Contract No. H2020 – 636078

# INFORMATION TECHNOLOGIES FOR SHIFT TO RAIL

## D2.6 –Travel Shopping Final Integration Report

Due date of deliverable: 31/08/2017

Actual submission date: 05/07/2018

Leader of this Deliverable: Indra
Reviewed: Y

| **Document status** | | |
|---|---|---|
| Revision | Date | Description |
| 0.1 | 31/08/17 | Template prepared and circulated by Indra |
| 1 | 19/10/17 | Integrated first contributions from all partners, new test cases and test results |
| 2 | 03/11/17 | Updated version by Amadeus |
| 3 | 08/02/18 | Included examples for different modes and multimodal offers in 2.3.1 |
| 4 | 07/03/18 | Generated Final version |
| 5 | 05/07/2018 | Final version after TMT approval and Quality check |

| **Project funded from the European Union's Horizon 2020 research and innovation programme** | | |
|---|---|---|
| **Dissemination Level** | | |
| **PU** | Public | X |
| **CO** | Confidential, restricted under conditions set out in Model Grant Agreement | |
| **CI** | Classified, information as referred to in Commission Decision 2001/844/EC | |

Start date of project: 01/05/2015 Duration: 36 months

## REPORT CONTRIBUTORS

| Name | Company | Details of Contribution |
|---|---|---|
| Florian Briy | Amadeus | Review Amadeus´ configuration for section 3<br>Description of Test Cases and results in section 4 |
| Peter von Grumbkow; Daniel Schmidt | Hacon | Review Hacon´s configuration for section 3<br>Description of Test Cases and results in section 4 |
| Massimo Fratini; Catherine Minciotti | Leonardo | Review Leonardo´s configuration for section 3<br>Description of Test Cases and results in section 4 |
| Leyre Merle | Indra | Request and integrate contributions from partners.<br>Review Indra´s configuration for section 3.<br>Provide main content for sections 1, 2 and 5.<br>Description of Test Cases and results in section 4<br>Include executive summary and issue the deliverable |
| Maria Laura Trfiletti | RINA C-BE | Quality check |

# EXECUTIVE SUMMARY

WP2 establishes the basis for the **Travel Shopping Technical Demonstrator** for SHIFT²RAIL IP4 contributing to its overall objectives and establishing the architecture for managing and aggregating distributed travel shopping data and distributing journey planning expertise. It creates the basis for a one-stop shop for co-modal pre-paid marketed transport products and services whose combinations can answer to door-to-door mobility queries. It allows for the presentation of transport service attributes and facilities taking into account Traveller preferences and special needs such as reduced mobility. It interfaces with WP1 (Interoperability framework) to overcome interoperability obstacles, so protecting the Customer from the today's fragmented travel marketplace. It also interfaces with other IT2Rail WPs such as WP5, whose Travel Companion is the entry point of the user to the IT2Rail Transport Ecosystem, thus allowing the Traveller to introduce preferences and request for shopping alternatives.

This document in particular describes the test campaign and the results obtained from the testing and validation of the components and functionalities developed for **WP2 Final Release** (F-REL). It also allows to check the coherence of the specification, the interfaces among components and the capability of the different modules to work together coherently.

The document follows the same methodology as its predecessors (D2.4 Travel Shopping Core Integration Report and D2.5 Travel Shopping Additional Integration Report) and other IT2Rail F-REL Integration Reports, and identifies a number of **Test Categories and Test Cases**. For each of the test cases identified, a description is included detailing the objectives, expected results and how to perform the testing. While some Test Cases were already identified and tested in the C-REL and A-REL Campaigns, other new ones have been identified and tested for this last campaign.

The results obtained for each of the test identified and described here are also included in this document, identifying whether the test has been performed satisfactorily and is considered "PASSED", or on the contrary if it was NOT PASSED, not possible to perform at that particular stage, or if the Test Case was not valid for the release due to final implementation choices.

TABLE OF CONTENTS

## LIST OF FIGURES



## LIST OF TABLES

# 1. INTRODUCTION

WP2 establishes the basis for the **Travel Shopping Technical Demonstrator** for Shift2Rail IP4 contributing to its overall objectives and establishing the architecture for managing and aggregating distributed travel shopping data and distributing journey planning expertise. It creates the basis for a one-stop shop for co-modal pre-paid marketed transport products and services whose combinations can answer to door-to-door mobility queries. It allows for the presentation of transport service attributes and facilities taking into account Traveller preferences and special needs such as reduced mobility. It interfaces with WP1 (Interoperability framework) to overcome interoperability obstacles, so protecting the Customer from the today's fragmented travel marketplace. It also interfaces with other IT2Rail WPs such as WP5, whose Travel Companion is the entry point of the user to the IT2Rail Transport Ecosystem, thus allowing the Traveller to introduce preferences and request for shopping alternatives.

This document in particular describes the test campaign and the results obtained from the testing and validation of the components and functionalities developed for **WP2 Final Release** (F-REL). It also allows to check the coherence of the specification, the interfaces among components and the capability of the different modules to work together coherently. Once the identified the Test Cases to be performed during the testing campaign, its results have been included in the document, indicating whether the test has been performed satisfactorily and is considered "PASSED", or on the contrary if it was NOT PASSED, not possible to perform at that particular stage, or if the Test Case was not valid for the release due to final implementation choices. While the focus of this document is to test each component and the interactions among them, an end-to-end Test Case has been also included (*[TEST CASE 2.F] Test the whole WP2 flow*), which was carried out once each of the previous Test Cases was successfully passed.

The document includes an explanation of the text campaign, and a global view of the test categories and test cases including differences with previous testing campaigns (Section 2), followed by an explanation of the infrastructure used by the partners for the testing (Section 3). Section 4 includes information of each of the Test Cases: description, objectives: expected results, how to perform the testing and **results obtained**. In Section 5 the results of the tests included in section 4 are summarized.

## 1.1 APPLICABLE DOCUMENTS

D 2.1 Travel Shopping Ontology document (M12)

D 2.2 Travel Shopping specifications document (M25)

D2.4 Travel Shopping Core Integration Report (M16)

D2.5 Travel Shopping Additional Integration Report (M22)



### 1.2 NORMATIVE DOCUMENTS

Not Applicable.

## 2. CAMPAIGN STRATEGY

The objectives of the test campaign are to test the components and functionalities developed for **WP2 Final Release**, its unitary testing as well as its interfaces with other WP2 modules and other WPs.

The document is an evolution of D2.4 Travel Shopping Core Integration Report (M16) and D2.5 Travel Shopping Additional Integration Report (M22). This means that it includes most Test Categories and Test Cases identified for the previous releases and also new ones related to the new components and functionalities developed for the F-REL.

For identifying Test Categories and Test Cases, it was taken into account the designs and analysis performed previously within WP2 and collected in Travel Shopping specifications document. In this document a number of Use Cases were identified, that will be linked to the Test Categories for testing purposes, and also a number of modules/components with related Functions and Function Exchanges, which will be used as a reference to identify the Test Cases.

Below is included the information used as a reference:

- **Use cases:**
  - Manage and decode the mobility request
  - Identify smartest routes corresponding to the mobility request
  - Build itinerary offers
  - Provide itinerary details
  - Alternative calculation

- **Modules/components:**
  - The Mobility Request Manager
  - The Shopping Orchestrator
  - The Meta-Route Explorer
  - The Offer Builder

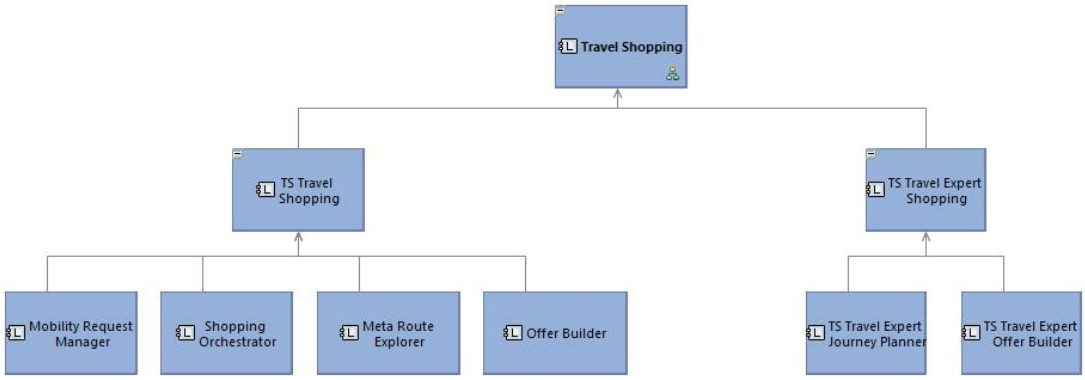



**Figure 1. Travel Shopping components breakdown (see D2.2. for more details)**

Linked to the previous, a number of **Functions** such as *ManageMobilityRequest* and *PrepareTravelExpertList,* and also **Functional Exchanges** such as *Send Mobility Request with Traveller Preferences* and *Get Stop Places List* were also identified in previous stages of WP2. For more details about the design and expected operation of each module, *D 2.2 Travel Shopping specifications document* can be consulted.

Taking all of this into consideration, a first list of Test Categories and Test Cases was elaborated for the particular C-REL test campaign. For the A-REL, some more new test categories and test cases were created. Existing Test Cases have been checked again during the F-REL, using the same configuration or indicating whether their software or interfaces have been updated in this new release.

Below is included a list that depicts which test cases were already identified in the C-REL (blue color), which were included for the A-REL (purple color), and which new ones have been identified for the F-REL (orange color). As in each release all the test cases are reviewed in order to align them with the implementation choices, the Test Cases final list has experimented some changes. Test cases that are not valid any more are indicated in red in the list below. The following changes have been done for this Final Release (compared to existing A-REL Test Cases):

- Identified new Test Case 2.3.9
- Test Case 2.5.7 is not valid anymore. The reason is that there is no webservice to call the network graph manager and therefore the Test Case cannot be tested
- Due to a change in implementation choice in Test Category 2.6, Test Cases 2.6.1 and 2.6.3 are not valid anymore, and it has been created a new Test Case (2.6.4) to reflect the implementation choice (finally the Shopping Orchestrator calls directly calls the IF functions without using for thar the Amadeus proxy that was used for the CREL)

- In some cases the order of the Test Cases have been changed/re-arranged to make it more logical and coherent with the sequence of the processes.

Final list of Test Cases, following the colour code identified above, is the following:

*[TEST CATEGORY 2. 1] Manage mobility request and return offers*

[TEST CASE 2.1.1] Prepare mobility request
[TEST CASE 2.1.2] Send Mobility Request
[TEST CASE 2.1.3] Get Traveler Preferences from TC (fomer 2.1.5)
[TEST CASE 2.1.4] Send Mobility Request with Traveler Preferences (former 2.1.3)
[TEST CASE 2.1.5] Provide itinerary offers for BA computations (fomer 2.1.4)
[TEST CASE 2.1.6] Itinerary offers provided to mobility request manager by the shopping orchestrator
[TEST CASE 2.1.7] Itinerary offers provided to travel companion by the mobility request manager

*[TEST CATEGORY 2.2] Identify smartest routes corresponding to the mobility request*

[TEST CASE 2.2.1] Select Smartest Routes
[TEST CASE 2.2.2] Select Smartest Routes with search options
[TEST CASE 2.2.3] Get mobility request from the shopping orchestrator and provide metaroutes to the shopping orchestrator

*[TEST CATEGORY 2.3] Build itinerary offers*

[TEST CASE 2.3.1] Generate Itinerary Offers
[TEST CASE 2.3.2] Get request from the shopping orchestrator and provide itinerary offers to the shopping orchestrator
[TEST CASE 2.3.3] Generation of offers by travel expert
[TEST CASE 2.3.4] Send a request for an itinerary offer item to the broker
[TEST CASE 2.3.5] Receive and decode a rail itinerary offer item
[TEST CASE 2.3.6] Receive and decode a coach itinerary offer item
[TEST CASE 2.3.7] Receive and decode an urban transport itinerary offer item
[TEST CASE 2.3.8] Receive and decode an air itinerary offer item
[TEST CASE 2.3.9] Filter itinerary offer items (new F-REL)

*[TEST CATEGORY 2.4] Provide itinerary details*

[TEST CASE 2.4.1] Get Stop Places List
[TEST CASE 2.4.2] Orchestration of all shopping modules
[TEST CASE 2.4.3] Prepare Travel Expert List

*[TEST CATEGORY 2.5] Build network reference resource*

[TEST CASE 2.5.1] Receive and decode air statistic file
[TEST CASE 2.5.2] Receive and decode Rail statistic file
[TEST CASE 2.5.3] Receive and decode coach statistic file
[TEST CASE 2.5.4] Receive and decode urban transport statistic file
[TEST CASE 2.5.5] Receive and decode walking statistic file

[TEST CASE 2.5.6] Build network reference resource with air, coach, rail and urban transport (former 2.5.5 in C-REL)
[TEST CASE 2.5.7] Sent a request for statistics to the Network Graph Manager (not valid any more)

*[TEST CATEGORY 2.6] Location Resolving*
[TEST CASE 2.6.1] Decoding of the Locations by using AMA-Proxy for Location Resolver (not valid any more)
[TEST CASE 2.6.2] Decoding of the Locations by using LocationResolver
[TEST CASE 2.6.3] Providing well defined Locations (not valid any more)
[TEST CASE 2.6.4] Send a query to Location Resolver (new F-REL)

*[TEST CATEGORY 2.F] Complete test WP2*
[TEST CASE 2.F] Test the whole WP2 flow (former 2.6 in C-REL)

It is worth mentioning that most Test Cases were functionality oriented and not travel expert oriented, in order to test the functionalities. Therefore tests have been done with different providers, but only the results of some of them have been included in order to demonstrate the shopping functionalities.

