INFORMATION TECHNOLOGIES FOR SHIFT TO RAIL

D6.4 Business Analytics Core Integration Report

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EXECUTIVE SUMMARY

This deliverable contains a complete report concerning tests envisaged for the Business Analytics planned for the IT2Rail Core Release. Furthermore the document includes a complete description concerning the configuration for the infrastructure and hardware in order to run the tests described in this document.

Finally, a list of all tests is provided along with a short description concerning which functionality the test verifies preconditions, expected and observed results. All tests are grouped by category and verify the effectiveness of the Business Analytics functionalities. The last section of the document describes the test runs with the observed results.

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1. INTRODUCTION

The following sections of this document describe:

- the description of the configuration needed for running all tests;
- the system used for running the tests;
- all tests planned and executed for verifying the functionalities of the IT2Rail Business Analytics;
- the expected and observed results achieved by means of this test campaign.

2. REFERENCED DOCUMENTS

2.1 APPLICABLE DOCUMENTS

This chapter lists the applicable documents for the current deliverable:

- **D6.1 – Business Analytics Ontology document**
- **D6.2 – Business Analytics Specifications document**

2.2 NORMATIVE DOCUMENTS

Not Applicable.

3. CAMPAIGN STRATEGY

This campaign strategy has the aim to test and verify the Business Analytics functions delivered for the IT2Rail Core Release.

The following chapters will describe:

- the test materials description meant as infrastructure and hardware settings in order to perform the test use cases planned for this IT2Rail release;
- the detailed test use cases planned for this campaign;
- the tests execution.

4. TEST MATERIALS DESCRIPTION

This chapter lists the assets required to perform the Business Analytics test use cases.

4.1 CONFIGURATION

This paragraph describes the configuration of the Business Analytics platform envisaged for the Core Release. The configuration includes infrastructure and hardware settings of the Business Analytics module. The former describes the infrastructure chosen for running the software modules needed to compute the Key Performance Indicators, the latter specifies the hardware the Business Analytics components relies on.

4.1.1 INFRASTRUCTURE AND HARDWARE

INFRASTRUCTURE

The Business Analytics components run on several virtual machines. Tomcat 8 has been chosen as application server that is running on each virtual machine. The different VMs communicate each other by using web services. REST technology has been chosen for implementing web services. Information formatted in JSON is exchanged internally by means of HTTP requests by using both POST and GET methods.

HARDWARE

The Business Analytics infrastructure is based on a cluster of nodes. Each of these nodes has the following hardware configuration:

- Centos 7 64 bit
- 8 Gb Ram
- CPU & Core Xeon 1.9

4.1.2 SETUP & CONFIGURATION

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

In order to accomplish the test phase, the personnel in charge of testing the Business Analytics platform needs to have an internet connection perfectly working.

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

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

4.1.3 TESTED SYSTEM

During this test campaign several modules of the Business Analytics platform have been tested in order to verify the functionalities foreseen for the Core Release.

The behaviour of the following WP6 software components has been checked against a list of tests defined in the later sections:

- The **Presentation component** of the Business Analytics that is used by the operators in order to show several geographic information and KPIs computed by the platform.
- **Web services of the Data Management component** used by the Presentation component to retrieve information from the Business Analytics repositories. This information is concerned to events that take place in the cities included in the IT2Rail Corridor use case and KPIs computed by the Information & Management Analysis component of the BA platform.

In addition, the Presentation component includes:

- a web based Geographic Information System (GIS) that shows on map several information concerning events and weather conditions;

- a dashboard showing KPIs selected for the Milan-Rome travel leg computed by the Information Analysis and Management component of the Business Analytics module.

The web services exposed by Business Analytics platform are responsible for making events available to the Presentation layer.

4.1.4 SYSTEM DATA PARAMETERS

For testing the WP6 interface which collects itinerary offers from WP2 Mobility Request Manager, an example provided by AMADEUS has been used. Information related to events was retrieved from Eventful and used in order to test WP6 web services.

4.1.5 SIMULATORS

Indicators computed for the Milan-Rome travel leg are based on raw data generated automatically by a standalone application developed by LEONARDO.

