



BONVOYAGE

From Bilbao to Oslo, intermodal mobility solutions, interfaces and applications for people and goods, supported by an innovative communication network

Research and Innovation Action GA 635867

### **Deliverable D2.1:**

#### **Use Cases and Reference Architecture**

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Abstract:	This deliverable covers user needs, requirements, Use Cases and functionalities. The reference architecture is the outcome of the analysis of different components connected with Pilots' existing services and detected users' requirements
Keyword List:	Requirements, Functionalities, Architecture, Scenario, Stakeholders

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## Abbreviations

ABBREVIATION	DEFINITION
APP	Application
CEF	Connecting Europe Facility
EITSFA	European ITS Framework Architecture
ETA	Elapsed Time of Arrival
EU	European Union
ICT	Information and Communication Technology
IT	Information Technology
ITS	Intelligent Transport System
OGC	Open Geospatial Consortium
POI	Point of interest
SP	Service Provider
TIP	Transport Information Provider
TO	Transport Operator
UC	Use Case
UML	Unified Modelling Language

**Table 0-1: Abbreviations**

## BONVOYAGE Glossary

Table 0-1 lists and describes the terms that have been considered relevant in this deliverable.

BONVOYAGE GLOSSARY	
TERM	DEFINITION
<b>Collective transport</b>	Represents the identified domain in which the user is the passenger and doesn't have the control of the vehicle (bus, train, car-pooling...)
<b>Existing ICT Solutions</b>	It is the software application supported by communication technology that is currently used in pilot sites for the management of the existing services.
<b>Functionality</b>	Represents a capability (or a set of capabilities) offered by the system toward external entities, or by a sub part of the system toward another sub part of the system.
<b>Individual transport</b>	Represents the identified domain in which the user is the driver and has the control of the vehicle (bike, car sharing, car-pooling...)
<b>Interface</b>	Link between the different components in the Architecture and defined by means of the set of services that the component supports.
<b>Intermodal</b>	Refers to the use of different transport modes in a journey to reach a destination
<b>Internames</b>	Internames is an "Information-Centric" communication Network, which collects and distributes all data through their identifying names, instead of their location on a particular server or host. Further, Internames is an advanced ICN which is able to operate across heterogeneous network realms.
<b>Interoperability</b>	Ability of two or more ICT Services to exchange information and use the information that has been exchanged in order to deliver new services or extend existing ones.
<b>Platform</b>	A platform is a group of technologies that are used as a base upon which other applications, processes or technologies are developed
<b>Reference Functional Architecture</b>	High-level and preliminary description of the system, expressed in terms of interacting functional modules, each being a set of (homogeneous) functionalities.
<b>Requirement</b>	A requirement is a condition or capability needed to solve a problem or achieve an objective
<b>Scenario</b>	Scenarios describe the stories and context behind why a specific user or user group will use a specific solution or product. They note the goals and questions to be achieved and sometimes define the possibilities of how the user(s) can achieve them on the product. Scenarios are critical both for designing the system, their interfaces and for usability testing. Scenarios are generally used

	by user research people to communicate with design teams.
<b>Service Providers (SP)</b>	Any company or entity that create apps or services which use the BONVOYAGE platform
<b>Short Story</b>	A short story is a brief statement, described in a very easy to read way, containing BONVOYAGE features from an end-user perspective. The short story describes the type of user, what they want and why from BONVOYAGE. Short Stories provide a quick way to handle needs without a big, giant, annotated document that is difficult to read.
<b>Stakeholder</b>	The term of stakeholder refers to an individual, group, or organization, who may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project.
<b>Technology Providers (TP)</b>	Represent the stakeholders that create or are responsible of the maintenance of the BONVOYAGE platform
<b>Transport Information Providers (TIP)</b>	Represent the stakeholders that will offer related transport information to BONVOYAGE platform, like Freight Operators, Transport Operators, Travel Operators, Information Providers
<b>Use Case</b>	<p>A Use Case describes the behaviour of a system in a certain situation. Thus, the Use Case describes:</p> <ul style="list-style-type: none"> <li>• The entities that participate in the Use Case (actors)</li> <li>• The constraints that govern the Use Case</li> <li>• The circumstances in which the Use Case occurs (pre-condition)</li> <li>• The circumstances in which the Use Case concludes (post-condition)</li> <li>• The objective of the Use Case</li> <li>• The sequence of the interaction between the user and the system</li> </ul>
<b>User</b>	<p>Any actor that will consume the services provided by the apps based on the BONVOYAGE platform (or the BONVOYAGE application itself).</p> <p>Passengers: Citizens that will make use of the services provided by the project.</p> <p>Private Driver: Citizens, truck and bus drivers... which drive a vehicle</p> <p>Companies: e.g. Transport operators who wants to find available services to be delivered</p> <p>Other entities that require specific information from BONVOYAGE.</p>
<b>User need</b>	A User need describes the expectation of the user to the system

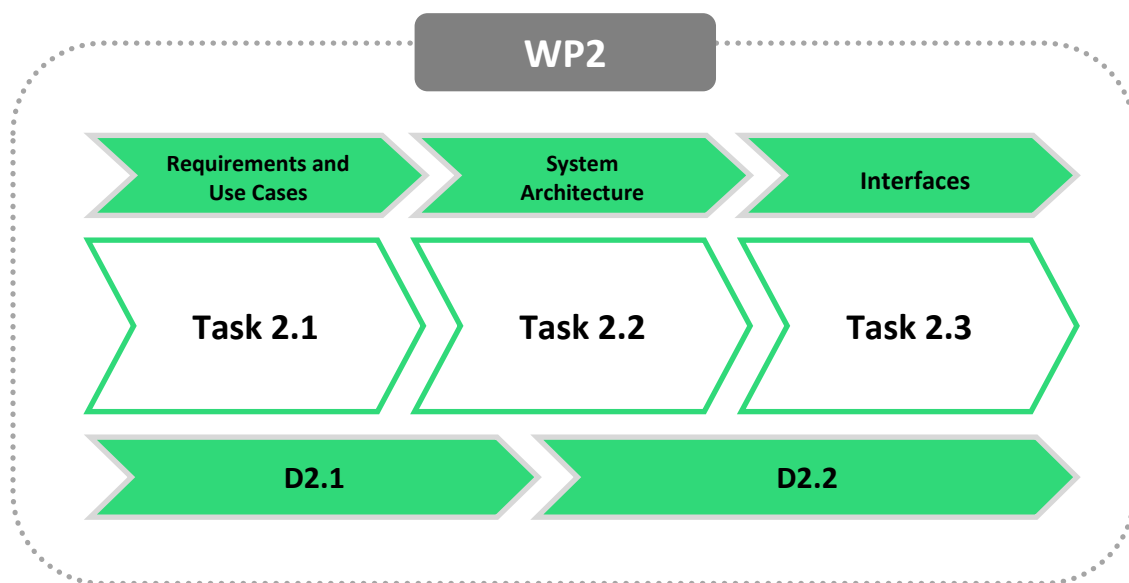
**Table 0-1: BONVOYAGE Dictionary**

# 1 Introduction

## 1.1 Deliverable Rationale

This deliverable summarises the work undertaken and results obtained within the first five months of WP2 “System requirements and design”. This work package aims at collecting and analysing the system requirements and, on the basis of such analysis, designing the system architecture and the detailed interfaces between the BONVOYAGE components. For this purpose, this WP is divided into three main tasks:

- Task 2.1 “Requirements and Use Cases”.
- Task 2.2 “System architecture”.
- Task 2.3 “Interfaces”.



*Figure 1-1: WP2 structure*

This document is the first deliverable resulting from Task 2.1 and part of Task 2.2. It covers user needs, requirements, Use Cases and functionalities. The reference functional architecture is the outcome of the analysis of different components connected with detected users’ requirements. The final architecture will be given by D2.2.

## 1.2 Quality review

The internal Reviewers responsible of this deliverable are Dag Kjenstad and Andréa Vassilev.

VERSION CONTROL TABLE			
VERSION N.	PURPOSE/CHANGES	AUTHOR	DATE
0.1	Draft index of the document	Nerea Rojas	05/06/2015
0.4	Stakeholders & architecture & BONVOYAGE Definition	Félix Lanas	20/07/2015
0.6	List of Templates section added, Short Stories skeleton, annexes of Use Cases included	Félix Lanas	28/09/2015
0.7	User Requirements added, Service providers requirements added, Technology providers requirements added, Transport Information providers requirements added, List of Use Cases, List of stakeholders	Félix Lanas	30/09/2015
0.73	Bilbao Validation Scenario description Use Cases and Stakeholders Requirements contribution from TRIT	Félix Lanas, Francesco Sorvillo	07/10/2015
0.75	Introduction, methodology and Reference Architecture sections completed Oslo Validation scenario description	Félix Lanas, Vincenzo Suraci, Ivar Christiansen	08/10/2015
0.78	Relevant Standards included Update Reference Architecture Section Update Methodology Intermodal travel solutions for public transport Use Cases included	Félix Lanas, Filippo Cervellati, Nacho González, Michael Kieslinger, Vincenzo Suraci	16/10/2015
0.8	Bilbao's Freight operator information included Use Cases reorganization	Félix Lanas	19/10/2015
0.9	Revision of Short Stories. General revision of the document	Giuseppe Tropea	23/10/2015
0.91	Introduction update Benchmarking process included Rome Validation scenario description	Félix Lanas, Vincenzo Suraci, Filippo Cervellati, Francesco Sorvillo	26/10/2015
0.98	Clean up and integration of reviewers comments	Nerea Rojas, Félix Lanas, Giuseppe Tropea	28/10/2015



0.99	Peer review	Dag Kjenstad, Andréa Vassilev	29/10/2015
1.0	Final check. Authorized	Nicola Blefari Melazzi	30/10/2015

## 1.3 Executive summary

### 1.3.1 Deliverable description

This deliverable named *D2.1 Use Cases and reference architecture* focuses on user needs, requirements, Use Cases and functionalities. The reference functional architecture we have designed is the outcome of the analysis of different components connected with identified users' requirements.

We started by describing the methodology adopted by the consortium to collect the user requirements, define Use Cases and construct and document the reference architecture of BONVOYAGE.

The first step was to generate a better understanding of potential services and capabilities of the BONVOYAGE platform which were grouped in three main transport domains: individual (user is the driver), collective (user travelling by public transport) and freight (goods delivery). Our starting point is included in *ANNEX 1: BONVOYAGE General Concepts*.

We have then asked partners to collectively produce a set of short stories which both capture desired capabilities not readily available in today's transport and, at the same time, display the technical challenges BONVOYAGE is going to face. These stories revolve around the three transport domains identified, and allow us to precisely focus the relationship between user-perceived capabilities and the structuring of BONVOYAGE into an ICT platform capable of satisfying them.

Benchmarking was carried out (see ANNEX 2: Benchmarking process) and the mixed background and experience of the consortium brought city, transport operator and technical perspective to this document. Main stakeholders and users for BONVOYAGE have been identified and classified (users, service providers, technology providers and transport information providers), in order to group their requirements and needs. This classification of requirements based on a characterization of the user domain provides an initial view about market possibilities for BONVOYAGE.

Then, user requirements and needs were tackled in section 5, definition of Use Cases. According to their scope, uses cases are distributed into five different groups: general Use Cases (UC\_00); Travel solutions for drivers including intermodality (UC\_01); Intermodal travel solutions for public transport (UC\_02); special groups travelling in public transport (UC\_03) and freight transportation (UC\_04). The complete set of use cases show how BONVOYAGE will act in specific situations to satisfy stakeholders' needs. This is found in the Annexes (3, 4, 5, 6 & 7).

The first step in the definition of the BONVOYAGE reference functional architecture was to identify and briefly describe functionalities addressing the requirements. These functionalities were then grouped into bigger functional modules, which interact with each other and constitute the BONVOYAGE preliminary functional architecture, included in this deliverable. Starting from these important achievements, the final BONVOYAGE system architecture will later be presented in D2.2, as the results of the activities to be carried out in T2.2 and T2.3. Furthermore, during the next phase of the project, a set of Use Cases will be selected and their requirements, functionalities and related interfaces will be detailed in D2.2. These functionalities and the related interfaces will be developed during the implementation phase, integrated in the project prototype and validated in real field trials.

In parallel, with the aim of taking into account standardization aspects during the design phase, a synthetic view upon the standards that have relevance in the BONVOYAGE context is provided.

This document also provides an overview of the context (for transport of passengers and goods) in which the BONVOYAGE will be validated. Section eight analyses the city environment and traveller and traffic information, ticketing, pricing and other services provided by the transport operators operating in the cities involved in the demonstration phase.

Finally, templates used in the classification of stakeholders and collection and categorization of requirements as well as use case definition are included in *ANNEX 0: Templates Used*.

### **1.3.2 Summary of results**

The following achievements are included in this deliverable:

- BONVOYAGE General Concepts with the services and capabilities that the platform will offer.
- BONVOYAGE Short Stories and a consequent division in groups of potential Use Cases.
- Stakeholders' requirements towards the project's goals (*Multi-objective optimization, Personalization, Tariff Schemes, Interoperability, Internames Communication System, Security and privacy*).

- Detailed Use Cases involving pilot cities considering the perspective of both clients and providers (technology & service).
- Identification of relevant standards.
- Description of available services and ICT solutions available in the pilot sites in order to prepare the adaptation and integration of the BONVOYAGE platform
- Definition of the System reference architecture, compliant with the system requirements.

The results gathered in this deliverable will be a guideline for several tasks and work packages of the BONVOYAGE project. Within WP2, the high level architecture, functionalities and requirements gathered in the T2.1 will contribute to the definition of the full architecture in the T2.2. Also, *T2.3 Interfaces among the system components* will be fed by the Use Cases and functionalities collected in this deliverable.

Within WP4, the *T4.2: Multi-Objective Optimization Tool* will be in charge of validating the Multi-Objective Optimization Tool through simulations, in real world scenarios, in compliance with selected Use Cases defined in WP2.

The identified requirements and the existing ITS solutions in the cities and operator involved in the project will be used in the framework of the validation and piloting activities performed in *WP7: System Integration and Validation*. It will help to assess if, in the BONVOYAGE realistic scenarios, the system behaviour is compliant with the expected one.

For the *T8.2: Standardization and open source contributions*, the relevant standards identified in this deliverable will be the grounds on which to build the standardization activities.

The following Figure 1-2 shows the relation of the D2.1 achievements with other tasks and work packages in BONVOYAGE.

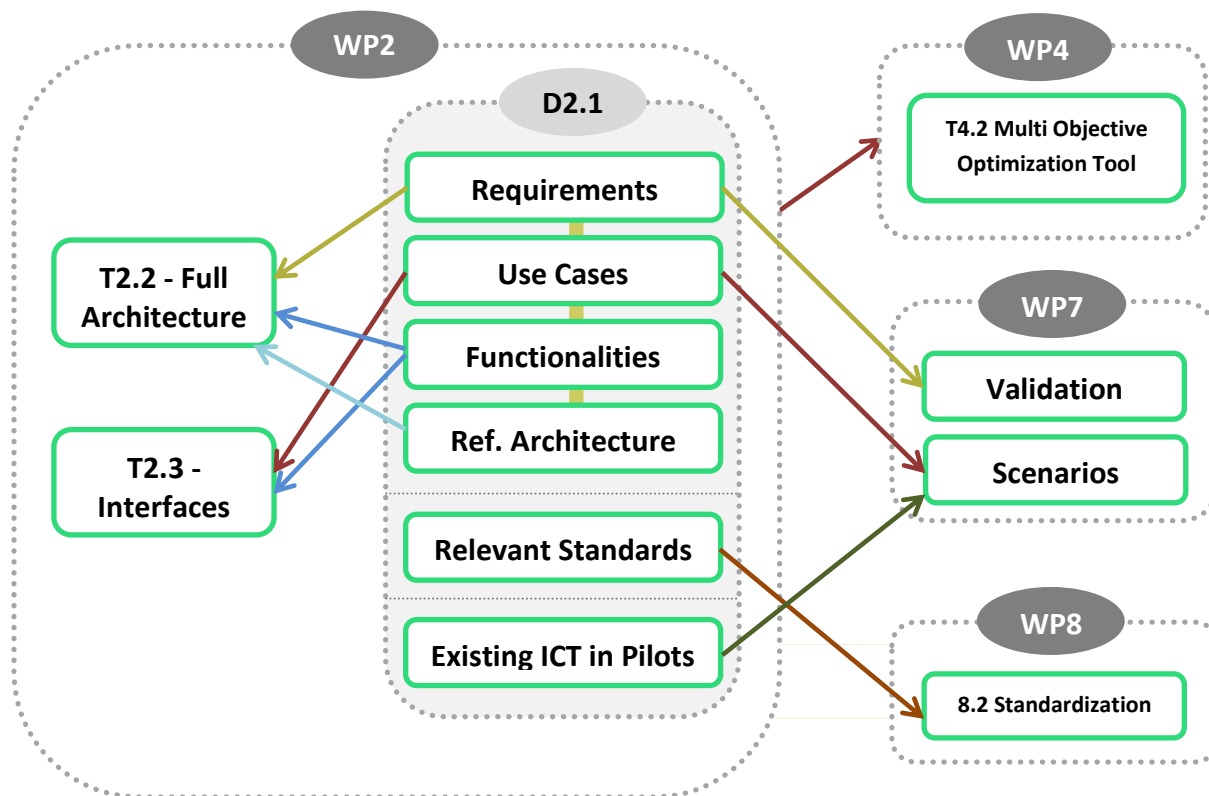
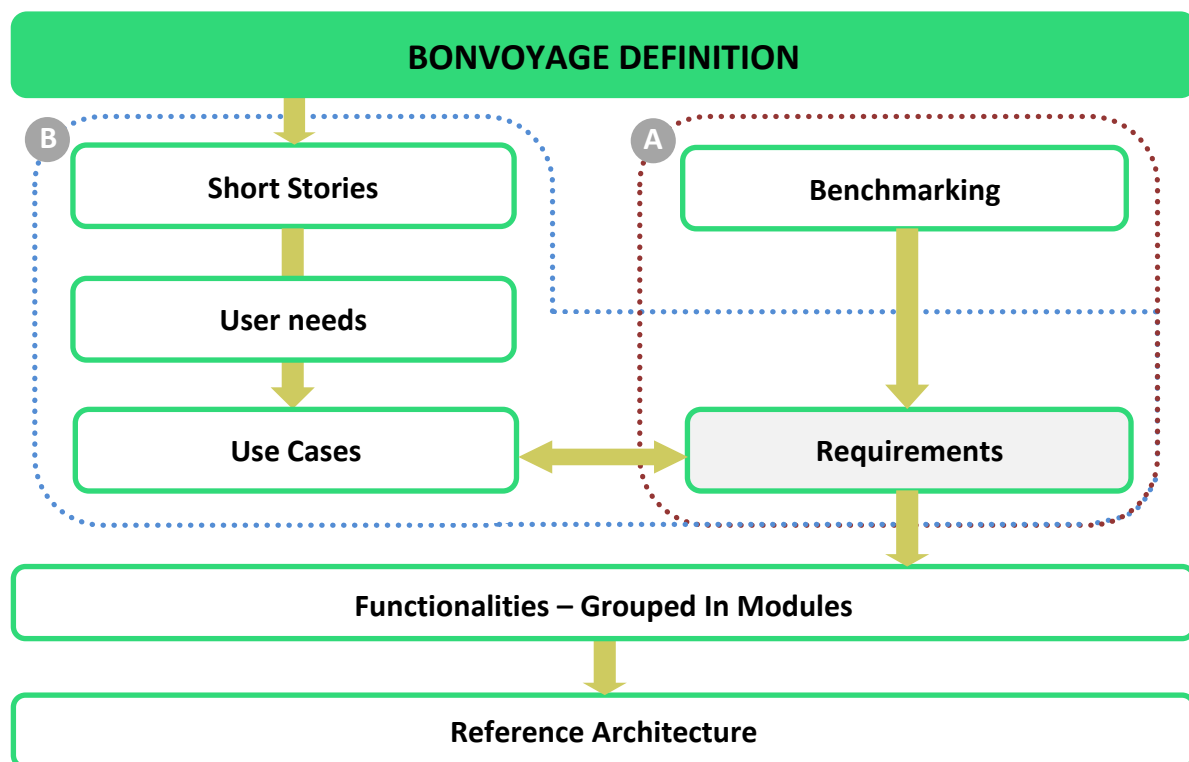


Figure 1-2: D2.1 Relation to other project tasks

## 2 METHODOLOGY

This chapter describes the working methodology followed to generate the deliverable. The main objectives are to identify user needs, requirements, Use Cases and functionalities. The reference functional architecture is the outcome of the analysis of different components connected with detected users' requirements.

The following picture shows a general overview of the methodology applied in the generation of the BONVOYAGE reference architecture:



*Figure 2-1: BONVOYAGE Methodology*

The first step was to define the general concepts of BONVOYAGE with the aim of providing a better understanding about what BONVOYAGE is and identify potential services/capabilities to be developed. A template table was circulated among all partners to agree on the capabilities of the BONVOYAGE platform grouped in the following main transport domains:

1. Individual transport: The user is the driver and has the control of the vehicle
2. Collective transport: The user is the passenger
3. Transportation of goods

The criterion was to identify for each domain:

- Potential services/capabilities based on pre-trip, on-trip and post-trip conditions
- The scope: the areas to be covered (urban, interurban, long distance) and the transport modes involved.
- Relevant actors (stakeholders, groups of users)

For the identification of the users' requirements and needs and definition of the Use Cases, two complementary approaches were adopted:

#### Benchmarking

A Benchmarking of existing mobility and apps was carried out in order to identify usual and innovative requirements.

The benchmark first aim was to map, analyse and compare existing functionalities offered by the multitude of widely used platforms and Apps. Afterwards, the benchmark was built through:

1. Identification and selection of mobility and travel platforms / Apps to be analysed
2. Mapping and analysis of available functionalities of possible interest for BONVOYAGE
3. Comparison of how same/similar functionalities are shaped in different platforms/Apps
4. Re-thinking of functionalities of interest for BONVOYAGE to define them in an original way and drafting of new functionalities
5. Identification of BONVOYAGE basic and innovative requirements, bringing to draw an "ideal BONVOYAGE platform"

#### Short stories process

A group of readable short stories was created in order to sketch the interaction of BONVOYAGE with the users, and to capture the salient technological challenges.

Based on the short stories, five groups of Use Cases were identified:

1. General Use Cases
2. Travel solutions for drivers including intermodality
3. Intermodal travel solutions for public transport
4. Special groups travelling in public transport
5. Freight transportation

Coming from short stories definition and based on the partners experience on user needs and taking into account the perspective of the different transport operators, administrations and members of the consortium, a set of Use Cases collecting their requirements were defined.

After a preliminary analysis of all requirements, the next step was to focus on identifying set of functionalities that meet those requirements and group them into logical modules that will result in the BONVOYAGE high level architecture.

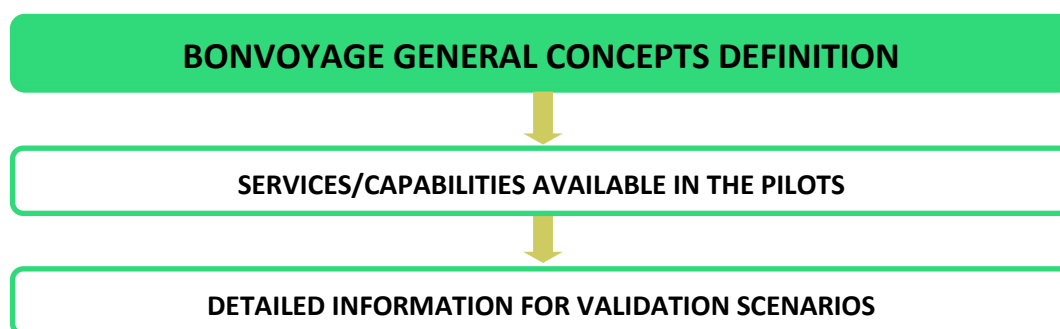
During T2.1 we followed a cyclic process, allowing the inclusion of new information (Short Stories, User Requirements, Use Cases...), if appeared during the project progress. This mechanism consists on repeating the methodology process from the beginning, but with the new information included. This helped us to progress through the different stages.

Nevertheless, in the context of project's Task 2.2 and 2.3, the requirements, Use Cases and functionalities will be revised in order to determine the priorities for implementation and validation purposes.

In parallel, an analysis of the most relevant standards has been carried out to be taken into account for the BONVOYAGE platform development.

Finally, to provide an overview of the transport operators and cities environment participating in the validation of BONVOYAGE, a description of the scenarios was performed. A template was circulated to gather available information relevant for the validation purposes. Also a description of the ICT solutions and services was carried out.

Afterwards a more extensive analysis will be made to identify in more detail relevant aspects related to their existing ICT solutions and services to prepare the validation scenario for the BONVOYAGE trials.



*Figure 2-2: Methodology for validation Scenarios*

### 3 BONVOYAGE SHORT STORIES

We present a selection of short, narrative stories about transport. They are purely fictional but we believe they depict in a realistic way today's expectations about a modern and global information service, which supports mobility of people and goods in an efficient, simple and friendly way. Some of these expectations seem quite obvious but they imply a technological infrastructure and associated protocols that only today are becoming possible and constitute the challenge BONVOYAGE is called in to solve, with an innovative approach to integration and intermodality based on a novel communication infrastructure, on real-time data and user profiling.

#### **Ole the biker**

Ole lives in Oslo and likes to take things on the fly. He is a frequent user of public transport in Oslo, and uses a combination of several transport modes (tram, metro, bus). However, he also likes to use his bike whenever he can. Ole is concerned with transfer times and uses mobile apps a lot. He wants BONVOYAGE to tell him what is the fastest/best way to his destination (including walking), and see it in a map, what is the lowest cost of the journey and information about bike paths and the area in general. He would like a route planner where one can include bike for the complete or parts of the journey, information on quality and excavation works obstructing bike paths and if bikes are permitted in tunnels. Ole does not have a driver's licence.

#### **Anna's gift**

Anna wants to send a gift to Alejandro, a friend of her. Anna lives in Rome, while Alejandro lives in Bilbao. Anna is interested in sending the gift so that it arrives at Roberto's home the day of his birthday, which is 3 days later. Anna needs services that can easily provide her with several alternatives, without having the effort to search several Internet sites to find the best solution. Anna wants to be assisted and kept informed during the complete process, ranging from the package expedition, to its arrival at the destination, using her own device and a dedicated, easy-to-use mobile app. Anna wants the possibility to select among several of possible choices, with related costs.

#### **Nabil the taxi van driver**

Nabil is a taxi driver in Oslo and the surrounding areas. He wants BONVOYAGE to tell him the shortest route between A and B. He spends a lot of time in the car, which causes him to eat a lot on the go and refuel often. He wants BONVOYAGE to give him driving directions to the closes dining place + gas station in a 20 km radius from where he is, as well as traffic incidents and



traffic flow information, SMS service for notification of accidents, information on planned road works, “via-locations” and auto save of last routes.

### **Alfredo and the efficient route**

Alfredo lives in Vitoria and has recently bought a van to become autonomous transport driver. Last week he was sub-contracted by a supermarket of the city, which now offers free delivery to its customers and gives him a lot of work. During his first days working in this service, Alfredo realizes that he is wasting a lot of time and fuel, because he is not yet a specialist in driving from A to B in an effectively way and there are a lot of variables to take into account like: traffic jams; streets under construction and prohibition to access to the downtown so he has to park in the nearest loading area.

Alfredo would like an easy to use app, which dynamically re-routes him based on changing external conditions, which creates an efficient route to minimize fuel costs, given the sequence of stops, and guides him along the city in order to make easier his job.

### **Ladybug day-care centre**

Ladybug is a small, private day-care centre with 7 kids ranging from 1 to 4 years old and with two employees. They have two large strollers, which fit 4 children in each, and depend on the bus to fit them. The day-care centre plans weekly excursions. They want to know if/how bus stops are accessible, transfer times and how long time the trip will take. They are in need of a travel planner with map and print function.

### **Eva the traffic information journalist**

Eva works as a traffic journalist in a large, national online newspaper and is responsible for presenting traffic information in its portal where she collects editorial content from various media. Eva needs information and material on current traffic-related events as the portal contains what people need to know about traffic incidents and flow for both car and PT at all times.

Eva needs the following from BONVOYAGE: To get messages in a format that can be integrated in her IT service; Notifications about special incidents; Reports for different geographical areas; Feed on deviations, planned and unforeseen; Clear contact information to traffic management centres and technical assistance; authoritative and verifiable information.

### **Larry the smartphone App developer**

Larry’s dream is to create a smartphone App that is able to act as a “people’s journey planner”, for people to input availability of their own vehicle with spare seats, for short periods, on a very specific area or itinerary, and, complementary, for others to request a shared transport. He

knows it is currently very difficult to interoperate with official services such as the Municipality public bus service to provide wider and intermodal coverage and it is difficult to collect crowd-sourced information from people's bikes, cars or phones in order to optimize such a horizontal "peer-to-peer" sharing service.

### **FonterTrans Christmas work overload**

Christmas is approaching and like every year, the transportation company FonterTrans has increased its workload by 200% so FonterTrans needs to temporarily hire an external delivery service. FonterTrans would like an easy to use application (the employees' knowledge about technology and Internet is limited) which notifies by sending an alert, or email or a text message about offers of available delivery services meeting FonterTrans specifications for timing and transport conditions.

### **Roberto, stress-free commuter**

Roberto lives in a small town close to Rome and everyday he has to travel to his office in the city centre. Roberto needs to be at work at a given time but often his daily schedule is affected by unpredictable events. When an event occurs, Roberto is forced to manually seek for an alternative path to his destination and, since his knowledge about different transport services is limited, he soon becomes frustrated. Roberto would like to have a unique app that behaves as a personal advisor, that works on behalf of him to find any transportation alternatives and that keeps him informed on best strategy to apply when a given event occurs.

## **3.1 Outline of the BONVOYAGE Platform**

An outline of what the "BONVOYAGE Platform" is going to be, in terms of technical capabilities, has been elaborated from the above short stories, and constitutes the guide to convey and maintain the requirements requested by external users (which we deal with in the subsequent chapters) within a well-focused framework.

<b>What is the BONVOYAGE Platform</b>	<b>The BONVOYAGE platform is an intermodal "door to door" advanced information service for passengers and goods.</b> The platform will be able to push information to users like alerts of changes, but also messages, offers, notifications.
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<b>BONVOYAGE communication model</b>	The platform has two communication models: <b>Request/Response</b> and <b>Publish/Subscribe</b> . Both ensure that the platform will only provide information if the user requires it. Nevertheless, certain services can require mandatory subscriptions by the users (e.g. to focused promotions) in order to operate.
<b>BONVOYAGE data sources</b>	BONVOYAGE will have a proprietary DB with information (such as user profiles). BONVOYAGE <b>will not have a DB with commercial information, timetables</b> , and so on, but this information will <b>be accessible by existing services</b> (via the Information Centric Network INTERNAMES) to produce different alternatives to the requester.

*Table 3-1: BONVOYAGE platform outline*

The following is a list of detailed BONVOYAGE platform capabilities immediately deriving from the short stories above. The platform:

Maintains information about users, and profiles them, limiting as much as possible the amount of information to be kept and requesting consent to users.
Receives requests from users about desired transportation requests of passengers or goods, subject to constraints (for instance special handling constraints, time frame constraints, tracking of position, or schedule a route with multiple stops).
Connects to external providers of information about: <ul style="list-style-type: none"> <li>- (Type 1) static capacity to operate a transport of passengers or goods</li> <li>- (Type 2) real-time conditions that may influence the planned transport (traffic jam, roadworks, blocks, under construction)</li> <li>- (Type 3) context services and offerings that may enrich the transport (parking, family tariff, reservation, wheelchair)</li> </ul>
Allows users to browse/search available raw information on their own.
Sends notifications to users with relevance to the planned journey or transport.
Searches, interprets and combines information made available by all external providers, in order to find the best matching transport solutions.
Match-makes the requests with the computed solutions, and ranks them for the specific user, by taking into account users' profiles and requested constraints.

Maintains information about chosen solutions, associates them with users and keeps them alive for receiving real-time updates and informing the user.
Offers a friendly GUI.
Offers APIs to access a subset of capabilities to external services that bypass the GUI.
Facilitates the possibility for users to play the role of external information provider of any of the three types above (with own vehicle or crowd-sourced data).
Operates in such a way that received requests can be made public for other users to search.
Operates in such a way that information provenance can be certified.

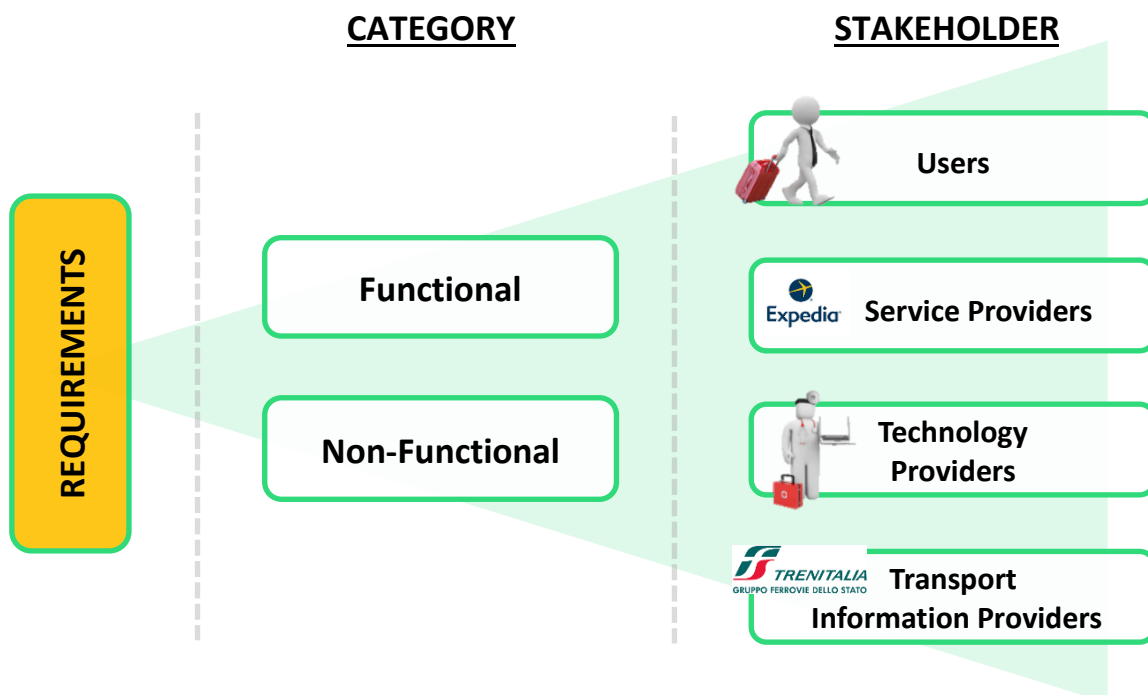
**Table 3-2: BONVOYAGE platform capabilities**

In the following chapter the detailed requirements deriving from the perspective of users utilizing the BONVOYAGE platform outlined above are discussed.

## 4 STAKEHOLDERS REQUIREMENTS

### 4.1 OVERVIEW

This chapter describes the requirements of BONVOYAGE stakeholders.



*Figure 4-1: Requirements Overview*

Requirements were defined taking into account how the BONVOYAGE platform is supposed to be used, its expected added value, and the scenarios of its usage.

Before illustrating identified requirements, it is necessary to explain how requirements were derived and how they have been classified with respect to different variables.

Firstly, requirements were derived according to three different, complementary methodologies:

- a) From short stories to requirements: this approach starts from short stories drafting, in order to identify specific user needs and requests that shall be fulfilled by the BONVOYAGE platform; it proceeds to Use Cases definition, which illustrates how the

BONVOYAGE platform concretely works to satisfy user requests, and, as a final step, requirements identification.

- b) Coming from short stories definition and based on the partners experience on user needs and taking into account the perspective of the different transport operators, administrations, members of the consortium, a set of Use Cases collecting their requirements were defined.
- c) From requirements benchmark to use cases: this approach moves from requirements benchmark, as a preliminary step to identify, select and define BONVOYAGE requirements; it moves on with Use Cases drafting aimed at showing how each requirement will concretely operate to allow users to perform specific activities on the BONVOYAGE platform.

The benchmark first aim was to map, analyse and compare existing functionalities offered by the following widely used platforms and Apps:

- 1 platform developed by a BONVOYAGE project partner: Trenitalia Commercial Platform (PICO);
- 11 Local Public Transport solutions across EU Member States and third countries, namely:
  - 1. Bpass Lignes d'Azur App (France); 2. Lyon Optimod initiative (France); 3. Lyon: Técély Card & City Card (France); 4. Trenitalia Local Public Transport (Italy); 5. Stockholm Accesskortet (Sweden); 6. Dutch OV-chipkaart (The Netherlands); 7. London Oyster Card (United Kingdom); 8. Masabi solution (United Kingdom); 9. Rio Card (Brazil); 10. Beijing Yikatong Card (China); 11. Singapore EZ-linked card (Singapore).
- 15 mobility and travel Apps: 1. Trenitalia App (developed by BONVOYAGE project partner Trenitalia; the App was previously called ProntoTreno); 2. Smile / Beambeta (developed by BONVOYAGE project partner Fluidtime); 3. Waze; 4. Moovit; 5. Superhub; 6. Google maps; 7. MyCicero; 8. Carsh; 9. Musement; 10. Moovel; 11. Mozie; 12. Wanderio; 13. Salsquare; 14. Jolly Ticket; 15. Waze.

The following steps were undertaken to develop the benchmark:

- I. Identification and selection of mobility and travel platforms / Apps to be analysed;
- II. Mapping and analysis of available functionalities of possible interest for BONVOYAGE;
- III. Comparison of how same/similar functionalities are shaped in different platforms/Apps.

This allowed to outline a complete framework of what current solutions offer, what is missing and what functionalities will have to be realised in BONVOYAGE to achieve real and concrete progress behind the current state of art.

Moving forward, available functionalities of interest for the project were re-thought in an original way to be included in BONVOYAGE platform. As for non-existing functionalities, they were created from scratch and described to meet envisaged user needs / requests to be satisfied by BONVOYAGE platform.

Finally, BONVOYAGE basic and innovative requirements were derived drawing an “ideal BONVOYAGE platform”.

An overview of how benchmarking was developed is provided in ANNEX 2: Benchmarking process.

Importantly, after the completion of the benchmarking exercise, derived requirements underwent a continuous revision process aimed to ensure consistency with short stories and use cases as well as to enable BONVOYAGE essential functionalities as presented in the Description of the Action (e.g. Intelligent Transport Functionalities).

Once derived, requirements have been defined with respect to four stakeholder groups:

- Users;
- Service providers;
- Technology providers;
- Transport information providers.

A detailed description of each group is provided in Paragraph 4.2.

Requirements have also been distinguished into functional and non-functional requirements.

Functional requirements explain what the BONVOYAGE platform is supposed to do in order to successfully solve its tasks. They directly target stakeholder needs, as they are elaborated on the basis of the expected usage of the platform. Non-functional requirements show the characteristics that BONVOYAGE platform should have in order to successfully operate and deliver its features. They also include requirements that define successful process of system's creation and maintenance.

Lastly, requirements have been split into two importance levels: essential and optional requirements.

Essential requirements enable BONVOYAGE platform to provide most of its intended features and perform its intended tasks. Thus, if essential requirements are not fulfilled, the BONVOYAGE platform becomes fully or partially unusable. Some essential requirements are critical: if they are

unfulfilled, BONVOYAGE platform becomes fully unusable and cannot provide any added value. Unlike critical requirements, the platform may still be able to partially operate if some of other essential requirements are not fulfilled, but one or more features or capabilities of the platform will be disabled or unusable.

Optional requirements are those that provide: additional features, not required by the original specifications; gradual improvements to the functional or non-functional parameters of the platform; or provide increased quality of life for intended users of the platform. BONVOYAGE platform can still be fully operational without fulfilment of optional requirements. However, in the long term performance and acceptance of the platform may differ considerably depending on fulfilment of such requirements.

Each Requirement is structured according to the following format:

- ID: requirement unique identifier through the BONVOYAGE project;
- Title: summarises the requirement content / enabled operations;
- Description: illustrates which tasks are enabled by the requirement;
- Stakeholder: indicates stakeholders group involved in performing the tasks related to the requirement;
- Category: functional vs. non-functional requirement.

For non-functional requirements the following sub-categories have also been identified:

- o Look and feel: it relates to the user interface that shall be in line with the envisaged template;
- o Usability: it relates to the user-friendliness;
- o Performance: it relates to the quality level to be respected and the time needed to perform a specific functionality/operation (e.g. a payment transaction shall not take more than 3 seconds);
- o Efficiency: it relates to the possibility to access functionalities, services or products (e.g. a specific product shall be accessible at any time);
- Domain: transport fields and means related to the requirement (passenger individual transports, passenger collective transports, freight transport);
- Priority: importance level of the requirement (essential vs. optional).

The User Requirement detailed template is available in ANNEX 0: Templates Used.



## 4.2 LIST OF STAKEHOLDERS

In this section we describe the identified stakeholders that interact with the BONVOYAGE platform as a whole, divided in 4 groups, without describing which level of the platform's architecture they connect to.

### 4.2.1 Users

The following *Table 3-1: List of Users* represents the final users that will consume the services provided by the apps based on the BONVOYAGE platform.

STAKEHOLDER	DESCRIPTION
<b>Passenger</b>	User who travels in public transport as passenger
<b>Private Driver</b>	User who drives a vehicle, including car-sharing
<b>Company</b>	e.g. Transport operator who wants to find available services
<b>Others</b>	Entities that require specific information e.g. weather forecasters that would like to give weather information

*Table 3-1: List of Users*

Importantly, a first set of user profile categories have been identified as BONVOYAGE platform target:

- Bike lovers;
- Heavy Vehicles drivers (including both truck drivers as well as bus drivers);
- Luxury (5 star tourists looking for luxury travel conditions);
- Backpacker (hostel tourists);
- Low cost; Families;
- Business;
- Schools (students groups);
- Eco-friendly (CO2 saving and naturalistic itineraries);
- Groups (tourists groups);
- Religious groups (religious tourism);
- Romantic (romantic travels for couples, scenic tours);
- Single; Adventure (adventure travels);
- Disabled travellers (with disabilities - also specifying the kind of disability);
- Food (wine and food travels);

- Art and culture (artistic itineraries);
- Music (itineraries for music events); Sport (itineraries for sporting events);
- Pregnant;
- Elderly;
- Day tripper (one day round trip);
- Special needs.

#### 4.2.2 Service providers

The following *Table 3-2: List of Service Providers* represents the companies or entities that create apps or services which will use the BONVOYAGE platform.

SERVICE PROVIDER	DESCRIPTION
<b>Companies</b>	Entities which connect to BV asking for information (e.g. Expedia)
<b>Transport Operator</b>	Transport operators which connect to BV asking for information (e.g. Trenitalia)
<b>Freight Operator</b>	Freight companies which connect to BV asking for information

*Table 3-2: List of Service Providers*

#### 4.2.3 Technology Providers

The Technology Providers represent the stakeholders that create or are responsible of the maintenance of the BONVOYAGE platform.

#### 4.2.4 Transport information providers

The following *Table 3-3: List of Transport information providers* represent stakeholders that will offer related transport information to BONVOYAGE platform.

TRANSPORT INFORMATION PROVIDER	DESCRIPTION
<b>Freight Operator</b>	(e.g. Freight company, stakeholder which offers its freight services in BV)
<b>Transport Operator</b>	(e.g. Bus company, stakeholder which made available the schedule and coverage details in BV)

<b>Travel Operator</b>	Offering aggregated and refined information about travels (e.g. Expedia)
<b>Information providers</b>	Stakeholders that will offer context information to the platform in order to enrich its intelligent transport capabilities (e.g. weather, sensors and crowd-sourced data, parking facilities)

*Table 3-3: List of Transport information providers*

### 4.3 User Requirements

This section aims to identify requirements from final users that will consume the services provided by the apps based on the BONVOYAGE platform.

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BU10	Login	<p>Mandatory registration required:</p> <p>Access only with BONVOYAGE credentials (at least in the initial phase - to assess future BONVOYAGE super parts that integrates access credentials with other App).</p> <p>1) Registration required "simple" (only email, password) and authorization to geolocation.</p> <p>2) Name; Surname (required) + nickname (optional), default preferred language, profile picture (optional) + icon (optional)</p> <p>3) Adding optional information on user category (few options with ability to click multiple), with the possibility of skipping.</p> <p>Categories will include: Bike lovers; Heavy Vehicles drivers (including both truck drivers as well as bus drivers); Luxury (5 star tourists looking for luxury travel conditions); Backpacker (hostel tourists); Low cost; Families; - Business; Schools (students groups); Eco-friendly (CO2 saving and naturalistic itineraries); Groups (tourists groups); Religious groups (religious tourism); Romantic (romantic travels for couples, scenic tours); Single; Adventure (adventure travels); Disabled travellers (with disabilities - also specifying the kind of disability); Food (wine and food travels); Art and culture (artistic itineraries); Music (itineraries for music events); Sport (itineraries for sporting events); Pregnant; Elderly; Day tripper (one day round trip); Special needs;</p> <p>This information shall be provided according to EU privacy regulation.</p> <p>4) Adding additional data (e.g. : tax code, VAT number) required to make the payment with billing.</p> <p>5) Possibility to link the account to the social networks (e.g. Gmail).</p>	Account /Profile	Account/ registration	Functional	All
BU20	Privacy	Authorization to share information during installation.	Account /Profile	Account/	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
		Possibility to also provide information in the next step.		registration		
BU30	<b>Base account definition/setting</b>	<p>Registration def.:</p> <ul style="list-style-type: none"> <li>- Full name, mobile number.</li> </ul> <p>Account definition: nickname, photo, icon identification; insertion and save addresses / favourite places; creating list favourite events/favourite places; fidelity programmes of BONVOYAGE transport operators and service providers (e.g. Star Alliance awards); age range; employment;</p> <p>Visualisation account fidelity viewing points accumulated.</p> <p>(Account update can be done whenever the user wants to. Each information shall be sided by a box explaining why that information is required and how BONVOYAGE will use that information to determine the most suitable solution for the user: e.g. personalised discounts/promotions).</p>	Account /Profile	Account/ registration	Functional	All
BU40	<b>Status</b>	<ul style="list-style-type: none"> <li>- Possibility to link status / emoticons to the profile.</li> <li>- Possibility of sharing status on social networks.</li> </ul>	Account/Profile	Profile updating	Functional	All
BU50	<b>Profile loyalty categorisation/setting</b>	Categorization in different levels of fidelity profile based on points accumulated.	Account/Profile	Profile ranking	Functional	All
BU60	<b>Social network "Friends" (contact) link</b>	Possibility to "invite" friends by inserting mail /mobile phone / contact Social Network (Optional requirements - if there is API).	Account/Profile	User (other) connection	Functional	All
BU70	<b>BONVOYAGE "Friends" (contact) link</b>	Entering contacts to identify other friends on BONVOYAGE (finding friends on BONVOYAGE and establishing "friendship" on BONVOYAGE).	Account/Profile	User (other) connection	Functional	All
BU71	<b>BONVOYAGE Contacts Network</b>	<p>Capability of BONVOYAGE platform to propose the user other people with whom establish a friendship based on the following key criteria:</p> <ul style="list-style-type: none"> <li>- number of mutual friends;</li> </ul>	Account/Profile	User (other) connection	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
		- user categories.				
BU80	<b>Define profiles for the definition of the travel solutions</b>	Capability of BONVOYAGE platform to manage search engine parameters in order to give preference to defined travel solutions according to a pre-defined user profile.	Account/Profile	User profile	Functional	All
BU90	<b>Differentiate travel solutions for profiling</b>	Capability of BONVOYAGE platform to diversify travel solutions according to different user profiles.	Account/Profile	User profile	Functional	All
BU100	<b>Identity Management</b>	Capability of BONVOYAGE platform to manage a customer identity.	Account/Profile	Identity management and application profile management	Functional	All
BU110	<b>Word of mouth</b>	BONVOYAGE chat exchange message	Communication	Messenger	Functional	All
BU120	<b>Sending/receiving message</b>	Possibility to send/receive messages among users (dedicated messages box)	Communication	Messenger	Functional	All
BU130	<b>Info-mobility reception notification</b>	Info-mobility notification.	Communication	Notification	Functional	All
BU140	<b>Notification purchased ticket reception</b>	Receiving notifications proposal / request for purchase of transport services related to the target user (e.g.: LTP travel document/Ticket of the destination city, museum entrance ticket, taxi, car sharing).	Communication	Notification	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BU150	Notification reception setting	Possibility to filter the information to be received (e.g. : notifications only peak times; updates and news; changes timetables and routes).	Communication	Notification	Functional	All
BU151	Newsletter service	BONVOYAGE platform sends a periodic newsletter to the user so that he can be informed of new services/service providers joining BONVOYAGE platform. Possibility for the user to un-subscribe from the newsletter reception.	Communication	Newsletter	Functional	All
BU160	You add me on travel	<ul style="list-style-type: none"> <li>- Enabling sharing route information (e.g.: travel time, estimated time of arrival) and location with "your friends" on the App BONVOYAGE;</li> <li>- Enabling shared address associated with contact phone / smart phone (which then becomes the starting address / travel destination);</li> <li>- Enabling sharing information on the place reserved on the means of transport with their friends;</li> <li>- Enabling sharing favourite places with other applications that require location information;</li> <li>- Enabling sharing user location with other Apps;</li> <li>- Enabling travel solution sharing with other users in order to share group tickets. (every sharing request shall be implicitly/explicitly accepted, ignored or refused by the beneficiary)</li> </ul>	Info-mobility	Information sharing /picking-up	Functional	All
BU170	Information on the state of the circulation	<p>User sharing real time information on road circulation status (public transportation, road status, road works, roadblocks, accidents, road closures, etc.) with other BONVOYAGE users, adding the information on BONVOYAGE platform.</p> <p>The information on road works can be shared by the user with local law enforcement agencies, as BONVOYAGE platform is connected with them.</p> <p>Possibility to choose to share these data with all the community, or with defined clusters of users or with identified users (own "friends")</p> <p>Information sharing among BONVOYAGE users (travellers).</p>	Info-mobility	Information sharing /picking-up	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BU180	Public transports information	User can share real time information on public transports circulation / status (e.g. delays, strikes, itinerary changes, etc.) with other BONVOYAGE users, adding the information on BONVOYAGE platform. User can also display information shared by other BONVOYAGE users concerning: - Public transportation Status (e.g.: train / bus not started yet, late / early, filling rate, cleanness); - Public transport lines (e.g.: delay, strike, problems of access); - Line of bus, metro on "where you are" (e.g.: delay, line out of service, accidents, change track, change path, driver assessment, the wrong path); - Stops / stations of public transport nearby.	Info-mobility	Information sharing /picking-up	Functional	Individual transport; Collective transport
BU190	Other information	Visualisation and information sharing on: - Planned measures on rail / bus / metro, strikes; - Weather (e.g. snow, rain, fog); - Checkpoints; - Places (e.g. restaurant schedule).	Info-mobility	Information sharing /picking-up	Functional	All
BU200	Radar interception	Setting a filter system (km, number of hours) to visualise information on transportation, state of the traffic and accidents incidents (e.g. : 100 km from the place of departure) - Features for user on the go. The user is informed of his choice with a certain lead time (user defined) of accidents / accidents along the way (the information received with logical push).	Info-mobility	Information sharing /picking-up	Functional	All
BU210	Search travel information for others	Possibility to search routes / information for others, through my contacts, and then send the result to the interested "new user" (e.g. to organize a trip on behalf of other person)	Info-mobility	Information sharing /picking-up	Functional	Individual transport; Collective transport
BU220	Pictures	Possibility to associate a picture to information shared (only with the person you are chatting, status of Social Network).	Info-mobility	Information sharing /picking-up	Functional	All



ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BU230	Itineraries / favourite places Localization	Geolocation routes / sites subscribed on the "preferred route list"	Geolocalization	Users and location localisation	Functional	All
BU240	User localisation	User geolocalisation.	Geolocalization	Users and location localisation	Functional	All
BU241	Events or denomination based search	Possibility for the user to indicate an event or a denomination instead of the origin / destination address. BONVOYAGE provides a list of pre-defined categories for possible denominations (e.g. Museums, restaurants, others).	Geolocalization	Users and location localisation	Functional	All
BU250	Services/event s localisation	Location and distance calculation / path: <ul style="list-style-type: none"> <li>- Car services (gas stations, parking );</li> <li>- Transport (bus stations, train, airports, etc.);</li> <li>- Public services (schools, universities, hospitals, police, post offices);</li> <li>- Shopping and services (supermarkets, shops, pharmacies, travel agencies;</li> <li>- Food and drink, restaurants;</li> <li>- Cultures and entertainment (theatres, cinemas, museums);</li> <li>- Hotels;</li> <li>- Outdoors (beaches, golf courses);</li> <li>- Natural features (islands, lakes, forests).</li> </ul> Possibility to define the area of the location (e.g.: 5/15 minutes by walk / drive).  Localization of the service / event on the map.	Geolocalization	Other services localisation	Functional	All
BU251	SOS Services request	Possibility for the user to require and receive road side assistance (if necessity) through BONVOYAGE platform. The user can send a request for assistance simply pushing a	Support	Other services	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
		bottom on his BONVOYAGE App.				
BU260	Basic visualisation	Maps visualisation (Google Map as well). Maps include: routes, stations and P.O.I (points of interest) for the passenger (e.g. dining place, gas station...), considering a standard radius from his current position. Freight transport operators, like ports, stations, inter-ports. On the displayed map, BONVOYAGE is also able to signal / suggest and display possible points of interest for the user	Maps	Online maps visualisation	Functional	All
BU261	Indoor navigation	Display maps of indoor areas of buildings and infrastructures (e.g. airports, stations)	Maps	Online maps visualisation	Functional	All
BU270	Information visualisation	Visualisation of other shared information on the map (e.g. incidents)	Maps	Online maps visualisation	Functional	All
BU280	Information visualisation selection	Possibility to select information that will be visualised in the map	Maps	Online maps visualisation	Functional	All
BU290	Route maps	Possibility to save maps and the chosen routes and view it offline	Maps	Off-line maps visualisation	Functional	All
BU291	Maps with disabled parking stops	Possibility to show in the map the disabled parking spaces	Maps	Maps visualization	Functional	Individual transport
BU300	User maps BONVOYAGE sharing	Possibility to share and view maps and itineraries of others BONVOYAGE.	Maps	Other maps capabilities	Functional	All
BU310	Travel maps sharing (Social network)	Possibility to share and view maps and itineraries of others BONVOYAGE through social networks.	Maps	Other maps capabilities	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BU320	<b>Planning intermodal travel solution Settings</b>	<ul style="list-style-type: none"> <li>- Selection preference path (e.g.: shortest, faster, less foreign exchange);</li> <li>- Selection favourite transportation (e.g.: bus, subway, train, tram, trucks / heavy vehicles);</li> <li>- Selection of routes to be avoided (e.g. toll roads, highways);</li> <li>- Identification preference level of different public transport / private (score 1-5): taxi, tram, bus, walk, train, subway, car, bicycle.</li> <li>- Selection vehicles owned (car, motorcycle, bicycle);</li> <li>- Selection access to transportation: car sharing, bike sharing, cars, motorcycles, bicycles.</li> <li>- Selection of P.O.I (points of interest) for freight transport operators, like ports, stations, inter-ports...</li> <li>- Possibility to insert geographical coordinates of the arrival/destination point as input for travel solution planning.</li> </ul>	Moving	Planning	Functional	All
BU321	<b>Planning travel solution Returning</b>	<p>Feasible solutions are found and ranked according to selection criteria</p> <ul style="list-style-type: none"> <li>- The best k solution (with k fixed) are returned</li> <li>- Identification of the preferred solution among the k returned</li> </ul>	Moving	Planning	Functional	All
BU330	<b>Planning intermodal travel solution through filter</b>	<p>Possibility to search for a travel solution using the following filters:</p> <ul style="list-style-type: none"> <li>- price (price ranges, e.g.: 0-100 €, 100-200€, etc.);</li> <li>- class category (first class, second class, etc.);</li> <li>- hour range for departure and return trip (e.g. only morning; only evening; from hour XX to hour XX);</li> <li>- total journey duration;</li> <li>- comfort;</li> <li>- environmental impact/foot print (e.g. CO2 grams);</li> <li>- total travel time;</li> <li>- in-vehicles time;</li> <li>- number of changes;</li> </ul>	Moving	Planning	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
		<ul style="list-style-type: none"> <li>- offers;</li> <li>- meals;</li> <li>- feedback score;</li> <li>- services (Wi-Fi, non-smoker, gym, animals allowed).</li> <li>- Special needs (in this case the user shall specify if the special needs relate to: disabled people; user with a baby chair; bikes to carry during the trip; pets to carry during the trip; luxury (this can also be a preference, but in this case, is treated as a need e.g.: limo and luxury for the honeymoon).</li> </ul>				
BU340	Intermodal trip planning and visualisation	<ul style="list-style-type: none"> <li>- Search vehicle available for the selected route (with notification of any changes);</li> <li>- Possibility to save search criteria (recent research) only if you specifically select (no default);</li> <li>- Using the selector Fast alphabet;</li> <li>- Possibility to visualise favourite stations;</li> <li>- Possibility of including commercial operators/merchants name (e.g. .: shop, restaurant) during the trip;</li> <li>- Possibility to insert the number of passengers;</li> <li>- Possibility to indicate passengers age range;</li> <li>- Possibility to insert animal transport;</li> <li>- Possibility to include extra luggage; luggage deposit; insurance; lounge access;</li> <li>- Possibility to declare disabilities;</li> <li>- Possibility to ask for a different sorting within the list of solutions created on the basis of the user account/profile;</li> <li>- Possibility to insert an event run by partners as BONVOYAGE end / start of a journey (e.g. .: show run by a museum);</li> <li>- Possibility to select as a destination the geolocation of another user BONVOYAGE (subject to their consent);</li> <li>- Routing with car home town-resort destination;</li> <li>- Routing home town-resort destination for local travel / national / transnational public</li> </ul>	Moving	Travel itinerary	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
		transport; - Calculation of a number of different paths for the selected intermodal trip and taking into account the preferences of public transport / private expressed during the registration, category of membership of the user, historical preferences in similar circumstances and behavioural profiling based on user feedbacks (if provided).				
BU350	<b>Additional information about the trip</b>	Entering information during the request of the travel solution on: (i) the travel scope (e.g.: work, pleasure); (ii) number of people (e.g.: alone, with friends, in couple, with children older than 1 year/8 years, etc.); (iii) day time (early in the morning, late night, etc.).	Moving	Travel itinerary	Functional	All
BU360	<b>Search stops and public transport routes</b>	Route, stops and arrival times at each stop of the bus lines, metro, tram search ability	Moving	Travel itinerary	Functional	Collective transport
BU370	<b>Travel time calculation (before and during the journey)</b>	- Possibility to check the travel schedule of public transport selected (by entering the number train / bus line); - Calculation of the time required to reach the stop / place of destination (user already on board the means of transport); - Calculation of connecting time; - Calculation of in-vehicles time.	Moving	Travel itinerary	Functional	All
BU371	<b>Trip monitoring and control</b>	Possibility to check that the actual trip is in line with the selected one while travelling. The current status of the trip and involved resources (in terms of transport modality) are monitored according to possibly different policy (e.g., fixed time, on demand, etc.). If a considerable deviation from the planned trip is detected or some resources become available or no more available, then - a new set of feasible solution is recomputed - the best k solutions (with k fixed) are returned This will be possible through the intervention of a virtual assistance (as described in	Moving	Travel itinerary/Planning	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
		requirements BU 990).				
<b>BU380</b>	<b>Travel solution visualisation</b>	<p>Visualisation solutions of departure time.</p> <p>Visualisation solutions of arrival time.</p> <p>Visualisation solutions length of the journey.</p> <p>Visualisation list of solutions containing the following information:</p> <ul style="list-style-type: none"> <li>- Source&gt; destination</li> <li>- Codes of public transport (more than one if there are changes)</li> <li>- Cost "from" and the number of loyalty points obtainable</li> <li>- Departure time: arrival time</li> <li>- Duration of the trip; number of changes; in-vehicles time; environmental impact; how the solution contributes to achieve the pre-defined mission.</li> </ul> <p>Visualisation travel "priority" solutions (determined by clustering declared - preferences - preferences based on user or detected by the behaviour of previous trips).</p> <p>Walking routes visualisation</p>	Moving	Travel solution and associated information visualisation	Functional	Collective transport
<b>BU390</b>	<b>Route visualisation</b>	<ul style="list-style-type: none"> <li>- Visualisation of the itinerary;</li> <li>- Visualisation of the route (map) followed by transport (user already on board);</li> <li>- Visualisation of points of interest for car drivers: picnic areas, camping sites, landmarks, tunnels, accident-prone areas.</li> <li>- Visualisation of specific road information for particular user categories (e.g. for the heavy vehicles drivers): width, permitted axel load, height in tunnels, gradient of slope/curvature, snow plowing standard; restoring areas, parking area where the truck drivers can relax or sleep.</li> <li>- Visualisation of Points of interest for car drivers and heavy vehicles drivers (e.g. dedicated areas along the roads where change snow chains).</li> </ul>	Moving	Travel solution and associated information visualisation	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BU400	Non-existent route	Notification of unavailable travel solutions for the route start-selected selected (the notification can be related also to a single phase of the travel).	Moving	Travel solution and associated information visualisation	Functional	All
BU410	Display trains stops	<ul style="list-style-type: none"> <li>- Visualisation stations train stop;</li> <li>- Visualization trains departing / arriving programmed.</li> </ul>	Moving	Travel solution and associated information visualisation	Functional	Collective transport
BU420	LPT display stop	<ul style="list-style-type: none"> <li>- Visualisation stops of urban public transport;</li> <li>- Visualisation interconnection with other modes of public transport.</li> </ul>	Moving	Travel solution and associated information visualisation	Functional	Collective transport
BU421	Display modality	Information displayed through universal design elements in Graphic User Interface (GUI)	Moving	Travel solution and associated information visualisation	Non-functional / Look and feel	All
BU430	Display of departure / arrival time in selected the station / LPT stop	<p>For each station, possibility to display the departure time of the selected train / LPT line.</p> <p>For the selected line, possibility to display the time of arrival to the user destination.</p>	Moving	Travel solution and associated information visualisation	Functional	Collective transport

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BU440	Define searching engine for travel solutions	Capability of BONVOYAGE platform to select travel solutions aligned to a specific user profile and to reject solutions which are not in line with this profile.	Moving	Travel solution search parameters	Functional	All
BU450	Defining objectives to be achieved in a given time interval	Defining a target: calories, emissions, money. Each target reached allows the accumulation score/points (e.g.: more heat = more points; less emissions = more points, more money saved = more points). (Preferential requirement).	Moving	Objective/Target	Functional	All
BU460	Mission/Travel monitoring	Monitoring progress towards achieving the objectives Monitoring time remaining at the end of the time pre-set for the achievement of (mandatory requirement).	Moving	Objective/Target	Functional	All
BU470	Mission/Travel cancellation	Possibility to delete the objective (of the mission)	Moving	Objective/Target	Functional	All
BU480	Travel solution choice	Preferred solution travel choice	Moving	Travel solution and related services selection	Functional	All
BU490	Travel Service (private) choice and booking	Car sharing booking (by re-sending to the site manager of car sharing service selected) in route planning.	Moving	Travel solution and related services selection	Functional	All
BU500	Travel solution finalisation	User confirmation of travel solutions and additional services selected for purchase. Possibility for the user to select the preferred currency for purchase.	Moving	Travel solution and	Functional	All



ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
				related services selection		
BU510	Credit/Debit card purchase	Travel solution purchase / single travel document (even LPT) and the ticket for the event (event ticket purchase)	Moving	Ticket purchase	Functional	All
BU520	eWallet purchase	Travel solution purchase / single travel document (even LPT) and the ticket for the event with a special credit BONVOYAGE.	Moving	Ticket purchase	Functional	All
BU530	PayPal purchase	Travel solution purchase / single travel document (even LPT) and the ticket for the event with PayPal account.	Moving	Ticket purchase	Functional	All
BU540	Receiving ticket travel solution	Possibility to select the mode of reception of the ticket and the ID code of the travel solution (smart phone or other mobile device): SMS, email, 2D code, QR code.	Moving	Ticket purchase	Functional	Individual transport; Collective transport
BU550	Purchase notification	Possibility to receive SMS or email notification of the purchased of travel solution. For freight transport, the transporter must receive order confirmation and the customer (the user who required the freight transport service) must receive an invoice for the purchased service.	Moving	Ticket purchase	Functional	All
BU560	Law/Rules searching and condition of sale	Possibility to search for information on commercial conditions connected with the resolution of transit acquired (e.g.: Mode refund / return ticket, compensation) before and after the trip	Moving	Ticket purchase	Functional	All
BU570	Create travel ticket	Capability of BONVOYAGE platform to create a travel document associated to the purchased travel solution.	Moving	Travel document creation	Functional	All
BU580	Intermodal/	Capability of BONVOYAGE platform to produce intermodal / multi-service integrated	Moving	Travel	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
	<b>Multi-Service Integrated ticketing</b>	ticketing.		document creation		
<b>BU590</b>	<b>Provide information related to the identification code history of the ticket</b>	Capability of BONVOYAGE platform to search and track a travel document "history" (e.g. visualization of original travel identification code and additional travel change booking code with timestamp related to year, date and hour of original purchase and changes occurred.).	Moving	Travel document history	Functional	All
<b>BU600</b>	<b>History visualisation</b>	<ul style="list-style-type: none"> <li>- Visualisation historical travel solution purchased and possibility to send the historian email.</li> <li>- View Detail tickets (e.g.: date, origin, destination and cost of the ticket, train codes, trip duration, number changes, number of adults, number children, passengers details with detail on site and reservation code, QR code and booking number references; reduced environmental impact - to be verified against eco-passenger)</li> </ul>	Moving	Historical purchase	Functional	All
<b>BU610</b>	<b>Ticket Wallet</b>	Possibility to insert the ticket purchased within another Wallet App on smart phones and to integrate with display historical App	Moving	Historical purchase	Functional	All
<b>BU620</b>	<b>Consult data sale system</b>	Capability of BONVOYAGE platform to access to sales basic information to support audits, information provision to Public Security Authorities, complaints management.	Travel document and sales	Consult data related to the sale system	Functional	All
<b>BU630</b>	<b>Travel setting memorandum</b>	Possibility to activate reminder by: <ul style="list-style-type: none"> <li>- Inclusion in the travel calendar;</li> <li>- Receipt notification to 1h before departure;</li> <li>- Receive notification in station (with list of booking codes).</li> </ul>	Moving	Reminder/Memo	Functional	All
<b>BU640</b>	<b>Passengers choice</b>	<ul style="list-style-type: none"> <li>- Select the type of passengers (e.g. elderly, adults, and children).</li> <li>- Specify number of passengers (groups etc.) when planning the trip</li> </ul>	Moving	Travel options purchase	Functional	Individual transport;

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
						Collective transport
BU650	Tariff choice	Possibility to select the best rate (e.g. fidelity card)	Moving	Travel options purchase	Functional	All
BU660	Best price management	Possibility to visualise and select the best price (with related services) of the week or of the month	Moving	Travel options purchase	Functional	All
BU670	Class Choice	Possibility to choose the preferred class/tariff	Moving	Travel options purchase	Functional	All
BU680	Select the favourite seats	- Possibility to visualise the layout of public transport available seats (with seats bookable). - Possibility to select the seat on public transport.	Moving	Travel options purchase	Functional	Collective transport
BU690	Discounts/Promotions	Possibility to visualise discounts/promotions available and buy it. The list of possible promotions can be ranked according to user profile defined as the commercial profile assigned at the registration moment or the behavioural profile emerged by analysing data about the user and the feedbacks provided.	Moving	Travel options purchase	Functional	All
BU700	Provide general terms of purchase	Capability of BONVOYAGE platform to provide customers general terms of purchase (e.g. possibility to reimburse ticket) related to a specific transport operator, during the travel ticket purchase phase.	Passengers "Protection"	General terms of purchase	Functional	All
BU710	Modify/delete travel seat purchased	Possibility to modify/delete travel seats booked	Moving	Modify/delete travel options purchased	Functional	Collective transport
BU720	Modify/delete travel services purchased	Possibility to modify/delete services purchased and associated to the travel solution	Moving	Modify/delete travel options purchased	Functional	All
BU730	Other	Possibility to buy other transport services:	Moving	Other	Functional	Individual

