

INFORMATION TECHNOLOGIES FOR SHIFT TO RAIL

D2.5 Travel Shopping Additional Integration Report

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| 2 | 30/01/2017 | Template creation. Include Checkbox Forms and additional sections to distinguish A-REL test cases and new developments |
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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 Additional Release (A-REL)**. It also allows checking 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 predecessor (D2.4 Travel Shopping Core Integration Report) and other IT2Rail A-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 Core Release Campaign, other new ones have been identified and tested for this new 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 not and therefore is considered "NOT PASSED", in the cases when it has not been possible to carry the test for technical problems, or further developments are needed and will be performed for next IT2Rail release. In some cases, input data is simulated in order to perform unit testing not having still the completed connection or interfaces among modules. This way it is possible to evaluate the performance of the component and to assess if the output is the expected.

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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 Additional Release (A-REL)**. It also allows checking the coherence of the specification, the interfaces among components and the capability of the different modules to work together coherently. Once the identified Test Cases have been performed during the testing campaign, its results have been included in the document, indicating whether the results of the test are satisfactory and the Test is considered "PASSED", or not and therefore is considered "NOT PASSED", in the cases when it has not been possible to carry the test for technical problems, or further developments are needed and will be performed for next IT2Rail release. In some cases, input data is simulated in order to perform unit testing not having still the completed connection or interfaces among modules. This way it is possible to evaluate the performance of the component and to assess if the output is the expected. 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 will be carried out once each of the previous Test Cases are successfully passed. WP7 will take this end-to-end test case for WP7 integration and testing results.

The document includes an explanation of the test campaign, and a global view of the test categories and test cases including differences with C-REL testing campaign (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)

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 Additional 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). This means that it includes the Test Categories and Test Cases identified for the Core Release (C-REL) and also new ones related to the new components and functionalities developed for the A-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
 - The Travel Expert Journey Planner
 - The Travel Expert Offer Builder

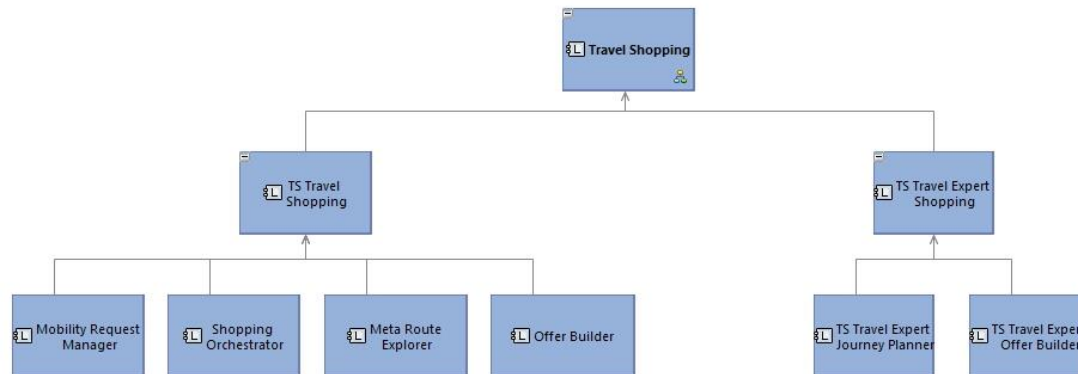


Figure 1. Travel Shopping components breakdown (see D2.2. for more details)

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 have been created. Existing Test Cases have been checked again, 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 colour](#)), and which have been identified for this new release ([purple colour](#)). In some cases, inputs or outputs were simulated to test only specific functions, not being available yet the final version of the components and functions.

- [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](#)
 - [\[TEST CASE 2.1.3\] Send Mobility Request with Traveller Preferences](#)
 - [\[TEST CASE 2.1.4\] Provide itinerary offers for BA computations](#)
 - [\[TEST CASE 2.1.5\] Get Traveller Preferences from TC](#)
 - [\[TEST CASE 2.1.6\] 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
 - [\[TEST CASE 2.3.1\] Aggregate 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 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 \(former 2.5.5\)](#)
 - [\[TEST CASE 2.5.7\] Sent a request for statistics to the Network Graph Manager](#)
- [TEST CATEGORY 2.6] Location Resolving