The indicators have been then computed with Pentaho – Business Analytics and then shown on the Presentation Layer of the Business Analytics module.

Furthermore, itinerary offers collected from WP2 are based on an example provided by AMADEUS.

4.1.6 PERSONNEL

The personnel required to run this test comparing has to be high-qualified people with a professional background on Information Technology and Computer Science.

5. TEST DESCRIPTIONS

This chapter contains a list of test cases provided for describing how Business Analytics components are checked in order to deliver the functionalities for the IT2Rail Core Release.

5.1 [TEST CATEGORY 6.1] PROVIDE KEY PERFORMANCE INDICATORS

One of the major aims of the Business Analytics module is to compute a list of indexes and Key Performance Indicators in order to provide a general overview concerning performances of the rail transport system. These KPIs are computed for the Milan-Rome travel leg and listed by these following categories:

- **Departure Station**
    - o Average travel delay for trains leaving from the departure station
    - o Total number of trains leaving from the departure station in a fixed time period by travel leg
    - o Number of on time departing trains
    - o Number of late departing trains
    - o Average travel delay for incoming trains
    - o Total number of incoming trains in a fixed time period
    - o Number of on time incoming trains

- o Number of late incoming trains
- o Percentage of late departing trains
- o Percentage of on time departing trains

- **Arrival**
    - o Average travel delay for incoming trains
    - o Total number of incoming trains in a fixed time period
    - o Number of on time incoming trains
    - o Number of late incoming trains
    - o Percentage of late incoming trains
    - o Percentage of on time incoming trains

- **Travel Leg**

    - o Total average travel delay
    - o Number of on time trains
    - o Number of late trains
    - o Ratio between travel delay and effective travel duration
    - o Max departing delay
    - o Max incoming delay
    - o Max travel delay
    - o Trustworthiness Index
    - o Percentage of trains departing in advance
    - o Percentage of late trains
    - o Percentage of on time trains

Id	Step description	Expected result	Observed result	State	Associated defect
1	• **The software component for simulating travel data is available and working.**	Travel data are generated and can be used for computing KPIs.	Travel data are generated and can be used for computing KPIs.	Passed	[used for traceability]

5.1.2 [TEST CASE 6.1.2] COMPUTE KEY PERFORMANCE INDICATORS

6.1.2	
Method Of Test	Demonstration
Type of test	Automated
Objectives	To check the Business Analytics module computes KPIs for the Milan-Rome travel leg.
Description	This test case verifies the KPI computation. The KPIs computed by the Business Analytics module are related to the Milan-Rome travel leg and measure the performances of the rail transport system in terms of KPIs.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: - **[List all pre-condition to the test case. EX: internet connection…]**				
1	• **The Data Management component of the Business Analytics module is running and can provide information for computing KPIs.** • **The Information Management & Analysis component is running and can compute KPIs.**	KPIs for the Milan-Rome travel leg are computed and made available to the Presentation layer.	KPIs for the Milan-Rome travel leg are computed and made available to the Presentation layer.	**Passed**	[used for traceability]

5.2 [TEST CATEGORY 6.2] SHOW KEY PERFORMANCE INDICATORS ON DASHBOARD

The dashboard included in the Presentation component shows KPIs by means of tables and charts and is used in this test campaign in order to check the functionality offered by the Presentation component to show KPIs computed by the Information Management & Analysis component.

5.2.1 [TEST CASE 6.2.1] SHOW KEY PERFORMANCE INDICATORS ON TABLE

6.2.1	
Method Of Test	Demonstration
Type of test	Manual
Objectives	To check KPIs are retrieved and shown on table.
Description	This test checks whether KPIs are retrieved and shown on table. The Presentation layer of the Business Analytics module encases a dashboard containing indicators that evaluate the performances of the rail transport system for the Milan-Rome travel leg.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: - **[List all pre-condition to the test case. EX: internet connection...]**				

Id	Step description	Expected result	Observed result	State	Associated defect
1	**Internet connection is available** **A web browser (Google Chrome preferably) installed on the laptop where the test is performed.** **The Presentation component of the Business Analytics is available and can be visualized by using a web browser**	KPIs are shown on tables within the dashboard.	KPIs are actually shown on the table within the dashboard.	**Passed**	[used for traceability]