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
	<b>transport services purchase</b>	- taxi; - car sharing, bike sharing.		mobility services purchase (to ultimate door to door travel)		transport; Collective transport
<b>BU740</b>	<b>Highway, stop and parking subscription</b>	Possibility to buy parking, highway etc.	Moving	Other mobility services purchase (to ultimate door to door travel)	Functional	Individual transport; Collective transport
<b>BU750</b>	<b>Access restricted traffic area/zone purchase</b>	Possibility to buy access for restricted area/zone	Moving	Other mobility services purchase (to ultimate door to door travel)	Functional	All
<b>BU760</b>	<b>Waiting list</b>	Enter inquiry to book in a waiting list services not available	Moving	Other mobility services purchase (to ultimate door to door travel)	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BU770	<b>Leisure services Purchase</b>	Possibility to buy recreational other services: - Activity 'Food & Beverage' e.g.: McDonald / Fast food - Retail Stores - Electronic payment of tolls and parking - Other self-service management - Supermarkets - Museums, tourist tours	Moving	Other ancillary services purchase	Functional	Individual transport; Collective transport
BU780	<b>Local services purchase</b>	Possibility to buy municipal services	Moving	Other ancillary services purchase	Functional	All
BU790	<b>Purchase services partner from integrated operators in BONVOYAGE</b>	Possibility to book services partners from transport operators integrated into the platform BONVOYAGE.	Moving	Partner services purchase	Functional	All
BU800	<b>Travel solution purchased modification</b>	Possibility to modify reservation or travel solution purchased (where available by the operator): - Possibility to change the booking keeping the same route; - Possibility to change the travel solution purchased.	Moving	Travel solution modification	Functional	All
BU810	<b>Passengers extensions</b>	Addition of passengers to a pre-identified travel solution.	Moving	Travel solution modification	Functional	Collective transport
BU820	<b>Travel extension</b>	Addition of a new travel solution to a pre-identified travel.	Moving	Travel solution	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
				modification		
<b>BU830</b>	<b>Passengers cancellation</b>	To delete passengers included in a pre-identified travel solution (including international trains' reservations and purchases made abroad).	Moving	Travel solution modification	Functional	Collective transport
<b>BU840</b>	<b>Travel cancellation</b>	To delete a travel solution from a pre-identified travel.	Moving	Travel solution modification	Functional	All
<b>BU850</b>	<b>Cancellation extra services</b>	To delete additional services from a travel solution.	Moving	Travel solution modification	Functional	All
<b>BU860</b>	<b>Travel solution purchased reimbursement</b>	- Possibility to apply for reimbursement of travel solution purchased; - Possibility to apply through contacts BONVOYAGE (online, free BONVOYAGE phone number) partial repayments (only LPT) LPT service not enjoyed.	Moving	Reimbursement	Functional	All
<b>BU870</b>	<b>LPT ticket validation</b>	Validation of the TLP ticket at the beginning of the travel (included in travel solution purchased) on Smart Card support, through a payment card with EMV, NFC technology, bar code technology	Ticket LPT	LPT ticket Validation/ Fare	Functional	Collective transport
<b>BU880</b>	<b>LPT Ticket tariff</b>	Validation and tariff calculation of the LPT ticket at the end of the travel (included in travel solution purchased) on Smart Card support, through a payment card with EMV, NFC technology, bar code technology.	Ticket LPT	LPT ticket Validation/ Fare	Functional	Collective transport
<b>BU890</b>	<b>Local Public Transport Travel document validation</b>	Capability of BONVOYAGE platform to produce travel document that can be validated through Smart Card, EMV credit card, NFC and bar code technology.	Ticket LPT	Validation and tariff payment	Functional	Collective transport
<b>BU900</b>	<b>Local Public</b>	Capability of BONVOYAGE platform to produce travel document whose tariff can be	Ticket LPT	Validation and	Functional	Collective

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
	<b>Transport Travel document tariff payment</b>	paid through Smart Card, EMV credit card, NFC and bar code technology.		tariff payment		transport
<b>BU910</b>	<b>Synchronization to and from calendar</b>	-Sync calendar events from mobile; - Sync travel and events purchased on BONVOYAGE platform on the user smart phone calendar	Events	Event visualisation/ Information	Functional	All
<b>BU920</b>	<b>Synchronization from social network</b>	Events (from Social Network) Visualisation	Events	Event visualisation/ Information	Functional	All
<b>BU930</b>	<b>Events information</b>	Information Display tourist events (e.g. tours with guides - where - when - Price - Review - related events) for cities and selected date (optional requirement).	Events	Event visualisation/ Information	Functional	Individual transport; Collective transport
<b>BU940</b>	<b>Historical</b>	Events historic purchases visualisation.	Events	Event visualisation/ Information	Functional	All
<b>BU950</b>	<b>Personalized events/suggestions</b>	According to the profile associated to the user, BONVOYAGE will suggest potential travel (and related planned trip) to the user. For example, if a user typically travels on the weekend, BONVOYAGE will propose a list of possible travel solutions for the following weekend.	Events	Event visualisation/ Information	Functional	Individual transport; Collective transport
<b>BU960</b>	<b>User Sending feedback</b>	- Possibility of sending notifications on possible problems the App (e.g.: problems with maps, places missing; feedback if misplaced); - Possibility to send feedback on how to improve the App; - Evaluation of using experience the App (cities, companies of mobility and transport supported by the JPA, information provided from the app, accuracy estimated time of	Feedback	Feedback (general)	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
		arrival at destination, accurate arrival times for public transport, correct information on location and online, finding points of interest, suggestions).				
BU961	User sending feedback on a received travel solution	<ul style="list-style-type: none"> <li>- Possibility for the user to insert and share his feedback on the travel solution he obtained for a specific itinerary;</li> <li>- Possibility for users to display feedback on a specific travel itinerary uploaded and shared by other users.</li> </ul> <p>Feedback can be provided by the user only if he has concretely experienced a travel solution.</p> <p>Feedback can be provided in two ways:</p> <ul style="list-style-type: none"> <li>- by the user in a proactive way;</li> <li>- upon request of BONVOYAGE system (BONVOYAGE sends the user - through email - a request to evaluate his travel experience).</li> </ul>	Feedback	Feedback (travel solution)	Functional	All
BU970	Follow me	<ul style="list-style-type: none"> <li>- Receiving assistance during journey to deliver an opinion and satisfaction degree on development of the trip concerning the overall travel solution and/or each single mono-modal step (e.g. during the travel, when a change of vehicle happen; on-line support).</li> <li>- Receiving assistance by activating the function of rescheduling with the possibility of providing a negative feedback if applicable.</li> <li>- Possibility to enable indoor and outdoor maps visualisation (based on requirement BU261).</li> </ul>	Feedback	Feedback (structured)	Functional	All
BU980	Vertical Support and re-planning of the trip in the event of unforeseen	<ul style="list-style-type: none"> <li>- Possibility to send requests for help to re-plan trip in case of unforeseen circumstances;</li> <li>- Possibility to receive support to re-plan of the travel itinerary (hint alternative route) - requirement ambitious, through the intervention of a virtual assistance.</li> </ul> <p>Virtual assistance can be activated in any moment by the user, except when it acts in a proactive way (as described in requirement BU961).</p> <p>Virtual assistance is always active by default for the heavy vehicles category.</p>	Feedback/Planning	Feedback (structured)	Functional	All
BU990	Collecting	Possibility to gather points/scores based on:	Membership	Score	Functional	All



ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
	<b>score</b>	<ul style="list-style-type: none"> <li>- Travel solutions purchased (e.g. based on low environmental impact of the purchased travel solution);</li> <li>- Quantity and type of information mobility shared with other users;</li> <li>- Achievement of objectives.</li> <li>- Possibility to gather scores from external services providers having a partnership with at least one of the BONVOYAGE partner operators.</li> </ul>	and Collecting points			
<b>BU1000</b>	<b>Score visualisation</b>	<p>Possibility to check your score, with its list of purchases / points earned, and its position in the ranking.</p> <p>Possibility to view the ranking of the other users (general rank and rank weekly) to determine "reliability" user.</p>	Membership and Collecting points	Score	Functional	All
<b>BU1010</b>	<b>Award</b>	<p>Possibility to obtain awards (e.g. transports or car sharing, bike sharing free tickets). Awards proposition to the user will be based on these preferences (where possible).</p> <ul style="list-style-type: none"> <li>- Possibility to receive an award as BONVOYAGE scores from external services providers having a partnership with at least one of the BONVOYAGE partner operators.</li> </ul>	Membership and Collecting points	Score	Functional	All
<b>BU1020</b>	<b>Receiving and obtaining promotions/discounts</b>	<ul style="list-style-type: none"> <li>- Possibility to receive promotions from the partners of BONVOYAGE, associated with specific classes of users (ex.: over 60);</li> <li>- Possibility to receive offers from the partners of BONVOYAGE, for sites designated as favourites.</li> <li>- Possibility to obtain reductions for TLP (e.g. : older passengers (over 60) discount).</li> <li>- Possibility to receive promotions/discounts according to the profile (commercial and/or behavioural) associated to the user;</li> <li>- Possibility to disable the promotion receptions (through a specific settings functionality).</li> </ul>	Partnership	Promotions	Functional	All
<b>BU1030</b>	<b>Preferred language switch</b>	Possibility for the user to switch the default preferred language (whenever he wants and also during a journey)	Support	Language support (also during the journey)	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BU1040	Currency switch	Possibility for the user to access a currency converter proposing the local (geo-referred) currency as first option (the converter shall automatically display the starting currency - usually used by the user - and the currency used to calculate the converted value)	Support	Currency converter	Functional	All
BU1050	Freight services list	Capability of BONVOYAGE platform to display available freight services to be contracted. These services also include the possibility for the user to contract a "remaining freight capacity" published on BONVOYAGE by the truck / heavy vehicles drivers.	Info-freight	Information picking up	Functional	Transportation of goods
BU1060	Available Freight Services filters	Possibility to search in BONVOYAGE platform for available freight to deliver throw the following parameters: <ul style="list-style-type: none"> <li>• Origin</li> <li>• Destination (the app will search freights within the origin and the destination)</li> <li>• Date Range</li> <li>• Max Km of route deviation; (TBC)</li> </ul>	Info-freight	Information picking up	Functional	Transportation of goods
BU1070	Freight service information	Possibility for the user to see a complete description of the available freight service to be delivered <ul style="list-style-type: none"> <li>- Origin</li> <li>- Destination</li> <li>- Collection date/time</li> <li>- Arrival date/time</li> <li>- Type of vehicle needed</li> <li>- Special conditions for the transport (e.g. refrigerated room, careful handling)</li> <li>- Weight/volume of the freight</li> <li>- Description (e.g. size of the package...)</li> <li>- Remaining freight capacity</li> <li>- Freight tracking</li> <li>- Preferences and constrains (e.g. specific limitations applicable to the service).</li> </ul>	Info-freight	Information picking up	Functional	Transportation of goods
BU1110	Contact info of	Possibility for the user to see the contact info of the of freight service's responsible in	Info-freight	Information	Functional	Transportati

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
	<b>freight service's responsible</b>	order to be able to communicate with him: - Email address - Phone number - BONVOYAGE User (if registered)		picking up		on of goods
<b>BU1120</b>	<b>Results ranking</b>	Results obtained from searches are ranked according to the input parameters and to the pre-defined user profile	Info-freight	Search	Non-functional / Efficiency	Transportation of goods
<b>BU1130</b>	<b>Search save</b>	Possibility of saving the current search in the history in both a customized list or a favourites searches list	Info-freight	Search History	Functional	Transportation of goods
<b>BU1140</b>	<b>Search automatic save</b>	- All performed searches will be automatically saved, and they will be accessible through a "search history" section; - Possibility to activate an automatic save for the last 10 destinations searched (this option is applied by default for heavy vehicles drivers).	Info-freight	Search History	Functional	Transportation of goods
<b>BU1150</b>	<b>Favourite freights list</b>	Possibility of marking one freight as favourite or saving it in a list	Info-freight	Services list	Functional	Transportation of goods
<b>BU1160</b>	<b>Courier data</b>	Possibility to update data and info of the courier by checking different sources like last services, personal feedback from other users.	Couriers	Couriers information	Non-functional / Efficiency	Transportation of goods
<b>BU1180</b>	<b>Filter the couriers</b>	Possibility of filtering the search of the couriers according to some input parameters	Couriers	Couriers information	Functional	Transportation of goods
<b>BU1190</b>	<b>Favourite couriers</b>	Possibility of marking one courier as favourite or saving it in a "preferred courier" list	Couriers	Couriers information	Functional	Transportation of goods
<b>BU1200</b>	<b>Contact info of the courier</b>	Possibility for the user to get the contact info of the courier in order to be able to communicate with him	Couriers	Couriers information	Functional	Transportation of goods
<b>BU1210</b>	<b>Courier profile</b>	Capability of BONVOYAGE platform to save a complete profile of the courier (to avoid	Couriers	Couriers	Functional	Transportation of goods

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
		input the info every time he wants to search)		information		on of goods
<b>BU1220</b>	<b>Modifying a bid</b>	Possibility to modify or remove a bid once it is placed.	Freight exchange	Bid Modification	Functional	Transportation of goods
<b>BU1230</b>	<b>Notifying about the result of an auction</b>	When auction ends, the BONVOYAGE application must inform about the result to the users who placed a bid	Communication	Notifications	Functional	Transportation of goods
<b>BU1240</b>	<b>Data and communication security and integrity</b>	Capability of BONVOYAGE platform to ensure that all data and all communication among users are protected by international security standards so that users have the possibility to verify that information they receive has not been tampered with	Communication	Security	Non-functional / Security	All
<b>BU1260</b>	<b>Setting an alert</b>	Possibility to set an alert to receive instantly or from time to time (e.g.: every day in the morning) an alert with new information	Communication	Notifications	Functional	Transportation of goods
<b>BU1270</b>	<b>Alerts to email</b>	Possibility to send the alerts not only through BONVOYAGE platform, but to an email address	Communication	Notifications	Non-functional / Efficiency	Transportation of goods
<b>BU1280</b>	<b>Alerts from performed search</b>	Possibility to set an alert from a performed search	Communication	Notifications	Functional	Transportation of goods
<b>BU1290</b>	<b>Editing an alert</b>	Possibility to edit a previously created alert	Communication	Notifications	Functional	Transportation of goods
<b>BU1300</b>	<b>Route optimization for freight</b>	Capability of BONVOYAGE platform to take into account real time information like the traffic situation and the weather when organizing the route optimized for freight	Route Optimization	Route planning	Non-functional / Efficiency	Transportation of goods
<b>BU1310</b>	<b>Saving the</b>	The possibility to save the calculated optimized route	Route	Route	Functional	Transportation

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
	<b>optimized route</b>		Optimization	planning		on of goods
<b>BU1320</b>	<b>Modifying the optimized route</b>	Capability of BONVOYAGE platform to allow the user to modify the created optimized route by changing some parameters and recalculating it	Route Optimization	Route modification	Functional	Transportation of goods
<b>BU1330</b>	<b>Route optimization for freight delivery in case of unforeseen event</b>	In case of an unforeseen event (e.g. traffic), user will be notified and an alternative route will be calculated.	Route Optimization	Recalculation	Functional	Transportation of goods
<b>BU1340</b>	<b>Stopping point in route optimization for freight</b>	Each stopping point should have: i. Location ii. A selector to choose the estimated time to spend (little, average, much or specific time) iii. Nearest Loading and unloading area (if selected, instead of marking the location of the delivery in the route, it will be pointed the nearest loading/unloading area)	Route Optimization	Route planning	Non-functional / Efficiency	Transportation of goods
<b>BU1350</b>	<b>Navigation turn-by-turn from optimized route</b>	Capability of BONVOYAGE platform to allow the user to start a navigation turn-by-turn (UC_01) from the calculated optimized route	Route Optimization	Navigation	Functional	Transportation of goods
<b>BU1360</b>	<b>Notifications to the clients</b>	When a driver is on trip using the optimized route in the navigator, capability of the BONVOYAGE platform to send a notification to the client when the driver is in his/her distribution area. This notifications can be sent through: - SMS - Notification through the BONVOYAGE App (if the client is registered to BONVOYAGE	Route Optimization	Notifications	Functional	Transportation of goods

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
		platform)				
<b>BU1370</b>	<b>User sending feedback on the quality of the services and on the freight transport operator</b>	Once the freight has been delivered, BONVOYAGE platform asks the user to qualify each of the Freight services (quality, reliability, usability, user experience...) providing a feedback on: -Package delivery -Freight Exchange	Feedback	Freight Services	Functional	Transportation of goods
<b>BU1390</b>	<b>System showing "history" of the freight transport operator</b>	Capability of BONVOYAGE platform to keep track of transports made by a single freight transport operator (both company and single driver) and of related results (e.g. volumes). Freight transport operator features (e.g. number of tracks, past experiences) and feedback are shown as results of the research a user has made on available freight services.	Feedback	Driver	Functional	Transportation of goods
<b>BU1420</b>	<b>Navigation from a Traceability support tool's service</b>	Possibility to start a turn-by-turn navigation taking as reference the information of a Traceability support tool's service (consignee's address)	Traceability support tool	Navigation	Functional	Transportation of goods
<b>BU1430</b>	<b>Delivery route monitoring</b>	Capability of BONVOYAGE platform to let the Transport Operator (the freight company) monitor (in real time) the delivery route when driver is using the Traceability support tool's turn-by-turn navigation	Traceability support tool	Traceability	Functional	Transportation of goods
<b>BU1440</b>	<b>Delivery note in the Traceability</b>	The possibility to include and edit electronic delivery notes created by the TO. If the TO can't create electronic delivery notes, the possibility to send all required information so the BONVOYAGE platform can generate an electronic delivery note with	Traceability support tool	Delivery note	Functional	Transportation of goods

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
	<b>support tool</b>	a sign field.				
<b>BU1450</b>	<b>Parcel monitoring</b>	Possibility for user to track and monitor the parcel path (in which location the parcel is) until the delivery is finalised	Traceability support tool	Parcel path	Functional	Transportation of goods
<b>BU1460</b>	<b>Delivery notification</b>	The user receives a notification about delivery finalisation. This is a pre-condition for requirement "User sending feedback on the quality of the services and on the transport operator".	Traceability support tool	Delivery	Functional	Transportation of goods
<b>BU1470</b>	<b>Edit and save electronic sign</b>	Capability of the BONVOYAGE platform to save the sign of the consignee through the smartphone screen	Traceability support tool	Electronic sign	Functional	Transportation of goods
<b>BU1480</b>	<b>Sending delivery notes</b>	Possibility to send signed electronic delivery notes or attach a photo of the physical delivery notes (for stamps)	Traceability support tool	Delivery note	Functional	Transportation of goods

**Table 3-4: User Requirements**

## 4.4 Service Providers Requirements

This section aims to identify requirements from companies or entities that create apps or services which will use the BONVOYAGE platform

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY / SUBCATEGORY	DOMAIN
BSP10	<b>Questioning on-time schedule provided by the transport operators (timetable and its variations over time - VCO)</b>	Capability of BONVOYAGE platform to provide transports time schedule (provided by transport operators) to external service providers that connect to BONVOYAGE platform to search for those specific information. Time schedule includes all the information related to a travel solution : point of departure, point of arrival, time of departure, time of arrival, intermediate itinerary/stops, available service classes, ancillary services, available seats, seats map, tariffs, commercial offers, discounts (if available), possibility to select a seat, periodicity.	Public transport timetable and other information	<i>Timetable upload</i>	Functional	All
BSP20	<b>Questioning on information / updates on progress of the vehicle flow provided to the platform BONVOYAGE</b>	Capability of BONVOYAGE platform to provide an updated time schedule to external service providers when there are delays occur or are planned on the medium-long term.	Public transport timetable and other information	<i>Timetable upload</i>	Functional	All
BSP30	<b>Questioning on inventory Modification</b>	Capability of BONVOYAGE platform to provide a modified list of services offered by a transport operator in relation to a specific transport mean (e.g. seats, related services, commercial properties - seat reserved to impaired people). Modifications to the list of services are made by transport operators.	Public transport timetable and other information	<i>Services list</i>	Functional	All
BSP40	<b>Questioning on information related to the vehicle geographic</b>	Capability of BONVOYAGE platform to provide to external service providers the effective geographic coordinates (point of departure, intermediate points, point of arrival) provided by a transport operator to exactly identify the	Public transport timetable	<i>Geographic coordinates</i>	Functional	All



ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY / SUBCATEGORY	DOMAIN
	<b>coordinates</b>	departure, arrival, intermediate location of a public transport.	and other information			
<b>BSP50</b>	<b>Questioning on BONVOYAGE client profile</b>	Capability of BONVOYAGE platform to interact with external service providers to provide them customer personal data. [For this requirement it is necessary to understand if it is compatible with privacy legislation. Besides, data enriches a system like BONVOYAGE, so it shall evaluate if BONVOYAGE data shall be shared with external entities. In any case, this data shall not include user profile data].	Personalisation	<i>Receive/Understand and client commercial profile</i>	Functional	All
<b>BSP60</b>	<b>Questioning on transport "booked" passengers list (for public transport subjected to mandatory reservation).</b>	Capability of BONVOYAGE platform to provide a public transport passengers list (for public transport subjected to reservation) to an external service provider. [It is necessary to understand how BONVOYAGE interacts with transport operator platform].	Passengers list	<i>Passengers list providing</i>	Functional	Individual transport; Collective transport
<b>BSP70</b>	<b>Questioning on transport "booked" passengers list (for public transport not subjected to mandatory reservation).</b>	Capability of BONVOYAGE platform to provide to external service providers a public transport passengers list (for public transport not subjected to reservation) to an external service provider. [It is necessary to understand how BONVOYAGE interacts with transport operator platform].	Passengers list	<i>Passengers list providing</i>	Functional	Individual transport; Collective transport
<b>BSP80</b>	<b>Questioning on passengers list to be "re-protected"</b>	Capability of BONVOYAGE platform to provide to external service providers the list of public transport passengers to be re-booked. [It is necessary to understand how BONVOYAGE interacts with transport operator platform].	Passengers list	<i>Passengers list providing</i>	Functional	Individual transport; Collective transport
<b>BSP90</b>	<b>Questioning on "re-protected" passengers list</b>	Capability of BONVOYAGE platform to provide to external service providers the list of "re-booked" public transport passengers. [It is necessary to understand how BONVOYAGE interacts with transport	Passengers list	<i>Passengers list providing</i>	Functional	Individual transport; Collective

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY / SUBCATEGORY	DOMAIN
		operator platform].				transport
BSP100	Questioning on disabled passengers list	Capability of BONVOYAGE platform to provide to external service providers the list public transport disabled passengers. [It is necessary to understand how BONVOYAGE interacts with transport operator platform].	Passengers list	<i>Passengers list providing</i>	Functional	Individual transport; Collective transport
BSP110	Questioning on passengers list entitled to special services	Capability of BONVOYAGE platform to provide to external service providers the list of passengers having rights to special services. [It is necessary to understand how BONVOYAGE interacts with transport operator platform].	Passengers list	<i>Passengers list providing</i>	Functional	Individual transport; Collective transport
BSP120	Information on the state of the circulation	Possibility to provide to external entities or companies information on the status of the circulation.	Info-mobility	<i>Information sharing /picking-up</i>	Functional	All
BSP130	External service platform	The external Service provider shall have the possibility to fetch selected data from the BONVOYAGE platform by means of well-documented service platform in a standard format. The project is to decide which categories and data-selection we allow for external release.	Data Interfacing	<i>Data transfer APIs service platform</i>	Functional	
BSP140	Real-time information lag	Capability of BONVOYAGE platform to provide real-time information (e.g.: occupancy of loading/unloading areas, events occurred) with a maximum lag of 2 minutes	Communication	<i>Information provision</i>	Non-functional / Performance	All
BSP150	Easy handbook	Easy to understand handbook with the instructions to connect the service provider system with the BONVOYAGE service platform with samples based on Use Cases and short stories provided (web services invocation, registration steps...)	Communication	<i>Handbook</i>	Non-functional / Maintainability and support	All
BSP160	Speed data transaction	Minimum speed data transaction between the service provider system and the BONVOYAGE platform should be 2 seconds without considering network reaction time on the calculation algorithm.	Communication	<i>Transactions</i>	Non-functional / Performance	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY / SUBCATEGORY	DOMAIN
BSP170	Data and communication security and integrity	Capability of BONVOYAGE platform to ensure that all data and all communication towards the service providers are protected by international security standards so that nobody has the possibility to tamper information provided by BONVOYAGE.	Communication	Security	Non-functional / Security	All
BSP180	Setting alerts	Possibility to set alerts in the BONVOYAGE platform for external service providers to be informed with new information.	Communication	Notifications	Functional	Transportation of goods
BSP200	Questioning on available freight services to be delivered	Capability of BONVOYAGE platform to provide information on available freight services (e.g. Origin, destination, date departure, date arrival, goods specifications) to be delivered.	Freight information	Freight information providing	Functional	Transportation of goods
BSP210	Place a bid	Capability of service providers that connect to BONVOYAGE platform to place bids for available freight services to be delivered.	Freight exchange	Freight exchange bid	Functional	Transportation of goods
BSP220	Asking for an optimal route for freight	Capability of BONVOYAGE platform to provide to an external service provider with an optimal route for freight based on the information of different pickup/delivery points sent by the service provider.	Optimal freight route	Freight route	Functional	Transportation of goods

**Table 3-5: Service Providers Requirements**

## 4.5 Technology Providers Requirements

This section aims to identify requirements from stakeholders that create or are responsible of the maintenance of the BONVOYAGE platform.

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY / SUBCATEGORY	DOMAIN
BT10	Authorisation profile management	Capability of BONVOYAGE platform to manage authorisations for different profiles of system users operating on different channels. [System users refer to transport, travel operators and other service providers connecting to BONVOYAGE platform]	Personalisation	<i>Identity management and application profile management</i>	Functional	All
BT20	Upload travel profile	Capability of BONVOYAGE platform to include a new user travel profile to be used for travel solution research and travel document purchase.	Personalisation	<i>Receive/Understand client commercial profile</i>	Functional	All
BT30	Define bonus identification/obligation	Capability of BONVOYAGE platform to define rules to grant bonus through the combination of a pre-defined set of parameters/rules.	Personalisation	<i>Receive/Understand client commercial profile</i>	Functional	All
BT40	Modify parameters used by the algorithms for the seat assignments	Capability of BONVOYAGE platform to modify algorithm parameters used to determine seating allocation.	Travel solution, prices and commercial offers	<i>Management of the algorithm parameters for the seat assignment</i>	Functional	All
BT50	Provide information related to the service/ticket sold	Capability of BONVOYAGE platform to display sales reports (according to hour, day, month, year, channel, sale point, electronic wallet).	Travel document and sales	<i>Sales reporting</i>	Functional	All
BT60	Provide financial reporting for the profiling clients	Capability of BONVOYAGE platform to retrieve periodic reports of purchases made by a profiled customer. Retrieved information relates to both invoiced and not-invoiced costs.	Travel document and sales	<i>Financial reporting</i>	Functional	All
BT70	BONVOYAGE	In case of <b>intermodal</b> ticket purchase, capability of BONVOYAGE platform to	Travel	<i>Fare distribution</i>	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY / SUBCATEGORY	DOMAIN
	<b>technology provider leading the user in the purchase of an intermodal travel solution.</b>	lead the user through the purchase, allowing him to buy separately tickets for transport mode operated by different transport operators. When the user purchases the single ticket, BONVOYAGE immediately transfers the amount to the concerned transport operator.	document and sales			
<b>BT71</b>	<b>BONVOYAGE technology provider leading the user in the purchase of an intermodal travel solution, to be finalised in a pre-set amount of time.</b>	In case of <b>intermodal</b> ticket purchase, the user has to complete the purchase transaction within a pre-set amount of time.	Travel document and sales	<i>Fare distribution</i>	Functional / Performance	All
<b>BT80</b>	<b>Automatically notification of the presence of the inhibited trains</b>	Capability of BONVOYAGE platform to acquire information on the presence of public transport that cannot be reserved due to incomplete re-booking or to other situations that require operator intervention to restore reservation functionalities. [Decision made by transport operators. It is necessary to understand how this decision can be made available to BONVOYAGE platform].	Other functionalities	<i>Other functionalities</i>	Functional	Collective transport

**Table 3-6: Technology Providers Requirements**

## 4.6 Transport Information Providers Requirements

This section aims to identify requirements from Stakeholders that will offer related transport information to BONVOYAGE platform.

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BTIP10	<b>Upload time schedule provided by the transport operators (timetable and its variations over time - VCO)</b>	<p>Capability of BONVOYAGE platform to receive, upload and manage a time schedule provided by a transport information provider.</p> <p>Time schedule includes all the necessary information to provide the travel solution to the users: point of departure, point of arrival, time of departure, time of arrival, intermediate itinerary/stops, available service classes, ancillary services, available seats, seats map, tariffs, commercial offers, discounts (if available), possibility to select a seat, periodicity, environmental impact (CO2 grams).</p> <p>Environmental impact shall be expressed in a common acknowledged scale.</p>	Public transport timetable and other information	<i>Timetable upload</i>	Functional	All
BTIP20	<b>Upload information / updates on progress of the vehicle flow provided to the platform BONVOYAGE</b>	<p>Capability of BONVOYAGE platform to receive, upload and manage information (provided by transport operators) on delays planned on the medium-long term in order to: provide adequate information to the customer; offer effective travel solutions (new travel solutions following rescheduled timetables) in order to provide the user with a new updated travel solution.</p>	Public transport timetable and other information	<i>Timetable upload</i>	Functional	All
BTIP30	<b>Inventory Modification</b>	<p>Capability of BONVOYAGE platform to receive, upload and manage a modified list of services offered by transport operators (e.g. number of seats, type of seats, seats reserved for categories, ancillary/related services, commercial properties; extra luggage; luggage deposit; insurance; lounge access).</p> <p>Modifications to the list of services are made by transport operators.</p>	Public transport timetable and other information	<i>Services list</i>	Functional	All
BTIP40	<b>Provide information related to the vehicle geographic</b>	<p>Capability of BONVOYAGE platform to receive, upload and manage the effective geographic coordinates (point of departure, intermediate points, point of arrival) provided by a transport operator to exactly identify the departure, arrival, intermediate</p>	Public transport timetable	<i>Geographic coordinates</i>	Functional	All

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
	<b>coordinates</b>	location of a public transport.	and other information			
<b>BTIP50</b>	<b>Upload tariff profile offers and promotions</b>	Capability of BONVOYAGE platform to receive from transport operators' information on tariffs profile, offers and promotions targeting different users and/or internalising negative externalities such as pollution and congestions. BONVOYAGE acquires rules defined by the transport operator for tariffs range to whom offers relate.	Travel solution, prices and commercial offers	<i>Tariffs/promotion modification</i>	Functional	All
<b>BTIP60</b>	<b>Cancel tariff profile offers and promotions</b>	Capability of BONVOYAGE platform to receive from transport operators instructions on tariffs profile, offers and promotions to be deleted.	Travel solution, prices and commercial offers	<i>Tariffs/promotion modification</i>	Functional	All
<b>BTIP70</b>	<b>Modify tariff profile offers and promotions</b>	Capability of BONVOYAGE platform to receive from transport operators instructions on tariffs profile, offers and promotions to be modified (according to modifications decided by transport operators), while tracking all the operators involved in the process.	Travel solution, prices and commercial offers	<i>Tariffs/promotion modification</i>	Functional	All
<b>BTIP80</b>	<b>Define type of pricing (OD, per km, zone)</b>	Capability of BONVOYAGE platform to receive from transport operators rules to be followed for price building, based on necessary elements for tariffs, offers and promotions definition. All prices modifications shall be validated by the interested transport operator before operating.	Travel solution, prices and commercial offers	<i>Price building</i>	Functional	All
<b>BTIP90</b>	<b>Provide disabled passengers list</b>	Capability of BONVOYAGE platform to receive, upload and manage the list of public transport disabled passengers provided by transport operators. [It is necessary to understand how BONVOYAGE interacts with transport operator platform].	Passengers list	<i>Passengers list providing</i>	Functional	Individual transport; Collective transport

ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
BTIP100	Provide passengers list entitled to special services	Capability of BONVOYAGE platform to receive, upload and manage the list of passengers having rights to special services provided by transport operators. [It is necessary to understand how BONVOYAGE interacts with transport operator platform].	Passengers list	<i>Passengers list providing</i>	Functional	Individual transport; Collective transport
BTIP120	Information format	Data shall be published on BONVOYAGE in a standard format by the entire information provider. Each information provider shall autonomously convert its data into the standard format before publishing it on BONVOYAGE.	Data Interfacing	<i>Data Formats specification</i>	Functional	All
BTIP130	Speed data transaction	Minimum speed data transaction between the transport information provider system and the BONVOYAGE platform should be $\leq 2$ seconds without considering network reaction time on the calculation algorithm.	Communication	<i>Information</i>	Non-functional / Performance	All
BTIP140	Easy handbook	Capability to provide a how-to-use handbook to connect the transport information provider system / data to BONVOYAGE, and how to relate keywords with information to feed BONVOYAGE. Easy to understand handbook with the instructions to connect with the BONVOYAGE service platform with samples based on Use Cases and short stories provided (service platform information , web services invocation, registration steps...)	Communication	<i>How-to-use</i>	Non-functional / Maintainability and support	All
BTIP150	TIP sending notifications	Capability of the BONVOYAGE platform to let the Transport Information Provider to send notifications to the users (e.g.: sales, last-minute changes...)	Communication	<i>Notifications</i>	Functional	All
BTIP160	Information Provenance	The transport information provider shall have the possibility to bind its identity to the data it publishes	Communication	<i>Security</i>	Non-functional / Security	All
BTIP170	Information Confidentiality	The information provider shall have the possibility to restrict the audience of data it publishes to certain categories of users only	Communication	<i>Security</i>	Non-functional / Security	All
BTIP180	Information Mobility	The information provider shall have the possibility to publish information coming from data sources that are mobile and temporarily connect and disconnect from the network	Communication	<i>Mobility</i>	Non-functional /	All



ID	TITLE	DESCRIPTION	CLUSTER	SUB-CLUSTER	CATEGORY/ SUBCATEGORY	DOMAIN
					Performance	
BTIP190	Monitoring statistics of use	Capability of BONVOYAGE platform to monitor the statistics of the users who have seen information related to the TIP (e.g.: How many users have consulted your company information last month)	Statistics	<i>Statistics</i>	Functional	All
BTIP200	Provide information related to available goods for transportation	Capability of BONVOYAGE platform to receive, upload and manage information about available - Goods for transportation Thus, if the information is deleted from the source, it automatically will be deleted from BONVOYAGE.	Info Freight	<i>Freight Exchange</i>	Functional	Transportation of goods
BTIP220	Sending bids to the TIP	Capability of the BONVOYAGE platform to send the placed bids in the freight exchange auction to the Transport Information provider	Freight exchange	<i>Sending bids</i>	Functional	Transportation of goods
BTIP230	Parcel track	Possibility for the freight transport information provider to notify / to provide to BONVOYAGE platform information on the status of the parcel (in which location the parcel is)	Traceability support tool	<i>Parcel path</i>	Functional	Transportation of goods

**Table 3-7: Transport Information Providers Requirements**

## 5 BONVOYAGE USE CASES

### 5.1 OVERVIEW

This chapter contains a detailed description of all BONVOYAGE Use Cases in order to draw the big picture of what BONVOYAGE platform will provide in the fields of passenger and freight mobility.

Use Cases reflect main functionalities of BONVOYAGE platform and interdependencies among them, with particular reference to innovative mobility functionalities (e.g. feedback, vertical support). Thus, Use Cases show how the platform will concretely be implemented and how it will operate in specific situations to satisfy requests / needs from the following groups of stakeholders: users; service providers; technology providers; transport information providers.

Particularly, BONVOYAGE Use Cases have been clustered into the five macro-scenarios listed below:

- UC\_00 - General Use Cases
- UC\_01 - Travel solutions for drivers including intermodality
- UC\_02 - Intermodal travel solutions for public transport
- UC\_03 - Special groups travelling in public transport
- UC\_04 - Freight transportation

Each scenario refers to:

- A specific field: passenger or freight mobility;
- Specific transport means: individual or collective transport;
- Specific circumstances leading stakeholders to exploit BONVOYAGE platform for different purposes.

Thus, each Use Case is structured as follows (the detailed template is available in ANNEX 0: Templates Used):

- Pursued goals: which BONVOYAGE functionalities / operating procedures the Use Case intends to illustrate;
- Constraints: possible restrictions to be taken into account to allow a proper activity flow;
- Actors: the entities involved in the Use Case activity flow;
- Pre-conditions: organisational or technical conditions fundamental for the activity flow to take place;

- Activity flow: consequential steps undertaken by BONVOYAGE platform to perform stakeholders requests;
- Post-conditions: state of BONVOYAGE platform after the activity flow finalisation;
- Alternative activity flow: possible alternatives to the main activity flow or technical faults that may interrupt the normal flow;
- Related requirements: requirements underlying and enabling the described activity flow.

In this section the list of Use Cases and the description of actors involved are provided, while a detailed description of each Use Case are given in the Annexes:

ANNEX 3: General Use Cases (UC\_00)

ANNEX 4: Travel solutions for drivers including intermodality Use Cases (UC\_01)

ANNEX 5: Intermodal travel solutions for public transport Use Cases (UC\_02)

ANNEX 6: Special groups travelling in public transport Use Cases (UC\_03)

ANNEX 7: Freight Transportation Use Cases (UC\_04)

## 5.2 LIST OF USE CASES

The following tables (Table 3-1, Table 3-2, Table 3-3, Table 3-4, Table 3-5) list the Use Cases collected. The table is based on the template described in the ANNEX 0: Templates Used.

### 5.2.1 UC\_00 (General Use Cases):

This group represents the generic Use Cases in the BONVOYAGE platform.

UC ID	USE CASE NAME	SHORT DESCRIPTION
UC_00_01	<i>Passenger registering and creating an account on BONVOYAGE platform, choosing to perform only the basic registration or completing an existing account</i>	<i>This Use Cases illustrates how a user can: register and create his account on BONVOYAGE platform ("basic profile"); deepen his existing profile providing additional data; authorise BONVOYAGE platform to share his data.</i>
UC_00_02	<i>Passenger updating his account on BONVOYAGE platform</i>	<i>This Use Case shows how a user can update his account on BONVOYAGE platform through: creation of a list of favourite addresses / places /events; display of gained fidelity scores; association of a status / emoticon to his profile.</i>
UC_00_03	<i>Passenger associating a status to his profile and sharing it through Social network</i>	<i>This Use Case describes how a user can link a status / emoticon to his BONVOYAGE profile and share it on social networks.</i>
UC_00_04	<i>Passenger inviting friends to join BONVOYAGE platform</i>	<i>This Use Case shows how a user can invite friends to join BONVOYAGE platform.</i>
UC_00_05	<i>Passenger making "friendships" on BONVOYAGE platform</i>	<i>This Use Case shows how a user can establish friendships on BONVOYAGE platform.</i>

**Table 3-1: List of General Use Cases**

### 5.2.2 UC\_01 (Travel solutions for drivers including intermodality):

These Use Cases describe citizens that would like to use BONVOYAGE system to travel from A to B by using during the whole or in a specific part of the route, individual transport modes such as

private car, bike, car-pooling or car-sharing, which needs to be operated by the user. In that sense this will also allow the combination of individual transport with collective transport (e.g.: a User using the car for going to the surrounding area of a city and then use the public transport to go to the city centre)

UC ID	USE CASE NAME	SHORT DESCRIPTION
UC_01_01	<i>Private or professional car driver</i>	<i>The Use Case describes how a user (pre- and on-trip) can utilise the BONVOYAGE platform to check travel planning options and get fresh information about traffic, incidents and rerouting options when necessary.</i>
UC_01_02	<i>City bike renting student</i>	<i>The Use Case describes how a user (pre- and on-trip) can utilise the BONVOYAGE platform for route planning for bikes and the availability of bikes racks and bike. In the Use Case the platform can also be used for combining cycling with PT-travel.</i>
UC_01_03	<i>Private or professional driver requiring road assistance through BONVOYAGE platform</i>	<i>The Use Case describes how a user can send a request for road assistance through the BONVOYAGE platform</i>

**Table 3-2: List of Use Cases for Users driving a transport mode**

### 5.2.3 UC\_02 (Intermodal travel solutions for public transport):

These Use Cases will describe a citizen that would like to use BONVOYAGE system to plan an intermodal end-to-end journey through the best possible combination of public collective transport means, such as train, bus, aeroplane...

Therefore, for all Use Cases showing how BONVOYAGE system provides the user a journey itinerary, and for all Use Cases showing how a user can book, purchase or modify a journey ticket, journey shall always be intended as intermodal. That is, leading the user from his origin to his destination point through the best combination of public collective transport means that meet user profile and travel preferences.

UC ID	USE CASE NAME	SHORT DESCRIPTION
UC_02_01	<i>Passenger planning an intermodal journey with public transports</i>	<i>This Use Case describes how a user can: plan and a journey / travel itinerary from point A to B using public transports and according to his travel preferences; display and select his preferred travel solution.</i>

UC ID	USE CASE NAME	SHORT DESCRIPTION
UC_02_02	<i>Passenger displaying scores gained using the systems available on BONVOYAGE platform</i>	<i>This Use Case shows how a user can display scores him has gained through BONVOYAGE platform.</i>
UC_02_03	<i>Passenger needing to re-plan his journey path due to unforeseen events</i>	<i>This Use Case describes how a user, who is already on-trip, can use BONVOYAGE platform to: check updates on public transport circulation on BONVOYAGE platform; re-plan his journey real-time; display alternative travel solutions.</i>
UC_02_04	<i>Passenger wanting to be informed on events he may be interested in, also in relation to a trip he has already planned</i>	<i>This Use Case applies to both a pre-trip and on-trip situation and describes how a passenger can use BONVOYAGE platform to: look for events taking place in his destination city he may be interested in; purchase a ticket for selected events. The Use Case also describes how BONVOYAGE platform notifies the user on possible trips (and related travel solutions) associated to a specific event.</i>
UC_02_05	<i>Passenger searching for an intermodal travel solution through filter selection</i>	<i>This Use Case illustrates how a user can search for a customised travel solution through BONVOYAGE platform.</i>
UC_02_06	<i>Passenger planning a travel solution considering other users' feedback</i>	<i>This Use Case describes how a user can display feedback on a specific travel itinerary uploaded and shared by other users in order to make an informed decision on the travel solution to select.</i>
UC_02_07	<i>Passenger planning a travel solution asking other users tips by chatting</i>	<i>This Use Case outlines how a user can interact with other BONVOYAGE users in order to ask them suggestions and / or feedback on a travel solution they have already experienced.</i>
UC_02_08	<i>Passenger purchasing an intermodal travel itinerary according to his preferences</i>	<i>This Use Case shows how a user can perform a multitude of tasks related to a travel solution booking and purchase, namely: display of available discounts / promotions; seat selection; ticket purchase and reception; finalised purchase notification reception.</i>
UC_02_09	<i>Passenger setting a travel memorandum</i>	<i>This Use Case illustrates how the user can set up a travel memorandum on BONVOYAGE platform.</i>
UC_02_10	<i>Passenger displaying the nearest collective/public transport stations to his point of departure and arrival</i>	<i>This Use Case describes how a user can use BONVOYAGE platform to: display on a map the nearest public transport stations to his current location; for each station, departing and arrival public transport schedule.</i>
UC_02_11	<i>Passenger applying filters to receive "push" information</i>	<i>This use-case describes how the user can apply a set of filters to regulate the type and the timing of information received by BONVOYAGE platform, in order to receive</i>

UC ID	USE CASE NAME	SHORT DESCRIPTION
	<i>related to a specific route.</i>	<i>alerts and information related to the route he is going or he wants to go through.</i>
UC_02_12	<i>Passenger searching for information shared by other users with respect to a specific route in order to get updates on his journey/itinerary</i>	<i>This Use Case describes how a user can display information shared by other users regarding his daily route.</i>
UC_02_13	<i>Accessing to restricted areas through alternative travel solutions purchase</i>	<i>This Use Case shows how a user can purchase an alternative mobility services, namely the access to urban limited traffic zones.</i>
UC_02_14	<i>Passenger sharing information before a journey</i>	<i>This Use Case outlines how a user can: share on BONVOYAGE platform his travel itinerary and several information related to his journey; check information circulation for his travel itinerary.</i>
UC_02_15	<i>Passenger searching stops and routes of public transports, providing BONVOYAGE his localisation</i>	<i>This Use Case describes how a user can perform the following tasks enabled by BONVOYAGE platform: display of an urban public transport stops, considering his geographical position; display the travel schedule (arrival time, stops) of each public transport line; display the time required to reach his destination considering the route selected.</i>
UC_02_16	<i>Passenger modifying a purchased travel solution</i>	<i>This Use Case shows how a user can modify a travel solution purchased through BONVOYAGE platform.</i>
UC_02_17	<i>Passenger synchronizing events stored on his calendar or on social networks</i>	<i>This Use Case shows how a user can synchronize an event already inserted on his smart phone calendar and / or social network on BONVOYAGE platform; set a reminder linked to the event (reminder will be sent through BONVOYAGE platform).</i>
UC_02_18	<i>Passenger selecting different options during the ticket purchase</i>	<i>This Use Case outlines how a user can perform a multitude of tasks while purchasing a public transport ticket, namely: selecting the type and the number of passengers; selecting the best rate using a fidelity card; selecting his preferred class; selecting the best price.</i>
UC_02_19	<i>Collecting scores and receiving awards.</i>	<i>This use-case illustrates in which cases BONVOYAGE attributes points/scores to the user; how the user can check his score and the score of others users; how the user can collect scores in order to receive an award.</i>
UC_02_20	<i>Passenger adding further requests to a pre-identified itinerary</i>	<i>This case shows how a user can update a travel solution he has already purchased by: adding passengers; adding a new travel solution.</i>

UC ID	USE CASE NAME	SHORT DESCRIPTION
UC_02_21	<i>Deleting pre-identified travel requests</i>	<i>This Use Case describes how a user can: delete passengers to a pre-identified travel solution; delete a travel solution from a pre-identified travel; delete additional services from travel solution</i>
UC_02_22	<i>Passenger purchasing ancillary services</i>	<i>This Use Case illustrates how a user can purchase ancillary services linked to a travel solution he has previously purchased. Ancillary services include: leisure services; local services (municipal services); other additional services.</i>
UC_02_23	<i>Passenger defining and cancelling user objectives</i>	<i>This Use Case describes how a user can: define objectives to be achieved in relation to a specific or a plurality of travel solutions purchased and experienced through BONVOYAGE platform; monitor progress towards achieving the objectives; delete pre-set objectives.</i>
UC_02_24	<i>Passenger receiving notifications/proposal to purchase travel solutions related to his profile</i>	<i>This Use Case outlines how BONVOYAGE platform sends the user notifications to propose him to purchase to additional services related to his travel solution (e.g. destination city LPT ticket, museum tickets).</i>
UC_02_25	<i>Passenger receiving BONVOYAGE periodic newsletter</i>	<i>This Use Case shows how BONVOYAGE platform notifies the user on its news through periodic newsletter. This contains information on new transport operators / service providers that have joined BONVOYAGE platform and new services offered through the platform.</i>
UC_02_26	<i>Passenger applying setting to define the kind of information to be received through notifications</i>	<i>This Use Case describes how a user can apply settings to define the type of information to be received by BONVOYAGE platform</i>
UC_02_27	<i>Passenger using the "Add me on travel" functionality</i>	<i>This Use Case shows how a user can perform several tasks related to travel solution information sharing with his friends through BONVOYAGE platform. Information includes: route information (e.g.: travel time, estimated time of arrival) and location; address associated with contact phone / smart phone (which then becomes the starting address / travel destination); place reserved on the means of transport with his friends; favourite places with other applications that require location information; his location.</i>
UC_02_28	<i>Passenger changing the default preferred language</i>	<i>This Use Case shows how a user modify the default preferred language he has chosen during the registration to BONVOYAGE platform.</i>



UC ID	USE CASE NAME	SHORT DESCRIPTION
UC_02_29	<i>Passenger looking for commercial conditions related to a travel solution he has purchased</i>	<i>This Use Case describes how a user can search and display commercial conditions associated to his travel solution through BONVOYAGE platform.</i>
UC_02_30	<i>Passenger sharing the ticket purchased through BONVOYAGE with another Wallet up he has downloaded on his smartphone</i>	<i>This use outlines how a user can share the purchased ticket with a Wallet App on his smart phone.</i>
UC_02_31	<i>Passenger purchasing a LPT ticket that can be e validated through Smart Card/EMV credit card/NFC /bar code technology</i>	<i>This Use Case describes how BONVOYAGE platform can create a travel document containing a LPT ticket that can be validated through Smart Card, EMV credit card, NFC and bar code technology.</i>
UC_02_32	<i>Passenger purchasing a LPT ticket whose tariff can be paid through Smart Card, EMV credit card, NFC and bar code technology</i>	<i>This Use Case shows how BONVOYAGE platform can create a travel document containing a LPT ticket whose tariff can be paid through Smart Card, EMV credit card, NFC and bar code technology.</i>
UC_02_33	<i>Passenger wanting to modify a purchased travel solution</i>	<i>This Use Case describes how a user can modify the purchased travel solution by: modifying/deleting the assigned/reserved seat; modifying/deleting services associated to the travel solution.</i>
UC_02_34	<i>Passenger wanting to book services managed by partners of BONVOYAGE transport operators</i>	<i>This Use Case describes how a user can purchase a service provided by partners of BONVOYAGE platform transport operators.</i>
UC_02_35	<i>Passenger wanting to get a travel solution refund</i>	<i>This Use Case outlines how a user can ask for and get refund for a purchased travel solution.</i>
UC_02_36	<i>Passenger validating a Local Public Transport Ticket he has purchased through BONVOYAGE platform</i>	<i>This Use Case shows how a user can validate a Local Public Transport ticket, that is stored in his BONVOYAGE System and whose tariff is charged when he starts his journey on the local public transport.</i>
UC_02_37	<i>Passenger validating a Local Public Transport Ticket he has purchased through BONVOYAGE platform</i>	<i>This Use Case illustrates how a user can validate a Local Public Transport ticket, that is stored in BONVOYAGE System and whose tariff is going to be charged to the user only after the user has completed his journey on the local public transport.</i>
UC_02_38	<i>Passenger sending a general feedback on BONVOYAGE App</i>	<i>This Use Case describes how a user can provide a "general" feedback on BONVOYAGE App in order to:</i>

UC ID	USE CASE NAME	SHORT DESCRIPTION
	<i>functioning</i>	<i>notify possible problems the App (e.g.: problems with maps, places missing; feedback if misplaced); provide suggestions for improvement; evaluate his experience with the App.</i>
UC_02_39	<i>Passenger sending a feedback on how the journey is going on, while travelling from his point of origin to his point of destination</i>	<i>This use-case describes how a user can provide an on-trip feedback to BONVOYAGE App in order to notify how the journey is going and if he is satisfied with the travel solution BONVOYAGE has provided him with.</i>
UC_02_40	<i>Passenger receiving promotions and discounts from partners of BONVOYAGE platform transport operators</i>	<i>This use-case shows how a user can receive notification containing promotions and discounts from partners of BONVOYAGE platform transport operators.</i>
UC_02_41	<i>Passenger searching travel information for others</i>	<i>This Use Case describes how a profiled user can make a travel solution search on behalf of someone else.</i>
UC_02_42	<i>Passenger planning a trip by car sharing</i>	<i>This Use Case shows how a user can look for an available car sharing service for his travel.</i>
UC_02_43	<i>User looking for travel document changes</i>	<i>This Use Case outlines how a user can display different changes related to a travel document.</i>
UC_02_44	<i>User consulting BONVOYAGE system to check sales data</i>	<i>This Use Case shows how a user can display different information related to BONVOYAGE sales.</i>
UC_02_45	<i>Passenger purchasing an intermodal travel solution</i>	<i>This Use Case describes how a user can purchase a ticket for an intermodal travel solution.</i>
UC_02_46	<i>Service provider questioning BONVOYAGE platform to receive information about time schedule of BONVOYAGE transport operators</i>	<i>This use-case shows how BONVOYAGE platform interacts with the App of external service providers to provide information on time schedule of transport operators that have joined BONVOYAGE.</i>
UC_02_47	<i>Service provider questioning BONVOYAGE platform to receive information about the updated time schedule of BONVOYAGE transport operators</i>	<i>This Use Case describes how BONVOYAGE platform interacts with the App of external service providers to provide updated information on time schedule of transport operators that have joined BONVOYAGE.</i>
UC_02_48	<i>Service provider questioning BONVOYAGE platform to receive information about a modified list of services of BONVOYAGE transport</i>	<i>This Use Case outlines how BONVOYAGE platform interacts with the App of external service providers to provide information on the updated list of services of transport operators that have joined BONVOYAGE.</i>

UC ID	USE CASE NAME	SHORT DESCRIPTION
	<i>operators</i>	
UC_02_49	<i>Service provider questioning BONVOYAGE platform to receive information about the effective geographic coordinates of transport means operated by BONVOYAGE transport operators</i>	<i>This Use Case illustrates how BONVOYAGE platform interacts with the App of external service providers to provide information on the geographic coordinates of transport means run by transport operators that have joined BONVOYAGE.</i>
UC_02_50	<i>Service provider questioning BONVOYAGE platform to receive information on the profile of customers that have registered to BONVOYAGE platform</i>	<i>This Use Case shows how BONVOYAGE platform interacts with the App of external service providers to provide information about the profile of its users.</i>
UC_02_51	<i>Service provider questioning BONVOYAGE platform to receive information on the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator</i>	<i>This Use Case illustrates how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers list.</i>
UC_02_52	<i>Service provider questioning BONVOYAGE platform to receive information on the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator</i>	<i>This Use Case shows how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers list.</i>
UC_02_53	<i>Service provider questioning BONVOYAGE platform to receive information on the list of passengers of specific transport operated by a BONVOYAGE transport operator that need to be “re-protected”</i>	<i>This Use Case describes how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers to be “re-protected”.</i>
UC_02_54	<i>Service provider questioning BONVOYAGE platform to receive information on the list</i>	<i>This Use Case describes how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers that have</i>

UC ID	USE CASE NAME	SHORT DESCRIPTION
	<i>of passengers of specific transport operated by a BONVOYAGE transport operator that have been “re-protected”</i>	<i>been “re-protected”.</i>
UC_02_55	<i>Service provider questioning BONVOYAGE platform to receive information on the list of disabled passengers of specific transport means operated by a BONVOYAGE transport operator</i>	<i>This Use Case shows how BONVOYAGE platform interacts with the App of external service providers to provide information about the disabled passengers list.</i>
UC_02_56	<i>Service provider questioning BONVOYAGE platform to receive information on the list of passengers entitled to special services of specific transport means operated by a BONVOYAGE transport operator</i>	<i>This Use Case shows how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers entitled to special services.</i>
UC_02_57	<i>Technology provider managing authorisations for different profiles of system users operating on different channels</i>	<i>This Use Case describes how account and authorisations for different profiles of system users operating on different channels can be created and managed on BONVOYAGE platform.</i>
UC_02_58	<i>Creation of a new user profile</i>	<i>This Use Case illustrates: how a new user travel profile can be created on BONVOYAGE platform; how a new user profile can be used as basis for travel solution research and travel document purchase.</i>
UC_02_59	<i>Technology provider defining parameters and rules for bonus assignment</i>	<i>This Use Case illustrates how a technology provider can define rules to grant bonus through the combination of a pre-defined set of parameters.</i>
UC_02_60	<i>Technology provider defining parameters to define seat assignment</i>	<i>This Use Case outlines how a technology provider can modify parameters used to assign seats to passengers that make a reservation or purchase a travel solution for a specific transport mean.</i>
UC_02_61	<i>Technology provider wanting to display report on services/tickets sold through BONVOYAGE platform</i>	<i>This Use Case describes how BONVOYAGE platform provides information on services/tickets sold for services provided by a defined transport operator.</i>

UC ID	USE CASE NAME	SHORT DESCRIPTION
UC_02_62	<i>Technology provider wanting to display report on services/tickets purchased by a specific profiled customer</i>	<i>This Use Case shows how BONVOYAGE platform provides information on services/tickets purchased by a profiled customer.</i>
UC_02_63	<i>Technology provider guiding the user in the purchase of an intermodal travel solution.</i>	<i>This use-case illustrates how BONVOYAGE platform manages the purchase of a multi-modal travel ticket, driving the user in the purchase process.</i>
UC_02_64	<i>Technology provider uploading on BONVOYAGE platform information on the presence of public transport that cannot be reserved</i>	<i>This Use Case outlines how BONVOYAGE platform can restore public reservation services.</i>
UC_02_65	<i>Transport operator providing public transport information on time schedule, geographic coordinates and available commercial offers to BONVOYAGE platform.</i>	<i>This use-case describes how BONVOYAGE platform receives and upload: a transport operator time schedule; the effective geographic coordinates to exactly identify the departure, arrival, intermediate location of a public transport; the transport operator tariffs, offers and promotions targeting different users.</i>
UC_02_66	<i>Transport operator providing BONVOYAGE platform with information on planned delays on its transport means</i>	<i>This use-case shows how BONVOYAGE platform receives and uploads information (provided by transport operators) on delays planned on the medium-long term in order to: provide adequate information to the user; offer effective travel solutions (new travel solutions following rescheduled timetables) in order to provide the user with a new updated travel solution.</i>
UC_02_67	<i>Transport operator providing BONVOYAGE platform a modified list of services</i>	<i>This Use Case describes how BONVOYAGE platform receives and uploads a modified list of services offered by transport operators.</i>
UC_02_68	<i>Transport operator checking tariff profile offers and promotions</i>	<i>This Use Case shows how BONVOYAGE platform receives from transport operators' information on tariffs profile, offers and promotions to be deleted.</i>
UC_02_69	<i>Transport operator modifying tariff profile offers and promotions</i>	<i>This Use Case illustrates how BONVOYAGE platform receives from transport operators' information on tariffs profile, offers and promotions to be modified.</i>
UC_02_70	<i>Transport operator providing BONVOYAGE platform with rules to be followed for pricing building</i>	<i>This Use Case shows how BONVOYAGE platform receives from transport operators' rules to be followed for price building, based on necessary elements for tariffs, offers and promotions definition.</i>
UC_02_71	<i>Transport operator providing BONVOYAGE platform with</i>	<i>This Use Case outlines how BONVOYAGE platform receives and integrates the list of disabled public</i>

UC ID	USE CASE NAME	SHORT DESCRIPTION
	<i>the list of disabled passengers for a specific transport mean</i>	<i>transport passengers provided by a transport operator.</i>
UC_02_72	<i>Transport operator providing BONVOYAGE platform with the list of passengers entitled to special services</i>	<i>This Use Case shows how BONVOYAGE platform receives and integrates the list of passengers entitled to special services provided by a transport operator.</i>

**Table 3-3: List of Use Cases for Passenger travelling in public transport**

#### 5.2.4 UC\_03 (Special groups travelling in public transport):

These Use Cases will describe citizens belonging to special needs groups (Luxury, disabled, remote areas, baby chairs...) that would like to use BONVOYAGE system with public transport.

UC ID	USE CASE NAME	SHORT DESCRIPTION
UC_03_01	<i>Intermodal journey planner for passengers with special needs/requirements</i>	<i>This Use Case describes travellers who want to use the BONVOYAGE application to plan their origin-destination route based (mandatorily) on their inherent special needs or requirements</i>

**Table 3-4: List of Use Cases for special groups travelling in public transport**

#### 5.2.5 UC\_04 (Freight transportation):

These Use Cases will describe a citizen that would like to use BONVOYAGE system for sending a freight/package.

UC ID	USE CASE NAME	SHORT DESCRIPTION
UC_04_01	<i>Anna's gift</i>	<i>The Use Case describes how the BONVOYAGE platform can advise on how to send parcels according to user specific preferences and how a client can track parcels until they have reached their destination</i>
UC_04_02	<i>Transport Operator sending goods through an external transport provider</i>	<i>This Use Case describes how a Transport Operator can use the BONVOYAGE application in order send good through an external transport provider</i>
UC_04_03	<i>Transport Provider looking for available freight services</i>	<i>This Use Case describes how a transport provider can search (according its preferences) through the BONVOYAGE application available freights services to and how he can place a bid for a specific one.</i>



UC_04_04	Traceability support tool for a Transport Operator	<p><i>This Use Case describes how, from the Traceability support tool service information, the driver can:</i></p> <ul style="list-style-type: none"> <li>- Use BONVOYAGE as turn-by-turn navigator (UC_01) to reach the place of delivery of the goods (helping also the Transport Operator to monitor the delivery route)</li> </ul> <p><i>To collect the sign of the consignee writing it by touching the mobile screen or by photo (automatically it will be sent to the TO)</i></p>
UC_04_05	Managing a bid	<i>This Use Case describes how the Transport Provider can modify/delete a previously performed bid</i>
UC_04_06	Feedback the transport service	<i>This Use Case describes how the user can feedback the transport service</i>
UC_04_07	Transport Provider wants to feedback the Transport Operator	<i>This Use Case describes how the Transport Provider can leave a feedback of the Transport Operator</i>
UC_04_08	Setting an alert to be notified with new information	<i>This Use Case describes how a user can fix an alert in the BONVOYAGE application in order to be notified when there is new available information (as soon as arrives or from time to time).</i>
UC_04_09	Setting an alert based on a performed search	<i>This Use Case describes how a user can fix an alert from a previously performed search.</i>
UC_04_10	Managing an alert	<i>This Use Case describes how a user can manage an alert by editing it or deleting it</i>
UC_04_11	Route optimization for freight	<i>This Use Case describes how a transport provider can organize the daily route covering different pickup/delivery points, using the BONVOYAGE application, in the most efficient way</i>
UC_04_12	Pony express start-up	<i>The Use Case describes how entrepreneurs can use the BONVOYAGE platform to look for available parcels to be delivered and how certain delivery criteria can be preferred based on the sender's specific preferences</i>
UC_04_13	Marina the driver / freelance driver – parcel delivery	<i>The Use Case describes how freelance drivers can use the BONVOYAGE platform for optimizing transport and as an online service for available goods</i>

**Table 3-5: List of Use Cases for freight transportation**

## 6 REFERENCE ARCHITECTURE

In this section the results of the analysis done on the BONVOYAGE reference architecture is described. In particular, by adopting a top down methodology, the first version of the reference architecture depicted in Figure 6-1 has been reviewed to take into account the functionalities that the BONVOYAGE platform is expected to offer.

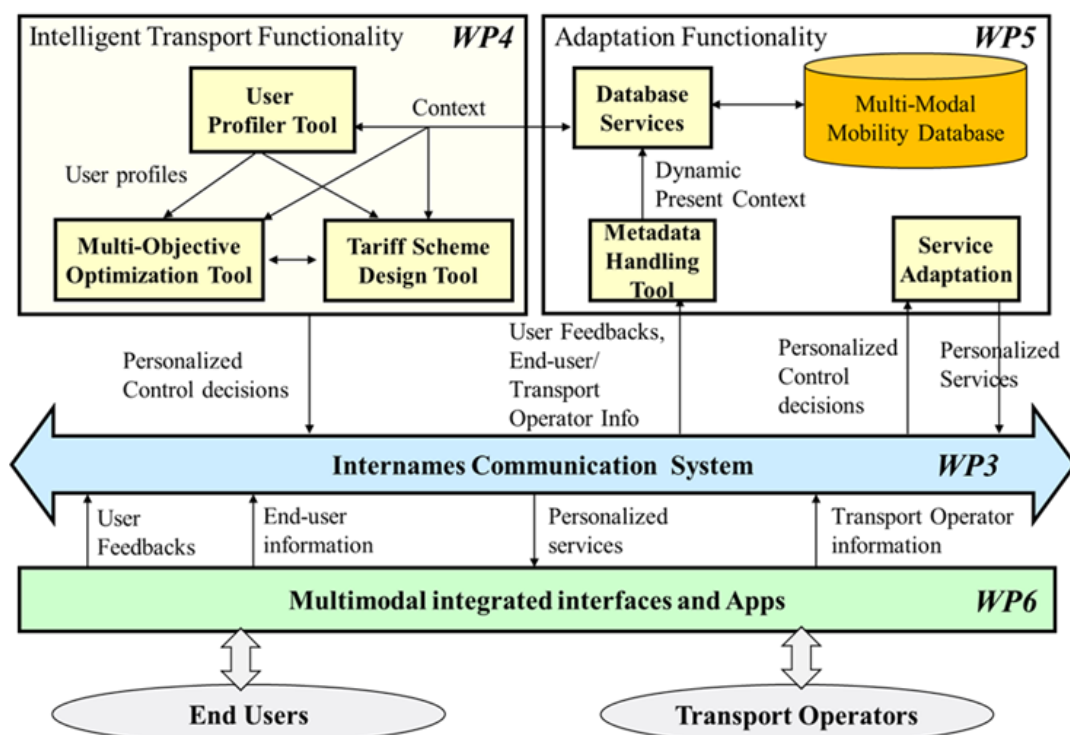


Figure 6-1: BONVOYAGE reference architecture

This section is organized as follow: paragraph 6.1 describes the BONVOYAGE functionalities that map all the identified requirements; paragraph 6.2 groups the functionalities into functional blocks and provides a brief description of them; paragraph 6.3 introduces the preliminary BONVOYAGE functional architecture as an evolution of the reference architecture, describes its rationale and makes several considerations.



## 6.1 Functionalities

A considerable effort has been made in order to identify the services offered by the BONVOYAGE platform as a set of functionalities in charge of addressing the project requirements. Such functionalities have been grouped into modules, i.e., key building blocks of the reference architecture, each providing a specific service.

Following the methodology described at the beginning of the document, the requirements listed in Section 4 have been grouped into modules and mapped into functionalities.

Each functionality is described by means of the following characteristics:

- **Id:** it represents the unique functionality identifier, within the BONVOYAGE platform;
- **Name:** it represents a short, human-readable name of the functionality;
- **Description:** describes, from a qualitative point of view, the main input/output operations performed by the functionality;
- **Address Requirements:** report the list of requirements ids that the functionality satisfies;
- **Module:** represents the functional module that offers that functionality.