- [\[TEST CASE 2.6.1\] Decoding of the Locations by using AMA-Proxy for Location Resolver](#)
- [\[TEST CASE 2.6.2\] Decoding of the Locations by using LocationResolver](#)
- [\[TEST CASE 2.6.3\] Providing well defined Locations](#)
- [\[TEST CATEGORY 2.F\] Complete test WP2](#)
 - [\[TEST CASE 2.F\] Test the whole WP2 flow \(former 2.6\)](#)

The results obtained from the C-REL testing campaign are summarized in Figure 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 | 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 | |

Figure 2. Summary of WP2 C-REL testing results

For this new Release, new Test Cases have been tested, linked to **new components/functionalities developed for the A-REL**. Also the existing Test Cases defined in C-REL have been performed again in order to ensure that the results are still valid, or to test updates in the Software or in the interfaces.

In order to show this, the structure of the description of each Test Case included in *Section 4. TEST DESCRIPTIONS*, has been also updated in this version of the document, in order to easily allow the reader to know if the Test Case is completely new, or if it already existed in C-REL, and in that case if there is something new that has been tested in this campaign. Each Test Case includes the following *Checkbox Form*, which has been filled by the Test Case responsible:

- ☐ New test case for the A-REL
- ☐ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

Figure 3. Checkbox form created to indicate what is new in the A-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 C-REL, and what is new for the A-REL testing (new sections indicated **in yellow** in Figure 4).

| 2.2.2 | |
|---------------------------|--|
| Method Of Test | Analysis |
| Type of test | Manual |
| Objectives | Obtain most relevant metaroutes joining origin and destination metaroutes are consistent with request |
| Description | The user specifies an origin, destination, wished departure date... and includes or excludes one or several modes Dependency: Testable only if networks in the metaroute explorer are completed |
| Status C-REL | OK |
| Updated A-REL description | The smartest routes algorithm has been modified to manage walking route links. Handling of urban transport route links has been enhanced |
| Status A-REL | OK |

Figure 4. Example of Test Description Table updated to indicate what is new in the A-REL

Figure 5 summarizes the global figures of each case. It reflects the important effort done for the A-REL in order to improve the performance of the components and their functionalities.

| | |
|---|----|
| Total number of Test Cases | 31 |
| New Test Cases | 10 |
| Existing Test Cases – Performed same testing | 6 |
| Existing Test Cases – Not passed for the C-REL | 5 |
| Existing Test Cases – Update Software for A-REL | 10 |

Figure 5. 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. It is worth mentioning that the results of the tests included in this document reflect the current status of testing by 6th of March, when the deliverable was issued. Nevertheless, those Test Cases that are not passed by the time of issuing, can be passed during the **WP7 Integration test campaign**, that follows all WPs testing campaigns, and in that case the successful results that are not included here will be included in D7.5.

3. TEST MATERIALS DESCRIPTION

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

3.1 CONFIGURATION 2.1

Amadeus WP2 Test Configuration (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: 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://185.54.152.72:70/it2rail-locations-resolver-1.0-AREL/services/LocationResolverSOAP?wsdl>

•TER:<http://185.54.152.72:70/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 (A-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://185.54.152.72:99/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, to meet new requirements and to implement the Shopping Orchestrator test case.

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

Header:

- Accept: application/json
- Content-Type: application/json
- Authorization: <a string> (ex. 34343fsdfs435345)

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.

Body:

```
{
  "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": ""
    }
  }
}
```

```
}  
}
```

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 A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☒ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 | <p>Test the performance of the Mobility Request Manager to prepare mobility request processing information from TC and preferences</p> <p>Data Managed: Mobility request and preferences</p> <p>Comments: Input is simulated at this stage.</p> |
| Status C-REL | OK 80% completed |
| Updated A-REL Description | Updated: Developed new interface managing shoppingRequestContext ,searchOptions into the body and UserIdToken into the header . |
| Status A-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-REL 1 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running. Travel Companion Cloud has to be reachable and able to retrieve user preferences. | 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 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running. Travel Companion Cloud has to be reachable and able to retrieve user preferences. | 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 |

4.1.2 [TEST CASE 2.1.2] Send Mobility Request

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☒ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 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 C-REL | OK |
| Updated A-REL Description | Not updated |
| Status A-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: | | | | | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---------------|--|---|---|---------------|-------------------|
| C-REL1 | <ul style="list-style-type: none"> Internet connection available Travel companion mobile app has to be working and running Travel Companion mobile app has to be connected to the public Internet 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 | <ul style="list-style-type: none"> Internet connection available Travel companion mobile app has to be working and running Travel Companion mobile app has to be connected to the public Internet 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 |