5.2.2 [TEST CASE 6.2.2] SHOW KEY PERFORMANCE INDICATORS ON CHART

6.2.2	
Method Of Test	Demonstration
Type of test	Manual
Objectives	To check KPIs are retrieved and shown on chart
Description	This test checks whether KPIs are retrieved and shown on chart. The Presentation layer of the Business Analytics module encases a dashboard containing indicators that evaluate the performances of the rail transport system for the Milan-Rome travel leg. This test shows that key performance indicators can easily evaluated when they are shown on chart included in the dashboard of the Presentation component.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: - **[List all pre-condition to the test case. EX: internet connection…]**				
1	• **Internet connection is available** • **A web browser (Google Chrome preferably) installed on the laptop where the test is performed.** • **The Presentation component of the Business Analytics is available and can be visualized by using a web browser**	KPIs are shown on chart within the dashboard.	KPIs are actually shown on chart within the dashboard.	**Passed**	[used for traceability]

5.3 [TEST CATEGORY 6.3] SHOW GEOGRAPHICAL AND WEATHER INFORMATION

This test category verifies by means the following test use cases the functionalities of the Presentation component to show geographical and weather information as well as events.

5.3.1 [TEST CASE 6.3.1] WEBGIS INTEGRATION WITHIN THE PRESENTATION LAYER

6.3.1	
Method Of Test	Demonstration
Type of test	Manual
Objectives	To show a webGIS displaying a map within the Presentation layer of the Business Analytics module.
Description	This test verifies the integration of a webGIS within the Business Analytics. The Presentation layer includes a webGIS (Google Maps, OpenStreetMap) displaying geographic information to the IT2Rail users who want to know more information about the current condition on events and weather data.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: **- [List all pre-condition to the test case. EX: internet connection...]**				

Id	Step description	Expected result	Observed result	State	Associated defect
1	• **Internet connection is available** • **A web browser (Google Chrome preferably) installed on the laptop where the test is performed.** • **The Business Analytics module is online and available.** • **The Presentation Component can be shown by using a web browser.**	A webGIS is available to be used within the Present layer of the Business Analytics module.	A webGIS can be used within the Presentation layer as a tool to support IT2Rail users in showing information on events and weather conditions and other geographic information.	**Passed**	[used for traceability]

5.3.2 [TEST CASE 6.3.2] SHOW BASE LAYERS ON MAP

6.3.2	
Method Of Test	Demonstration
Type of test	Manual
Objectives	To show a map displaying the base layers provided by Google Maps and OpenStreetMap.
Description	This test verifies the retrieval of base layers from Google Maps and OpenStreetMap. The Presentation Component of the Business Analytics module shows a map with specific base layers retrieved from GoogleMaps and OpenStreetMap. The choice of the layer can be performed by clicking on the specific check box on the Presentation layer.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: - **[List all pre-condition to the test case. EX: internet connection…]**				
1	• **Internet connection is available** • **A web browser (Google Chrome preferably) installed on the laptop where the test is performed.** • **The Presentation component of the Business Analytics is available and can be shown by using a web browser.**	Base layers provided by Google Maps, OpenStreetMap and other providers are used as building blocks to show geographical information to IT2Rail users.	Base layers provided by Google Maps, OpenStreetMap and other providers are used as building blocks to show geographical information to IT2Rail users.	**Passed**	[used for traceability]

5.3.3 [TEST CASE 6.3.3] SHOW WEATHER LAYERS ON MAP

6.3.3	
Method Of Test	Demonstration

6.3.3	
Type of test	Manual
Objectives	To show layers related to weather conditions over base layers of the Geographic Information System. These layers are retrieved from OpenWeatherMap by means of Web Map Services (WMS).
Description	This test verifies whether weather layers are shown on map. The Presentation Layer allows IT2Rail users to see layers enriched with additional weather information on map provided by the webGIS.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: - **[List all pre-condition to the test case. EX: internet connection…]**				