The set of functionalities that map the BONVOYAGE requirements is reported in the following *Table 6-1: Functions:*

Id	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
ADD_INF	ADD_INFORMATION	This function allows the user to add new information such as traffic situation and transport status. The information is associated with the identity of the publisher and can be shared through the SHARE_INFORMATION functionality.	BU170, BU180	Mobility information management
ADD_OBJ	ADD_OBJECTIVE	This function allows the user to define an objective: calories, emissions or money.	BU450	Travel objective/target management
ADD_PIN	ADD_PLATFORM_INFORMATION	This function connects the BONVOYAGE platform with an Information Provider, taking care of (a) possible format conversion and (b) heterogeneous connecting technologies	BTIP120	Data Interfacing Service
ADD_PSG	PASSENGER_ADD	This functionality is used to add a passenger to a travel solution	BU810	Travel solution management
APP_UFB	PUT_APP_USER_FEEDBACK	This functionality allows the end user to send a feedback notification on possible problems of the App (e.g.: problems with maps, places missing; feedback if misplaced), on how to improve the App, or to evaluate their quality of experience while using the App (cities, companies of mobility and transport supported by the JPA, information provided from the app, accuracy estimated time of arrival at destination, accurate arrival times for public transport, correct information on location and online, finding points of interest, suggestions).	BU960	User feedback and profile management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
ASK_UFB	ASK_TRAVEL_SOLUTION_USER_FEEDBACK	<p>This functionality allows asking the end user to provide his feedback on the travel solution he obtained for a specific itinerary;</p> <p>Feedback can be provided by the user only if he has concretely experienced a travel solution.</p>	BU961	User feedback and profile management
AUTHO	AUTHORIZATION	Yes or No as output based on the customer authorization preferences, once it is required a particular function/operation with a Media (Laptop, Smartphone etc.)	BT10	User feedback and profile management
BIT_NOT	SET_BIDS_NOTIFICATION	This function activate/deactivate notification alerts for the Transport Information Provider when a bid takes place for a FREIGHT_SERVICE published by him	BTIP220	Passenger and travel management
BLD_TPR	BUILD_TARIFF_PROFILE	The function designs the tariff profile associated to a given user profile, the selected travel solution and all data/information related to user's travel solutions (historical travel solutions purchased and tickets details).	BTIP80	Membership management
BLD_PRC	BUILD_PRICES	This function designs non-linear tariff schemes for intermodal transport networks to promote dynamically the use of socially desirable mobility services (e.g., those with low environmental impact) and to incentivize the adoption of the most efficient (e.g., in terms of congestion externalities given the load capability) bundle of travel options.	BTIP80	Travel solution management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
CAL_TRP	CALCULATE_TRIP_SOLUTION	This function computes a family of optimal or near-optimal route alternatives from a given origin to one or more destinations. The function takes into account a number of query parameters, user constraints, and user commitments and uses these as constraints in the search. The user objectives are instead combined in the objective function to determine the quality of the solutions. The alternatives returned must be sufficiently different from each other, according to some predefined indicators.	BU320, BU330, BU340, BU350, BU360, BU370	Planning and travel itinerary management
CNT_FBK	CONTRACTOR_FEEDBACK	This function offers the possibility for the responsible person of a freight published in BONVOYAGE and which has contracted a transport operator via BONVOYAGE to insert and share some feedback about him and the provided service.	BU1410	User feedback and profile management
CNT_TRP	CONTROL_TRIP_SOLUTION	<p>This function receives a set of routes to monitor and the occurring dynamic events and decodes whether one or more such routes are "sufficiently" affected by the events. In which case, it will return a request to the affected user(s) whether to calculate a new set of route alternatives.</p> <p>During the processing phase, monitored routes that are sufficiently affected by the dynamic events are identified:</p> <ul style="list-style-type: none"> <li>a. Routes that are not possible anymore</li> <li>b. Routes that will be delayed</li> <li>c. Routes that can be improved</li> </ul>	BU370	Planning and travel itinerary management
CPR_SRC	CLIENT_PROFILE_SEARCHING	This function helps the transport operator to contact the costumer through personal contacts	BSP50	User feedback and profile management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
CRT_OPR	CREATE_OPTIMIZED_ROUTE	<p>This function allows the user to create an optimized route taking into account real time information like the traffic situation and the weather.</p> <p>The functionality should provide all the STOPPING_POINTS each one should include:</p> <ul style="list-style-type: none"> <li>- Location</li> <li>- Available schedule</li> <li>- Estimated time to spend</li> <li>- Contact information: So the consignee will be notified (BV notification, SMS or mail) when the courier is approaching</li> </ul>	BU1300, BU1330, BU1340 , BU1360	Passenger and travel management
CSH_BOK	CAR_SHARING_BOOK	This functionality is used to book a car sharing service on the basis of a given travel solution.	BU490	Travel solution management
CTR_CRE	COLLECTIVE_TRAVEL_CREATE	This functionality creates a new collective travel request	BTIP100, BTIP90	Passenger and travel management
CTR_UPD	COLLECTIVE_TRAVEL_UPDATE	This functionality allows the modification of any attribute of an collective travel request	BTIP100, BTIP90	Passenger and travel management
CUS_TIC_PUR	CUSTOMISED_TICKET_PURCHASE	This functionality allows the user to select a travel solution based on her/his travel preferences (e.g. passenger category, best tariff, class choice, seat choice...), visualize discounts/promotions/alternative options available for that travel solution and purchase a customized ticket (e.g. passenger category, best tariff, class choice, seat choice...).	BU640 , BU650, BU660, BU670, BU680, BU690	Travel option purchase service

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
DAT_REL	DATA_RELEASE	This functionality allows the external Service provider to fetch a set of selected data from the BONVOYAGE platform by means of well-documented service platform in a standard format.	BSP130	Data Interfacing Service
DEF_BIO	DEFINE_BONUS_IDENTIFICATION/OBLIGATION	This function is aimed at updating the user bonus based on its last choices (e.g. trip), given the BONVOYAGE bonus framework	BT30	User feedback and profile management
DEF_STP	DEFINE_STATIC_PARAMETERS	This function defines the static parameters needed for the implementation of the search algorithm in SRC_ENG.	BU440	Travel objective/target management
DEL_DSC	DELETE_DISCOUNTS	This function allows any transport operator TROP_ID, given a REQUEST, to cancel any tariff profile discounts, offers and promotions in the current list of DISCOUNTS for each TARIFF_PROFILE.	BTIP60	Travel solution management
DEL_OBJ	DELETE_OBJECTIVE	This functionality is used to delete one objective	BU470	Travel objective/target management
DLV_INF	DELIVER_INFORMATION	This function delivers an information piece to a specified recipient.	BTIP180, BU110, BU120, BU130, BU140, BU1230, BU1240, BU1250, BU1260, BU1270, BU1280, BU1290, BSP140, BSP150, BSP160, BSP170, BSP180, BTIP150, BTIP160, BTIP170)	Communication Service

Id	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
DR_FBK	DRIVER_FEEDBACK	This function enables the transport operator to leave a feedback and an evaluation of an evaluation of the service provided by a driver subcontracted using BONVOYAGE	BU1380	User feedback and profile management
DSP_DRV	DISPLAY_DRIVER_INFORMATION	This function allows the user to see the complete profile of a driver who wants to subcontract	BU1090,BU1200	Travel solution information and visualization
DSP_FRG	DISPLAY_FREIGHT_SERVICE	This function allows the user to see a complete description of the available FREIGHT_SERVICE to be delivered	BU1070	Travel solution information and visualization
DSP_FRR	DISPLAY_FREIGHT_RESPONSIBLE	This function allows the user to see a complete description of the FREIGHT_SERVICE responsible	BU1110	Travel solution information and visualization
EXP_PIN	EXPOSE_PLATFORM_INFORMATION (Please map to External APIs block/module and not anymore to Data Interfacing Module which is to be removed)	This function exposes to external applications or Service providers selected, aggregated data which is available within the BONVOYAGE platform.	BSP130	Data Interfacing Service
EXS_REM	EXTRA_SERVICE_CANCELLATION	This functionality is used to remove extra services from a travel solution	BU850	Travel solution management
FAV_DRV	MARK_FAVOURITE_DRIVER	This function allows the user to mark a DRIVER as favourite	BU1190	Passenger and travel management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
FAV_FRG	MARK_FAVOURITE_FREIGHT	This function allows the user to mark a freight service as favourite	BU1150	Passenger and travel management
FGT_OPT	FREIGHT_OPERATOR	This function keeps track of transports made by a single freight transport operator (both company and single driver) and of related results (e.g. volumes). Freight transport operator features (e.g. number of tracks, past experiences) and feedback are shown as results of the research a user has made on available freight services.	BU1390	User feedback and profile management
FIL_INF	SET_FILTER_INFORMATION	This function allows the user to set, from a planned route (collective or individual transport including freight drivers); a filtered notifications system (push) to be informed when is on the go, about transportation and state of the traffic.	BU200	Mobility information management
GET_AWA	GET_GIFTS	This function returns the list of Awards for a given user	BU1020	Membership management
GET_CIS	GET_CIRCULATION_STATUS	This function allows the Service Provider to get information on the status of the circulation	BSP120	Mobility information management
GET_FBF	GET_FEEDBACK_ON_FREIGHT	This function returns the feedback about quality of service and freight transport operator provided by a user	BU1370	User feedback and profile management
GET_FRS	GET_FREIGHT_SERVICES	This function allows the Service Provider to get available freight services in the BONVOYAGE platform according to some	BSP200	Mobility information management
GET_MYS	VIEW_MY_SCORE	This function returns the user points/scores for an all the scores of a given	BU1010	Membership



ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
		user.		management
GET_OPRR	GET_DRIVERS	This function allows the Service Provider to get available drivers' information in the BONVOYAGE platform	BSP190	Mobility information management
GET_OPR	GET_OPTIMIZED_ROUTE	This function allows the Service Provider to get an optimized route providing the STOPPING_POINTS information	BSP220	Travel solution information and visualization
GET_SCR	GET_SCORE	This function returns the user points/scores for a given score identifier.	BU1010	Membership management
GET_SRK	VIEW_SCORE_RANK	This function returns a ranked list of the best rated scores.	BU1010	Membership management
GET_STA	GET_STATISTICS	This function allows the Transport Information Providers to get the statistics about the use of their information in BONVOYAGE (e.g.: How many users have consulted your company information last month)	BTIP190	Passenger and travel management
GET_TSS	GET_TIMESCHEDULE_SERVICE	This function allows the Service Provider to get on-time time schedule for a specific service (e.g.: a specific flight)	BSP10, BSP20, BSP30, BSP40	Mobility information management
GET_UFB	GET_TRAVEL_SOLUTION_USER_FEEDBACK	<p>This functionality allows the end user to get feedback on a specific travel itinerary uploaded and shared by other users.</p> <p>Feedback can be provided by the user only if he has concretely experienced a travel solution.</p>	BU961	User feedback and profile management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
GET_USC	GET_USER_SCORE	This function provides the score associated to a given user	BU990	Membership Management
GTR_CRE	GOODS_TRAVEL_CREATE	This functionality creates a new goods travel request	BTIP100, BSP220	Passenger and travel management
GTR_UPD	GOODS_TRAVEL_UPDATE	This functionality allows the modification of any attribute of a goods travel request	BTIP100	Passenger and travel management
INF_VIS	INFORMATION_VISUALIZATION	This function allows the user to display in device/technology neutral information like weather, POIs, checkpoints...	BU190	Mobility information management
ITR_CRE	INDIVIDUAL_TRAVEL_CREATE	This functionality creates a new individual travel request	BT50, BU320, BU321, BU330	Passenger and travel management
ITR_UPD	INDIVIDUAL_TRAVEL_UPDATE	This functionality allows the modification of any attribute of an individual travel request	BT50, BU320, BU321, BU330	Passenger and travel management
LEI_LOC_PUR	LEISURE_LOCAL_SERVICES_PURCHASE	This functionality allows the user the possibility to buy ancillary solutions that can include both local (municipal services) and leisure (recreational services) services.	BU770, BU780	Travel option purchase service
LPT_TIC	LPT_TICKET	This functionality enables the creation of LPT travel documents whose tariff can be paid through Smart Card, EMV credit card, NFC and bar code technology; travel documents can be also validated by the same tools.	BU890 BU900	Payment and reimbursement service

Id	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
LPT_VAL	LPT_VALIDATION	This functionality enables the validation of a Local Public Transport ticket, stored in the user BONVOYAGE App, and whose tariff has already been paid by the user (BU870) or is going to be charged to the user only after the user has completed his journey on the local public transport (BU880).	BU870 BU880	Payment and reimbursement service
MAP_LAY	MAP_LAYER	This function allows viewing of tiles on a smartphone or web app. Suggested is to follow the OGC Web Map Tile Service (WMTS) standard version 1.0.0.	BU260, BU270, BU280, BU290	Maps management
MOB_SER_P UR	MOBILITY_SERVICES_PURCH ASE	This functionality allows the user to purchase a set of additional mobility services which can be furthermore associated with the pre-identified travel solution and enter inquiry to book in a waiting list services not available.	BU730, BU740, BU750, BU760	Travel option purchase service
MOD_DSC	MODIFY_DISCOUNTS	This function allows any transport operator TROP_ID, given a REQUEST, to modify any tariff profile discounts, offers and promotions in the current list of DISCOUNTS for each TARIFF_PROFILE. Moreover, this function accurately tracks all the transport operators involved in the process and identified by the TROP_IDs: as a result, the OVERALL_BEHAVIOUR signal is provided as output.	BTIP70	Travel solution management
MOD_SAP	MODIFY_SEATASSIGN_PARA MS	This function modifies the vector of SEAT_ASSIGNMENT_PARAMS according to the STRATEGY_SUGGESTION signal, depending on the specific USER_PROFILE and the available TRAVEL_SOLUTIONs.	BT40	Travel solution management

Id	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
MON_DVP	MONITOR_DELIVERY_PARCEL	This function allows the consignee to monitor the parcel path (in which location the parcel is) until the delivery is finalised	BU1450	Mobility information management
MON_DVR	MONITOR_DELIVERY_ROUTE	This function allows the Transport Operator (the freight company) monitor (in real time) the delivery route in the TRACEABILITY_SUPPORT_TOOL_SERVICE	BU1430	Mobility information management
NVG_OPR	NAVIGATION_OPTIMIZED_ROUTE	This function allows the user to start a navigation turn-by-turn (UC_01) from the calculated optimized route	BU1350	Passenger and travel management
NVG_TZR	NAVIGATION_TRACEABILITY_TOOL	This function allows the driver to start a navigation turn-by-turn (UC_01) taking as reference the information of a TRACEABILITY_SUPPORT_TOOL_SERVICE (consignee's address)	BU1420, BU1430	Passenger and travel management
ONT_VIS	ONTRIP_VISUALIZATION	This function is used by the user to visualize the route on the map followed by the transport mean (on-trip) and its current location.	BU390	Travel solution information and visualization
PAC_TRA	PARCEL_TRACKING	This functionality allows the freight transport information provider to notify / to provide to BONVOYAGE platform information on the status (location) of the parcel. Moreover this functionality lets the "addressee user" to track and monitor the parcel path until the delivery is finalised; it also allows "the sender user" to receive a notification about delivery finalisation.	BU1450, BU1460, BU1460, BTIP230	Mobility information management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
PAR_OFF	PARTNERS_OFFERS	This functionality enables the user to be informed on and to get available promotions and discounts offered from partners of BONVOYAGE platform transport operators. The functionality requires two types of input parameters: information related to the partner of BONVOYAGE platform transport operators, concerning especially the promotion and discounts offered for specific services/events; information on the BONVOYAGE user, that are essential to allow BONVOYAGE platform to distinguish and select discounts and promotions of possible interest for the user in order to send him notifications targeted to his profile and preferences.	BU30, BU690, BU1020	Partnership
PAR_SER	PARTNERS_SERVICES	This functionality allows the user to book services provided by partners of transport operators integrated into the BONVOYAGE Platform.	BU790	Travel option purchase service
PHT_DVN	PHOTO_DELIVERY_NOTE	This function allows the driver to take a photo of the physical delivery note and include it in the TRACEABILITY_SUPPORT_TOOL_SERVICE	BU1480	Mobility information management
PRF_CTE	PROFILE_CREATE	This function creates a user profile with account information	BU80, BU90	Profile/account management
PRF_DTE	PROFILE_DELETE	This functionality deletes a profile registry, mainly for management purposes	BU80, BU90	Profile/account management
PRF_UTE	PROFILE_UPDATE	This functionality allows modifying existing profile information	BU80, BU90	Profile/account management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
PRO_USE_P UR (technology provider perspective)	PROFILED_USER_PURCHASES	<p>This functionality allows the technology provider to display the list of purchases made by the profiled customer in the selected timeline. For each purchase, the following information is showed:</p> <ul style="list-style-type: none"> <li>• Purchase date;</li> <li>• Travel solution description;</li> <li>• Travel solution ID code;</li> <li>• Amount;</li> <li>• Invoiced / not invoiced (with possibility to display invoice details).</li> </ul>	BT60	Travel document management (Technology provider perspective)
PRV_VAS	PROVIDE_VIRTUAL_ASSISTANCE	<p>This functionality allows the BONVOYAGE platform to get in contact, if possible, with the end user providing some vertical information to assist the user in case of problems. This function also allows the user to ask for road side assistance, in case of necessity, through the BONVOYAGE Platform. As a result of her/his request, the user will receive the help needed. The user sends the request for assistance by simply pushing a button on the BONVOYAGE App.</p>	BU980, BU251	User feedback and profile management
PSS_CTE	PASSENGER_CREATE	This functionality creates a passenger entity linked with a profile for a new user	BU10, BU20, BU40, BU50, BU60, BU70, BU71, BU150, BU151	Profile/account management
PSS_UTE	PASSENGER_UPDATE	This functionality allows the system to edit an existing passenger	BU10, BU20, BU40, BU50, BU60, BU70, BU71, BU150, BU151	Profile/account management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
PUB_INF	PUBLISH_INFORMATION	This function publishes a piece of information. The information is associated with the identity of the publisher. The information is published under the specified name. The information can be encrypted so that only recipients possessing certain certified properties can decrypt it.	BTIP180, BU110, BU120, BU130, BU140, BU1230, BU1240, BU1250, BU1260, BU1270, BU1280, BU1290, BSP140, BSP150, BSP160, BSP170, BSP180, BTIP150, BTIP160, BTIP170	Communication Service
PUR_TIC	PURCHASE_TICKET	This functionality allows the user to: select his preferred payment modality when he decides to purchase a ticket/travel solution; choose among four different payment options (credit card, debit card, eWallet, PayPal); select the preferred type of reception of the ticket and the ID code of the travel solution on his smart phone or other mobile device whenever he finalizes the purchase (SMS, email, 2D code, QR code). The functionality also enables the user to get information on commercial conditions (e.g. refund, compensation) as defined by the relevant transport operator.	BU510, BU520, BU530, BU540, BU550, BU560	Ticket purchase service
PUT_BID	PUT_BID	This function allows the Service Provider to put a bid in one available FREIGHT_SERVICE in the BONVOYAGE platform according to some	BSP210	Passenger and travel management
PUT_SCR	PUT_SCORE	This function stores the user's usage of the BONVOYAGE system to gather points/scores.	BU1000	Membership management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
PUT_UFB	PUT_TRAVEL_SOLUTION_USER_FEEDBACK	<p>This functionality allows the end user to insert and share his feedback on the travel solution he obtained for a specific itinerary;</p> <p>Feedback can be provided by the user only if he has concretely experienced a travel solution.</p>	BU961, BU970	User feedback and profile management
REM_PSG	PASSENGER_REMOVE	This functionality is used to remove a passenger from a travel solution	BU830	Travel solution management
RMV_BID	REMOVE_BID	This function allows the user to remove a bid	BU1220	Passenger and travel management
RMV_INF	REMOVE_INFORMATION	This function allows the Transport Operator to remove information (previously uploaded by the TO) from the BONVOYAGE platform	BTIP10, BTIP20, BTIP30, BTIP40, BTIP200, BTIP210	Public transport service
ROU_VIS	ROUTE_INFO_VISUALIZATION	This functionality will show all information related to a travel solution (pre-trip) like cost, codes of public transport, source-destination...	BU380, BU390, BU400	Travel solution information and visualization
RST_USC	RESET_USER_SCORE	This function reset the score associated to a given user. The new score will be the initial one	BU990	Membership Management



ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
SAL (technology provider perspective)	SALES_2	This functionality allows the technology provider to display the sales report containing information on total sold amount, cancelled refunded amount (if any), passengers number with respect to a specific aggregation cluster: • timeline (hour/day/month/year); • transport mean/service type; • channel/selling point; • eWallet; • Start date and end date of the search timeline.	BT50	Travel document management (technology provider perspective)
SAL (user perspective)	SALES_1	This functionality allows the user to access to sales basic information to support audits, information provision to Public Security Authorities, complaints management.	BU620	Travel document management (user perspective)
SCORE	SCORE	This function allows the user to accumulate points from achieved targets that was created by the ADD_OBJECTIVE function	BU450	Travel objective/target management
SEL_TRS	SELECTED_TRAVEL_SOLUTION	This functionality is used to inform the BONVOYAGE platform about which travel solution has been chosen, on the base of a given set of search parameters and a given user profile. This information can be used to learn more about the user profile selection behaviour and related preferences, so that the user profile can be updated.	BU480	Travel solution management
SET_FBF	SET_FEEDBACK_ON_FREIGHT	This function enables the user to provide own feedback about quality of service and freight transport operator	BU1370	User feedback and profile management
SET_SPL	SET_SCORE_POLICY	This function sets the score assignment policy	BU1010	Membership management

Id	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
SET_USC	SET_USER_SCORE	This function sets an initial score associated to a given user.	BU990	Membership Management
SGN_DVN	SIGN_DELIVERY_NOTE	This function allows the consignee to sign the electronic delivery note in the mobile handset screen	BU1470	Mobility information service
SHR_INF	SHARE_INFORMATION	This function allows the user to share with others (users or applications) all the information displayed in their devices resulting from previous searches (e.g.: route trip information); public transport information (status, lines...); Stored information (contacts, favourites POI), current location...	BU160, BU170, BU190, BU210, BU220, BU300, BU310	Mobility information management
SHW_PRG	SHOW_PROGRESS	This function shows progress towards the achieving of the objective and the pre-set time	BU460	Travel objective/target management
SND_DVN	SEND_DELIVERY_NOTE	This function allows the driver to send the delivery note included in the TRACEABILITY_SUPPORT_TOOL_SERVICE	BU1460, BU1480	Mobility information service
SRC_DRV	SEARCH_DRIVER	This function allows the user to search available drivers to be subcontracted (for a service or for a long term) and to filter and sort the results according to SEARCH_PARAMETERS	BU1080, BU1100, BU1120, BU1140, BU1170, BU1180	Mobility information management
SRC_ENG	SEARCH_ENGINE	This function runs a travel solution search algorithm which is in charge of selecting/rejecting travel solutions according to the specific USER_PROFILE.	BU440	Travel objective/target management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
SRC_FRG	SEARCH_FREIGHT	This function allows the user to search available freight services to be contracted and to filter and sort the results according to SEARCH_PARAMETERS	BU1050, BU1060, BU1120, BU1140	Mobility information management
SRC_LOC	SEARCH_LOCATION	This function receives a request to find an address or POI in order to search for routes or transport stops nearby etc...	BU250, BU230, BU291	Geolocation service
STP_INF	PT_STOP_INFORMATION_VISUALIZATION	This functionality is used to visualize the information of a specific public transport stop (scheduling, departing and arriving programmed, Interconnection with other modes of public transport...) and the arrival time.	BU410, BU420, BU430	Travel solution information and visualization
STP_VIS	PT_STOPS_LOCATION_VISUALIZATION	This function is used to visualize on the map the location of the public transport stops.	BU410, BU420, BU430	Travel solution information and visualization
SUB_INF	SUBSCRIBE_INFORMATION	This function subscribes to a piece of information. The subscription is created (or removed) for a specific information piece. A flag indicates creation or removal of the subscription.	BTIP180, BU110, BU120, BU130, BU140, BU1230, BU1240, BU1250, BU1260, BU1270, BU1280, BU1290, BSP140, BSP150, BSP160, BSP170, BSP180, BTIP150, BTIP160, BTIP170	Communication Service
SVE_DRV	SAVE_DRIVER	This function allows the user to save a DRIVER in a CUSTOMIZED_LIST	BU1210	Profile/account management
SVE_FRG	SAVE_FREIGHT	This function allows the user to save a FREIGHT_SERVICE in a customized list	BU1150	Profile/account management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
SVE_OPR	SAVE_OPTIMIZED_ROUTE	This function allows the user to save the OPTIMIZED_ROUTE generated by BONVOYAGE	BU1310	Profile/account management
SVE_SRC	SAVE_SEARCH	This function allows the user to save the current search in a customized list	BU1130	Profile/account management
SWI_CUR	SWITCH_CURRENCY	This functionality allows the user to access a currency converter proposing the local (geo-referred) currency as first option whenever he has to purchase a ticket or a travel solution.	BU1040	User feedback and profile management
SYN_INF	SYNC_INFORMATION	This function keeps two information pieces in sync. Whenever one of the information pieces changes, all changes are propagated to the other.	BU930, BU940, BU950, BU960, BU1230, BU1240, BU1250, BU1260, BU1270, BU1280, BU1290, BSP140, BSP150, BSP160, BSP170, BSP180, BTIP150, BTIP160, BTIP170	Communication Service
TAR_TRA (technology provider perspective)	TARIFF_TRANSFER	(While the user purchases an integrated ticket) this functionality allows the technology provider to transfer from BONVOYAGE platform to the single transport operator the amount related to the transport mode it operates and for which the user has purchased a ticket through BONVOYAGE platform.	BT70, BT71	Travel document management (technology provider perspective)

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
TCH_UFB	PUT_TRAVEL_CHUNK_USER_FEEDBACK	<p>This functionality allows the end user to insert his feedback on the travel chunk (that is a sub-part of the overall travel solution) he obtained for a specific itinerary;</p> <p>Feedback can be provided by the user only if he has concretely experienced a travel solution.</p>	BU970	User feedback and profile management
TIC_COD_CH A	TICKET_CODE_CHANGES	This functionality enables to track and display original travel identification code and additional travel change booking code (changes incurred in case the user modifies the original purchased travel solution across time). This functionality allows the user also to visualise the timestamp related to year, date and hour of original purchase and changes occurred.	BU590	Travel document management (user perspective)
TIC_CRE	TICKET_CREATION	This functionality allows BONVOYAGE to create a travel document based on input parameters “deduced and assembled” by BONVOYAGE platform on the basis of: information provided by the user to search for a travel solution; data related to the travel solution selected and purchased by the user.	BU570, BU580	Travel document management (user perspective)
TIC_DET	TICKETS_DETAILS	This functionality allows the user to display all the details related to the purchased tickets/travel solutions accessing to a “Historical” section; moreover this functionality allows the user to share the purchased tickets /travel solutions with the Wallet up available on his smartphone.	BU600, BU610	Ticket purchase service

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
TIC_MOD	TICKET_MODIFICATION	This functionality allows the user to modify / cancel a travel seat already booked or a service purchased and associated to a travel solution.	BU710, BU720	Travel option purchase service
TIC_REI	TICKET_REIMBURSEMENT	This functionality allows the user to receive a reimbursement of a purchased travel solution on his credit/debit card, PayPal account, and eWallet.	BU860	Payment and reimbursement service
TRC_TOO	TRACEABILITY_SUPPORT_TOOL	<p>This function allows creating a TRACEABILITY_SUPPORT_TOOL_SERVICE in order to improve the traceability of the shipment of goods for subcontracted drivers.</p> <p>The necessary inputs are:</p> <ul style="list-style-type: none"> <li>- SERVICE_INFORMATION: Sender, consignee, date, weight, observations, BONVOYAGE Driver id</li> <li>- DELIVERY_NOTE: An e-note created in the Transport Operator back-office; An e-note created by BONVOYAGE based on the introduced data by the Transport Operator; or empty, waiting for the attachment of an image of the signed note (different formats: .pdf, .tiff...)</li> </ul>	BU1440, BU1490	Mobility information management
TRP_FBK	TRANSPORT_PROVIDER_FEE_DBACK	This function offers the possibility for a transport provider - that has already performed the transportation of the available freight - to insert and share some feedback about the responsible person of the freight (or contractor of the freight).	BU1400	User feedback and profile management
TRS_EXT	TRAVEL_SOLUTION_EXTENSION	This functionality, is used to modify a travel solution with additional info regarding the whole travel	BU820	Travel solution management

Id	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
TRS_FIN	TRAVEL_SOLUTION_FINALIZATION	This functionality is used to confirm the purchase of a travel solution plus additional selected services	BU500, BU520, BU530, BU540, BU550	Travel solution management
TRS_MOD	TRAVEL_SOLUTION_MODIFICATION	This functionality is used to modify a purchased travel solution with additional selected services	BU800	Travel solution management
TRS_REM	TRAVEL_SOLUTION_CANCELLATION	This functionality is used to modify a travel solution removing parts of the travel solution	BU840	Travel solution management
TRV_MEM	TRAVEL_SETTING_MEMORANDUM	This function allows the user to set a memorandum of the travel in the calendar and the possibility to receive notifications under MEMORANDUM_PREFERENCES (e.g. 1h before departure, in station with list of booking codes).	BU630	Travel solution information and visualization
UPD_BID	UPDATE_BID	This function allows the user to update the price of a bid	BU1220	Passenger and travel management
UPD_INF	UPDATE_INFORMATION	This function allows the Transport Operator to update the route initially uploaded, and the option of maintaining previous versions on BONVOYAGE platform.	BTIP10, BTIP20, BTIP30, BTIP40, BTIP200, BTIP210	Public transport service
UPD_OPR	UPDATE_OPTIMIZED_ROUTE	This function allows the user to modify a created optimized route by changing some parameters and recalculating it	BU1320	Travel objective/target management
UPD_USC	UPDATE_USER_SCORE	This function updates the score associated to a given user by adding a given value to the previous score	BU990	Membership Management

ID	NAME	DESCRIPTION	ADDRESSED REQUIREMENTS	MODULE
UPL_DSC	UPLOAD_DISCOUNTS	This function allows any transport operator TROP_ID, given a REQUEST, to upload a list of DISCOUNTS including tariff profile discounts, offers and promotions for each TARIFF_PROFILE.	BTIP50	Travel solution management
UPL_INF	UPLOAD_INFORMATION	This function allows the Transport Operator to upload information to the BONVOYAGE platform like time schedules, list of services, list of existing ticket prices and offers, etc.	BTIP10, BTIP30, BTIP40, BTIP200, BTIP210	Public transport service
UPL_TPR	UPLOAD_TRAVEL_PROFILE	Update of the user profile based on its last choices (source and destination of the trip)	BT20	User feedback and profile management
USE_SHR	USE_SHARED_INFORMATION	This function allows the user to use information shared by others, giving him a list of possible actions.	BU160	Mobility information management
VAL_PRC	VALIDATE_PRICES	This function validates the PRICES chosen by BLD_PRC, thus providing the FINAL_PRICES, which are ready for the subsequent operation phase.	BTIP80	Travel solution management
VER_INF	VERIFY_INFORMATION	This function verifies that an information piece has been published by the claimed publisher, that it has not been tampered with, and that it can be decrypted by the recipient based on recipient's attributes.	All requirements that are of non-functional Security kind, including Information Provenance, Information Confidentiality, Information Integrity	Security Management

**Table 6-1: Functions**



## 6.2 Functional modules

In this subsection, the functionalities introduced in the previous section are grouped in functional modules. A functional module is a set of functionalities deputed to provide a specific service (e.g. communication service, geolocalization service, ticket purchase service, etc.). The BONVOYAGE platform is composed by the following functional modules:

**Communication Service** – This functional module is in charge of the communication services, namely, it enables information publishing, subscription to a piece of information as well as information delivery to a specified recipient. It also enables information encryption and offers the opportunity to keep different pieces of information in sync.

**Data Interfacing Service** – This functional module connects the BONVOYAGE platform with an Information Provider, taking care of all the issues related to the heterogeneity of the connecting technologies. It exposes aggregated data coming from the BONVOYAGE platform to external applications or Service providers and allows external Service providers to fetch data from the BONVOYAGE platform.

**Geolocation Service** – This functional module manages all requests aimed at finding an addresses or POIs, thus enabling the search for routes, transport stops, etc. nearby.

**Maps management** – This functional module is in charge of allowing tile viewing on a smartphone or web app.

**Membership management** – This functional module is in charge of monitoring and recording the user's usage of the BONVOYAGE platform in order to collect and update user scores according to the current score assignment policy. It must also return the ranked list of the best rated scores as well as the list of Awards for a given user.

**Mobility information management** – This functional module is in charge of allowing the user to add information and/or be informed about the transportation situation and the state of traffic as well as about weather, POIs and checkpoints. Such information is displayed in a device/technology neutral manner and can be shared with other users. Moreover, this functional module allows the freight transport information provider to provide the BONVOYAGE platform with information about the location of the parcel and lets the addressee user track and monitors the parcel path until delivery is finalized.

**Partnership** – This functional module offers the user the opportunity to avail him/her of the promotions and discounts offered by the partners of the BONVOYAGE platform and it also sends the user the related notifications, targeted to the user's specific profile and preferences.

**Passenger and travel management** – This functional module manages the creation and modification of travel requests, both individual and collective, as well as of goods travel requests.

**Payment and reimbursement service** – This functional module enables the creation and the validation of Local Public Transport travel documents and tickets. It also allows the user to receive reimbursement for a purchased travel solution.

**Planning and travel itinerary management** – This functional module is in charge of computing optimal or near-optimal route alternatives from a given origin to one or more destinations by taking into account query parameters, user constraints and user commitments. It also monitors and detects the occurrence of dynamic events and chooses whether to calculate a new set of route alternatives, in case such dynamic events severely affect the previously calculated routes or even make them unfeasible (e.g., the previously calculated routes turn out to be not possible anymore, will be delayed, will have to be improved, etc.).

**Profile/account management** – This functional module allows creating, deleting and modifying user profiles and accounting information. It also allows creating and updating a passenger entity linked with a profile for each new user.

**Public transport service** – This functional module allows Transport Operators to upload, update and remove information concerning routes, time schedules, lists of services, etc. to and from the BONVOYAGE Platform.

**Security Management** – This functional module is in charge of checking that a piece of information has been published by the claimed publisher, that it has not been tampered with, and that it can be decrypted by the recipient based on the recipient's attributes.

**Ticket purchase service** – This functional module enables the user to choose the payment modality when purchasing a ticket/travel solution. It also provides the user with all the information concerning commercial conditions (e.g., refund, compensation) as defined by the relevant transport operator, and is in charge of displaying all the details about the purchased tickets/travel solutions in a user-specific historical section.

**Travel document management** – This functional module is in charge of managing travel documents both from the technology provider's and from the user's perspectives. In particular,

from the point of view of the technology provider, it allows to display the sales report containing information about the total amount sold, the cancelled refunded amount (if any), the number of passengers with respect to a specific aggregation cluster, the travel timeline, the transport means or service type, the channel/selling point, etc.

**Travel option purchase service** – This functional module allows the user to select a travel solution based on her/his travel preferences (e.g. passenger category, best tariff, class choice, seat choice...), to visualize discounts/promotions/alternative options available for that travel solution and to purchase a customized ticket (e.g. passenger category, best tariff, class choice, seat choice...). This functional module also offers the user the possibility to buy ancillary solutions, which can include both local (municipal services) and leisure (recreational services) services, as well as to purchase a set of additional mobility services, which can be furthermore associated with the pre-identified travel solution. It also allows the user to book some specific services and/or to modify/cancel a travel seat already booked or a service purchased and associated to a travel solution.

**Travel solution information and visualization** – This functional module is aimed at allowing the user to visualize the route followed by the means of transport (on-trip) and its current location. It is also aimed at displaying the information related to a travel solution (pre-trip), such as cost, codes of public transport, source-destination association, as well as the information of a specific public transport stop (scheduling, departing and arriving programmed, Interconnection with other modes of public transport...) and the arrival time. Moreover, it allows the user to set a memorandum of the travel in his/her own calendar and makes sure he/she receive useful notifications.

**Travel solution management** – This functional module is in charge of managing travel solution data. Such management is realized by associating passengers with the requested travel solutions, by “building” prices for all tariffs, offers, promotions and discounts and by allowing any transport operator to modify/update such tariffs, offers, promotions and discounts. As a result, this functional module is in charge of informing the BONVOYAGE platform about the travel solutions that have been chosen, on the basis of a given set of search parameters and of given user profiles.

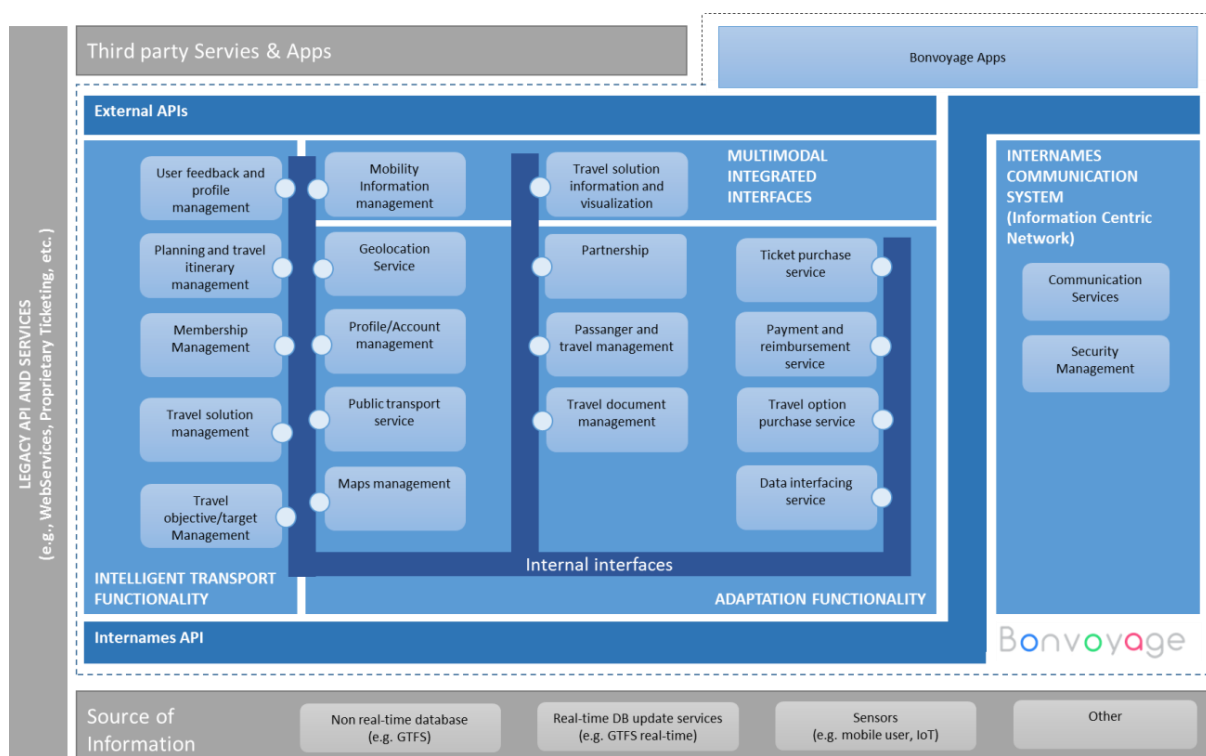
**User feedback and profile management** – This functional module is in charge to collect, store and react to the user feedbacks and to manage their profile.

## 6.3 Functional architecture

In this subsection, the BONVOYAGE preliminary functional architecture is described.

The functional modules introduced in the previous section have been grouped into functional blocks. A functional block is a set of functional modules that provide a similar type of service (intelligent functionalities, adaptation functionalities, communication functionalities, etc.). The set of functional blocks constitute the functional architecture that shows how the BONVOYAGE functional modules interact with each other and how the BONVOYAGE platform interacts with external functionalities, data sources, services and applications.

The BONVOYAGE preliminary functional architecture is depicted in Figure 6-2.



**Figure 6-2: Preliminary functional architecture**

The grey boxes represent functional elements that are not part of the BONVOYAGE platform. In particular, the following external elements can be identified:

- **Third party Services and Apps** – These represent mobility services, applications or functionalities implemented by third parties, that are interested to take advantage by using the BONVOYAGE platform;
- **Sources of information** - These represent pre-existing mobility data sources: real-time databases, non-real-time databases, streaming sources (IoT sensors), social networks (tweets, comments, etc.), others. This information exists independently from the

BONVOYAGE platform, but it is useful for the BONVOYAGE platform to provide its added value services.

- **Legacy Services and Apps** – These represent those existing mobility services, applications or functionalities that work independently from the BONVOYAGE platform. They can be used, if needed, by the BONVOYAGE platform to provide its added value services.

The preliminary functional architecture of the BONVOYAGE platform is composed by five functional blocks:

- **BONVOYAGE Application** – It represents the front-end of the BONVOYAGE platforms, that interacts directly with the BONVOYAGE end user (e.g. the traveller);
- **Intermodal integrated interfaces** – This functional block contains all the functional modules deputed to the interaction with the front-end;
- **Intelligent Transport Functionality** – It is in charge of offering a set of innovative, added value functionalities dealing with the personalization, profiling, quality of experience, travel planning and control, membership management, etc.;
- **Adaptation Functionality** - It is in charge of offering a set of key adaptation functionalities aiming at offering to the other functional modules of the BONVOYAGE platform the most appropriate, aggregated and homogeneous information;
- **Internames Communication System** – This set of functionalities setup an information centric network that provides to the other functional modules of the BONVOYAGE platform an easy, secure and scalable access to a variety of heterogeneous data offered by external data sources or by other BONVOYAGE modules.

The BONVOYAGE platform offers different communication channels:

- **Internames APIs** – It is a set of APIs that allows the BONVOYAGE functional modules to access the data sources, or to provide information to other modules, adopting an information centric network;
- **Externals APIs** – It is a set of APIs that allows external services and applications, developed by third parties, to use some of the functionalities provided by the BONVOYAGE functional modules;
- **Internal Interfaces** – It is composed by the set of functionalities that each BONVOYAGE functional module exposes to the other modules;

It is worth to note that while a third party application can use only the legacy services and the BONVOYAGE External APIs, a BONVOYAGE functional module can use the legacy services, the Internames APIs and the Internal Interfaces.

Thanks to adoption of a top-down design methodology, the BONVOYAGE functional architecture is able to deal with all the identified Use Cases and to satisfy all the identified requirements. In particular, a prototypal implementation of the BONVOYAGE functional architecture will be used to validate the BONVOYAGE platform against a meaningful subset of Use Cases and related requirements.

An important consideration has to be done, regarding the orchestration of the BONVOYAGE functional modules. It is up to the third parties application developers to exploit wisely the BONVOYAGE External APIs in order to address a specific Use Case. Indeed, even if the BONVOYAGE functionalities map the requirements identified on the base of the Use Cases, to satisfy a specific Use Case, an orchestration of the available functionalities is necessary. In the project, some BONVOYAGE apps will be developed to address specific project Use Cases. The apps will contain all the logic needed to manage the BONVOYAGE functionalities and to satisfy the specific user need in a given scenario.

A final consideration can be done on the functional architecture introduced in this section. As shown in Figure 6-3, the BONVOYAGE functional architecture (the one on the bottom) is an evolution of the BONVOYAGE reference architecture (the one on the top). Each element of the reference architecture has been translated into a set of functionalities, each functionality mapping a specific set of requirements, each requirement mapping a specific set of Use Cases.

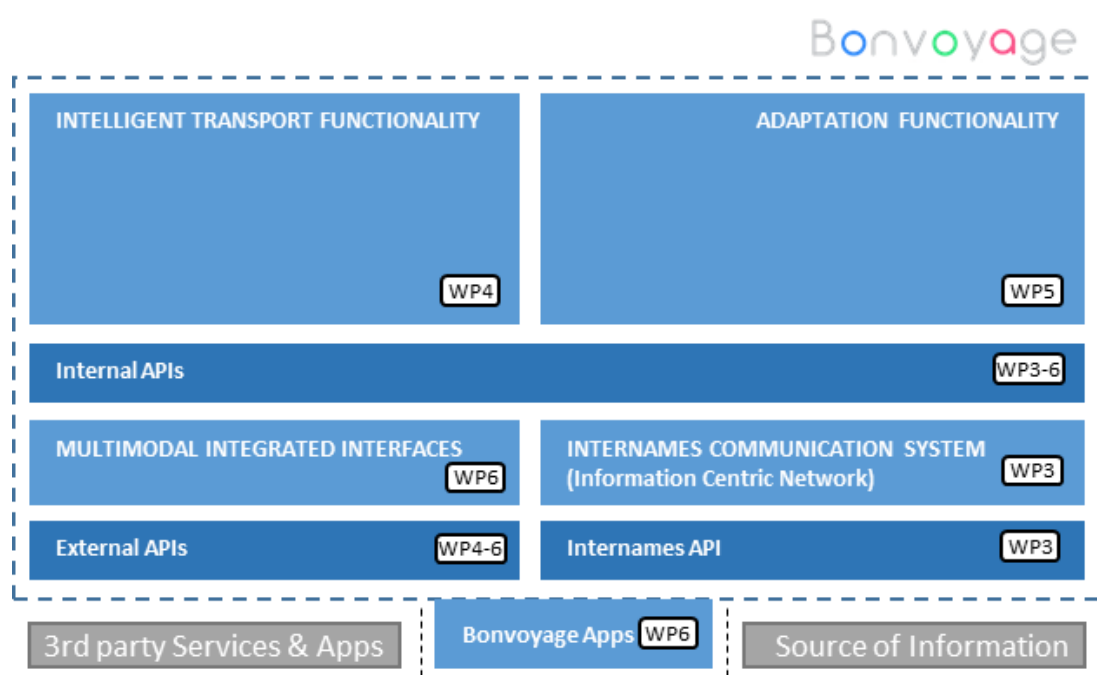
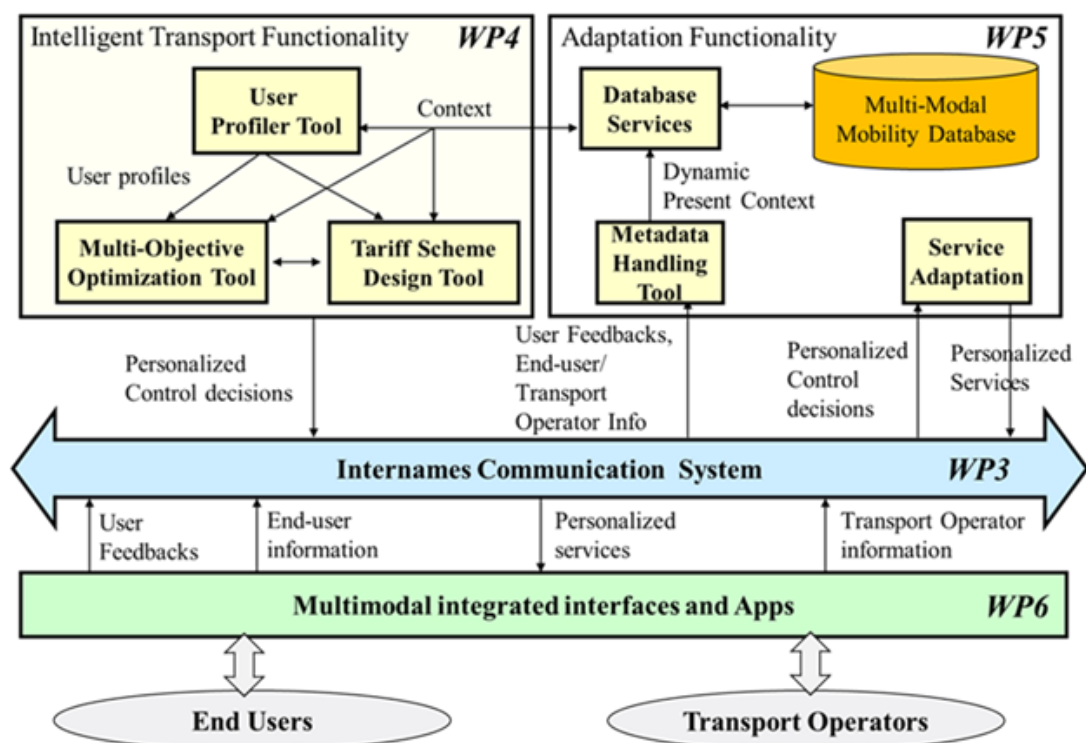


Figure 6-3: Evolution of the BONVOYAGE reference architecture

## 7 RELEVANT STANDARDS

This section covers Identified standards that relate to the functional and technological requirements identified in the previous section 4 - STAKEHOLDERS REQUIREMENTS.

### 7.1 Overview of Relevant Standards

For BONVOYAGE, in contrast to regional or small-scope projects, systems and interface standardisation and open system architectures play a key role in the development of the final solutions proposed.

Standards are required to ensure compatibility among the different components and technical interfaces of the system. Standards and compatibility studies are particularly relevant when the various sub-systems and components may be produced by different manufacturers and providers. The obvious standards that will be needed are concerned with communications and data interchange between sub-systems and components, but “simple” communication standards are not always sufficient to produce a working and workable system. Of equal importance are the data that they use, and the behaviour of the sub-systems and components at each end of the communications link, e.g.: can one produce information in time for the other to make use of it, and will the receiving end understand the units and format in which the data is being provided?

In the next sections we’ll analyse the available standards and their affect to BONVOYAGE platform. This analysis has been made by classifying standards in:

- Content standards
  - Road network data
  - Public transport network data
  - Intermodal transport network data
  - Location referencing
  - Traffic flow data
  - Traffic messages
  - Parking
  - Public transport service data
  - POI and other categories
  - Data for Public Transport Journey Planning
  - Data for intermodal Journey Planning



- Data for freight traffic
- Encoding standards
- Services standards
  - Application service
  - Data service
  - Mapping service
  - Routing service
  - Public transport journey planning service
  - Positioning service
  - Directory service
  - Geocoding service
  - Coordinate transformation service
  - Registry/catalogue service
  - Event notification service
  - Digital rights management and security
  - Pricing and ordering
  - Payment and billing
  - Workflow support
  - Network management
  - Natural language translation
- Network and communication standards

## 7.2 Standards Identification Process and List of Standards

The general IT standards useful for achieving the goals of the BONVOYAGE platform have been analysed. The design of the architecture will be based on the European ITS Framework Architecture<sup>1</sup> (EITSFA, short FRAME) for the e-services focusing on interoperability and intermodality. For the geographical information and geo-ITC standards based on ISO/TC 211<sup>2</sup> and OGC<sup>3</sup> (Open Geospatial Consortium) are basis for spatial Data Infrastructures (SDIs), and are currently emerging on regional, European and worldwide scale.

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<sup>1</sup> <http://www.frame-online.net/?q=the-architecture/About-the-architecture.html>

<sup>2</sup> <http://www.isotc211.org/>

<sup>3</sup> <http://www.opengeospatial.org/>

The most relevant and well-established European and international standards for all the domains of interest for BONVOYAGE platform design are ISO (TC2014, TC208 and TC211), OGC, OASIS (Organization for the Advancement of Structured Information Standards), CEN and selected de facto standards and projects of interest such as: ALERT-C, DATEX 2, DELFI, FRAME, GDF, JourneyWeb, OTA, SIRI, TPEG, Transmodel, TransXChange, etc.

Furthermore, there is a series of relevant activities (on-going or planned) involving different European Commission services and contributing the creation of the environment for providing EU-wide intermodal travel information, planning and ticketing services.

### **7.2.1 Existing frameworks**

The Directive 2010/40/EU (ITS Directive)<sup>4</sup> already envisages the possibility of developing the necessary standards in the priority areas and initiatives for providing interoperability, compatibility and continuity for the deployment and operational use of ITS.

- The priority action: “Provision of EU-wide intermodal travel information services”<sup>5</sup>

#### **7.2.1.1 Specifications under the Directive 2010/40/EU (ITS Directive)**

The requirements needed to make EU-wide intermodal travel information services accurate and available across borders, including, inter alia, possible provisions for the roles of the various stakeholders along the service chain, their procedural obligations, the various levels of services and their content, would be defined by the specifications for priority action “Provision of EU-wide intermodal travel information services”.

In the same way, the specifications for priority action “Provision of EU-wide real-time traffic information services”<sup>6</sup> would define the necessary requirements to make EU-wide real-time traffic information services accurate and available across borders to ITS users.

These specifications are undergoing a process of revision and further specification through Annexes, especially relative to data formats. It is extremely important for BONVOYAGE to track all actions in this course, and reflect them in the design.

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<sup>4</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:207:0001:0013:EN:PDF>

<sup>5</sup> [http://ec.europa.eu/transport/themes/its/consultations/2015-its-mmtips\\_en.htm](http://ec.europa.eu/transport/themes/its/consultations/2015-its-mmtips_en.htm)

<sup>6</sup> [http://ec.europa.eu/transport/themes/its/news/doc/2014-12-18-rtti/swd\(2014\)356.pdf](http://ec.europa.eu/transport/themes/its/news/doc/2014-12-18-rtti/swd(2014)356.pdf)

### **7.2.1.2 Activities under Horizon2020 “Smart, Green and Integrated Transport” – Challenge**

Projects funded under the umbrella of the Work Programme 2014-2015 of the “Smart, Green and Integrated Transport”<sup>7</sup> – Challenge under Horizon 2020 would help to overcome fragmentation, facilitate cooperation between various stakeholders involved in service provision and unlock the potential of vast amounts of transport data.

### **7.2.1.3 Activities under the Connecting Europe Facility (CEF)**

The CEF will promote new technologies and innovation, including advanced concepts for:

- Operation management, accessibility, interoperability, intermodality and efficiency of the network, including through intermodal ticketing and coordination of travel timetables;
- Efficient ways to provide accessible and comprehensible information to all citizens on interconnections, interoperability and multi-modality.

The Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regards to the processing of personal data and on the free movement of such data would face the processing of personal data, to various degrees.

### **7.2.2 *Planned initiative on availability of intermodal travel and traffic data in the EU***

Following the public hearing after the public consultation on access to multimodal travel and traffic data in the EU, a set of topics and elements were identified in order to be assessed in the future initiatives and actions to be taken in the next period of time. The question of creating better interfaces between different transport modes, also for data exchange, has been raised in several forums, and this list of elements endorse the key concepts for assuring a clear and complete opening access to travel and traffic data, respecting the principles of fairness and non-discrimination, and tackling questions of liability, data protection and protection of commercial interests.

The elements that could be addressed are:

- Ensuring access to public and private intermodal travel and traffic data;
- Improving and maximizing the availability of public and private intermodal travel and traffic data;
- Promoting and developing fully interoperable or compatible formats for data and data exchange protocols;
- Defining clear terms and conditions for the use and re-use of data.

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<sup>7</sup> <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/smart-green-and-integrated-transport>

In Table 7-1 there is a roadmap of the different activities and initiatives designed for addressing the different topics related to the BONVOYAGE objectives:

- Access and availability of intermodal travel and traffic data
- Further standardization needs evaluation
- Specs under the ITS Directive
- Horizon 2020 Smart Green and Integrated Transport work program
- Connecting Europe Facility

	Enabling the fair and equal access to multimodal travel and traffic data	Maximizing the availability of good quality multimodal travel and traffic data	Interoperable, harmonized data formats and data exchange protocols	Promoting the interconnection of existing services	Facilitating an efficient stakeholder cooperation	Showcasing the benefits of multimodal travel information, planning and ticketing services	Targeted date
Impact assessment work on access and availability of multimodal travel and traffic data							2014
Evaluating further standardization needs							2015
Specifications under the ITS Directive, priority action (a) "Provision of EU-wide multimodal travel information services"							2015
Specifications under the ITS Directive, priority action (b) "Provision of EU-wide real-time traffic information services"							2014
Horizon2020 Smart, Green and Integrated Transport Work Programme 2014-2015							After 2014
Using Connecting Europe Facility, Work Programme 2014							After 2014

**Table 7-1: Indicative timeline of planned initiatives**

## 8 BONVOYAGE VALIDATION SCENARIOS DESCRIPTION

This chapter aims at providing an overview of the cities/transport operators' environment in which the BONVOYAGE platform is going to be validated.

The context of the core cities participating in the BONVOYAGE project, Bilbao, Oslo and Rome is described to provide a better understanding on aspects related to the organization of the public transport network, existing traveller information services, ticketing and payment systems as well as freight services.

This section also provides a general description of the services directly offered by the project city/transport operators, what information they have and how this data is organized and displayed, data formats, etc., (these will be analysed in depth in WP7).

## 8.1 Bilbao

### 8.1.1 Overview

Bilbao is the capital of the county called Bizkaia, Spain, and it could be considered as the industrial and financial capital of the Basque Country. With an area of 41,60 km<sup>2</sup> and around 355.000 inhabitants, Bilbao is located right in the heart of Greater Bilbao, which is a metropolitan area that extends along the estuary of the Nervión River with a population close to 1 million.

Every day, 544.600 external movements with origin or destination Bilbao are produced. More than a half of the incoming people use the public transport (train or bus) and 2/3 of the outgoing movements are carried out by private car. Meanwhile most of the 826.500 daily internal trips are performed by walking.<sup>8</sup>

The distribution of competences model in Spain is based on decentralization, so one area's competences can be distributed among different administrations at different territorial levels (country, region, county and city). The competence distribution of different modes of transports in Bilbao can be summarized in the following way:

- Bilbao Council: Urban bus
- Bizkaia County: Interurban bus
- Bizkaia Transport Consortium: Tube
- Basque government: Tram, Train
- Spanish Government: Train

The ticketing system in Bilbao (and all Bizkaia territory) is based on the BARIK contactless card, for whose users take advantage of better prices than occasional users. There are two types of BARIK, anonymous and customized cards, latter ones with discounts for people belonging to special groups (elderly, large family...).

Urban transformation has provided a friendly environment for pedestrians with promenades (mostly along the river) for walking and cycling. A bike sharing service is running since March 2011 with 25 stations.

Due to the orography of the city and the growth population living on the hillsides, Bilbao developed an "Accessibility Plan" focused on facilitating access and mobility in these High Districts primarily for elderly and groups with special needs.

In relation to freight distribution, Bilbao city has boosted different initiatives to solve existing complex problems by implementing innovative technologies to improve urban mobility of goods.

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<sup>8</sup> Estudio de la movilidad de la Comunidad Autónoma Vasca (2011)

### **8.1.2 Existing ICT solutions and services**

The Transport Management and Information System in Bilbao allows the city to monitor and control the traffic situation. Sensors, CCTV cameras and other systems deployed in the city are connected to the Traffic Control Centre. This Control Centre centralizes the following systems:

1. CCTV Camera system which allows monitoring of traffic conditions in real time
2. Crossing in red light detection system that creates penalties for those vehicles that don't respect red lights, creating a risk to the driver himself, others drivers and for pedestrians.
3. Classification of vehicle system that provides information about traffic allowing on-line actions on the road in order to adequate the regulation to the traffic situation.
4. Traffic lights regulation system allows the regulation of traffic by scheduling all phases of traffic light. The centralization of traffic light system enables real-time monitoring and performance of the Traffic Control Centre on the elements of regulation.
5. Information system to drivers (VMP) can provide real-time information to optimize the circulation in Bilbao, showing details of: traffic conditions on major tracks, availability of parking rotation and OTA (regulated parking system), and the conditions or incidents in the street.
6. Access control to pedestrian areas - Bilbao has some pedestrian areas in which vehicle traffic is only allowed, during loading and unloading time windows or for authorized vehicles.
7. OTA system (regulated parking system) - The control system is based on parking meters located where the user makes a reservation of parking. The parking meters centralize the information on a server having connection with it through mobile operator network.
8. Support system for exploitation of Bilbobus - through continuous, instantly and automatically localization of buses network, enables its regulatory and operational control.

#### **Available services**

Though the Transport Management and Information System in Bilbao, the following information services are available (here is contemplated only the information owned by Bilbao, there is also other services information available in the MoveEuskadi platform, but is not managed by the council):

## Individual Transport

	Service's Name	Scope		
		Urban	Inter-Urban	Long Dist.
Dynamic Info	Availability for Bike-Renting	X		
	Surface Parking Availability	X		
	Pay-And-Pay Area Parking Availability	X		
	Underground Parking	X		
	Access to pedestrians areas	X		
	Traffic information	X		
Static Info	Surface Parking Facilities	X		
	Pay-And-Pay Area Parking Facilities	X		
	Underground Parking Facilities	X		
	Points to pick up / leave a rental bike	X		
	POIs	X		

*Table 8-1: Bilbao available services – Individual Transport*

## Collective Transport

	Service's Name	Scope		
		Urban	Inter-Urban	Long Dist.
Dynamic Info	ETA Elapsed Time of Arrival	Bus		
	Lines, Stops	Bus		
Static Info	Travel estimated duration	Bus		
	Route Timelines	Bus		
	Stops	Bus, Taxi, Funicular, Escalator		
	Tariff information/schema	Bus, Taxi, Funicular, Escalator		

*Table 8-2: Bilbao available services – Collective Transport*



## Open Data System

Information aforementioned is displayed in different ways: municipal website, Variable Message Panels (VMP) distributed in the bus shelters, parking access, etc.

Within the European project, Co-Cities, Bilbao deployed the Commonly Agreed Interface (CAI). Through this platform, Bilbao publishes static and dynamic information about traffic conditions, public transport network (Bilbobus) and rotation and on-street parking location and availability in an open and standard way.

With the aim of improving the urban freight distribution, Bilbao is currently working on the provision of information about loading/downloading parking location and availability and the integration into the open data system.

## Freight

Azkar is an international transport provider, currently one of the Iberian leaders in logistics industry, with over 3.000 employees supported by more than 2.000 external drivers. Azkar offers its customers a full range of transport, distribution and logistics services in the Iberian Peninsula, supported by modern automated facilities, upgraded transport equipment and innovative information technology systems.

Azkar offers a wide range of logistics services for the entire supply chain of its customers, from the origin of the goods anywhere in the world to the last mile of final distribution by road in Europe.

The following services are available through the Azkar's portal web page for the user:

- Monitor, in real time, the status and location of the freight.
- Calculate the tariff (national and international) for sending goods, indicating origin and destination as well as providing information about the package characteristics and the desired service (Azkar express, Azkar night, Azkar 10...).

	Service's Name	Scope		
		Urban	Inter-Urban	Long Dist.
Dynamic Info	Location of the freight	X	X	
	Special constraints (dangerous goods, fragile goods...)	X	X	
Static Info	Tariff	X	X	

*Table 8-3: Bilbao available services – Freight*

## 8.2 Oslo

### 8.2.1 Overview

Oslo, the capital of Norway, is located in the south east of the country, at the end of the Oslo fjord. The city is also the industrial and financial capital of the country. As of July 1<sup>st</sup> 2015, the city had a population of 652 044. However, the Oslo metropolitan area is much bigger, and includes the neighbouring county of Akershus, with a population of almost 600 000 people, along with several smaller counties and municipalities.

On a national level, more than half of the daily trips are made by car drivers, and only 8 % by car passengers. About 1/5<sup>th</sup> of daily trips are done by foot, while 5 % by bike and 10 % by public transport.

*Table 8-4: Daily journeys according to transport mode in 2013/2014 (in %)*

Mode of transport	2013/2014
By foot/walking	21
Bike	5
Car driver	55
Car passenger	8

In 2014, the public transport in Oslo and Akershus consisted of 319 million single journeys, an increase of 3, 4 % compared to 2013. The share of public transport is much higher in Oslo, than other parts of the country. In the capital 26 % of all trips are done using public transport and this number is steadily increasing.

In 2013/2014 30 % of the population has a very good public transport supply, i.e. hourly frequency of at least four departures and a distance less than one kilometre to the bus stop/terminal. There are great differences between places of living. 83 percent of people living in Oslo have a very good supply.

Oslo has an ambitious plan for its public transport. Official prognosis shows an expected increase in population of 40% in the Oslo metropolitan area within 2040. The goal is that all increase in personal traffic due to population growth, shall be covered by public transport, biking and walking. This increase has been strong for many years, but car traffic has levelled off.

The following transport modes are at the disposal of travellers using the public transport network in Oslo and Akershus:

- Urban and interurban bus
- Metro
- Tram

- Train
- Ferry

A real time information system greatly benefits drivers and travellers on public transport in the region. The system includes technology to prioritise buses and trams in intersections, as well as automatic display and announcements of the next stop. The real time information system is covering all modes of urban public transport since 2010. In the same year, installation of real information signs with voice synthesis and tactile maps was started. Work to provide real time information for all stops with bus, metro or tram is still in progress. Ruter

provides real time and travel planning data free of charge. Ruter also provides a travel planner for the entire Oslo metropolitan area including bus, metro, tram, and train and ferry options.

The ticketing system used in the Oslo and Akershus region is based on the NPRA's manual for electronic ticketing, a national standard. Although the most used ticket media is contactless cards, almost 40 % of the Oslo and Akershus transport authority's (Ruter AS) turnover happens through their ticket application for smart phones.

Oslo has already had a bike-rental arrangement for some years. This arrangement will be renewed on April 1<sup>st</sup> 2016, when the number of bikes will be doubled to about 3000, with a total of 300 bike racks.

## 8.2.2 Existing ICT solutions and services

### Road traffic

The NPRA has had a national traffic information service in operation since the early 1990's. The service is based on NPRA's five regional Traffic Management Centres (TMCs) as the coordinating actor for the service. Data on driving conditions, traffic, road works and incidents are automatically collected from roadside units (traffic and road weather stations, cameras, etc.) or reported to the TMCs by the police, contractors, media or road users. Information is processed and disseminated via different channels to end-users. Information regarding incidents, road works, restrictions and closures are registered in the national TIC system (Traffic Information Centre) and is transferred to the NPRAs DATEX node, where the information is available for service providers free of charge.

*Table 8-5: Transport mode share for different modes of public transport in 2013/2014 (in %)*

Mode of transport	Share of public transport journeys
Taxi	4,6
Bus	54,9
Tram	6,8
Metro	14,6
Train	14,8

Traffic information to road users is one of the tools the NPRA uses to influence the choices and behaviour of road users, in order to achieve overall policy objectives of a more efficient transport system with good accessibility, mobility, traffic safety and better environment. An overall objective is that traffic information from the NPRA should be of high standard and a uniform level of quality. In addition, they should be easily accessible to the public.

In May 2014, the NPRA launched a national DATEX-node where all real time road and traffic data are available in DATEX II version 2.0 format. Currently, CCTV images and information from the national traffic information system about incidents, road works and driving conditions are available to media, service providers and other stakeholders free of charge.

The following systems and services are in operation related to the road network operation:

1. Tunnel surveillance, control and traffic management systems for 52 equipped tunnels, automatic incident detection (AID) in 24 of these tunnels and in all 1700 CCTV cameras. The traffic management equipment is traffic signals, lane control signals, variable direction signs and graphic information panels. Approximately 25 information panels are located at strategic location on the main road network and can give alerts and guidance to the car traffic during incidents, events and roadworks. These systems and services are particularly important in the 5-year period from 2015 to 2020 due to a large upgrading project to reach a uniform security level of road tunnels.
2. Traffic control on street level is a responsibility for both the local NPRA office and Oslo City administration. Traffic signals are centrally controlled and coordinated.
3. Travel time registration of road traffic covers the main arterials and the main ring road of Oslo. More than 80% of all vehicles and 100% of heavy vehicles in the Oslo area are equipped with on-board tags for tolling. This and a large number of dedicated antenna installations represent the infrastructure for this service. The dissemination is through a number of channels, including both internet and the information panels mentioned above; when they are not in use for incident management. The travel time data is available in real time on the NPRA Datex Node and re-used in a number of third party services.
4. Traffic data is collected from fixed counting stations in real time and will soon be available on the NPRA Datex Node. This is data containing volumes, classification and speed. In combination with the travel time data it will describe the quality of traffic flow in each direction and lane and additionally be a source for forecast models and incident detection.
5. NPRA runs a web-camera service with more than 1500 cameras available. An on-going project aims to upgrade the service to reach an image update of one second. These images are part of the national traffic information service and are available for re-use on the Datex node.

6. The national traffic information service is a responsibility of NPRA. The information in the Oslo area has a high quality of service. The TMC generates the textual messages based on input from sensors, police, maintenance companies and the public. Traffic information will soon be complemented by a map-based service. All data used in the service are open for re-use.
7. Public Transport signal priority is operational in the majority of intersections in Oslo. This system (SIS) integrates with the systems for real time information and traffic management for PT; based on GPS positioning.
8. A modern Road weather monitoring system covers the main road network of Norway. The primary data source is app. 350 weather-monitoring stations. Contributions and input from the National Meteorological Institute enhance the data quality. The system generates prognosis for road weather and driving conditions.

### **Public Transport**

The public transport management is the responsibility of Ruter, the joint Public Transport organisation for Oslo and Akershus counties. The following systems and services are in operation:

1. Real time information of arrivals and deviations is available as web-based services and on graphic information signs at all major stops and terminals.
2. Fleet management for all modes of public transport is based on GPS positioning and closed radio communication. All units are equipped with on-board computer integrated in the system.
3. An interoperable electronic ticketing system comprises all public collective transport in the Oslo-Akershus area, also local ferries and the local train services run by the national railway operator NSB. The system includes ticketing apps for smart-phones offering both single trip and period tickets.

### **Other transport related services**

1. A national information service with static and real-time data for charging stations is managed by the organisation for electric vehicles. In Norway and in the Oslo area in particular the amount of electric vehicles has increased substantially over the last years. This is due to the national policy to fight climate change with high economic incentives for purchase and use of non-fossil propulsion vehicles.
2. City Bike information is disseminated both as static and real-time information by the company. As part of a new contract, the number of bikes and bike-stands will increase. Renewed data collection and dissemination will be a part of the new contract with the City of Oslo.

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3. Parking information is provided by the operator companies. There is no comprehensive information service for dynamic information on vacant capacity or closures. Static and dynamic information of parking locations is not available.

Available data and information services that is open for re-use and in machine-readable formats.

### Individual Transport

	Service's Name	Scope		
		Urban	Inter-Urban	Long Dist.
Dynamic Info	Traffic information messages	X	X	X
	Travel times in road traffic	X	X	
	Road weather information		X	X
	Web camera images	X	X	X
	Traffic volume and speed at fixed points	X	X	X
	Charging station availability	X	X	X
	City bike availability	X		
Static Info	Road network and network characteristics		X	X
	Tolling stations and fees	X	X	X
	Charging station location	X	X	X
	City bike stands location	X		

Table 8-6: Oslo available services – Individual Transport

### Collective Transport

	Service's Name	Scope		
		Urban	Inter-Urban	Long Dist.
Dynamic Info	Time of Arrival or delay	X	X	
	Deviations in lines, schedules and stops	X	X	
Static Info	Stops position and characteristics	X	X	X
	Route schedules	X	X	X
	Fare tariffs and zone information	X	X	X

Table 8-7: Oslo available services – Collective Transport

## 8.3 Rome

Rome validation scenario intends to outline the framework of the city mobility “environment” with respect to available transport passenger services and their usage, ticketing systems as well as mobility ICT-based solutions and services.

For this reason, general information about transport modes other than rail transports operated by Trenitalia has been included. More detailed information has been provided for rail services. It shall be remarked that for the BONVOYAGE project validation phase it will be possible to provide only information directly owned by Trenitalia and related to rail services.

### 8.3.1 Overview

Rome is the capital of Italy and of the Lazio Region. It is located in the central-western part of the Italian peninsula and is the most populated and largest city of the country: it has a population of 2.9 million residents within an area of 1,285 km<sup>2</sup>. However, considering the whole area of the Metropolitan City of Rome, population amounts to 4.3 million residents overall.

Available statistics (year 2013) about mobility in Rome show that the Metropolitan City of Rome registers overall 4.500.000 daily journeys, of which:

- 95.3% is performed within the city of Rome;
- 4.6% is performed within the Metropolitan City of Rome area;
- 0.1% is outgoing journeys from the Metropolitan City of Rome area.