4.1.3 [TEST CASE 2.1.3] Send Mobility Request with Traveller Preferences

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
- ☐ Performed same testing as in the C-REL, obtained same successful results

- ☐ Not passed for the C-REL. Tested with new configuration or data
- ☒ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.1.3

| | |
|----------------------------------|--|
| Method Of Test | Demonstration |
| Type of test | Manual |
| Objectives | Shopping orchestrator is able to receive the enriched mobility request. |
| Description | <p>Test Shopping Orchestrator interface that will receive the Mobility Request enriched with User Preferences</p> <p>Dependency with Shopping Orchestrator interface: required to send the Mobility Request enhanced with user's preferences</p> |
| Status C-REL | KO. The test will be performed in the next IT2Rail release |
| Updated A-REL Description | Update of interface sending mobility request to Shopping Orchestrator |
| Status A-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-REL 1 | <ul style="list-style-type: none"> Internet connection available Mobility Request Manager has to be working and running 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 |
| A-REL 1 | <ul style="list-style-type: none"> Internet connection available Mobility Request Manager has to be working and running 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 | |

4.1.4 [TEST CASE 2.1.4] Provide itinerary offers for BA computations

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL

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

2.1.4

| | |
|----------------------------------|--|
| 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 Dependency with WP6 interface: required for sending itinerary offers to WP6. |
| Status C-REL | OK |
| Updated A-REL Description | Not updated |
| Status A-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 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running Itinerary offers have to be computed by the Travel Shopping Orchestrator 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 |
| A-REL1 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running Itinerary offers have to be computed by the Travel Shopping Orchestrator 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 |

4.1.5 [TEST CASE 2.1.5] Get Traveller Preferences from TC

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☒ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 Dependency with WP5 Interface. Required for retrieving user's preferences. |
| Status C-REL | OK |
| Updated A-REL Description | Not updated |
| Status A-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 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running 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 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running 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 |

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

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☒ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | OK |
| Updated A-REL Description | Not updated |
| Status A-REL | KO |

Configuration to apply: 2.3

| | |
|-------------------|----|
| Regression | No |
|-------------------|----|

Configuration to apply: 2.3

Test Case Tester

[2.3]/[2.2]

| Id | Step description | Expected result | Observed result | State | Associated defect |
|-----------------------|--|---|---|-------------------|--|
| Preconditions: | | | | | |
| C-REL1 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running 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 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running 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. |

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

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☒ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | OK |
| Updated A-REL Description | Not updated |
| Status A-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 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running Itinerary offers have to be computed by the Travel Shopping Orchestrator 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 | <ul style="list-style-type: none"> Internet connection is available Mobility Request Manager has to be working and running Itinerary offers have to be computed by the Travel Shopping Orchestrator 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. |

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 A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☒ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.2.1

| | |
|----------------------------------|---|
| Method Of Test | Analysis |
| Type of test | Manual |
| Objectives | Obtain most relevant metaroutes joining origin and destination |
| Description | <p>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.</p> <p>This message contains the following information: origin and destination with their associated stop places, wished departure date... (only mandatory data).</p> <p>Dependency: Testable only if networks in the metaroute explorer are completed</p> <p>Tests are always based on the IT2Rail corridor scenarios</p> |
| Status C-REL | OK |
| Updated A-REL description | The smartest routes algorithm has been modified to manage walking routelinks. Handling of urban transport routelinks has been enhanced. |

2.2.1

Status A-REL OK
Link to WP7 use cases N/A

Configuration to apply: 2.1

Regression No
Test Case Tester [2.1]