The results obtained from the C-REL testing campaign are summarized in Table 1:

| Test Case Form - Summarized results | | | |
|---|---|---|---|
| **Test Category** | **Test Case ID** | **Results of Test Run (passed/not passed) More details of results in section 4** | **Comments** |
| **2. 1: Manage mobility request and return offers** | **Test Case 2.1.1** | Passed (80% completed) | |
| | **Test Case 2.1.2** | Passed | |
| | **Test Case 2.1.3** | Not passed | Moved to next IT2Rail release |
| | **Test Case 2.1.4** | Passed | |
| | **Test Case 2.1.5** | Passed | |
| | **Test Case 2.1.6** | Passed | |
| | **Test Case 2.1.7** | Passed | |
| **2.2 : Identify smartest routes corresponding to the mobility request** | **Test Case 2.2.1** | Passed | |
| | **Test Case 2.2.2** | Passed | |
| | **Test Case 2.2.3** | Passed | |
| **2.3: Build itinerary offers** | **Test Case 2.3.1** | Passed | |
| | **Test Case 2.3.2** | Passed | |
| | **Test Case 2.3.3** | Passed | |
| **2.4: Provide itinerary details** | **Test Case 2.4.1** | Passed | |
| | **Test Case 2.4.2** | Passed | |
| | **Test Case 2.4.3** | Not passed | Moved to next IT2Rail release |
| **2.5 Build network reference resource** | **Test Case 2.5.1** | Passed | |
| | **Test Case 2.5.2** | Passed | |
| | **Test Case 2.5.3** | Not passed | Moved to next IT2Rail release |
| | **Test Case 2.5.4** | Not passed | Moved to next IT2Rail release |
| | **Test Case 2.5.5** | Passed | |

**Table 1.Summary of WP2 C-REL testing results**

The results obtained from the A-REL testing campaign are summarized in Table 2:

| Test Case Form - Summarized results | | |
|---|---|---|
| **Test Category** | **Test Case ID** | **Results of Test Run (passed/not passed) More details of results in section 4** |
| **2. 1: Manage mobility request and return offers** | **Test Case 2.1.1** | Passed |
| | **Test Case 2.1.2** | Passed |
| | **Test Case 2.1.3** | Passed |
| | **Test Case 2.1.4** | Passed |
| | **Test Case 2.1.5** | Passed |
| | **Test Case 2.1.6** | Not passed |
| | **Test Case 2.1.7** | Passed |
| **2.2 : Identify smartest routes corresponding to the mobility request** | **Test Case 2.2.1** | Passed |
| | **Test Case 2.2.2** | Passed |
| | **Test Case 2.2.3** | Not passed (80 % Passed) |
| **2.3: Build itinerary offers** | **Test Case 2.3.1** | Passed |
| | **Test Case 2.3.2** | Not passed |
| | **Test Case 2.3.3** | Not passed |
| | **Test Case 2.3.4** | Passed |
| | **Test Case 2.3.5** | Passed |
| | **Test Case 2.3.6** | Passed |
| | **Test Case 2.3.7** | Passed |
| | **Test Case 2.3.8** | Passed |
| **2.4: Provide itinerary details** | **Test Case 2.4.1** | Passed |
| | **Test Case 2.4.2** | Passed |
| | **Test Case 2.4.3** | Passed |
| **2.5 Build network reference resource** | **Test Case 2.5.1** | Passed |
| | **Test Case 2.5.2** | Passed |
| | **Test Case 2.5.3** | Passed |
| | **Test Case 2.5.4** | Passed |
| | **Test Case 2.5.5** | Passed |
| | **Test Case 2.5.6** | Not passed |
| | **Test Case 2.5.7** | Not passed |
| **2.6 Resolve Locations** | **Test Case 2.6.1** | Not passed |
| | **Test Case 2.6.2** | Not passed |
| | **Test Case 2.6.3** | Not passed |

**Table 2. Summary of WP2 A-REL testing results**

For this new campaign, the existing Test Cases have been tested again, with updates when needed. In order to show if the Test Case is new or has been updated, each Test Case described in *Section 4. TEST DESCRIPTIONS,* includes the following *Checkbox Form*, which has been filled by the Test

Case responsible:

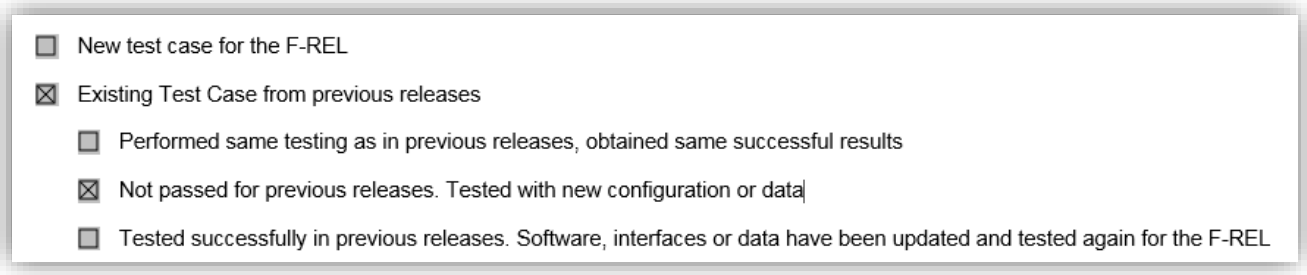
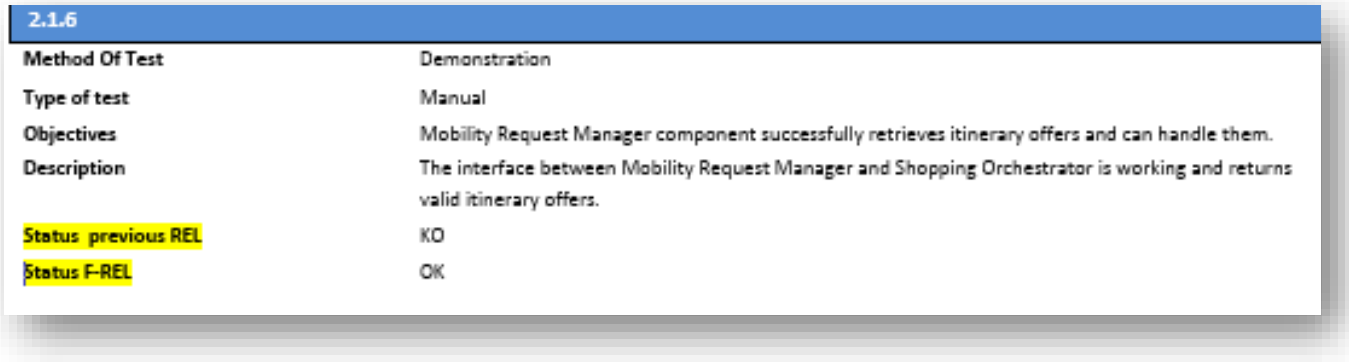



**Figure 2. Checkbox form created to indicate what is new in the F-REL**

Moreover, the structure of the tables that include the test descriptions have been updated to reflect what was the status of the Test in the previous releases, and what has changed for the F-REL testing ( in yellow in Figure 3).



| 2.1.6 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Mobility Request Manager component successfully retrieves itinerary offers and can handle them. |
| **Description** | The interface between Mobility Request Manager and Shopping Orchestrator is working and returns valid itinerary offers. |
| **Status previous REL** | KO |
| **Status F-REL** | OK |

**Figure 3. Example of Test Description Table updated to indicate what is new in the F-REL**

Table 3 summarizes the global figures of each case. It reflects the important effort done for the F-REL in order to improve the performance of the components and their functionalities, and to finally reach a good performance of the whole WP2, and in integration with other WPs components such as the Travel Companion.

| | |
|---|---|
| **Total number of Test Cases** | 34 |

| | |
|---|---|
| New Test Cases | 2 |
| Existing Test Cases – Performed same testing | 6 |
| Existing Test Cases – Not passed in previous release | 4 |
| Existing Test Cases – Update Software for F-REL | 19 |
| Test Cases not valid due to implementation choice | 3 |

**Table 3. Number of Test Cases of each type**

All this information will be detailed for each Test Case in *Section 4. TEST DESCRIPTIONS*, including also: description, objectives, expected results, how to perform the testing and **results** obtained.

In *section 5* the results of the tests included in section 4 are summarized to give the overall view of the Test Campaign, together with the position of these test within the global IT2Rail project.

# 3. TEST MATERIALS DESCRIPTION

This chapter lists all the assets required to perform the F-REL test campaign.

## 3.1 CONFIGURATION 2.1

Amadeus WP2 Test Configuration for the Meta Route and Offer builder

### 3.1.1 Infrastructure and Hardware

Computer & Internet connection

### 3.1.2 Setup & configuration

Each client should have:

- A LSS account (Amadeus security account)
- A Dedicated SAP
- Access to Amadeus Webservice Portal for technical references, user guide and implementation guides

These parameters are required only for Amadeus services clients (i.e, in the scope of WP2, the only client is the shopping orchestrator)

### 3.1.3 Tested system

Involved modules:

- Metaroute Explorer
- Build Offer

### 3.1.4 System DATA PARAMETERS

Metaroute Explorer:

- Statistical Data provided by the network graph manager (TrenItalia)
- Airline schedule network stored on Amadeus side

### 3.1.5 Simulators

- No simulator

### 3.1.6 Personnel

Amadeus Personnel – henceforth referred as: Test Case Tester: [2.1]

## 3.2 CONFIGURATION 2.2

HaCon WP2 Test Configuration for the Shopping orchestrator.

### 3.2.1 Infrastructure and Hardware

State-of-the-art multi-core computer (x86) with a state-of-the-art Linux.

Internet connection.

### 3.2.2 Setup & configuration

The Shopping Orchestrator is installed and deployed on Tomcat 8 at the following endpoint:
http://demo.hafas.de/it2rail/shopping-orchestrator

It needs itself properly configured access credentials to the Offer Builder and the Meta Route Explorer.

The Shopping Orchestrator calls the Location Resolver, Meta Route Explorer, Travel Expert Resolver and the Offer Builder.
The LR and the TER are open accessible in the web.

•LR:http://leonardo.selfip.com:70/it2rail-locations-resolver-1.0-AREL/services/LocationResolverSOAP?wsdl
•TER:http://leonardo.selfip.com:70/it2rail-travelexpert-resolver-1.0-AREL/services/TravelExpertResolverSOAP?wsdl

but for the Meta Route Explorer and the Offer Builder properly configured access credentials are needed.

### 3.2.3 Tested system

Tests concern the Shopping Orchestrator (F-REL version) itself and its communication with Location Resolver, Meta Route Explorer, Travel Expert Resolver and Offer Builder.

### 3.2.4 System DATA PARAMETERS

The Shopping Orchestrator does not use further data.

### 3.2.5 Simulators

No simulators used for any component of the Shopping orchestrator.

### 3.2.6 Personnel

One senior JAVA developer (HaCon Personnel). Henceforth referred as: Test Case Tester: [2.2]

## 3.3 CONFIGURATION 2.3

This section describes the configuration for the Mobility Request Manager module envisaged for the IT2Rail Additional Release.

### 3.3.1 Infrastructure and Hardware

The Mobility Request Manager has to be deployed on an application server such as Tomcat 8.
The machine has to be exposed to the public Internet in order to receive mobility requests.
Software components will be running on a machine with these technical features:

- Cpu & Core Xeon 1.9
- Centos 7 64 bit as operating system
- 8 Gb RAM

### 3.3.2 Setup & configuration

This section contains the setup and the configuration for performing the test campaign envisaged for the Additional Release.

The Mobility Request Manager module is installed and deployed on Tomcat 8 at the following endpoint:

http://93.42.113.18:99/it2rail-wp2/mobilityrequest

In order to accomplish the test phase, the personnel in charge of testing the Mobility Request Manager module needs to have an internet connection perfectly working.

In addition, the following software applications have to be installed on the laptop where the tests will be carried out:

- A web browser (Google Chrome preferably).
- POSTMAN as Google Chrome plugin

### 3.3.3 Tested system

The Mobility Request Manager is deployed on Tomcat application server (v 8.0).

Java Runtime Environment (JRE) or Java Development Kit (JDK) version 8 has to be installed in order to run Tomcat and the Mobility Request Manager.

The Operating System is CentOS 7 64 bit.

### 3.3.4 System DATA PARAMETERS

This section describes the text example of a mobility request used as input for the Mobility Request Manager. The mobility request will be sent through an HTTP Request by using the POST method with the following headers:

- Accept: application/json
- Content-Type: application/json

The following mobility request was formatted in JSON and was used for the C-REL testing campaign:

```
{
        "userId": "name.lastname@mail.com",
        "oneTimePreferences": {
                "directTravel": "true"
        },
        "metaJourneys": [{
                "origin": {
                        "name": "Grenoble",
                        "latitude": "2.456789",
```

```
                "longitude": "44.56789"
            },
            "destination": {
                "name": "Barcelone",
                "latitude": "5.3456",
                "longitude": "41.6543"
            },
            "wishedDepartureDate": "2016-05-03T03:55:37Z",
            "wishedArrivalDate": ""
        }, {
            "origin": {
                "name": "Barcelone",
                "latitude": "5.3456",
                "longitude": "41.6543"
            },
            "destination": {
                "name": "Madrid",
                "latitude": "3.8196207",
                "longitude": "40.4378698"
            },
            "wishedDepartureDate": "",
            "wishedArrivalDate": "2016-05-03T03:55:37Z"
        }]
}

}
```


In A-REL, the mobility request was changed in both formats and values, in order to meet new requirements and to implement the Shopping Orchestrator test case.

The syntax of the FREL Mobility Request is the same compared to the AREL version, however, the meaning of the “userId” field was changed: instead of containing a name such as “Jane” or an email address such as “arya@got.com”, it now contains the actual IT2Rail user key.

The following mobility request is formatted in JSON and is used for the test campaign:

Example of Header content:

- Accept: application/json
- Content-Type: application/json
- Authorization: <a string> (ex. 34343fsfdsf435345)

***Note: The value of the Authorization field is the UserIdToken to be sent to the Travel Companion Cloud. For security reasons, the UserIdToken has limited validity so it must be agreed with Indra (as TC Cloud leader) at actual testing time.***

Example of AREL Body content:


```
{
    "userId": "jane2",
    "searchOptions": [{
        "label": "directTravel",
        "values": ["yes"]
    }],
    "metaJourneys": [{
        "origin": {
            "name": "Berlin",
            "latitude": "52.559722",
            "longitude": "13.287778"
        },
        "destination": {
            "name": "Paris",
            "latitude": "49.009722",
            "longitude": "2.547778"
        },
        "wishedDepartureDate": "2017-01-20T06:55:37Z",
        "wishedArrivalDate": "2017-01-20T12:00:00Z"
    }],
    "shoppingRequestContext": {
        "deviceInfo": "",
        "retailer": {
            "retailerName": "",
            "retailerCode": ""
        }
    }
}
```


Example of FREL Body content:


```
{
        "userId": "8276203a-c5a2-46e9-98c7-6c2dbe9ac7cc",
        "searchOptions": [{
                "label": "directTravel",
                "values": ["yes"]
        }],
        "metaJourneys": [{
                "origin": {
                        "name": "Gare de Grenoble",
                        "latitude": "45.191507",
                        "longitude": "5.7145014"
                },
                "destination": {
                        "name": "Gare de Lyon-Part-Dieu",
                        "latitude": "45.7605474",
```

```
                "longitude": "4.861117699"
            },
            "wishedDepartureDate": "2018-02-13T10:00:00Z"
        }],
        "shoppingRequestContext": {
            "deviceInfo": "",
            "retailer": {
                "retailerName": "",
                "retailerCode": ""
            }
        }
}
```


### 3.3.5 Simulators

An example of itinerary offer was provided by AMADEUS and was used during testing in order to simulate a response from the Mobility Request Manager.

### 3.3.6 Personnel

The personnel required to run this test campaign must be highly qualified people with a professional background in Information Technology and Computer Science. Leonardo Personnel – henceforth referred to as: Test Case Tester: [2.3]

## 3.4 CONFIGURATION 2.4

Indra WP2 Test Configuration (generation of offers by Travel Expert)

### 3.4.1 Infrastructure and Hardware

Currently the software is deployed in a virtual machine with the following characteristics:

- Intel Xeon CPU E5-2630 x2
- 8 GB RAM
- Windows Server 2008 R2 Datacenter 64 bits

The services are deployed and or need the following software:

- SQL Server 2012
- Tomcat 9

### 3.4.2 Setup & configuration

The software is deployed in a Tomcat 9 accessible in an intranet at the URL: http://192.168.27.50:9090. In the future it is expected to be made accessible through a public address.