Concerning to the usage of different transport modes, more than 50% of Rome residents move by car and 15% by motorbike. Local public transports usage accounts for 28.5%, of which 20.3% is road transport<sup>9</sup>.

The following transport modes are available for passengers using the LPT in the Metropolitan City of Rome:

- Urban buses, operated by ATAC;
- Regional buses, operated by a multitude of companies (e.g. COTRAL);
- Subway, operated by ATAC;
- Tram, operated by ATAC;
- Train, operated by Trenitalia and ATAC.

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<sup>9</sup> Roma Mobilità, STATUS – Scenarios transport terms and Environment for a Sustainable Urban Transport, Transport planning in Rome, March 2015.



For all of them, a picture showing the length, the usage and the accessibility is provided by the table below.

**Table 7-8: Metropolitan City of Rome - Public transports data (2014)<sup>10</sup>**

Transport mode	Network length	Daily passengers	Active LPT accessibility	Passive LPT accessibility	Modal LPT efficiency
Urban buses	2,041 km	796,000	49%	53%	7,4%
Regional buses	1,847 km	178,000	77%	23%	1,6%
Subway	58 km	715,800	21%	53%	7%
Tram	36 km	94,000	39%	60%	0,9%
Train	872 km	563,000	64%	23%	5,2%
Total	4,893 km	2,389,000			

*Active accessibility: passengers reaching the LPT stop / station without using another public transport mode (e.g. by car, bike, walking).*

*Passive accessibility: passengers dropping off the LPT and reaching their final destination without using another public transport mode (that is, by walking).*

*Modal efficiency: percentage of overall daily journeys performed through the LPT mode.*

A more detailed picture can be provided for rail transport services operated by Trenitalia.

Importantly, the city of Rome is the core and main point of departure / arrival of 9 railway lines (hereinafter FL) crossing the Lazio Region:

- FL1: Orte – Fara Sabina – Roma – Fiumicino Airport;
- FL 2: Roma - Tivoli - Pescara
- FL 3: Roma - Cesano - Viterbo
- FL 4: Roma - Ciampino - Frascati/Albano/Velletri
- FL 5: Roma - Civitavecchia - Pisa
- FL 6: Roma - Cassino - Caserta
- FL 7: Roma - Formia - Napoli
- FL 8: Roma - Nettuno
- Roma Termini Station - Fiumicino Airport non-stop.



**Figure 7-1: Lazio Region railway lines**

<sup>10</sup> Roma Mobilità, STATUS – Scenarios transport terms and Environment for a Sustainable Urban Transport, Transport planning in Rome, March 2015.

Figure 8-1 shows the extension and the path of the whole Lazio Region railway system (it includes the 9 lines mentioned above as well as three additional railway lines not crossing the Metropolitan City of Rome).

The following data provide an overview of the rail services offer and usage within the Region:

- overall railway lines length: 1207 km;
- 895 trains running from Monday to Friday;
- 360,000 passengers per day;
- 108,000,000 passengers per year;
- 163 served destinations;
- 170 stations;
- 30 ticket selling points.

Additionally: 70% of trains offer the possibility to carry bikes; 74% of trains offer equipped coaches for impaired people; 96% of trains are electric trains<sup>11</sup>.

Importantly, the two main stations in Rome (Rome Termini and Rome Tiburtina) register more than 6000 journeys per day on average.

To complete the picture, car sharing service available within the City of Rome area shall be mentioned. It was firstly introduced in 2010 by the Rome Mobility Agency and its popularity and usage is gradually increasing. Currently, three different operators provide car sharing services in Rome: Rome Mobility Agency; Car2Go; Enjoy.

Concerning the ticketing systems, transport service providers operating within the Metropolitan City of Rome and Lazio Region have set-up a ticketing system offering passengers:

- Several types of tickets and monthly plan depending on: the ticket validity time (e.g. single journey ticket, 24 hours ticket; weekly ticket, monthly and yearly plan); the areas of the Metropolitan City of Rome and / or Lazio Region the passengers wants to cover (the Metropolitan City of Rome is divided into six areas, whereas Lazio Region is divided into seven areas);
- Integrated single tickets or monthly plan. These are based on specific commercial agreements on transport operators aimed to ease the usage of different transport modes available in the Lazio Region.

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<sup>11</sup> Trenitalia Services Catalogue for Lazio Region, June 2015.

Paper tickets and electronic tickets (including smart cards and tickets purchased and stored on users' mobile devices) co-exist for transports operated within the Metropolitan City of Rome and Lazio Region.

Specifically, the Electronic Regional Ticket is available for all regional trains operated by Trenitalia. It can be purchased on Trenitalia website or through Trenitalia App (a detailed description is provided in Section 8.3.2). The Electronic Regional Ticket can be showed on user smart phone or tablet without need to print it.

### **8.3.2 Existing ICT solutions and services**

#### **Rail services**

ICT equipment available on Lazio Region railways network is composed of:

- Traffic Management and Control System, that enables an integrated management of traffic, diagnosis, maintenance, information provision and video-monitoring to ensure maximum efficiency in rail traffic problems resolution;
- Remote traffic management system, covering 602 km of the overall railway lines and including both the Traffic Management and Control System and the Centralised Traffic Control;
- European Rail Traffic Management System, covering 139 km of the overall railway lines<sup>12</sup>.

Available ICT services related to rail mobility are ViaggiaTreno and Trenitalia App, both provided by Trenitalia and accessible by users, free-of-charge.

**ViaggiaTreno** is a web platform allowing to search for and display information on medium and long haul trains. It provides information related to a specific train (e.g. departing / arrival station and time, intermediate stops) and its progress in real time. It also provides updated news on national and regional traffic status, showing the status of all trains that are traveling (e.g. on time, delays), services interruptions or modifications, as well as information on weather conditions for all provincial capital cities. Through ViaggiaTreno users can also plan a train journey, inserting their departing and arrival stations, date and preferred time range.

**Trenitalia App** available for both, iOS and Android platforms. Trenitalia App offers a wide range of functionalities, ranging from rail journey planning to ticket reimbursement requests. Specifically, Trenitalia App provides rail traffic information: time of departure and arrival of the train from / in

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<sup>12</sup> Lazio Region, Scenarios and Vision Preliminaries at Drafting of Regional Plan for Mobility, Transport and Logistics, July 2014.

selected stations; news and real time updates about the status of rail circulation (e.g. circulation slowed / interrupted), specific trains status (e.g. train not departed yet, train late / early, departing / arrival platform) and planned measures on railway lines (e.g. strikes). It enables to perform a rail travel research, planning and booking, showing information on travel price (also including best prices and related services), duration and number of obtainable loyalty scores (where applicable). Train ticket can be purchased through Trenitalia App using a credit / debit card or a PayPal account. Purchased ticket can be received and stored on user smartphone. In addition, Trenitalia App also allows modifying reservations, asking for the reimbursement of the ticket purchased.

### **Road services<sup>13</sup>**

ICT equipment available for the City of Rome road traffic includes:

- Urban Travel Time (UTT) system, which monitors travel time on a 150 km road path within the City of Rome. The system is composed of cameras equipped with software for number plate recognition and relies on a specific algorithm for travel time calculation. Resulting information are published on “Muoversi a Roma” service (described below) to ease users mobility decision making;
- Road monitoring system, composed of 62 measurement stations and around 2500 sensors positioned under road surfaces. Sensors provide data on a periodic basis (every 5 minutes) and feed a database, where all information coming from traffic lights, limited traffic zones gates and panel systems are gathered and assembled. Data are stored within an “archive” and represented on a GIS database, providing a picture of road services status. The road monitoring system provides information on vehicle flows (number of vehicles per hour) and their speed.

Rome Mobility Agency provides a real time road transports information service called “Muoversi a Roma”, that only concerns the City of Rome area. It is available on a web platform and App for mobile devices; user can access it free-of-charge. The service provides real time news on bus, tram, subway and regional train lines, traffic information, limited traffic zone areas as well as parking availability in defined parking areas within the city. For instance, Muoversi a Roma includes a dedicated functionality to monitor and release information on bus waiting time for almost all bus stops within Rome area. Information is gathered through the AVM system (a bus monitoring satellite system), installed on most of buses; user can search for envisaged waiting time by inserting the code associated to the specific bus stop. A journey planning functionality is also available.

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<sup>13</sup> Lazio Region, Scenarios and Vision Preliminaries at Drafting of Regional Plan for Mobility, Transport and Logistics, July 2014; Rome Mobility Agency <https://www.agenziamobilita.roma.it/it/servizi/centrale-mobilita/>

Open Data concerning road public transports in Rome are available in GTFS format.

Available information that can be provided for the validation scenario is listed in *Table 8-9: Rome available information for rail services* below. This information is available in GTFS format and only concerns rail transport services operated by Trenitalia.

### Collective Transport

	Service's Name	Scope		
		Urban	Inter-Urban	Long Dist.
Dynamic Info	ETA Elapsed Time of Arrival		X	X
	Generic Alerts		X	X
	On demand alerts		X	X
Static Info	Travel estimated duration		X	X
	Route Timelines		X	X
	Transport on demand		X	X
	Tariff information/schema		X	X

*Table 8-9: Rome available information for rail services*

## 1 ANNEX 0: Templates Used

### List of Use Cases Template

The following template (Table A0-1: List of Use Cases template) is used to list all the Use Cases concerning to BONVOYAGE. It is used to give a quick overview of the Use Cases that will be implemented.

UC ID	USE CASE NAME	SHORT DESCRIPTION
<i>Unambiguous identification code, according to the format: UC_XX_YY</i>	<i>Insert here a self-describing name for the Use Case.</i>	<i>Provide a short description of the Use Cases.</i>

*Table A0-1: List of Use Cases template*

### List of Stakeholders Template

The following template (Table A0-2: List of Stakeholders template) is used to describe all the stakeholders involved in BONVOYAGE

STAKEHOLDER	DESCRIPTION
<i>Insert here unambiguous and self- describing actor's name.</i>	<i>Provide a short description of the stakeholder, and optionally specific examples.</i>

*Table A0-2: List of Stakeholders template*

## User Requirement Collection Template

The User Requirement template follows the next format:

**ID:** The requirement ID is unique throughout BONVOYAGE project and its structure is UR.XX

**Title:** Meaningful and short title for the requirement

**Description:** Description of the specific requirement, no more than 30-50 words in length, easy to read and understand and not ambiguous.

**Cluster:** Set to which the requirement belongs to (cluster can be intended as a big set of a multitude of requirements)

**Sub-Cluster:** Sub-set to which the requirement belongs to (sub-set can be intended as a smaller and more specific set of a multitude of requirements)

**Category:** Two main categories of requirements have been identified.

- **Functional requirements:** they describe what the system has to do in order to enable a specific functionality/operation;
- **Non-functional requirements:** they describe how the system shall provide a specific functionality/operation. Non-functional requirements may be distinguished in the following sub-categories:
  - Look and feel: it relates to the user interface that shall be in line with the envisaged template;
  - Usability: it relates to the user-friendliness;
  - Performance: it relates to the quality level to be respected and the time needed to perform a specific functionality/operation (e.g. a payment transaction shall not take more than 3 seconds);
  - Efficiency: it relates to the possibility to access functionalities, services or products (e.g. a specific product shall be accessible at any time);
  - Maintainability and support: it relates to the necessary features to support a specific functionality/service or product;

- Security: it relates to security features, expressed in terms of confidentiality, integrity and availability;
- Cultural, Political and Legal.

**Domain:** In the BONVOYAGE project we identify three main fields (Individual Transport, Collective Transport or Transportation of goods).

**Priority:** The Importance is expressed according to two parameters: Essential vs. Optional.

**Use Case:** Use case to which the requirement refers to.

The following template (Table A0-3: User Requirements template) was used to collect all the Requirements concerning to BONVOYAGE

ID	TITLE	DESCRIPTION	CLUSTER	SUB CLUSTER	CATEGORY	DOMAIN	PRIORITY	USE CASE

*Table A0-3: User Requirements template*



## Use Case Collection Template

The following template (Table A0-4: Use Case collection template) is used to describe a Use Cases in detail:

USE CASE ID	UC_XX_YY
<b>Title</b>	Meaningful title for the users
<b>Description / Goals</b>	<ul style="list-style-type: none"> <li>- Overview: brief description</li> <li>- Purpose and Goal: which is the intention of the Use Case</li> <li>- Significant picture (optional)</li> </ul> <p><i>Example:</i></p> <p><i>A citizen wants to send goods from point A to B</i></p>
<b>Constraints</b>	<p>Describe all the restrictions to be taken into to run the Use Case.</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> <li>• <i>Not all the cities/towns have green transport means</i></li> <li>• <i>Transport means capacity could not be enough for the group</i></li> </ul>
<b>Actors</b>	<p>List of actors involved</p> <p><i>Example:</i></p> <p><i>Citizen, delivery company, driver</i></p>
<b>Pre-conditions</b>	<p>Organizational or technical conditions that have to be given to perform the Use Case</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> <li>• <i>Registration is needed to book the service.</i></li> </ul>
<b>Main Flow / Activity step Description</b>	<p>Activity steps</p> <p><i>Example:</i></p> <p><i>1. Client inputs relevant data: origin, destination, weight, size of the</i></p>

	<p><i>package</i></p> <ol style="list-style-type: none"> <li>2. <i>BONVOYAGE shows possible choices with related info (cost, time, consumption)</i></li> <li>3. <i>User selects the preferred option</i></li> <li>4. <i>User performs the payment.</i></li> <li>5. <i>Transport operator gets the request and send received details.</i></li> </ol>
<b>Post-conditions</b>	<p>Possible states of the system after the Use Case execution.</p> <p><i>Example:</i></p> <ul style="list-style-type: none"> <li>• <i>BONVOYAGE app stores a report of the delivery</i></li> </ul>
<b>Alternative Flow</b>	<p>Alternative flow defines exceptional behaviour that can interrupt the normal flow. Often alternative flows indicate what is to be done under error conditions. To determine alternative flows, ask yourself, “What could possibly go wrong?” for each of the actions in the main flow and the sub-flows</p> <p><i>Example:</i></p> <p><i>4a. [Payment isn’t successfully performed]</i></p> <p><i>4a1. System asks you to input another payment method</i></p> <p><i>4a2. The flow continues with step 4</i></p>
<b>User requirements</b>	<p>URXX Title of requirement</p> <p>URYY Title of requirement</p>

**Table A0-4: Use Case collection template**

## 2 ANNEX 1: BONVOYAGE General Concepts

Domain	Capabilities	Range	Transport Modes	Actors
<b>Individual Transport</b>	<p><b>Pre-trip phase</b></p> <ul style="list-style-type: none"> <li>- User request retrieval: each user request contains the following information: origin, destination, explicit travel preferences (access difficulty, special needs, etc.)</li> <li>- Identification of the user's implicit travel preferences (favourite transport modes, propensity for green mobility, etc.) on the basis of the profile automatically assigned to the user by the platform</li> <li>- Origin-destination multi objective trip planning depending on (i) user request (origin, destination, explicit travel preferences), (ii) user's implicit travel preferences and (iii) data from the transport operators and service providers about possible travel solutions</li> <li>- Displaying optimal travel solutions in a personalized way, i.e. ranked on the basis of the profile assigned to the user; each travel solution is presented along with pre trip information: precise trip description, travel estimated</li> </ul>	<p>Long distance</p> <p>Interurban</p> <p>Urban</p>	<p>Private vehicle</p> <p>Private vehicle Car-sharing Car-pooling</p> <p>Bike, Walking</p>	<p>Transport operators, Service providers</p> <p>Private drivers (Client)</p>

	<p>duration and price, and environmental impact (expected carbon dioxide equivalent emission)</p> <ul style="list-style-type: none"> <li>- Alerts: operators push this info (promotions, on demand alerts ...)</li> </ul> <p><b>On trip phase</b></p> <ul style="list-style-type: none"> <li>- Navigation features</li> <li>- Static information (parking facilities, POI, electric/gas station ...)</li> <li>- Dynamic information (ETA, traffic info, weather, parking availability info, energy charging availability, route incidents, POIs, etc.)</li> <li>- Intermediate trip re-optimization depending on dynamic information</li> </ul> <p><b>Post trip phase</b></p> <ul style="list-style-type: none"> <li>- User feedback retrieval</li> <li>- Displaying post-trip information: actual trip description, travel duration, price, and environmental impact (actual carbon dioxide equivalent emission)</li> </ul>			
<b>Collective Transport</b>	<p><b>Pre-trip phase</b></p> <ul style="list-style-type: none"> <li>- User request retrieval: each user request contains the</li> </ul>	Long distance	Ship, Airplane, Train, Bus	Transport Operators, <b>Service providers</b> (think Expedia, or

	<p>following information: origin, destination, explicit travel preferences (access difficulty, banned travel modes, group travel, etc.)</p> <ul style="list-style-type: none"> <li>- Identification of the user's implicit travel preferences (propensity for green mobility, propensity for paying, etc.) on the basis of the profile automatically assigned to the user by the platform</li> <li>- Origin-destination multi objective and multi modal trip planning depending on (i) user request (origin, destination, explicit travel preferences), (ii) user's implicit travel preferences and (iii) data from the transport operators and service providers about possible travel solutions</li> <li>- Definition of suitable multi modal tariff schemes depending on (i) user's implicit travel preferences and (ii) optimal travel solutions</li> <li>- Displaying optimal travel solutions in a personalized way, i.e. ranked on the basis of the profile assigned to the user; each travel solution is presented along with pre trip information: precise trip description about travel exchanges, travel estimated duration and price, and environmental impact (expected carbon dioxide</li> </ul>	<p>Interurban</p> <p>Urban</p>	<p>Train, Bus, Car-pooling (psgr.)</p> <p>Bus, Tram, Metro, Car-pooling (p), taxi</p>	<p><b>different, competing ticketing services for the same A-to-B trip), Passenger (Clients)</b></p>
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	<p>equivalent emission)</p> <ul style="list-style-type: none"><li>- Alerts: operators push this info (promotions, incidents, on demand alerts...)</li><li>- Buy tickets for events if the organisation responsible for organising or managing the event has established an agreement or a partnership with one of the transport operators that have joined the BONVOYAGE platform.</li><li>- Tariff calculation, payment</li></ul> <p><b>On trip phase</b></p> <ul style="list-style-type: none"><li>- Dynamic information (ETA, route changes, ...)</li><li>- Intermediate trip re-optimization depending on dynamic information</li><li>- Alerts: operators push this info (promotions, incidents, on demand alerts...)</li></ul> <p><b>Post trip phase</b></p> <ul style="list-style-type: none"><li>- User feedback retrieval</li><li>- Displaying post trip information: actual trip description, travel duration, price and environmental impact detailed by transport modes</li><li>- Reimbursement</li></ul>			
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<b>Transportation of goods</b>	<p>User request retrieval: each user request contains the following information: description of the good, origin, destination, special constraints (dangerous goods, fragile goods, etc.), travel preferences (speed)</p> <p>Origin-Destination routes</p> <p>Static information (Companies, Type of Services, routes, tariff)</p> <p>Dynamic information (location of freight, alerts, route changes, promotions...)</p> <p>Freight exchange</p>	<p>Long distance</p> <p>Interurban</p> <p>Urban</p>	<p>Ship, Airplane, Train</p> <p>Trucks</p> <p>Vans</p>	<p>Fleet operators</p> <p><b>Companies, individual users (clients)</b></p>
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*Table A1-1: BONVOYAGE General Concepts*

### 3 ANNEX 2: Benchmarking process

**Benchmarking activity** was carried out following 5 steps:

1. Identification of mobility and travel platforms / Apps to be analysed
2. Analysis and mapping of functionalities of possible interest for BONVOYAGE
3. Comparison of how same / similar functionalities are shaped in different platforms / Apps
4. Outline of how each functionality of interest shall be shaped in BONVOYAGE
5. BONVOYAGE requirements description

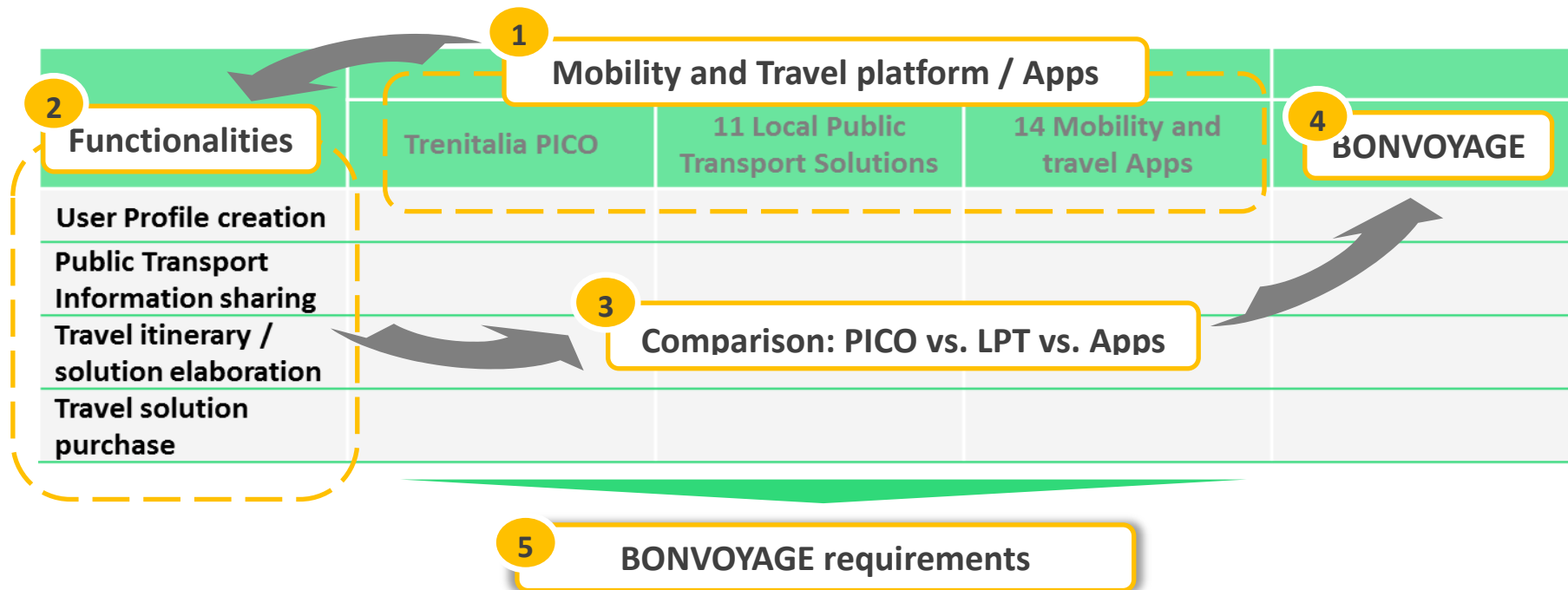


Figure A2-1: Benchmarking process



### Integrated Commercial Platform (PICO) – Technology Provider Perspective.

Macro-Categories (area)	Categories (sub-area)	Functionality (entity)	Description
<b>Configuration</b>	Price Arrangement (configuration)	Charge	Basic modality for price calculation, according to different parameters established by the Service Provider (price parameters may differ according to the Tariff used - e.g. rail services may use Km and regions as parameters).
	Offer Arrangement (configuration)	Offer	It matches Marketplace Services with tariffs to be used for price calculation. The basic Offer is the one on the Marketplace Services.
		Promotion	Special type of Offer with respect to price, governing rules and time validity.
	Service Arrangement (configuration)	Marketplace services	It lists Trenitalia products, rules Offer, "Services Composition" and Travel solutions (on the basis of parameters established by Business Unites or provision restrictions). It is integrated with Service Providers to define services, solutions and supply modalities.
	Selling channels setting	Selling points (Railways Station Ticket Offices, Travel Agencies)	They mediate customers' interaction with Trenitalia, allowing for more or less direct interaction. Each vending channel shows different profile configuration capabilities and has its own processing rules.
		Call Centres	

Macro-Categories (area)	Categories (sub-area)	Functionality (entity)	Description
		Internet B2B	
		Internet B2C	
		Mobile	
	Customer setting (it defines customers functional profile and their accessibility to specific application functionalities).	Customer functional profile (non-anonymous)	It describes customers' categories (that are managed by the CRM) and defines profile categories. These latter determines different "eligibilities" to the purchase of specific offers and to specific services accessibility.
		Customer functional profile -anonymous	Customer profile may be anonymous or based on a category (e.g. kids, families).

Macro-Categories (area)	Categories (sub-area)	Functionality (entity)	Description
	Operator setting (it defines Operator behaviour through the identification of functional applications to whom the Operator has access and the way he uses them).		
Client commercial		Customer travel preferences	Customer preferences related to the travel and searching features (they are parts of customer commercial profile).

Macro-Categories (area)	Categories (sub-area)	Functionality (entity)	Description
profile (managed by the CRM)		Customer loyalty	Customer loyalty (e.g. scores gained) is managed through the creation of customer commercial profile, that is also integrated on the CRM.
		Customer	It is associated to well-defined Customer functional profile, travel preferences and loyalty.
Vending	Electronic values	Bonus	Electronic value granted as compensation.
		Electronic credit	They are associated to a specific customer.
		Voucher	Special type of electronic value (e.g. Coupon). It may be anonymous.
		Chargeable card	Special type of electronic value (anonymous or associated to an electronic Wallet) where it is possible to charge credit through the purchase of commercial offer (e.g. but 50 € and get 60 € charge).
		Electronic Wallet	It gathers and manages all Electronic Values belonging to a Customer.
	Products providers	Commercial Train	Commercial perspective of a commercial train.
		Coach	Train basic unit to whom "Composition Services" are associated (Composition services are the ground for Marketplace services commercial offer).
		Other services	

Macro-Categories (area)	Categories (sub-area)	Functionality (entity)	Description
		Car rental	
		Hotel	
		Events	
		Composition services	Provides internal representation of physical resources necessary to make Marketplace Services available to the customer.
		Trenitalia Provider	Trenitalia services general provider.
		Virtual Train	It is associated to a commercial train and defines the number of coaches on the basis of selected journeys (it is strictly related to booking and resource management systems).
	Price calculation engine (it manages prices calculation)	Price	It is calculated on the basis of a specific "Context Solution" and specific rules (e.g. customer profile, vending channels, offers/promotions, service availability). It is calculated in two steps: 1) basic price (depending on the tariff associated to a service); 2) final price (following the application of offers/promotions to the basic price).
	Solution drivers	Provider	Every Marketplace service provider (including rail and non-rail service providers). Each provider is responsible for its own services supply, availability calculation, booking and inventory management). Providers may be internal and external to Trenitalia.

Macro-Categories (area)	Categories (sub-area)	Functionality (entity)	Description
		Location	It is a relevant commercial location, defining a route endpoints. Different types of services may be associated to it (e.g. hotels, parking).
		Means of transport	
		Path	It is calculated on the basis of Travel Search Criteria and may include different transport modes.
		Search criteria	It gathers all criteria used to look for a travel solution. They may be defined according to channel profile, customer profile or Trenitalia conditions (e.g. offers).
		Route	It is a part of a path. Route is covered through a single transport mean.
	Travel and solution	Context Solution	All the context information associated to a Purchase Solution. The following elements can be identified: search criteria, access channel and path (this latter only for Travel Solution).

Macro-Categories (area)	Categories (sub-area)	Functionality (entity)	Description
		Travel	It manages travel experience through the following phases: selection, purchase, pre-travel, travel, post-travel. Access to the following information is provided: orders, transactions, travel experience attachments, travel solutions and related travel ticket. It gathers customers, travellers and operators and it is fundamental for the management of communities associated to the travel.
		Travel solution	It is the travel search final result. It gathers different services operated by different providers. It is the purchasing unit (it can be added to other travel solutions, which compose the Travel.) Several travel solutions may be purchased separately or altogether.
		Travel Experience Attachment	Additional information associated to a Travel (e.g. links to advices on the travel). These are chosen by the Customer or proposed by Trenitalia.
		Waiting List	List of Customers waiting for booking.
		Ledger Transaction	Ledger transaction associated to a Customer purchase.

Macro-Categories (area)	Categories (sub-area)	Functionality (entity)	Description
		Traveller	A single Customer can manage other Travellers (travelling with him - e.g. family members) or can be associated to specific objects (e.g. cars) or animals.
		Bill - Receipt	
		Booking Service	It is a special type of commercial services.
		Ticket	It defines and manages how a Customer can use a specific commercial service.

**Table A2-1: Integrated Commercial Platform (PICO) – Technology Provider Perspective benchmark**



## Integrated Commercial Platform (PICO) – End-user technology provider and transport information provider perspective

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
<b>Search for Time Scheduling/Availability</b>	<b>Provide information</b>	Provide periodic information	Defined in the App sheet	Interaction between the user and PICO system in order to provide information on trains' regularity.
		Provide information about Layout Train seats	Provide information about available seats layout of any means of transportation (with bookable seats). The user has the opportunity to choose and select the seat.	How the customer interacts with PICO system to require information of seats arrangement within a coach, related services and commercial features.
		Provide information about the "State of traffic's circulation"	Defined in the App sheet	How the customer interacts with PICO system to search for train traffic status.
		Search for commercial conditions	Opportunity to search for information about commercial conditions(e.g.: refund process/ticket change, reimbursement) before and after	How to look for and access information related to vending rules and conditions (rules are shown on a document supported by helping tools).

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
			the travel	
		Provide information about Planned Events	Defined in the App sheet	Interaction between the customer and PICO system to require information on Trenitalia planned events (e.g. works, strikes, deviation) that hinder regular circulation. The research shall provide information on real-time traffic status in order to minimise inconveniences.
		Provide information about External Events	Defined in the App sheet	How the customer interacts with PICO system to require information on planned external events (e.g. exhibitions, fairs, conferences) so that the best solution can be proposed to the customer.
		Provide information about travel solutions	Defined in the App sheet	Research modalities of travel solution information based on departure and arrival station.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Search for tariff & Best Price	Defined in the App sheet	Research of travel solution information based on the following criteria: offer, prices range, best price, best universal price, best regional price, tariffs, tariffs for specific channels, commercial card utilisation, etc. Solutions may include international train as well as national trains operated by different companies.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
	<b>Build and adjust inventories</b>	Adjust/Update Inventory ( The requirement is related to the platform's management)	Opportunity for the transport operators to publish and adjust the list of products offer on BONVOYAGE platform (seats, linked services, commercial ownership – e.g.: seat reserved for disabled)	How to modify configuration of a specific section within a coach, with respect to seats features and proximity.
		Define seats positioning and numeration		Process to be followed to number or define seats priority within a coach.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Define the services linked to any individual seats		Process to be followed to associate specific services to specific seats within a coach.
		Define ownership commercial linked to any individual seat		Process to be followed to associate commercial features to specific seats within a coach.
		Manage the bunks and bed wagons' layout		Process to be followed to modify the configuration of a night coach (e.g. couchettes addition or elimination, proximity of beds within a coach).
		Define profiles to establish travel solutions (The requirement is linked to the platform management)	Process to be followed to manage search engine parameters in order to give preference to defined travel solutions.	Process to be followed to manage search engine parameters in order to give preference to defined travel solutions.
		Manage intermodal services related to other transport operator		Process to be followed to manage multi-modal services: to define association between stations and locations where the service can be enjoyed.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Differentiate travel solutions based on the users profiling. (The requirement is linked to the platform management)	How to diversify travel solutions defined through profiles associated to different channels.	How to diversify travel solutions defined through profiles associated to different channels.
	Time uploading	Planned time uploading provided by the transport operators(timetable and time of variation over time- VOT) (The requirement is linked to the platform management)	How to manage the timetable initial upload, while maintaining previous versions.	How to manage the timetable initial upload, while maintaining previous versions.
		Upload/updates information/updates on the circulation's evolution provided to BONVOYAGE's platform (The requirement is linked to the platform's)	How to manage information uploads on traffic status (e.g. delays planned on the medium-long term in order to: provide adequate information to the customer; offer effective travel solutions - new travel solutions following	How to manage delays planned on the medium-long term in order to: provide adequate information to the customer; offer effective travel solutions (new travel solutions following rescheduled timetables).

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		management)	rescheduled timetables).	
	<b>Adapt times and circulation conditions</b>	Upload variations over time (VOT) in Planning (until 4 days before train departure)		How to manage train schedule variation within 4 days before departure. Variation can be related to: departure/arrival station, intermediate stations, departure/arrival time, and train addition/cancellation.
		Align departure and		How to update train departure/arrival

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		arrival delays		schedule within stations.
		Provide precise information about the transportation's starting point (The requirement is linked to the platform's management)	Insert precise geographic coordinates to identify the starting point of the transportation (rail, stop address).	How to update effective platform for train departure/arrival.
		Upload variation over time VOT in Operations Management		How to manage train schedule variation from 4 days before departure up to train departure. Variation can be related to: departure/arrival station, intermediate stations, departure/arrival time, and train addition/cancellation.
	<b>Adapt train's composition to the circulation's conditions</b>	Change the planned composition of the train		How to update planned changes in train composition.



Macro-Categories	Categories	Functionality	BONVOYAGE	Description
<b>Prices and Commercial Offers</b>	<b>Modify tariff, offering and offers</b>	Insert offer and promotions related to price profiles (The requirement is linked to the platform's management)	How to insert tariffs profile, offers and promotions, while tracking all the users involved in the process. Definition of rules for tariffs range to which offers relate.	How to insert tariffs profile, offers and promotions, while tracking all the users involved in the process. Definition of rules for tariffs range to which offers relate.
		Cancel Promotions and Offers Price Profiles (The requirement is linked to the platform's management)	How to delete tariffs profile, offers and promotions, while tracking all the operators involved in the process.	How to delete tariffs profile, offers and promotions, while tracking all the operators involved in the process.
		Adjust Promotions and Offers Price Profiles (The requirement is linked to the platform's management)	How to modify tariffs profile, offers and promotions, while tracking all the operators involved in the process.	How to modify tariffs profile, offers and promotions, while tracking all the operators involved in the process.
	<b>Define pricing rule</b>	Define pricing modalities (OD fixed, per km, zone). (The requirement is linked to the platform management)	How to build a price, based on necessary elements for tariffs, offers and promotions definition. All prices modifications shall be validated before operating.	How to build a price, based on necessary elements for tariffs, offers and promotions definition. All prices modifications shall be validated before operating.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
	<b>Modify parameters engine</b>	Define parameters engine for travel solutions searching (The requirement is linked to the platform's management)	Define static parameters (the algorithm should select/reject travel solutions)	How to define static parameters to be used for price definition, while tracking all operators involved in the process. All prices modifications shall be validated before operating.
	<b>Channels configuration</b>	Define parameter to program the channels		Configuration process for parameters and controls for each single channel defined by the system.
		Enable payment systems		How to enable Trenitalia payment system on different channel, sub-channels/terminals. Users shall be able to view which payment modalities are foreseen for each channel/sub-channel.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Define mapping of offers for mixed vending		How to map national, regional, international offers in case of "mixed vending".
		Select saleable products		How to select single products or groups of products on different channels/sub-channels. Users shall be able to view which products are available for each channel/sub-channel.
		Activate offers/promotions		How the Configuration channel responsible operator activates "Commercial Promotions" on channel, sub-channels, regions, cities, terminal groups, single terminal.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Approve/inhibit partial or complete refund		How to authorise/prevent a reimbursement partially or entirely.
<b>Purchase, payment and travel document creation</b>	<b>Create new tickets</b>	Create new Travel Document	Pre-condition: creation of the travel document is a pre-condition for the use case for which the user selects the receiving modalities (SMS, mail)	How to create a travel document associated to Travel Solutions within a Travel. Each travel solution may be composed by services operated by different provider in Trenitalia Marketplace services.
	<b>Modify tariff, offering and promotions</b>	Modify Path (Restitution)	The requirement is analogous to the App ( understand how to change a ticket with different route)	How to manage situation where it is necessary to return the original travel document and release a new one, following a travel solution change.
		Modify booking	Similar requirement to the App (understood as change the ticket on the same route)	How to modify a train reservation (for free or for additional fees), while tracking all operators involved in the modification process.
		Add passengers	Addition of passengers to a pre-identified travel solution.	Addition of passengers to a pre-identified travel solution.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Add travels	Addition of a new travel solution to a pre-identified travel.	Addition of a new travel solution to a pre-identified travel.
		Delete passengers	To delete passengers included in a pre-identified travel solution (including international trains' reservations and purchases made abroad).	To delete passengers included in a pre-identified travel solution (including international trains' reservations and purchases made abroad).
		Delete travels	To delete a travel solution from a pre-identified travel.	To delete a travel solution from a pre-identified travel, while tracking all modifications made.
		Delete additional services	To delete additional services from a travel solution.	To delete additional services from a travel solution, while tracking all modifications made.
	<b>Finalize a ticket</b>	Finalize travel document	User's confirmation of travel solutions and further services selected for the purchase	Travel document registration (with reference to the identification code).
	<b>Pay a ticket</b>	Pay a travel document	Defined in the App sheet	Available payment modalities to purchase a travel solution, identification of common features and differences. Payment modalities change according to the vending channel. A mixed payment is available.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Generate deferred bill payment B2B		How to issue an invoice when a B2B customer makes a purchase through a deferred mode.
	<b>Assign credit/points loyalty</b>	Bestow point on loyalty card	Defined in the App sheet	How to transform fidelity card scores in electronic credit to be used for ticketing purchase.
	<b>Refund a ticket</b>	Refund travel document		How a user interacts with the system to delete a finalised travel document (paid or not paid), while tracking every operation related to the travel document.
		Refund travel document offering a different travel		Interaction between a user and the system in case of a travel document cancellation attributed to the service provider.
	<b>Refund ticket</b>	Refund travel document	Defined in the App sheet	How to reimburse a digital travel document already finalised and paid for. Reimbursement may be partial or total, depending on specific commercial clauses.
	<b>Book seats and services</b>	Book seats and services	How to reserve seats or other services	How to reserve seats or other services from different enabled channels.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		insert a booking request for services in the waiting list	How to include a request to book a service (currently unavailable) with a waiting list	How to include a request to book a service (currently unavailable) with a waiting list automatically managed by the system.
		Book services of the partners of the BONVOYAGE operators	Include the opportunity to book services dispensed by partners of the transportation operator integrated in the BONVOYAGE platform	How to book services managed by Trenitalia partners.
		Delete/modify the reservation of seats and services	How to delete seats or services reservations.	How to delete seats or services reservations.
	<b>Manage algorithm's parameters of seats assignment</b>	Modify parameters used by seats engine	Supervisor view	How to modify algorithm parameters used for seating allocation.
	<b>Provide information on the tickets details</b>	Access to the ticket documents information	Defined in the App sheet	How the user interacts with PICO system to request information on travel document.
		Provide ticket document details	Defined in the App sheet	How the user interacts with PICO system to request information on travel document data.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Provide detailed information on the ticket document's life	Defined in the App sheet	How the user interacts with PICO system to request information on travel document lifetime (e.g. Origin/availability, class, tariff, payment modalities and commercial conditions).
		Provide information on loyalty points and points balance	Defined in the App sheet	How the user interacts with PICO system to request information on loyalty scores balance associated to a specific customer, as well as on the amount of scores to be granted to the customer for the purchased travel solution.
		Provide ID code history information related to the travel document (The requirement is related to the platform's management)	Search for the representative code history of the ticket document	How the user interacts with PICO system to search for information related to the history of travel document identification code (back-up functionality).



Macro-Categories	Categories	Functionality	BONVOYAGE	Description
	<b>Setting he reminder of the travel</b>	Selection of receiving and visualization of travel document (except paper)	Defined in the App sheet	Electronic travel document materialisation on paper document and non-paper documents (SMS, email). Each format contains information related to travel and customer profile (this latter only applies to "loyal customers").
	<b>Purchase ancillary services to the ticket</b>	Add additional services	Defined in the App sheet	How the user interacts with PICO system to add services (e.g. bike/car transport, restaurant service).
		Tickets Wallet	Opportunity to insert the travel document within another app Wallet on the smartphone and integrating that with the historic visualization per App	
		Build a digital wallet for the payment	Defined in the App sheet	How to create an electronic wallet (this contains electronic credit associated to specific spending and validity rules). Each wallet is associated to a customer.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
	<b>Create and use electronic credit</b>	create and purchase an Electronic Value		How to create and purchase electronic value (different forms of electronic credit are available: electronic credit, electronic promotion, voucher and electronic prizes, electronic commercial acknowledgement, electronic reimbursement).
		Manage Goal Bonus for <u>Big Clients</u> / incentive plan		How to define bonus for "Big clients" following the achievement of defined goals.
		Management of services not related to travel document purchase		How to purchase services not related to travel document purchase.
		Create duplicates		How to create copies of items associated to a specific customer.
		Release duplicates		How to issue copies.
		Coupon and commercial card management		How to manage Coupon and commercial cards.
		Define rules to assign a	Define rules to assign bonus	Definition of rules to grant bonus

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		bonus (Defined in the App sheet )		through the combination of a pre-defined set of parameters or the modification of current rules.
<b>Help System and Unusual Clients</b>	<b>Analyse different travel solutions</b>	Outline the process to search different solutions	Defined in the App sheet	Modalities available for customers and/or operators to define how the application behaves when requested services are not available.
	<b>Uploading customer commercial profile</b>	Search for Client Profile (the requirement is related to the platform management)	How to interact with the system to get customer personal data.	How to interact with the system to get customer personal data.
		Insert the travel (the requirement is related to the platform's management)	To include a new travel profile to be used for travel solution research and travel document purchase.	To include a new travel profile to be used for travel solution research and travel document purchase.
	<b>Provide selling report</b>	Provide selling information (the requirement is related to the platform's		How the user interacts with the system to display sales reports (according to hour, day, month, year, channel, sale point, electronic wallet).

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		management))		
	<b>Provide report</b>	Provide report for outlined clients (the requirement is related to the platform management)		How the user interacts with the system to retrieve periodic reports of purchase made by a profiled customer or a company. Retrieve information relates to both invoiced and not-invoiced costs.
	<b>Consult selling system data</b>	Consult selling system data (the requirement is related to the platform's management)		How to access sales basic information to support audits, information provision to Public Security Authorities, complaints management.
	<b>Manage technology providers authorization</b>	Manage identity (the requirement is related to the platform's management)		How to manage a customer identity through different channels.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Manager applicable profiles (the requirement is related to the platform's management)		How to manage authorisations for different profiles of system users operating on different channels.
	Provide passengers list	Provide passengers list of trains with booking (the requirement is related to the platform's management )	It is necessary to understand how BONVOYAGE interact and communicate with the transportation operator platform	How to get train passengers list (trains subjected to reservation).
		Provide passengers list of trains without booking(the requirement is related to the platform's management)	It is necessary to understand how BONVOYAGE interact and communicate with the transportation operator platform	How to get train passengers list (trains not subjected to reservation).
		Provide list of passengers to be re-accommodated (the requirement is related	It is necessary to understand how BONVOYAGE interact and communicate with the transportation operator platform	How to look for the list of train passengers to be re-booked.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		to the platform's management)		
		Provide re-scheduled passengers list (the requirement is related to the platform's management)	It is necessary to understand how BONVOYAGE interact and communicate with the transportation operator platform	How to look for the list of train re-booked passengers.
		Provide disable passengers list (the requirement is related to the platform's management)	It is necessary to understand how BONVOYAGE interact and communicate with the transportation operator platform	How to look for train disabled passengers list.
		Provide the list of passengers with the right of special services (the requirement is related to the platform's management)	It is necessary to understand how BONVOYAGE interact and communicate with the transportation operator platform	How to look for the list train of passengers having rights to special services.

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
	<b>Re-schedule passengers</b>	Automatically passengers re-scheduling (the requirement is related to the platform's management)	It is necessary to understand how BONVOYAGE interact and communicate with the transportation operator platform	How to automatically re-book a group of passengers on a different train in case of rail traffic disruption.
		Re-schedule Assisted Passengers (the requirement is related to the platform's management)	It is necessary to understand how BONVOYAGE interact and communicate with the transportation operator platform	How to re-book passengers by inserting into the system the modalities to select the new seat to be allocated to the customer.
		Re-open train booking process (the requirement is related to the platform's management)	Transport operator makes decision and BONVOYAGE can have access to them ( to be defined how )	How to restore train reservation services (previously closed due to a negative finalisation of the automatic re-protection process).
		Manage automatically support of the train (the requirement is related to the platform's management)	Transport operator makes decision and BONVOYAGE can have access to them ( to be defined how )	How to include additional coaches into a train under construction (in order to support a deep increase in seats reservation).

Macro-Categories	Categories	Functionality	BONVOYAGE	Description
		Notify automatically the presence of the inhibited train (the requirement is related to the platform's management)	Transport operator makes decision and BONVOYAGE can have access to them ( to be defined how )	How the system notifies to the operator the presence of trains that cannot be reserved due to incomplete re-booking or to other situations that require operator intervention to restore reservation functionalities.

*Table A2-2: Integrated Commercial Platform (PICO) – End-user technology provider and transport information provider perspective benchmark*



## Local Public Transport:

Macro-category	Category	Functionality	BONVOYAGE
Payment, Validation and pricing of the travel document	Travel document Smart Card	Validation and Pricing of the LPT travel document stored on Smart Card	<p><b><u>Pre-conditions:</u></b></p> <p>1) The user purchases the Smart Card by a transport operator (e.g.: Trenitalia);</p> <p>2) The Smart Card is enabled to write an intermodal and interoperable travel solution ( it is possible through commercial agreement between the different transport operators involved in the integrated travel solution)</p> <p>3)The user purchases the travel solution through selling systems integrated within BONVOYAGE platform.</p> <p>The integrated travel solution is purchased online and then uploaded on Smart Card (the travel solution is made by different travel document).</p> <p>By doing the check-in, the LPT travel document is enabled through: check of validity through the reading of the data contained on the Smart Card; writing information about the “change of state” of the travel solution...</p> <p>Before going on board, the traveller gets the card close to the sensor; the Smart Card and the commercial system of the LPT operator record the entry data and enable the travel document both the support (Smart Card) and the commercial system centre of the operator.</p> <p>Two possible cases :a) during the check-in, a temporary fee is charged on the Smart Card and on the operator systems. During the check-out, the system writes the exit data on the Smart Card and set the price of the user's journey. The system re-charges the fee. b) Validation and pricing take place during the check-in when the user gets</p>

Macro-category	Category	Functionality	BONVOYAGE
			<p>the Smart Card to the sensor that automatically deduct the fee for the journey (on Travel document) that has been chosen.</p> <p>BONVOYAGE system notices the entrance gate and the urban transportation used and the price based on the check-in. BONVOYAGE uses the check-in information as part of the travel solution that the user has chosen.</p> <p>Within the different stages of the process (check-in, checkout and credit charging) BONVOYAGE establish the rules and modalities of data sharing to show to many TPL operators the travel document life cycle inserted in the interoperable solution .</p>
	Payment card with EMV standard ( physical card or virtualized even on SIM of Mobile Network Operator)	Payment charge at the moment of check in on LPT	<p><b>Pre-condition:</b> the user provides the data of his own card to the BONVOYAGE platform. Then, BONVOYAGE share those data to the local transportation operators for the transactions.</p> <p>During the check-in, the user gets the contactless card close to the reader on board of the bus/train and he provides the authorization to manage the banking card for the transportation transaction and for the future payment ( that need another authorization from the user)of the individual journey.</p> <p>The payment charge at the moment of check in on LPT will be charged directly on the payment card circuit.</p> <p>To respect the operator infrastructure limits, the card should be enabled also during the offline transactions.</p> <p>The user does not immediately receive neither the bill nor the paper ticket: each journey made will be displayed on the account balance of the card. In the final balance, the user will enable the payment.</p>

Macro-category	Category	Functionality	BONVOYAGE
		Payment charge at the moment of check out LPT.	<p><b>CASE 1</b> <b><u>Pre-condition:</u></b> Travel document payment.</p> <p>During the check-in, the travel document validation device reads the EMV's card and registers the access. The on-board staff device receives the information of the EMV's card which has made the access. The cards are verified with the access list. The pricing is done by an evening batch after that the information about the access is received.</p> <p><b>CASE 2</b> <b><u>Pre-condition:</u></b> the user provides early the data about his card to the BONVOYAGE platform. BONVOYAGE shares those data to the other operator of the transportation for the transactions.</p> <p>When there are gaps, the calculation of the cost is based on the check.in/check-out mechanism. In the entrance, the validation of the card is verified based on the black-list (used to collect events related to fraudulent use of the card, not by acquisition-the authorizing list that allows to move to the check-in is, initially, a white list that allows the access to everyone own a EMV card). Going out, the ticket cost is calculated and the amount is transmitted to the payment circuit.</p> <p>BONVOYAGE provides the card's ID of the local transportation operators whom give automatically access to the user.</p> <p>If later an inappropriate use of the card is noticed, the user is added in the black-list (cloned card). The black list belongs to the transportation system, not to the bank</p>

Macro-category	Category	Functionality	BONVOYAGE
			system.
	NFC/eWallet Technology	Payment, validation, checking, support through NFC technology and eWallet	<p><b>CASE 1</b>  <u><b>Pre-condition:</b></u> the user purchases the travel solution via web or via BONVOYAGE App (the payment is done via credit card) and receive on his own mobile device the travel document.</p> <p>BONVOYAGE App receive the travel document that is used according to the HW/SW included on the user mobile device (e.g. Android, iOS) and enable the interaction process with NFC (if the NFC technology is not available on the user mobile device, BONVOYAGE App reproduce the travel ticket through a bar-code - according to the Masabi case modality)</p> <p>The user receive on his mobile device the electronic travel document purchased for the local transportation OTA (over the air).</p> <p>The check of the travel document validation happens at the entrance: through getting the device close to the validator, the NFC technology reads the data contained on the device. In the same moment, the App manages the change of state of the travel document.</p> <p><b>CASE 2</b>  <u><b>Pre-condition:</b></u> the activation of BONVOYAGE to manage the eWallet (it has to be established if BONVOYAGE can deal with banking institute for the management of the eWallet or can get commercial deal with partners (e.g.: enjoy) to obtain voucher</p>

Macro-category	Category	Functionality	BONVOYAGE
			<p>to be used for the travels.</p> <p>The user can use his own mobile phone to do the payment for the local transportation services and re-charge his own digital wallet within the re-charge point.</p> <p><b>CASE 3</b></p> <p><b>Pre-condition:</b> the activation of BONVOYAGE to manage the eWallet (it has to be established if BONVOYAGE can make deal with banking institute or Telco).</p> <p>The client purchase phone and SIM NFC (declination of NFC technology) among the Telco dealer, with a pre-charged application of eWallet. For the mobility services payment, within a specific threshold, the charge is done using the phone credit, over that threshold, it is necessary to register to the PaybyPhone service that means the charge on the credit card.</p> <p>The App allows seeing the not-validating travel documents still available on the eWallet.</p> <p><b>In every case, the App allows to do the NFC payments for the other services (different from TPL).</b></p>
	Bar Code Technology	Validation through Bar Code technology	<p><b>Pre-condition:</b> the user purchases the travel solution via web and choose to receive the travel document via Mobile Barcode 2D.</p> <p>The validation of the travel document is made through the App at the entrance, through the scan of the Barcode on the validator in the station.</p>

Macro-category	Category	Functionality	BONVOYAGE
	Tracking and Refund	Check of charge/deposit of the related services used	The traveller has the opportunity to register himself on BONVOYAGE where he can see the tickets details of the interoperable travel solution that are already purchase: fee charged/refund.
		Re-fund	Opportunity to request through BONVOYAGE's contacts (online, BONVOYAGE toll free number) the partial refund (only LPT) of the LPT service not used yet. For the not-used Smart Card refund's management BONVOYAGE follows the rules of the transportation operator where the user has purchased the Smart Card.
Travel document	Use of the card by the users		
	Pricing	pricing elaboration (requirement related to the app's management)	Pricing elaboration by the BONVOYAGE platform that integrates all the modalities of interoperable transportation. The platform for the interoperable solutions realizes promotions based on the edge of added profit that will be add thanks to the platform.
	Integrated Ticketing	Integrated ticketing (requirement related to the app's management)	Intermodal / multi-service integrated ticketing.
Additional services	Private transportation service and recreate services	Services Purchase	Opportunity to purchase services of: - Taxi and private transportation - highway - 'Food & Beverage' activities: McDonald

Macro-category	Category	Functionality	BONVOYAGE
			<ul style="list-style-type: none"> <li>- Store/retailer</li> <li>- Electronic payment of toll and parking</li> <li>- Other self-service</li> <li>- Cinema, supermarket</li> <li>- Museum, guided tour</li> </ul>
	Partnership	Discount achievement	There are reductions for LPT (e.g.: passengers obtain 60% discount on the normal cost of the bus tickets).
<b>Mobility</b>	Journey Planning	Journey Planning	Journey planner intermodal, forecast and real time ( function that BONVOYAGE should have but it has to be acquired- there are already different market solution for journey planning to be chosen and used)
	Mobility info	Geolocalization and sharing of information	Real-time information sharing about travel time between operators, GSM (Global System for Mobile), meteorology info, information about times of the means of transportation.
	Other services	Forecast services (requirement related to the app management)	Forecast of the traffic (also logistical) and re-planning to protect the client.
		Support services	Re-planning
<b>Other functionality</b>	Choose favourite seats		
	Events		

Macro-category	Category	Functionality	BONVOYAGE
	Feedback structured / Vertical support and re-planning		
	Membership and score collection		
	Search for travel information for others		
	Navigation as anonymous user ( with partial or total disabled user profile)		
	PayPal payment		

*Table A2-3: Local Public Transport benchmark*



Functionality	BONVOYAGE	Trenitalia (interoperable)	London
Validation and Pricing of the LPT travel document stored on Smart Card	<p><b><u>Pre-conditions:</u></b></p> <p>1) The user purchases the Smart Card by a transport operator (e.g.: Trenitalia);</p> <p>2) The Smart Card is enabled to write an intermodal and interoperable travel solution ( it is possible through commercial agreement between the different transport operators involved in the integrated travel solution)</p> <p>3)The user purchases the travel solution through selling systems integrated within BONVOYAGE platform.</p>	<p>Online purchase of the travel document for local transportation.</p> <p>Check of the validity through the reading of the data that is upload on the Smart Card and update travel document change of state.</p>	
	<p>The integrated travel solution is purchased online and then uploaded on Smart Card (the travel solution is made by different travel document).</p> <p>By doing the check-in, the LPT travel document is enabled through: check of validity through the reading of the data contained on the Smart Card; writing information about the “change of state” of the travel solution.</p> <p>Before going on board, the traveller gets the card close to the sensor; the Smart Card and the commercial system of the</p>		

Functionality	BONVOYAGE	Trenitalia (interoperable)	London
	<p>LPT operator record the entry data and enable the travel document both the support (Smart Card) and the commercial system centre of the operator.</p> <p>Two possible cases:</p> <p>a) During the check-in, a temporary fee is charged on the Smart Card and on the operator systems. During the check-out, the system writes the exit data on the Smart Card and set the price of the user's journey. The system re-charges the fee.</p> <p>b) Validation and pricing take place during the check-in when the user gets the Smart Card to the sensor that automatically deduct the fee for the journey (on Travel document) that has been chosen.</p> <p>BONVOYAGE system notices the entrance gate and the urban transportation used and the price based on the check-in.</p> <p>BONVOYAGE uses the check-in information as part of the travel solution that the user has chosen.</p> <p>Within the different stages of the process (check-in, checkout and credit charging) BONVOYAGE establish the rules and modalities of data sharing to show to many TPL operators the travel document life cycle inserted in the interoperable</p>		

Functionality	BONVOYAGE	Trenitalia (interoperable)	London
	solution .		
Payment charge at the moment of check in on LPT	<p><b>Pre-condition:</b> the user provides the data of his own card to the BONVOYAGE platform. Then, BONVOYAGE share those data to the local transportation operators for the transactions.</p> <p>During the check-in, the user gets the contactless card close to the reader on board of the bus/train and he provides the authorization to manage the banking card for the transportation transaction and for the future payment ( that need another authorization from the user)of the individual journey.</p> <p>The payment charge at the moment of check in on LPT will be charged directly on the payment card circuit.</p> <p>To respect the operator infrastructure limits, the card should be enabled also during the offline transactions.</p> <p>The user does not immediately receive neither the bill nor the paper ticket: each journey made will be displayed on the account balance of the card. In the final balance, the user will enable the payment.</p>		<p>(The client provide early the details of his own card to BONVOYAGE) BONVOYAGE share them with the transport operators for the transaction</p> <p>The user gets the contactless card close to the reader on board of the bus/train and he provides the authorization to manage the banking card for the transportation transaction and for the future payment ( that need another authorization from the user)of the individual journey.</p> <p>The payment at cost will be charged directly on the payment card circuit.</p> <p>To respect the operator infrastructure limits, the card should be enabled also during the offline transactions.</p> <p>The user does not immediately receive neither the bill nor the paper ticket: each journey made will be displayed on the account balance of the card. In the final balance, the user will enable the payment.</p>
Payment (at cost) at the	<b>CASE 1</b>	Payment requirement.	With gaps, the calculation of the ticket

Functionality	BONVOYAGE	Trenitalia (interoperable)	London
moment of the check out on the TPL transportation.	<p><b>Pre-condition:</b> Travel document payment. During the check-in, the travel document validation device reads the EMV's card and registers the access. The on-board staff device receives the information of the EMV's card which has made the access. The cards are verified with the access list. The pricing is done by an evening batch after that the information about the access is received.</p> <p><b>CASO 2</b></p> <p><b>Pre-condition:</b> the user provides early the data about his card to the BONVOYAGE platform. BONVOYAGE shares those data to the other operator of the transportation for the transactions. When there are gaps, the calculation of the cost is based on the check.in/check.-out mechanism. in the entrance, the validation of the card is verified based on the black-list ( used to collect events related to fraudulent use of the card, not by acquisition- the authorizing list that allows to move to the check-in is, initially, a white list that allows the access to everyone own a EMV card). Going out, the ticket cost is calculated and the</p>	Reading of the EMV card and registration of the access. The device of the on-board staff receives the information of the cards that have already done the access. The cards are verified with the list of access. The pricing is done by batch after that the information of the access gave by the validator are received.	cost is done based on the mechanism of check in/ checks out. At the entrance, the validity of the card is verified based on the black-list (it is done by acknowledgement not for acquisition- they are authorization lists that allows going further); at the exit the cost of ticket is calculated. Then the amount is sent to the payment systems BONVOYAGE share the card's ID to the local transport operators which gives automatically access to the customer. If later it is discovered an inappropriate use of the card, the user goes in the black list. The black list belongs to the transportation system, not to the banking system.

Functionality	BONVOYAGE	Trenitalia (interoperable)	London
	<p>amount is transmitted to the payment circuit.</p> <p>BONVOYAGE provides the card's ID of the local transportation operators whom give automatically access to the user.</p> <p>If later an inappropriate use of the card is noticed, the user is added in the black-list (cloned card). The black list belongs to the transportation system, not to the bank system.</p>		
Payment, validation, checking, support through NFC technology and eWallet	<p><b>CASE 1</b></p> <p><b>Pre-condition:</b> the user purchases the travel solution via web or via BONVOYAGE App (the payment is done via credit card) and receive on his own mobile device the travel document.</p> <p>BONVOYAGE App receive the travel document that is used according to the HW/SW included on the user mobile device (Android, iOS) and enable the interaction process with NFC (if the NFC technology is not available on the user mobile device, BONVOYAGE App reproduce the travel ticket through a bar-code - according to the Masabi case modality)</p>	<p>Purchase via Web (with credit card).</p> <p>BONVOYAGE App receive the TdV and use it according the HW/SW with the functionality NFC and it enable the interaction process with NFC (if the NFC technology is not available on the user mobile device, BONVOYAGE App reproduce the travel ticket through a bar-code - according to the Masabi case modality)</p> <p>The user receive on his mobile device the electronic travel document purchased for the local transportation OTA (over the air).</p> <p>The check of the travel document validation happens at the entrance: through getting the device close to the</p>	

Functionality	BONVOYAGE	Trenitalia (interoperable)	London
	<p>The user receive on his mobile device the electronic travel document purchased for the local transportation OTA (over the air).</p> <p>The check of the travel document validation happens at the entrance: through getting the device close to the validator, the NFC technology reads the data contained on the device. In the same moment, the App manages the change of state of the travel document.</p> <p><b>CASE 2</b>  <u><b>Pre-condition:</b></u> the activation of BONVOYAGE to manage the eWallet (it has to be established if BONVOYAGE can deal with banking institute for the management of the eWallet or can get commercial deal with partners (enjoy) obtaining voucher to be used for the travels.</p> <p>The user can use his own mobile phone to do the payment for the local transportation services and re-charge his own digital wallet within the re-charge point.</p> <p><b>CASE 3</b>  <u><b>Pre-condition:</b></u> the activation of</p>	<p>validator, the NFC technology reads the data contained on the device. In the same moment, the App manages the change of state of the travel document.</p>	

Functionality	BONVOYAGE	Trenitalia (interoperable)	London
	<p>BONVOYAGE to manage the eWallet (it has to be established if BONVOYAGE can make deal with banking institute or Telco).</p> <p>The client purchase phone and SIM NFC (declination of NFC technology) among the Telco dealer, with a pre-charged application of eWallet. For the mobility services payment, within a specific threshold, the charge is done using the phone credit, over that threshold, it is necessary to register to the PaybyPhone service that means the charge on the credit card.</p> <p>The App allows seeing the not-validating travel documents still available on the eWallet.</p> <p><b>In every case, the App allows to do the NFC payments for the other services (different from TPL).</b></p>		
Validation through Bar Code technology	<p><b>Pre-condition:</b> the user purchases the travel solution via web and choose to receive the travel document via Mobile Barcode 2D.</p> <p>The validation of the travel document is made through the App at the entrance,</p>	<p>Purchase of the travel document via Web with choice received via Mobile Barcode. Validation on the app Mobile before the travel and related change of state. Reading through the scan of the Barcode 2D in the station and possible opening of the turnstile. ( Masabi modality)</p>	

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Functionality	BONVOYAGE	Trenitalia (interoperable)	London
Services Purchase	<p>Opportunity to purchase services of:</p> <ul style="list-style-type: none"> <li>- Taxi and private transportation</li> <li>- highway</li> <li>- 'Food &amp; Beverage' activity e.g. McDonald</li> <li>- Store/retailer</li> <li>- Electronic payment of toll and parking</li> <li>- Other self-service</li> <li>- Cinema, supermarket</li> <li>- Museum, guided tour</li> </ul>		
Discount achievement	There are reductions for LPT (passengers obtain 60% discount on the normal cost of the bus tickets).		
Journey Planning	Journey planner intermodal, forecast and real time ( function that BONVOYAGE should have but it has to be acquired- there are already different market solution for journey planning to be chosen and used)		
Geolocalization and sharing of information	Real-time information sharing about travel time between operators, GSM (Global System for Mobile), meteorology info, information about times of the means of transportation.		
Forecast services (requirement related to the app management)	Forecast of the traffic (also logistical) and re-planning to protect the client.		

Functionality	BONVOYAGE	Trenitalia (interoperable)	London
Support services	Re-planning		

*Table A2-4: London and Trenitalia (interoperable) Public Transport benchmark*

Functionality	Singapore	Netherlands	Stockholm
<b>Validation and Pricing of the LPT travel document stored on Smart Card</b>		<p>Before going on-board, the traveller gets the card close to the sensor; the card and the commercial system of the operator register the data of entrance and validate the travel document both on commercial system and on the support (Smart Card).</p> <p>During the check-in, a temporary deposit is charged on the card and on the operator system. During the check-out the system writes the data of exit on the card and the price the journey that the user used. The system gives back the deposit.</p>	
<b>Payment charge at the moment of check in on LPT</b>	The validation of the travel ticket is a check in/ checks out type. The pricing happens at the check-out moment through a progressive credit.		Before going on-board, the traveller gets the card close to the sensor, the data are then sending to the central system. The user that goes out accomplish the check out, the system through the check-out device price the journey used by the user.