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|--|---|---|-------------------------------|---|
| Preconditions: - Internet connection is available - Amadeus security account | | | | | |
| C-REL 1 | Send a basic “air oriented” query with no options : 1 origin & associated airport ; 1 destination & associated airport | 1 Metaroute is returned with 3 Meta travel expert Episode: 2 Urban Transport & 1 Air episode 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 |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|----------------|--|---|--|---------------------------|---|
| C-REL 2 | Send a basic query with no options : 1 origin & associated stop places (1 airport, 1 train station) ; 1 destination & associated stop places (1 airport, 1 train station) | 1 Metaroute is returned with rail & train meta travel expert episodes 1 Metaroute is returned with air meta travel expert episodes No irrelevant metaroute is returned | 1 Metaroute is returned with rail & train meta travel expert episodes 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 3 | Send a basic query for multiple MetaJourneys, no options : For each: 1 origin & associated stop places (1 airport, 1 train station) ; 1 destination & associated stop places (1 airport, 1 train station) | For each metaJourney: 1 Metaroute is returned with rail & train meta travel expert episodes 1 Metaroute is returned with air meta travel expert episodes No irrelevant metaroute is returned | For each metaJourney: 1 Metaroute is returned with rail & train meta travel expert episodes 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 | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|----------------|---|--|---|---------------|-------------------|
| A-REL 1 | Send a basic query with no options : 1 origin & associated stop places (1 airport, 1 train station) ; 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. Walking episodes are present in the output No irrelevant metaroute is returned | Test validated for the following corridor scenarios: Jane (Grenoble – Barcelona), Jena (Rome – Barcelona) and Steeve (Berlin – Amsterdam) | Passed | |
| A-REL 2 | Send a basic query with no options : 1 origin & associated stop places (1 coach) ; 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. Walking episodes are present in the output No irrelevant metaroute is returned | Test validated for the following corridor scenarios: Peter (Prague – Berlin) | Passed | |

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

Here is a sample of a “findRoutes” message:



FindRoutes_valid_RQ.xml



FindRoutes_valid_RS.xml

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

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data

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

2.2.2

| | |
|----------------------------------|---|
| Method Of Test | Analysis |
| Type of test | Manual |
| Objectives | Obtain most relevant metaroutes joining origin and destination 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. 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 Dependency: Testable only if networks in the metaroute explorer are completed Tests are always based on the IT2Rail corridor scenarios |
| Status C-REL | OK |
| Updated A-REL description | The smartest routes algorithm has been modified to manage walking route links. Handling of urban transport route links has been enhanced The “include transportation mode” option has been removed from the IT2Rail scope. |
| Status A-REL | OK |

Configuration to apply: 2.1

| | |
|-------------------|----|
| Regression | No |
|-------------------|----|

Configuration to apply: 2.1

Test Case Tester

[2.1]

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

| Id | Step description | Expected result | Observed result | State | Associated defect |
|----------------|--|---|---|---------------------------|--|
| C-REL 3 | Send a basic query with rail + air transport mode excluded : 1 origin & associated airport + train station; 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 AREL | |
| A-REL 1 | Send a basic query with rail transport mode excluded : 1 origin & associated airport + train station; 1 destination & associated airport + train station | 1 Metaroute is returned with Meta travel expert Episodes containing only urban transport, coach and/or air Walking episodes are present in the output 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 | Send a basic query with rail transport mode included : 1 origin & associated airport + train station; 1 destination & associated airport + train station | 1 Metaroute is returned with Meta travel expert Episodes containing only urban transport and rail Walking episodes are present in the output No irrelevant metaroute is returned | Not tested. Option “include transportation mode” removed from the IT2Rail scope | Not valid | The “include transportation mode” has been removed from the IT2Rail scope. |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---------|--|--|--|--------|-------------------|
| A-REL 3 | Send a basic query with rail + air + coach transport mode excluded : 1 origin & associated airport, train or station; 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 | |

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 A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☒ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.2.3

| | |
|----------------|---------------|
| Method Of Test | Demonstration |
| Type of test | Manual |

2.2.3

| | |
|----------------------------------|--|
| Objectives | Meta route explorer successfully decodes mobility request; shopping orchestrator successfully decodes Meta route explorer replies |
| Description | The interface between the shopping orchestrator and the meta route explorer is working |
| Status C-REL | OK |
| Updated A-REL description | Using new interface version 3. |
| Status A-REL | KO. 80% completed |

Configuration to apply: 2.2

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

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|--|--|---|---------------|--------------------------|
| Preconditions: - Internet connection is available - 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 | |

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] Aggregate Itinerary Offers