Id	Step description	Expected result	Observed result	State	Associated defect
1	• **Internet connection is available** • **A web browser (Google Chrome preferably) installed on the laptop where the test is performed.** • **The Presentation component of the Business Analytics is available and can be visualized by using a web browser.** • **Web Map Services provided by OpenWeatherMap are available.**	Weather layers retrieved from OpenWeatherMap are shown on base layers of the webGIS.	Weather layers retrieved from OpenWeatherMap are shown on base layers of the webGIS..	Passed	[used for traceability]

5.3.4 [TEST CASE 6.3.4] SHOW EVENTS ON MAP

6.3.4	
Method Of Test	Demonstration
Type of test	Manual
Objectives	To verify events stored in WP6 repositories are actually shown on map.
Description	This test verifies that events are shown on map. Events retrieved and stored in WP6 repositories can be visualized by means of the WP6 Presentation component. Information displayed on map is related to details concerning events.
Status	OK

6.3.4	
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: - **[List all pre-condition to the test case. EX: internet connection…]**				
1	• **Internet connection is available** • **A web browser (Google Chrome preferably) installed on the laptop where the test is performed.** • **The Presentation component of the Business Analytics is available and can be visualized by using a web browser** • **The Data Management component is running.**	Events are shown as markers on map and provide information where events take place.	Events are shown as markers on map and provide information where events take place.	**Passed**	[used for traceability]

5.4 [TEST CATEGORY 6.4] PROVIDE EVENTS INFORMATION

This test category describes the tests performed in order to check the Business Analytics functions used to:

- collect data from Eventful;
- store events information into Business Analytics repositories;
- make events available to the Presentation layer and the other IT2Rail modules by means of web services.

5.4.1 [TEST CASE 6.4.1] COLLECTING EVENTS FROM EVENTFUL

6.4.1	
Method Of Test	Demonstration
Type of test	Manual
Objectives	To verify events are collected from Eventful.
Description	This test verifies that events are collected from Eventful. Information about events is gathered by invoking web services made available by Eventful.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: **- [List all pre-condition to the test case. EX: internet connection...]**				
1	• **Internet connection is available** • **Eventful webservices are available**	Information about events is returned after invoking Eventful webservices.	Information about events is effectively returned.	**Passed**	[used for traceability]

5.4.2 [TEST CASE 6.4.2] STORING EVENTS INTO BUSINESS ANALYTICS REPOSITORIES

6.4.2	
Method Of Test	Demonstration
Type of test	Manual
Objectives	To verify events are stored into Business Analytics repositories
Description	This test verifies events are stored into Business Analytics repositories. Information about events from Eventful are parsed and then stored into Business Analytics repositories.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: - **[List all pre-condition to the test case. EX: internet connection...]**				
1	• **Events retrieved from Eventful are correctly formatted in JSON.** • **Data management module of the Business Analytics is available and can store information into its repositories.**	Information about events are properly parsed and then stored into WP6 repositories.	Information about events are properly parsed and then stored into WP6 repositories.	Passed	[used for traceability]

5.4.3 [TEST CASE 6.4.3] EXPOSING WEB SERVICES TO RETRIEVE COLLECTED EVENTS

6.4.3	
Method Of Test	Demonstration
Type of test	Manual
Objectives	To check WP6 web services make events available to the Presentation layer and IT2Rail modules

6.4.3	
Description	This test checks events information can be retrieved by using WP6 web services. The Business Analytics exposes web services in order to collect events information stored in its repositories. These web services are created by using REST technology and allow retrieving events by city and category. Data are formatted in JSON.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: **- [List all pre-condition to the test case. EX: internet connection...]**				
1	• **Internet connection is available** • **Web services of the Data Management component of the Business Analytics are available and can be invoked.**	Information about events is retrieved by using web services.	Information about events is retrieved by using web services.	**Passed**	[used for traceability]

5.5 [TEST CATEGORY 6.5] COLLECTING ITINERARY OFFERS FROM IT2RAIL TRAVEL SHOPPING

This test category describes tests performed in order to check the functionalities enabling the retrieval of itinerary offers from IT2Rail Travel Shopping. These itinerary offers are stored into the Business Analytics repositories for later computations.