Functionality	Singapore	Netherlands	Stockholm
<b>Payment charge at the moment of the check-out on LTP</b>	Opportunity to do operations of payment for public transportation services on Bus and on MRT train.		
<b>Payment, validation, checking, support through NFC technology and eWallet</b>			
<b>Validation through Bar Code technology</b>	Opportunity to do NFC payments for commercial services ( different from local public transportation)		
<b>Check of charge/deposit of the related services used</b>			
<b>Re-fund</b>	The details of the purchased used ticket are send to the central system, the charge and deposit are available on web		
<b>Pricing elaboration (requirement related to the app's management)</b>	Opportunity to request partial or total online refunds for the not-used service	Opportunity to request partial or total online refunds for the not-used service	
<b>Integrated ticketing (requirement related to the app's management)</b>			

Functionality	Singapore	Netherlands	Stockholm
Services Purchase	Pricing elaboration from a unique national system that integrate the transport modalities		
Discount achievement			
Journey Planning	Opportunity to acquire services of: <ul style="list-style-type: none"> <li>- Taxi and private transportation</li> <li>- highway</li> <li>- 'Food &amp; Beverage' activity e.g.: McDonald</li> <li>- Store/retailer</li> <li>- Electronic payment of toll and parking</li> <li>- Other self-service</li> <li>- Cinema, supermarket</li> <li>- Museum, guided tour</li> </ul>		Opportunity to pay parking
Geolocalization and sharing of information			
Forecast services (requirement related to the app management)			
Support services			

*Table A2-5: Singapore, Netherlands and Stockholm Public Transport benchmark*

Functionality	Lyons (Técély Card e Lyon City Card for tourist)	Lyons (Optimod project)	Rio
Validation and Pricing of the LPT travel document stored on Smart Card	Touch validation as soon as the traveller is on-board).		Validation and pricing are done in the moment of the check-in, just getting the card close to the validator that take the credit for the travel that is going to be done. (Sub-case of use-case declined for BONVOYAGE- the system reveal the entrance gate and the urban transportation used and price based on the check-in.9 BONVOYAGE decline the information of the check in as part of the travel solutions that the user has purchased.
Payment charge at the moment of check in on LPT			
Payment charge at the moment of the check-out on LTP			
Payment, validation, checking, support through NFC technology and eWallet			

<b>Validation through Bar Code technology</b>			Watch, iPhone
<b>Check of charge/deposit of the related services used</b>			
<b>Re-fund</b>			
<b>Pricing elaboration (requirement related to the app's management)</b>	Opportunity to ask for the refund of the card (smart card) before the starting date of validity		
<b>Integrated ticketing (requirement related to the app's management)</b>			the card is named but can be used by other person
<b>Services Purchase</b>			
<b>Discount achievement</b>		Intermodal / multi-service integrated ticketing.	
<b>Journey Planning</b>	Opportunity to acquire services of: - bike-sharing services - museum - guided tour		
<b>Geolocalization and sharing of information</b>	Discount for local services are provided		
<b>Forecast services (requirement related to</b>		Journey planner intermodal forecast and real time.	

the app management)			
Support services		Sharing “real-time” of the information between operators, GSM (Global System for Mobile), meteorology info, and information about times of the means of transportation.	
		Traffic forecast	
		Personal support for mobility	

*Table A2-6: Lyon and Rio Public Transport benchmark*

Functionality	Beijing	CITIZI (France)	Masabi (UK)
Validation and Pricing of the LPT travel document stored on Smart Card			
Payment charge at the moment of check in on LPT	Before going on-board, the traveller gets the card close to the sensor, and then the data are sent to the central system. The user when goes out accomplish the check out, the system through the check-out device price the journey used by the user.		
Payment charge at the moment of the check-			Validation and checking stage: the

out on LTP			<p>requirement is that the payment has been done. The management of the travel document changes related to the support: barcode 2D on paper support or on mobile device that reproduce the bar code.</p> <p>Barcode 2D- high level of safety.</p> <p>MTickets can be sent to the phone of the clients with the most safe of the bar code 2D (the aspect and the background of the bar code changes through an algorithm that follows the travel document life cycle)</p>
Payment, validation, checking, support through NFC technology and eWallet			
Validation through Bar Code technology	<p>eWallet requirement. It has to be established if BONVOYAGE can deal with banking institute for the management of the eWallet or can get commercial deal with partners (e.g.: enjoy) to obtain voucher to be used for the travels. The user can use his own mobile phone to do the payment for the local transportation services and re-charge his own digital wallet within the re-charge point.</p>	<p>Requirement: eWallet. To establish if BONVOYAGE can make deals with banking institute or Telco.</p> <p>The client purchase phone and SIM NFC (declination of NFC technology) among dealer Telco, with pre-charged application of m-wallet. For the payment of the mobility services, within a specific threshold, (to be established) the charge is done on telephonic credit, above the threshold, it is necessary to register to the service PaybyPhone that charge on the credit card. The app allows to sell tickets</p>	<p>mTickets is available for phone with NFC technology: the user through his own application on mobile select the desired solution does the payment with credit card and receives on his own phone the travel document. The document is validating at the entrance, getting the mobile device close to the validator.</p>



		not validate until they are available on the eWallet.	
<b>Check of charge/deposit of the related services used</b>		In the cities of Caen and Strasburg, it is possible to purchase both individual tickets or multiple tickets, just downloading the app Twisto Mobile Ticketing	- Barcode -high level of safety: MTickets can be sent to the clients phones with the most safe of the bar codes 2D... - MTickets with Barcode colour readable MTickets are available also in a readable format, delivered in combination with a bar code 8Masabi modality)
<b>Re-fund</b>			
<b>Pricing elaboration (requirement related to the app's management)</b>		It is possible to ask for online refund for both partial and total, for not yet used services	It is possible to ask for online refund for both partial and total, for not yet used services
<b>Integrated ticketing (requirement related to the app's management)</b>			
<b>Services Purchase</b>			
<b>Discount achievement</b>			
<b>Journey Planning</b>	Opportunity to pay: - Highway - Parking - Automobile service - Taxi - Cinema, supermarket and restaurant.		
<b>Geolocalization and</b>	Paying with the card, the clients get 60% discount on the normal cost of the bus		

sharing of information	ticket		
Forecast services (requirement related to the app management)			
Support services		Information about the time of the public transportation	

*Table A2-7: Beijing, Citizi (France) and Masabi (UK) Transport benchmark*

## Mobility and Travel APPs

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	Users of: local public transports (rail, bus), intercity public transports (rail, airplanes, bus), national and international; car drivers; car sharing users.	Users of local, intercity public transports (rail)	Users of local public transports (bus and trains); bike sharing and car sharing services.
Login	<p>Mandatory registration required: Access only with BONVOYAGE credentials (at least in the initial phase - to assess future BONVOYAGE super parts that integrates access credentials with other App).</p> <p>1) Registration required "simple" (only email, password) and authorization to geolocation.</p> <p>2) Name; Surname (required) + nickname (optional), default preferred language, profile picture (optional) + icon (optional)</p> <p>3) Adding optional information on user category (few options with ability to click multiple), with the possibility of skipping.</p> <p>4) Adding additional data (e.g. .: tax code, VAT number) required to make the payment with billing.</p>	<p>Login with the same credentials used to access "Trenitalia" website account (registration previously made on the site Trenitalia) and / or login with fidelity card number.</p> <p>Automatic login after the first access.</p>	<p><u>Mandatory registration (creation of a basic profile):</u></p> <ul style="list-style-type: none"> <li>- need to register using an email address and a password;</li> <li>- need to provide name, surname, email, phone number, birth date, address.</li> </ul> <p>Automatic login after registration.</p>
Base account	Registration def.:		<u>Registration finalisation:</u>

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
definition/setting	<ul style="list-style-type: none"> <li>- Full name, mobile number.</li> <li>Account definition: nickname, photo, icon identification; insertion and save addresses / favourite places; creating list favourite events/favourite places.</li> <li>Visualisation account fidelity viewing points accumulated.</li> </ul>		<ul style="list-style-type: none"> <li>- selection of BeamBeta partners for which the user has already registered (Car2Go; Citybike; Linz Lienen; Wiener Lienen);</li> <li>- selection of preferred transport mode;</li> <li>- selection of preferred payment modalities and provision of credit cards data.</li> </ul> <p><u>Notification subscription</u>: possibility to activate - deactivate a notification push service.</p>
Status	<ul style="list-style-type: none"> <li>- Possibility to link status / emoticons to the profile.</li> <li>- Possibility of sharing status on social networks.</li> </ul>		-
Privacy	<p>Authorization to share information during installation.</p> <p>Possibility to also provide information in the next step.</p>		-
Nickname	[Included in "Base account definition / setting"]		-
Preferred addresses	[Included in "Base account definition / setting"]		-
Icon	[Included in "Base account definition / setting"]		-
Humour			-

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
Connection of user profile to social media			-
Profile loyalty categorisation/setting	Categorization in different levels of fidelity profile based on points accumulated.		-
App usage as anonymous user (user profile is partially or totally deactivated)			-
Social network "Friends" (contact) link	Possibility to "invite" friends by inserting mail /contact Social Network (Optional requirements - if there is API).		-
			-
	Possibility to view the ranking of the other users (general rank and rank weekly) to determine "reliability" user.		-
	Entering contacts to identify other friends on BONVOYAGE (finding friends on BONVOYAGE and establishing "friendship" on BONVOYAGE).		-
Information on the state of circulation	User sharing real time information on road circulation status (public transportation, road status, road works, roadblocks, accidents, road closures, etc.) with other BONVOYAGE users, adding the information on BONVOYAGE platform.	Display information and news about the status of rail circulation (e.g. circulation slowed / interrupted).	-

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	The information on road works can be shared by the user with local law enforcement agencies, as BONVOYAGE platform is connected with them.		
You add me on travel	<ul style="list-style-type: none"> <li>- Enabling sharing route information (e.g.: travel time, estimated time of arrival) and location with "your friends" on the App BONVOYAGE;</li> <li>- Enabling shared address associated with contact phone / smart phone (which then becomes the starting address / travel destination);</li> <li>- Enabling sharing favourite places with other applications that require location information;</li> <li>- Enabling sharing user location with other Apps.</li> </ul> (Every sharing request shall be implicitly/explicitly accepted, ignored or refused by the beneficiary).		-
	- Enabling sharing information on the place reserved on the means of transport with their friends.		-
Word of mouth	BONVOYAGE chat exchange message.		-
Public transports information	User can share real time information on public transports circulation / status (e.g. delays, strikes, itinerary changes, etc.)	Display information about the status of the train (e.g. train not departed yet, train late / early, departing / arrival	Display information on nearby public transport stops and real-time information

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno platform).	Smile / BeamBeta
	<p>with other BONVOYAGE users, adding the information on BONVOYAGE platform.</p> <p>User can also display information shared by other BONVOYAGE users concerning:</p> <ul style="list-style-type: none"> <li>- Public transportation Status (e.g.: train / bus not started yet, late / early, filling rate, cleanness);</li> <li>- Public transport lines (e.g.: delay, strike, problems of access);</li> <li>- Line of bus, metro on "where you are" (e.g.: delay, line out of service, accidents, change track, change path, driver assessment, the wrong path);</li> <li>- Stops / stations of public transport nearby.</li> </ul>		
Other information	<p>Visualisation and information sharing on:</p> <ul style="list-style-type: none"> <li>- Planned measures on rail / bus / metro, strikes;</li> <li>- Weather (e.g. snow, rain swing);</li> <li>- Checkpoints;</li> <li>- Places (e.g. restaurant schedule).</li> </ul>	Display information on planned measures on railway lines (e.g. strikes).	
Radar interception	Setting a filter system (km, number of hours) to visualise information on transportation, state of the traffic and accidents incidents (e.g. : 100 km from the place of departure) - Features for		

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	user on the go. The user is informed of his choice with a certain lead time (user defined) of accidents / accidents along the way (the information received with logical push).		
Picture	Possibility to associate a picture to information shared (only with the person you are chatting, status of Social Network).		
Notifications / messages reception	Possibility to send/receive messages among users (dedicated messages box).		
Notifications reception settings	Possibility to filter the information to be received (e.g. : notifications only peak times; updates and news; changes timetables and routes).		Activate or deactivate push messages
Search travel information for others			
Itineraries / favourite places localization	[Included in "Base account definition / setting"]	Insertion / Deletion of Padua within your favourite stations	planned (available in the next release)
User localisation	User Geolocalization.		Geolocalisation of user current position and display of: - available nearby public transport stops / stations and related distance; - nearby places (e.g. hotels) and related distance.
Services/events localisation	Location and distance calculation / path: - Car services (gas stations, parking );		mobility offerings (bike sharing, taxi, car sharing, parking) as a list, on a map



Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	<ul style="list-style-type: none"> <li>- Transport (bus stations, train, airports, act.);</li> <li>- Public services (schools, universities, hospitals, police, post offices);</li> <li>- Shopping and services (supermarkets, shops, pharmacies, travel agencies);</li> <li>- Food and drink, restaurants;</li> <li>- Cultures and entertainment (theatres, cinemas, museums);</li> <li>- Hotels;</li> <li>- Outdoors (beaches, golf courses);</li> <li>- Natural features (islands, lakes, forests).</li> </ul> <p>Possibility to define the area of the location (e.g.: 5/15 minutes by walk / drive).</p> <p>Localization of the service / event on the map.</p>		
Basic visualisation	Maps visualisation (Google Map as well).		Surrounding areas maps display
Information visualisation	Visualisation of other shared information on the map (e.g. incidents).		Via tapping a specific icon on the map (e.g. public transport stop), further information can be accessed (e.g. departure times of public transport at a stop, available rental bikes, condition of a car-sharing vehicle or the available charging points in park houses).

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
Information visualisation selection	Possibility to select information that will be visualised on the map.		Filter to show/hide specific mobility offerings by category (e.g. car sharing)
Display of public transports lines path			
Route maps	Possibility to save maps and the chosen routes and view it offline.		
User maps BONVOYAGE sharing	Possibility to view maps and itineraries of other users.		
Travel maps sharing (Social network)	Possibility to share and view maps and itineraries of others BONVOYAGE through social networks.		
Speedometer			
Maps updating / modification			
Planning travel solution Settings	<ul style="list-style-type: none"> <li>- Selection preference path (e.g.: shortest, faster, less foreign exchange);</li> <li>- Selection favourite transportation (e.g.: bus, subway, train, tram, trucks / heavy vehicles);</li> <li>- Selection of routes to be avoided (e.g. toll roads, highways);</li> <li>- Identification preference level of different public transport / private (score 1-5): taxi, tram, bus, walk, train, subway, car, bicycle.</li> <li>- Selection vehicles owned (car, motorcycle, bicycle);</li> </ul>		Specify Date and Time of Departure / Arrival

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	<ul style="list-style-type: none"> <li>- Selection access to transportation: car sharing, bike sharing, cars, motorcycles, bicycles.</li> </ul>		
Trip planning and visualisation	<ul style="list-style-type: none"> <li>- Search vehicle available for the selected route (with notification of any changes);</li> <li>- Possibility to save search criteria (recent research) only if you specifically select (no default);</li> <li>- Using the selector Fast alphabet;</li> <li>- Possibility to display favourite stations;</li> <li>- Possibility to Possibility of including commercial operators/merchants name (e.g. .: shop, restaurant) during the trip;</li> <li>- Possibility to insert an event run by partners as BONVOYAGE end / start of a journey (e.g. .: show run by a museum);</li> <li>- Routing with car home town-resort destination;</li> <li>- Routing home town-resort destination for local travel / national / transnational public transport;</li> <li>- Calculation of a number of different paths for the selected intermodal trip and taking into account the preferences of public transport / private expressed during the registration, category of membership of the user, historical</li> </ul>	<ul style="list-style-type: none"> <li>- Search trains available for the selected route (with notification of any changes).</li> <li>- Search for "mes" in the station list.</li> <li>- Search of "S." in the station list.</li> <li>- Using the selector Fast alphabet.</li> <li>- Scroll to the M. list.</li> <li>- Display favourite stations.</li> </ul>	<p>Travel itinerary planning through the indication of the point of origin and point of arrival, time of departure, carbon footprint, and price.</p> <p>For price calculation: for travel itineraries depending on the duration of usage or the distance driven (e.g. taxis or car-sharing) an orientation price is calculated.</p> <p>Total price is shown for the entire trip as well as for each segment.</p> <p>Itineraries can be sorted by mean of transport, time, price and CO2.</p> <p>With a filter certain means of transport can be filtered individually.</p>

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	preferences in similar circumstances and behavioural profiling based on user feedbacks (if provided).		
Additional information about the trip	Entering information during the request of the travel solution on: (i) the travel scope (e.g.: work, pleasure); (ii) number of people (e.g.: alone, with friends, in couple, with children older than 1 year/8 years, etc.).		Available Tickets that can be bought
Search stops and public transport routes	Route, stops and arrival times at each stop of the bus lines, metro, tram search ability.		
Travel time calculation (during the journey)	<ul style="list-style-type: none"> <li>- Possibility to check the travel schedule of public transport selected (by entering the number train / bus line);</li> <li>- Calculation of the time required to reach the stop / place of destination (user already on board the means of transport);</li> <li>- Calculation of connecting time;</li> <li>- Calculation of in-vehicles time.</li> </ul>	Possibility to control the travel time of the trains selected (by entering the train number).	Visualisation of departure and arrival time
Travel solution visualisation	<p>Visualisation solutions of departure time. Visualisation solutions of arrival time. Visualisation solutions length of the journey.</p> <p>Visualisation list of solutions containing</p>	<p>Visualisation solutions of departure time. Visualisation solutions of arrival time. Visualisation solutions length of the journey.</p> <p>Visualisation list of solutions containing</p>	<p>Visualisation solutions of departure time. Visualisation solutions of arrival time. Visualisation solutions duration of the journey. Intermodal routes Visualisation list of solutions containing</p>

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	<p>the following information:</p> <ul style="list-style-type: none"> <li>- Source&gt; destination</li> <li>- Codes of public transport (more than one if there are changes)</li> <li>- Cost "from" and the number of loyalty points obtainable</li> <li>- Departure time: arrival time</li> <li>- Duration of the trip; number of changes; in-vehicles time; environmental impact; how the solution contributes to achieve the pre-defined mission.</li> </ul> <p>Visualisation travel "priority" solutions (determined by clustering declared - preferences - preferences based on user or detected by the behaviour of previous trips).</p>	<p>the following information:</p> <ul style="list-style-type: none"> <li>- Source&gt; destination</li> <li>- Codes of public transport (more than one if there are changes)</li> <li>- Cost "from" and the number of loyalty points obtainable</li> <li>- Departure time: arrival time</li> <li>- Duration of the trip.</li> </ul>	<p>the following information:</p> <ul style="list-style-type: none"> <li>- Source&gt; destination</li> <li>- segments</li> <li>- Costs</li> <li>- Departure time: arrival time</li> <li>- Duration of the trip.</li> </ul>
Route visualisation	<ul style="list-style-type: none"> <li>- Visualisation of the itinerary;</li> <li>- Visualisation of the route (map) followed by transport (user already on board).</li> </ul>	Display train route map, also including Pin Points of intermediate stations.	Visualisation of the itinerary in a list, on a map
Non-existent route	Notification of unavailable travel solutions for the route start-selected selected (the notification can be related also to a single phase of the travel).	View screen and message stating that there are no solutions.	View screen and message stating that there are no solutions.
Display trains stops	<ul style="list-style-type: none"> <li>- Visualisation stations train stop;</li> <li>- Visualization trains departing / arriving</li> </ul>	Display of selected stations Pin Points and planned departing / arriving trains.	Display of selected stations Pin Points and planned departing / arriving trains.

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	programmed.		
LPT display stop	<ul style="list-style-type: none"> <li>- Visualisation stops of urban public transport;</li> <li>- Visualisation interconnection with other modes of public transport.</li> </ul>		
Display of departure / arrival time in selected the station / LPT stop	<p>For each station, possibility to display the departure time of the selected train / LPT line.</p> <p>For the selected line, possibility to display the time of arrival to the user destination.</p>	Display time of departure and arrival of the train from / in selected stations.	
Defining objectives to be achieved in a given time interval	<p>Defining a target: calories, emissions, money.</p> <p>Each target reached allows the accumulation score/points (e.g.: more heat = more points; less emissions = more points, more money saved = more points).</p> <p>(Preferential requirement).</p>		
Mission/Travel monitoring	<p>Monitoring progress towards achieving the objectives</p> <p>Monitoring time remaining at the end of the time pre-set for the achievement (mandatory requirement).</p>		
Mission/Travel cancellation	Possibility to delete the objective (of the mission).		
Travel Service	Car sharing booking (by re-sending to the		Booking of mobility services (bike

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
(private) choice and booking	site manager of car sharing service selected) in route planning.		sharing, car sharing, public transport,...) in the app
Credit/Debit card purchase	Travel solution purchase / single travel document (even LPT) and the ticket for the event (event ticket purchase).	Purchase tickets for the route selected by credit card / debit card.	Pressing the "book now" button the whole trip was booked, reserved and necessary tickets bought from the providers
eWallet purchase	Travel solution purchase / single travel document (even LPT) and the ticket for the event with a special credit BONVOYAGE.		
PayPal purchase	Travel solution purchase / single travel document (even LPT) and the ticket for the event with PayPal account.	Purchase tickets for the selected route with PayPal account.	
Purchase through other modalities			
Travel solution purchased modification	Possibility to modify reservation or travel solution purchased (where available by the operator): - Possibility to change the booking keeping the same route; - Possibility to change the travel solution purchased.	Possibility to modify the reservation.	
Travel solution purchased Reimbursement	- Possibility to apply for reimbursement of travel solution purchased; - Possibility to apply through contacts BONVOYAGE (online, free BONVOYAGE phone number) partial repayments (only	Possibility of asking for the reimbursement of the ticket purchased.	cancellation possible (showing costs that arise)

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	LPT) LPT service not enjoyed.		
Purchase notification	Sending notification with travel ID code and travel ticket to the user.	Receiving notification with ticket PNR code when arriving at the departing station.	
	Possibility to select the mode of reception of the ticket and the ID code of the travel solution (smart phone or other mobile device): SMS, email, 2D code, QR code.	Receiving tickets on smartphones.	After the payment is authorized, the ticket is be directly shown within the smile app.
	Possibility to receive SMS or email notification of the purchased of travel solution.	Receiving purchase tickets notification on smartphones.	
History visualisation	<ul style="list-style-type: none"> <li>- Visualisation historical travel solution purchased and possibility to send the historian email.</li> <li>- View Detail tickets (e.g.: date, origin, destination and cost of the ticket, train codes, trip duration, number changes, number of adults, number children, passengers details with detail on site and reservation code, QR code and booking number references; reduced environmental impact - to be verified against eco-passenger).</li> </ul>	Display of purchased tickets "history" and ability to send the history by email. View Detail tickets (e.g.: travel date, origin, destination and cost of the ticket, train codes; trip duration, number changes, number of adults, number of children, passengers detail with detail on site and reservation code, QR code and PNR).	Purchased tickets display. Tickets classification in valid and expired tickets.
Travel setting memorandum	Possibility to activate reminder by: <ul style="list-style-type: none"> <li>- Inclusion in the travel calendar;</li> <li>- Receipt notification to 1h before</li> </ul>	Possibility to activate reminder by: <ul style="list-style-type: none"> <li>- Inclusion in the travel calendar;</li> <li>- Receipt notification to 1h before</li> </ul>	



Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	departure; - Receive notification in station (with list of booking codes).	departure; - Receive notification in station (with list of booking codes).	
Passengers choice	- Select the type of passengers (e.g.: elderly, adults, and children). - Specify number of passengers (groups etc.) when planning the trip.	- Select the type of passengers (e.g. Elderly, adults, and children).	
Tariff choice	Possibility to select the best rate (e.g. fidelity card).	Possibility to select the best rate (e.g. fidelity card; young / senior card).	
Best price management	Possibility to visualise and select the best price (with related services) of the week or of the month.	Possibility to visualise and select the best price (with related services).	Sort by price
Class Choice	Possibility to choose the preferred class/tariff.	Possibility to choose the preferred class/tariff.	
Select the favourite seats	- Possibility to visualise the layout of public transport available seats (with seats bookable). - Possibility to select the seat on public transport.		
Discounts / promotions visualisation	Possibility to visualise discounts/promotions available and buy it.		
Other transport services purchase	Possibility to buy other transport services: - taxi; - car sharing, bike sharing.		Possibility to buy other transport services: - taxi; - car sharing, bike sharing.
Stop and parking	Possibility to buy parking.		

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
subscription			
Access restricted traffic area/zone purchase	Possibility to buy access for restricted area/zone.		
Leisure services purchase	Possibility to buy recreational and tourists services: <ul style="list-style-type: none"> <li>- Activity 'Food &amp; Beverage' e.g.: McDonald / Fast food;</li> <li>- Retail Stores;</li> <li>- Electronic payment of tolls and parking;</li> <li>- Other self-service management;</li> <li>- Supermarkets;</li> <li>- Museums, tourist tours.</li> </ul>		
Municipal services purchase	Possibility to buy municipal services.		
Synchronization to and from calendar; from social network	-Sync calendar events from mobile; - Sync travel and events purchased on BONVOYAGE platform on the user smart phone calendar.		
	Events (from Social Network) Visualisation.		
Events information	Information Display tourist events (e.g. tours with guides - where - when - Price - Review - related events) for cities and selected date (optional requirement).		
Preferred events	[Included in "Base account definition / setting"]		

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
Historical	Events historic purchases visualisation.		
User Sending feedback	<ul style="list-style-type: none"> <li>- Possibility of sending notifications on possible problems the App (e.g.: problems with maps, places missing; feedback if misplaced);</li> <li>- Possibility to send feedback on how to improve the App;</li> <li>- Evaluation of using experience the App (cities, companies of mobility and transport supported by the JPA, information provided from the app, accuracy estimated time of arrival at destination, accurate arrival times for public transport, correct information on location and online, finding points of interest, suggestions).</li> </ul>	Possibility of signal possible problems.	Possibility to send a "general" feedback through a description and a picture.
Follow me	<ul style="list-style-type: none"> <li>- Receiving assistance during journey to deliver an opinion and satisfaction degree on development of the trip concerning the overall travel solution and/or each single mono-modal step (e.g. during the travel, when a change of vehicle happen; on-line support).</li> <li>- Receiving assistance by activating the function of rescheduling with the possibility of providing a negative feedback if applicable.</li> </ul>		

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
Vertical Support and re-planning of the trip in the event of unforeseen	<ul style="list-style-type: none"> <li>- Possibility to send requests for help to re-plan trip in case of unforeseen circumstances;</li> <li>- Possibility to receive support to re-plan of the travel itinerary (hint alternative route) - requirement ambitious, through the intervention of a virtual assistance.</li> </ul>		push message if bike sharing station (box) is not available at planned station (asking for re-planning)
Collecting score	Possibility to gather points/scores based on: <ul style="list-style-type: none"> <li>- Travel solutions purchased (e.g. based on low environmental impact of the purchased travel solution);</li> <li>- Quantity and type of information mobility shared with other users;</li> <li>- Achievement of objectives.</li> </ul>	Entering fidelity card code to collect scores when purchasing tickets.	
Score visualisation	Possibility to check your score, with its list of purchases / points earned, and its position in the ranking.	Possibility to check collected scores and view a list of all purchases and related data on the points earned.	
Award	Possibility to obtain awards (e.g. transports or car-sharing, bike-sharing free tickets). Awards proposition to the user will be based on these preferences (where possible).		
Receiving and obtaining promotions/discounts	<ul style="list-style-type: none"> <li>- Possibility to receive promotions from the partners of BONVOYAGE, associated with specific classes of users (ex.: over</li> </ul>		The App considers season tickets, discounts and memberships e.g. from sharing providers as well as private

Functionalities	BONVOYAGE	Trenitalia App (previously called ProntoTreno)	Smile / BeamBeta
	60).		vehicles which can be saved in the mobility profile.

*Table A2-8: Mobility and travel apps benchmark (BONVOYAGE, TRIT, Smile/BeamBeta)*

Functionalities	Waze	Moovit	Superhub
	Car drivers	Urban public transports users	Users of private / public transports in urban areas
Login	Automatic login after registration.	Automatic login after registration.	Log in as a "guest" or profile registered to have a personalized travel experience.
Base account definition/setting	Entering basic information: name, country, mobile phone number.	Entering information on country, town.	Entering basic information: name, surname, email address.
Status			
Privacy			
Nickname	Nickname selection and insertion.	Nickname selection and insertion (to be associated to the email address).	
Preferred addresses	Entering preferred addresses (e.g. home, work)		
Icon	Choice of an icon that identifies user location on the Waze map (example: trucks, Fiat 500, taxi).	Choice of an icon to be associated to the nickname.	
Humour	Possibility to associate a mood (e.g. turbo, sleepy, ninja) to the user profile (this feature is active only after the collection of a certain number of scores).		
Connection of user	Possibility to insert data from the user	Sharing in Facebook, Twitter, Google +,	

Functionalities	Waze	Moovit	Superhub
profile to social media	Facebook profile. Possibility to connect to Facebook, Twitter and Foursquare.	Gmail, Whatsup account.	
Profile loyalty categorisation/ setting	Categorization into different levels of profile based on points accumulated. Examples: - Baby Wazer: up to the achievement of 161 km - Wazer warrior among the top 10% of users at the national level - Wazer royal: 1% of the top user nationwide	Categorization into different levels of profile based on points accumulated. Examples: - Beginner: until it reaches 100 pts; - Knight: between 40% of the top user at national level; - Aviator: among the top 5% of users nationwide.	
App usage as anonymous user (user profile is partially or totally deactivated)	Possibility to use the App in anonymous mode (icon and your user name are not displayed on the map) and the information is shared as "Wazer".	Possibility to use the App and share information in anonymous mode (eliminating the nickname).	
Social network "Friends" (contact) link	Possibility to add "friends" from user smart phone contacts list or from his Facebook account.		
	Possibility to obtain information about the ranking of user's Facebook friends which are also users of Waze.		
	Possibility to view the ranking of the other users (general rank and rank weekly) to determine "reliability" user.		
	Entering contacts to identify other friends on Waze.		
Information on the	Sharing information about the status of		Display information and news about the

Functionalities	Waze	Moovit	Superhub
state of circulation	road circulation (e.g. circulation slowed / interrupted).		status of circulation and unforeseen events (e.g. circulation slowed / interrupted).
You add me on travel	Sharing information (e.g.: travel time, estimated time of arrival) and location with friends.		
Word of mouth	Sending notifications and messages through Waze chat, email and social media (sharing post / I like on Facebook, Twitter).		
Public transports information		Sharing updated information about timetables and routes of public transport (in order to improve the App).	Sharing information on public transport lines with other users (example: delay, strike, problems of access).
		Sharing information about the bus line, metro on where the user is located with other users (example: delay, line out of service, accidents, change track, change path, driver assessment, and the wrong path).	
		Displaying information shared by other users regarding the bus line, metro on which the user is travelling.	Displaying information shared by other users regarding public transport lines.
Other information			Sharing information on weather and checkpoints.
Radar interception			Setting a radar interception (in kms) to receive information on transports, state of the circulation and unexpected events / accidents.

Functionalities	Waze	Moovit	Superhub
Picture			Possibility to associate a picture to information shared.
Notifications / messages reception	Receive notifications / messages from other users through Waze chat.	Receiving notifications through email push mode and pop-ups.	
Notifications reception settings		Possibility to filter the information to be received (e.g. ∴ notifications only peak times; updates and news; changes timetables and routes).	
Search travel information for others			
Itineraries / favourite places localization	Recognition of favourite routes.	Recognition of favourite routes.	Recognition of favourite places.
User localisation	Localization of active users and related profile details (username, score, speed, date of registration in Waze).	User localisation and display of nearby bus, tram, metro stops, including indication of the travel time needed to reach them.	
Services/events localisation	Location and distance calculation / path: <ul style="list-style-type: none"> <li>- Car services (gas stations, car parks);</li> <li>- Transport (bus stations, train, airports, etc.);</li> <li>- Public services (schools, universities, hospitals, police, post offices);</li> <li>- Shopping and services (supermarkets, shops, pharmacies, travel agencies);</li> <li>- Food and drink, restaurants;</li> <li>- Cultures and entertainment (theatres, cinemas, museums);</li> <li>- Hotels;</li> </ul>		



Functionalities	Waze	Moovit	Superhub
	<ul style="list-style-type: none"> <li>- Outdoors (beaches, golf courses);</li> <li>- Natural features (islands, lakes, forests).</li> </ul>		
Basic visualisation	Surrounding areas maps display.		
Information visualisation	Displaying shared information on the map (e.g. checkpoints, dangers accidents).		
Information visualisation selection	Possibility to select information that will be displayed on the map.		
Display of public transports lines path		Display of metro and bus lines maps divided by areas (city centre, suburbs), mode (tramways, electric) and time of day (night).	
Route maps			
User maps BONVOYAGE sharing	Possibility to view maps and itineraries of other users. Possibility to send maps and itineraries to other users.		
Travel maps sharing (Social network)			
Speedometer	Possibility to activate a speedometer.		
Maps updating / modification	Possibility to modify route map (e.g. street names, direction) based on the user ranking.		
Planning travel solution Settings	Selection of routes to be avoided (e.g. toll roads, expressways). Selecting the type of path to find (example: shortest / fastest route).	Route preferences selection (example: fastest, shortest, chin exchange rates). Favourites transports selection (e.g. bus, subway, train, and tram).	Indication of the preference level of different private / public transport (score 1-5): taxi, tram, bus, walk, train, subway, car, and bicycle. Selection of transport means owned (car, motorcycle, and bicycle).

Functionalities	Waze	Moovit	Superhub
			Selection of access to transportation: car-sharing, bike-sharing, car, motorbike, bicycle.
Trip planning and visualisation	Car itinerary / route calculation based on point of departure / point of arrival.	Itinerary / route calculation (through public transports) based on point of departure / point of arrival.	Calculation of 3 different intermodal itineraries for the selected route, taking into account the preferences of private / public transports expressed during the registration phase.
Additional information about the trip			Entering information on reasons for traveling (e.g. work, leisure) and the number of people (e.g. alone, with friends, with children).
Search stops and public transport routes		Ability to search route, stops and arrival times at each stop of the bus lines, metro, tram.	
Travel time calculation (during the journey)		Calculation of the time required to reach the stop / place of destination (user already on board the means of transport).	
Travel solution visualisation			
Route visualisation		Visualisation of the route (map) followed by transport (user already on board).	
Non-existent route			
Display trains stops			
LPT display stop		Public transport next stop display (user already on board).	
Display of departure / arrival time in selected		For each stop, possibility to display the departure time of the selected train / LPT	

Functionalities	Waze	Moovit	Superhub
the station / LPT stop		line. For the selected line, possibility to display the time of arrival to the user destination.	
Defining objectives to be achieved in a given time interval			Selecting a target / objective to be achieved: calories, carbon footprint reduction, saved money. Each accomplishment allows the collect a pre-defined amount of scores. (e.g.: more burnt calories = more points; less emissions = more points, more money saved = more points).
Mission/Travel monitoring			Monitoring progress towards achieving the objectives Monitoring time remaining at the end of the time pre-set for the achievement.
Mission/Travel cancellation			Possibility to delete the objective.
Travel Service (private) choice and booking			
Credit/Debit card purchase			
eWallet purchase			
PayPal purchase			
Purchase through other modalities			
Travel solution purchased modification			
Travel solution			

Functionalities	Waze	Moovit	Superhub
Purchase reimbursement			
Purchase notification			
History visualisation			
Travel setting memorandum			
Passengers choice			
Tariff choice			
Best price management			
Class Choice			
Select the favourite seats			
Discounts / promotions visualisation			
Other transport services purchase			
Stop and parking subscription			
Access restricted traffic area/zone purchase			
Leisure services purchase			
Municipal services purchase			
Synchronization to and	Sync calendar events from mobile.		

Functionalities	Waze	Moovit	Superhub
from calendar; from social network	Events sync from social networks.		
Events information			
Preferred events			
Historical			
User Sending feedback		Evaluating the App usage experience (cities, companies of mobility and transport supported by the APP, information provided by the App, accuracy of estimated time of arrival at destination, accurate arrival times for public transport, correct information on path and lines, finding points of interest, suggestions).	
Follow me			
Vertical Support and re-planning of the trip in the event of unforeseen			
Collecting score	Scores collection based on the quantity and type of shared information about the state of the traffic. Examples: <ul style="list-style-type: none"> <li>- First report: 25 pts;</li> <li>- The first 16 km: 25 pts;</li> <li>- First report on the weekend: 30 pts;</li> <li>- The first report of the problem on the map: 50 pts;</li> <li>- First friend in Waze: 200 pts;</li> </ul>	Collecting scores based on the amount of information shared with other users.	Possibility to gather points/scores depending on the achievement of the objectives.

Functionalities	Waze	Moovit	Superhub
	- Best national user of the week: 500 pts.		
Score visualisation	Possibility to check collected scores user positioning in the ranking.	Possibility to check collected scores.	Possibility to check collected scores.
Award			Possibility to get awards (e.g. free tickets for LPT or credit for car-sharing, bike-sharing services).
Receiving and obtaining promotions/discounts		Partners: Roma mobilità, OpenStreetMap Credit.	

*Table A2-9: Mobility and travel apps benchmark (Waze, Moovit, Superhub)*

Functionalities	Google Maps	MyCicero	Carsh	Musement
	Car drivers; users of public transports	Users of public transports	Users of car sharing services	Tourists
Login	Login through Gmail account.	Automatic login after registration.	Automatic login after registration.	Automatic login after registration.
Base account definition/setting		Entering basic information: name, surname, email address, phone number.	Entering basic information: name, surname, email address.	Entering basic information: name, surname, email address, phone number, country.
Status				
Privacy				
Nickname				
Preferred addresses	Entering preferred addresses			

Functionalities	Google Maps	MyCicero	Carsh	Musement
	(e.g. home, work)			
Icon				
Humour				
Connection of user profile to social media				Possibility to insert profile data from Facebook account.
Profile loyalty categorisation/ setting				
App usage as anonymous user (user profile is partially or totally deactivated)				
Social network "Friends" (contact) link	Possibility to locate the address associated to contacts present in the user phone book.			
Information on the state of circulation	Display of circulation status on the map.			
You add me on travel	Share favourite places with other Apps that require location information. Share user location with other Apps.			
Word of mouth				
Public transports information	Display information on nearby public transports stops / stations.			

Functionalities	Google Maps	MyCicero	Carsh	Musement
Other information	Displaying information associated with a place (e.g. time of opening / closing of a restaurant).			
Radar interception				
Picture				
Notifications / messages reception				
Notifications reception settings				
Search travel information for others				
Itineraries / favourite places localization	Possibility to save favourite places.			
User localisation	User geolocalisation.	User geolocalisation.	User geolocalisation.	
Services/events localisation	Localisation of nearby restaurants, shops, parks, museums, other services (possibility to define the radius of localization, e.g.: 5/15 minute walk / drive).			Display of the selected event address on the map.
Basic visualization	Map display.			
Information visualization				
Information visualization selection				
Display of public				



Functionalities	Google Maps	MyCicero	Carsh	Musement
transports lines path				
Route maps	Possibility to save maps and the chosen routes and view it offline.			
User maps BONVOYAGE sharing	Possibility to view maps and itineraries of other users.			
Travel maps sharing (Social network)				
Speedometer				
Maps updating / modification				
Planning travel solution Settings	Route preferences selection (e.g.: fastest, shortest, chin exchange rates). Favourites transport modes selection (e.g. bus, subway, train, and tram).			
Trip planning and visualization	Route calculation by car and / or public transports from point of departure to the point of arrival (also international routes).	Itinerary calculation through local, regional and inter-regional public transports.		
Additional information about the trip				
Search stops and public transport routes		Ability to search route, stops and arrival times at each stop of the bus lines, metro, tram.		
Travel time calculation	Calculation of the time			

Functionalities	Google Maps	MyCicero	Carsh	Musement
(during the journey)	required to reach the place of destination.			
Travel solution visualisation				
Route visualisation	Visualisation of the route to be followed.			
Non-existent route				
Display trains stops				
LPT display stop				
Display of departure / arrival time in selected the station / LPT stop				
Defining objectives to be achieved in a given time interval				
Mission/Travel monitoring				
Mission/Travel cancellation				
Travel Service (private) choice and booking			Car sharing service booking (by reference to the website of the operator of the car sharing service selected).	
Credit/Debit card purchase		Travel tickets purchase (tickets and subscriptions in a few cases) from local, regional and interregional transport operators, through credit card		Purchase tickets for the selected event by credit card / debit card.

Functionalities	Google Maps	MyCicero	Carsh	Musement
		registered to the App.		
eWallet purchase		Travel tickets purchase from the local transport operators (example: ATAC) with special credit myCicero. (eWallet can be charged by credit card / prepaid Bemoov, SisalPay).		
PayPal purchase				Purchase tickets for the selected event by PayPal account.
Purchase through other modalities		Purchase through Bemoov system (registration Bemoov by association mobile number to credit card or debit card number, insert the M-site phone number, receive via SMS a link that will be used for identification, completion of payment by clicking on the link received and by entering the security code of the credit card).		
Travel solution purchased modification				
Travel solution purchase reimbursement				

Functionalities	Google Maps	MyCicero	Carsh	Musement
Purchase notification		Possibility to receive the ticket on smart phone through QR code.		
History visualisation		Visualisation historical travel solution purchased.		Visualisation historical tickets purchased.
Travel setting memorandum				
Passengers choice				
Tariff choice				
Best price management				
Class Choice				
Select the favourite seats				
Discounts / promotions visualisation			Possibility to purchase packages and promotions (e.g. monthly packages Car To Go, discounts on car insurance and motorcycle).	Possibility to display available discounts and purchase discounted tickets.
Other transport services purchase				
Stop and parking subscription		Parking payment (after entering vehicle registration number and selection of the parking area) by credit myCicero. Actual parking payment can be		

Functionalities	Google Maps	MyCicero	Carsh	Musement
		controlled by the auxiliary traffic through handheld.		
Access restricted traffic area/zone purchase		Access restricted traffic area/zone purchase.		
Leisure services purchase				Touristic services purchase.
Municipal services purchase		Municipal services payment (where / if applicable).		
Synchronization to and from calendar; from social network				
Events information				Display of tourist events information (e.g. guided tours - where - when - Price - Review - related events) for selected cities and dates.
Preferred events				Preferred events list creation.
Historical				"Seen events" list creation.
User Sending feedback	Possibility to send a feedback to Google Maps: reporting problems with the maps; inserting missing places; reporting wrong positions; feedback on App usage and changes.			
Follow me				
Vertical Support and				

Functionalities	Google Maps	MyCicero	Carsh	Musement
re-planning of the trip in the event of unforeseen				
Collecting score				
Score visualization				
Award				
Receiving and obtaining promotions/discounts				

*Table A2-10: Mobility and travel apps benchmark (Google Maps, MyCicero, Carsh, Musement)*

The benchmark exercise also included the following web platforms:

- Moovel;
- Mozie;
- Wanderio;
- Sailsquare;
- Jolly Ticket;
- Waynaut.

However, as they are not available as App, the benchmark exercise was limited to identify and track main functionalities, as illustrated below:

- Moovel: Possibility of scheduling itineraries only on the Internet ([www.moovel.com](http://www.moovel.com)) and only in Germany.
- Mozie: Possibility to plan and purchase travel (half price) only on the Internet ([www.mozie.it](http://www.mozie.it)).
- Wanderio: Possibility to compare prices, timing and emissions paths with planes, trains, ships, buses only on the Internet ([www.wanderio.com](http://www.wanderio.com)).
- Sailsquare: Possibility of booking and buying holiday sailing only on the Internet (<https://it.sailsquare.com/>).
- Jolly Ticket: Possibility of booking and purchasing flights, hotels, rental cars only on the Internet ([www.jollyticket.com](http://www.jollyticket.com)).
- Waynaut: a producer / provider API - widget for websites or App.

## 4 ANNEX 3: General Use Cases (UC\_00)

**Use Case UC\_00\_01: User registering and creating an account on BONVOYAGE platform, choosing to perform only the basic registration or completing an existing account**

USE CASE ID	UC_00_01
<b>Title</b>	User registering and creating an account on BONVOYAGE platform, choosing to perform only the basic registration or completing an existing account
<b>Description / Goals</b>	<p><u>Overview:</u> A user wants to register in BONVOYAGE platform and create an account.</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How the user can provide his personal data to BONVOYAGE platform to create a “basic” profile;</li> <li>• How the user can provide additional personal data to BONVOYAGE platform to deepen his existing profile;</li> <li>• How the user can authorise BONVOYAGE platform to share his data.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	Citizen (registers to BONVOYAGE) BONVOYAGE platform
<b>Pre-conditions</b>	The user has downloaded BONVOYAGE App on his smart phone or other mobile device.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1. The user accesses BONVOYAGE App.</li> <li>2. BONVOYAGE starts the user registration process.</li> <li>3. BONVOYAGE asks the user to provide the following information for a “basic” registration: <ul style="list-style-type: none"> <li>• Email;</li> <li>• Password.</li> </ul> </li> <li>4. BONVOYAGE platform asks the user the authorisation to be geo-located, displaying: <ul style="list-style-type: none"> <li>• YES button;</li> <li>• NO button.</li> </ul> </li> <li>5. The user clicks on the YES button.</li> <li>6. BONVOYAGE platform processes the information.</li> <li>7. BONVOYAGE platform creates a “basic” user account.</li> <li>8. BONVOYAGE platform asks the user to provide the following mandatory information:</li> </ol>



	<ul style="list-style-type: none"><li>• Name;</li><li>• Surname.</li></ul> <p>9. The user inserts his name and surname.</p> <p>10. BONVOYAGE platform displays a message telling the user that the “basic registration” has been completed.</p> <p>11. BONVOYAGE platform asks the user if he wants to provide additional information to enrich his profile, displaying:</p> <ul style="list-style-type: none"><li>• YES button;</li><li>• No button.</li></ul> <p>12. The user clicks on the YES button.</p> <p>13. BONVOYAGE platform asks the user to provide the following (optional) information:</p> <ul style="list-style-type: none"><li>• Nickname;</li><li>• Default preferred language;</li><li>• Profile picture;</li><li>• Icon;</li><li>• User category;</li><li>• VAT number (for businesses);</li><li>• Tax code (for persons).</li></ul> <p>For each domain, BONVOYAGE explains why the information is needed (e.g. “<i>user category allows BONVOYAGE to provide customised travel solutions for each single user</i>”).</p> <p>For each domain, BONVOYAGE platform also displays a “SKIP” button.</p> <p>14. The user inserts:</p> <ul style="list-style-type: none"><li>• A nickname;</li><li>• Profile picture (selected from his Smart phone gallery);</li><li>• Icon (selected from the ones provided by BONVOYAGE App);</li><li>• User category;</li><li>• VAT number;</li><li>• Tax code.</li></ul> <p>15. The user saves the provided information.</p> <p>16. BONVOYAGE platform “matches” the information to the user account.</p> <p>17. BONVOYAGE platform asks the user the authorisation to share his information, displaying:</p> <ul style="list-style-type: none"><li>• YES button;</li><li>• NO button.</li></ul> <p>18. The user clicks on the YES button.</p> <p>19. BONVOYAGE platform saves the changes.</p> <p>20. BONVOYAGE platform asks the user if he wants to add additional information to his profile (e.g. insert favourite addresses; create a list of favourite places / events), displaying:</p>
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	<ul style="list-style-type: none"> <li>• YES button;</li> <li>• NO button.</li> </ul> <p>21. The user clicks on the NO button.</p> <p>22. The user exits from the BONVOYAGE App.</p> <p>23. The Use Case ends.</p>
<b>Post-conditions</b>	The user account on BONVOYAGE platform has been created.
<b>Alternative Flow 1</b>	<p>11a. The user clicks on the NO button<sup>14</sup>.</p> <p>11a1. The user exists from the BONVOYAGE platform.</p> <p>11a2. The Use Case ends.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU10 Login;</li> <li>• BU20 Privacy;</li> <li>• BU30 Base account definition/setting.</li> </ul>

**Table A3-1: UC\_00\_01 User registering and creating an account on BONVOYAGE platform, choosing to perform only the basic registration or completing an existing account**

<sup>14</sup> If the optional information is not inserted, at the moment of the first purchase, BONVOYAGE platform will ask the user to compulsorily provide VAT code/Tax code as these are necessary data for ticket purchase.

## Use Case UC\_00\_02: User updating his account on BONVOYAGE App

USE CASE ID	UC_00_02
Title	User updating his account on BONVOYAGE App
Description / Goals	<p><u>Overview</u>: a user wants update his account on BONVOYAGE platform.</p> <p><u>Goal</u>: this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• how the user can create a list of favourite addresses / places /events;</li> <li>• how the user can view fidelity scores he has gained;</li> <li>• How the user can link a status / emoticon to his profile and share it on social networks.</li> </ul>
Constraints	-
Actors	<p>Citizen (registers to BONVOYAGE)</p> <p>BONVOYAGE platform</p>
Pre-conditions	The user has created his BONVOYAGE account according to the Activity flow described in <b>UC_02_01</b> .
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>1 The user accesses BONVOYAGE App.</li> <li>2 The user accesses the “Setting” functionality.</li> <li>3 The user clicks on “update profile” functionality.</li> <li>4 The user updates the following data: mobile number, nickname, photo, icon identification.</li> <li>5 The user clicks on “Favourites” functionality.</li> <li>6 BONVOYAGE platform displays the following options: <ul style="list-style-type: none"> <li>• Insert favourite address;</li> <li>• Insert favourite places;</li> <li>• Insert favourite events.</li> </ul> </li> <li>7 The user selects “Insert favourite address” option.</li> <li>8 The user insert the following data related to the address: street, number, zip code, city, country.</li> <li>9 BONVOYAGE platform displays two button: <ul style="list-style-type: none"> <li>• Add More addresses;</li> <li>• Finish.</li> </ul> </li> <li>10 The user clicks on the Finish button.</li> <li>11 BONVOYAGE creates the list of favourite addresses.</li> <li>12 The user exits the BONVOYAGE platform.</li> </ol>

	13 The Use Case ends.
<b>Post-conditions</b>	A list of favourite addresses has been created and associated to the user account.
<b>Alternative Flow 1</b>	10a. The user clicks on the Add more addresses button. The flow continues from step 8.
<b>Alternative Flow 2</b>	7a The user selects “Insert favourite places” option. 7a1 The user insert the following data related to the place: name, street, number, zip code, city, country. The flow continues from step 9.
<b>Alternative Flow 3</b>	7a The user selects “Insert favourite events” option. 7a1 The user insert the following data related to the event: name, date, street, number, zip code, city, country. The flow continues from step 7.
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU30 Base account definition/setting.</li> </ul>

*Table A3-2: UC\_00\_02 Passenger updating his account on BONVOYAGE App*

## Use Case UC\_00\_03: User associating a status to his profile and sharing it through Social network

USE CASE ID	UC_00_03
Title	User associating a status to his profile and sharing it through Social network
Description / Goals	<p><u>Overview</u>: a user wants to associate a status to his BONVOYAGE profile</p> <p><u>Goal</u>: this Use Case aims to show how the user can:</p> <ul style="list-style-type: none"> <li>• link status / emoticons to his profile;</li> <li>• Share the status on social networks.</li> </ul>
Constraints	-
Actors	<p>Citizen (registers to BONVOYAGE)</p> <p>BONVOYAGE platform</p>
Pre-conditions	The user has created his BONVOYAGE account according to the Activity flow described in <b>UC_02_01</b> .
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>1 The user accesses BONVOYAGE App.</li> <li>2 The user accesses the "Status" functionality.</li> <li>3 The user clicks on the "Status" empty fields.</li> <li>4 The user inserts a sentence describing his status (e.g. <i>on my way to Portugal</i>).</li> <li>5 The user clicks on the Save button.</li> <li>6 The user status is associated to the user profile.</li> <li>7 BONVOYAGE platform asks the user if he wants to share the status through social network, displaying: <ul style="list-style-type: none"> <li>• YES button;</li> <li>• NO button.</li> </ul> </li> <li>8 The user clicks on the YES button.</li> <li>9 BONVOYAGE shows a list of social network whose Apps are available on the user smart phone.</li> <li>10 The user selects the preferred social network.</li> <li>11 The same status is published on the selected social network wall.</li> <li>12 The user exits the BONVOYAGE platform.</li> <li>13 The Use Case ends.</li> </ol>

<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	7a The user clicks on the NO button. The flow continues from step 12.
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU40 Status.</li></ul>

*Table A3-3: UC\_00\_03 User associating a status to his profile and sharing it through Social network*

## Use Case UC\_02\_04: User inviting friends to join BONVOYAGE platform

USE CASE ID	UC_00_04
Title	User inviting friends to join BONVOYAGE platform
Description / Goals	<p><u>Overview:</u> a user wants to invite people he knows to join BONVOYAGE platform.</p> <p><u>Goal:</u> this Use Case aims to show how the user can invite friends to join BONVOYAGE platform.</p>
Constraints	-
Actors	<p>Citizen (uses BONVOYAGE)</p> <p>BONVOYAGE platform</p>
Pre-conditions	The user has created his BONVOYAGE account according to the Activity flow described in <b>UC_02_01</b> .
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>1 The user accesses BONVOYAGE platform.</li> <li>2 The user accesses the “Friendship” functionality.</li> <li>3 The user selects the “invite friends” functionality (targeting user contacts that have not registered on BONVOYAGE yet).</li> <li>4 BONVOYAGE platform asks the user to select a contact from one of the following lists: <ul style="list-style-type: none"> <li>• Phone contacts;</li> <li>• Email contacts;</li> <li>• Social network friends.</li> </ul> <p>BONVOYAGE platform considers the invitation through SMS as preferred modality. If BONVOYAGE notices that the phone number is not available for the selected contact, it will suggest the user to send the invitation through email (as described in alternative flow 4).</p> </li> <li>5 The user selects the option “Phone contacts”.</li> <li>6 The full list of phone contacts is opened.</li> <li>7 The user flags the contacts he wants to invite to join BONVOYAGE.</li> <li>8 The user click on the “Send invitation” functionality.</li> <li>9 BONVOYAGE platform sends an SMS to the selected contact to invite him to register to BONVOYAGE platform.</li> <li>10 BONVOYAGE platform displays the user a message telling “Your invitation has been successfully sent”.</li> <li>11 BONVOYAGE platform asks the user if he wants to invite other friends, displaying: <ul style="list-style-type: none"> <li>• YES button;</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>• NO button.</li> </ul> <p>12 The user selects the NO button.</p> <p>13 The user exits the BONVOYAGE platform.</p> <p>14 The Use Case ends.</p>
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	<p>12a The user clicks on the YES button.</p> <p>The flow continues from step 6.</p>
<b>Alternative Flow 2</b>	<p>5a The user selects the option “Social network contacts”.</p> <p>5a1 The list of Social network whose App is available on the user smart phone is displayed.</p> <p>5a2 The user selects a Social network.</p> <p>5a3 The full list of Social network contact is displayed.</p> <p>5a4 The user flags the contacts he wants to invite to join BONVOYAGE.</p> <p>5a5 The user clicks on the “Send invitation” functionality.</p> <p>5a6 BONVOYAGE platform sends a message to the selected contact to invite them to register to BONVOYAGE App.</p> <p>The flow continues from step 10.</p>
<b>Alternative Flow 3</b>	<p>5a The user selects the option “Email contacts”.</p> <p>5b1 The full list of email contacts is opened.</p> <p>5b2 The user flags the contacts he wants to invite to join BONVOYAGE.</p> <p>5b3 The user clicks on the “Send invitation” functionality.</p> <p>5b4 BONVOYAGE platform sends an email to the selected contact to invite them to register to BONVOYAGE App.</p> <p>The flow continues from step 10.</p>
<b>Alternative Flow 4</b>	<p>9a BONVOYAGE notices that there is no phone number available for the selected contact.</p> <p>9a1 BONVOYAGE sends a notification to the user and suggests him to send the invitation via email. BONVOYAGE platform displays a message saying “There is no phone number available for the selected contact. Do you want to send the invitation through email?” BONVOYAGE platform also displays:</p> <ul style="list-style-type: none"> <li>• YES button;</li> <li>• NO button.</li> </ul> <p>9a2 The user selects the YES button.</p> <p>The flow continues as described in Alternative Flow 3.</p>
<b>Alternative Flow 5</b>	<p>9b BONVOYAGE sends at the same time a SMS and an email to the selected</p>



	contact, to invite him to register to platform. The flow continues from step 10.
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU60 Social network "Friends" (contact) link.</li></ul>

*Table A3-4: UC\_00\_04 User inviting friends to join BONVOYAGE platform*

## Use Case UC\_00\_05: User making “friendships” on BONVOYAGE System

USE CASE ID	UC_00_05
<b>Title</b>	User making “friendships” on BONVOYAGE System
<b>Description / Goals</b>	<p><u>Overview:</u> a user wants to establish friendships on BONVOYAGE</p> <p><u>Goal:</u> this Use Case aims to show how the user can establish friendships on BONVOYAGE platform.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (uses to BONVOYAGE)</p> <p>BONVOYAGE platform</p>
<b>Pre-conditions</b>	<p>The user has created his BONVOYAGE account according to the Activity flow described in <b>UC_02_01</b>.</p> <p>The user, who receives the “Friendship request”, is already registered on BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses BONVOYAGE App.</li> <li>2 The user accesses the “Friendship” functionality.</li> <li>3 The user selects the “find friends” functionality (targeting user contacts that have registered on BONVOYAGE).</li> <li>4 BONVOYAGE platform asks the user to insert the name and surname or the nickname of the person he wants to find.</li> <li>5 The user inserts the required data.</li> <li>6 BONVOYAGE platform displays a list of potential friends.</li> <li>7 The user selects the person he was looking for.</li> <li>8 The user clicks on “Send friendship request” button.</li> <li>9 BONVOYAGE platform sends the friendship request.</li> <li>10 BONVOYAGE platform displays the user a message saying “your request has been sent”.</li> <li>11 The user exists from the BONVOYAGE App.</li> <li>12 The Use Case ends.</li> </ol>

<b>Post-conditions</b>	<p>Once the friendship request is accepted, the user will receive a notification saying "The XXX user has accepted your friendship".</p> <p>The user friends list will be automatically updated by BONVOYAGE.</p>
<b>Alternative Flow 1</b>	<p>6a BONVOYAGE does not find anybody related to that name and surname/ nickname.</p> <p>The flow continues from step 10</p>
<b>Alternative Flow 2</b>	<p>3a When the user accesses the "Friendship" functionality, BONVOYAGE automatically shows the user a pop-up notification proposing the user other people (that are also registered on BONVOYAGE platform) he may know and with whom establish a friendship.</p> <p>Friends are suggested based on the following key criteria:</p> <ul style="list-style-type: none"> <li>- number of mutual friends;</li> <li>- User categories.</li> </ul>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU70 BONVOYAGE "Friends" (contact) link</li> <li>• BU71 BONVOYAGE Contact Networks</li> </ul>

**Table A3-5: UC\_00\_05 User making "friendships" on BONVOYAGE System**

## 5 ANNEX 4: Travel solutions for drivers including intermodality Use Cases (UC\_01)

### Use Case UC\_01\_01: Private or professional car driver switching to a transport public mode

USE CASE ID	UC_01_01
<b>Title</b>	Private or professional car driver switching to a public transport mode
<b>Description / Goals</b>	<p>Overview:</p> <p>Car driver that normally uses the car for private and business matters. It allows the driver to switch from individual transport to collective if necessary.</p> <p>Purpose and Goal:</p> <p>The car driver wants a travel planner and fresh information about traffic and incidents, rerouting proposals including park &amp; ride (PT, city bikes) when necessary.</p>
<b>Constraints</b>	<ul style="list-style-type: none"> <li>• <i>Lack of traffic information and incidents on secondary road network</i></li> <li>• <i>Lack of alternative routes and alternative transport means</i></li> </ul>
<b>Actors</b>	Driver(s), passengers
<b>Pre-conditions</b>	<ul style="list-style-type: none"> <li>• Price calculator for car and PT services</li> <li>• The portal automatically has to show alternative PT routes that are realistic alternatives and more environmentally friendly to trigger a change from car to PT travels.</li> <li>• Traveller uses BONVOYAGE traffic notification app</li> <li>• Travel planner for normal and/or heavy vehicles</li> <li>• Real time traffic and PT information including ferry schedules and road weather information</li> </ul>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1. The user accesses the BONVOYAGE platform</li> <li>2. Client inputs preferences and relevant data: origin, destination, via location, departure/arrival time, type of vehicle (electric, bio diesel, and heavy vehicle), preferred type of road.</li> <li>3. BONVOYAGE shows possible choices with related info (cost, duration, transport options, gas stations/charging points, picnic points, restaurants along road, length of the journey, carbon footprint, tunnels, road</li> </ol>

	<p>information (width, permitted axel load, height in tunnels, gradient of slope/curvature, dry/wet/slippy road surface)</p> <ol style="list-style-type: none"> <li>4. User selects the preferred route alternatives</li> <li>5. User selects on-trip information and alerts</li> <li>6. User prints routes/sends routes to mobile app/GPS</li> <li>7. User starts journey</li> <li>8. BONVOYAGE platform sends info on changes, incidents, rerouting options if necessary according to step 5</li> <li>9. User arrives at his destination</li> </ol>
<b>Post-conditions</b>	The BONVOYAGE service stores the selected journey and preferences
<b>Alternative Flow</b>	<p>7a1. Journey is very delayed due to severe incident. Large queues.</p> <p>7a2. BONVOYAGE platform sends info on rerouting options (by car, PT options, available parking at park &amp; ride locations)</p> <p>7a3. Traveller accepts preferred option</p> <p>7a4. Flow continues with step 8.</p>
<b>User requirements</b>	<p>BU10 Login</p> <p>BU660 Best price management</p> <p>BU320 Planning Intermodal Travel solution Settings</p> <p>BU350 Additional information about the trip</p> <p>BU380 Travel solution visualisation</p> <p>BU480 Travel solution choice</p> <p>BU371 Trip monitoring and control</p> <p>BU980 Vertical support and re-planning</p>

**Table A4-1: UC\_01\_01 Private or professional car driver switching to a transport public mode**

## Use Case UC\_01\_02: City bike renting student

USE CASE ID	UC_01_02
<b>Title</b>	City bike renting student
<b>Description / Goals</b>	<p>Overview:</p> <p>Student that prefers using the city's bike rental for moving around town</p> <p>Purpose and Goal:</p> <p>Want information on routes, info on available bikes and bike racks. Possibility for PT transfers during the journey.</p>
<b>Constraints</b>	<ul style="list-style-type: none"> <li>Limited number of available bikes and bike racks.</li> <li>Limited real time information on availability</li> </ul>
<b>Actors</b>	Traveller
<b>Pre-conditions</b>	<ul style="list-style-type: none"> <li>App for bike/bike rack availability and PT rerouting possibilities</li> <li>User is able to securely lock the bike at any location</li> </ul>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>Client accesses the BONVOYAGE platform</li> <li>Client inputs preferences and relevant data: origin, destination, preferred type of bike (electric), and declared biking ability level.</li> <li>Client inputs trip category <ol style="list-style-type: none"> <li>city bike to be obtained (with or without PT transfer option)</li> <li>city bike rental to be returned (with or without PT transfer option)</li> </ol> </li> <li>BONVOYAGE calculates alternative options based on user input, taking into consideration availability of city bikes and the user's ability level</li> <li>BONVOYAGE shows possible choices with related info (cost, time, combination of PT routing and bike rental location, bike availability and bike routing)</li> <li>User selects the preferred option</li> <li>Bike pick-up (3a) or bike return (3b)</li> <li>User reaches destination</li> <li>User starts return trip from step 3</li> </ol>
<b>Post-conditions</b>	<ul style="list-style-type: none"> <li>The BONVOYAGE service stores the selected journey and preferences</li> </ul>
<b>Alternative Flow</b>	<p>6a1. Bike rack is empty/out of order</p> <p>6a2. BONVOYAGE guides user to closest PT stop/other bike rack</p>

	<p>6a3 User starts journey</p> <p>6a4 Flow continues with step 7</p> <p>6b1. Bike rack is full/out of order (on return trip)</p> <p>6b2. BONVOYAGE informs user of full bike rack and offers alternative routing (bike rack location combined with PT routing)</p> <p>6b3. BONVOYAGE guides user to closest functioning bike rack</p> <p>6b4. Flow continues with step 7</p>
<b>User requirements</b>	<p>BU10 Login</p> <p>BU320 Planning Intermodal Travel solution Settings</p> <p>BU350 Additional information about the trip</p> <p>BU380 Travel solution visualisation</p> <p>BU480 Travel solution choice</p> <p>BU371 Trip monitoring and control</p> <p>BU980 Vertical support and re-planning of the trip in the event of unforeseen</p>

*Table A4-2: UC\_01\_02 City bike renting student*

## Use Case UC\_01\_03: Private or professional driver requiring road assistance through BONVOYAGE platform

USE CASE ID	UC_01_03
<b>Title</b>	Private or professional driver requiring road assistance through BONVOYAGE platform
<b>Description / Goals</b>	<p><u>Overview</u>: a user is driving (e.g. a car, a bus or a truck) from point A to B through an individual transport mean. During the journey, he experiences a problem with the vehicle and needs to require assistance.</p> <p><u>Goal</u>: this Use Case aims to show how the user can send a request for road assistance through BONVOYAGE platform.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (sends request through BONVOYAGE platform)</p> <p>BONVOYAGE platform</p> <p>Road assistance services (receive user requests)</p>
<b>Pre-conditions</b>	<p>The user is registered on BONVOYAGE platform.</p> <p>The user has activated the GPS on his platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses BONVOYAGE platform.</li> <li>2 The user accesses the “Assistance” functionality.</li> <li>3 BONVOYAGE platform shows the user a list of available options.</li> <li>4 The user selects the “Roadside assistance” option.</li> <li>5 BONVOYAGE platform asks the user if he wants to send a request for road assistance to the nearest roadside assistance service provider showing the user: <ul style="list-style-type: none"> <li>• YES button;</li> <li>• NO button.</li> </ul> </li> <li>6 The user clicks on the YES button.</li> <li>7 BONVOYAGE platform asks the user to type a short message to be sent to the roadside assistance services, illustrating the problem he is experiencing.</li> <li>8 BONVOYAGE platform detects user localisation and sends the request.</li> <li>9 BONVOYAGE platform displays a notification saying “Your request has been sent”.</li> <li>10 Once the assistance service provider receives and accepts the request, BONVOYAGE platform notifies the user in how long roadside assistance services will arrive.</li> </ol>



	11 The user exits from the BONVOYAGE platform.
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	<p>8a. BONVOYAGE platform cannot localise the user because GPS is not been activated.</p> <p>8a1. BONVOYAGE platform asks the user to activate GPS or to type the address of his current location.</p> <p>8a2. The user activates the GPS.</p> <p>The flow continues from step 9.</p>
<b>Alternative Flow 2</b>	<p>8b. BONVOYAGE platform cannot localise the user because GPS is not been activated.</p> <p>8b1. BONVOYAGE platform asks the user to activate GPS or to type the address of his current location.</p> <p>8b2. The user activates types the address in an appropriate field shown by BONVOYAGE platform.</p> <p>The flow continues from step 9.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU251 SOS Services request.</li> </ul>

*Table A4-3: UC\_01\_03 Private or professional driver requiring road assistance through BONVOYAGE*

## 6 ANNEX 5: Intermodal travel solutions for public transport Use Cases (UC\_02)

### Use Case UC\_02\_01: Passenger planning an intermodal journey with public transports

USE CASE ID	UC_02_01
<b>Title</b>	Passenger planning an intermodal journey with public transports
<b>Description / Goals</b>	<p><u>Overview:</u> A user wants to make a journey from point A to B using public transports.</p> <p>The user wants the BONVOYAGE platform to plan the journey and the route according to his preferences.</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a user can “ask” the BONVOYAGE platform to plan a travel solution according to the user specific preferences;</li> <li>• How the user can view and select the preferred travel solution.</li> </ul>
<b>Constraints</b>	Some paths of the way may not have available transport means, in which case, there is no other option than walking or using a car sharing service. In this case BONVOYAGE platform displays a hand lens, which suggests the user there is no public transport available for the itinerary selected.,.
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operators (provide the service)</p>
<b>Pre-conditions</b>	The user has registered on BONVOYAGE platform.
<b>Main Flow / Activity step Description</b>	<p>During request (Citizen)</p> <ol style="list-style-type: none"> <li>1 The user accesses the BONVOYAGE platform.</li> <li>2 BONVOYAGE automatically re-calls user profile category (e.g. back packer).</li> <li>3 The user inserts basic data on the journey he wants to make: <ul style="list-style-type: none"> <li>• Origin;</li> <li>• Destination;</li> <li>• Departure time;</li> <li>• Number of travellers;</li> <li>• Category of travellers.</li> </ul> </li> <li>4 The user inserts its journey preferences:</li> </ol>

	<ul style="list-style-type: none"><li>• Preferred path: the cheapest path; the fastest path with the minimum number of transport changes and walking routes;</li><li>• Access to individual transports (e.g. cars haring, bike sharing): none.</li></ul> <p>5 BONVOYAGE manages search engine parameters in order to give preference to defined travel solutions according to a pre-defined user profile.</p> <p>6 BONVOYAGE differentiate travel solutions for profiling.</p> <p>7 BONVOYAGE shows possible journey options with related information: local public transport line; price; departure time; arrival time; duration; length of the journey; number of transport changes.</p> <p>Feasible solutions are found and ranked according to preferences inserted by the user:</p> <ul style="list-style-type: none"><li>- The best k solution (with k fixed) are returned;</li><li>- Identification of the preferred solution among the k returned.</li></ul> <p>8 BONVOYAGE shows travel solutions prioritised according to user preferences.</p> <p>9 The user displays the preferred travel solution/itinerary.</p> <p>10 The user selects the preferred travel solution/itinerary.</p> <p>11 BONVOYAGE platform asks the user if he wants to reserve a place on the selected transport modes, displaying:</p> <ul style="list-style-type: none"><li>• YES button;</li><li>• NO button;</li></ul> <p>12 The user clicks on the YES button;</p> <p>13 BONVOYAGE platform shows the user the map of available seats;</p> <p>14 The user selects his preferred seat.</p> <p>15 The user clicks on the “Reserve seat” option;</p> <p>16 The user saves the preferred travel solution/itinerary map to display it when he accesses BONVOYAGE platform or offline.</p> <p>17 The user exits from the BONVOYAGE platform.</p>
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<b>Post-conditions</b>	The user can display the selected travel solution and the itinerary to be followed each time he accesses the BONVOYAGE platform or offline.
<b>Alternative Flow 1</b>	<p>2a. The user uses the user localisation functionality.</p> <p>2a1. The BONVOYAGE platform suggests the location identified by the localisation functionality as a point of departure to elaborate the travel solution.</p> <p>2a2. The user accepts to consider the suggested location as point of departure.</p> <p>2a3. The flow continues from step 1.</p> <p>3a. As destination, the user indicates an event or a denomination instead of the destination address.</p> <p>3a1. BONVOYAGE provides a list of event or a list pre-defined categories for possible denominations (e.g. Museums, restaurants, others) matching what the user has indicated.</p> <p>3a2. The user clicks on the right event or denomination.</p> <p>3a3. The user inserts other information about his journey.</p> <ul style="list-style-type: none"> <li>• Destination;</li> <li>• Departure time;</li> <li>• Number of travellers;</li> <li>• Category of travellers.</li> </ul> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3b. As origin, the user indicates an event and as destination, his address getting it from his favourites list.</p> <p>3b1. BONVOYAGE provides a list of events or a list of pre-defined categories for possible denominations (e.g. Museums, restaurants, others) matching what the user has indicated.</p> <p>3b2. The user clicks on the right event or denomination.</p> <p>3a3. The user inserts other information about his journey.</p> <ul style="list-style-type: none"> <li>• Departure time;</li> <li>• Number of travellers;</li> <li>• Category of travellers.</li> </ul> <p>The flow continues from step 4.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU80 Define profiles for the definition of the travel solutions;</li> <li>• BU90 Differentiate travel solutions for profiling;</li> <li>• BU100 Identity Management;</li> <li>• BU241 Events or denomination based search;</li> <li>• BU240 User localisation;</li> <li>• BU290 Route maps;</li> </ul>

	<ul style="list-style-type: none"><li>• BU320 Planning intermodal travel solution Settings;</li><li>• BU321 Planning travel solution Returning;</li><li>• BU350 Additional information about the trip;</li><li>• BU380 Travel solution visualisation;</li><li>• BU390 Route visualisation;</li><li>• BU440 Define searching engine for travel solutions;</li><li>• BU500 Travel solution finalisation;</li><li>• BU680 Select the favourite seats.</li></ul>
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**Table A5-1: UC\_02\_01 Passenger planning an intermodal journey with public transports**

## Use Case UC\_02\_02: Passenger displaying scores gained using the systems available on BONVOYAGE System

USE CASE ID	UC_02_02
<b>Title</b>	Passenger displaying scores gained using the systems available on BONVOYAGE System
<b>Description / Goals</b>	<p><u>Overview:</u> a user wants to display scores he has gained using the systems available on BONVOYAGE System <u>Goal:</u> this Use Case aims to show how the user can:</p> <ul style="list-style-type: none"> <li>• Display his scores;</li> <li>• Display his loyalty / fidelity category.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	Citizen (registers to BONVOYAGE) BONVOYAGE platform
<b>Pre-conditions</b>	The user has created his BONVOYAGE account
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses BONVOYAGE App.</li> <li>2 The user accesses "Score" functionality.</li> <li>3 BONVOYAGE platform automatically displays the user the loyalty /fidelity category to whom he belongs (Different categories are defined based on gained scores).</li> <li>4 The user clicks on "Display scores" functionality.</li> <li>5 BONVOYAGE platform displays the user the score he has gained.</li> <li>6 The user exits the BONVOYAGE platform.</li> <li>7 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU30 Base account definition/setting;</li> <li>• BU50 Profile loyalty categorisation/setting.</li> </ul>