In order to use the application a modern web browser is needed (Firefox recommended).

### 3.4.3 Tested system

The current tested system has the following software versions:

- Java Runtime Environment 1.8.0_91
- Tomcat Server 9.0.0.M6
- Windows Server 2008 R2 Datacenter 64 bits

### 3.4.4 System DATA PARAMETERS

Data uploaded in the service: TMB transport data in GTFS format.

Simulated fares.

Simulated traveller information: origin, destination, hour of travelling

### 3.4.5 Simulators

Request and responses have been simulated and xml and JSON static files sent offline to WP1

### 3.4.6 Personnel

1 Senior Developer (Indra Personnel). Henceforth referred as: Test Case Tester: [2.4]

# 4. TEST DESCRIPTIONS

This chapter contains the test cases that were planned to be executed for the Core Release and for the Additional Release, as well as the results and observations collected.

## 4.1 [TEST CATEGORY 2. 1] MANAGE MOBILITY REQUEST AND RETURN OFFERS

Corresponds to Use Case *Manage and decode the mobility request*, and tests the unitary performance of the *Mobility Request Manager component* and its interfaces with other WP2 modules and other WPs modules.

### 4.1.1 [TEST CASE 2.1.1] Prepare mobility request

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.1.1 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Component able to process incoming information and prepare mobility request including preferences |
| **Description** | Test the performance of the Mobility Request Manager to prepare mobility request processing information from TC and preferences<br>Data Managed: Mobility request and preferences<br>Comments: Input is simulated at this stage. |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.3 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.3] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| | **Preconditions:**<br>• Internet connection is available<br>• Mobility Request Manager has to be working and running.<br>• Travel Companion Cloud has to be reachable and able to retrieve user preferences. | | | | |
| **C-REL 1** | The tester using Postman sends a Post message as described in §3.3.4 to the MRM module.<br>The MRM receives the request, adapts the request to the Shopping Orchestrator Interface and sends the mobility request to the Shopping Orchestrator. | Prepare the mobility request with the user preferences | The Mobility Request Manager is able to prepare the mobility request without preferences. | **80% Passed** | NA |
| **A-REL 1** | The tester using Postman sends a Post message as described in §3.3.4 to the MRM module.<br>• The MRM receives the request, adapts the request to the Shopping Orchestrator Interface and sends the mobility request to the Shopping Orchestrator. | Prepare the mobility request with the user preferences | The Mobility Request Manager is able to prepare the mobility request with users' preferences.retrieved from TC Cloud. | **Passed** | NA |

| | | | | | |
|---|---|---|---|---|---|
| **F-REL 1** | The tester using Postman sends a Post message as described in §3.3.4 to the MRM module.<br>The MRM receives the request, adapts the request to the Shopping Orchestrator Interface and sends the mobility request to the Shopping Orchestrator. | In the log file, the tester sees the mobility request sent to the Shopping Orchestrator. | In the log file, the tester saw the mobility request sent to the Shopping Orchestrator. | **Passed** | NA |

### 4.1.2 [TEST CASE 2.1.2] Send Mobility Request

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.1.2 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | All information sent from WP5 is received by the Mobility Request Manager component |
| **Description** | Test interfaces and communication among TC and Mobility Request Manager component<br>Dependency with WP5: the mobile app is able to send a mobility request. Dependency with WP2: the Mobility Request Manager is able to receive requests from WP5. |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.3 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.3] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>• Internet connection is available<br>• Mobility Request Manager has to be working and running.<br>• Travel Companion Cloud has to be reachable and able to retrieve user preferences. | | | | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **C-REL1** | • Internet connection available<br>• Travel companion mobile app has to be working and running<br>• Travel Companion mobile app has to be connected to the public Internet<br>• Mobility Request Manager has to be working and running | The Mobility Request Manager is able to receive the mobility request sent by the Travel Companion mobile app. | The Mobility Request Manager is able to receive the mobility request sent by the Travel Companion mobile app. | **Passed** | NA |
| **A-REL1** | • Internet connection available<br>• Travel companion mobile app has to be working and running<br>• Travel Companion mobile app has to be connected to the public Internet<br>• Mobility Request Manager has to be working and running | The Mobility Request Manager is able to receive the mobility request sent by the Travel Companion mobile app. | The Mobility Request Manager is able to receive the mobility request sent by the Travel Companion mobile app. | **Passed** | NA |
| **F-REL 1** | • The tester through the Travel Companion PA sends a Post message as described in §3.3.4 to the MRM module.<br>• The MRM receives the request, adapts the request to the Shopping Orchestrator Interface and sends the mobility request to the Shopping Orchestrator. | In the log file, the tester sees the mobility request sent to the Shopping Orchestrator. | In the log file, the tester saw the XML mobility request sent to the Shopping Orchestrator. | **Passed** | NA |

### 4.1.3 [TEST CASE 2.1.3] Get Traveller Preferences from TC

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.1.5 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Mobility Request Manager component is able to retrieve preferences information from WP5-Cloud for a particular user |
| **Description** | Test interfaces and communication among TC - Cloud and Mobility Request Manager component<br>Dependency with WP5 Interface. Required for retrieving user's preferences. |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply:2.3 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.3] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:** | | | | |
| **C-REL1** | • Internet connection is available<br>• Mobility Request Manager has to be working and running<br>• Travel Companion Cloud has to be reachable in order to retrieve user preferences. | The Mobility Request Manager is able to retrieve user preferences from Travel Companion Cloud. | The Mobility Request Manager is able to retrieve user preferences from Travel Companion Cloud | **Passed** | NA |
| **A-REL1** | • Internet connection is available<br>• Mobility Request Manager has to be working and running<br>• Travel Companion Cloud has to be reachable in order to retrieve user preferences. | The Mobility Request Manager is able to retrieve user preferences from Travel Companion Cloud. | The Mobility Request Manager is able to retrieve user preferences from Travel Companion Cloud | **Passed** | NA |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **F-REL 1** | • The tester through the Travel Companion PA sends a Post message as described in §3.3.4 to the MRM module.<br>• The MRM receives the request and establishes a trusted connection with the TC Cloud.<br>• The MRM requests the user preferences using the userId and userIdToken contained with the request message. | In the log file, the tester sees both the request sent to the TC Cloud and the corresponding successful response code (200). | In the log file, the tester saw both the request sent to the TC Cloud and the corresponding successful response code.(200). | **Passed** | NA |

Here follows an example of a section of the log file recording in plain text the dialogue between MRM and TC Cloud:

*Preferences request received at Mon May 14 16:49:41 CEST 2018*
*userId: d8a3aee6-e4ba-415a-b959-fd2f08f13dd5, userIdToken:*
*eyJhbGciOiJIUzI1NiJ9.eyJzdWIiOiJkOGEzYWVlNi1lNGJhLTQxNWEtYjk1OS1mZDJmMDhmMTNkZDUiLCJmdW5jdGlvbnMiOlsiZ2V0cHJlZmVyZW5jZXMiXSwicGVyaW1ldGVyIjoic2hvcHBpbmciLCJleHAiOjE1MjYzMTYyMDN9.AJ4gRjsEpdgWebzdEKsmdZqlPaF9*
*xPqzGMbmzwXfLoQ*
*Retrieving preferences from Cloud Wallet*
*INDRA Webservice invocation - HTTPS Request at:*
*https://2.139.190.214:8443/AccessManagerWP5/tc/cwallet/AccessManager/preferences/userId?userId=d8a3aee6-e4ba-415a-b959-fd2f08f13dd5*
*Response code from Travel Companion Cloud Wallet: 200 at: Mon May 14 16:49:42 CEST 2018*
*Reading user preferences at: Mon May 14 16:49:42 CEST 2018*
*User's preferences retrieved at: Mon May 14 16:49:42 CEST 2018*
*Preferences request processed at Mon May 14 16:49:42 CEST 2018*

### 4.1.4 [TEST CASE 2.1.4] Send Mobility Request with Traveller Preferences

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.1.3 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Shopping orchestrator is able to receive the enriched mobility request. |
| **Description** | Test Shopping Orchestrator interface that will receive the Mobility Request enriched with User Preferences<br>Dependency with Shopping Orchestrator interface: required to send the Mobility Request enhanced with user's preferences |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| 2.1.3 | |
|---|---|
| **Configuration to apply: 2.3** | |
| **Regression** | No |
| **Test Case Tester** | [2.3] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>• Internet connection is available<br>• Mobility Request Manager has to be working and running.<br>• Travel Companion Cloud has to be reachable and able to retrieve user preferences. | | | | |
| **C-REL 1** | • Internet connection available<br>• Mobility Request Manager has to be working and running<br>• Travel Shopping Orchestrator has to be working and running | The Travel Shopping Orchestrator is able to receive mobility requests enriched with users' preferences. Result must be expressed under the form of a metric | Not available | **NA** | NA |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 1** | • Internet connection available<br>• Mobility Request Manager has to be working and running<br>• Travel Shopping Orchestrator has to be working and running | The Travel Shopping Orchestrator is able to receive mobility requests enriched with users' preferences. Result must be expressed under the form of a metric | The Travel Shopping Orchestrator is able to receive mobility requests with users' preferences. | **Passed** | |
| **F-REL 1** | The tester through the Travel Companion PA sends a Post message as described in §3.3.4 to the MRM module.<br>The MRM receives the request, establishes a trusted connection with the TC Cloud, requests the user preferences using the userId and userIdToken contained with the request message, then adds the active user preferences to the mobility request for the Shopping Orchestrator. | In the log file, the tester sees both the successful response code (200) received from the TC Cloud and the user preferences included within the XML mobility request sent to the Shopping Orchestrator. | In the log file, the tester saw both the successful response code (200) received from the TC Cloud and the user preferences included within the XML mobility request sent to the Shopping Orchestrator. | **Passed** | NA |

Here follows an example of a section of the log file recording in plain text the dialogue between MRM and TC Cloud:

*Preferences request received at Mon May 14 16:49:41 CEST 2018*
*userId: d8a3aee6-e4ba-415a-b959-fd2f08f13dd5, userIdToken:*
*eyJhbGciOiJIUzI1NiJ9.eyJzdWIiOiJkOGEzYWVlNi1lNGJhLTQxNWEtYjk1OS1mZDJmMDhmMTNkZDUiLCJmdW5jdGlvbnMiOlsiZ2V0cHJlZmVyZW5jZXMiXSwicGVyaW1ldGVyIjoic2hvcHBpbmciLCJleHAiOjE1MjYzMTYyMDN9.AJ4gRjsEpdgWebzdEKsmdZqlPaF9*
*xPqzGMbmzwXfLoQ*
*Retrieving preferences from Cloud Wallet*
*INDRA Webservice invocation - HTTPS Request at:*
*https://2.139.190.214:8443/AccessManagerWP5/tc/cwallet/AccessManager/preferences/userId?userId=d8a3aee6-e4ba-415a-b959-fd2f08f13dd5*
*Response code from Travel Companion Cloud Wallet: 200 at: Mon May 14 16:49:42 CEST 2018*
*Reading user preferences at: Mon May 14 16:49:42 CEST 2018*
*User's preferences retrieved at: Mon May 14 16:49:42 CEST 2018*
*Preferences request processed at Mon May 14 16:49:42 CEST 2018*

The TC Cloud response is further processed and then recorded in the log file in this manner (plain text):

*activePref: transportation = train*
*activePref: transportation = urban*
*activePref: transportation = coach*
*activePref: transportation = airline*
*activePref: carrier = trenitalia*
*activePref: carrier = sncf*
*activePref: carrier = AF*
*activePref: carrier = vbb*
*activePref: carrier = tmb*
*activePref: carrier = renfe*
*activePref: carrier = regiojet*
*activePref: carrier = KL*
*activePref: carrier = IB*

*activePref: carrier = flixbus*
*activePref: loyalty card = cartafreccia*
*activePref: loyalty card = doradacard*
*activePref: loyalty card = grand voyageur*
*activePref: payment card = mastercard*
*activePref: payment card = visa*
*activePref: payment card = paypal*
*activePref: payment card = google wallet*
*activePref: payment card = apple wallet*
*activePref: prm type = older person*
*activePref: prm type = impairments temp wheelchair*
*activePref: prm type = persons porting a carrycots*
*activePref: prm type = blindness visual impairments*
*activePref: prm type = wheelchair mainstreaming seat*
*activePref: prm type = wheelchair specific h-seat*
*activePref: prm type = pregnant women*
*activePref: prm type = deafness auditory impairments*
*activePref: class = economy*
*activePref: class = business*
*activePref: class = first class*
*activePref: seat = aisle*
*activePref: seat = window*
*activePref: seat = large*

Here follows an extract from the log file regarding the  XML Shopping Orchestrator request:

*<ns2:AMA_DoorToDoorFindRoutesRQ TimeStamp="2018-05-15T13:28:15.085+02:00" Version="4"*
*xmlns="http://xml.amadeus.com/2010/06/DoorToDoorTypes_v4" xmlns:ns2="http://xml.amadeus.com/2010/06/DoorToDoorRoutes_v4">*
*<ns2:Passenger id="PAX_1">*
*<FunctionalId context="UserName">demo@it2rail.com</FunctionalId>*
*<FunctionalId*
*context="userIdToken">eyJhbGciOiJIUzI1NiJ9.eyJzdWIiOiI4ODczMDc1Yy00YWI0LTQzNGQtOWVmZS03OTI2ZDU4N2U4ZDIiLCJmdW5jdGlvbnMi*
*OlsiZ2V0cHJlZmVyZW5jZXMiXSwicGVyaW1ldGVyIjoic2hvcHBpbmciLCJleHAiOjE1MjYzOTA1NDB9.boHaMCDgyUHPSNjKoUpCvy1DV0BtJEnRx*
*CP_7bgWLeA</FunctionalId>*
*<Code context="Amadeus">ADT</Code>*
*<Preference level="1.0" type="transportation" value="train"/>*
*<Preference level="0.5" type="transportation" value="urban"/>*
*<Preference level="0.5" type="transportation" value="coach"/>*
*<Preference level="0.25" type="transportation" value="airline"/>*
*<Preference level="0.5" type="carrier" value="trenitalia"/>*
*<Preference level="0.5" type="carrier" value="sncf"/>*
*<Preference level="0.5" type="carrier" value="AF"/>*
*<Preference level="0.5" type="carrier" value="vbb"/>*
*<Preference level="0.5" type="carrier" value="tmb"/>*
*<Preference level="0.5" type="carrier" value="renfe"/>*
*<Preference level="0.5" type="carrier" value="regiojet"/>*
*<Preference level="0.5" type="carrier" value="KL"/>*
*<Preference level="0.5" type="carrier" value="IB"/>*
*<Preference level="0.5" type="carrier" value="flixbus"/>*
*<Preference level="0.5" type="loyalty card" value="cartafreccia"/>*
*<Preference level="0.5" type="loyalty card" value="doradacard"/>*
*<Preference level="0.5" type="loyalty card" value="grand voyageur"/>*
*<Preference level="0.5" type="payment card" value="mastercard"/>*
*<Preference level="0.5" type="payment card" value="visa"/>*
*<Preference level="0.5" type="payment card" value="paypal"/>*
*<Preference level="0.5" type="payment card" value="google wallet"/>*
*<Preference level="0.5" type="payment card" value="apple wallet"/>*

```
      <Preference level="0.0" type="prm type" value="older person"/>
      <Preference level="0.0" type="prm type" value="impairments temp wheelchair"/>
      <Preference level="0.0" type="prm type" value="persons porting a carrycots"/>
      <Preference level="0.0" type="prm type" value="blindness visual impairments"/>
      <Preference level="0.0" type="prm type" value="wheelchair mainstreaming seat"/>
      <Preference level="0.0" type="prm type" value="wheelchair specific h-seat"/>
      <Preference level="0.0" type="prm type" value="pregnant women"/>
      <Preference level="0.0" type="prm type" value="deafness auditory impairments"/>
      <Preference level="0.25" type="class" value="economy"/>
      <Preference level="0.5" type="class" value="business"/>
      <Preference level="1.0" type="class" value="first class"/>
      <Preference level="0.5" type="seat" value="aisle"/>
      <Preference level="0.5" type="seat" value="window"/>
      <Preference level="0.5" type="seat" value="large"/>
   </ns2:Passenger>
   <ns2:RequestedJourney>
      <ns2:Origin dateTime="2018-05-23">
         <ns2:Location name="Roma Termini">
            <GeoCode latitude="41.9010032" longitude="12.5019037"/>
         </ns2:Location>
      </ns2:Origin>
      <ns2:Destination>
         <ns2:Location name="Messe-Prater">
            <GeoCode latitude="48.2177835" longitude="16.40389309"/>
         </ns2:Location>
      </ns2:Destination>
   </ns2:RequestedJourney>
</ns2:AMA_DoorToDoorFindRoutesRQ>
```

### 4.1.5 [TEST CASE 2.1.5] Provide itinerary offers for BA computations

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.1.5 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Mobility Request Manages is able to send itinerary offers to WP6. The latter will store itinerary offers in its repositories for later computations. |
| **Description** | Test WP6 interface responsible for storing itinerary offers<br>Dependency with WP6 interface: required for sending itinerary offers to WP6. |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.3 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.3] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>• Internet connection is available<br>• Mobility Request Manager has to be working and running.<br>• Travel Companion Cloud has to be reachable and able to retrieve user preferences.<br>• Business Analytics has to be working and running. | | | | |
| **C-REL1** | • Internet connection is available<br>• Mobility Request Manager has to be working and running<br>• Itinerary offers have to be computed by the Travel Shopping Orchestrator<br>• The Business Analytics module has to be working and running. | The IT2Rail Business Analytics is able to receive itinerary offers and to store them. | The Mobility Request Manager sends itinerary offers to WP6. The Business Analytics is able to receive itinerary offers and to store them. | **Passed** | NA |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL1** | • Internet connection is available<br>• Mobility Request Manager has to be working and running<br>• Itinerary offers have to be computed by the Travel Shopping Orchestrator<br>• The Business Analytics module has to be working and running. | The IT2Rail Business Analytics is able to receive itinerary offers and to store them. | The Mobility Request Manager sends itinerary offers to WP6. The Business Analytics is able to receive itinerary offers and to store them. | **Passed** | NA |
| **F-REL 1** | • Execute the steps as in TEST CASE 2.1.4 | In the log file, the tester sees that the MRM module, after having correctly received the itinerary offers by the Shopping Orchestrator, first sends them to WP6 and then receives a confirmation message from the BA module | The Mobility Request Manager sends itinerary offers to WP6. In the log file, the tester saw that itinerary offers are correctly sent to Business Analytics. | **Passed** | |

Here is an extract from the log file showing successful transmission to the WP6 module of the itinerary offers:

*Sending itinerary offers to the Business Analytics platform at: Tue May 15 13:28:38 CEST 2018*
*Sending itinerary offers to the Business Analytics platform completed at: Tue May 15 13:28:38 CEST 2018*

### 4.1.6 [TEST CASE 2.1.6] Itinerary offers provided to mobility request manager by the shopping orchestrator

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☒ Not passed for previous releases. Tested with new configuration or data
- ☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.1.6 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Mobility Request Manager component successfully retrieves itinerary offers and can handle them. |
| **Description** | The interface between Mobility Request Manager and Shopping Orchestrator is working and returns valid itinerary offers. |
| **Status previous REL** | KO |
| **Status F-REL** | OK |

| Configuration to apply: 2.3 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.3]/[2.2] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:** | | | | |
| **C-REL1** | • Internet connection is available<br>• Mobility Request Manager has to be working and running<br>• Itinerary offers have to be computed by the Travel Shopping Orchestrator | The Mobility Request Manager is able to receive itinerary offers from the Travel Shopping Orchestrator. | The Mobility Request Manager is able to receive itinerary offers from the Travel Shopping Orchestrator. | **Passed** | NA |
| **A-REL1** | • Internet connection is available<br>• Mobility Request Manager has to be working and running<br>• Itinerary offers have to be computed by the Travel Shopping Orchestrator | The Mobility Request Manager is able to receive itinerary offers from the Travel Shopping Orchestrator. | The Mobility Request Manager is not able to receive itinerary offers from the Travel Shopping Orchestrator. | **Not Passed** | The Travel Shopping Orchestrator returns a message without itinerary offers. |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **F-REL 1** | Execute the steps as in TEST CASE 2.1.3 | In the log file, the tester sees that the MRM module, first correctly receives the message response by the Shopping Orchestrator, then correctly parses that response. | The Mobility Request Manager is able to receive itinerary offers from the Travel Shopping Orchestrator. | **Passed** | |

An example of the XML Travel Shopping Orchestrator response can be found in the TSO_response.xml below:

TSO_response.xml

### 4.1.7 [TEST CASE 2.1.7] Itinerary offers provided to travel companion by the mobility request manager

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.1.7 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Mobility Request Manager successfully return itinerary offers to the TC |
| **Description** | Test that the computed itinerary offers are returned to the Travel Companion mobile app. |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.3 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.3] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:** | | | | |
| **C-REL1** | • Internet connection is available<br>• Mobility Request Manager has to be working and running<br>• Itinerary offers have to be computed by the Travel Shopping Orchestrator<br>• Travel Companion Mobile App has to be connected to the public Internet | The Travel Companion mobile app receives itinerary offers from the Mobility Request Manager | The Travel Companion mobile app receives itinerary offers from the Mobility Request Manager | **Passed** | NA |
| **A-REL1** | • Internet connection is available<br>• Mobility Request Manager has to be working and running<br>• Itinerary offers have to be computed by the Travel Shopping Orchestrator<br>• Travel Companion Mobile App has to be connected to the public Internet | The Travel Companion mobile app receives itinerary offers from the Mobility Request Manager | The Travel Companion mobile app receives itinerary offers from the Mobility Request Manager | **Passed** | The Mobility Request Manager returns a static example of itinerary offers provided by AMADEUS. |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **F-REL 1** | • Execute the steps as in TEST CASE 2.1.3 | Through POSTMAN, the tester sees the JSON message returned by the MRM module, containing the Itinerary Offers provided by the Shopping Orchestrator | Through POSTMAN, the tester saw the JSON message returned by the MRM module, containing the Itinerary Offers provided by the Shopping Orchestrator. | **Passed** | The MRM response can be easily analysed through any JSON viewer |

An example of the JSON MRM response can be found in the MRM_response.below;

MRM_Response.json

## 4.2 [TEST CATEGORY 2.2] IDENTIFY SMARTEST ROUTES CORRESPONDING TO THE MOBILITY REQUEST

Corresponds to Use Case *Identify smartest routes corresponding to the mobility request*, and test the unitary performance of the *Meta Route Explorer component* and its interfaces with other WP2 modules and other WPs modules.

### 4.2.1 [TEST CASE 2.2.1] Select Smartest Routes

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.2.1 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Obtain most relevant metaroutes joining origin and destination |
| **Description** | A findRoutes message is sent to the Metaroute Explorer. This test case corresponds to the functional exchange between the shopping orchestrator and the metaroute explorer.<br>This message contains the following information: origin and destination with their associated stop places, wished departure date… (only mandatory data).<br>Dependency: Testable only if networks in the metaroute explorer are completed<br>Tests are always based on the IT2Rail corridor scenarios |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Internet connection is available**<br>**- Amadeus security account** | | | | |
| **C-REL 1** | Send a basic “air oriented” query with no options :<br>1 origin & associated airport ;<br>1 destination & associated airport | 1 Metaroute is returned with 3 Meta travel expert Episode: 2 Urban Transport & 1 Air episode<br>No irrelevant metaroute is returned | 1 Metaroute is returned with 3 Meta travel expert Episode: 2 Urban Transport & 1 Air episode | **Not valid for AREL** | The Meta-network content has changed for the AREL |
| **C-REL 2** | Send a basic query with no options :<br>1 origin & associated stop places (1 airport, 1 train station) ;<br>1 destination & associated stop places (1 airport, 1 train station) | 1 Metaroute is returned with rail & train meta travel expert episodes<br>1 Metaroute is returned with air meta travel expert episodes<br>No irrelevant metaroute is returned | 1 Metaroute is returned with rail & train meta travel expert episodes<br>1 Metaroute is returned with air meta travel expert episodes | **Not valid for AREL** | The Meta-network content has changed for the AREL |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **C-REL 3** | Send a basic query for multiple MetaJourneys, no options :<br>For each:<br>1 origin & associated stop places (1 airport, 1 train station) ;<br>1 destination & associated stop places (1 airport, 1 train station) | For each metaJourney:<br>1 Metaroute is returned with rail & train meta travel expert episodes<br>1 Metaroute is returned with air meta travel expert episodes<br>No irrelevant metaroute is returned | For each metaJourney:<br>1 Metaroute is returned with rail & train meta travel expert episodes<br>1 Metaroute is returned with air meta travel expert episodes | **Not valid for AREL** | The Meta-network content has changed for the AREL |
| **C-REL 4** | Error case: No stop places indicated in query sent | An error is returned, no route is computed | An error is returned, no route is computed | **Passed** | |
| **C-REL 5** | Error case: Past date indicated in query sent | An error is returned, no route is computed | An error is returned, no route is computed | **Passed** | |
| **A-REL 1**<br>**F-REL 1** | Send a basic query with no options :<br>1 origin & associated stop places (1 airport, 1 train station) ;<br>1 destination & associated stop places (1 airport, 1 train station) | One or several Metaroutes is returned with at least urban transport, rail or air meta travel expert episodes.<br>Walking episodes are present in the output<br>No irrelevant metaroute is returned | Test validated for the following corridor scenarios: Jane (Grenoble – Barcelona), Jena (Rome – Barcelona) and Steeve (Berlin – Amsterdam) | **Passed** | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 2**<br>**F-REL 2** | Send a basic query with no options :<br>1 origin & associated stop places (1 coach) ;<br>1 destination & associated stop places (1 airport, 1 train station) | One or several Metaroutes is returned with at least urban transport, coach meta travel expert episodes.<br>Walking episodes are present in the output<br>No irrelevant metaroute is returned | Test validated for the following corridor scenarios: Peter (Prague – Berlin) | **Passed** | |
| **A-REL 3**<br>**F-REL 3** | Send a basic query for multiple MetaJourneys, no options :<br>For each:<br>1 origin & associated stop places (1 airport 1 train station or 1 coach) ;<br>1 destination & associated stop places (1 airport, 1 train station or 1 coach) | For each metaJourney:<br>One or several Metaroutes is returned with at least urban transport, rail, coach or air meta travel expert episodes.<br>Walking episodes are present in the output<br>No irrelevant metaroute is returned | Test validated for all corridor scenarios | **Passed** | |

Here is a sample of “findRoutes” messages corresponding to the mobility request “Rome to Barcelona”:

FindRoutesRQ.xml FindRoutesRS.xml

### 4.2.2 [TEST CASE 2.2.2] Select Smartest Routes with search options

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☐ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.2.2 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Obtain most relevant metaroutes joining origin and destination<br>metaroutes are consistent with request |
| **Description** | A findRoutes message is sent to the Metaroute Explorer. This test case corresponds to the functional exchange between the shopping orchestrator and the metaroute explorer.<br>This message contains the following information: origin and destination with their associated stop places, wished departure date… (only mandatory data), and includes or excludes one or several transportation modes<br>Dependency: Testable only if networks in the metaroute explorer are completed<br>Tests are always based on the IT2Rail corridor scenarios |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Internet connection is available**<br>**- Amadeus security account** | | | | |
| **C-REL 1** | Send a basic query with **rail transport mode excluded** :<br>1 origin & associated airport + train station;<br>1 destination & associated airport + train station | 1 Metaroute is returned with 3 Meta travelexpert Episode: 2 Urban Transport & 1 Air episode<br>No metaroute including rail meta travel episodes are returned | 1 Metaroute is returned with 3 Meta travelexpert Episode: 2 Urban Transport & 1 Air episode | **Not valid for CREL** | |
| **C-REL 2** | Send a basic query with **rail transport mode included** :<br>1 origin & associated airport + train station;<br>1 destination & associated airport + train station | 1 Metaroute is returned with 3 Meta travel expert Episode: 2 Urban Transport & 1 train episode<br>No irrelevant metaroute is returned | 1 Metaroute is returned with 3 Meta travel expert Episode: 2 Urban Transport & 1 Train episode | **Not valid for CREL** | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **C-REL 3** | Send a basic query **with rail + air transport mode excluded** :<br>1 origin & associated airport + train station;<br>1 destination & associated airport + train station | No MetaRoute is returned: An error is returned (not made explicit for the core release) | No MetaRoute is returned: An error is returned | **Not valid for CREL** | |
| **A-REL 1**<br>**F-REL 1** | Send a basic query with **rail transport mode excluded** :<br>1 origin & associated airport + train station;<br>1 destination & associated airport + train station | 1 Metaroute is returned with Meta travelexpert Episodes containing only urban transport, coach and/or air<br>Walking episodes are present in the output<br>No metaroute including rail meta travel episodes are returned | Test validated for the following corridor scenarios: Jena (Rome – Barcelona). Only itinerary offers mixing air and urban transport itinerary offer items are returned | **Passed** | |
| **A-REL 2**<br>**F-REL 2** | Send a basic query with **rail transport mode included** :<br>1 origin & associated airport + train station;<br>1 destination & associated airport + train station | 1 Metaroute is returned with Meta travel expert Episodes containing only urban transport and rail<br>Walking episodes are present in the output<br>No irrelevant metaroute is returned | Not tested.<br>Option “include transportation mode” removed from the IT2Rail scope | **Not valid** | The search options like “include transportation mode” has been removed from the IT2Rail scope. |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 3**<br>**F-REL 3** | Send a basic query with **rail + air + coach transport mode excluded** :<br>1 origin & associated airport, train or station;<br>1 destination & associated airport, train or coach station | No MetaRoute is returned: An error is returned | No MetaRoute is returned: An error is returned | **Passed** | |