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results

- ☐ Not passed for the C-REL. Tested with new configuration or data
- ☒ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.3.1

| | |
|----------------------------------|---|
| Method Of Test | Analysis |
| Type of test | Manual |
| Objectives | Itinerary offer is built |
| Description | <p>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.</p> <p>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</p> <p>Tests are always based on the IT2Rail corridor scenarios</p> <p>CREL tests are based on simulators (Offer Builder is not delivered for CREL)</p> |
| Status C-REL | OK |
| Updated A-REL description | Itinerary offer items collected from travel experts are aggregating to build one or several itinerary offers |
| Status A-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: - internet connection is available - 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 AREL | |
| 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.” | | |





| 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 AREL | |
| 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 AREL | |
| 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 AREL | |



| 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 AREL | |
| 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'.” | | |





| Id | Step description | Expected result | Observed result | State | Associated defect |
|----------------|--|---|--|---------------------------|--|
| 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 AREL | |
| A-REL 1 | Send a grammatically valid query. | Receive one or several itinerary offers based on itinerary offer items provided by travel experts | | Passed | Query message:  BOREq_valid.xml Reply message:  BOREs_valid.xml |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|----------------|---|---|-----------------|--------------|--|
| A-REL 2 | 'No travel expert' use case – send a query where at least one meta travel expert episodes isn't associated to any travel expert | Receive one or several itinerary offers with an emulated itinerary offer item covering the meta travel expert episode with no travel expert | | Passed | |
| A-REL 3 | Multi passengers – send a query with two passengers | Receive global itinerary offers which take into account the two passenger | | Out of scope | |
| A-REL 4 | Two requested journeys – send a query with two requested journeys | Receive global itinerary offers covering both journeys | | Passed | <p>Query message:</p>  <p>BOReq_valid_RoundTrip.xml</p> <p>Reply message:</p>  <p>BORes_valid_RoundTrip.xml</p> |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---------|--|---|---|--------|--|
| A-REL 5 | Grammar checks – elements order: launch a query in which elements are not correctly ordered. att:StopPlace is placed after att:MetaTravelExpertEpisodeEndPoint | Receive an error code 100043, with indication on the grammar error. | Error Code=100043 with Tag description=> cvc-complex-type.2.4.a: Invalid content was found starting with element 'att:StopPlace'. One of '{"http://xml.amadeus.com/2010/06/DoorToDoorTypes_v3";MetaTravelExpertEpisodeEndPoint,&br/>"http://xml.amadeus.com/2010/06/DoorToDoorTypes_v3";MetaTravelExpertEpisode}' is expected. | Passed | Query message:  BOReq_grammarchk_Order.xml Reply message:  BORes_grammarchk_Order.xml |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|----------------|---|---|---|---------------|--|
| A-REL 6 | 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:  BOReq_grammarchk_ValueConstraint.xml Reply message:  BORes_grammarchk_ValueConstraint.xml |
| A-REL 7 | Grammar checks – ID check on unicity + Ref ID checks: In the request provide two att:Passenger having same ID + endPointRefId of Arrival of one Meta Travel Expert Episode does not exist | Receive an error code 100043, with indication on the grammar error. | cvc-id.2: There are multiple occurrences of ID value 'PAX_1' & missing endPointRefId for the Arrival (msg-The value " of attribute 'endPointRefId' on element 'att:Arrival' is not valid with respect to its type, 'IDREF'.). | Passed | Query message:  BOReq_grammarchk_IDRefUnicity.xml Reply message:  BORes_grammarchk_IDRefUnicity.xml |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---------|---|---|--|--------|---|
| A-REL 8 | Grammar checks – Missing mandatory element and attribute: In the request there is missing MetaTravelExpertEpisode and missing Arrival attribute | Receive an error code 100043, with indication on the grammar error. | <p>Invalid content was found starting with element 'att:JourneyRoutes'. One of</p> <p>'{&quot;http://xml.amadeus.com/2010/06/DoorToDoorTypes_v3&quot;;:MetaTravelExpertEpisodeEndPoint,</p> <p>&quot;http://xml.amadeus.com/2010/06/DoorToDoorTypes_v3&quot;;:MetaTravelExpertEpisode}' is expected.</p> <p>Invalid content was found starting with element 'att:MetaRoute'. One of</p> <p>'{&quot;http://xml.amadeus.com/2010/06/DoorToDoorTypes_v3&quot;;:Arrival}' is expected.</p> <p>There is no ID/IDREF binding for IDREF 'MTEE_1'.</p> <p>Undefined ID</p> <p>&quot;MTEE_1&quot;;.</p> | Passed | <p>Query message:</p> <p> BQReq_grammarchk_Mandatory.xml</p> <p>Reply message:</p> <p> BQRes_grammarchk_Mandatory.xml</p> |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|-----------------|---|---|--|---------------|--|
| A-REL 9 | 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:  BOREq_grammarchk_ElementCardinality.xml Reply message:  BORes_grammarchk_ElementCardinality.xml |
| A-REL 10 | Grammar checks – Attribute Cardinality: In the request endPointRefId defined twice in the Arrival attributes defined in JourneyRoutes | Problems creating the model | <faultstring>Problems creating SAAJ object model</faultstring> | Passed | Query message:  BOREq_grammarchk_AttributeCardinality.xml Reply message:  BORes_grammarchk_AttributeCardinality.xml |