*Table A5-2: UC\_02\_02 Passenger displaying scores gained using the systems available on BONVOYAGE System*

**Use Case UC\_02\_03: Passenger needing to re-plan his journey path due to unforeseen events.**

USE CASE ID	UC_02_03
<b>Title</b>	Passenger needing to re-plan his journey path due to unforeseen events.
<b>Description / Goals</b>	<p><u>Overview:</u> a user is going by train from point A to B.</p> <p>Due to extreme weather conditions, railway traffic is interrupted. The train stops in station X, which is halfway between points A and B. The user wants the BONVOYAGE platform to find an alternative travel solution to reach point B as soon as he can.</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a user can check updates on public transport circulation on BONVOYAGE platform;</li> <li>• How the user can “ask” the BONVOYAGE platform to re-plan his journey;</li> <li>• How the user can display alternative travel solutions.</li> </ul>
<b>Constraints</b>	Alternative public transport travel solution may cause the user an excessive delay in reaching his final destination.
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	<p>The user has registered to the BONVOYAGE platform.</p> <p>At the moment of travel ticket purchase, the user has subscribed to the info-mobility notification service and has required receiving notifications/alerts related to his journey.</p> <p>The user has saved his journey solution and itinerary on the BONVOYAGE platform (so the BONVOYAGE platform already knows the user final destination and his travel preferences).</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 While the user is travelling, BONVOYAGE platform monitors the trip and checks that the actual trip is in line with the selected one.  To this aim, BONVOYAGE platform monitors the current status of the trip and involved resources (in terms of transport modality) according to possibly different policy (e.g., fixed time, on demand, etc.).</li> <li>2 If a considerable deviation from the planned trip is detected or some resources become available or no more available, BONVOYAGE platform activates the Vertical Support option (this service automatically triggers when: the system realizes that the journey is not going according to the plans; there is a KO response to a feedback request; others travellers provide negative feedback for that route; it is possible to activate the mobile phone geo-localization). Then BONVOYAGE platform sends the</li> </ol>

	<p>user a notification with information on:</p> <ul style="list-style-type: none"> <li>Public transportation status (e.g.: train / bus not started yet, late / early, deleted);</li> <li>Public transport lines (e.g.: delay, strike, problems of access).</li> </ul> <p>3 Through the notification, the BONVOYAGE platform advises the user that his train will not proceed the journey due to extreme weather conditions.</p> <p>4 If a considerable deviation from the planned trip is detected, based on the itinerary information stored, the BONVOYAGE platform re-computes a new set of feasible solution and returns the best k solutions (with k fixed) are returned</p> <p>5 BONVOYAGE platform suggests the user 4 possible alternative journey options with related information: local public transport line; price; departure time; arrival time; duration; length of the journey; number of changes.</p> <p>6 BONVOYAGE shows travel solutions prioritised according to user preferences.</p> <p>7 The user displays the new preferred public transport travel solution (e.g. interurban bus) and related itinerary.</p> <p>8 The user selects the new preferred public transport travel solution and related itinerary.</p> <p>9 The BONVOYAGE platform asks the user if he wants to purchase the selected public transport travel solution.</p> <p>10 The user activates the currency converter to know the travel solution exact price in local / geo-referred currency.</p> <p>11 The user selects the payment functionality.</p> <p>12 The user selects the preferred payment modality: credit card.</p> <p>13 The user inserts his credit card data to purchase the ticket.</p> <p>14 The BONVOYAGE platform processes the payment.</p> <p>15 The user receives a notification about purchase finalisation.</p> <p>16 The user saves the preferred travel solution/itinerary map to display it when he accesses BONVOYAGE platform or offline.</p> <p>17 The user exits from the BONVOYAGE platform.</p>
<b>Post-conditions</b>	The user can display the selected travel solution and the itinerary to be followed each time he accesses the BONVOYAGE platform or offline.
<b>Alternative Flow 1</b>	<p>6a None of the suggested alternative travel solutions, based on public transport, allows the user to reach his final destination at a satisfactory time.</p> <p>6a1 The user modifies its travel preferences and inserts only “private/individual” transport means (e.g. carpooling, car sharing).</p> <p>6a2 BONVOYAGE platform shows the user a list of car sharing services available</p>



	<p>in station X.</p> <p>6a3 The user selects the car sharing service he wants to use.</p> <p>6a4 BONVOYAGE platform re-directs the user on the car sharing operator website so that the user can book a car.</p> <p>6a2 The flow continues from step 7.</p>
<b>Alternative Flow 2</b>	<p>9a The user refuses to purchase the new travel solution.</p> <p>9a1 The flow continues from step 17.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU130 Info-mobility reception notification;</li> <li>• BU180 Public transports information;</li> <li>• BU240 User localisation;</li> <li>• BU290 Route maps;</li> <li>• BU371 Trip monitoring and control;</li> <li>• BU380 Travel solution visualisation;</li> <li>• BU390 Route visualisation;</li> <li>• BU510 Credit/debit card purchase;</li> <li>• BU550 Purchase notification;</li> <li>• BU980 Vertical Support and re-planning of the trip in the event of unforeseen;</li> <li>• BU1040 Currency switch</li> </ul>

**Table A5-3: UC\_02\_03 Passenger needing to re-plan his journey path due to unforeseen events.**

**Use Case UC\_02\_04: Passenger wanting to be informed on events he may be interested in, also in relation to a trip he has already planned.**

USE CASE ID	UC_02_04
<b>Title</b>	Passenger wanting to be informed on events he may be interested in, also in relation to a trip he has already planned.
<b>Description / Goals</b>	<p><u>Overview:</u> a user is going from point A to B.</p> <p>Before or during the journey, the user wants to find about events he may be interested in, also taking place in his destination city (in case he has already planned a journey). If the journey foresees a quite long break between a stop and another, the user could also be interested in participating events which take place nearby one of the stops.</p> <p>The user wants to purchase a ticket for events he may be interested in.</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a user can display information on events;;</li> <li>• How the user can purchase tickets through the BONVOYAGE platform;</li> <li>• How BONVOYAGE platform notifies the user on possible trips (and related travel solutions) associated to a specific event.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	<p>The user has registered to the BONVOYAGE platform.</p> <p>At the moment of travel ticket purchase, the user has subscribed to the event notification service and has required to be informed of events taking place in his city of destination.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 While the user is travelling to his destination, the BONVOYAGE platform sends him notification about events planned in his city of destination within the next 3 days.</li> <li>2 The user accesses the BONVOYAGE platform.</li> <li>3 The user accesses the “Events information” functionality.</li> <li>4 For each event the BONVOYAGE platform also shows information related to suggested events: location, price, opening hours.</li> <li>5 The user selects the event he is interested in.</li> <li>6 The user selects the “localisation” function to display where the event location on his city of destination maps.</li> <li>7 The user clicks on the “Path calculation” functionality in order calculate the distance and the path from his hotel to the event location.</li> </ol>

	<p>8 The user inserts his hotel address as point of departure.</p> <p>9 BONVOYAGE platform automatically inserts the event location as point of arrival.</p> <p>10 BONVOYAGE platform shows the distance (in km) and available paths to reach the event.</p> <p>11 The user decides to purchase a ticket for the event.</p> <p>12 The user selects the payment functionality.</p> <p>13 The user selects the preferred payment modality: credit card.</p> <p>14 The user inserts his credit card data to purchase the ticket.</p> <p>15 The BONVOYAGE platform processes the payment.</p> <p>16 The user receives a notification about purchase finalisation.</p> <p>17 The user exits from the BONVOYAGE platform.</p>
<b>Post-conditions</b>	The user can display the purchased ticket within the “Historical” section of his BONVOYAGE platform account.
<b>Alternative Flow</b>	<p>1a. Before the user plans / books a trip (or during a trip), and based on user specific profile, BONVOYAGE platform sends the user notifications /suggestions about events he may be interested in.</p> <p>1a1. BONVOYAGE platform also suggests the user travel solution to reach the event. Suggested travel solutions are based on user profile / preferences (for example, if a user typically travels on the weekend, BONVOYAGE will propose a list of possible travel solutions for the following weekend).</p> <p>1a2. If BONVOYAGE platform suggests the user to participate to an event during his journey, it will also show the relative “risk level” whenever this choice can cause problems for the travel journey (for example it could cause the user to miss a public transport he has to catch). BONVOYAGE platform also shows the travel solutions to reach the event (e.g. how to go from the train station to an exhibition).</p> <p>1a3. The user is interested in both the events and the suggested solutions and decides to purchase the ticket event and the travel solution.</p> <p>The flow continues from step 12.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU250 Services/Events localisation;</li> <li>• BU510 Credit/debit card purchase;</li> <li>• BU550 Purchase notification;</li> <li>• BU930 Events information;</li> <li>• BU940 Historical;</li> <li>• BU950 Personalized events/suggestions</li> </ul>

**Table A5-4: UC\_02\_04 Passenger wanting to be informed on events he may be interested in, also in relation to a trip he has already planned.**

## Use Case UC\_02\_05: Passenger searching for an intermodal travel solution through filter selection

<b>USE CASE ID</b>	<b>UC_02_05</b>
<b>Title</b>	Passenger searching for an intermodal travel solution through filter selection
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to make a journey from point A to B.</p> <p>The user wants the BONVOYAGE platform to plan the journey according to his preferences.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How a user can “ask” the BONVOYAGE platform to plan a customizing solution trip.</li> </ul>
<b>Constraints</b>	Some filtered options may not be selected because of the transport mode chosen or since they are no longer available.
<b>Actors</b>	<p>Citizen (request the service and ask for a tip)</p> <p>Transport operators (provide the service)</p>
<b>Pre-conditions</b>	<p>The user has registered to the BONVOYAGE platform and he has already inserted basic data on the journey he wants to make, like:</p> <ul style="list-style-type: none"> <li>• Transportation mode;</li> <li>• Origin;</li> <li>• Destination;</li> <li>• Departure time</li> <li>• Number of travellers;</li> <li>• Category of travellers.</li> </ul>
<b>Main Flow / Activity step Description</b>	<p>During the request (Citizen)</p> <ol style="list-style-type: none"> <li>1 The users searches for a travel solution by putting some of the following filters: <ul style="list-style-type: none"> <li>• Price ranges;</li> <li>• Class category (first class, second class, etc....);hour range for departure and return trip (e.g. only morning; only evening; from hour XX to hour XX);</li> <li>• total journey duration;</li> <li>• comfort;</li> <li>• environmental impact/foot print (e.g. CO2 grams);</li> <li>• total travel time;</li> <li>• in-vehicles time;</li> <li>• number of changes;</li> <li>• Offers;</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>• Meals;</li> <li>• Feedback scores;</li> <li>• Services (Wi-Fi, non-smoker, gym, animals allowed, etc....)</li> </ul> <ol style="list-style-type: none"> <li>2 BONVOYAGE shows different journey solutions according to user's conditions.</li> <li>3 The user displays the preferred travel solution/itinerary.</li> <li>4 The user selects the preferred travel solution/itinerary.</li> <li>5 The user saves the preferred travel solution to display it when he accesses to BONVOYAGE platform or offline.</li> <li>6 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can display the selected travel solution every time he accesses the BONVOYAGE platform.
<b>Alternative Flow</b>	<p>3a. The user decides to check other filters in order to receive different travel solutions.</p> <p>The flow continues from step 2.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU380 Travel solution visualisation;</li> <li>• BU330 Planning intermodal travel solution through filter;</li> <li>• BU480 Travel solution choice.</li> </ul>

*Table A5-5: UC\_02\_05 Passenger searching for an intermodal travel solution through filter selection*

## Use Case UC\_02\_06: Passenger planning a travel solution considering other users' feedback

<b>USE CASE ID</b>	<b>UC_02_06</b>
<b>Title</b>	Passenger planning a travel solution considering other users' feedback.
<b>Description / Goals</b>	<p><u>- Overview:</u> a user wants to make a journey from point A to B.</p> <p>In order to make an informed decision on the travel solution to choose, the user wants to display feedback shared from other users that have undertaken the travel solution suggested by the BONVOYAGE platform.</p> <p><u>- Goal:</u> this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>How a user can display feedback on a specific travel itinerary uploaded and shared by other users.</li> </ul>
<b>Constraints</b>	Some feedback may not be available for the selected travel solution.
<b>Actors</b>	<p>Citizen (request the service and ask for a tip)</p> <p>Transport operator (provide the service)</p> <p>Citizens (provide suggestions)</p>
<b>Pre-conditions</b>	<p>The user has registered to the BONVOYAGE platform.</p> <p>The user has already inserted basic data on the journey he wants to make. The user has already launched a travel solution search according to his journey preferences.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>BONVOYAGE shows 4 different travel solutions/itinerary according to user's preferences.</li> <li>For each travel solution (if available), BONVOYAGE also shows feedback provided by other users who experienced that path.</li> <li>The user examines each feedback in order to identify that/those one that could be useful for him.</li> <li>Based on feedback, the user is able to make an informed decision.</li> <li>The user displays the preferred travel solution/itinerary.</li> <li>The user selects the preferred travel solution/itinerary.</li> <li>BONVOYAGE platform asks the user if he wants to save or purchase the selected travel solution.</li> <li>The user selects the "Save" option.</li> <li>The user saves the preferred solution to display it when he accesses to BONVOYAGE platform or offline.</li> <li>The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can display the selected travel solution every time he accesses the BONVOYAGE platform.
<b>Alternative Flow 1</b>	5a. Based on the displayed feedback, the user decides to not select any of the 4 travel solutions/itineraries suggested by the BONVOYAGE platform.

	<p>5a1. The user asks the BONVOYAGE platform to elaborate additional travel solutions applying to the same filters.</p> <p>5b1. The user starts a new travel solution/itinerary search applying different filter.</p> <p>The flow continues from step 1.</p>
<b>Alternative Flow 2</b>	<p>8 The user selects the “Purchase” option.</p> <p>8a The user confirms the travel solution and decides to purchase it as described in UC_02_13 (from step 9 to 22).</p> <p>The flow continues from step 10.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU380 Travel solution visualisation;</li> <li>• BU480 Travel solution choice;</li> <li>• BU961 User sending feedback on a received travel solution.</li> </ul>

*Table A5-6: UC\_02\_06 Passenger planning a travel solution considering other users' feedback*

## Use Case UC\_02\_07: Passenger planning a travel solution asking other users tips by chatting

<b>USE CASE ID</b>	<b>UC_02_07</b>
<b>Title</b>	Passenger planning a travel solution asking other users tips by chatting.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to make a journey from point A to B.</p> <p>In order to make an informed decision on the travel solution to choose, the user wants to ask suggestions to other users that have undertaken the same travel solutions suggested by the BONVOYAGE platform and have shared their feedback.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How a user can interact with other users by chatting.</li> </ul>
<b>Constraints</b>	Some feedback may not be available for the selected travel solution. Moreover not all users would be willing to start an online conversation.
<b>Actors</b>	<p>Citizen (request the service and ask for a tip)</p> <p>Transport operator (provide the service)</p> <p>Citizens (provide suggestions)</p>
<b>Pre-conditions</b>	<p>The user has registered to the BONVOYAGE platform.</p> <p>The user he has already inserted basic data on the journey he wants to make</p> <p>The user has already launched a travel solution search according to his journey preferences.</p> <p>BONVOYAGE platform has already shown the user 4 different travel solutions/itineraries and related feedback (where available).</p> <p>The user has already displayed feedback shared by other users on those travel solutions/itineraries.</p> <p>The user has made a “first decision” on the preferred travel solution/itinerary.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 For the purpose of receiving further information, the user intends to contact the user who shared the feedback.</li> <li>2 The user selects the “word of mouth” function on the BONVOYAGE platform;</li> <li>3 The user searches for feedback provider by inserting his name or nickname;</li> <li>4 The user verifies if the feedback provider is online.</li> <li>5 The user starts an online conversation with the feedback provider.</li> <li>6 The feedback provider sends the user a picture he has taken on his journey path.</li> <li>7 The user clicks on the picture and displays it.</li> <li>8 Once obtained the needed information, the user closes the conversation and returns to the 4 suggested travel solution.</li> </ol>



	<p>9 The user is able to confirm the initial decision or to select a different one.</p> <p>10 The user displays the preferred solution.</p> <p>11 The user selects the preferred travel solution/itinerary.</p> <p>12 The user saves the preferred solution to display it when he accesses to BONVOYAGE platform or offline.</p> <p>13 The user exits from the BONVOYAGE platform.</p>
<b>Post-conditions</b>	The user can display the selected travel solution every time he accesses the BONVOYAGE platform.
<b>Alternative Flow</b>	<p>4a. The feedback provider is not online and it is impossible to establish an online conversation at that time.</p> <p>5a1. The user decides to send him a private message through the dedicated messages box.</p> <p>5a2. The other user receives the message in his message box.</p> <p>5a3. The other user (tip provider) sees the message and sends his response.</p> <p>5a4. The user receives a response.</p> <p>The flow continues from step 3</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU220 Pictures</li> <li>• BU110 Word of mouth;</li> <li>• BU120 Sending/receiving message;</li> <li>• BU380 Travel solution visualisation;</li> <li>• BU480 Travel solution choice.</li> </ul>

*Table A5-7: UC\_02\_07 Passenger planning a travel solution asking other users tips by chatting*

## Use Case UC\_02\_08: Passenger purchasing a travel itinerary according to his preferences

<b>USE CASE ID</b>	<b>UC_02_08</b>
<b>Title</b>	Passenger purchasing an intermodal travel itinerary according to his preferences.
<b>Description / Goals</b>	<p><u>- Overview:</u> a user travels frequently for work using collective/public transports... He needs to book a journey looking for discounts in order to purchase the cheapest travel solution.</p> <p><u>- Goal:</u> this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How the user can visualise discounts/promotions available for that itinerary;</li> <li>• How the user can select his seat on the train;</li> <li>• How the user can purchase the ticket and receive it;</li> <li>• How the user can receive notifications before departure.</li> </ul>
<b>Constraints</b>	<p>Some promotions/discounts may not be available for that route.</p> <p>The user may not have the possibility to select a seat because it may already been occupied.</p>
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	<p>The user has registered to the BONVOYAGE platform.</p> <p>The user has decided to travel using a collective/public transport mode and has already inserted his journey preferences.</p>
<b>Main Flow / Activity Description</b>	<ol style="list-style-type: none"> <li>1 The user launches a travel solution search according to his journey preferences.</li> <li>2 The user asks to visualize discounts/promotions available for his journey.</li> <li>3 BONVOYAGE platform shows the user 4 different travel solutions/itineraries</li> <li>4 For each travel solution/itinerary BONVOYAGE platform shows available promotions and discounts.</li> <li>5 The user selects the preferred travel solution.</li> <li>6 The user displays the available seats.</li> <li>7 The user selects the preferred seat among those available.</li> <li>8 The user confirms the travel solution.</li> <li>9 BONVOYAGE platform asks the user if he wants to proceed to purchase the selected travel solution.</li> <li>10 BONVOYAGE platform gives the user the possibility to select: <ol style="list-style-type: none"> <li>a. YES: if he wants to purchase the selected travel solution;</li> <li>b. NO: if he does not want to purchase the selected travel solution.</li> </ol> </li> <li>11 The user selects "YES";</li> <li>12 BONVOYAGE platform shows the user commercial conditions associated</li> </ol>

	<p>to that travel solution. In particular, BONVOYAGE has to inform the user if refund is allowed by the concerned transport operator policies for that specific travel solution.</p> <p>13 BONVOYAGE platform asks the user to select one of the following payment modalities to purchase the travel solution:</p> <ol style="list-style-type: none"> <li>Credit card;</li> <li>Debit card;</li> <li>eWallet;</li> <li>PayPal account.</li> </ol> <p>14 The user selects the “PayPal account” payment modality;</p> <p>15 BONVOYAGE platform automatically “recalls” the user “PayPal account” credentials;</p> <p>16 BONVOYAGE platform asks the user to confirm his selection;</p> <p>17 The user confirms his selection;</p> <p>18 BONVOYAGE platform processes the payment transaction;</p> <p>19 BONVOYAGE platform confirms the payment finalisation;</p> <p>20 BONVOYAGE platform creates the ticket.</p> <p>21 BONVOYAGE platform asks the user to select one of the following modalities to receive the purchased ticket and the ID code of the travel solution on smart phone or other mobile devices:</p> <ul style="list-style-type: none"> <li>SMS ;</li> <li>Email ;</li> <li>2D code ;</li> <li>QR code.</li> </ul> <p>22 The user selects the SMS ticket reception modality.</p> <p>23 The user receives an SMS containing his travel solution ID code.</p> <p>24 The user exits from the BONVOYAGE platform.</p>
<b>Post-conditions</b>	The user can display the purchased travel solution every time he accesses the BONVOYAGE platform.
<b>Alternative Flow 1</b>	<p>13a. The user selects an alternative modality to purchase the travel solution.</p> <p>13a1. The user selects the credit card payment modality.</p> <p>14a2. BONVOYAGE platform automatically “recalls” the user credit card credentials.</p> <p>14b1. The user selects the debit card payment modality.</p> <p>14b2. BONVOYAGE platform automatically “recalls” the user credit card credentials.</p> <p>14c1. The user selects the eWallet payment modality.</p> <p>14c2. BONVOYAGE platform automatically connects to the user BONVOYAGE dedicated eWallet.</p> <p>The flow continues from step 15.</p>

<b>Alternative flow 2</b>	<p>22a. The user selects an alternative ticket reception modality.</p> <p>22a1. The user selects the email ticket reception modality.</p> <p>22a2. The user receives an email containing the purchased ticket and the travel solution ID code.</p> <p>22b1. The user selects the 2D code ticket reception modality.</p> <p>22b2. The user receives a QR code associated to his travel solution ID code.</p> <p>22c1. The user selects the QR code ticket reception modality.</p> <p>22c2. The user receives a QR code associated to his travel solution ID code.</p> <p>The flow continues from step 22</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU540 Receiving ticket travel solution;</li> <li>• BU510 credit/debit card purchase;</li> <li>• BU520 eWallet purchase;</li> <li>• BU530 PayPal purchase;</li> <li>• BU680 Select the favourite seats;</li> <li>• BU570 Create travel ticket;</li> <li>• BU690 Discounts/Promotions;</li> <li>• BU500 Travel solution finalisation</li> </ul>

**Table A5-8: UC\_02\_08 Passenger purchasing an intermodal travel itinerary according to his preferences**

## Use Case UC\_02\_09: Passenger setting a travel memorandum

<b>USE CASE ID</b>	<b>UC_02_09</b>
<b>Title</b>	Passenger setting a travel memorandum
<b>Description / Goals</b>	<p>- <b>Overview:</b> a user has purchased a travel solution through BONVOYAGE platform and decides to set a memorandum in order to remember the date he shall travel and the departure location</p> <p>- <b>Goal:</b> this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• how the user can set up a travel memorandum on BONVOYAGE platform</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	Citizen (request the service)
<b>Pre-conditions</b>	<p>The user has registered to the BONVOYAGE platform.</p> <p>The user has finalised the travel solution purchase through BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1. The BONVOYAGE platform asks the user if he wants to set up a memorandum related to the purchased travel solution.</li> <li>2. BONVOYAGE platform gives the user the possibility to select: <ul style="list-style-type: none"> <li>• YES: if he wants to set up a travel memorandum;</li> <li>• NO: if he does not want to set up a travel solution memorandum.</li> </ul> </li> <li>3. The user selects "YES";</li> <li>4. BONVOYAGE platform asks the user to select one of the following memorandum he prefers to set up: <ul style="list-style-type: none"> <li>• Inclusion in the travel calendar;</li> <li>• Notification reception to 1h before departure;</li> <li>• Receive notification in station (with list of booking codes).</li> </ul> </li> <li>5. The user selects the option "inclusion in travel calendar".</li> <li>6. BONVOYAGE platform uploads the travel solution in the calendar.</li> <li>7. The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can display the purchased travel solution every time he accesses the BONVOYAGE platform
<b>Alternative Flow</b>	<p>5a. The user selects an alternative travel memorandum option.</p> <p>5a1. The user selects the option "notification reception to 1h before departure".</p> <p>5a2. BONVOYAGE platform sets up a reminder to be sent to 1h before the departure of the purchased travel solution.</p> <p>5b1. The user selects the option "receive notification in station (with list of booking codes)".</p> <p>5b2. BONVOYAGE platform stores the "order" to notify the user when he arrives</p>

	to the station (notification includes booking codes).  The flow continues from step 7
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU630 Travel setting memorandum</li><li>• BU910 Synchronization to and from calendar</li></ul>

*Table A5-9: UC\_02\_09 Passenger setting a travel memorandum*

## Use Case UC\_02\_10: Passenger displaying the nearest collective/public transport stations to his point of departure and arrival

<b>USE CASE ID</b>	<b>UC_02_10</b>
<b>Title</b>	Passenger displaying the nearest collective/public transport stations to his point of departure and arrival
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user travels frequently for work using collective/public transports. He needs to plan a journey from point A to B.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How BONVOYAGE platform displays on a map the nearest public transport stations considering the user journey;</li> <li>• How BONVOYAGE platform displays the departing and arriving public transports schedule.</li> </ul>
<b>Constraints</b>	There may not be planned travel solutions for the range of time required by the user.
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	The user has registered to the BONVOYAGE platform and he has already decided to travel by train.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user inserts his point of departure (A) and his point of destination (B).</li> <li>2 The user asks the BONVOYAGE platform to show public transports stations nearest to the points A and B indicated;</li> <li>3 BONVOYAGE displays a list of stations close to points A and B.</li> <li>4 Stations are ordered from the nearest to the farthest.</li> <li>5 The user clicks on the station he prefers.</li> <li>6 BONVOYAGE asks the user if he wants to: <ol style="list-style-type: none"> <li>a) Display planned public transports for that station (only referring to transports that ensure connection from point A to point B);</li> <li>b) Display the station indoor map;</li> </ol> </li> <li>7 The user selects option a);</li> <li>8 For each station, BONVOYAGE platform displays the list of planned transports that can connect point A to B, and related departing /arrival time.</li> <li>9 The user selects the transport of interest.</li> <li>10 BONVOYAGE shows a list of main information related to the selected transport: <ul style="list-style-type: none"> <li>• Departure and arrival time;</li> <li>• Itinerary map;</li> <li>• Total journey duration;</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>• Price.</li> </ul> <ol style="list-style-type: none"> <li>11 The user selects the Itinerary map.</li> <li>12 BONVOYAGE platform displays the map of the itinerary the transport goes through (also using Google maps where necessary).</li> <li>13 The user closes the map visualisation.</li> <li>14 The user selects the transport.</li> <li>15 The user saves the selected travel solution.</li> <li>16 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can display the backed up travel solutions every time he accesses the BONVOYAGE platform.
<b>Alternative Flow</b>	<p>7a The user selects option b) Display station indoor map.</p> <p>7a1. BONVOYAGE platform displays a map of the station indoor area.</p> <p>7a2. The user checks the station map.</p> <p>7a3. The user closes the map.</p> <p>7a4. The user then selects option a).</p> <p>The flow continues from step 8.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU260 Basic visualisation;</li> <li>• BU410 Display trains stops;</li> <li>• BU261 Indoor navigation.</li> </ul>

**Table A5-10: UC\_02\_10 Passenger displaying the nearest collective/public transport stations to his point of departure and arrival**



## Use Case UC\_02\_11: Passenger applying filters to receive “push” information related to a specific route

<b>USE CASE ID</b>	<b>UC_02_11</b>
<b>Title</b>	Passenger applying filters to receive “push” information related to a specific route.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user makes a daily urban journey from point A to point B by bus.</p> <p>The user wants the BONVOYAGE platform to alert him and display information related to the route he goes through. For this reason, the user applies filters.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How the user can select a specific route from a “preferred routes list”;</li> <li>• How the user can apply a set of filters to regulate the type and the timing of information received by BONVOYAGE platform.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (request the service)</p> <p>BONVOYAGE platform (sends notification)</p>
<b>Pre-conditions</b>	<p>The user has registered and logged into BONVOYAGE platform.</p> <p>The user has already inserted the route in the “preferred route list”.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the “preferred route list”.</li> <li>2 The user selects a specific route from the list.</li> <li>3 BONVOYAGE shows the route itinerary.</li> <li>4 The user displays applicable filters.</li> <li>5 The user inserts a filter (e.g. “1 hour before departure”) to receive information related to the selected route.</li> <li>6 The user displays the list of information he can ask to receive with respect to that itinerary maps.</li> <li>7 The user selects information related to: the state of the traffic; eventual accidents.</li> <li>8 The user saves the changes.</li> <li>9 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	BONVOYAGE platform will daily send the user notification on the state of the traffic and eventual accidents/incidents related to the selected route 1 hour before departure.
<b>Alternative Flow</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU200 Radar interception;</li> <li>• BU280 Information visualisation selection.</li> </ul>

**Table A5-11: UC\_02\_11 Passenger applying filters to receive “push” information related to a specific route**

**Use Case UC\_02\_12: Passenger searching for information shared by other users with respect to a specific route in order to get updates on his journey/itinerary**

<b>USE CASE ID</b>	<b>UC_02_12</b>
<b>Title</b>	Passenger searching for information shared by other users with respect to a specific route in order to get updates on his journey/itinerary.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user makes a daily urban journey from point A to point B by public transport.</p> <p>The user wants the BONVOYAGE platform to display information shared by other users regarding his daily route.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How the user can select a specific route from a “preferred routes list”;</li> <li>• How the user can display set information shared by other users.</li> </ul>
<b>Constraints</b>	Some information may not be available
<b>Actors</b>	<p>Citizen (requests the information)</p> <p>BONVOYAGE platform (provides the information)</p>
<b>Pre-conditions</b>	<p>The user has registered and logged into BONVOYAGE platform.</p> <p>The user has already inserted the route in the “preferred route list”.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the “preferred route list”.</li> <li>2 The user selects a specific route from the list.</li> <li>3 BONVOYAGE shows the route itinerary.</li> <li>4 The user asks BONVOYAGE platform to display available information for that route. The user selects the following categories of information: <ul style="list-style-type: none"> <li>• Information shared by users;</li> <li>• Other information (e.g. weather).</li> </ul> </li> <li>5 BONVOYAGE platform displays information shared by other users. The information is associated with the nickname of the user that has shared it.</li> <li>6 BONVOYAGE platform also displays information related to the weather.</li> <li>7 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU190 Other information;</li> <li>• BU230 Itineraries / favourite places localization;</li> <li>• BU270 Information visualisation.</li> </ul>

**Table A5-12: UC\_02\_12 Passenger searching for information shared by other users with respect to a specific route in order to get updates on his journey/itinerary**

## Use Case UC\_02\_13: Accessing to restricted areas through alternative travel solutions purchase

<b>USE CASE ID</b>	<b>UC_02_13</b>
<b>Title</b>	Accessing to restricted areas through alternative travel solutions purchase.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user every day has to reach a point which is situated into an urban restricted area.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>How the user can purchase an alternative mobility service from ones displayed by BONVOYAGE platform.</li> </ul>
<b>Constraints</b>	Some travel solutions required may not be available.
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	The user has registered to the BONVOYAGE platform and he has decided to travel by car and/or by other mobility services too.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>The user reaches with his car a parking area close to the urban restricted area.</li> <li>The user asks BONVOYAGE platform to buy a parking ticket.</li> <li>BONVOYAGE platform lets the user to access to his Pay Pol account in order to purchase the ticket.</li> <li>The user purchases the parking ticket.</li> <li>The user asks BONVOYAGE platform to find alternative mobility services close to his current position in order to access into the urban restricted area.</li> <li>BONVOYAGE platform displays some travel solutions.</li> <li>The user decides to select the bike sharing mode.</li> <li>BONVOYAGE platform lets the user to access to his Pay Pol account in order to purchase the selected mobility service.</li> <li>The user purchases the mobility service.</li> <li>The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can display the selected alternative mobility services every time he accesses the BONVOYAGE platform.
<b>Alternative Flow 1</b>	<p>7a. The user selects an alternative mobility service (taxi, car sharing).</p> <p>The flow continues from step 6.</p> <p>1a. The user decides to buy the access for the urban restricted area because he wants to travel by own car.</p> <p>1a1. The user asks BONVOYAGE platform to buy the access.</p>

	<p>1a2. BONVOYAGE platform lets the user to access to his Pay Pal account in order to purchase the access to the urban restricted area.</p> <p>1a3. The user purchases the access to the urban restricted area.</p> <p>1a4. The user exits from the BONVOYAGE platform.</p>
<b>Alternative Flow 2</b>	<p>6a. BONVOYAGE doesn't display any travel solutions, because the existent ones are not available at that time.</p> <p>6a1. The user decides to reach the point inside the urban restricted area by walk.</p> <p>The flow continues from step10</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU530 PayPal purchase;</li> <li>• BU730 Other transport services purchase;</li> <li>• BU740 Highway, stop and parking subscription;</li> <li>• BU750 Access restricted traffic area/zone purchase.</li> </ul>

*Table A5-13: UC\_02\_13 Accessing to restricted areas through alternative travel solutions purchase*

## Use Case UC\_02\_14: Passenger sharing information before a journey

<b>USE CASE ID</b>	<b>UC_02_14</b>
<b>Title</b>	Passenger sharing information before a journey.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user has just booked a travel journey. He has to check whether other friends on BONVOYAGE or Social Networks are going in the same direction. He also wants to check the status of the circulation before departing.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>How the user can share on BONVOYAGE platform his travel itinerary and information related to his journey.</li> </ul>
<b>Constraints</b>	If the user is travelling in a dead zone (zone without signal/service), he won't share any information on BONVOYAGE platform.
<b>Actors</b>	Citizen (request the service)
<b>Pre-conditions</b>	The user has registered to the BONVOYAGE platform and has already selected the travel solution itinerary.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>The user selects the "Maps" functionality.</li> <li>BONVOYAGE platform displays the user two options: <ul style="list-style-type: none"> <li>Share travel itinerary on BONVOYAGE;</li> <li>Share travel itinerary through Social Networks.</li> </ul> </li> <li>The user selects the "Share travel itinerary on BONVOYAGE" options.</li> <li>The user shares his travel itinerary on BONVOYAGE Wall so that other BONVOYAGE users can display it.</li> <li>(In the "Maps" functionality) the user selects the option "View BONVOYAGE users maps" to display maps shared by other BONVOYAGE users and check if someone is travelling to the same destination.</li> <li>The user displays available maps and verifies that no other user is travelling to the same place.</li> <li>The user quits the "Maps" functionality.</li> <li>The user selects the "Circulation status" functionality to check information on the public transport circulation.</li> <li>The user checks find out that there an accident occurred within his city subway line.</li> <li>The user clicks on the information.</li> <li>BONVOYAGE displays the following options: <ul style="list-style-type: none"> <li>Share information on BONVOYAGE;</li> <li>Share information through Social Networks.</li> </ul> </li> <li>The user selects the option "Share information on BONVOYAGE".</li> <li>BONVOYAGE publishes the information on the Wall.</li> <li>The user exits from the BONVOYAGE platform.</li> </ol>

	15 The Use Case ends.
<b>Post-conditions</b>	The user can share his travel itinerary and other information on BONVOYAGE platform, according to his preferences.
<b>Alternative Flow 1</b>	<p>3a. The user selects the “Share travel itinerary on Social Networks” option.</p> <p>3a1 The list of Social network whose App is available on the user smart phone is displayed.</p> <p>3a2 The user selects a Social network.</p> <p>3a3 BONVOYAGE platform asks the user if he wants to share the information on that Social Network, displaying:</p> <ul style="list-style-type: none"> <li>• YES button;</li> <li>• No button.</li> </ul> <p>3a4 The user selects the YES button.</p> <p>3a5 The information is published on the Social Network Wall.</p> <p>The flow continues from step 7.</p>
<b>Alternative Flow 2</b>	<p>12a The user selects the option “Share information on Social network”.</p> <p>12a1 The list of Social network whose App is available on the user smart phone is displayed.</p> <p>12a2 The user selects a Social network.</p> <p>12a3 BONVOYAGE platform asks the user if he wants to share the information on that Social Network, displaying:</p> <ul style="list-style-type: none"> <li>• YES button;</li> <li>• No button.</li> </ul> <p>12a4 The user selects the YES button.</p> <p>12a5 The information is published on the Social Network Wall.</p> <p>The flow continues from step 14.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU170 Information on the state of circulation;</li> <li>• BU300 User maps BONVOYAGE sharing;</li> <li>• BU310 Travel maps sharing (Social network).</li> </ul>

*Table A5-14: UC\_02\_14 Passenger sharing information before a journey*

## Use Case UC\_02\_15: Passenger searching stops and routes of public transports, providing BONVOYAGE his localisation

<b>USE CASE ID</b>	<b>UC_02_15</b>
<b>Title</b>	Passenger searching stops and routes of public transports, providing BONVOYAGE his localisation.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to travel from point A to B using an urban public transport.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How the user can visualize the stops of an urban public transport, considering his geographical position;</li> <li>• How the user can display the travel schedule (arrival time, stops) of each public transport line;</li> <li>• How BONVOYAGE platform can display the time required to reach the user destination considering the route selected.</li> </ul>
<b>Constraints</b>	There may not be an existing route, considering the travel conditions required by the user.
<b>Actors</b>	<p>Citizen (requests the service)</p> <p>Transport operator (provides the service)</p>
<b>Pre-conditions</b>	The user has registered to the BONVOYAGE platform and he has decided to travel using public/collective transports...
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user enters BONVOYAGE platform.</li> <li>2 The user activates the geolocalisation function.</li> <li>3 BONVOYAGE shows on a map the current position of the user.</li> <li>4 The user asks BONVOYAGE platform to display the stops related to a public/collective transport closest to his current position.</li> <li>5 BONVOYAGE shows on a map the stops closest to his position and eventually the interconnection with other modes of public transport.</li> <li>6 For stop BONVOYAGE displays: <ul style="list-style-type: none"> <li>• Public/collective transport lines;</li> <li>• Public/collective transport lines routes;</li> <li>• Public/collective transport line arrival time.</li> </ul> </li> <li>7 All information is displayed through Graphic User Interfaces.</li> <li>8 The user selects one public/collective transport line.</li> <li>9 BONVOYAGE platform asks the user if he wants to calculate a travel itinerary with that line, displaying: <ul style="list-style-type: none"> <li>• YES button;</li> <li>• No button.</li> </ul> </li> <li>10 The user clicks on the YES button.</li> <li>11 The user inserts his point of arrival (BONVOYAGE already considers the</li> </ol>

	<p>user position as point of departure).</p> <p>12 BONVOYAGE shows the user the itinerary and time required to reach his destination.</p> <p>13 The user saves the information received.</p> <p>14 The user exits from the BONVOYAGE platform.</p>
<b>Post-conditions</b>	Every time the user accesses the BONVOYAGE platform he can display the travel schedule of the urban transport mode preferred.
<b>Alternative Flow 1</b>	<p>4a. The user asks to display the stop of any alternative transport mode closest to his position.</p> <p>4b The user asks to display the stop closest to his position.</p> <p>The flow continues from step 5.</p>
<b>Alternative Flow 2</b>	<p>11a BONVOYAGE displays an alert message notifying the user that there is no unavailable travel solution for the route selected.</p> <p>11a1 BONVOYAGE asks the user to insert a different point of arrival.</p> <p>11a2 The user inserts a different address.</p> <p>The flow continues from step 11.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU240 User localisation;</li> <li>• BU360 Search stops and public transport routes;</li> <li>• BU370 Travel time calculation;</li> <li>• BU430 Display of departure / arrival time in selected the station / LPT stop;</li> <li>• BU400 Non-existent route;</li> <li>• BU420 TPL display stop;</li> <li>• BU421 Display modality.</li> </ul>

**Table A5-15: UC\_02\_15 Passenger searching stops and routes of public transports, providing BONVOYAGE his localisation**



## Use Case UC\_02\_16: Passenger modifying a purchased travel solution

<b>USE CASE ID</b>	<b>UC_02_16</b>
<b>Title</b>	Passenger modifying a purchased travel solution.
<b>Description / Goals</b>	<p><u>- Overview:</u> a user has already purchased a travel solution and wants to modify it.</p> <p><u>Goal:</u> this Use Case aims at showing how the user can modify a travel solution purchased through BONVOYAGE platform.</p>
<b>Constraints</b>	Some travel solutions may not be changed.
<b>Actors</b>	<p>Citizen (requests the service)</p> <p>Transport operator (allows to perform the change)</p>
<b>Pre-conditions</b>	The user has registered to the BONVOYAGE platform and has already purchased a travel solution.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user enters the BONVOYAGE platform.</li> <li>2 The user selects displays the travel tickets he has purchased.</li> <li>3 The user selects one of the tickets.</li> <li>4 The user selects the “Change travel solution” option.</li> <li>5 BONVOYAGE platform displays the following options: <ul style="list-style-type: none"> <li>• Change travel solution keeping the same route;</li> <li>• Change travel solution choosing a different route.</li> </ul> </li> <li>6 The user selects the “Change travel solution keeping the same route” option.</li> <li>7 The user inserts a new date and departing and arrival hour for the travel.</li> <li>8 BONVOYAGE shows new travel solution that fits with user preferences.</li> <li>9 BONVOYAGE notifies the user that no additional cost will be charged for the new travel solution.</li> <li>10 BONVOYAGE asks the user to confirm the new travel solution.</li> <li>11 The user confirms the new travel solution.</li> <li>12 The new travel solution replaces the original travel solution.</li> <li>13 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow</b>	<p>6a. The user selects the “Change travel solution choosing a different route” option.</p> <p>6a1. The user inserts the new point of departure and arrival in the appropriate fields.</p>

	<p>6a2. For the fields “date” and “hour” the user selects the option “keep the same date and hour”.</p> <p>6a2. The user selects the bus as transport mode.</p> <p>The flow continues from step 8.</p>
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU800 Travel solution purchased modification</li><li>•</li></ul>

*Table A5-16: UC\_02\_16 Passenger modifying a purchased travel solution*

## Use Case UC\_02\_17: Passenger synchronizing events stored on his calendar or on social networks

<b>USE CASE ID</b>	<b>UC_02_17</b>
<b>Title</b>	Passenger synchronizing events stored on his calendar or on social networks.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to add his BONVOYAGE account the same events he has on his calendar and social networks.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How BONVOYAGE can synchronize an event from his calendar and social network while he is looking for a travel solution.</li> <li>• How BONVOYAGE send reminders linked to the user event.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (request the service)</p> <p>BONVOYAGE platform (provide the service)</p>
<b>Pre-conditions</b>	The user has accessed to the BONVOYAGE platform.
<b>Main Flow / Activity Description</b>	<ol style="list-style-type: none"> <li>1 The user knows that an event stored in his smart phone calendar will take place in the city where he is going to travel within a week.</li> <li>2 The user accesses the “Events Synchronisation” functionality.</li> <li>3 BONVOYAGE displays the user two options: <ul style="list-style-type: none"> <li>• Synchronisation from calendar;</li> <li>• Synchronisation from Social Network.</li> </ul> </li> <li>4 The user selects the “Synchronisation from calendar” option.</li> <li>5 BONVOYAGE shows to the user the events stored on user smart phone calendar.</li> <li>6 The user selects the event he wants to upload in his BONVOYAGE account.</li> <li>7 BONVOYAGE asks the user if he wants to save the event in the preferred events list, displaying: <ul style="list-style-type: none"> <li>• YES button;</li> <li>• No button.</li> </ul> </li> <li>8 The user clicks on the YES button.</li> <li>9 BONVOYAGE saves the event in the preferred events list.</li> <li>10 The user exits from BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow</b>	<p>4a The user selects the “Synchronisation from Social Network” option.</p> <p>4a2 The list of Social network whose App is available on the user smart phone is displayed.</p> <p>4a3 The user selects a Social network.</p>

	<p>4a4 BONVOYAGE platform asks the user if he wants to synchronise the events he has saved on his Social Network, displaying:</p> <ul style="list-style-type: none"><li>• YES button;</li><li>• No button.</li></ul> <p>4a5 The user selects the YES button.</p> <p>The flow continues from step 9.</p>
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU910 Synchronization to and from calendar.</li><li>• BU920 Synchronization from social network.</li></ul>

*Table A5-17: UC\_02\_17 Passenger synchronizing events stored on his calendar or on social networks*

## Use Case UC\_02\_18: Passenger selecting different options during the ticket purchase

<b>USE CASE ID</b>	<b>UC_02_18</b>
<b>Title</b>	Passenger selecting different options during the ticket purchase.
<b>Description / Goals</b>	<p><u>- Overview:</u> a user wants to buy a ticket (public transport) from point A to B, looking for the best price.</p> <p><u>- Goal:</u> this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How the user can select the type and the number of passengers;</li> <li>• How the user can select the best rate using a fidelity card;</li> <li>• How the user can select the preferred class;</li> <li>• How the user can select the best price.</li> </ul>
<b>Constraints</b>	<p>The user may not have the possibility to select the preferred class because it may not be available.</p> <p>The user may have not the possibility to choose the best rate because he doesn't have any fidelity card.</p> <p>The user may have not the possibility to choose the best price because only one travel solution may be available.</p>
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	The user has registered to the BONVOYAGE platform and he has already decided to travel using a public/collective transport.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user asks BONVOYAGE to purchase a travel ticket according to his preferences.</li> <li>2 BONVOYAGE platform lets the user insert the travel data.</li> <li>3 The user selects: <ul style="list-style-type: none"> <li>• The travel typology (one way/return);</li> <li>• The origin/destination;</li> <li>• The date;</li> <li>• The hour of arrival and departure;</li> <li>• The number and the type of passengers.</li> </ul> </li> <li>4 BONVOYAGE displays 4 different travel solutions according to user's preferences and for each one shows: <ul style="list-style-type: none"> <li>• The price of each class;</li> <li>• The tariffs linked to a fidelity card.</li> </ul> </li> <li>5 Since the user doesn't have a fidelity card, he selects the cheapest travel solution among those displayed.</li> <li>6 The user asks BONVOYAGE platform to purchase the ticket.</li> <li>7 BONVOYAGE platform lets the user to choose the payment mode.</li> </ol>

	<p>8 The user decides to pay via Credit Card.</p> <p>9 BONVOYAGE asks the user to insert the credit card credentials.</p> <p>10 The user inserts the credit card credentials.</p> <p>11 BONVOYAGE asks the user to confirm the purchase of the travel solution selected.</p> <p>12 The user confirms the purchase.</p> <p>13 The user exits from BONVOYAGE platform.</p>
<b>Post-conditions</b>	The user can purchase a customized ticket every time he accesses the BONVOYAGE platform.
<b>Alternative Flow</b>	<p>5a. Since the user has got a fidelity card; he selects the best tariff available.</p> <p>5a1. BONVOYAGE asks the user to insert the credential (username, password) related to his fidelity card.</p> <p>5a2. The user insert these credentials.</p> <p>5a3. BONVOYAGE verifies the validity of the fidelity card credentials.</p> <p>The flow continues from step 4.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU640 Passengers choice;</li> <li>• BU650 Tariff choice;</li> <li>• BU660 Best price management;</li> <li>• BU670 Class choice.</li> </ul>

**Table A5-18: UC\_02\_18 Passenger selecting different options during the ticket purchase**

## Use Case UC\_02\_19: Collecting scores and receiving awards

<b>USE CASE ID</b>	<b>UC_02_19</b>
<b>Title</b>	Collecting scores and receiving awards.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user often travels using public transport modes.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• In which cases BONVOYAGE attributes points/scores to the user;</li> <li>• How the user can check his score and the score of others users;</li> <li>• How the user can collect scores in order to receive an award.</li> </ul>
<b>Constraints</b>	The user may not receive any awards because he may not have collected enough scores.
<b>Actors</b>	Citizen (request the service)
<b>Pre-conditions</b>	The user has accessed to the BONVOYAGE platform. He has cumulated scores over the time.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user selects the “Scores and awards” functionality.</li> <li>2 The user selects the “Score visualisation” functionality.</li> <li>3 BONVOYAGE displays the total score collected by the user which is made up of the sum of each point gained in the following area: <ul style="list-style-type: none"> <li>• Travel solutions purchased;</li> <li>• Quantity and type of information mobility shared with other users;</li> <li>• Achievement of objectives.</li> </ul> </li> <li>4 The user asks BONVOYAGE platform to show his position in the ranking, in order to compare his score to the other users’ score.</li> <li>5 BONVOYAGE displays the rank.</li> <li>6 BONVOYAGE shows to the user the award that he could receive with that score (transports or car sharing, bike sharing free tickets, etc...).</li> <li>7 The user exits from BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can view the score collected every time he accesses the BONVOYAGE platform.
<b>Alternative Flow</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU990 Collecting score;</li> <li>• BU1000 Score visualization;</li> <li>• BU1010 Award.</li> </ul>

*Table A5-19: UC\_02\_19 Collecting scores and receiving awards*

## Use Case UC\_02\_20: Passenger adding further requests to a pre-identified itinerary

<b>USE CASE ID</b>	<b>UC_02_20</b>
<b>Title</b>	Passenger adding further requests to a pre-identified itinerary.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to travel from point A to B using a public/collective transport mode, according to his preferences.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How the user can add passengers to a pre-identified travel solution;</li> <li>• How the user can add a new travel solution to a pre-identified travel.</li> </ul>
<b>Constraints</b>	There may not be available seats for additional passengers on the transport mode identified.
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	The user has registered to the BONVOYAGE platform. He has already identified a travel solution which has been saved on BONVOYAGE platform.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user asks BONVOYAGE platform to visualize all the travel solutions previously saved.</li> <li>2 BONVOYAGE displays all the user's travel solutions.</li> <li>3 The user displays a travel solution.</li> <li>4 The user selects the option "Modify travel solution".</li> <li>5 The user selects the option "add more passengers".</li> <li>6 BONVOYAGE platform asks the user to insert the number of passengers to be added to the pre-identified travel solution.</li> <li>7 The user inserts the number 2.</li> <li>8 BONVOYAGE checks if 2 seats are available on the transport mode.</li> <li>9 BONVOYAGE confirms the availability.</li> <li>10 BONVOYAGE asks the user to insert the data of the additional passengers.</li> <li>11 The user submits the passengers' data.</li> <li>12 BONVOYAGE asks the user to confirm his request.</li> <li>13 The user confirms the request.</li> <li>14 The user exits from BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can add several requests to a pre-identified itinerary every time he accesses the BONVOYAGE platform.
<b>Alternative Flow</b>	<p>5a. The user selects the option "Add a new travel solution", to add a new travel solution to the pre-identified travel.</p> <p>5a1 The user performs a travel solution according to the activity flow described in <b>UC_02_08</b>.</p> <p>5a2 BONVOYAGE asks the user if he wants to add the new travel solution to his</p>



	itinerary. The flow continues from step 13
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU810 Passengers extensions;</li><li>• BU820 Travel extension.</li></ul>

*Table A5-20: UC\_02\_20 Passenger adding further requests to a pre-identified itinerary*

## Use Case UC\_02\_21: Deleting pre-identified travel requests

<b>USE CASE ID</b>	<b>UC_02_21</b>
<b>Title</b>	Deleting pre-identified travel requests.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to travel from point A to B.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How the user can delete passengers to a pre-identified travel solution;</li> <li>• How the user can delete a travel solution from a pre-identified travel;</li> <li>• How the user can delete additional services from travel solution.</li> </ul>
<b>Constraints</b>	Due to the Transport operator policy, there may not be the possibility to delete pre-identified travel requests.
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	The user has registered to the BONVOYAGE platform. He has already identified some travel solutions which have been saved on BONVOYAGE platform.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user asks BONVOYAGE platform to visualize all the travel solutions previously saved.</li> <li>2 BONVOYAGE displays all the user's travel solutions.</li> <li>3 The user selects one travel solution.</li> <li>4 The user selects the option "Modify travel solution".</li> <li>5 The user selects the option "delete passengers".</li> <li>6 The user selects the name of one of the passengers included in the travel solution.</li> <li>7 The user selects the option "Delete passenger".</li> <li>8 BONVOYAGE checks the feasibility of the user requests.</li> <li>9 BONVOYAGE confirms the feasibility.</li> <li>10 BONVOYAGE asks the user to confirm his request.</li> <li>11 The user confirms.</li> <li>12 The user exits from BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	<p>5a. The user selects the option "Delete additional services", provided by BONVOYAGE platform.</p> <p>5a1. The user selects the option "Delete the luggage insurance" (additional service).</p> <p>The flow continues from step 8.</p>

<b>Alternative Flow 2</b>	<p>5b. The user selects the option “Delete a travel solution”.</p> <p>5b. The user asks BONVOYAGE platform to delete a travel solution, according to his preferences.</p> <p>The flow continues from step 8.</p>
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU830 Passengers cancellation;</li><li>• BU840 Travel cancellation;</li><li>• BU850 Cancellation extra services.</li></ul>

*Table A5-21: UC\_02\_21 Deleting pre-identified travel requests*

## Use Case UC\_02\_22: Passenger purchasing ancillary services

<b>USE CASE ID</b>	<b>UC_02_22</b>
<b>Title</b>	Passenger purchasing ancillary services.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user has purchased a travel solution (public transport mode) from point A to point B.</p> <p>- <u>Goal</u>: this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How the user can purchase leisure services;</li> <li>• How the user can purchase local services (municipal services);</li> <li>• How the user can purchase other additional services.</li> </ul>
<b>Constraints</b>	The user may not purchase his leisure service because it may not be allowed to purchase tickets on line.
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p> <p>Public operator (provide the service)</p>
<b>Pre-conditions</b>	The user has registered to the BONVOYAGE platform. The user has already purchased a travel solution to reach the point B where there is, for instance, a leisure service he is interested in. The user has already purchased the leisure service standard ticket. The user has accessed to the BONVOYAGE section dedicated to the purchasing of ancillary services.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user selects, from the ancillary services dedicated section, the leisure services subsection.</li> <li>2 The user enters in the leisure services subsection.</li> <li>3 The user inserts the destination of his itinerary (point B).</li> <li>4 BONVOYAGE displays a list of leisure services connected to the inserted destination.</li> <li>5 The user selects the leisure service he prefers, for instance, the service called "Museum".</li> <li>6 BONVOYAGE displays a list of the leisure services of interest (e.g. all museums) close to the destination provided.</li> <li>7 The user selects a specific leisure service (e.g. a museum, according to his preferences).</li> <li>8 BONVOYAGE displays a default list of services that the user can purchase.</li> <li>9 The user selects the option "additional tourist tour ticket".</li> <li>10 BONVOYAGE controls the "additional tourist tour ticket" availability.</li> <li>11 BONVOYAGE communicates the user that the tourist tour tickets are sold out.</li> <li>12 BONVOYAGE asks the user if he wants to book the "waiting list option",</li> </ol>

	<p>in order to receive a notification when there will be a new availability.</p> <p>13 The user confirms the “waiting list option”.</p> <p>14 BONVOYAGE displays a message telling the user that he will be notified if a ticket becomes available.</p> <p>15 The user exits from BONVOYAGE platform.</p>
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	<p>2a. The user enters in the local services subsection.</p> <p>3a. BONVOYAGE displays a list of local services connected to the inserted destination.</p> <p>4a. The user selects one service among those displayed.</p> <p>5a. The user asks BONVOYAGE platform to purchase this service.</p> <p>6a. BONVOYAGE platform lets the user to choose the payment mode.</p> <p>7a. The user decides to pay via Credit Card.</p> <p>8a. BONVOYAGE asks the user to insert the credit card credentials.</p> <p>9a. The user inserts the credit card credentials.</p> <p>10a. BONVOYAGE asks the user to confirm the purchase of the travel solution selected.</p> <p>11a. The user confirms the purchase.</p> <p>12a. The user exits from BONVOYAGE platform.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU760 Waiting list;</li> <li>• BU770 Leisure services purchase;</li> <li>• BU780 Local services purchase.</li> </ul>

**Table A5-22: UC\_02\_22 Passenger purchasing ancillary services**

## Use Case UC\_02\_23: Passenger defining and cancelling user objectives

<b>USE CASE ID</b>	<b>UC_02_23</b>
<b>Title</b>	Passenger defining and cancelling user objectives.
<b>Description / Goals</b>	<p><u>- Overview:</u> during the year, a user usually travels from point A to B using public transport modes.</p> <p><u>- Goal:</u> this Use Case aims at showing:</p> <ul style="list-style-type: none"> <li>• How the user can define objectives to be achieved;</li> <li>• How the user can monitor progress towards achieving the objectives;</li> <li>• How the user can delete the objectives.</li> </ul>
<b>Constraints</b>	Some objectives may be defined only in connection with the transport modes selected.
<b>Actors</b>	Citizen (request the service)
<b>Pre-conditions</b>	<p>The user has registered to the BONVOYAGE platform.</p> <p>The user wants to define a new goal plan (list of objectives to achieve in a range of time) for the coming year.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user goes to the “Personal objectives” functionality.</li> <li>2 The user selects the “Goal plan” functionality.</li> <li>3 The user selects the option “Define new objectives”.</li> <li>4 The user selects his objectives from a default list (calories, emission, and money).</li> <li>5 For each field, the user set values to be achieved.</li> <li>6 The user clicks on the “Save” button.</li> <li>7 BONVOYAGE adds these new objectives to the user Goal Plan.</li> <li>8 BONVOYAGE saves the new Goal Plan.</li> <li>9 The user exits from BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can define and cancel new/old objectives every time he accesses the BONVOYAGE platform.
<b>Alternative Flow 1</b>	<p>3a. The user asks BONVOYAGE platform to:</p> <ul style="list-style-type: none"> <li>• Analyse his current objectives in order to monitor possible progresses, also showing the list of finalised travels through whom the user collected necessary scores to achieve the objectives;</li> <li>• Delete one objective from his goal plan.</li> </ul> <p>3a1. BONVOYAGE displays all the objectives previously saved by the user and their current status (time remaining at the end of the time pre-set for their achievement).</p> <p>3a2. The user selects the objective he wants to cancel.</p>

	<p>3a3. BONVOYAGE asks the user to confirm the cancellation.</p> <p>3a4. The user confirms.</p> <p>9a. BONVOYAGE deletes that objective from the user Goal Plan.</p> <p>10a. The user exits from BONVOYAGE platform.</p>
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU450 Defining objectives to be achieved in a given time interval;</li><li>• BU460 Mission/travel monitoring;</li><li>• BU470 Mission/travel cancellation.</li></ul>

*Table A5-23: UC\_02\_23 Passenger defining and cancelling user objectives*

## Use Case UC\_02\_24: Passenger receiving notifications/proposal to purchase services related to his travel solutions related

<b>USE CASE ID</b>	<b>UC_02_24</b>
<b>Title</b>	Passenger receiving notifications/proposal to purchase services related to his travel solutions related
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user has purchased a travel solution through BONVOYAGE platform.</p> <p>The travel is started and the user heading towards his point of destination.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform notifies the user and proposes the user to purchase services related to his travel solution (e.g. destination city LPT ticket, museum tickets).</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (receives notification)</p> <p>BONVOYAGE platform (sends notification)</p> <p>Service provider (offers the service)</p>
<b>Pre-conditions</b>	<p>The user has purchased a travel solution through BONVOYAGE platform.</p> <p>The user is travelling towards his point of destination.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform sends the user a notification showing mobility, touristic and other services available in the city of destination.</li> <li>2 The user sees an alert icon on his mobile phone display.</li> <li>3 The user clicks on the icon.</li> <li>4 The user opens the notification and displays the list of available services.</li> <li>5 The user clicks on the service of interest (e.g. museum guided tour) to find out more information about it.</li> <li>6 The user displays information related to the service (e.g. price, starting/ending time).</li> <li>7 The user decides to purchase the service.</li> <li>8 The user purchases the selected service (see <b>UC_02_13</b> Activity Flow steps 13 -20).</li> <li>9 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can display the purchased service every time he accesses the BONVOYAGE platform.



<b>Alternative Flow 1</b>	7a The user is not interested in any service. 7a1 The user exist from the BONVOYAGE platform.
<b>Alternative Flow 2</b>	3a The user decides not to open the notification alert. 3a1 The user skips the notification pop up, deleting it from his smart phone display.
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU140 Notification purchase ticket reception</li><li>• BU510 credit/debit card purchase;</li><li>• BU520 eWallet purchase;</li><li>• BU530 PayPal purchase.</li></ul>

*Table A5-24: UC\_02\_24 Passenger receiving notifications/proposal to purchase services related to his travel solutions related*

## Use Case UC\_02\_25: Passenger receiving BONVOYAGE periodic newsletter

<b>USE CASE ID</b>	<b>UC_02_25</b>
<b>Title</b>	Passenger receiving BONVOYAGE periodic newsletter
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to be updated on new services offered by BONVOYAGE platform.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform notifies the user on its news through periodic newsletter. This contains information on new transport operators / service providers that have joined BONVOYAGE platform and new services offered through the platform (both by “old” and “new” transport operators and service providers).</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (receives notification)</p> <p>BONVOYAGE platform (sends notification)</p> <p>Service provider (offers the service)</p>
<b>Pre-conditions</b>	During the registration to BONVOYAGE platform, the user has subscribed to the BONVOYAGE newsletter
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 Once a month, BONVOYAGE platform sends the user a newsletter through a push modality.</li> <li>2 The user sees an alert icon on his mobile phone display.</li> <li>3 The user clicks on the icon.</li> <li>4 The user opens the notification and finds a message in his BONVOYAGE inbox. The message contains a brief text and the newsletter in attachment.</li> <li>5 The user clicks on the attachment.</li> <li>6 BONVOYAGE platform opens the newsletter.</li> <li>7 The user goes through the newsletter.</li> <li>8 The user closes the newsletter.</li> <li>9 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	-
<b>User requirements</b>	BU151 Newsletter service

Table A5-25: UC\_02\_25 Passenger receiving BONVOYAGE periodic newsletter

## Use Case UC\_02\_26: Passenger applying setting to define the kind of information to be received through notifications

<b>USE CASE ID</b>	<b>UC_02_26</b>
<b>Title</b>	Passenger applying setting to define the kind of information to be received through notifications
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user makes a daily urban journey from point A to point B by bus.</p> <p>The user wants the BONVOYAGE platform to alert him and display only certain information related to the route he goes through. For this reason, the user applies filters.</p> <p>- <u>Goal</u>: this Use Case aims at showing how the user can apply settings to define the type of information to be received by BONVOYAGE platform.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (applies settings)</p> <p>BONVOYAGE platform (sends notification)</p>
<b>Pre-conditions</b>	<p>The user has registered and logged into BONVOYAGE platform.</p> <p>The user has already inserted the route in the “preferred route list”.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the “preferred route list”.</li> <li>2 The user selects a specific route from the list.</li> <li>3 BONVOYAGE shows the route itinerary.</li> <li>4 The user displays categories of available information (e.g. timetable/route changes).</li> <li>5 The user selects the type of information of interest.</li> <li>6 BONVOYAGE platform asks the user if he wants to be notified every time there is a change/an update related to that category of information (e.g. timetable/route changes).</li> <li>7 BONVOYAGE platforms displays two options to the user: <ul style="list-style-type: none"> <li>• YES button;</li> <li>• No button.</li> </ul> </li> <li>8 The user clicks on the YES button, confirming he wants to receive notification for that category of information.</li> <li>10 The user saves the changes.</li> <li>11 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	BONVOYAGE platform will send the user notification every time there is a change in the timetable or in the route followed by the bus line he catches every day.