Here is a sample of “findRoutes” messages corresponding to the mobility request “Rome to Barcelona” with Rail exclusion:

FindRoutesRQwithExclusion.xml

FindRoutesRSwithExclusion.xml

### 4.2.3 [TEST CASE 2.2.3] Get mobility request from the shopping orchestrator and provide meta routes to the shopping orchestrator

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.2.3 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Meta route explorer successfully decodes mobility request;<br>shopping orchestrator successfully decodes Meta route explorer replies |
| **Description** | The interface between the shopping orchestrator and the meta route explorer is working |
| **Status previous REL** | KO. 80% completed |
| **Status F-REL** | OK |

| Configuration to apply: 2.2 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.2] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Internet connection is available**<br>**- Amadeus security account** | | | | |
| **C-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Meta Route Explorer. | Receive a grammatically correct response and decodes it. | Received a grammatically correct response and decoded it. | **Passed** | Works only for mode AIR. |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **C-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Meta Route Explorer. | Receive an error message response. | Received an error message response. | **Passed** | |
| **A-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Meta Route Explorer. | Receive a grammatically correct response and decodes it. | Received a grammatically correct response and decoded it for mode AIR only. | **80% Passed** | Works only for mode AIR. |
| **A-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Meta Route Explorer. | Receive an error message response. | Received an error message response. | **Passed** | |
| **F-REL 1** | Send grammatically **correct** requests from Shopping Orchestrator to Meta Route Explorer. | Receive a grammatically correct response and decodes it. | Received a grammatically correct response and decoded it for mode AIR only. | **Passed** | |
| **F-REL 2** | Send grammatically **incorrect** requests from Shopping Orchestrator to Meta Route Explorer. | Receive an error message response. | Received an error message response. | **Passed** | |

## 4.3 [TEST CATEGORY 2.3] BUILD ITINERARY OFFERS

Corresponds to Use Case *Build itinerary offers*, and test the unitary performance of the *Offer Builder component* and its interfaces with other WP2 modules.

### 4.3.1 [TEST CASE 2.3.1] Generate Itinerary Offers

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.3.1 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Itinerary offer is built |
| **Description** | A buildOffers message is sent to the Offer Builder. This test case corresponds to the functional exchange between the shopping orchestrator and the offer builder.<br>This message contains the following information: origin and destination with their associated stop places, wished departure date and a list of metaroutes with associated travel experts<br>Tests are always based on the IT2Rail corridor scenarios<br>The list of itinerary offers which are generated by the Offer Builder may be multimodal or contain only one transportation mode depending on the mobility request and on the itinerary offers proposed by the travel experts.<br>CREL tests are based on simulators (Offer Builder is not delivered for CREL) |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- internet connection is available**<br>**- Amadeus security account** | | | | |
| **C-REL 1** | Send a grammatically valid query. | Receive the emulated Build Itinerary Offers response | Emulated Build Itinerary Offers response received | **Not valid for CREL** | |
| **C-REL 2** | Grammar checks – elements order: launch a query in which elements are not correctly ordered. The element Destination is inserted before the element Origin. | Receive an error code 100043, with indication on the grammar error. | Error code 100043 returned, with the message: “Invalid content was found starting with element 'att:Origin'. One of '{”http://xml.amadeus.com/2010/06/DoorToDoorTypes_v1”:Destination}' is expected.” | **Not valid for CREL** | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **C-REL 3** | Grammar checks - value constraint: launch a query in which one value is not compliant with the expected format. One of the ID does not start with a letter. | Receive an error code 100043, with indication on the grammar error. | Error code 100043 returned, with the message: “The value '1000' of attribute 'id' on element 'att:Traveller' is not valid with respect to its type, 'ID'.” | **Not valid for CREL** | |
| **C-REL 4** | Grammar checks – ID unicity: launch a query in which two IDs have the same value. | Receive an error code 100043, with indication on the grammar error. | Error code 100043 returned, with the message: “There are multiple occurrences of ID value 'ID_1000'.” | **Not valid for CREL** | |
| **C-REL 5** | Grammar checks – ID reference: launch a query in which an IDREF does not refer to an existing ID in the message. | Receive an error code 100043, with indication on the grammar error. | Error code 100043 returned, with the message: “There is no ID/IDREF binding for IDREF 'ID_500'.” | **Not valid for CREL** | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **C-REL 6** | Grammar checks – mandatory element: launch a query in which one mandatory element is missing. One of the MetaJourney does not contain any Origin element. | Receive an error code 100043, with indication on the grammar error. | Error code 100043 returned, with the message: “Invalid content was found starting with element 'att:Destination. One of '{”http://xml.amadeus.com/2010/06/DoorToDoorTypes_v1”:Origin}' is expected.” | **Not valid for CREL** | |
| **C-REL 7** | Grammar checks – mandatory attribute: launch a query in which one mandatory attribute is missing. One of the MetaRoute does not have any id. | Receive an error code 100043, with indication on the grammar error. | Error code 100043 returned, with the message: “Attribute 'id' must appear on element 'att:MetaRoute'.” | **Not valid for CREL** | |
| **C-REL 8** | Grammar checks – element cardinality: launch a query in which one of the element occurrences exceeds the maximum number authorized. In one of the MetaJourney, the element Origin appears twice. | Receive an error code 100043, with indication on the grammar error. | Error code 100043 returned, with the message: “Invalid content was found starting with element 'att:Origin'. One of '{”http://xml.amadeus.com/2010/06/DoorToDoorTypes_v1”:Destination}' is expected.” | **Not valid for CREL** | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 1**<br>**F-REL 1** | Send a grammatically valid query. | Receive one or several aggregated itinerary offers based on itinerary offer items provided by travel experts | A valid BuildOffers response message is generated from the Offer Builder module.<br>This test is showing a list of multimodal itinerary offers mixing air and rail itinerary offer items. | **Passed** | Sample with query and reply messages:<br>BuildOfferRQ_RS_AirRail.txt |
| **A-REL 2**<br>**F-REL 2** | Grammar checks – Value constraint: provide an invalid value for timestamp | Receive an error code 100043, with indication on the grammar error. | Error code 100043 with failure message including <ns6:Error Code="100043" Tag="cvc-datatype-valid.1.2.3: '2017-15-15' is not a valid value of union type 'DateOrDateTimeType'." Type="1"/> | **Passed** | Query message:<br>BuildOfferRQ_ChkTime.xml<br>Reply message:<br>BuildOfferRS_ChkTime.xml |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 6**<br>**F-REL 6** | Grammar checks – ID check on unicity + Ref ID checks: In the request provide two att:Passenger having same ID | Receive an error code 100043, with indication on the grammar error. | cvc-id.2: There are multiple occurrences of ID value 'PAX_1' | **Passed** | Query message:<br>BuildOfferRQ_RefIDChk.xml<br>Reply message:<br>BuildOfferRS_RefIDChk.xml |
| **A-REL 7**<br>**F-REL 7** | Grammar checks – Missing mandatory element and attribute: In the request there is missing Arrival attribute | Receive an error code 100043, with indication on the grammar error. | Invalid content was found starting with element 'att:JourneyRoutes'. One of '{"http://xml.amadeus.com/2010/06/DoorToDoorTypes_v3":MetaTravelExpertEpisodeEndPoint, "http://xml.amadeus.com/2010/06/DoorToDoorTypes_v3":MetaTravelExpertEpisode}' is expected. | **Passed** | Query message:<br>BuildOfferRQ_missingItem.xml<br>Reply message:<br>BuildOfferRS_missingItem.xml |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 8**<br>**F-REL 8** | Grammar checks – Element Cardinality: In the request add 10 Passengers whereas the max limit imposed is 9 | Receive an error code 100043, with indication on the grammar error. | Invalid content was found starting with element 'att:Passenger'. One of '{"http://xml.amadeus.com/2010/06/DoorToDoorTypes_v3":StopPlace, "http://xml.amadeus.com/2010/06/DoorToDoorTypes_v3":MetaTravelExpertEpisodeEndPoint}' is expected. | **Passed** | Query message:<br>BuildOfferRQ_ElementCardinality.xml<br>Reply message:<br>BuildOfferRS_ElementCardinality.xml |

Samples of Offer Builder responses for the air, rail and urban transport transportation types:

Air transportation type:

BuildOfferRQ_RS_Air.txt

Rail transportation type:

BuildOfferRQ_RS_Rail.txt

Urban transport transportation type:


Coach transportation type:


### 4.3.2 [TEST CASE 2.3.2] Get request from the shopping orchestrator and provide itinerary offers to the shopping orchestrator

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☒ Not passed for previous releases. Tested with new configuration or data
- ☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.3.2 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Offer builder successfully decodes the request; shopping orchestrator successfully decodes offer builder replies |
| **Description** | Test that the interface between the shopping orchestrator and the offer builder is working |
| **Status previous REL** | KO. 50% passed. Interface implemented usual answer: error message OR time out from OB |
| **Status F-REL** | OK |

| Configuration to apply: 2.2 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.2] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Internet connection**<br>**- Amadeus security account** | | | | |
| **C-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Offer Builder. | Receive a grammatically correct response and decodes it. | Received a grammatically correct response and decoded it. | **Passed** | The quality of the response content can not be checked. |
| **C-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Offer Builder. | Receive an error message response. | Received an error message response. | **Passed** | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Offer Builder. | Receive a grammatically correct response and decodes it. | Request times out after one minute and no response is sent in that time. | **Not Passed** | The quality of the response content can not be checked. |
| **A-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Offer Builder. | Receive an error message response. | Received an error message response. | **Passed** | |
| **F-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Offer Builder. | Receive a grammatically correct response and decodes it. | Received valid response. | **Passed** |  test_case_2_3_2_request.xml  test_case_2_3_2_response.xml |
| **F-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Offer Builder. | Receive an error message response. | Received an error message response. | **Passed** | |

### 4.3.3 [TEST CASE 2.3.3] Generation of offers by travel expert

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☒ Not passed for previous releases. Tested with new configuration or data
- ☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

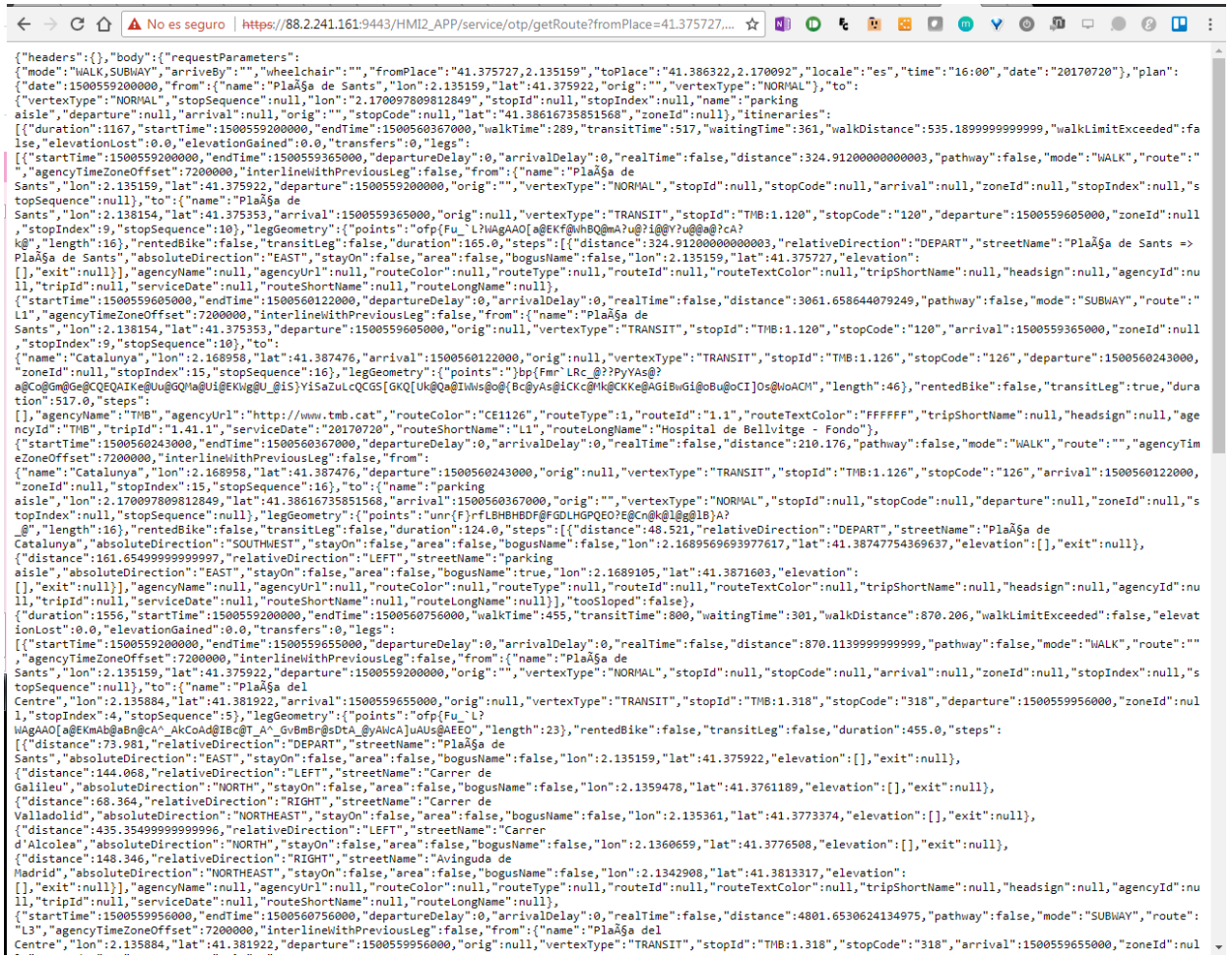
| **2.3.3** | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | Travel Expert<br>Generation of Travel Offers by Travel Experts |
| **Description** | Indra/TMB Travel Expert Generates a number of offers to travel in the city of Barcelona covering multiple transport modes including bus, tram and metro, as well as calculating walking episodes. This information is provided through the WP1 Interoperability Framework. |
| **Status previous REL** | KO (files simulated for testing. Not run with real integration) |
| **Status F-REL** | OK |

| Configuration to apply: 2.4 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.4] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:** | | | | |
| **C-REL 1** | -Enable software based on Open Trip Planner for Route Planning<br>-Upload TMB transport information in GTFS format (bus, Tram and metro)<br>-Only a limited number of functionalities available for route planning. Not possible to include preferences<br>-10 different scenarios simulated for initial testing | GTFS information uploaded correctly | Successful read and upload of GTFS files. Software capable of using the information for route calculation. | **Passed** | NA |
| **C-REL 2** | Origin/Destination and travelling times manually introduced for 2 specific scenarios (2 users arriving by different modes at specific times) | Obtain different routes and offers | Generated xml and JSON for request and response. 3 possible routes obtained for each of the 2 scenarios | **Passed** | NA |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 1** | Origin/Destination and travelling times manually introduced for 2 specific scenarios (2 users arriving by different modes at specific times). | Make offers and itinerary details available for aggregation through WP1-IF | Not direct communication among Travel Expert and Offer Builder through WP1 | **Not Passed** | NA |
| **F-REL 1** | Origin/Destination and travelling times available for multiple scenarios in Barcelona | Offers and itinerary details are provided to the WP1-IF (Interoperability Framework) for being displayed in the WP5-TC (Travel Companion) | Offers and itinerary details are provided to the WP1-IF (Interoperability Framework) for being displayed in the WP5-TC (Travel Companion) | **Passed** | NA |