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 A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☒ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | OK |
| Updated A-REL description | Using new interface version 3. |
| Status A-REL | KO. 50% passed. Interface implemented usual answer: error message OR time out from OB |

Configuration to apply: 2.2

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

| Id | Step description | Expected result | Observed result | State | Associated defect |
|--|--|--|---|-------------------|--|
| Preconditions: - Internet connection - 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 cannot 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 | |
| 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 are sent in that time. | Not Passed | The quality of the response content cannot 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 | |

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

2.3.3

Method Of Test

Demonstration

2.3.3

| | |
|---------------------------|---|
| Type of test | Manual |
| Objectives | Travel Expert Generation of Travel Offers by Travel Experts |
| Description | Indra/TMB Travel Expert Generates a number of offers to travel in the city of Barcelona. Although this information should be sent from the Travel Expert to the Shopping Offer Builder through the WP1 IF, for the C-REL a specific static file has been generated and sent to Amadeus in xml and JSON format, for a specific case. |
| Status C-REL | OK |
| Updated A-REL description | Sent information through WP1 |
| Status A-REL | KO (files simulated for testing. Not run with real integration) |

Configuration to apply: 2.4

| | |
|------------------|-------|
| Regression | No |
| Test Case Tester | [2.4] |

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

| Id | Step description | Expected result | Observed result | State | Associated defect |
|----------------|--|--|--|-------------------|-------------------|
| C-REL 1 | <ul style="list-style-type: none"> -Enable software based on Open Trip Planner for Route Planning -Upload TMB transport information in GTFS format (bus, Tram and metro) -Only a limited number of functionalities available for route planning. Not possible to include preferences -10 different scenarios simulated for initial testing | GTFS information upload 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 |
| 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 |

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

- ☒ New test case for the A-REL
- ☐ Existing Test Case from C-REL

- ☐ Performed same testing as in the C-REL, obtained same successful results
- ☐ Not passed for the C-REL. Tested with new configuration or data
- ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | Not existing |
| Updated A-REL description | The interaction offer builder / broker is using the version 3.0 of the “AcquireOffer” message. |
| Status A-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: - internet connection - Amadeus security account | | | | | |
| | | | | | |
| A-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 | Send an invalid query (unknown travel expert, grammatically invalid query...) | Receive an error message | The broker replies with an error message | | |

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

- ☒ New test case for the A-REL
- ☐ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.3.5

Method Of Test

Analysis

2.3.5

| | |
|----------------------------------|---|
| 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 C-REL | Not existing |
| Updated A-REL description | N/A |
| Status A-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: <ul style="list-style-type: none"> - internet connection - Amadeus security account | | | | | |

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



RailRequest.xml



RailReply.xml

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

- ☒ New test case for the A-REL
- ☐ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.3.6

| | |
|----------------|---|
| Method Of Test | Analysis |
| Type of test | Manual |
| Objectives | Coach itinerary offer items are collected |

2.3.6

| | |
|----------------------------------|---|
| 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 C-REL | Not existing |
| Updated A-REL description | N/A |
| Status A-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: - internet connection - Amadeus security account | | | | | |
| A-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:



CoachRequest.xml



CoachReply.xml

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

- ☒ New test case for the A-REL
- ☐ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | Not existing |
| Updated A-REL description | N/A |
| Status A-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: - internet connection - Amadeus security account | | | | | |
| A-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:



UrbanTransportRequest.xml



UrbanTransportReply.xml

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

- ☒ New test case for the A-REL
- ☐ Existing Test Case from C-REL
- ☐ Performed same testing as in the C-REL, obtained same successful results