<b>Alternative Flow</b>	8a The user clicks on the NO button. 8a1 The user exits the BONVOYAGE platform.
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU150 Notification reception setting</li></ul>

*Table A5-26: UC\_02\_26 Passenger applying setting to define the kind of information to be received through notifications*

## Use Case UC\_02\_27: Passenger using the “Add me on travel” functionality

<b>USE CASE ID</b>	<b>UC_02_27</b>
<b>Title</b>	Passenger using the “Add me on travel” functionality
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to share information with his friends related to his journey.</p> <p>- <u>Goal</u>: this Use Case aims at showing how the user can:</p> <ul style="list-style-type: none"> <li>• Share route information (e.g.: travel time, estimated time of arrival) and location with his “friends” on the App BONVOYAGE;</li> <li>• Share address associated with contact phone / smart phone (which then becomes the starting address / travel destination);</li> <li>• Sharing information on the place reserved on the means of transport with his friends;</li> <li>• Sharing favourite places with other applications that require location information;</li> <li>• Share his location with other Apps.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (uses BONVOYAGE App functionality)</p> <p>BONVOYAGE App (sends notification)</p>
<b>Pre-conditions</b>	<p>The user has registered and logged into BONVOYAGE platform.</p> <p>The user has already established “friendships” with other BONVOYAGE users.</p> <p>The user has selected the address associated to one of his contacts as the point of arrival of his journey (point B).</p> <p>The user has already purchase a travel solution to go from point A to point B.</p> <p>The user has created a list of favourite places located in point B.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the “Add me on travel functionality”.</li> <li>2 The user displays the list of available actions: <ul style="list-style-type: none"> <li>• Share route / location with friends;</li> <li>• Share address associated with contact phone / smart phone;</li> <li>• Share reserved seat;</li> <li>• Sharing favourite places with other Apps;</li> <li>• Share location with other Apps.</li> </ul> </li> <li>3 The user selects the actions: <ul style="list-style-type: none"> <li>• Share route with friends;</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>• Share address associated with his contact (that is his point of arrival);</li> <li>• Share reserved seat.</li> </ul> <p>4 BONVOYAGE platform shows the user the list of BONVOYAGE friends.</p> <p>5 The user selects the friends he wants to share information with.</p> <p>6 BONVOYAGE sends selected friends the following information:</p> <ul style="list-style-type: none"> <li>• Journey itinerary (point of departure and point of arrival);</li> <li>• Date;</li> <li>• Departing / arrival time;</li> <li>• Transport ID code (e.g. train /flight number);</li> <li>• Reserved seat number.</li> </ul> <p>7 BONVOYAGE confirms the user that information has been sent.</p> <p>8 The user exits from the BONVOYAGE platform.</p>
<b>Post-conditions</b>	Selected friends will receive a notification showing the shared information.
<b>Alternative Flow</b>	<p>3a The user selects the actions:</p> <ul style="list-style-type: none"> <li>• Sharing favourite places with other Apps;</li> <li>• Share location with other Apps.</li> </ul> <p>3a1 BONVOYAGE platform shows the user the list of available Apps on his smart phone.</p> <p>3a2 The user selects the Apps he wants to share information with.</p> <p>3a3 BONVOYAGE shares relevant information to the selected Apps through the appropriate communication system</p> <p>The flow continues from step 7.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU160 Add me on travel</li> </ul>

**Table A5-27: UC\_02\_27 Passenger using the “Add me on travel” functionality**

## Use Case UC\_02\_28: Passenger changing the default preferred language

<b>Use Case ID</b>	<b>UC_02_28</b>
<b>Title</b>	Passenger changing the default preferred language
<b>Description / Goals</b>	<p>- Overview: after completing the registration to BONVOYAGE platform, the user wants to modify the default preferred language.</p> <p>- Goal: this Use Case aims at showing how the user can change BONVOYAGE default preferred language he has selected during the registration process. This shall be possible for the user also during a journey.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (changes the language)</p> <p>BONVOYAGE platform (allows to perform the change)</p>
<b>Pre-conditions</b>	<p>A user has completed the registration to BONVOYAGE platform.</p> <p>While registering to BONVOYAGE, he had selected a specific language (e.g. English) as default preferred language.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the BONVOYAGE platform.</li> <li>2 The user accesses the Account functionality.</li> <li>3 The user clicks on Settings.</li> <li>4 BONVOYAGE platform displays the full list of Settings options.</li> <li>5 The user selects the option Language.</li> <li>6 BONVOYAGE platform shows the list of available languages.</li> <li>7 The user selects Norwegian.</li> <li>8 BONVOYAGE platform asks the user if he wants to set Norwegian as default language showing: <ol style="list-style-type: none"> <li>a) YES button;</li> <li>b) No button.</li> </ol> </li> <li>9 The user clicks on the YES button.</li> <li>10 BONVOYAGE changes the default language.</li> <li>11 The user exists from BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	BONVOYAGE will use the new default preferred language selected by the user.
<b>Alternative Flow 1</b>	
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU1030 Preferred language switch</li> </ul>

*Table A5-28: UC\_02\_28 Passenger changing the default preferred language*

## Use Case UC\_02\_29: Passenger looking for commercial conditions related to a travel solution he has purchased

<b>USE CASE ID</b>	<b>UC_02_29</b>
<b>Title</b>	Passenger looking for commercial conditions related to a travel solution he has purchased
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user has purchased a travel solution through BONVOYAGE platform. Before departing, the user wants to verify commercial conditions applying to that travel solution.</p> <p>- <u>Goal</u>: this use search and display commercial conditions associated to his travel solution through BONVOYAGE platform.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (searches for the commercial conditions)</p> <p>Transport operator (establishes commercial conditions)</p> <p>BONVOYAGE platform (shows commercial conditions)</p>
<b>Pre-conditions</b>	<p>The user has purchased a travel solution through BONVOYAGE platform.</p> <p>The user has registered and logged into BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the “History purchase” functionality.</li> <li>2 The user selects the relevant travel solution.</li> <li>3 BONVOYAGE platform displays related information.</li> <li>4 The user clicks on “View commercial conditions” button.</li> <li>5 BONVOYAGE platform displays the list of applicable commercial conditions (e.g. refund, compensation) as defined by the transport operator.</li> <li>6 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU560 Law/Rules searching and condition of sale</li> <li>• BU600 History visualization</li> <li>• BU700 Provide general term of purchase</li> </ul>

*Table A5-29: UC\_02\_29 Passenger looking for commercial conditions related to a travel solution he has purchased*



**Use Case UC\_02\_30: Passenger sharing the ticket purchased through BONVOYAGE with another Wallet up he has downloaded on his smartphone**

<b>USE CASE ID</b>	<b>UC_02_30</b>
<b>Title</b>	Passenger sharing the ticket purchased through BONVOYAGE with another Wallet up he has downloaded on his smartphone
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user has purchased a travel solution through BONVOYAGE platform.</p> <p>- <u>Goal</u>: this use aims at showing how a user can share the purchased ticket with a Wallet App on his smart phone</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (shares the ticket)</p> <p>BONVOYAGE platform (provides the ticket)</p> <p>Wallet App ("receives" the ticket)</p>
<b>Pre-conditions</b>	<p>The user has purchased a travel solution through BONVOYAGE platform.</p> <p>The user has registered and logged into BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the "History purchase" functionality.</li> <li>2 The user selects the relevant ticket.</li> <li>3 The user selects the "send ticket to Wallet" option.</li> <li>4 BONVOYAGE platform shares the ticket with the Wallet App available on the user smart phone.</li> <li>5 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The purchased ticket can be displayed within the Wallet App.
<b>Alternative Flow 1</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU610 Ticket Wallet</li> </ul>

**Table A5-30: UC\_02\_30 Passenger sharing the ticket purchased through BONVOYAGE with another Wallet up him has downloaded on his smartphone**

### Use Case UC\_02\_31: Passenger purchasing a LPT ticket that can be e validated through Smart Card/EMV credit card/NFC /bar code technology

<b>USE CASE ID</b>	<b>UC_02_31</b>
<b>Title</b>	Passenger purchasing a LPT ticket that can be e validated through Smart Card/EMV credit card/NFC /bar code technology.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user is purchasing a travel journey has described in <b>UC_02_13</b>.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform can create a travel document containing a LPT ticket that can be validated through Smart Card, EMV credit card, NFC and bar code technology.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	<p>The user is purchasing an intermodal travel journey has described in <b>UC_02_08</b>.</p> <p>The intermodal travel journey includes a LPT ticket.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>Once the payment transaction has been completed, BONVOYAGE platform creates the ticket.</li> <li>BONVOYAGE platform asks the user to select one of the following modalities to receive the purchased ticket and the ID code of the travel solution on smart phone or other mobile devices: <ul style="list-style-type: none"> <li>SMS ;</li> <li>Email ;</li> <li>2D code ;</li> <li>QR code.</li> </ul> </li> <li>BONVOYAGE also informs the user that the intermodal travel ticket contains a LPT that can be validated through Smart Card/EMV credit card/NFC /bar code technology.</li> <li>The user selects the QR code option.</li> <li>The user receives his travel solution through a QR code.</li> <li>The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	When he catches the LPT, the user will validate his ticket according to <b>UC_02_36</b> .
<b>Alternative Flow</b>	
<b>User requirements</b>	<ul style="list-style-type: none"> <li>BU890 Local Public Transport Travel document validation</li> </ul>

*Table A5-31: UC\_02\_31 Passenger purchasing a LPT ticket that can be e validated through Smart Card/EMV credit card/NFC /bar code technology*

**Use Case UC\_02\_32: Passenger purchasing a LPT ticket whose tariff can be paid through Smart Card, EMV credit card, NFC and bar code technology.**

<b>USE CASE ID</b>	<b>UC_02_32</b>
<b>Title</b>	Passenger purchasing a LPT ticket whose tariff can be paid through Smart Card, EMV credit card, NFC and bar code technology.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user is purchasing a travel journey has described in <b>UC_02_13</b>.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform can create a travel document containing a LPT ticket whose tariff can be paid through Smart Card, EMV credit card, NFC and bar code technology.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	<p>The user is purchasing an intermodal travel journey has described in <b>UC_02_13</b>.</p> <p>The intermodal travel journey includes a LPT ticket.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>Once the payment transaction has been completed, BONVOYAGE platform creates the ticket.</li> <li>BONVOYAGE platform asks the user to select one of the following modalities to receive the purchased ticket and the ID code of the travel solution on smart phone or other mobile devices: <ul style="list-style-type: none"> <li>SMS ;</li> <li>Email ;</li> <li>2D code ;</li> <li>QR code.</li> </ul> </li> <li>BONVOYAGE also informs the user that the intermodal travel ticket contains a LPT whose tariff can be paid through Smart Card, EMV credit card, NFC and bar code technology.</li> <li>The user selects the QR code option.</li> <li>The user receives his travel solution through a QR code.</li> <li>The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	When he catches the LPT, the user will pay the tariff associated to the LPT according to <b>UC_02_37</b> .
<b>Alternative Flow</b>	
<b>User requirements</b>	<ul style="list-style-type: none"> <li>BU900 Local Public Transport Travel document tariff payment</li> </ul>

**Table A5-32: UC\_02\_32 Passenger purchasing a LPT ticket whose tariff can be paid through Smart Card, EMV credit card, NFC and bar code technology**

## Use Case UC\_02\_33: Passenger wanting to modify a purchased travel solution

<b>USE CASE ID</b>	<b>UC_02_33</b>
<b>Title</b>	Passenger wanting to modify a purchased travel solution
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user has purchased a travel solution through BONVOYAGE platform.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can modify the purchased travel solution by:</p> <ul style="list-style-type: none"> <li>• Modifying/deleting the assigned/reserved seat;</li> <li>• Modifying/deleting services associated to the travel solution.</li> </ul>
<b>Constraints</b>	There may be no other available seat on the public transport
<b>Actors</b>	<p>Citizen (modifies the travel solution)</p> <p>BONVOYAGE platform (performs required modification)</p>
<b>Pre-conditions</b>	<p>The user has purchased a travel solution through BONVOYAGE platform.</p> <p>The user has registered and logged into BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the “History purchase” functionality.</li> <li>2 The user selects the relevant travel solution.</li> <li>3 BONVOYAGE platform displays all the information related to the travel solution.</li> <li>4 The user clicks on the seat number assigned to him.</li> <li>5 The user selects the option “modify seat”.</li> <li>6 BONVOYAGE platform shows the user the map of available seats.</li> <li>7 The user selects the new seat he wants to be assigned.</li> <li>8 The user confirms the modification.</li> <li>9 BONVOYAGE platform executes the operation and matches the travel solution to the new seat.</li> <li>10 BONVOYAGE platform generates a new travel document indicating the new seat number.</li> <li>11 The new travel document replaces the original one into the “History purchase” functionality.</li> <li>12 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The purchased ticket can be displayed within the Wallet App.
<b>Alternative Flow 1</b>	6a BONVOYAGE platform displays an alert message saying that there are no more seats available on that public transport.

	The flow continues from step 12.
<b>Alternative Flow 2</b>	<p>4a The user clicks on the purchased services associated to the travel solution.</p> <p>4a1 The user selects the option “modify purchased service”.</p> <p>4a2 BONVOYAGE platform shows the user the list of available services.</p> <p>4a3 The user selects the new services he wants to match to his travel solution.</p> <p>4a4 BONVOYAGE platform verifies the service price.</p> <p>4a5 BONVOYAGE platform notifies the user that the service price is equivalent to the price of the original service.</p> <p>4a6 The user confirms the modification.</p> <p>4a7 BONVOYAGE platform executes the operation and matches the travel solution to the new service.</p> <p>4a7 BONVOYAGE platform generates a new travel document indicating the new service.</p> <p>The flow continues from step 11.</p>
<b>Alternative Flow 3</b>	<p>4b The user clicks on the purchased services associated to the travel solution.</p> <p>4b1 The user selects the option “delete purchased service”.</p> <p>4b2 The user confirms the action.</p> <p>4b3 BONVOYAGE platform deletes the service from the travel solution.</p> <p>4b4 The user is refunded through the flow described in <b>UC_02_40</b>.</p> <p>The flow continues from step 11.</p>
<b>Alternative Flow 4</b>	<p>4a The user clicks on the purchased services associated to the travel solution.</p> <p>4a1 The user selects the option “modify purchased service”.</p> <p>4a2 BONVOYAGE platform shows the user the list of available services.</p> <p>4a3 The user selects the new services he wants to match to his travel solution.</p> <p>4a4 BONVOYAGE platform verifies the service price.</p> <p>4a5 BONVOYAGE platform notifies the user that the service price is higher than the price of the original service.</p> <p>4a6 BONVOYAGE platform asks the user if he wants to pay for the additional fee, showing the following option:</p> <ul style="list-style-type: none"> <li>• YES button;</li> <li>• NO button;</li> </ul> <p>4a7 The user clicks on the YES button.</p>

	<p>4a8 The user pays for the additional fee through the flow described in <b>UC_02_07</b>.</p> <p>4a9 BONVOYAGE platform executes the operation and matches the travel solution to the new service.</p> <p>4a10 BONVOYAGE platform generates a new travel document indicating the new service.</p>
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU710 Modify/delete travel seat purchased</li><li>• BU720 Modify/delete travel services purchased</li></ul>

*Table A5-33: UC\_02\_33 Passenger wanting to modify a purchased travel solution*

### Use Case UC\_02\_34: Passenger wanting to book services managed by partners of BONVOYAGE transport operators

<b>USE CASE ID</b>	<b>UC_02_34</b>
<b>Title</b>	Passenger wanting to book services managed by partners of BONVOYAGE transport operators
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user is purchasing a travel solution through BONVOYAGE platform.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can purchase a service provided by partners of BONVOYAGE platform transport operators.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (purchases the service)</p> <p>Transport operator (provides travel solution)</p> <p>Transport operator partner (provides the service)</p>
<b>Pre-conditions</b>	<p>The user has registered and logged into BONVOYAGE platform.</p> <p>The user is purchased a travel solution through BONVOYAGE platform.</p> <p>The user has already selected the travel solution he wants to purchase.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform shows the user the list of services provided by partners of the transport operator offering the travel solution selected by the user.</li> <li>2 The user scrolls the services list.</li> <li>3 The user selects the service of interest.</li> <li>4 BONVOYAGE platform shows all the information related to the service: <ul style="list-style-type: none"> <li>• Date;</li> <li>• Place;</li> <li>• Price.</li> </ul> </li> <li>5 The user selects the option "Purchase service".</li> <li>6 BONVOYAGE platform adds the service to the travel solution selected by the user.</li> <li>7 The user purchases travel solution and the service through the flow described in UC_02_08.</li> <li>8 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post conditions</b>	The service can be displayed in the "History purchase" functionality.
<b>Alternative Flow 1</b>	<p>2a The user selects the option "Do not add any service to the selected travel solution.</p> <p>The flow continues from step 7.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU790 Purchase services partner from integrated operators in BONVOYAGE</li> </ul>

Table A5-34: UC\_02\_34 Passenger wanting to book services managed by partners of BONVOYAGE transport operators

## Use Case UC\_02\_35: Passenger wanting to get a travel solution refund

<b>USE CASE ID</b>	<b>UC_02_35</b>
<b>Title</b>	Passenger wanting to get a travel solution refund
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to get refund for a travel solution he has previously purchased.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can ask for and get refund for a purchased travel solution.</p>
<b>Constraints</b>	. A ticket purchased on BONVOYAGE can be refund only through the platform. There is no possibility to receive the reimbursement personally from the Transport Operator.
<b>Actors</b>	<p>Citizen (asks for refund)</p> <p>Transport operator (allows refund of the travel solution purchased or of a part of this. )</p>
<b>Pre-conditions</b>	<p>The user has registered and logged into BONVOYAGE platform.</p> <p>The user has purchased a travel solution through BONVOYAGE platform</p> <p>The user is aware about the transport operator commercial conditions, thus he knows that he can receive the refund.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses to the “History purchase” functionality.</li> <li>2 The user selects the travel document associated to the travel solution.</li> <li>3 The user selects the “Reimbursement option”.</li> <li>4 BONVOYAGE asks the user to confirm the action.</li> <li>5 The user confirms.</li> <li>6 BONVOYAGE verifies if refund is allowed for that travel document.</li> <li>7 BONVOYAGE finds out that refund is allowed by the transport operator commercial conditions.</li> <li>8 BONVOYAGE displays a message to the user asking how he wants to get refund: <ul style="list-style-type: none"> <li>• Deposit on his credit/debit card/Pay Pal account;</li> <li>• Electronic credit on his BONVOYAGE wallet;</li> <li>• Bonus to be used for other purchases on BONVOYAGE platform.</li> </ul> </li> <li>9 The user selects the option Deposit on his credit/debit card/Pay Pal account.</li> <li>10 BONVOYAGE platform processes the operation.</li> <li>11 BONVOYAGE platform confirms reimbursement finalisation.</li> </ol>



	12 The user exits from the BONVOYAGE platform.
<b>Post-conditions</b>	<p>The user receives the money on his credit/debit card/PayPal account / BONVOYAGE Wallet / The user receives a bonus stored in his BONVOYAGE account.</p> <p>The travel document is deleted.</p>
<b>Alternative Flow 1</b>	<p>9a The user selects the option BONVOYAGE wallet.</p> <p>The flow continues from step 10.</p>
<b>Alternative Flow 2</b>	<p>9a The user selects the option Bonus to be used for other purchases on BONVOYAGE platform.</p> <p>The flow continues from step 10.</p>
<b>Alternative Flow 3</b>	
<b>Alternative Flow 4</b>	<p>7b3 The user selects the option Change the travel solution.</p> <p>7b4 The user modifies the travel solution through the Action Flow described in UC_02_16.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU860 Travel solution purchased reimbursement</li> </ul>

*Table A5-35: UC\_02\_35 Passenger wanting to get a travel solution refunds*

### Use Case UC\_02\_36: Passenger validating a Local Public Transport Ticket he has purchased through BONVOYAGE platform

<b>USE CASE ID</b>	<b>UC_02_36</b>
<b>Title</b>	Passenger validating a Local Public Transport Ticket he has purchased through BONVOYAGE platform
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user has purchased an intermodal travel solution through BONVOYAGE platform. The travel solution includes a Local Public Transport ticket.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can validate a Local Public Transport ticket, that is stored in his BONVOYAGE System and whose tariff is charged when he starts his journey on the local public transport.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (validates the ticket)</p> <p>Local Public Transport operator (owns the infrastructure against which the ticket is validated)</p>
<b>Pre-conditions</b>	<p>The user has purchased an intermodal travel solution through BONVOYAGE platform.</p> <p>The travel solution includes a Local Public Transport ticket.</p> <p>The user has received the Local Public Transport ticket on BONVOYAGE System and stored it in the "History purchase" functionality of his BONVOYAGE account.</p> <p>The user has logged into BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses to the "History purchase" functionality.</li> <li>2 The user selects Local Public Transport Ticket.</li> <li>3 The ticket is displayed full screen on the user smartphone.</li> <li>4 The user approaches his smart phone to the validation machine.</li> <li>5 The ticket is validated through the smartphone, thanks to NFC technology.</li> <li>6 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The ticket is validated and cannot be used again.
<b>Alternative Flow 1</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU870 LPT ticket validation</li> </ul>

Table A5-36: UC\_02\_36 Passenger validating a Local Public Transport Ticket he has purchased through BONVOYAGE platform

## Use Case UC\_02\_37: Passenger validating a Local Public Transport Ticket he has purchased through BONVOYAGE platform

<b>USE CASE ID</b>	<b>UC_02_37</b>
<b>Title</b>	Passenger validating a Local Public Transport Ticket he has purchased through BONVOYAGE platform
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user has purchased an intermodal travel solution through BONVOYAGE platform. The travel solution includes a Local Public Transport ticket.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can validate a Local Public Transport ticket, that is stored in BONVOYAGE System and whose tariff is going to be charged to the user only after the user has completed his journey on the local public transport.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (validates the ticket)</p> <p>Local Public Transport operator (owns the infrastructure against which the ticket is validated)</p>
<b>Pre-conditions</b>	<p>The user has purchased an intermodal travel solution through BONVOYAGE platform.</p> <p>The travel solution includes a Local Public Transport ticket.</p> <p>The user has received the Local Public Transport ticket on his smart phone and stored it in the "History purchase" functionality of BONVOYAGE System.</p> <p>The user has logged into BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses to the "History purchase" functionality.</li> <li>2 The user selects Local Public Transport Ticket.</li> <li>3 The ticket is displayed full screen on the user smartphone.</li> <li>4 The user approaches his smart phone to the validation machine.</li> <li>5 The ticket is validated through NCF technology.</li> <li>6 The user makes the journey through the local public transport.</li> <li>7 When he exits the local public transport, the user approaches his smart phone to the validation machine again<sup>15</sup>.</li> <li>8 BONVOYAGE platform calculates the amount to be charged to the user, according to the local transport operator tariff rules.</li> <li>9 The amount is charged on the user credit /debit card/ eWallet.</li> </ol>

	10 The user exits from the BONVOYAGE platform.
Post-conditions	-
Alternative Flow 1	-
User requirements	<ul style="list-style-type: none"><li>• BU880 LPT ticket tariff</li></ul>

*Table A5-37: UC\_02\_37 Passenger validating a Local Public Transport Ticket he has purchased through BONVOYAGE platform*

## Use Case UC\_02\_38: Passenger sending a general feedback on BONVOYAGE App functioning

<b>USE CASE ID</b>	<b>UC_02_38</b>
<b>Title</b>	Passenger sending a general feedback on BONVOYAGE App functioning
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to send a feedback on how BONVOYAGE App works and on how to improve it.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can provide a feedback on BONVOYAGE App in order to:</p> <ul style="list-style-type: none"> <li>• Notify possible problems the App (e.g.: problems with maps, places missing; feedback if misplaced);</li> <li>• Provide suggestions for improvement;</li> <li>• Evaluate his experience in the App (cities, companies of mobility and transport supported by the JPA, information provided from the app, accuracy estimated time of arrival at destination, correct information on location and online, finding points of interest, suggestions).</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (provides the feedback)</p> <p>BONVOYAGE App (receives the feedback)</p>
<b>Pre-conditions</b>	The user has registered and logged into BONVOYAGE platform.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses to the “BONVOYAGE App Feedback” functionality.</li> <li>2 BONVOYAGE displays the following feedback options: <ul style="list-style-type: none"> <li>• Problems notification;</li> <li>• Suggestions;</li> <li>• Experience rating.</li> </ul> </li> <li>3 The user selects the option Problems notification.</li> <li>4 BONVOYAGE platform shows the list of App functionalities.</li> <li>5 BONVOYAGE platform asks the user to flag the functionalities that does not work properly.</li> <li>6 BONVOYAGE platform shows a list of possible problems related to that functionality.</li> <li>7 BONVOYAGE platform asks the user to flag the problems experienced.</li> <li>8 At the end of the list, a box is displayed where the user can insert a brief description of the experienced problem (e.g. maximum 30 words).</li> <li>9 The user confirms the operation.</li> <li>10 The user sends the feedback to BONVOYAGE platform.</li> </ol>

	11 The user exits from the BONVOYAGE platform.
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	<p>3a The user selects the option experience rating.</p> <p>3a1 BONVOYAGE platform shows a set of questions related to BONVOYAGE usage.</p> <p>3a2 For each question, BONVOYAGE platform asks the user to provide a rate from 1 to 5 (1= not at all satisfied; 2= not satisfied; 3= nor satisfied nor satisfied; 4=satisfied; 5= very satisfied).</p> <p>3a3 The user provides a rate for each question.</p> <p>3a4 At the end of the list, a box is displayed where the user can insert a brief remark (e.g. maximum 30 words).</p> <p>The flow continues from step 6.</p>
<b>Alternative Flow 2</b>	<p>3b The user selects the option suggestion.</p> <p>3b1 BONVOYAGE platform shows the list of App functionalities.</p> <p>3b2 BONVOYAGE platform asks the user to flag the functionalities for which he wants to provide a suggestion.</p> <p>3b3 BONVOYAGE platform shows a list of possible aspects to be improved.</p> <p>3b4 BONVOYAGE platform asks the user to flag the aspects he wants to provide suggestions for.</p> <p>3b5 At the end of the list, a box is displayed where the user can insert a brief suggestion description (e.g. maximum 30 words).</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU960 User sending feedback</li> </ul>

**Table A5-38: UC\_02\_38 Passenger sending a general feedback on BONVOYAGE App functioning**

**Use Case UC\_02\_39: Passenger sending a feedback on how the journey is going on, while travelling from his point of origin to his point of destination**

<b>USE CASE ID</b>	<b>UC_02_39</b>
<b>Title</b>	Passenger sending a feedback on how the journey is going on, while travelling from his point of origin to his point of destination
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user is travelling and wants to send a feedback on how his journey is going on.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can provide a feedback on BONVOYAGE App in order to notify if he is satisfied with the travel solution BONVOYAGE has provided him with.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (provides the feedback)</p> <p>BONVOYAGE App (receives the feedback)</p>
<b>Pre-conditions</b>	The user is registered and logged into BONVOYAGE platform and its database.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses to the “Journey Feedback” functionality.</li> <li>2 BONVOYAGE displays a list of 5 questions to assess whether the user is satisfied or not. Questions relate to both the overall journey and its components (e.g. each single transport the user catches).</li> <li>3 For each question, BONVOYAGE platform asks the user to provide a rate from 1 to 5 (1= not at all satisfied; 2= not satisfied; 3= nor satisfied nor satisfied; 4=satisfied; 5= very satisfied).</li> <li>4 The user provides a rate for each question.</li> <li>5 At the end of the list, a box is displayed where the user can insert a brief description of the experienced problem (e.g. maximum 30 words).</li> <li>6 The user confirms the operation.</li> <li>7 The user sends the feedback to BONVOYAGE platform.</li> <li>8 BONVOYAGE platform finds out that the overall feedback is positive.</li> <li>9 BONVOYAGE platform displays a message to thank the user for his feedback.</li> <li>10 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	<p>8a BONVOYAGE platform finds out that the overall feedback is negative.</p> <p>8a2 BONVOYAGE platform asks the user if he wants to be proposed alternative travel solutions.</p> <p>8a3 The user confirms he wants alternative travel solutions.</p>

	<p>8a4 BONVOYAGE platform generates new travel solutions through the flow described in <b>UC_08_13</b>.</p> <p>8a5 The user selects one of the new travel solutions.</p> <p>8a6 The user display information on the new travel solution.</p> <p>8a7 The user purchases the new travel solution through the flow described in <b>UC_08_13</b>.</p> <p>The flow continues from step 9.</p>
<b>User requirements</b>	<ul style="list-style-type: none"><li>• BU970 Follow me</li></ul>

*Table A5-39: UC\_02\_39 Passenger sending a feedback on how the journey is going on, while travelling from his point of origin to his point of destination*



## Use Case UC\_02\_40: Passenger receiving promotions and discounts from partners of BONVOYAGE platform transport operators

<b>USE CASE ID</b>	<b>UC_02_40</b>
<b>Title</b>	Passenger receiving promotions and discounts from partners of BONVOYAGE platform transport operators
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user receives notification containing promotions and discounts from partners of BONVOYAGE platform transport operators.</p> <p>- <u>Goal</u>: this Use Case aims at showing how:</p> <ul style="list-style-type: none"> <li>• a user can receive promotions and discounts from partners of BONVOYAGE platform transport operators;</li> <li>• how a user can disable the reception of promotions and discounts</li> </ul>
<b>Constraints</b>	BONVOYAGE platform may continue to send promotions / discounts to the user, even if he has disabled the reception.
<b>Actors</b>	<p>Citizen (receives notification)</p> <p>Partner of BONVOYAGE platform transport operator (sends promotion)</p>
<b>Pre-conditions</b>	The user has registered to BONVOYAGE platform.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform sends a push notification to the user.</li> <li>2 The notification is displayed through an icon on the user smart phone.</li> <li>3 The user clicks on the icon to display the notification.</li> <li>4 BONVOYAGE platform opens the notification, showing the promotion offered to the user by a partner of BONVOYAGE transport operator.</li> <li>5 The user clicks on the promotion to display all related information.</li> <li>6 BONVOYAGE platform asks the user if he wants to get the promotion.</li> <li>7 The user confirms the action.</li> <li>8 The promotion is stored in the user BONVOYAGE account and is available to be spent.</li> <li>9 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	The user can use the promotion when he purchases the service offered by the Partner of BONVOYAGE platform transport operator.
<b>Alternative Flow 1</b>	<p>7a The user says he does not want to get the promotion.</p> <p>The flow continues from step 10.</p>
<b>Alternative Flow 2</b>	3a The user decides to disable the reception of promotions / discounts from

	<p>BONVOYAGE partners.</p> <p>3a1 The user goes to the “Setting” functionality.</p> <p>3a2 BONVOYAGE platform shows the user the list of available options.</p> <p>3a3 The user clicks on the “Promotions / Discounts “option.</p> <p>3a4 BONVOYAGE platform displays the following sentence “Receive notifications on available promotions /discounts of BONVOYAGE partners”, which is sided by a flagged field;</p> <p>3a5 The user removes the flag from the field;</p> <p>3a6 BONVOYAGE platform displays an alert saying “You will not receive notifications on promotions / discounts of BONVOYAGE partners anymore. Do you want to continue?” and displays:</p> <ul style="list-style-type: none"> <li>• YES button;</li> <li>• NO button.</li> </ul> <p>3a6 The user clicks on the YES button.</p> <p>3a7 The user exits from the BONVOYAGE platform.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU 1020 Receiving and obtaining promotions/discounts</li> </ul>

**Table A5-40: UC\_02\_40 Passenger receiving promotions and discounts from partners of BONVOYAGE platform transport operators**

## Use Case UC\_02\_41: Passenger searching travel information for others

<b>USE CASE ID</b>	<b>UC_02_41</b>
<b>Title</b>	Passenger searching travel information for others
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to check a travel solution for another user (who is not a BONVOYAGE member).</p> <p>- <u>Goal</u>: this Use Case aims at showing how a profiled user can make a travel solution search on behalf of someone else.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (searches a travel solution on behalf of someone else)</p> <p>Citizen (receives shared travel solution)</p> <p>Partner of BONVOYAGE platform transport operator (sends promotion)</p>
<b>Pre-conditions</b>	The user has registered to BONVOYAGE platform.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user enters on BONVOYAGE platform.</li> <li>2 The user selects the "Search" functionality.</li> <li>3 BONVOYAGE platform shows the user all the available options under the "Search" functionality.</li> <li>4 The user selects the option "Search a travel solution for others".</li> <li>5 BONVOYAGE asks the user if he wants to: <ul style="list-style-type: none"> <li>• Indicate a specific user profile for whom to perform the travel solution search (e.g. elderly, young, disable);</li> <li>• Make a travel solution search without any profile.</li> </ul> </li> <li>6 The user selects the first option.</li> <li>7 BONVOYAGE shows the user the list of available user profiles.</li> <li>8 The user selects the suitable profile (e.g. elderly).</li> <li>9 BONVOYAGE automatically redirects the user on the travel search functionality.</li> <li>10 The user inserts the following information: <ul style="list-style-type: none"> <li>• Origin /destination;</li> <li>• Date;</li> <li>• Hour.</li> </ul> </li> <li>11 BONVOYAGE platform performs a travel search according showing travel solutions in chronological order.</li> <li>12 The user selects one of the travel solutions.</li> </ol>

	<p>13 The user selects the “Share with contacts” option.</p> <p>14 The user selects a contact from his smart phone.</p> <p>15 The user clicks on the “Share” button.</p> <p>16 BONVOYAGE asks the user if he wants to share the travel solution through:</p> <ul style="list-style-type: none"> <li>• SMS;</li> <li>• Email;</li> <li>• BONVOYAGE platform (this option is only applicable if the other user is registered to BONVOYAGE platform and has a BONVOYAGE account);</li> </ul> <p>17 The user selects the SMS option.</p> <p>BONVOYAGE platform considers the search results sharing through SMS as preferred modality. If BONVOYAGE notices that the phone number is not available for the selected contact, it will suggest the user to send the invitation through email (as described in alternative flow 2) or through BONVOYAGE platform (as described in alternative flow 3).</p> <p>18 BONVOYAGE sends an SMS to the contact containing the travel solution.</p> <p>19 BONVOYAGE displays a message saying that the travel solution has been successfully shared.</p> <p>20 The user exits from the BONVOYAGE platform.</p>
<b>Post-conditions</b>	<p>If BONVOYAGE platform finds out that the beneficiary of the travel solution search is not registered to BONVOYAGE, it sends the beneficiary a notification advising him that he may get more appropriate / targeted travel solutions if he registered to the BONVOYAGE platform.</p>
<b>Alternative Flow 1</b>	<p>6a The user selects the option “Make a travel solution search without any profile”.</p> <p>The Flow continues from step 9.</p>
<b>Alternative Flow 2</b>	<p>17a The user selects the Email option.</p> <p>17a1 BONVOYAGE verifies that the beneficiary email address is available in the user smart phone.</p> <p>If BONVOYAGE notices that the beneficiary email is not available for the selected contact, it will suggest the user to send the invitation through SMS or through BONVOYAGE.</p> <p>17a2 BONVOYAGE sends an email to the beneficiary contact containing the travel solution.</p>

	The flow continues from step 19.
<b>Alternative Flow 3</b>	<p>17b The user selects the BONVOYAGE platform option.</p> <p>17b1 BONVOYAGE verifies that the beneficiary is registered to BONVOYAGE.</p> <p>If BONVOYAGE notices that the beneficiary is not registered to BONVOYAGE platform, it will suggest the user to send the invitation through SMS or email.</p> <p>17b2 BONVOYAGE sends notification to the beneficiary contact showing the travel solution.</p> <p>The flow continues from step 19.</p>
<b>Alternative Flow 4</b>	<p>17c BONVOYAGE finds-out that there is no phone number available for the selected contact.</p> <p>17c1 BONVOYAGE sends a notification to the user and suggests him to send the invitation via mail or BONVOYAGE it-self. BONVOYAGE platform will display “There is no phone number available for the selected contact. Do you want to share the search results through email or BONVOYAGE?” BONVOYAGE platform also displays:</p> <ul style="list-style-type: none"> <li>• YES button;</li> <li>• NO button.</li> </ul> <p>The user clicks on the YES button.</p> <p>The flow continues as described in Alternative Flow 2 (if the user selects the email option) or in Alternative Flow 3 (if the user selects the BONVOYAGE platform option).</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU210 Search travel information for others</li> </ul>

**Table A5-41: UC\_02\_41 Passenger searching travel information for others**

## Use Case UC\_02\_42: Passenger planning a trip by car sharing

<b>USE CASE ID</b>	<b>UC_02_42</b>
<b>Title</b>	Passenger planning a trip by car sharing.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to travel from point A to B using a car sharing service.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can look for an available car sharing service for his travel.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	The user is registered to the BONVOYAGE platform and has inserted his travel preferences. BONVOYAGE already knows that the user prefers to travel by car sharing.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the BONVOYAGE platform.</li> <li>2 The user selects the “Search Travel solution” functionality.</li> <li>3 The user inserts the following data: <ul style="list-style-type: none"> <li>• Origin;</li> <li>• Date;</li> <li>• Arrival time.</li> </ul> </li> <li>4 To fill in the “Destination” field, the user selects the option “choose destination from...”</li> <li>5 BONVOYAGE displays a list of options, including: <ul style="list-style-type: none"> <li>• Favourite addresses;</li> <li>• Favourite places;</li> <li>• Favourite events.</li> </ul> </li> <li>6 The user selects the “Favourite events” option.</li> <li>7 BONVOYAGE displays the list of favourite events.</li> <li>8 The user selects the event.</li> <li>9 BONVOYAGE automatically insert the event address in the “Destination” field.</li> <li>10 The user clicks on the “Travel solution” button.</li> </ol>

	<p>11 BONVOYAGE display a list of travel routes to be travelled by car.</p> <p>12 For each route, BONVOYAGE also displays available car sharing services.</p> <p>13 The user selects the travel solution.</p> <p>14 BONVOYAGE redirects the user on the car sharing service providers so that the user can book the service.</p> <p>15 Once the user has completed the reservation, BONVOYAGE sends the user a notification saying that his reservation has been successfully completed.</p> <p>16 The user exits from the BONVOYAGE platform.</p>
<b>Post-conditions</b>	The user can display the selected travel solution in the History functionality within BONVOYAGE platform.
<b>Alternative Flow</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU340 Intermodal trip planning and visualisation</li> <li>• BU490 Travel Service (private) choice and booking</li> </ul>

*Table A5-42: UC\_02\_42 Passenger planning a trip by car sharing*

### Use Case UC\_02\_43: User looking for travel document changes

<b>USE CASE ID</b>	<b>UC_02_43</b>
<b>Title</b>	User looking for travel document changes
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to check different modification a travel document has undergone over time.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can display different changes related to a travel document.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	The user has accessed BONVOYAGE platform.
<b>Main Flow / Activity Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the BONVOYAGE platform.</li> <li>2 The user selects the “History” functionality.</li> <li>3 BONVOYAGE platform displays all travel documents purchased by the user a pre-set time frame.</li> <li>4 The user selects a travel document.</li> <li>5 BONVOYAGE platform displays the travel document and all related information.</li> <li>6 The user selects the “Display history” option.</li> <li>7 BONVOYAGE platform displays all the changes incurred to the document: <ul style="list-style-type: none"> <li>• ID code;</li> <li>• Itinerary;</li> <li>• Date;</li> <li>• Hour;</li> <li>• Passengers;</li> <li>• Related services.</li> </ul> </li> <li>8 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU590 Provide information related to the identification code history of the ticket</li> </ul>

*Table A5-43: UC\_02\_43 User looking for travel document changes*



## Use Case UC\_02\_44: User consulting BONVOYAGE system to check sales data

<b>USE CASE ID</b>	<b>UC_02_44</b>
<b>Title</b>	User consulting BONVOYAGE system to check sales data
<b>Description / Goals</b>	<p>- <u>Overview</u>: a user wants to check BONVOYAGE sales data.</p> <p>- <u>Goal</u>: this Use Case aims at showing how a user can display different information related to BONVOYAGE sales.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (request the service)</p> <p>Transport operator (provide the service)</p>
<b>Pre-conditions</b>	The user has accessed BONVOYAGE platform.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses the BONVOYAGE platform.</li> <li>2 The user selects the “Sales” functionality.</li> <li>3 The user selects the “Show sales data” functionality.</li> <li>4 BONVOYAGE platform displays asks the user to select one of the following options to display sales data: <ul style="list-style-type: none"> <li>• Display data for a specific time frame;</li> <li>• Display data for a specific country;</li> <li>• Display data for a specific transport mode;</li> <li>• Display data for a specific transport operator.</li> </ul> </li> <li>5 The user selects the “Display data for a specific transport operator” option.</li> <li>6 BONVOYAGE displays the list of all transport operators that have joined BONVOYAGE in alphabetic order.</li> <li>7 The user selects “Trenitalia”.</li> <li>8 BONVOYAGE platform displays all sales data attributed to Trenitalia.</li> <li>9 The user saves the search.</li> <li>10 The user exits from the BONVOYAGE platform.</li> </ol>
<b>Post-conditions</b>	-
<b>Alternative Flow</b>	-
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU620 Consult data sales system</li> </ul>

*Table A5-44: UC\_02\_44 User consulting BONVOYAGE system to check sales data*

## Use Case UC\_02\_45: Passenger purchasing an intermodal travel solution

<b>Use Case ID</b>	<b>UC_02_45</b>
<b>Title</b>	Passenger purchasing an intermodal travel solution.
<b>Description / Goals</b>	<ul style="list-style-type: none"> <li>- Overview: the user is purchasing an intermodal travel ticket.</li> <li>- Goal: this Use Case aims at showing how the user can purchase a ticket for an intermodal travel solution.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Citizen (purchases the ticket)</p> <p>BONVOYAGE platform (provides the purchase service)</p>
<b>Pre-conditions</b>	A user is purchasing a multi-modal ticket. The user has already selected the different transport modes (e.g. 3) he will catch during his journey. The user has started the purchase process.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform displays all data related to the first transport mode composing the user travel solution (e.g. origin/destination, date, hour, and price).</li> <li>2 BONVOYAGE platform asks the user to select one of the following payment modalities to purchase the travel solution: <ol style="list-style-type: none"> <li>a. Credit card;</li> <li>b. Debit card;</li> <li>c. eWallet;</li> <li>d. PayPal account.</li> </ol> </li> <li>3 The user clicks on the PayPal purchase option.</li> <li>4 BONVOYAGE platform re-calls user's PayPal credential.</li> <li>5 BONVOYAGE platform asks the user to confirm the payment and advises the user he has to complete the purchase transaction within a pre-set amount of time (e.g. 15 minutes).</li> <li>6 The user confirms.</li> <li>7 BONVOYAGE platform processes the payment, transferring directly the amount to the relevant transport operator.</li> <li>8 BONVOYAGE displays a message saying that the purchase has been finalised.</li> <li>9 The user receives a notification<sup>16</sup> confirming the purchase finalisation.</li> </ol>

<sup>16</sup> The type of notification received by the user (e.g. email, SMS) depends on the conditions foreseen under the selected payment modality (e.g. the user bank operator may use email or SMS notification).

	<p>10 BONVOYAGE platform displays all data related to the second transport mode composing the user travel solution (e.g. origin/destination, date, hour, and price).</p> <p>11 BONVOYAGE platform leads the user in the purchase process, repeating all the steps 2 -9.</p> <p>12 BONVOYAGE platform displays all data related to the third transport mode composing the user travel solution (e.g. origin/destination, date, hour, and price).</p> <p>13 BONVOYAGE platform leads the user in the purchase process, repeating all the steps 2 -9.</p> <p>14 Once the whole purchase process has been finalised, BONVOYAGE sends the user a notification message summarising all transport modes and related data (including transport operator) included in the travel solution.</p> <p>15 The use exits from the BONVOYAGE platform.</p>
<b>Post-conditions</b>	The purchase process may be interrupted due to a malfunctioning in the system.
<b>Alternative Flow 1</b>	<p>10a BONVOYAGE platform is not able to process the payment for the second transport mode due to a temporary service interruption.</p> <p>10a1 BONVOYAGE platform displays an alert message telling the user that the purchase has not been finalised and to retry in a different moment<sup>17</sup>.</p> <p>10a2 BONVOYAGE automatically saves the information on user travel solution.</p> <p>10a3 The Use Case ends.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU580 Intermodal/Multi-service Integrated ticketing</li> </ul>

**Table A5-45: UC\_02\_45 Passenger purchasing an intermodal travel solution**

<sup>17</sup> When the user re-access the BONVOYAGE platform to finalise the purchase process, BONVOYAGE will re-start the process from the point it was interrupted, that is from the purchase of the second transport mode.

## Service providers' requirements

**NB: in the following Use Cases, BONVOYAGE services are to be intended as a service exposed to external entities to provide the required information**

**Use Case UC\_02\_46: Service provider questioning BONVOYAGE platform to receive information about time schedule of BONVOYAGE transport operators**

<b>Use Case ID</b>	<b>UC_02_46</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information about time schedule of BONVOYAGE transport operators
<b>Description / Goals</b>	<ul style="list-style-type: none"> <li>- Overview: an App belonging to a service provider questions BONVOYAGE platform to receive information about time schedule of BONVOYAGE transport operators</li> <li>- Goal: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information on time schedule of transport operators that have joined BONVOYAGE</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has uploaded his time schedule on BONVOYAGE platform)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 The service provider questions BONVOYAGE platform to obtain the following information related to the time schedule of transport operators that have joined BONVOYAGE: <ul style="list-style-type: none"> <li>• Point of departure and point of arrival;</li> <li>• Time of departure and time of arrival;</li> <li>• Intermediate itinerary/stops;</li> <li>• Available service classes;</li> <li>• Ancillary services;</li> <li>• Available seats, seats map;</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>• Tariffs;</li> <li>• Commercial offers;</li> <li>• Discounts (if available);</li> <li>• Possibility to select a seat;</li> <li>• Periodicity.</li> </ul> <p>3 BONVOYAGE platform provides the required information.</p> <p>4 The service provider gathers and stores the information.</p> <p>5 The Use Case ends.</p>
<b>Post-conditions</b>	The service provider is able to provide information to its end-users.
<b>Alternative Flow 1</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3a1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP10 Questioning on time schedule provided by the transport operators (timetable and its variations over time - VCO)</li> </ul>

**Table A5-46: UC\_02\_46 Service provider questioning BONVOYAGE platform to receive information about time schedule of BONVOYAGE transport operators**

**Use Case UC\_02\_47: Service provider questioning BONVOYAGE platform to receive information about the updated time schedule of BONVOYAGE transport operators**

<b>Use Case ID</b>	<b>UC_02_47</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information about the updated time schedule of BONVOYAGE transport operators
<b>Description / Goals</b>	<p>- Overview: an App belonging to a service provider questions BONVOYAGE platform to receive information about the updated time schedule of BONVOYAGE transport operators, following delays related to a transport mean it operates as well as on the status of the circulation.</p> <p>- Goal: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide updated information on time schedule of transport operators that have joined BONVOYAGE.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has updated his time schedule on BONVOYAGE platform)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 The service provider questions BONVOYAGE platform to obtain the following information related to circulation and planned delays of transport means run by transport operators that have joined BONVOYAGE: <ul style="list-style-type: none"> <li>• Transport mean number;</li> <li>• Departure time;</li> <li>• Point of departure;</li> <li>• Point of arrival;</li> <li>• Current status of the circulation;</li> <li>• Planned departing time for each intermediate stop;</li> <li>• Planned arrival time for each intermediate stop;</li> <li>• Effective departing time for each intermediate stop;</li> <li>• Effective arrival time for each intermediate stop.</li> </ul> </li> <li>3 BONVOYAGE platform provides the required information.</li> <li>4 The service provider gathers and stores the information.</li> </ol>

	5 The Use Case ends.
<b>Post-conditions</b>	The service provider is able to provide adequate information on planned delays to its end-user.
<b>Alternative Flow 1</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3a1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP20 Questioning on information / updates on progress of the vehicle flow provided to the platform BONVOYAGE</li> <li>• BSP120 Information on the state of the circulation.</li> </ul>

**Table A5-47: UC\_02\_47 Service provider questioning BONVOYAGE platform to receive information about the updated time schedule of BONVOYAGE transport operators**

**Use Case UC\_02\_48: Service provider questioning BONVOYAGE platform to receive information about a modified list of services of BONVOYAGE transport operators**

<b>Use Case ID</b>	<b>UC_02_48</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information about a modified list of services of BONVOYAGE transport operators
<b>Description / Goals</b>	<p>- Overview: an App belonging to a service provider questions BONVOYAGE platform to receive information about the updated list of services of BONVOYAGE transport operators.</p> <p>- Goal: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information on the updated list of services of transport operators that have joined BONVOYAGE.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has updated his list of services on BONVOYAGE platform)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 The service provider questions BONVOYAGE platform to obtain the following information related to the updated list of services offered by transport operators that have joined BONVOYAGE: <ul style="list-style-type: none"> <li>• Number of seats;</li> <li>• Type of seats;</li> <li>• Seats reserved for categories;</li> <li>• Ancillary/related services;</li> <li>• Commercial properties.</li> </ul> </li> <li>3 BONVOYAGE platform provides the required information.</li> <li>4 The service provider gathers and stores the information.</li> <li>5 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	The service provider is able to provide adequate information on



	BONVOYAGE transport operator services to its end-users.
<b>Alternative Flow 1</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3a1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP30 Questioning on inventory modification</li> </ul>

**Table A5-48: UC\_02\_48 Service provider questioning BONVOYAGE platform to receive information about a modified list of services of BONVOYAGE transport operators**

**Use Case UC\_02\_49: Service provider questioning BONVOYAGE platform to receive information about the effective geographic coordinates of transport means operated by BONVOYAGE transport operators**

<b>Use Case ID</b>	<b>UC_02_49</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information about the effective geographic coordinates of transport means operated by BONVOYAGE transport operators
<b>Description / Goals</b>	<p>- Overview: an App belonging to a service provider questions BONVOYAGE platform to receive information about the effective geographic coordinates of origin / destination / intermediary stops of transport means run by BONVOYAGE transport operators.</p> <p>- Goal: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information on the geographic coordinates of transport means run by transport operators that have joined BONVOYAGE.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has uploaded its transport means geographic coordinates on BONVOYAGE platform)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 The service provider questions BONVOYAGE platform to obtain geographic coordinates related to: <ul style="list-style-type: none"> <li>• Point of departure;</li> <li>• Intermediate points;</li> <li>• Point of arrival.</li> </ul> <p>Of transport means operated by transport operators that have joined BONVOYAGE.</p> </li> <li>3 BONVOYAGE platform provides the required information.</li> <li>4 The service provider gathers and stores the information.</li> <li>5 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	The service provider is able to provide effective geographic coordinates of transport services run by BONVOYAGE transport operator to its end-users.

<b>Alternative Flow 1</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3a1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP40 Questioning on information related to the vehicle geographic coordinates</li> </ul>

**Table A5-49: UC\_02\_49 Service provider questioning BONVOYAGE platform to receive information about the effective geographic coordinates of transport means operated by BONVOYAGE transport operators**

**Use Case UC\_02\_50: Service provider questioning BONVOYAGE platform to receive information on the profile of customers that have registered to BONVOYAGE platform**

<b>Use Case ID</b>	<b>UC_02_50</b>
<b>Title</b>	<p>Service provider questioning BONVOYAGE platform to receive information on the profile of customers that have registered to BONVOYAGE platform</p> <p>[For this requirement it is necessary to understand if it is compatible with privacy legislation. Besides, data enriches a system like BONVOYAGE, so it shall evaluate if BONVOYAGE data shall be shared with external entities. In any case, this data shall not include user profile data].</p>
<b>Description / Goals</b>	<ul style="list-style-type: none"> <li>- Overview: an App belonging to a service provider questions BONVOYAGE platform to receive information about the profile of users that have registered to BONVOYAGE platform.</li> <li>- Goal: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information about the profile of its users.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>User (has provided BONVOYAGE platform with his personal data and profile information)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 The service provider questions BONVOYAGE platform to obtain personal data and information of BONVOYAGE users.</li> <li>3 BONVOYAGE platform provides the required information.</li> <li>4 The service provider gathers and stores the information.</li> <li>5 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	The service provider is able to provide effective geographic coordinates of transport services run by BONVOYAGE transport operator to its end-users.
<b>Alternative Flow 1</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3a1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in "time out" and makes a new question.</p>

	<p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP50 Questioning on BONVOYAGE client profile</li> </ul>

**Table A5-50: UC\_02\_50 Service provider questioning BONVOYAGE platform to receive information on the profile of customers that have registered to BONVOYAGE platform**

**Use Case UC\_02\_51: Service provider questioning BONVOYAGE platform to receive information on the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator**

<b>Use Case ID</b>	<b>UC_02_51</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information on the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator (for public transport subjected to reservation).
<b>Description / Goals</b>	<p>- <u>Overview</u>: an App belonging to a service provider questions BONVOYAGE platform to receive information about the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers list.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has uploaded on BONVOYAGE platform the list of passengers of a specific transport mean)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 The service provider questions BONVOYAGE platform to obtain the following information related to passengers that have reserved a seat on a transport mean: <ul style="list-style-type: none"> <li>• Travel solution unique ID code;</li> <li>• Passenger contacts ;</li> <li>• Number of coach and seat reserved;</li> <li>• (If applicable) purchased services;</li> <li>• Point of arrival and Point of departure;</li> <li>• Timeframe;</li> <li>• Travel solution features (tariff and payed amount);</li> <li>• Status;</li> <li>• (If applicable) fidelity card code.</li> </ul> </li> <li>3 BONVOYAGE platform provides the required information.</li> <li>4 The service provider gathers and stores the information.</li> </ol>

	5 The Use Case ends.
<b>Post-conditions</b>	The service provider stores passengers list of transport services run by BONVOYAGE transport operator to its end-users.
<b>Alternative Flow 1</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3a1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP60 Questioning on transport "booked" passengers list (for public transport subjected to mandatory reservation).</li> </ul>

**Table A5-51: UC\_02\_51 Service provider questioning BONVOYAGE platform to receive information on the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator**

**Use Case UC\_02\_52: Service provider questioning BONVOYAGE platform to receive information on the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator (for public transport not subjected to reservation)**

<b>Use Case ID</b>	<b>UC_02_52</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information on the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator (for public transport not subjected to reservation).
<b>Description / Goals</b>	<p>- <u>Overview</u>: an App belonging to a service provider questions BONVOYAGE platform to receive information about the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers list.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has uploaded on BONVOYAGE platform the list of passengers of a specific transport mean)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 The service provider questions BONVOYAGE platform to obtain the following information related to passengers that have reserved a seat on a transport mean: <ul style="list-style-type: none"> <li>• Travel solution unique ID code;</li> <li>• Passenger name and surname (optional);</li> <li>• Point of arrival and Point of departure (optional).</li> </ul> </li> <li>3 BONVOYAGE platform provides the required information.</li> <li>4 The service provider gathers and stores the information.</li> <li>5 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	The service provider stores passenger lists transport services run by BONVOYAGE transport operator.
<b>Alternative Flow 1</b>	3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.



	<p>3a1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP70 Questioning on train transport passengers list (for public transport not subjected to mandatory reservation).</li> </ul>

**Table A5-52: UC\_02\_52 Service provider questioning BONVOYAGE platform to receive information on the list of passengers that have reserved a seat for a specific transport operated by a BONVOYAGE transport operator (for public transport not subjected to reservation)**

**Use Case UC\_02\_53: Service provider questioning BONVOYAGE platform to receive information on the list of passengers of specific transport operated by a BONVOYAGE transport operator that need to be “re-protected”**

<b>Use Case ID</b>	<b>UC_02_53</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information on the list of passengers of specific transport operated by a BONVOYAGE transport operator that need to be “re-protected”.
<b>Description / Goals</b>	<p>- <u>Overview</u>: an App belonging to a service provider questions BONVOYAGE platform to receive information about the list of passengers of specific transport operated by a BONVOYAGE transport operator that need to be “re-protected”.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers to be “re-protected”.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has uploaded on BONVOYAGE platform the list of passengers to be “re-protected”)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 For transport where a protection is needed, the service provider questions BONVOYAGE platform to obtain the following information related to passengers that need to be “re-protected”: <ul style="list-style-type: none"> <li>• Travel solution unique ID code ;</li> <li>• Passenger contacts;</li> <li>• Channel where the travel solution has been purchased;</li> <li>• Number of coach and seat reserved;</li> <li>• (If applicable) purchased services;</li> <li>• Point of arrival and Point of departure;</li> <li>• Timeframe;</li> <li>• Travel solution features (tariff and payed amount);</li> <li>• Status;</li> <li>• (If applicable) fidelity card code.</li> </ul> </li> </ol>

	<p>3 BONVOYAGE platform provides the required information.</p> <p>4 The service provider gathers and stores the information.</p> <p>5 The Use Case ends.</p>
<b>Post-conditions</b>	The service provider stores the lists of passengers that need to be re-protected in relation to a transport mean run by BONVOYAGE transport operator.
<b>Alternative Flow 1</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3a1 The service provider continues make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP80 Questioning on passengers list to be “re-protected”</li> </ul>

**Table A5-53: UC\_02\_53 Service provider questioning BONVOYAGE platform to receive information on the list of passengers of specific transport operated by a BONVOYAGE transport operator that need to be “re-protected”.**

**Use Case UC\_02\_54: Service provider questioning BONVOYAGE platform to receive information on the list of passengers of specific transport operated by a BONVOYAGE transport operator that have been “re-protected”**

<b>Use Case ID</b>	<b>UC_02_54</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information on the list of passengers of specific transport operated by a BONVOYAGE transport operator that have been “re-protected”.
<b>Description / Goals</b>	<p>- <u>Overview</u>: an App belonging to a service provider questions BONVOYAGE platform to receive information about the list of passengers of specific transport operated by a BONVOYAGE transport operator that have been “re-protected”.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers that have been “re-protected”.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has uploaded on BONVOYAGE platform the list of “re-protected” passengers)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 For transport where a protection is needed, the service provider questions BONVOYAGE platform to obtain the following information related to passengers that have been “re-protected”: <ul style="list-style-type: none"> <li>• Passenger contacts;</li> <li>• If the re-protection has been communicated to the passenger;</li> <li>• Channel where the travel solution has been purchased;</li> <li>• Number of coach and seat reserved;</li> <li>• (If applicable) purchased services;</li> <li>• Number of coach, seat and related services after re-protection.</li> </ul> </li> <li>3 BONVOYAGE platform provides the required information.</li> <li>4 The service provider gathers and stores the information.</li> <li>5 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	The service provider stores the lists of passengers that have been re-protected in relation to a transport mean run by BONVOYAGE transport operator.

<b>Alternative Flow 1</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3a1 The service provider continues make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP90 Questioning on “re-protected” passengers list</li> </ul>

**Table A5-54: UC\_02\_54 Service provider questioning BONVOYAGE platform to receive information on the list of passengers of specific transport operated by a BONVOYAGE transport operator that have been “re-protected”**

**Use Case UC\_02\_55: Service provider questioning BONVOYAGE platform to receive information on the list of disabled passengers of specific transport means operated by a BONVOYAGE transport operator**

<b>Use Case ID</b>	<b>UC_02_55</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information on the list of disabled passengers of specific transport means operated by a BONVOYAGE transport operator
<b>Description / Goals</b>	<p>- <u>Overview</u>: an App belonging to a service provider questions BONVOYAGE platform to receive information about the list of disabled passengers of a specific transport mean operated by a BONVOYAGE transport operator.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information about the disabled passengers list.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has uploaded on BONVOYAGE platform the list of disabled passengers)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 The service provider questions BONVOYAGE platform to obtain the following information related to disabled passengers: <ul style="list-style-type: none"> <li>• Passenger contacts;</li> <li>• Number of coach and seat reserved;</li> <li>• Type of passenger disability;</li> <li>• Information on required assistance tools (e.g. wheel chair).</li> </ul> </li> <li>3 BONVOYAGE platform provides the required information.</li> <li>4 The service provider gathers and stores the information.</li> <li>5 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	The service provider stores the lists of disabled passengers.
<b>Alternative Flow 1</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3a1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range</p>

	<p>(e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP100 Questioning on disabled passengers list</li> </ul>

*Table A5-55: UC\_02\_55 Service provider questioning BONVOYAGE platform to receive information on the list of disabled passengers of specific transport means operated by a BONVOYAGE transport operator*

**Use Case UC\_02\_56: Service provider questioning BONVOYAGE platform to receive information on the list of passengers entitled to special services of specific transport means operated by a BONVOYAGE transport operator**

<b>Use Case ID</b>	<b>UC_02_56</b>
<b>Title</b>	Service provider questioning BONVOYAGE platform to receive information on the list of passengers entitled to special services of specific transport means operated by a BONVOYAGE transport operator
<b>Description / Goals</b>	<p>- <u>Overview</u>: an App belonging to a service provider questions BONVOYAGE platform to receive information about the list of passengers entitled to special services of a specific transport mean operated by a BONVOYAGE transport operator.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform interacts with the App of external service providers to provide information about the passengers entitled to special services.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Service provider (questions BONVOYAGE Platform)</p> <p>BONVOYAGE platform (exposes its services)</p> <p>Transport operator (has uploaded on BONVOYAGE platform the list of passengers entitled to special services)</p>
<b>Pre-conditions</b>	Services have been set-up to allow communication and information sharing between BONVOYAGE platform and external service providers.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform exposes its services.</li> <li>2 The service provider questions BONVOYAGE platform to obtain the following information related to passengers that have purchased special services: <ul style="list-style-type: none"> <li>• Passenger contacts;</li> <li>• Number of coach and seat reserved;</li> <li>• Payed tariff;</li> <li>• List of services to which each passenger is entitled to.</li> </ul> </li> <li>3 BONVOYAGE platform provides the required information.</li> <li>4 The service provider gathers and stores the information.</li> <li>5 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	The service provider stores the lists of passengers entitled to special services.
<b>Alternative Flow 1</b>	3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.



	<p>3a1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3a2 The service is restored and BONVOYAGE platform provides the required information.</p> <p>The flow continues from step 4.</p>
<b>Alternative Flow 2</b>	<p>3a Due to a service interruption, BONVOYAGE platform cannot provide the required information instantaneously.</p> <p>3b1 The service provider continues to make sequential questions to BONVOYAGE platform: the service provider makes a question and if, after a pre-set time range (e.g. 3 seconds), BONVOYAGE does not reply, the service provider goes in “time out” and makes a new question.</p> <p>3b2 After several questions, BONVOYAGE platform is not able to provide the required information in the defined time range.</p> <p>3b3 The service provider does not get the required information due to connectivity problems.</p> <p>3a4 The service provider App displays its end-users an error message saying that the required information is not available at that moment.</p> <p>The flow continues from step 4.</p>
<b>Service providers requirements</b>	<ul style="list-style-type: none"> <li>• BSP110 Questioning on Questioning on passengers list entitled to special services</li> </ul>

**Table A5-56: UC\_02\_56 Service provider questioning BONVOYAGE platform to receive information on the list of passengers entitled to special services of specific transport means operated by a BONVOYAGE transport operator**

## Technology providers

### Use Case UC\_02\_57: Technology provider managing authorisations for different profiles of system users operating on different channels

<b>USE CASE ID</b>	<b>UC_02_57</b>
<b>Title</b>	Technology provider managing authorisations for different profiles of system users operating on different channels.  [System users refer to service providers (transport, travel operators and others) connecting to BONVOYAGE platform]
<b>Description / Goals</b>	<p>- <u>Overview</u>: a technology provider wants to create account and manage authorisation profiles for service providers selling BONVOYAGE platform travel solutions through different vending channels.</p> <p>- <u>Goal</u>: this Use Case aims at showing how account and authorisations for different profiles of system users operating on different channels can be created and managed on BONVOYAGE platform</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>BONVOYAGE channel configuration manager – technology provider (inserts profiles, creates account and manages authorisations)</p> <p>Service providers (are granted authorisation to operate on BONVOYAGE platform)</p>
<b>Pre-conditions</b>	BONVOYAGE platform database has been updated with service providers identity/profile related information
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE channel configuration manager logs into BONVOYAGE platform through a generic browser and inserting its user ID and password.</li> <li>2 BONVOYAGE channel configuration manager creates new service providers account or modifies existing profiles. Profiles include: <ul style="list-style-type: none"> <li>• Travel agencies;</li> <li>• Transport operators;</li> <li>• Other service providers.</li> </ul> </li> <li>3 For each service provider, BONVOYAGE channel configuration manager enables or disables access to different functions.</li> <li>4 BONVOYAGE platform shows updated information.</li> <li>5 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	Service providers receive their account and authorisation to access to

	BONVOYAGE platform to check and sell its travel journey solutions. Technology provider - BONVOYAGE channel configuration manager receives a notification whenever he creates a new account
Alternative Flow 1	-
Technology providers requirements	<ul style="list-style-type: none"><li>• BT10 Authorisation profile management</li></ul>

*Table A5-57: UC\_02\_57 Technology provider managing authorisations for different profiles of system users operating on different channels*

## Use Case UC\_02\_58: Creation of a new user profile

<b>Use Case ID</b>	UC_02_58
<b>Title</b>	Creation of a new user profile. [Travel profile relates to a single user]
<b>Description / Goals</b>	<ul style="list-style-type: none"> <li>- Overview: a user wants to create and insert on BONVOYAGE platform his travel profile</li> <li>- Goal: this Use Case aims at showing how a new user travel profile can be created on BONVOYAGE platform. Moreover it shows how a new user profile can be used as basis for travel solution research and travel document purchase.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	BONVOYAGE platform (creating the new user travel profile) User (inserts his data on BONVOYAGE platform)
<b>Pre-conditions</b>	The user has already registered and logged into BONVOYAGE platform through his user ID and password
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The user accesses to the Profile functionality.</li> <li>2 BONVOYAGE platform verifies the user credentials and that he is an end-user.</li> <li>3 BONVOYAGE platform asks the user to insert the following information, describing the travel profile desired by the end-user:               <ul style="list-style-type: none"> <li>• Point of departure;</li> <li>• Point of arrival;</li> <li>• Tariff scheme;</li> <li>• Class;</li> <li>• Seat positioning;</li> <li>• Fidelity card;</li> <li>• Firm code;</li> <li>• Ticket reception modality;</li> <li>• Name and surname;</li> <li>• Address;</li> <li>• Email;</li> <li>• Phone.</li> </ul> </li> <li>4 The user provides the required information.</li> <li>5 The user sends the information to BONVOYAGE platform.</li> </ol>

	<p>6 BONVOYAGE platform stores information and matches them with the user account.</p> <p>7 The Use Case ends.</p>
<b>Post-conditions</b>	<p>A new travel profile is associated to the user account.</p> <p>BONVOYAGE platform will rely upon user information to identify suitable travel solution.</p>
<b>Alternative Flow 1</b>	-
<b>Technology providers requirements</b>	<ul style="list-style-type: none"><li>• BT20 Upload travel profile</li></ul>

*Table A5-58: UC\_02\_58 Creation of a new user profile*

## Use Case UC\_02\_59: Technology provider defining parameters and rules for bonus assignment

<b>Use Case ID</b>	<b>UC_02_59</b>
<b>Title</b>	Technology provider defining parameters and rules for bonus assignment
<b>Description / Goals</b>	<p>- Overview: a technology provider wants to select parameters and define new rules to grant bonus.</p> <p>The starting point is a set of parameters (e.g. train, event, date, class). Through a combination of this parameter the technology provider can define a new rule for bonus granting.</p> <p>- Goal: this Use Case aims at showing how a technology provider can define rules to grant bonus through the combination of a pre-defined set of parameters.</p>
<b>Constraints</b>	-
<b>Actors</b>	Technology provider (defines the combination of parameters and sets up the new rule)
<b>Pre-conditions</b>	<p>The technology provider, that manages and updates BONVOYAGE platform, is authorised to work on parameters.</p> <p>The technology provider has logged into BONVOYAGE platform.</p> <p>The set of available parameters has been already inserted on BONVOYAGE platform (the technology provider cannot modify parameters but can only add/modify combination of parameters).</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform displays the list of transport means associated to a defined transport operator.</li> <li>2 The technology provider selects the transport mean of interest.</li> <li>3 BONVOYAGE platform shows the list of available bonus eligibility rules.</li> <li>4 The technology provider selects the rule of interest (if the high speed train travels on Sunday 4<sup>th</sup> October, a bonus is granted).</li> <li>5 BONVOYAGE platform shows the following rules parameters (e.g. train; category; service; date).</li> <li>6 The technology provider modifies one of the parameters, inserting a new value (e.g. he adds the value "intercity train" to the parameter category).</li> <li>7 The technology provider confirms the modification he has inserted.</li> <li>8 BONVOYAGE platform generates a new rule.</li> <li>9 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	BONVOYAGE platform will take into account the new rule grant bonus for a specific transport mean.
<b>Alternative Flow 1</b>	-

Technology providers requirements	<ul style="list-style-type: none"><li>• BT30 Define bonus identification/obligation</li></ul>
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*Table A5-59: UC\_02\_59 Technology provider defining parameters and rules for bonus assignment*

## Use Case UC\_02\_60: Technology provider defining parameters to define seat assignment

<b>Use Case ID</b>	<b>UC_02_60</b>
<b>Title</b>	Technology provider defining parameters to define seat assignment
<b>Description / Goals</b>	<ul style="list-style-type: none"> <li>- Overview: a technology provider wants to define parameters to be used by the algorithm to define seat assignment</li> <li>- Goal: this Use Case aims at showing how a technology provider can modify parameters used to assign seats to passengers that make a reservation or purchase a travel solution for a specific transport mean.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	Technology provider (defines the combination of parameters)
<b>Pre-conditions</b>	<p>The technology provider has received authorisation to work on parameters.</p> <p>The technology provider has logged into BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform displays the list of transport means associated to a defined transport operator.</li> <li>2 The technology provider selects the transport mean of interest.</li> <li>3 BONVOYAGE platform displays the list of parameters used by the algorithm to define seats assignment.</li> </ol> <p>Parameters are distinguished into two categories:</p> <ul style="list-style-type: none"> <li>• Application of the single algorithm: they allow selecting the specific algorithm to be used according to train feature and reservation/purchase request.</li> <li>• Features of the specific algorithm.</li> </ul> <ol style="list-style-type: none"> <li>4 The technology provider modifies parameters belonging to the two categories based on operating needs.</li> <li>5 The technology provider confirms the modification.</li> <li>6 BONVOYAGE platform displays the parameters updated list.</li> <li>7 The technology provider closes the modification page.</li> <li>8 BONVOYAGE platform asks the technology provider to activate modification.</li> <li>9 The technology provider activates modification he has made.</li> <li>10 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	BONVOYAGE platform will take into account the new parameters to define seat assignment for a specific transport mean.



Alternative Flow 1	-
Technology providers requirements	<ul style="list-style-type: none"><li>• BT40 Modify parameters used by the algorithms for the seat assignments</li></ul>

*Table A5-60: UC\_02\_60 Technology provider defining parameters to define seat assignment*

## Use Case UC\_02\_61: Technology provider wanting to display report on services/tickets sold through BONVOYAGE platform

<b>Use Case ID</b>	<b>UC_02_61</b>
<b>Title</b>	Technology provider wanting to display report on services/tickets sold through BONVOYAGE platform
<b>Description / Goals</b>	<p>- Overview: a technology provider wants to display information on services/tickets associated to a defined transport operator that have been sold through BONVOYAGE platform.</p> <p>Information is contained in reports and is displayed based on the selected aggregation criteria (e.g.: services/tickets sold by hour/day/month/year; transport mean/service type; etc.).</p> <p>- Goal: this Use Case aims at showing how BONVOYAGE platform provides information on services/tickets sold for services provided by a defined transport operator.</p>
<b>Constraints</b>	-
<b>Actors</b>	Technology provider (asks to view information on tickets/services sold)
<b>Pre-conditions</b>	<p>.</p> <p>The technology provider has logged into BONVOYAGE platform.</p> <p>All the information related to services/tickets sold has been correctly uploaded on BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform displays available aggregation criteria (e.g.: services/tickets sold by hour/day/month/year; transport mean/service type; channel/selling point; eWallet).</li> </ol> <p>It is possible to select more than one aggregation criteria to get more details results.</p> <p>Clusters are organised according to hour or day or month or year.</p> <ol style="list-style-type: none"> <li>2 The technology provider selects the aggregation cluster of interest (e.g. transport mean/service type).</li> <li>3 The technology provider selects a start date and an end date to define the search timeline.</li> <li>4 The technology provider confirms its search criteria.</li> <li>5 BONVOYAGE platform displays a report containing the required information. This includes: <ul style="list-style-type: none"> <li>• Total number of tickets / services sold;</li> <li>• Total sold amount;</li> <li>• Cancelled refunded amount (if any);</li> <li>• Passenger's number.</li> </ul> </li> </ol>

	6 The Use Case ends.
Post-conditions	-
Alternative Flow 1	-
Technology providers requirements	<ul style="list-style-type: none"><li>• BT50 Provide information related to the service/ticket sold</li></ul>

*Table A5-61: UC\_02\_61 Technology provider wanting to display report on services/tickets sold through BONVOYAGE platform*

## Use Case UC\_02\_62: Technology provider wanting to display report on services/tickets purchased by a specific profiled customer

<b>Use Case ID</b>	<b>UC_02_62</b>
<b>Title</b>	Technology provider wanting to display report on services/tickets purchased by a specific profiled customer
<b>Description / Goals</b>	<p>- Overview: a technology provider wants to display information on services/tickets purchased by a specific profiled customer.</p> <p>Information is contained in periodic reports.</p> <p>Information can be retrieved with respect to both invoiced and not-invoiced costs.</p> <p>- Goal: this Use Case aims at showing how BONVOYAGE platform provides information on services/tickets purchased by a profiled customer.</p>
<b>Constraints</b>	-
<b>Actors</b>	Technology provider that (asks to view information on tickets/services purchased)
<b>Pre-conditions</b>	<p>The technology provider has logged into BONVOYAGE platform.</p> <p>All the information related to services/tickets purchase has been correctly uploaded on BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform shows the technology provider a page where he can insert customer credentials.</li> <li>2 The technology provider inserts customer credentials.</li> <li>3 The technology provider confirms the action.</li> <li>4 BONVOYAGE platform shows the technology provider a page where he can select a start and an end date to define the timeline of interest.</li> <li>5 The technology provider selects the start and the end date.</li> <li>6 BONVOYAGE platform shows the list of purchases made by the profiled customer in the selected timeline. For each purchase, the following information is showed: <ul style="list-style-type: none"> <li>• Number of tickets sold;</li> <li>• Purchase date of each ticket;</li> <li>• Travel solution description of each ticket;</li> <li>• Travel solution ID code associated to each ticket;</li> <li>• Amount overall;</li> <li>• Amount associated to each ticket;</li> <li>• Invoiced/not invoiced overall (with possibility to display invoice</li> </ul> </li> </ol>

	<p>details);</p> <ul style="list-style-type: none"><li>• Invoiced/not invoiced associated to each ticket (with possibility to display invoice details)...</li></ul> <p>7 The Use Case ends.</p>
<b>Post-conditions</b>	-
<b>Alternative Flow 1</b>	-
<b>Technology providers requirements</b>	<ul style="list-style-type: none"><li>• BT60 Provide financial reporting for the profiling clients</li></ul>

*Table A5-62: UC\_02\_62 Technology provider wanting to display report on services/tickets purchased by a specific profiled customer*

## Use Case UC\_02\_63: Technology provider guiding the user in the purchase of an intermodal travel solution

<b>Use Case ID</b>	<b>UC_02_63</b>
<b>Title</b>	Technology provider guiding the user in the purchase of an intermodal travel solution.
<b>Description / Goals</b>	<ul style="list-style-type: none"> <li>- Overview: the user is purchasing an intermodal travel ticket. BONVOYAGE platform drives the user in the purchase process, allowing the user to buy separately each ticket composing the intermodal travel solution.</li> <li>- Goal: this Use Case aims at showing how BONVOYAGE platform manages the purchase of an intermodal travel solution.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	Technology provider (managing BONVOYAGE platform to lead the purchase process)
<b>Pre-conditions</b>	A user is purchasing a multi-modal ticket. The user has already selected the different transport modes (e.g. 3) he will catch during his journey. The user has started the purchase process.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform displays all data related to the first transport mode composing the user travel solution (e.g. origin/destination, date, hour, and price).</li> <li>2 The user clicks on the PayPal purchase option.</li> <li>3 BONVOYAGE platform re-call user's PayPal credential.</li> <li>4 BONVOYAGE platform asks the user to confirm the payment and advises the user he has to complete the purchase transaction within a pre-set amount of time (e.g. 15 minutes).</li> <li>5 The user confirms.</li> <li>6 BONVOYAGE platform processes the payment, transferring directly the amount to the relevant transport operator.</li> <li>7 BONVOYAGE displays a message saying that the purchase has been finalised.</li> <li>8 The user receives a notification<sup>18</sup> confirming the purchase finalisation.</li> <li>9 BONVOYAGE platform displays all data related to the second transport mode composing the user travel solution (e.g. origin/destination, date, hour, and price).</li> <li>10 BONVOYAGE platform leads the user in the purchase process, repeating</li> </ol>

<sup>18</sup> The type of notification received by the user (e.g. email, SMS) depends on the conditions foreseen under the selected payment modality (e.g. the user bank operator may use email or SMS notification).