The following capture shows a sample of the response generated by the Indra/TMB Travel Expert:




{"headers":{},"body":{"requestParameters":
{"mode":"WALK,SUBWAY","arriveBy":"","wheelchair":"","fromPlace":"41.375727,2.135159","toPlace":"41.386322,2.170092","locale":"es","time":"16:00","date":"20170720"},"plan":
{"date":1500559200000,"from":{"name":"PlaÃ§a de Sants","lon":2.135159,"lat":41.375922,"orig":"","vertexType":"NORMAL"},"to":
{"vertexType":"NORMAL","stopSequence":null,"lon":2.170097809812849,"stopId":null,"stopIndex":null,"name":"parking
aisle","departure":null,"arrival":null,"orig":"","stopCode":null,"lat":41.38616735851568,"zoneId":null},"itineraries":
[{"duration":1167,"startTime":1500559200000,"endTime":1500560367000,"walkTime":289,"transitTime":517,"waitingTime":361,"walkDistance":535.1899999999999,"walkLimitExceeded":fa
lse,"elevationLost":0.0,"elevationGained":0.0,"transfers":0,"legs":
[{"startTime":1500559200000,"endTime":1500559365000,"departureDelay":0,"arrivalDelay":0,"realTime":false,"distance":324.91200000000003,"pathway":false,"mode":"WALK","route":"
","agencyTimeZoneOffset":7200000,"interlineWithPreviousLeg":false,"from":{"name":"PlaÃ§a de
Sants","lon":2.135159,"lat":41.375922,"departure":1500559200000,"orig":"","vertexType":"NORMAL","stopId":null,"stopCode":null,"arrival":null,"zoneId":null,"stopIndex":null,"s
topSequence":null},"to":{"name":"PlaÃ§a de
Sants","lon":2.138154,"lat":41.375353,"arrival":1500559365000,"orig":null,"vertexType":"TRANSIT","stopId":"TMB:1.120","stopCode":"120","departure":1500559605000,"zoneId":null
,"stopIndex":9,"stopSequence":10},"legGeometry":{"points":"ofp{Fu_`L?WAgAAO[a@EKf@WhBQ@mA?u@?i@@Y?u@@a@?cA?
k@","length":16},"rentedBike":false,"transitLeg":false,"duration":165.0,"steps":[{"distance":324.91200000000003,"relativeDirection":"DEPART","streetName":"PlaÃ§a de Sants =>
PlaÃ§a de Sants","absoluteDirection":"EAST","stayOn":false,"area":false,"bogusName":false,"lon":2.135159,"lat":41.375727,"elevation":
[],"exit":null}],"agencyName":null,"agencyUrl":null,"routeColor":null,"routeType":null,"routeId":null,"routeTextColor":null,"tripShortName":null,"headsign":null,"agencyId":nu
ll,"tripId":null,"serviceDate":null,"routeShortName":null,"routeLongName":null},
{"startTime":1500559605000,"endTime":1500560122000,"departureDelay":0,"arrivalDelay":0,"realTime":false,"distance":3061.658644079249,"pathway":false,"mode":"SUBWAY","route":"
L1","agencyTimeZoneOffset":7200000,"interlineWithPreviousLeg":false,"from":{"name":"PlaÃ§a de
Sants","lon":2.138154,"lat":41.375353,"departure":1500559605000,"orig":null,"vertexType":"TRANSIT","stopId":"TMB:1.120","stopCode":"120","arrival":1500559365000,"zoneId":null
,"stopIndex":9,"stopSequence":10},"to":
{"name":"Catalunya","lon":2.168958,"lat":41.387476,"arrival":1500560122000,"orig":null,"vertexType":"TRANSIT","stopId":"TMB:1.126","stopCode":"126","departure":1500560243000,
"zoneId":null,"stopIndex":15,"stopSequence":16},"legGeometry":{"points":"}bp{Fmr`LRc_@??PyYAs@?
a@Co@Gm@Ge@CQEQAIKe@Uu@GQMa@Ui@EKWg@U_@iS}YiSaZuLcQCGS[GKQ[Uk@Qa@IWWs@o@{Bc@yAs@iCKc@Mk@CKKe@AGiBwGi@oBu@oCI]Os@WoACM","length":46},"rentedBike":false,"transitLeg":true,"dura
tion":517.0,"steps":
[],"agencyName":"TMB","agencyUrl":"http://www.tmb.cat","routeColor":"CE1126","routeType":1,"routeId":"1.1","routeTextColor":"FFFFFF","tripShortName":null,"headsign":null,"age
ncyId":"TMB","tripId":"1.41.1","serviceDate":"20170720","routeShortName":"L1","routeLongName":"Hospital de Bellvitge - Fondo"},
{"startTime":1500560243000,"endTime":1500560367000,"departureDelay":0,"arrivalDelay":0,"realTime":false,"distance":210.176,"pathway":false,"mode":"WALK","route":"","agencyTim
eZoneOffset":7200000,"interlineWithPreviousLeg":false,"from":
{"name":"Catalunya","lon":2.168958,"lat":41.387476,"departure":1500560243000,"orig":null,"vertexType":"TRANSIT","stopId":"TMB:1.126","stopCode":"126","arrival":1500560122000,
"zoneId":null,"stopIndex":15,"stopSequence":16},"to":{"name":"parking
aisle","lon":2.170097809812849,"lat":41.38616735851568,"arrival":1500560367000,"orig":"","vertexType":"NORMAL","stopId":null,"stopCode":null,"departure":null,"zoneId":null,"s
topIndex":null,"stopSequence":null},"legGeometry":{"points":"unr{F}rfLBHBHBDF@FGDLHGPQEO?E@Cn@k@l@g@lB}A?
_@","length":16},"rentedBike":false,"transitLeg":false,"duration":124.0,"steps":[{"distance":48.521,"relativeDirection":"DEPART","streetName":"PlaÃ§a de
Catalunya","absoluteDirection":"SOUTHWEST","stayOn":false,"area":false,"bogusName":false,"lon":2.1689569693977617,"lat":41.38747754369637,"elevation":[],"exit":null},
{"distance":161.65499999999997,"relativeDirection":"LEFT","streetName":"parking
aisle","absoluteDirection":"EAST","stayOn":false,"area":false,"bogusName":true,"lon":2.1689105,"lat":41.3871603,"elevation":
[],"exit":null}],"agencyName":null,"agencyUrl":null,"routeColor":null,"routeType":null,"routeId":null,"routeTextColor":null,"tripShortName":null,"headsign":null,"agencyId":nu
ll,"tripId":null,"serviceDate":null,"routeShortName":null,"routeLongName":null}],"tooSloped":false},
{"duration":1556,"startTime":1500559200000,"endTime":1500560756000,"walkTime":455,"transitTime":800,"waitingTime":301,"walkDistance":870.206,"walkLimitExceeded":false,"elevat
ionLost":0.0,"elevationGained":0.0,"transfers":0,"legs":
[{"startTime":1500559200000,"endTime":1500559655000,"departureDelay":0,"arrivalDelay":0,"realTime":false,"distance":870.1139999999999,"pathway":false,"mode":"WALK","route":""
,"agencyTimeZoneOffset":7200000,"interlineWithPreviousLeg":false,"from":{"name":"PlaÃ§a de
Sants","lon":2.135159,"lat":41.375922,"departure":1500559200000,"orig":"","vertexType":"NORMAL","stopId":null,"stopCode":null,"arrival":null,"zoneId":null,"stopIndex":null,"s
topSequence":null},"to":{"name":"PlaÃ§a del
Centre","lon":2.135884,"lat":41.381922,"arrival":1500559655000,"orig":null,"vertexType":"TRANSIT","stopId":"TMB:1.318","stopCode":"318","departure":1500559956000,"zoneId":nul
l,"stopIndex":4,"stopSequence":5},"legGeometry":{"points":"ofp{Fu_`L?
WAgAAO[a@EKmAb@aBn@cA^_AkCoAd@IBc@T_A^_GvBmBr@sDtA_@yAWcA]uAUs@AEEO","length":23},"rentedBike":false,"transitLeg":false,"duration":455.0,"steps":
[{"distance":73.981,"relativeDirection":"DEPART","streetName":"PlaÃ§a de
Sants","absoluteDirection":"EAST","stayOn":false,"area":false,"bogusName":false,"lon":2.135159,"lat":41.375922,"elevation":[],"exit":null},
{"distance":144.068,"relativeDirection":"LEFT","streetName":"Carrer de
Galileu","absoluteDirection":"NORTH","stayOn":false,"area":false,"bogusName":false,"lon":2.1359478,"lat":41.3761189,"elevation":[],"exit":null},
{"distance":68.364,"relativeDirection":"RIGHT","streetName":"Carrer de
Valladolid","absoluteDirection":"NORTHEAST","stayOn":false,"area":false,"bogusName":false,"lon":2.135361,"lat":41.3773374,"elevation":[],"exit":null},
{"distance":435.35499999999996,"relativeDirection":"LEFT","streetName":"Carrer
d'Alcolea","absoluteDirection":"NORTH","stayOn":false,"area":false,"bogusName":false,"lon":2.1360659,"lat":41.3776508,"elevation":[],"exit":null},
{"distance":148.346,"relativeDirection":"RIGHT","streetName":"Avinguda de
Madrid","absoluteDirection":"NORTHEAST","stayOn":false,"area":false,"bogusName":false,"lon":2.1342908,"lat":41.3813317,"elevation":
[],"exit":null}],"agencyName":null,"agencyUrl":null,"routeColor":null,"routeType":null,"routeId":null,"routeTextColor":null,"tripShortName":null,"headsign":null,"agencyId":nu
ll,"tripId":null,"serviceDate":null,"routeShortName":null,"routeLongName":null},
{"startTime":1500559956000,"endTime":1500560756000,"departureDelay":0,"arrivalDelay":0,"realTime":false,"distance":4801.6530624134975,"pathway":false,"mode":"SUBWAY","route":
"L3","agencyTimeZoneOffset":7200000,"interlineWithPreviousLeg":false,"from":{"name":"PlaÃ§a del
Centre","lon":2.135884,"lat":41.381922,"departure":1500559956000,"orig":null,"vertexType":"TRANSIT","stopId":"TMB:1.318","stopCode":"318","arrival":1500559655000,"zoneId":nul

Here is a sample a query/reply for this test case:


getRoute.txt

### 4.3.4 [TEST CASE 2.3.4] Send a request for an itinerary offer item to the TE broker

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☐ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.3.4 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | The offer builder interacts with the broker to collect itinerary offer items from travel experts. This test case aims at validating this flow |
| **Description** | An “AcquireOffer” message is sent to the broker to collect itinerary offer items. The broker replies with a list of itinerary offer items or an error message |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- internet connection**<br>**- Amadeus security account** | | | | |
| **A-REL 1**<br>**F-REL 1** | Send a grammatically valid query. | Receive one or several itinerary offer items | The broker replies to the offer request and provides some itinerary offer items | **Passed** | Samples are provided in the following test cases 2.3.5, 2.3.6, 2.3.7 and 2.3.8 |
| **A-REL 2**<br>**F-REL 2** | Send an invalid query (unknown travel expert, grammatically invalid query…) | Receive an error message | The broker replies with an error message | **Passed** | |

### 4.3.5 [TEST CASE 2.3.5] Receive and decode a rail itinerary offer item

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☐ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.3.5 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Rail itinerary offer items are collected |
| **Description** | An “AcquireOffer” message is sent to the broker to collect rail itinerary offer items. The broker replies with a list of itinerary offer items or an error message. |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- internet connection**<br>**- Amadeus security account** | | | | |
| **A-REL 1**<br>**F-REL 1** | Send a grammatically valid query for rail itinerary offer items. | Receive one or several rail itinerary offer items | The broker replies to the offer request and provides some rail itinerary offer items | **Passed** | |

Here is a sample a query/reply for this test case:

AcquireOffersRQ_Rail.xml AcquireOffersRS_Rail.xml

### 4.3.6 [TEST CASE 2.3.6] Receive and decode a coach itinerary offer item

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.3.6 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Coach itinerary offer items are collected |
| **Description** | An “AcquireOffer” message is sent to the broker to collect coach itinerary offer items. The broker replies with a list of itinerary offer items or an error message |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- internet connection**<br>**- Amadeus security account** | | | | |
| **A-REL 1**<br>**F-REL 1** | Send a grammatically valid query for coach itinerary offer items. | Receive one or several coach itinerary offer items | The broker replies to the offer request and provides some coach itinerary offer items | **Passed** | |

Here is a sample a query/reply for this test case:

AcquireOffersRQ_Coach.xml AcquireOffersRS_Coach.xml

### 4.3.7 [TEST CASE 2.3.7] Receive and decode an urban transport itinerary offer item

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☐ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.3.7 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Urban transport itinerary offer items are collected |
| **Description** | An “AcquireOffer” message is sent to the broker to collect urban transport itinerary offer items. The broker replies with a list of itinerary offer items or an error message |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- internet connection**<br>**- Amadeus security account** | | | | |
| **A-REL 1**<br>**F-REL 1** | Send a grammatically valid query for urban transport itinerary offer items. | Receive one or several urban transport itinerary offer items | The broker replies to the offer request and provides some urban transport itinerary offer items | **Passed** | |

Here is a sample a query/reply for this test case:

AcquireOffersRQ_UT.xml

AcquireOffersRS_UT.xml

### 4.3.8 [TEST CASE 2.3.8] Receive and decode an air itinerary offer item

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.3.8 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Air itinerary offer items are collected |
| **Description** | The offer builder sends a shopping request to Amadeus |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- internet connection**<br>**- Amadeus security account** | | | | |
| **A-REL 1**<br>**F-REL 1** | Send a grammatically valid query for air itinerary offer items. | Receive one or several air itinerary offer items | Amadeus provides air itinerary offer items | **Passed** | |

### 4.3.9 [TEST CASE 2.3.9] Filter itinerary offer items

☒ New test case for the F-REL

☐ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.3.9 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Itinerary offer items are computed based on the passenger details (age, PRM details,…) and the product description. |
| **Description** | Some Travel Experts provide a list of products in the itinerary offer item response. In such a case, the Offer Builder computes the itinerary offer items on behalf of the Travel Expert based on the passenger details (age, PRM details,…) and the product description. |
| **Status previous REL** | N/A |
| **Status F-REL** | OK |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- internet connection**<br>**- Amadeus security account** | | | | |
| **F-REL 1** | Send an itinerary offer item request to the Travel Expert (VBB) to collect the list of products and to generate the itinerary offer items | VBB provides a list of products, itinerary offer items are computed by the Offer Builder and the itinerary offer is generated with these itinerary offer items.<br>The filtering is based on the passenger details and travel expert information provided by the travel expert model. | The AcquireOffers response message contains the list of products. Itinerary offer items are computed and integrated in the BuildOffers response message.<br>The appropriate association between the passenger and the product is performed. | **Passed** | |

Here is a sample a query/reply for this test case:


AcquireOffersRS_VBB.txt


BuildOfferRS_VBB.txt

## 4.4 [TEST CATEGORY 2.4] PROVIDE ITINERARY DETAILS

Corresponds to Use Case *Provide itinerary details*, and test the unitary performance of the *Shopping Orchestrator component* and its interfaces with other WP2 modules and other WPs components.