- ☐ Not passed for the C-REL. Tested with new configuration or data
- ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | Not existing |
| Updated A-REL description | N/A |
| Status A-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: <ul style="list-style-type: none"> - internet connection - Amadeus security account | | | | | |

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

4.4 [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 A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☒ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 |

2.4.1

| | |
|----------------------------------|--|
| Status C-REL | OK |
| Updated A-REL description | A new flow of control was used: the Shopping Orchestrator communicates now with Location Resolver Proxy. |
| Status A-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: - Internet connection - 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 | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---------|--|--|---|--------|--|
| 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. |
| A-REL 2 | Send grammatically incorrect requests from Shopping Orchestrator to Location Resolver. | Receive an error message response. | Received an error message response. | Passed | |

4.4.2 [TEST CASE 2.4.2] Orchestration of all shopping modules

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☒ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.4.2

| | |
|----------------|--|
| Method Of Test | Demonstration |
| Type of test | Manual |
| Objectives | The Shopping Orchestrator successfully fulfils the four consecutive steps of shopping. |

2.4.2

| | |
|----------------------------------|---|
| 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 C-REL | OK |
| Updated A-REL description | Using new interface version 3. |
| Status A-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: <ul style="list-style-type: none"> - Internet connection - VPN tunnel to Location Resolver - Amadeus security account | | | | | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|----------------|---|---|---|---------------|---|
| C-REL 1 | Initiate a valid mobility request with the shopping orchestrator. 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 | |
| A-REL 1 | Initiate a valid mobility request with the shopping orchestrator. 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. |

4.4.3 [TEST CASE 2.4.3] Prepare Travel Expert List

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☒ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | NOK |
| Updated A-REL description | Not updated. |
| Status A-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: - Internet connection - 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 | |

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 A-REL
- ☒ Existing Test Case from C-REL
 - ☒ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | OK |
| Updated A-REL description | Not updated |
| Status A-REL | OK |

2.1

Regression No
Test Case Tester [2.1]

| Id | Step description | Expected result | Observed result | State | Associated defect |
|--|-------------------------------------|--------------------------------|--------------------------------|---------------|--|
| Preconditions: - Statistical file with air content | | | | | |
| C-REL 1 | Integrate air content in meta-route | The graph includes air content | The graph includes air content | Passed | Statistics are extracted directly from Amadeus Journey planner for AREL. A sample of air statistics file will be provided for the FREL |

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

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL

- ☐ Performed same testing as in the C-REL, obtained same successful results
- ☐ Not passed for the C-REL. Tested with new configuration or data
- ☒ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | OK |
| Updated A-REL description | File with rail statistics are collecting from the network graph manager |
| Status A-REL | OK |

2.1

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

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|------------------|-----------------|-----------------|-------|-------------------|
| Preconditions: - Statistical file with rail content | | | | | |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|----------------|---|---|---------------------------------|------------------|---|
| C-REL 1 | Integrate rail content in meta-route | The graph includes rail content | Process has changed for AREL | Not valid | |
| A-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:  TrenitaliaNetworkData.xml |

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

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☒ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.5.3

Method Of Test Analysis
Type of test Manual


2.5.3

| | |
|----------------------------------|--|
| Objectives | Decode file with coach content |
| Description | Coach travel experts provide at least a statistic file with air content |
| Status C-REL | KO |
| Updated A-REL description | File with coach statistics are collecting from the network graph manager |
| Status A-REL | OK |

2.1

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

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

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---------|--|--|----------------------------------|--------|---|
| A-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:  AMSCoachNetwork Data.xml |

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

- ☐ New test case for the A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☒ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 |

2.5.4

| | |
|---------------------------|--|
| Status C-REL | KO |
| Updated A-REL description | File with urban transport statistics are collecting from the network graph manager |
| Status A-REL | OK |

2.1

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

| Id | Step description | Expected result | Observed result | State | Associated defect |
|--|--|--|--|------------------|---|
| Preconditions: | | | | | |
| - 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 | 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:  VBBNetworkData.xml |

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

- ☒ New test case for the A-REL
- ☐ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | Not existing |
| Updated A-REL description | File with walking statistics are collecting from the network graph manager |
| Status A-REL | OK |

2.1

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

| Id | Step description | Expected result | Observed result | State | Associated defect |
|--|--|--|-----------------|---------------|--|
| Preconditions: | | | | | |
| - Statistical file with urban transport content | | | | | |
| A-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 A-REL
- ☒ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☒ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.5.5