	<p>all the steps 2 -9.</p> <p>11 BONVOYAGE platform displays all data related to the third transport mode composing the user travel solution (e.g. origin/destination, date, hour, and price).</p> <p>12 BONVOYAGE platform leads the user in the purchase process, repeating all the steps 2 -9.</p> <p>13 Once the whole purchase process has been finalised, BONVOYAGE sends the user a notification message summarising all transport modes and related data (including transport operator) included in the travel solution.</p> <p>14 The Use Case ends.</p>
<b>Post-conditions</b>	
<b>Alternative Flow 1</b>	<p>10a BONVOYAGE platform is not able to process the payment for the second transport mode due to a temporary service interruption.</p> <p>10a1 BONVOYAGE platform displays an alert message telling the user that the purchase has not been finalised.</p> <p>10a2 BONVOYAGE automatically tries to restore the service to allow the user complete the purchase process.</p> <p>10a3 BONVOYAGE is able to restore the service.</p> <p>10a4 BONVOYAGE automatically re-drives the user to the purchase process last step (that is the last step the user had reached).</p> <p>The flow continues from step 9.</p> <p>To retry in a different moment<sup>19</sup>.</p> <p>10a2 BONVOYAGE automatically saves the information on user travel solution.</p> <p>10a3 The Use Case ends.</p>
<b>Alternative Flow 2</b>	<p>10b BONVOYAGE platform is not able to process the payment for the second transport mode due to a temporary service interruption.</p> <p>10b1 BONVOYAGE platform displays an alert message telling the user that the purchase has not been finalised.</p> <p>10b2 BONVOYAGE automatically tries to restore the service to allow the user complete the purchase process.</p> <p>10b3 BONVOYAGE is not able to restore the service.</p> <p>10b4 BONVOYAGE asks the user if he wants to delete the process or if he wants</p>

<sup>19</sup> When the user re-accesses the BONVOYAGE platform to finalise the purchase process, BONVOYAGE will re-start the process from the point it was interrupted, that is from the purchase of the second transport mode.

	<p>to purchase the ticket by him-self through a different channel (e.g. transport operator web-sites).</p> <p>10b5 The user decides to delete the process.</p> <p>10b6 BONVOYAGE deletes the travel solution.</p> <p>The Use Case ends.</p>
<b>Technology providers requirements</b>	<p>B70 BONVOYAGE technology provider leading the user in the purchase of an intermodal travel solution</p> <p>BT71 BONVOYAGE technology provider leading the user in the purchase of an intermodal travel solution, to be finalised in a pre-set amount of time.</p>

*Table A5-63: UC\_02\_63 Technology provider guiding the user in the purchase of an intermodal travel solution*



**Use Case UC\_02\_64: Technology provider uploading on BONVOYAGE platform information on the presence of public transport that cannot be reserved**

<b>Use Case ID</b>	<b>UC_02_64</b>
<b>Title</b>	Technology provider uploading on BONVOYAGE platform information on the presence of public transport that cannot be reserved.  [Decision made by transport operators. It is necessary to understand how this decision can be made available to BONVOYAGE platform].
<b>Description / Goals</b>	<ul style="list-style-type: none"> <li>- Overview: following a transport operator decisions, the technology provider uploads on BONVOYAGE platform information on public transport that cannot be reserved due to situations that require operator intervention to restore reservation functionalities.</li> <li>- Goal: this Use Case aims at showing how BONVOYAGE platform can restore public reservation services.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	Technology provider (managing BONVOYAGE platform to upload information)
<b>Pre-conditions</b>	<p>The technology provider has received authorisation manage integrated ticket.</p> <p>The technology provider has logged into BONVOYAGE platform.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The technology provider selects the transport means for whom he wants to notify that reservation is not available.</li> <li>2 For the selected transport mean, the technology provider inserts the following information: train number; relevant date/s; reservation not available.</li> <li>3 The Use Case ends.</li> </ol>
<b>Post-conditions</b>	If a user wants to reserve a not available train, BONVOYAGE platform will notify the user and suggest an alternative solution.
<b>Alternative Flow 1</b>	-
<b>Technology providers requirements</b>	BT80 Automatically notification of the presence of the inhibited trains

*Table A5-64: UC\_02\_64 Technology provider uploading on BONVOYAGE platform information on the presence of public transport that cannot be reserved*

## ***Transport information providers requirements***

**Use Case UC\_02\_65: Transport operator providing public transport information on time schedule, geographic coordinates and available commercial offers to BONVOYAGE platform**

<b>USE CASE ID</b>	<b>UC_02_65</b>
<b>Title</b>	Transport operator providing public transport information on time schedule, geographic coordinates and available commercial offers to BONVOYAGE platform.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a transport operator wants to provide and upload its time schedule, geographic coordinates, and its tariff profile offers / promotions on BONVOYAGE platform.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform receives and upload :</p> <ul style="list-style-type: none"> <li>• A transport operator time schedule (which includes all the necessary information to provide the travel solution to the end-users);</li> <li>• The effective geographic coordinates (point of departure, intermediate points, point of arrival) provided by a transport operator to exactly identify the departure, arrival, intermediate location of a public transport;</li> <li>• The transport operator tariffs, offers and promotions targeting different users.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Transport operator (provides the time schedule)</p> <p>BONVOYAGE time schedule system</p>
<b>Pre-conditions</b>	The user has been authorized to upload data, whenever he needs to.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1. The transport operator enters in the Upload functionality of BONVOYAGE platform.</li> <li>2. BONVOYAGE platform displays the list of transports operated by the relevant transport operator.</li> <li>3. The transport operator selects the transport mean.</li> <li>4. The transport Operator uploads on BONVOYAGE System the following information related to the time schedule: <ul style="list-style-type: none"> <li>• Point of departure and point of arrival;</li> <li>• Time of departure and time of arrival;</li> </ul> </li> </ol>

	<ul style="list-style-type: none"><li>• Intermediate itinerary/stops;</li><li>• Available service classes;</li><li>• Ancillary services;</li><li>• Available seats, seats map;</li><li>• Tariffs;</li><li>• Commercial offers;</li><li>• Discounts (if available);</li><li>• Possibility to select a seat;</li><li>• Periodicity;</li><li>• Start date of the uploaded time schedule;</li><li>• End date of the uploaded time schedule.</li></ul> <p>5. The transport operator also uploads the geographic coordinates associated to</p> <ul style="list-style-type: none"><li>• Point of departure;</li><li>• Intermediate points;</li><li>• Point of arrival.</li></ul> <p>6. Transport operator selects the passenger category, or the basic tariff, or the point of departure/arrival, or the Regions for whom he wants to insert an offer.</p> <p>7. The transport operator also uploads the following offer information to be associated to the selected transport mean/passenger category/basic tariff/ point of departure/arrival/ Regions :</p> <ul style="list-style-type: none"><li>• Offer code;</li><li>• Offer status (no modifiable);</li><li>• Offer type;</li><li>• Starting date of validity;</li><li>• Expiring date;</li><li>• Offer description (e.g. to which passenger categories it can be applied);</li><li>• Days and/or hours when the offer can be sold;</li><li>• Days when the offer is available;</li><li>• Possibility to combine the offer with other offers;</li><li>• Envisaged possibility to modify reservation;</li><li>• Envisaged reimbursement;</li><li>• Mandatory round/trip;</li><li>• Maximum number of people allowed purchasing that offer.</li></ul>
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	<ol style="list-style-type: none"> <li>8. With reference to the commercial offers upload, BONVOYAGE platform associates the offer information to the selected transport mean /passenger category / basic tariff / point of departure / arrival / Regions.</li> <li>9. BONVOYAGE platform receives and stores the information within its database.</li> <li>10. BONVOYAGE platform produces a reception timestamp for all the received information on time schedule, geographic coordinates and commercial offers.</li> <li>11. BONVOYAGE platform starts the time schedule, geographic coordinates and commercial offers data base generation process that executes consistency checks and generates an optimised format.</li> <li>12. BONVOYAGE platform registers operations log.</li> <li>13. With reference to the geographical coordinates upload, BONVOYAGE platform asks the transport operator if he wants to repeat the same procedure for another transport mean.</li> <li>14. The transport operator doesn't want to repeat the procedure.</li> <li>15. The Use Case ends with no error.</li> </ol>
<b>Post-conditions</b>	<p>BONVOYAGE database is updated and it is available to receive and upload new information.</p> <p>BONVOYAGE platform is also able to provide the user with geographic coordinates of selected transport means and with updated offers.</p> <p>When the validity period of a specific time schedule is about to "expire", BONVOYAGE will send a notification to the concerned transport operator to remind him to update time schedule information on BONVOYAGE platform.</p>
<b>Alternative Flow 1</b>	<p>13a1. The transport operator wants to repeat the procedure.</p> <p>The transport operator inserts new geographical coordinates (go to step 5); the flow continues from step 9.</p>
<b>Transport information provider requirements</b>	<p>BTIP10 Upload time schedule provided by the transport operators (timetable and its variations over time - VCO)</p> <p>BTIP40 Provide information related to the vehicle geographic coordinates</p> <p>BTIP50 Upload tariff profile discounts offers and promotions</p>

**Table A5-65: UC\_02\_65 Transport operator providing public transport information on time schedule, geographic coordinates and available commercial offers to BONVOYAGE platform**

## Use Case UC\_02\_66: Transport operator providing BONVOYAGE platform with information on planned delays on its transport means

<b>USE CASE ID</b>	<b>UC_02_66</b>
<b>Title</b>	Transport operator providing BONVOYAGE platform with information on planned delays on its transport means
<b>Description / Goals</b>	<p>- <u>Overview</u>: a transport operator wants to provide BONVOYAGE platform with information on planned delays related to a transport mean it operates</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform receives and uploads information (provided by transport operators) on delays planned on the medium-long term in order to:</p> <ul style="list-style-type: none"> <li>• Provide adequate information to the user;</li> <li>• Offer effective travel solutions (new travel solutions following rescheduled timetables) in order to provide the user with a new updated travel solution.</li> </ul>
<b>Constraints</b>	-
<b>Actors</b>	<p>Transport operator (provides the updated time schedule)</p> <p>BONVOYAGE time schedule system</p>
<b>Pre-conditions</b>	<p>The transport operator has been authorised to connect to BONVOYAGE platform to provide and upload its time schedule and related information</p> <p>BONVOYAGE database is correctly updated with information of regular time schedule.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 The transport operator sends information on planned delays to BONVOYAGE platform using the pre-set and appropriate communication protocol. The provided information includes: <ul style="list-style-type: none"> <li>• Transport mean number;</li> <li>• Departure time;</li> <li>• Point of departure;</li> <li>• Point of arrival;</li> <li>• Planned departing time for each intermediate stop;</li> <li>• Planned arrival time for each intermediate stop;</li> <li>• Effective departing time for each intermediate stop;</li> <li>• Effective arrival time for each intermediate stop.</li> </ul> </li> <li>2 BONVOYAGE platform receives and stores the information within its</li> </ol>

	<p>database.</p> <p>3 BONVOYAGE platform produces a reception timestamp.</p> <p>4 BONVOYAGE platform starts the time schedule data base generation process that executes consistency checks and generates an optimised format.</p> <p>5 BONVOYAGE platform register operations log.</p> <p>6 The Use Case ends with no error.</p>
<b>Post-conditions</b>	<p>BONVOYAGE platform is able to provide the users with information on planned delays.</p> <p>Moreover, BONVOYAGE platform proactively provides the user with information on journey re-planning, giving advices on its feasibility and suggesting alternative solutions.</p>
<b>Alternative Flow 1</b>	<p>2a. BONVOYAGE platform points out the transport mean is not included in its time schedule database or it is not envisaged for the indicated date.</p> <p>2a1. The system stores the information on the missing alignment and the related reason.</p> <p>2a2. The Use Case ends.</p>
<b>Transport information provider requirements</b>	<p>BTIP20 Upload information / updates on progress of the vehicle flow provided to the platform BONVOYAGE</p>

**Table A5-66: UC\_02\_66 Transport operator providing BONVOYAGE platform with information on planned delays on its transport means**

## Use Case UC\_02\_67: Transport operator providing BONVOYAGE platform a modified list of services

<b>USE CASE ID</b>	<b>UC_02_67</b>
<b>Title</b>	Transport operator providing BONVOYAGE platform a modified list of services.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a transport operator wants to provide BONVOYAGE platform with a modified list of the services it offers with respect to operated transports.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform receives and uploads a modified list of services offered by transport operators (e.g. number of seats, type of seats, seats reserved for categories, ancillary/related services, and commercial properties).</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Transport operator (provides the list of services)</p> <p>BONVOYAGE time schedule system/data base</p>
<b>Pre-conditions</b>	<p>The transport operator has been authorised to connect to BONVOYAGE platform to provide and upload its time schedule and related information</p> <p>BONVOYAGE database is correctly updated with information of regular time schedule.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform displays the list of transports operated by the relevant transport operator.</li> <li>2 The transport operator selects one of his means on which he wants to make modifications.</li> <li>3 BONVOYAGE platform displays the list of services associated to that transport mean, including: <ul style="list-style-type: none"> <li>• Number of seats;</li> <li>• Type of seats;</li> <li>• Seats reserved for categories;</li> <li>• Ancillary/related services;</li> <li>• Commercial properties.</li> </ul> </li> <li>4 The transport operator selects the service he wants to modify (e.g. number of seats).</li> <li>5 BONVOYAGE platform displays the list of seats composing the transport mean and related modifiable information (e.g. number, type, etc.).</li> <li>6 The transport operator selects the number he wants to assign each seat or to a specific group of seats.</li> </ol>

	<p>7 The transport operator saves the modifications he has made.</p> <p>8 BONVOYAGE platform verifies the possibility to apply the required modifications.</p> <p>9 BONVOYAGE platform displays the list of seats composing the transport mean, updated with the required modification.</p> <p>10 The BONVOYAGE platform asks the transport operator to activate the applied modifications.</p> <p>11 The transport operator confirms the activation.</p> <p>12 The Use Case ends.</p>
<b>Post-conditions</b>	<p>BONVOYAGE platform activates the required modifications.</p> <p>BONVOYAGE platform is able to provide users with the updated services list.</p>
<b>Alternative Flow 1</b>	<p>4a The transport operator selects the service he wants to modify: type of seats.</p> <p>4a1 BONVOYAGE platform displays the list of seats composing the transport mean and related modifiable information (e.g. number, type, etc.).</p> <p>4a2 The transport operator selects the new features he wants to assign each seat or to a specific group of seats.</p> <p>4b The transport operator selects the service he wants to modify: seats reserved for categories.</p> <p>4b1 BONVOYAGE platform displays the list of seats composing the transport mean and related modifiable information (e.g. number, type, etc.).</p> <p>4b2 The transport operator selects the new passenger categories he wants to assign each seat or a specific group of seats.</p> <p>4c The transport operator selects the service he wants to modify: ancillary/related services.</p> <p>4c1 BONVOYAGE platform displays the list of seats composing the transport mean and related modifiable information (e.g. number, type, etc.).</p> <p>4c2 The transport operator selects the seat or the group of seats for whom he wants to modify ancillary services.</p> <p>4c3 BONVOYAGE platform displays the list of ancillary services already assigned to selected places and the list of ancillary services not assigned to selected places.</p> <p>4c4 The transport operator selects one or more services not assigned to the selected seats.</p> <p>4c5 The transport operator also selects one or more services already assigned to the selected seats.</p> <p>4c6 The transport operator asks BONVOYAGE platform to:</p>



	<ul style="list-style-type: none"> <li>• Assign new services to the selected seat;</li> <li>• Remove selected services already assigned to those seats.</li> </ul> <p>4d The transport operator selects the service he wants to modify: commercial properties.</p> <p>4d1 BONVOYAGE platform displays the list of seats composing the transport mean and related modifiable information (e.g. number, type, etc.).</p> <p>4d2 The transport operator selects the seat or the group of seats to whom he wants to assign new commercial properties.</p> <p>4d3 BONVOYAGE platform displays the list of commercial properties already assigned to selected places and the list of ancillary services not assigned to selected places.</p> <p>4d4 The transport operator selects one or more commercial properties not assigned to the selected seats.</p> <p>4d5 The transport operator also selects one or more commercial properties already assigned to the selected seats.</p> <p>4d6 The transport operator asks BONVOYAGE platform to:</p> <ul style="list-style-type: none"> <li>• Assign new commercial properties to the selected seat;</li> <li>• Remove selected commercial properties already assigned to those seats.</li> </ul> <p>The flow continues from step 7.</p> <p>8a BONVOYAGE platform finds out that it is not possible to receive the required modifications.</p> <p>8a1 BONVOYAGE platforms displays an error message informing the transport operator that required modifications are not applicable, also providing related reasons.</p> <p>The flow continues from step 12.</p>
<b>Transport information provider requirements</b>	BTIP30 Inventory modification

*Table A5-67: UC\_02\_67 Transport operator providing BONVOYAGE platform a modified list of services*

## Use Case UC\_02\_68: Transport operator checking tariff profile offers and promotions

<b>USE CASE ID</b>	<b>UC_02_68</b>
<b>Title</b>	Transport operator checking tariff profile offers and promotions.
<b>Description / Goals</b>	<p>- <u>Overview</u>: a transport operator wants to check offers and promotions he had previously uploaded for a specific transport mean.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform receives from transport operators' information on tariffs profile, offers and promotions to be deleted.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Transport operator (provides the tariff profile, offers and promotions)</p> <p>BONVOYAGE time schedule system</p>
<b>Pre-conditions</b>	<p>The transport operator has already provided BONVOYAGE platform with its time schedule.</p> <p>The transport operator has already provided BONVOYAGE platform with information on its tariffs and promotions.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform displays the list of transports operated by the relevant transport operator.</li> <li>2 The transport operator selects one of his transport means., according to his preferences</li> <li>3 BONVOYAGE platform shows the list of available offers and promotions for the selected transport mean.</li> <li>4 BONVOYAGE platform automatically displays the standard rates whenever the offers are expired...</li> <li>5 The Use Case ends with no error.</li> </ol>
<b>Post-conditions</b>	<p>BONVOYAGE database is updated.</p> <p>For that transport mean, BONVOYAGE will display the user the basic tariff.</p> <p>[This Use Case is based on the assumption that BONVOYAGE is able to manage an offer/promotions calendar: BONVOYAGE knows and provides by-default the basic tariff. When a transport operator inserts an offer/promotion, BONVOYAGE temporary substitutes the offer/promotion to the basic tariff. Consequently, when the offer/promotion is deleted or expires, BONVOYAGE will automatically</p>

	return to the basic tariff].
<b>Alternative Flow 1</b>	-
<b>Transport information provider requirements</b>	BTIP60 Cancel tariff profile offers and promotions

*Table A5-68: UC\_02\_68 Transport operator checking tariff profile offers and promotions*

## Use Case UC\_02\_69: Transport operator modifying tariff profile offers and promotions

<b>USE CASE ID</b>	<b>UC_02_69</b>
<b>Title</b>	Transport operator modifying tariff profile offers and promotions
<b>Description / Goals</b>	<p>- <u>Overview</u>: a transport operator wants to modify offers and promotions he had previously uploaded for a specific transport mean.</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform receives from transport operators information on tariffs profile, offers and promotions to be modified</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Transport operator (provides the tariff profile, offers and promotions)</p> <p>BONVOYAGE time schedule system</p>
<b>Pre-conditions</b>	<p>The transport operator has already provided BONVOYAGE platform with its time schedule.</p> <p>The transport operator has already provided BONVOYAGE platform with information on its tariffs and promotions.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform displays the list of transports operated by the relevant transport operator.</li> <li>2 The transport operator selects one of his transport means, according to his preferences</li> <li>3 BONVOYAGE platform shows the list available tariffs, offers and promotions (promoted by the same transport operator) for the selected transport mean.</li> <li>4 The transport operator selects the tariff/ offer / promotion he wants to modify.</li> <li>5 Where necessary, the transport operator inserts new information related to the tariff/ offer/ promotion: <ul style="list-style-type: none"> <li>• Offer code;</li> <li>• Offer status (no modifiable);</li> <li>• Offer type;</li> <li>• Starting date of validity;</li> <li>• Expiring date;</li> <li>• Offer description (e.g. to which passenger categories it can be applied);</li> <li>• Days and/or hours when the offer can be sold;</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>• Days when the offer is available;</li> <li>• Possibility to combine the tariff /offer / promotion with other offers;</li> <li>• Envisaged possibility to modify reservation;</li> <li>• Envisaged reimbursement;</li> <li>• Mandatory round/trip;</li> <li>• Maximum number of people allowed purchasing that offer.</li> </ul> <p>6 BONVOYAGE platform receives and stores the information within its database.</p> <p>7 BONVOYAGE platform executes consistency checks and generates an optimised format.</p> <p>8 The Use Case ends with no error.</p>
<b>Post-conditions</b>	<p>BONVOYAGE database is updated.</p> <p>[This Use Case is based on the assumption that BONVOYAGE is able to manage an offer/promotions calendar: BONVOYAGE knows and provides by-default the basic tariff. When a transport operator inserts an offer/promotion, BONVOYAGE temporary substitutes the offer/promotion to the basic tariff. Consequently, when the offer/promotion is deleted or expires, BONVOYAGE will automatically return to the basic tariff].</p>
<b>Alternative Flow 1</b>	-
<b>Transport information provider requirements</b>	BTIP70 Modify tariff profile offers and promotions

*Table A5-69: UC\_02\_69 Transport operator modifying tariff profile offers and promotions*

## Use Case UC\_02\_70: Transport operator providing BONVOYAGE platform with rules to be followed for pricing building

<b>USE CASE ID</b>	<b>UC_02_70</b>
<b>Title</b>	Transport operator providing BONVOYAGE platform with rules to be followed for pricing building
<b>Description / Goals</b>	<p>- <u>Overview</u>: a transport operator wants to upload the rules to be followed to define the price to be associated to a specific transport mean</p> <p>- <u>Goal</u>: this Use Case aims at showing how BONVOYAGE platform receives from transport operators' rules to be followed for price building, based on necessary elements for tariffs, offers and promotions definition.</p>
<b>Constraints</b>	The transport operator has to provide data consistent with BONVOYAGE tariff scheme (to be developed).
<b>Actors</b>	<p>Transport operator (provides the tariff profile, offers and promotions)</p> <p>BONVOYAGE time schedule system</p>
<b>Pre-conditions</b>	The transport operator has already provided BONVOYAGE platform with its time schedule.
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform displays the list of transports operated by the relevant transport operator.</li> <li>2 The transport operator selects one of his transport means, according to his preferences.</li> <li>3 BONVOYAGE platform shows the transport operator the rules he has already inserted (and that have already been used by BONVOYAGE) to define the price associated to that transport mean. Rules include: Itinerary length (kilometres); Origin – Destination; Tariff zone.</li> <li>4 BONVOYAGE platform asks the transport operator if he wants to: <ul style="list-style-type: none"> <li>• Maintain the same rules;</li> <li>• Insert new rules.</li> </ul> </li> <li>5 The transport operator selects the option “Insert new rules”.</li> <li>6 The transport operator updates new rules to be followed to define the price associated to that transport mean. <p>Rules include:</p> <ul style="list-style-type: none"> <li>○ Itinerary length (kilometres);</li> <li>○ Origin – Destination;</li> <li>○ Tariff zone.</li> </ul> </li> <li>7 BONVOYAGE platform receives and stores the information within its</li> </ol>

	<p>database.</p> <p>8 BONVOYAGE platform executes consistency checks and generates an optimised format.</p> <p>9 The Use Case ends with no error.</p>
<b>Post-conditions</b>	<p>BONVOYAGE database is updated.</p> <p>BONVOYAGE platform is able to correctly define the price to be associated to the transport mean required by the user.</p> <p>Once BONVOYAGE has calculated prices modifications according to the new rules, modifications shall be validated by the interested transport operator before operating.</p>
<b>Alternative Flow 1</b>	-
<b>Transport information provider requirements</b>	BTIP80 Define type of pricing (OD, per km, zone)

*Table A5-70: UC\_02\_70 Transport operator providing BONVOYAGE platform with rules to be followed for pricing building*

## Use Case UC\_02\_71: Transport operator providing BONVOYAGE platform with the list of disabled passengers for a specific transport mean

<b>USE CASE ID</b>	<b>UC_02_71</b>
<b>Title</b>	Transport operator providing BONVOYAGE platform with the list of disabled passengers for a specific transport mean
<b>Description / Goals</b>	<p>- Overview: a transport operator wants to upload on BONVOYAGE platform the list of disabled passengers</p> <p>- Goal: this Use Case aims at showing how BONVOYAGE platform receives and integrates the list of disabled public transport passengers provided by a transport operator.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Transport operator platform (provides the passengers list)</p> <p>BONVOYAGE platform database</p>
<b>Pre-conditions</b>	<p>The transport operator has been authorised to connect to BONVOYAGE platform to provide and upload its time schedule as well as other related information</p> <p>The transport operator has already provided BONVOYAGE platform with the list of passengers that have made a reservation for a specific transport.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform periodically checks the list of transports operated by the relevant transport operator.</li> <li>2 For transports where a reservation is mandatory, BONVOYAGE platform requests the transport operator platform to provide the list of disabled passengers.  For this purpose, BONVOYAGE platform specifies: <ul style="list-style-type: none"> <li>• The train number;</li> <li>• The relevant day;</li> <li>• The relevant stop.</li> </ul> </li> <li>3 The transport operator platform communicates in “batch” modality the list of passengers that have requested assistance for disabilities. The list contains the following information: <ul style="list-style-type: none"> <li>• Passenger contacts;</li> <li>• Number of coach and seat reserved;</li> <li>• Information on required assistance tools (e.g. wheel chair).</li> </ul> </li> <li>4 BONVOYAGE platform receives and stores the information within its database.</li> <li>5 BONVOYAGE platform executes consistency checks and generates an</li> </ol>



	<p>optimised format.</p> <p>6 The Use Case ends with no error.</p>
<b>Post-conditions</b>	BONVOYAGE database is updated.
<b>Alternative Flow 1</b>	<p>3a The transport operator platform finds out that no passenger has required assistance because of disabilities.</p> <p>3a1 The transport operator platform notifies BONVOYAGE through an alert message.</p> <p>The flow continues from step 4.</p>
<b>Transport information provider requirements</b>	<ul style="list-style-type: none"> <li>BTIP90 Provide disabled passengers list</li> </ul>

**Table A5-71: UC\_02\_71 Transport operator providing BONVOYAGE platform with the list of disabled passengers for a specific transport mean**

## Use Case UC\_02\_72: Transport operator providing BONVOYAGE platform with the list of passengers entitled to special services

<b>Use Case ID</b>	<b>UC_02_72</b>
<b>Title</b>	Transport operator providing BONVOYAGE platform with the list of passengers entitled to special services
<b>Description / Goals</b>	<p>- Overview: a transport operator wants to upload on BONVOYAGE platform the list passengers entitled to special services</p> <p>- Goal: this Use Case aims at showing how BONVOYAGE platform receives and integrates the list of passengers entitled to special services provided by a transport operator.</p>
<b>Constraints</b>	-
<b>Actors</b>	<p>Transport operator platform (provides the passengers list)</p> <p>BONVOYAGE platform database</p>
<b>Pre-conditions</b>	<p>The transport operator has been authorised to connect to BONVOYAGE platform to provide and upload its time schedule as well as other related information</p> <p>The transport operator has already provided BONVOYAGE platform with the list of passengers that have made a reservation for a specific transport.</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1 BONVOYAGE platform periodically checks the list of transports operated by the relevant transport operator.</li> <li>2 For transports where a reservation is mandatory, BONVOYAGE platform requests the transport operator platform to provide the list of passengers entitled to special services. For this purpose, BONVOYAGE platform specifies: <ul style="list-style-type: none"> <li>• The train number;</li> <li>• The relevant day;</li> <li>• The relevant stop.</li> </ul> </li> <li>3 The transport operator platform communicates in “batch” modality the list of passengers that have purchased special services. The list contains the following information: <ul style="list-style-type: none"> <li>• Passenger contacts;</li> <li>• Number of coach and seat reserved;</li> <li>• Payed tariff.</li> </ul> </li> <li>4 BONVOYAGE platform receives and stores the information within its database.</li> <li>5 BONVOYAGE platform executes consistency checks and generates an</li> </ol>

	<p>optimised format.</p> <p>6 The Use Case ends with no error.</p>
<b>Post-conditions</b>	BONVOYAGE database is updated.
<b>Alternative Flow 1</b>	<p>3a The transport operator platform finds out that no passenger has purchased special services.</p> <p>3a1 The transport operator platform notifies BONVOYAGE through an alert message.</p> <p>The flow continues from step 4.</p>
<b>Transport information provider requirements</b>	BTIP100 Provide passengers list entitled to special services

*Table A5-72: UC\_02\_72 Transport operator providing BONVOYAGE platform with the list of passengers entitled to special services*

## 7 ANNEX 6: Special groups travelling in public transport Use Cases (UC\_03)

### Use Case UC\_03\_01: Intermodal journey planner for passengers with special needs/requirements

USE CASE ID	UC_03_01
Title	Intermodal journey planner for passengers with special needs/requirements
Description / Goals	<p><u>Overview:</u> Special group's people want to travel from point A to B by using public transport.</p> <p>Travellers want to use the BONVOYAGE application to plan their origin-destination route based (mandatorily) on their inherent special needs or requirements</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a user can apply the BONVOYAGE platform for a travel plan solution according to the user specific needs/requirements;</li> <li>• How the user can view and select the preferred travel solution.</li> </ul>
Constraints	
Actors	<p>Special group's citizen (request the service)</p> <p>Transport operator (provide the service)</p>
Pre-conditions	
Main Flow / Activity step Description	<p>During request (Citizen)</p> <ol style="list-style-type: none"> <li>1. The user accesses the BONVOYAGE application.</li> <li>2. The user inserts basic data of the journey he wants to make: <ul style="list-style-type: none"> <li>• Origin</li> <li>• Destination</li> <li>• Departure time</li> <li>• Number of travellers</li> <li>• One way / return</li> </ul> </li> <li>3. The user accesses the "journey needs" tab and marks the special conditions to be fulfilled by the trip plan: <ul style="list-style-type: none"> <li>• Disabled / handicapped people</li> </ul> </li> </ol>

- Pets
  - Pram
  - Bike
  - Luxury
  - Special Sports equipment...
4. User continues to the next step
  5. Now the user has the possibility to input “journey preferences”:
    - Class category (first class, second class...);
    - Preferred transport mean
    - The fastest route
    - Minimum number of transfers
    - Eco-friendly route Services (e.g.: WI-FI)
  6. User finishes the search
  7. BONVOYAGE shows possible journey options (based on: the user needs; the user preferences and his BONVOYAGE profile) with related information: local public transport line; price of the full route; departure time; arrival time; duration; length of the journey; number of transfers.
  8. The user selects the preferred travel solution/itinerary and the app gives complete info of the route
  9. The user can save the preferred travel solution/itinerary map to display it when he accesses BONVOYAGE application
  10. BONVOYAGE application asks the user if he wants to purchase the tickets for the travel solution
  11. Flow continues in UC\_02\_13 (Passenger purchasing a travel itinerary according to his preferences)

<b>Post-conditions</b>	<p>BONVOYAGE application automatically saves the search in the history in order to use it in the future.</p> <p>If any changes occur on the route before being madeUC_02_08 (Passenger needing to re-plan his journey path due to unforeseen events).</p>
<b>Alternative Flow</b>	<p>2a. The user provides localisation functionality.</p> <p>2a1. The BONVOYAGE app suggests the location identified by the localisation functionality as a point of departure to elaborate the travel solution.</p> <p>2a2. The user accepts to consider the suggested location as point of departure.</p> <p>2a3. The flow continues from step 2.</p> <p>5a. If there isn't an available route with the requested needs of the journey, BONVOYAGE app provides travel solution by private transport mode (car) showing on map the itinerary with disabled parking stops and disabled spaces available on the journey</p> <p>5a1. BONVOYAGE app notifies that there isn't complete routes but displays all the phases of the route that fulfil the user needs and provide other travel solution alternative (in different time/date)</p> <p>5a3. The flow continues from step 5.</p>
<b>User requirements</b>	<ul style="list-style-type: none"> <li>• BU80 Define profiles for the definition of the travel solutions;</li> <li>• BU90 Differentiate travel solutions for profiling;</li> <li>• BU100 Identity Management</li> <li>• BU240 User localisation</li> <li>• BU290 Route maps</li> <li>• BU291 Maps with disabled parking stops</li> <li>• BU320 Planning intermodal travel solution Settings</li> <li>• BU330 Planning intermodal travel solution through filter</li> <li>• BU350 Additional information about the trip</li> <li>• BU380 Travel solution visualisation</li> <li>• BU390 Route visualisation</li> <li>• BU400 Non-existent route</li> <li>• BU440 Define searching engine for travel solutions</li> <li>• BU480 Travel solution choice</li> <li>• BU510 credit/debit card purchase</li> <li>• BU520 eWallet purchase</li> <li>• BU530 PayPal purchase</li> <li>• BU540 Receiving ticket travel solution</li> <li>• BU570 Create travel ticket</li> <li>• BU680 Select the favourite seats</li> </ul>

	<ul style="list-style-type: none"><li>• BU640 Passengers choice</li><li>• BU690 Discounts/Promotions.</li></ul>
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***Table A6-1: UC\_03\_01 Intermodal journey planner for passengers with special needs/requirements***

## 8 ANNEX 7: Freight Transportation Use Cases (UC\_04)

### Use Case UC\_04\_01: Sending a parcel from A to arrive at B as quickly as possible

USE CASE ID	UC_04_01 (ANNA'S GIFT)
Title	Sending a parcel from A to arrive at B as quickly as possible
Description / Goals	<p>Overview:</p> <ul style="list-style-type: none"> <li>The user wants to send a parcel from A to arrive at B as quickly as possible</li> <li>The user wants the BONVOYAGE platform to give her several alternatives according to her preferences</li> </ul> <p>Purpose and Goal:</p> <ul style="list-style-type: none"> <li>BONVOYAGE platform can advise on how to send the parcel according to user specific preferences</li> <li>The user can follow(track) her parcel until it has reached its destination</li> </ul>
Constraints	<ul style="list-style-type: none"> <li>Not all the parcel delivery companies have parcel tracking</li> <li>User may demand special conditions for the transport, e.g. refrigerated room, careful handling,</li> </ul>
Actors	Sender, transport delivery company, driver, receiver
Pre-conditions	<ul style="list-style-type: none"> <li>Online app or web-service</li> <li>Registration is needed to book the service</li> <li>Input of preferences</li> <li>Online cost display</li> <li>Online estimated delivery time display</li> </ul>
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>The user accesses the BONVOYAGE platform</li> <li>Client inputs relevant data: origin, destination, weight, value, size of the package, preferences and constraints</li> <li>BONVOYAGE shows possible choices with related info (cost, time, delivery service options, information to receiver, carbon footprint)</li> <li>User selects the preferred options</li> <li>User performs the payment steps</li> <li>Transport operator gets the request and sends receipt and itinerary via BONVOYAGE service</li> </ol>



	<p>7. The transport service is initiated (pick-up/ drop-off)</p> <p>8. Transport and tracking services are performed</p> <p>9. Receiver accepts delivery</p> <p>10. Confirmation about delivery to sender</p>
<b>Post-conditions</b>	<ul style="list-style-type: none"> <li>The BONVOYAGE service stores the selected itinerary and preferences</li> </ul>
<b>Alternative Flow</b>	<p><i>5a. [Payment isn't successfully performed]</i></p> <p><i>5a1. System asks you to input another payment method</i></p> <p><i>5a2. The flow continues with step 4</i></p> <p>10a. Missing confirmation within time limit.</p> <p>10a1. BONVOYAGE service generates alert or user contacts the service</p> <p>10a2. Inquiry sent to transport operator(s)</p> <p>10a3. Response from transport operator</p> <p>10a4. The BONVOYAGE service communicates information back to the user</p> <p>10a5. The user receives the parcel or reimbursement</p>
<b>User requirements</b>	<p>BU1150 Favourite freights list</p> <p>BU1160 Courier data</p> <p>BU1180 Filter the couriers</p> <p>BU1190 Favourite couriers</p> <p>BU1200 Contact info of the courier</p> <p>BU1210 Courier profile</p> <p>BU1220 Modifying a bid</p> <p>BU1230 Notifying about the result of an auction</p> <p>BU1240 Data and communication security and integrity</p> <p>BU1260 Setting an alert</p> <p>BU1270 Alerts to email</p> <p>BU1280 Alerts from performed search</p> <p>BU1290 Editing an alert</p> <p>BU1300 Route optimization for freight</p> <p>BU1310 Saving the optimized route</p> <p>BU1320 Modifying the optimized route</p> <p>BU1330 Route optimization for freight delivery in case of unforeseen event</p>

	BU1340	Stopping point in route optimization for freight
	BU1350	Navigation turn-by-turn from optimized route
	BU1360	Notifications to the clients
	BU1370	User sending feedback on the quality of the services

***Table A7-1: UC\_04\_01 Sending a parcel from A to arrive at B as quickly as possible***

## Use Case UC\_04\_02: Transport Operator sending goods through an external transport provider

USE CASE ID	UC_04_02
<b>Title</b>	Transport Operator sending goods through an external transport provider
<b>Description / Goals</b>	<p><u>Overview:</u> TO (Transport Operator) wants to search an external transport provider (company or autonomous) for a specific freight service.</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a TO can search (and filter), through the BONVOYAGE application, available transport providers for the shipment of goods.</li> <li>• How the BONVOYAGE application displays the information of the available transport providers.</li> </ul>
<b>Constraints</b>	
<b>Actors</b>	<p>Transport Operator - User: Request the service</p> <p>Transport Provider (autonomous or company) TIP: Provide the service</p>
<b>Pre-conditions</b>	<p>Transport Operator must be registered in the BV platform</p> <p>Transport Provider must be registered in the BV platform</p>
<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1. Transport Operator starts the BONVOYAGE application</li> <li>2. TO inputs basic fields to filter the search: <ul style="list-style-type: none"> <li>• Origin</li> <li>• Destination</li> <li>• Date</li> <li>• Characteristics of the goods <ol style="list-style-type: none"> <li>i. size</li> <li>ii. weight</li> </ol> Special conditions (dangerous goods; liquids, cool ...)</li> <li>• Preferences (cheaper, eco-friendly...)</li> </ul> </li> <li>3. BONVOYAGE shows the list of transport providers (autonomous or company) with related information: <ul style="list-style-type: none"> <li>• Company/Name</li> <li>• City</li> <li>• Driving licence type and/or vehicle characteristics</li> <li>• Price</li> <li>• Score (based on the previous reviews)</li> </ul> </li> </ol>

	<p>4. TO selects the preferred transport provider and the application displays a more complete information (based on privacy conditions) and the possibility to:</p> <ul style="list-style-type: none"> <li>• Mark the transport provider as favourite or add it to a list (so in the future it will be possible to contact it or feedback the service)</li> <li>• Contact the transport provider, so the BV application displays the following information. <ul style="list-style-type: none"> <li>i. Phone number information</li> <li>ii. Mail information</li> <li>iii. BV message exchange functionality for the communication driver-TO</li> </ul> </li> <li>• Arrange the service</li> </ul> <p>5. TO arrange the service</p> <p>6. Transport, traceability services are performed (UC_04_04)</p>
<b>Post-conditions</b>	<p>BONVOYAGE application automatically saves the search in the history in order to use it in the future.</p> <p>BONVOYAGE application automatically saves the visited transport providers in the history in order to use it in the future.</p> <p>Once the hiring is finished, the BONVOYAGE application lets the Transport Operator to feedback the service.</p> <p>The Transport Operator has the possibility to know the location of the goods through the BONVOYAGE application.</p>
<b>Alternative Flow</b>	<p>5a. BONVOYAGE application gives the possibility to redefine the search</p> <p>5a1. Transport Operator redefines the search</p> <p>5a2. BONVOYAGE application displays the same window as step 4, but filled with the previously inputted information</p> <p>5a3. Transport Operator updates the fields</p> <p>5a4. Return to normal flow at step 5 with the new results</p> <p>5b. BONVOYAGE application gives the possibility to save the current search.</p> <p>5b1. Transport Operator saves the search</p> <p>5b2. BONVOYAGE application asks for</p> <ul style="list-style-type: none"> <li>• Name for the search</li> <li>• In which list you want to save the search</li> </ul>

	5b3. Transport Operator input the info 5b4. Return to normal flow at step 5
<b>User requirements</b>	BU1050 – Freight services list BU1060 – Available Freight Services filters BU1070 – Freight service information BU1140 – Search automatic save BU1130 – Search save BU1120 – Results ranking BU1190 – Favourite couriers BU110 – Word of mouth BU120 - Sending/receiving message

*Table A7-2: UC\_04\_02 Transport Operator sending goods through an external transport provider*

### Use Case UC\_04\_03: Transport Provider looking for freight services

USE CASE ID	UC_04_03
Title	Transport Provider looking for available freight services
Description / Goals	<p><u>Overview:</u> Transport Provider (TP) wants to look for available freight services to deliver (e.g. to seize the return journey).</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a transport provider can search (according its preferences) through the BONVOYAGE application available freight services.</li> <li>• How the transport provider can view all the information related to available freights.</li> <li>• How the transport provider can place a bid for the selected freight</li> </ul>
Constraints	
Actors	<p>Transport Provider – User: Places the bid</p> <p>Responsible entity of the freight service - Transport information provider: Provides the service</p>
Pre-conditions	<p>The transport provider has to be registered in the BONVOYAGE platform.</p> <p>The Transport information provider has to be registered in the BONVOYAGE platform.</p>
Main Flow / Activity step Description	<p>During request (Transport provider)</p> <ol style="list-style-type: none"> <li>1. The TP accesses the BONVOYAGE application.</li> <li>2. TP logs in BONVOYAGE.</li> <li>3. TP accesses the “Freight” section, and then to “Freight exchange” sub-section.</li> <li>4. TP starts the search</li> <li>5. The TP inserts basic data on the freight service it would like to contract:</li> <li>6. Origin;</li> <li>7. Destination;</li> <li>8. Date range;</li> <li>9. Max Km of route deviation;</li> <li>10. The TP can press add additional preferences:</li> <li>11. Freight specifications (dimensions range, weight range, dangerous goods, cold...);</li> <li>12. TP clicks finishes the search</li> <li>13. BONVOYAGE app shows all the available freights (sorted according to</li> </ol>

the preferences) with related information:

- a. Origin
- b. Destination
- c. Collection date/time
- d. Arrival date/time
- e. Type of vehicle needed
- f. Weight/volume of the freight
- g. Description
- h. Price (to be defined)

14. BONVOYAGE app can also display all the result's available freights on the map

15. The TP selects the preferred freights (in the list -step 8-; or on the map -step 9-) and the app displays a more complete information about it (based on privacy conditions) and the possibility to:

- a. Save the freight in a list
- b. Contact the responsible person of the freight
  - i. Phone number info
  - ii. Mail info
  - iii. BV message exchange functionality for the communication
- c. Place a bid for the freight

16. TP places a bid

17. BONVOYAGE platform will automatically inform the Transport Information Provider about the bid and send him also the Transport Provider information (profile's information).

When the auction ends, the TIP sends a notification to the TP informing him if he has won or not the auction.

18. TP wins the auction

19. TP and TIP agree outside BONVOYAGE the payment methods and legal stuff

20. Transport, traceability services are performed (UC\_04\_04)

<b>Post-conditions</b>	BONVOYAGE application automatically saves the visited freights in the history.
<b>Alternative Flow</b>	<p>8a1 The current freight is no longer available</p> <p>8a2 BONVOYAGE application warns that the current freight is not available.</p> <p>8a3 Normal flow continues in step 5</p>
<b>User requirements</b>	<p>BU1060 - Available Freight Services filters</p> <p>BU1050 - Freight services list</p> <p>BU1070 - Freight service information</p> <p>BU1110 - Contact info of freight service's responsible</p> <p>BU1140 – Search automatic save</p> <p>BU1130 – Search save</p> <p>BU1120 – Results ranking</p> <p>BU1190 – Favourite couriers</p> <p>BU1230 - Notifying about the result of an auction</p>

**Table A7-3: UC\_04\_03 Transport Provider looking for available freight services**



## Use Case UC\_04\_04: Traceability support tool for a Transport Operator

USE CASE ID	UC_04_04
Title	Traceability support tool for a Transport Operator
Description / Goals	<p><u>Overview:</u></p> <p>Traceability and communication improvement when sending goods through an external Transport Provider for a specific service from A to B.</p> <p>The Transport Operator requires the external Transport Provider to use the BONVOYAGE application to automatically send the delivery note once signed by the consignee.</p> <p>Collection of the signature can be done by following two different procedures, depending on the client:</p> <ul style="list-style-type: none"> <li>• To take a photo of the physical delivery note (when a stamp is required)</li> <li>• To sign electronically the delivery note on the mobile screen</li> </ul> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How BONVOYAGE can automatically create an electronic delivery note for a specific service</li> <li>• How the TO can monitor the delivery route through BONVOYAGE (This requires the external Transport Provider's driver using the BONVOYAGE app as a turn-by-turn navigator (UC_01) to reach the place of delivery of the goods)</li> <li>• How the external Transport Provider's driver collects the sign of the consignee writing it by touching the mobile screen or by photo (automatically it will be sent to the TO)</li> </ul>
Constraints	
Actors	<p>Transport Operator – User: Sends the goods using BONVOYAGE application</p> <p>Transport Provider – Transport Information Provider</p> <p>Transport Provider's driver – User: Receives the service, uses the navigation function to achieve the destination and collects and send the signature</p> <p>Consignee: signs the delivery note (stamp or electronically)</p>
Pre-conditions	<p>Transport operator and external Transport Provider (and the driver) must be registered in the BONVOYAGE platform</p> <p>The Transport Operator has already selected a service to be performed</p>

<b>Main Flow / Activity step Description</b>	<ol style="list-style-type: none"> <li>1. BONVOYAGE creates an electronic delivery note (customized for the Transport Operator) with the following information: <ul style="list-style-type: none"> <li>• Sender</li> <li>• Consignee</li> <li>• Date</li> <li>• Weight (this will be taken into account in the navigation turn-by-turn)</li> <li>• Observations (this can be filled in the future)</li> <li>• Sign, will be collected through: <ul style="list-style-type: none"> <li>○ Writing it in the mobile phone's screen</li> <li>○ By attaching an image of the physical note (when sign is made by a stamp)</li> </ul> </li> </ul> </li> <li>2. The External Transport Provider sends the delivery service to the associated driver</li> <li>3. The driver receives the notification of the new delivery service assigned</li> <li>4. The driver can save on his/her application the notification with the information of the delivery service</li> <li>5. The driver starts the navigation turn-by-turn from the information contained in the notification received.</li> <li>6. When arriving to the destination, the driver collects the signature of the client: <ul style="list-style-type: none"> <li>• By editing the e-note to collect the e-signature</li> <li>• By attaching an image of the printed note stamped by the client</li> </ul> </li> <li>7. BONVOYAGE app will send automatically the signed delivery note to both, the external Transport Provider and the Transport Operator.</li> </ol>
<b>Post-conditions</b>	The service for the <i>traceability driver support tool</i> is automatically saved in the BONVOYAGE platform marked as done.
<b>Alternative Flow</b>	
<b>User requirements</b>	BU1430 – Delivery route monitoring BU1440 – Delivery note in the Traceability support tool BU1470 – Edit and save electronic sign BU1480 – Sending delivery notes BU1420 – Navigation from a Traceability support tool's service

**Table A7-4: UC\_04\_04 Traceability support tool for a Transport Operator**

## Use Case UC\_04\_05: Managing a bid

USE CASE ID	UC_04_05
Title	Managing a bid
Description / Goals	<p><u>Overview:</u> TP (Transport Provider) wants to edit the price of the bid or delete the bid.</p> <p>The user (Transport Provider) wants the BONVOYAGE application to modify the price of the bid or delete the bid.</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a Transport Provider can modify a previously performed bid</li> <li>• How a Transport Provider can delete a previously performed bid.</li> </ul>
Constraints	
Actors	Transport Provider – User: Manage the bid
Pre-conditions	Transport Provider has previously place a bid for the freight
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>1 Transport Operator starts the BONVOYAGE application</li> <li>2 TP logs in BONVOYAGE</li> <li>3 TP accesses the “freight” section and then “Freight exchange” sub-section</li> <li>4 The TP goes to the section of the active bids</li> <li>5 TP selects the bid he wants to manage</li> <li>6 BONVOYAGE displays the info of the freight and the bid <ul style="list-style-type: none"> <li>• For modifying the bid: TP inputs the new price</li> <li>• TO updates the bid</li> <li>• For deleting: TP removes the bid</li> </ul> </li> <li>7 BONVOYAGE throws a window to warn the user if he is sure to continue</li> <li>8 BONVOYAGE platform will automatically inform the Transport Information Provider about the updated bid</li> <li>9 The user exits from the BONVOYAGE application</li> </ol>
Post-conditions	
Alternative Flow	
User requirements	BU1220 - Modifying a bid

*Table A7-5: UC\_04\_05 Managing a bid*

## Use Case UC\_04\_06: Feedback the transport service

USE CASE ID	UC_04_06
Title	Feedback the transport service
Description / Goals	<p><u>Overview:</u> The transport process has finished. The user has already performed the payment and now he wants to make a review of the service (Transport Provider) in the BONVOYAGE platform so other users can consider it in the future.</p> <p>The user wants the BONVOYAGE application to feedback the service.</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a User can score the Transport Provider in a range scale.</li> <li>• How the User can type a comment about the service provided by the Transport Providers</li> </ul>
Constraints	
Actors	User: Leaves the feedback
Pre-conditions	<p>User must be registered in the BV platform</p> <p>Transport Provider must be registered in the BV platform</p>
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>1. User starts the BONVOYAGE application</li> <li>2. User logs in BONVOYAGE</li> <li>3. User searches the service provider who provided the service from: <ul style="list-style-type: none"> <li>• Search directly the transport provider</li> <li>• Saved services (only for Individual Users)</li> <li>• List of favourite Transport Providers</li> <li>• History of visited Transport Providers</li> <li>• If the Transport Providers is connected with you in the platform, access to the people in your network section</li> </ul> </li> <li>4. BONVOYAGE displays the profile of the Transport Provider</li> <li>5. User selects the option of leaving a feedback</li> <li>6. BONVOYAGE displays a form to be filled by the user with: <ul style="list-style-type: none"> <li>• Rate the overall service in a range score</li> <li>• Comment (A field for explain widely the opinion of the user about the service)</li> <li>• Rate details about the service/s in a range scale:</li> </ul> </li> </ol>

	<ul style="list-style-type: none"> <li>i. <i>How satisfied are you with the Transport Provider's communication?</i></li> <li>ii. <i>How the Transport Provider's profile matches the reality?</i></li> <li>iii. <i>How efficient was the service?</i></li> <li>iv. <i>How was the quality of the service/s?</i></li> <li>v. <i>How was the treatment received?</i></li> </ul>
	7. TO exits the BONVOYAGE application
<b>Post-conditions</b>	BONVOYAGE application saves the review in the feedback's history
<b>Alternative Flow</b>	
<b>User requirements</b>	BU1370 - User sending feedback on the quality of the services

**Table A7-6: UC\_04\_06 Feedback the transport service**

## Use Case UC\_04\_07: Transport Provider wants to feedback the service provider

USE CASE ID	UC_04_07
Title	Transport Provider wants to feedback the Transport Operator
Description / Goals	<p><u>Overview:</u> The Transport Provider (contracted by the Transport Operator) has already performed the whole transport process and wants to assess the service provider in the BONVOYAGE platform so other users can consider it in the future. This action requires the Transport Provider to be registered in the BV platform.</p> <p>The user (Transport Provider) wants the BONVOYAGE application to feedback the contractor (TO).</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>How a Transport Provider can score and type a comment about the responsible person/entity of the freight service in a range scale</li> </ul>
Constraints	
Actors	Transport Provider (user): Leaves the feedback
Pre-conditions	<p>Transport Provider must be registered in the BV platform</p> <p>Transport Operator must be registered in the BV platform</p>
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>Transport Provider starts the BONVOYAGE application</li> <li>Transport Provider logs in BONVOYAGE</li> <li>Transport Provider searches the service provider from: <ul style="list-style-type: none"> <li>Search the Transport Operator in BONVOYAGE</li> <li>Through the section of Transport Operators who visited your contact information</li> <li>In the contacts list of the Transport Provider if they were previously connected</li> </ul> </li> <li>BONVOYAGE displays the profile of the service provider</li> <li>Transport Provider select the option of leaving a feedback</li> <li>BONVOYAGE displays a form to be filled by the Transport Provider with: <ul style="list-style-type: none"> <li>Scoring the service provider in a range scale.</li> <li>Comment</li> </ul> </li> <li>Transport Provider exits the BV app</li> </ol>

<b>Post-conditions</b>	BONVOYAGE application saves the review in the feedback's history
<b>Alternative Flow</b>	
<b>User requirements</b>	BU1390 - System showing "history" of the freight transport operator BU1370 - User sending feedback on the quality of the services

*Table A7-7: UC\_06\_07 Transport Provider wants to feedback the Transport Operator*

## Use Case UC\_04\_08: Setting an alert to be notified with new information

USE CASE ID	UC_04_08
Title	Setting an alert to be notified with new information
Description / Goals	<p><u>Overview:</u> User (Transport Operator, transport provider, citizen) wants to fix an alert in the BONVOYAGE application in order to be notified when there is new available information (as soon as arrives or from time to time).</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a user can fix an alert in BONVOYAGE.</li> <li>• How that alert has useful information filtered by the user</li> <li>• How the user can set the frequency for receiving the alert</li> <li>• How the user can choose, besides receiving the alert on the phone, receiving the new information it by email.</li> </ul>
Constraints	
Actors	User: fix the alert
Pre-conditions	User must be registered
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>1. User starts the BONVOYAGE application</li> <li>2. User logs in BONVOYAGE</li> <li>3. User accesses the “freight” section and then “Alerts” sub-section</li> <li>4. User creates new alert</li> <li>5. BONVOYAGE let the user select the type of the alert: <ol style="list-style-type: none"> <li>a. Available services for individuals</li> <li>b. Available services for professionals</li> <li>c. Freight exchange alert</li> </ol> </li> <li>6. User selects the type of alert</li> <li>7. BONVOYAGE application displays the same window than in the respective Use Cases’ search (UC_04_01, UC_04_02, UC_04_03)</li> <li>8. User fills-in the search and continues in the next step</li> <li>9. User selects the frequency to receiving the alerts: <ol style="list-style-type: none"> <li>a. Push (as soon as new information arrives)</li> <li>b. From time to time: <ol style="list-style-type: none"> <li>i. Frequency for receiving the alert: Every hour, Daily, Weekly, Monthly...</li> <li>ii. Time of the day for receiving the alerts</li> </ol> </li> </ol> </li> </ol>



	<p>10. BONVOYAGE lets the user the possibility to send the alert by:</p> <ul style="list-style-type: none"><li>a. BONVOYAGE application notification</li><li>b. Email address (by default the user profile's email address will be shown)</li></ul> <p>11. User fixes the alert</p> <p>12. User exits BONVOYAGE app</p>
<b>Post-conditions</b>	<p>Alert is saved in the "Freight" – "Alerts" Section.</p> <p>BONVOYAGE will notice Transport Operator when new results are founded based on the criteria.</p>
<b>Alternative Flow</b>	
<b>User requirements</b>	<p>BU1260 - Setting an alert</p> <p>BU1270 - Alerts to email</p>

*Table A7-8: UC\_04\_08 Setting an alert to be notified with new information*

## Use Case UC\_04\_09: Setting an alert based on a performed search

USE CASE ID	UC_04_09
Title	Setting an alert based on a performed search
Description / Goals	<p><u>Overview:</u> User wants to be notified when new information arises from a previously search, which is saved in the BONVOYAGE application.</p> <p>User wants to fix an alert in the BONVOYAGE application from a saved search.</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>How a user can fix an alert in BONVOYAGE from a saved search.</li> </ul>
Constraints	
Actors	User: Fixes the alert
Pre-conditions	The user has already performed the search
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>User accesses the search which wants to set the alert via: <ol style="list-style-type: none"> <li>List of saved searches</li> <li>Search history</li> </ol> </li> <li>User creates an alert from a performed search</li> <li>Same flow than UC_04_08 steps 9 to 10</li> <li>User exits BONVOYAGE application</li> </ol>
Post-conditions	<p>Alert is saved in the “Freight” – “Alerts” Section.</p> <p>BONVOYAGE will notice User when new results are founded based on the criteria.</p>
Alternative Flow	
User requirements	<p>BU1260 - Setting an alert</p> <p>BU1270 - Alerts to email</p> <p>BU1280 - Alerts from performed search</p>

*Table A7-9: UC\_04\_09 Setting an alert based on a performed search*

## Use Case UC\_04\_10: Managing an alert

USE CASE ID	UC_04_10
Title	Managing an alert
Description / Goals	<p><u>Overview:</u> User wants to manage an alert by editing it or deleting it.</p> <p>The user wants the BONVOYAGE application to modify some parameters of a previously created alert or deleting it.</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a User can edit a previously created alert, modifying its parameters.</li> <li>• How a user can delete a previously created alert.</li> </ul>
Constraints	
Actors	User: Edit the alert
Pre-conditions	The alert must be previously created
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>1. User starts the BONVOYAGE application</li> <li>2. User logs in BONVOYAGE</li> <li>3. User accesses the “freight” section and then “Alerts” sub-section</li> <li>4. User clicks the alert they want to modify</li> <li>5. BONVOYAGE displays the info of the alert</li> <li>6. User edits the alert</li> <li>7a. <u>For editing:</u> User edits the inputs of the alert.</li> <li>7a1. User continues to the next step</li> <li>7b. <u>For deleting:</u> Select the option of deleting the alert</li> <li>8. BONVOYAGE throws a window to warn the user that the modifications will overwrite the current alert</li> <li>9. User accepts the changes</li> <li>10. User exits BONVOYAGE application</li> </ol>
Post-conditions	
Alternative Flow	
User requirements	BU1290 - Editing an alert

*Table A7-10: UC\_04\_10 Managing an alert*

## Use Case UC\_04\_11: Route optimization for freight

USE CASE ID	UC_04_11
Title	Route optimization for freight
Description / Goals	<p><u>Overview:</u> A transport provider would like to organize the daily route covering different pickup/delivery points in the most efficient way.</p> <p>Once the driver receives the freight distribution list, he internally decides the sequence of stops, and input them into BONVOYAGE in order to plan the optimal route taking into account:</p> <ul style="list-style-type: none"> <li>• Estimated time to carry out the delivery at each stop.</li> <li>• External conditions (weather, traffic)</li> </ul> <p>On-trip, the driver is informed about the location and availability of the loading zones to be efficient when finding a parking.</p> <p>The client can receive notifications about when the driver is in his/her distribution area</p> <p><u>Goal:</u> this Use Case aims to show:</p> <ul style="list-style-type: none"> <li>• How a driver can get the most efficient route for the daily operation giving BONVOYAGE the sequence of stops.</li> <li>• How the driver can select the preferred route among different options.</li> </ul>
Constraints	
Actors	<p>Driver – User: Planning the route</p> <p>Client: Person or entity who receives the package</p>
Pre-conditions	<p>Driver must be registered in the BONVOYAGE platform</p> <p>Client should be registered in the BONVOYAGE platform and be subscribed to the transport provider's channel to be able to receive notifications through the BONVOYAGE application</p>
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>1 The driver is informed about the deliveries of the day</li> <li>2 Driver starts the BONVOYAGE application</li> <li>3 Driver logs in</li> <li>4 Driver accesses the "Freight" section and then "Freight route" sub-section</li> </ol>

	<ol style="list-style-type: none"> <li>5 Driver creates a new route</li> <li>6 BONVOYAGE app displays a form to be filled-in with the sequence of pickup/delivery points, each one will contain: <ul style="list-style-type: none"> <li>• Location</li> <li>• A selector to choose the estimated time of the operation (e.g.: little, average, much or specific time)</li> <li>• Associate the stopping point with the client (so BONVOYAGE will notify it once the transport provider is approaching to the destination) by: <ol style="list-style-type: none"> <li>i. BONVOYAGE user (the receiver will be automatically notified in its BONVOYAGE app)</li> <li>ii. The phone number (so the BONVOYAGE platform will send automatically the receiver a SMS)</li> <li>iii. Mail address (so the receiver will be informed automatically by an email)</li> </ol> </li> </ul> </li> <li>7 BONVOYAGE calculates the route taking into account available external information about traffic conditions (real-time or predictions), weather...</li> <li>8 BONVOYAGE shows information about the different options <ol style="list-style-type: none"> <li>a. Time</li> <li>b. Distance</li> <li>c. Estimated fuel consumption</li> </ol> </li> <li>9 The Driver selects the preferred route</li> <li>10 BONVOYAGE application displays the map with the route and a complete description of the route</li> <li>11 Driver can: <ol style="list-style-type: none"> <li>a. Modify the route (e.g.: points of the route)</li> <li>b. Save the route</li> <li>c. Start navigation turn-by-turn of the route</li> </ol> </li> <li>12 Driver exits the BONVOYAGE application</li> </ol>
<b>Post-conditions</b>	<p>BONVOYAGE application saves automatically the route in the history in order to use it in the future.</p> <p>In case of traffic event, user will be notified. An alternative route will be calculated.</p> <p>Once the optimized route for freight navigation starts, the notification service for the clients will also start. If one stopping point is associated with a client, he will receive a notification once the driver is approaching to the destination (based on the on-real time positioning and if the next stopping point is the</p>

	client's one)
<b>Alternative Flow</b>	
<b>User requirements</b>	BU1330 - Route optimization for freight delivery in case of unforeseen event BU1340 - Stopping point in route optimization for freight BU1300 - Route optimization for freight BU1310 - Saving the optimized route BU1350 - Navigation turn-by-turn from optimized route BU1360 - Notifications to the clients BU1320 - Modifying the optimized route

*Table A7-11: UC\_04\_11 Route optimization for freight*

## Use Case UC\_04\_12: Pony express start-up with “green” parcel delivery

USE CASE ID	UC_04_12 (PONY EXPRESS START-UP)
Title	Pony express start-up with “green” parcel delivery
Description / Goals	<p>Overview:</p> <ul style="list-style-type: none"> <li>Entrepreneur starting pony express with the aim of deliver packages in a green way</li> </ul> <p>Purpose and Goal:</p> <ul style="list-style-type: none"> <li>“Green”, multi-modal transportation of goods within a city</li> <li>To prefer zero-emission vehicles, shared vehicles and bicycles in delivery of goods</li> </ul>
Constraints	<ul style="list-style-type: none"> <li>Lack of total overview of zero-emission vehicles and shared vehicles.</li> <li>Size, weight and distance constraints for the service</li> </ul>
Actors	<i>Sender, transport delivery company, driver, receiver</i>
Pre-conditions	<ul style="list-style-type: none"> <li><i>Offline planning for carriers</i></li> <li><i>Online managing of goods routing</i></li> <li><i>Adequate data on zero-emission vehicles and shared vehicles</i></li> </ul>
Main Flow / Activity step Description	<ol style="list-style-type: none"> <li>Pony express registers provider profile and service parameters (e.g. area covered, cost, service schedule)</li> </ol> <p>USER RELATED ACTIVITY BEFORE STEP 2</p> <ol style="list-style-type: none"> <li>The user accesses the BONVOYAGE platform</li> <li>User inputs relevant data: origin, destination, weight, value, size of the package</li> <li>BONVOYAGE shows possible choices with related info (cost, time, delivery service options, information to receiver, carbon footprint and green delivery services)</li> <li>User selects the green delivery service</li> <li>User performs the payment steps</li> </ol> <ol style="list-style-type: none"> <li>Pony express gets a new request and sends receipt, itinerary and (green) transport means via BONVOYAGE service.</li> <li>The transport service is initiated (pick-up)</li> <li>Transport and tracking services are performed</li> <li>Receiver accepts delivery</li> <li>Confirmation about delivery to BONVOYAGE</li> </ol>

	a. BONVOYAGE send confirmation about delivery to user
<b>Post-conditions</b>	The BONVOYAGE service stores the selected itinerary and preferences
<b>Alternative Flow</b>	<p><i>6a. Green transport means are not available</i></p> <p><i>6a1. User is informed via BONVOYAGE service of alternative transport means.</i></p> <p><i>6a2. The flow continues with step 3 in UC 04_01.</i></p>
<b>User requirements</b>	<p>BTIP200 Provide information related to available goods for transportation</p> <p>BTIP220 Sending bids to the TIP</p> <p>BTIP230 Parcel track</p>

**Table A7-12: UC\_04\_12 Pony express start-up with “green” parcel delivery**



## Use Case UC\_04\_13: Freelance driver - parcel delivery

USE CASE ID	UC_04_13 (MARINA THE DRIVER)
Title	Freelance driver - parcel delivery
Description / Goals	<p>Overview</p> <ul style="list-style-type: none"> <li>Freelance driver that does parcel delivery</li> </ul> <p>Purpose and Goal</p> <ul style="list-style-type: none"> <li>Show how someone can use the BONVOYAGE platform for optimizing transport</li> <li>Online service for available goods (?)</li> </ul>
Constraints	<ul style="list-style-type: none"> <li><i>Capacity and reliability</i></li> <li><i>Time of operation</i></li> </ul>
Actors	<i>Sender, Transport delivery company, driver, receiver</i>
Pre-conditions	<ul style="list-style-type: none"> <li><i>Online service for available goods</i></li> </ul>
Main Flow / Activity step Description	As UC04_02. Marina's service is similar to Pony Express, except for the green profile and limited service schedule.
Post-conditions	The BONVOYAGE service stores the selected itinerary and preferences
Alternative Flow	
User requirements	BU10 Login BU320 Planning intermodal Travel solution Settings BU380 Travel solution visualisation BU480 Travel solution choice BU371 Trip monitoring and control BU980 Vertical support and re-planning BTIP200 Provide information related to available goods for transportation BTIP220 Sending bids to the TIP BTIP230 Parcel track

**Table A7-13: UC\_04\_13 Freelance driver - parcel delivery**