### 4.4.1 [TEST CASE 2.4.1] Get Stop Places List

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☐ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.4.1 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | The list of nearest stop places is identified and integrated in the mobility request |
| **Description** | The location resolver identifies nearest stop places |
| **Status previous REL** | OK [direct connection from SO to IF] |

| 2.4.1 | |
|---|---|
| **Status F-REL** | OK [direct connection from SO to IF] |

| Configuration to apply: 2.2 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.2] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Internet connection**<br>**- VPN tunnel to Location Resolver** | | | | |
| **C-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Location Resolver. | Receive a grammatically correct response and decodes it. | Received a grammatically correct response and decoded it. | **Passed** | The quality of the response content cannot be checked. |
| **C-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Location Resolver. | Receive an error message response. | Received an error message response. | **Passed** | |
| **A-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Location Resolver. | Receive a grammatically correct response and decodes it. | Received a grammatically correct response and decoded it. | **Passed** | The quality of the response content cannot be checked. |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Location Resolver. | Receive an error message response. | Received an error message response. | **Passed** | |
| **F-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Location Resolver. | Receive a grammatically correct response and decodes it. | Received a grammatically correct response and decoded it. | **Passed** | |
| **F-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Location Resolver. | Receive an error message response. | Received an error message response. | **Passed** | |


2_4_1_request.xml


2_4_1_response.xml

### 4.4.2 [TEST CASE 2.4.2] Orchestration of all shopping modules

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.4.2 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | The Shopping Orchestrator successfully fulfils the four consecutive steps of shopping. |
| **Description** | The Shopping Orchestrator has to fulfil four consecutive steps of shopping. Data has to be transferred correctly from one step to the next. |
| **Status previous REL** | OK [direct connection from SO to IF] |
| **Status F-REL** | OK [direct connection from SO to IF] |

| 2.2 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.2] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Internet connection**<br>**- VPN tunnel to Location Resolver**<br>**- Amadeus security account** | | | | |
| **C-REL 1** | Initiate a valid mobility request with the shopping orchestrator.<br>Input from Travel Expert Resolver is simulated | The Location Resolver, Meta Route Explorer, Travel Expert Resolver, and Offer Builder are queried consecutively and their responses are used as for the following system, respectively. | The Location Resolver, Meta Route Explorer, Travel Expert Resolver (interface simulated for testing), and Offer Builder were queried consecutively and their responses were used as for the following system, respectively. | **Passed** | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 1** | Initiate a valid mobility request with the shopping orchestrator.<br>Input from Travel Expert Resolver is simulated | The Location Resolver, Meta Route Explorer, Travel Expert Resolver, and Offer Builder are queried consecutively and their responses are used as for the following system, respectively. | The Location Resolver, Meta Route Explorer, Travel Expert Resolver (interface simulated for testing), and Offer Builder were queried consecutively and their responses were used as for the following system, respectively. | **Passed** | Location Resolver is still directly called. |
| **F-REL 1** | Initiate a valid mobility request with the shopping orchestrator. | The Location Resolver, Meta Route Explorer, Travel Expert Resolver, and Offer Builder are queried consecutively and their responses are used as for the following system, respectively. | The Location Resolver, Meta Route Explorer, Travel Expert Resolver (interface simulated for testing), and Offer Builder were queried consecutively and their responses were used as for the following system, respectively. | **Passed** | Location Resolver is still directly called. |

### 4.4.3 [TEST CASE 2.4.3] Prepare Travel Expert List

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☒ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.4.3 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | The Shopping Orchestrator successfully calls the Travel Expert Resolver and retrieves meta travel expert episodes enriched by appropriate travel experts. |
| **Description** | The Travel Expert Resolver has to supply meta travel expert episodes with appropriate travel experts. |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| Configuration to apply: 2.2 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.2] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Internet connection**<br>**- VPN tunnel to Location Resolver** | | | | |
| **C-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Travel Expert Resolver. | Receive a grammatically correct response and decodes it. | Test not implemented. | **Not passed** | The quality of the response content cannot be checked. |
| **C-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Travel Expert Resolver. | Receive an error message response. | Test not implemented. | **Not passed** | |
| **A-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Travel Expert Resolver. | Receive a grammatically correct response and decodes it. | Received a grammatically correct response and decoded it. | **Passed** | The quality of the response content cannot be checked. |
| **A-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Travel Expert Resolver. | Receive an error message response. | Received an error message response. | **Passed** | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **F-REL 1** | Send grammatically correct requests from Shopping Orchestrator to Travel Expert Resolver. | Receive a grammatically correct response and decodes it. | Received a grammatically correct response and decoded it. | **Passed** | |
| **F-REL 2** | Send grammatically incorrect requests from Shopping Orchestrator to Travel Expert Resolver. | Receive an error message response. | Received an error message response. | **Passed** | |


2_4_3_request.xml


2_4_3_response.xml

## 4.5 [TEST CATEGORY 2.5] BUILD NETWORK REFERENCE RESOURCE

Corresponds to Use Case *Identify smartest routes corresponding to the mobility request*, and test the unitary performance of the *Meta Route Explorer component* and its interfaces with other WP2 modules and other WPs components.

### 4.5.1 [TEST CASE 2.5.1] Receive and decode air statistic file

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☒ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.5.1 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Decode file with air content |
| **Description** | Air travel experts provide at least a statistic file with air content |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Statistical file with air content** | | | | |
| **C-REL 1**<br>**A-REL 1**<br>**F-REL 1** | Integrate air content in meta-route | The graph includes air content | The graph includes air content | **Passed** | Sample of air statistics file:<br>  <br>**AMAAirNetworkData.txt** |

### 4.5.2 [TEST CASE 2.5.2] Receive and decode Rail statistic file

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☒ Performed same testing as in previous releases, obtained same successful results
- ☐ Not passed for previous releases. Tested with new configuration or data
- ☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.5.2 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Decode file with rail content |
| **Description** | Rail travel experts provide at least a statistic file with air content |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Statistical file with rail content** | | | | |
| **C-REL 1** | Integrate rail content in meta-route | The graph includes rail content | Process has changed for AREL | **Not valid** | |
| **A-REL 1**<br>**F-REL 1** | Collect rail statistics from the network graph manager and integrate them in meta-route | Rail statistics are collected and integrated in the graph | The graph includes rail content | **Passed** | Sample of rail statistics file:<br>  <br>TrenitaliaNetworkData-092017.xml |

### 4.5.3 [TEST CASE 2.5.3] Receive and decode coach statistic file

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☒ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.5.3 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Decode file with coach content |
| **Description** | Coach travel experts provide at least a statistic file with air content |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Statistical file with coach content** | | | | |
| **C-REL 1** | Integrate coach content in meta-route | The graph includes coach content | Process has changed for AREL | **Not valid** | |
| **A-REL 1**<br>**F-REL 1** | Collect coach statistics from the network graph manager and integrate them in meta-route | Coach statistics are collected and integrated in the graph | The graph includes coach content | **Passed** | Sample of coach statistics file:<br>AMSCoachNetworkData.xml |

### 4.5.4 [TEST CASE 2.5.4] Receive and decode urban transport statistic file

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☒ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.5.4 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Decode file with urban transport content |
| **Description** | Urban transport travel experts provide at least a statistic file with air content |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Statistical file with urban transport content** | | | | |
| **C-REL 1** | Integrate urban transport content in meta-route | The graph includes urban transport content | Process has changed for AREL | **Not valid** | |
| **A-REL 1**<br>**F-REL 1** | Collect urban transport statistics from the network graph manager and integrate them in meta-route | Urban transport statistics are collected and integrated in the graph | The graph includes urban transport content | **Passed** | Sample of urban transport statistics file:<br>VBBNetworkData-092017.xml |

### 4.5.5 [TEST CASE 2.5.5] Receive and decode walking statistic file

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☒ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.5.5 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Decode file with walking content |
| **Description** | walking travel experts provide at least a statistic file with air content |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Statistical file with urban transport content** | | | | |
| **A-REL 1**<br>**F-REL 1** | Collect walking statistics from the network graph manager and integrate them in meta-route | Walking statistics are collected and integrated in the graph | | **Passed** | Walking statistics data is provided with rail/coach/urban transport statistics file. |

### 4.5.6 [TEST CASE 2.5.6] Build network reference resource with air, coach, rail and urban transport

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

☒ Performed same testing as in previous releases, obtained same successful results

☐ Not passed for previous releases. Tested with new configuration or data

☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.5.5 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Build Meta Networks |
| **Description** | MetaRoute Explorer builds networks with statistic data |
| **Status previous REL** | OK |
| **Status F-REL** | OK |

| 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Statistical files with air, coach, rail, urban transport and walking content** | | | | |
| **C-REL 1** | Integrate all content resource received from travel experts, mixing Air and Rail content. | The graph is fully built | The graph is fully built | **Not valid anymore** | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 1 F-REL 1** | Integrate all content resource received, mixing Air, Rail, Coach, Urban Transport and Walking content. | The graph is fully built | The graph is fully built | **Passed** | |

### 4.5.7 [TEST CASE 2.5.7] Send a request for statistics to the Network Graph Manager

☒ Removed for F-REL, not valid anymore

| 2.5.6 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Collect file with statistics |
| **Description** | The metaroute explorer interacts with the network graph manager. |
| **Status previous REL** | Not run |
| **Status F-REL** | Not valid: There is no webservice to call the network graph manager. The use case cannot be tested |

| Configuration to apply: 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- internet connection**<br>**- Amadeus security account** | | | | |
| **A-REL 1** | Send a grammatically valid query. | Receive statistical data files | | **Not run** | |
| **F-REL 1** | Send a grammatically valid query. | Receive statistical data files | | **Not valid anymore** | |

## 4.6 [TEST CATEGORY 2.6] RESOLVE LOCATIONS

Corresponds to Use Case *Identify smartest routes corresponding to the mobility request*, and test the unitary performance of the *Meta Route Explorer component* and its interfaces with other WP2 modules and other WPs components.

### 4.6.1 [TEST CASE 2.6.1] Send a query to Location Resolver Proxy

☒ Removed for F-REL, not valid anymore

| 2.6.1 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Identify nearest stop places using the Location Resolver Proxy |
| **Description** | A message is sent to the Location Resolver Proxy to request the identification of nearest stop places. |
| **Status previous REL** | KO. Postponed until all other related Interfaces and components are working well |
| **Status F-REL** | Not valid: implementation choice was differently than originally planned. Finally the Shopping Orchestrator calls directly the IF functions without using the Amadeus proxies for that (see test case 2.4.1) |

| 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Statistical file with air content** | | | | |
| **A-REL 1** | Identify nearest stop places using the Location Resolver Proxy | The Location Resolver Proxy provides the reference point with the nearest stop places | Test not performed, as Location Resolver Proxy is not used yet. | **Not passed** | |
| **F-REL 1** | Identify nearest stop places using the Location Resolver Proxy | The Location Resolver Proxy provides the reference point with the nearest stop places | Test not performed, as Location Resolver Proxy is not used. | **Not valid anymore** | |

### 4.6.2 [TEST CASE 2.6.2] Send a query and decode the response from the location graph manager

☐ New test case for the F-REL

☒ Existing Test Case from previous releases

- ☐ Performed same testing as in previous releases, obtained same successful results
- ☒ Not passed for previous releases. Tested with new configuration or data
- ☐ Tested successfully in previous releases. Software, interfaces or data have been updated and tested again for the F-REL

| 2.6.2 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Identify nearest stop places using the location graph manager |
| **Description** | A “getStopPlaces” message is sent to the location graph manager to request the identification of nearest stop places. |
| **Status previous REL** | KO |
| **Status F-REL** | OK |

| 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Statistical file with air content** | | | | |
| **A-REL 1** | Identify nearest stop places using the location graph manager | The location graph manager provides the reference point with the nearest stop places | | **Not run** | Postponed to the FREL |
| **F-REL 1** | Identify nearest stop places using the location graph manager | The location graph manager provides the reference point with the nearest stop places | The location graph manager provides the reference point with the nearest stop places | **Passed** | |

### 4.6.3 [TEST CASE 2.6.3] Providing of Locations

☒ Removed for F-REL, not valid anymore

| 2.6.3 | |
|---|---|
| **Method Of Test** | Analysis |
| **Type of test** | Manual |
| **Objectives** | Receive stop places near to a location. |
| **Description** | The response of the Location Resolver Proxy is decoded and checked for stop places. |
| **Status previous REL** | KO. Postponed until all other related Interfaces and components are working well |
| **Status F-REL** | Not valid: implementation choice was differently than originally planned. Finally the Shopping Orchestrator calls directly the IF functions without using the Amadeus proxy for that |

| 2.1 | |
|---|---|
| **Regression** | No |
| **Test Case Tester** | [2.1] |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**- Statistical file with air content** | | | | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| **A-REL 1** | Receive and decode nearest stop places using the Location Resolver Proxy. | The Shopping Orchestrator receives and decodes the response of the Location Resolver Proxy and finds well-defined stop places. | Test not performed, as Location Resolver Proxy is not used yet. | **Not passed** | |
| **F-REL 1** | Receive and decode nearest stop places using the Location Resolver Proxy. | The Shopping Orchestrator receives and decodes the response of the Location Resolver Proxy and finds well-defined stop places. | Test not performed, as Location Resolver Proxy is not used yet. | **Not valid anymore** | |

## 4.7 [TEST CATEGORY 2.F] COMPLETE TEST WP2

Corresponds to the testing of the whole WP2 flow (integration among WP2 modules) and the integration within IT2Rail

### 4.7.1 [TEST CASE 2.F] Test the whole WP2 flow

| 2.4.1 | |
|---|---|
| **Method Of Test** | Demonstration |
| **Type of test** | Manual |
| **Objectives** | A mobility request is sent from the TC and the appropriate list of itinerary offers is returned |
| **Description** | This test aims at testing the whole WP2 flow and the integration within IT2Rail. Needs that all the previous key Tests are Passed |

| 2.4.1 | |
|---|---|
| **Status previous REL** | KO: A few critical tests has not been passed for this campaign, making unable to test the complete flow from beginning to end |
| **Status F-REL** | OK |