Method Of Test Analysis

Type of test Manual

2.5.5

| | |
|----------------------------------|---|
| Objectives | Build Meta Networks |
| Description | MetaRoute Explorer builds networks with statistic data |
| Status C-REL | OK |
| Updated A-REL description | A-REL network contains some new content (coach, urban transport, walking) |
| Status A-REL | OK |

2.1

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

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|--|--------------------------|--------------------------|-------------------|-------------------|
| Preconditions: - 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 | |
| A-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

- ☒ New test case for the A-REL
- ☐ Existing Test Case from C-REL
- ☐ Performed same testing as in the C-REL, obtained same successful results
- ☐ Not passed for the C-REL. Tested with new configuration or data
- ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

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 C-REL | Not existing |
| Updated A-REL description | N/A |
| Status A-REL | KO |

Configuration to apply: 2.1

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

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

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

- ☒ New test case for the A-REL
- ☐ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.6.1

Method Of Test

Analysis

2.6.1

| | |
|---------------------------|--|
| 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 C-REL | Not Existing |
| Updated A-REL description | N/A |
| Status A-REL | KO. Postponed until all other related Interfaces and components are working well |

2.1

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

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

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 A-REL
- ☐ Existing Test Case from C-REL
- ☐ Performed same testing as in the C-REL, obtained same successful results
- ☐ Not passed for the C-REL. Tested with new configuration or data
- ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-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 C-REL | Not Existing |
| Updated A-REL description | N/A |
| Status A-REL | KO |

2.1

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

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

4.6.3 [TEST CASE 2.6.3] Providing of well-defined Locations

- ☒ New test case for the A-REL
- ☐ Existing Test Case from C-REL
 - ☐ Performed same testing as in the C-REL, obtained same successful results
 - ☐ Not passed for the C-REL. Tested with new configuration or data
 - ☐ Tested successfully in the C-REL. Software, interfaces or data have been updated and tested again for the A-REL

2.6.3

| | |
|-----------------------|--|
| Method Of Test | Analysis |
| Type of test | Manual |
| Objectives | Receive well-defined stop places near to a location. |
| Description | The response of the Location Resolver Proxy is decoded and checked for well-defined stop places. |
| Status C-REL | Not Existing |

2.6.3

Updated A-REL description

N/A

Status A-REL

KO. Postponed until all other related Interfaces and components are working well

2.1

Regression

No

Test Case Tester

[2.1]

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

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

2.1-2.2-2.3

| | |
|-------------------------|----|
| Regression | NA |
| Test Case Tester | NA |

| Id | Step description | Expected result | Observed result | State | Associated defect |
|---|---|---|---|---------|-------------------|
| Preconditions: -All list pre-condition of the previous test cases apply -Previous Test Cases must be passed to perform the full test | | | | | |
| C-REL 1 | <ul style="list-style-type: none"> Get and decode mobility query <ul style="list-style-type: none"> Resolve locations Build network reference resource <ul style="list-style-type: none"> Identify smartest routes Build itinerary offers Provide itinerary details <ul style="list-style-type: none"> 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 |
|---------|---|---|---|---------|-------------------|
| A-REL 1 | <ul style="list-style-type: none"> Get and decode mobility query <ul style="list-style-type: none"> Resolve locations Build network reference resource <ul style="list-style-type: none"> Identify smartest routes Build itinerary offers Provide itinerary details <ul style="list-style-type: none"> 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 |

5. TEST EXECUTION

The following table gives an overview of the results achieved during the A-REL campaign described in the document. Previous section details the results obtained for the test executed (Note: “Not passed” includes both test that were not successfully passed and those that was not possible to run)

| 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 |
| 2.F Complete test WP2 | Test Case 2.F | Not passed |

While the focus of this document is to test each component and the interactions among them, an end-to-end Test Case was also included (*[TEST CASE 2.F] Test the whole WP2 flow*), which can only be tested if each of the previous Test Cases are successfully passed. This was not the case at the moment of issuing the current deliverable, therefore, end-to-end test case was not possible to execute. As WP7 will take this WP2 end-to-end test case for WP7 integration and testing results, WP2 partners will continue working in the integration during the WP7 Integration test campaign, in order to fulfil all test cases and be able to produce a complete end-to-end successful result, which could be included in D7.5.