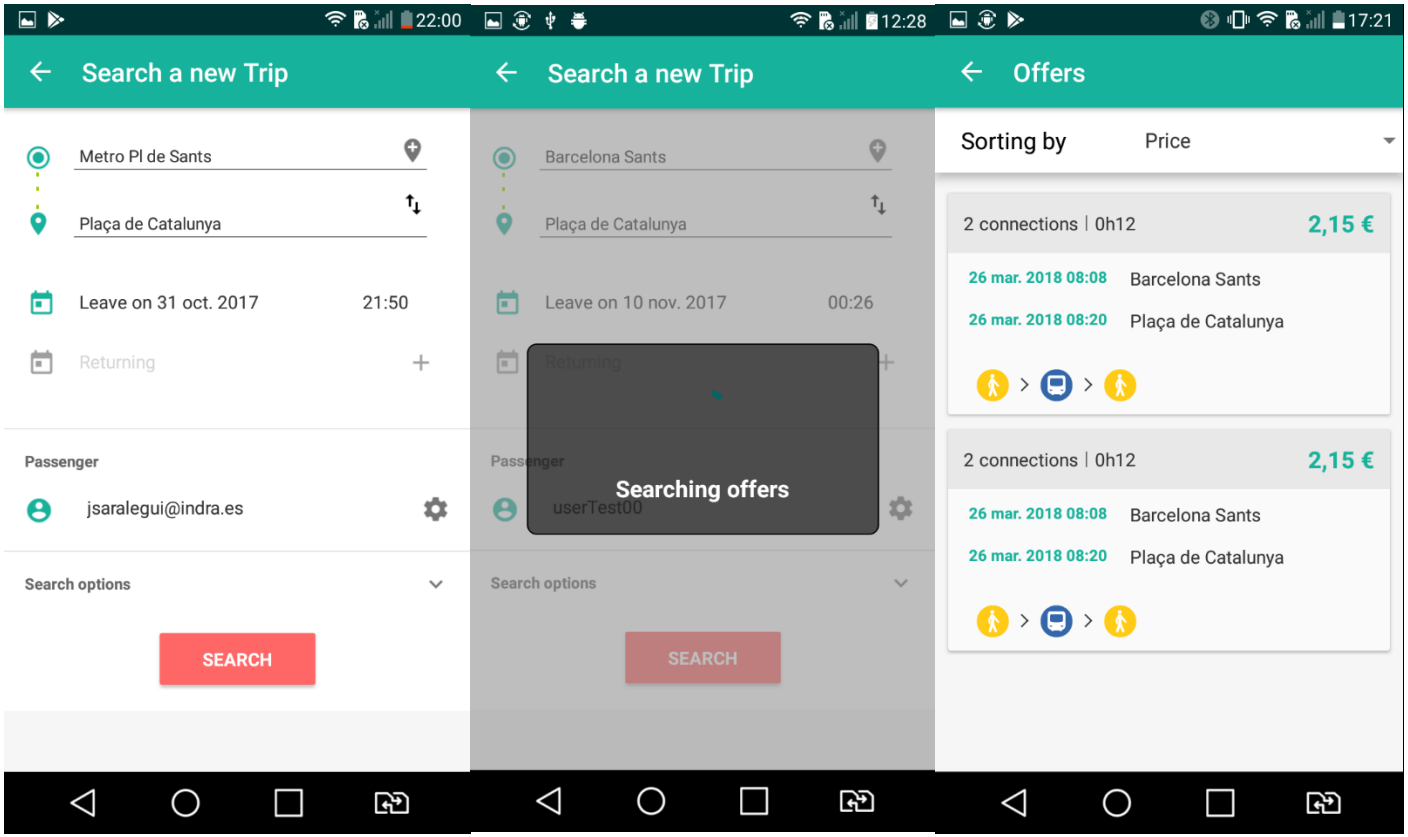
| 2.1-2.2-2.3 | |
|---|---|
| **Regression** | NA |
| **Test Case Tester** | NA |

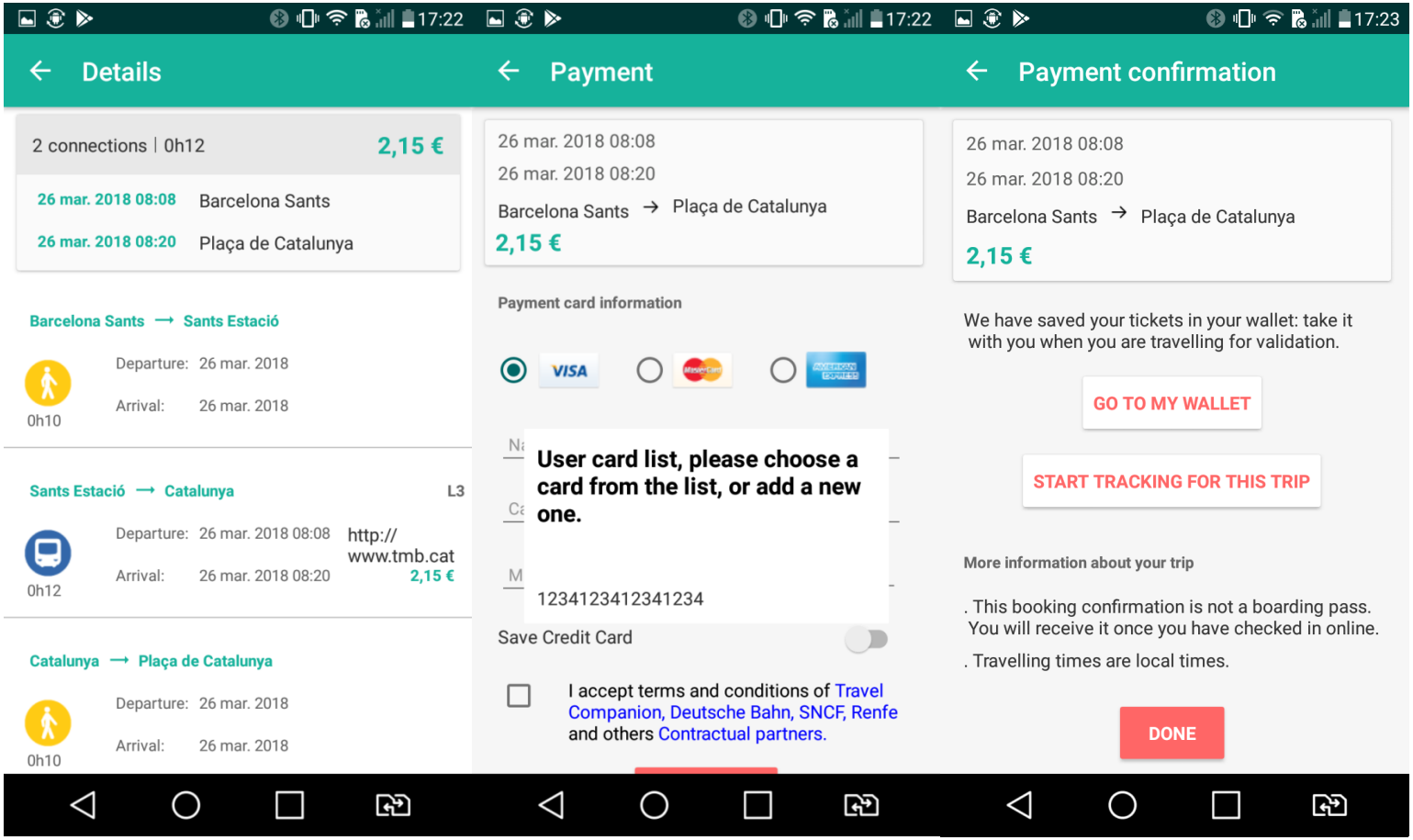
| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| | **Preconditions:**<br>**-All list pre-condition of the previous test cases apply**<br>**-Previous Test Cases must be passed to perform the full test** | | | | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| C-REL 1 | • Get and decode mobility query<br>• Resolve locations<br>• Build network reference resource<br>• Identify smartest routes<br>• Build itinerary offers<br>• Provide itinerary details<br>• Return offer | End-to-end WP2 integration: a mobility request is sent from the TC and the appropriate list of itinerary offers is returned | Not possible to test, as some key Test cases are not passed | Not run | NA |
| A-REL 1 | • Get and decode mobility query<br>• Resolve locations<br>• Build network reference resource<br>• Identify smartest routes<br>• Build itinerary offers<br>• Provide itinerary details<br>• Return offer | End-to-end WP2 integration: a mobility request is sent from the TC and the appropriate list of itinerary offers is returned | Not possible to test, as some key Test cases are not passed | Not run | NA |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---|---|
| F-REL 1 | • Get and decode mobility query<br>• Resolve locations<br>• Build network reference resource<br>• Identify smartest routes<br>• Build itinerary offers<br>• Provide itinerary details<br>• Return offer | End-to-end WP2 integration: a mobility request is sent from the TC and the appropriate list of itinerary offers is returned | | Passed | |

The following screens present the whole flow of what the travellers see in their Travel Companions. It allows to demonstrate the successful implementation of all WP2 and its correct integration with the Interoperability Framework and the Travel Companion.




17:22
Details
2 connections | 0h12
2,15 €
26 mar. 2018 08:08
Barcelona Sants
26 mar. 2018 08:20
Plaça de Catalunya
Barcelona Sants → Sants Estació
Departure: 26 mar. 2018
Arrival: 26 mar. 2018
0h10
Sants Estació → Catalunya
L3
Departure: 26 mar. 2018 08:08
Arrival: 26 mar. 2018 08:20
http://
www.tmb.cat
2,15 €
0h12
Catalunya → Plaça de Catalunya
Departure: 26 mar. 2018
Arrival: 26 mar. 2018
0h10
17:22
Payment
26 mar. 2018 08:08
26 mar. 2018 08:20
Barcelona Sants → Plaça de Catalunya
2,15 €
Payment card information
VISA
User card list, please choose a card from the list, or add a new one.
1234123412341234
Save Credit Card
I accept terms and conditions of Travel Companion, Deutsche Bahn, SNCF, Renfe and others Contractual partners.
17:23
Payment confirmation
26 mar. 2018 08:08
26 mar. 2018 08:20
Barcelona Sants → Plaça de Catalunya
2,15 €
We have saved your tickets in your wallet: take it with you when you are travelling for validation.
GO TO MY WALLET
START TRACKING FOR THIS TRIP
More information about your trip
. This booking confirmation is not a boarding pass. You will receive it once you have checked in online.
. Travelling times are local times.
DONE

# 5. TEST EXECUTION

The following table (Table 4) gives an overview of the results achieved during the F-REL campaign described in the document. Previous section details the results obtained for the test executed.

| Test Case Form - Summarized results | | |
|---|---|---|
| **Test Category** | **Test Case ID** | **Results of Test Run (passed/not passed) More details of results in section 4** |
| **2. 1: Manage mobility request and return offers** | **Test Case 2.1.1** | Passed |
| | **Test Case 2.1.2** | Passed |
| | **Test Case 2.1.3** | Passed |
| | **Test Case 2.1.4** | Passed |
| | **Test Case 2.1.5** | Passed |
| | **Test Case 2.1.6** | Passed |
| | **Test Case 2.1.7** | Passed |
| **2.2 : Identify smartest routes corresponding to the mobility request** | **Test Case 2.2.1** | Passed |
| | **Test Case 2.2.2** | Passed |
| | **Test Case 2.2.3** | Passed |
| **2.3: Build itinerary offers** | **Test Case 2.3.1** | Passed |
| | **Test Case 2.3.2** | Passed |
| | **Test Case 2.3.3** | Passed |
| | **Test Case 2.3.4** | Passed |
| | **Test Case 2.3.5** | Passed |
| | **Test Case 2.3.6** | Passed |
| | **Test Case 2.3.7** | Passed |
| | **Test Case 2.3.8** | Passed |
| | **Test Case 2.3.9** | Passed |
| **2.4: Provide itinerary details** | **Test Case 2.4.1** | Passed |
| | **Test Case 2.4.2** | Passed |
| | **Test Case 2.4.3** | Passed |
| **2.5: Build network reference resource** | **Test Case 2.5.1** | Passed |
| | **Test Case 2.5.2** | Passed |
| | **Test Case 2.5.3** | Passed |
| | **Test Case 2.5.4** | Passed |
| | **Test Case 2.5.5** | Passed |
| | **Test Case 2.5.6** | Passed |
| | **Test Case 2.5.7** | Not valid for F-REL |
| **2.6: Resolve Locations** | **Test Case 2.6.1** | Not valid for F-REL |
| | **Test Case 2.6.2** | Passed |
| | **Test Case 2.6.3** | Not valid for F-REL |
| | **Test Case 2.6.4** | Passed |
| **2.F Complete test WP2** | **Test Case 2.F** | Passed |

**Table 4. Results of the test execution**

The fulfilment of the above mentioned test, at WP2 level, allow also to fulfil the following IT2Rail Use Cases defined in D7.6 Pilot Integrated Final Release.

| WP7-UC03 Preparing the trip | | |
|---|---|---|
| WP7-UC03.01 | Itinerary 1: Jane's mobility request for her travel from Grenoble to Vienna via Lyon and Barcelona – individual tests to travel episodes | Search, select and book the travels episodes of the travel. Getting relevant entitlements and tokens. |
| WP7-UC03.02 | Itinerary 1: Jane's mobility request for her travel from Grenoble to Vienna via Lyon and Barcelona – multimodal tests | Search, select, and book the travels episodes of the travel. Adding vias and defining arrival times at destinations among the three days |
| WP7-UC03.03 | Itinerary 2: Francesca's mobility request for his travel from Rome to Vienna via Milano, Lyon and Barcelona – individual tests to travel episodes | Search, select, and book the travels episodes of the travel. Getting relevant entitlements and tokens. |
| WP7-UC03.04 | Itinerary 2: Francesca's mobility request for her travel from Rome to Vienna via Milano, Lyon and Barcelona – integrated tests | Search, select, and book the travels episodes of the travel. Adding vias and defining arrival times at destinations among the three days |
| WP7-UC03.05 | Itinerary 3: Peter's mobility request for her travel from Praha to Vienna via Berlin– individual tests to travel episodes | Search, select, and book the travels episodes of the travel. Getting relevant entitlements and tokens. |
| WP7-UC03.06 | Itinerary 3: Peter's mobility request for her travel from Praha to Vienna via Berlin- integrated tests | Search, select, and book the travels episodes of the travel. Adding vias and defining arrival times at destinations among the three days |
| WP7-UC03.07 | Itinerary 4: Steve's mobility request for his travel from Berlin to Vienna – individual tests to travel episodes | Search, select, and book the travels episodes of the travel. Getting relevant entitlements and tokens. |
| WP7-UC03.08 | Itinerary 4: Steve's mobility request for his travel from Berlin to Vienna - integrated tests | Search, select, and book the travels episodes of the travel. Adding vias and defining arrival times at destinations among the three days |

**Table 5. Table of IT2Rail Use Cases related to WP2 performance**