5.5.1 [TEST CASE 6.5.1] RETRIEVING ITINERARY OFFERS FROM TRAVEL SHOPPING

6.5.1	
Method Of Test	Demonstration
Type of test	Manual and Automated
Objectives	To check itinerary offers are retrieved from IT2Rail Travel Shopping
Description	This test checks itinerary offers are retrieved from IT2Rail Travel Shopping. The Business Analytics exposes web services in order to collect itinerary offers from WP2 Mobility Request Manager. These web services are created by using REST technology and allow retrieving information containing itinerary offers.
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: - **[List all pre-condition to the test case. EX: internet connection…]**				
1	• **Internet connection is available** • **WP2 Mobility Request Manager is available and can send itinerary offers.** • **Web services of the Data Management component of the Business Analytics are available and can be used in order to receive itinerary offers sent by WP2 Mobility Request Manager.**	Information about itinerary offers is retrieved from WP2 Mobility Request Manager.	Information about itinerary offers is retrieved from WP2 Mobility Request Manager.	**Passed**	[used for traceability]

5.5.2 [TEST CASE 6.5.2] STORING ITINERARY OFFERS INTO REPOSITORIES

6.5.2	
Method Of Test	Demonstration
Type of test	Automated
Objectives	To verify itinerary offers are stored into the Business Analytics repositories.
Description	This test verifies itinerary offers are stored into the Business Analytics repositories. The Data Management component of the Business Analytics module stores itinerary offers into repositories in order to process information and turn them into useful indications.

6.5.2	
Status	OK
% passed	100%

[Configuration to apply]	
Regression	N
Test Case Tester	[ID of tester]

Id	Step description	Expected result	Observed result	State	Associated defect
	Preconditions: - [List all pre-condition to the test case. EX: internet connection…]				
1	• **Itinerary offers are retrieved from WP2 Mobility Request Manager.** • **Data Management of the Business Analytics module is available and can store information into repositories.**	Information about itinerary offers are stored into Business Analytics repositories.	Information about itinerary offers are stored into Business Analytics repositories.	Passed	[used for traceability]

6. TEST EXECUTION

This table describes the execution of test cases previously described in the previous sections.

Table 1: Execution of test cases

Test Category	Test Case ID	Number of test /Date of test	Results (passed/failed) More details of results in section 4	Comments / Changes to be done
6. 1: Provide Key Performance Indicators	Test Case 6.1.1	Test Run 6.1 - 26/07/2016	Passed	
	Test Case 6.1.2	Test Run 6.1 - 26/07/2016	Passed	
6.2 : Show Key Performance Indicators on Dashboard	Test Case 6.2.1	Test Run 6.2 - 26/07/2016	Passed	
	Test Case 6.2.2	Test Run 6.2 - 26/07/2016	Passed	
6.3: Show Geographical and Weather Information	Test Case 6.3.1	Test Run 6.3 - 26/07/2016	Passed	
	Test Case 6.3.2	Test Run 6.3 - 26/07/2016	Passed	
	Test Case 6.3.3	Test Run 6.3 - 26/07/2016	Passed	
	Test Case 6.3.4	Test Run 6.3 - 26/07/2016	Passed	

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6.4: Provide events information	**Test Case 6.4.1**	Test Run 6.4 - 26/07/2016	**Passed**	
	Test Case 6.4.2	Test Run 6.4 - 26/07/2016	**Passed**	
	Test Case 6.4.3	Test Run 6.4 - 26/07/2016	**Passed**	
6.5 Collecting Itinerary offers from IT2Rail Travel Shopping	**Test Case 6.5.1**	Test Run 6.5 - 26/07/2016	**Passed**	
	Test Case 6.5.2	Test Run 6.5 - 26/07/2016	**Passed**	

6.1 TEST RUN 6.1

6.1.1 PROVIDE KEY PERFORMANCE INDICATORS – GENERATE TRAVEL DATA

This test case checks the generation of information that will be used as input for computing the key performance indicators for the Milan-Rome travel leg.

Test succeeded.

6.1.2 PROVIDE KEY PERFORMANCE INDICATORS – COMPUTE KEY PERFORMANCE INDICATORS

This test case verifies the KPI computation. The KPIs computed by the Business Analytics module are related to the Milan-Rome travel leg and measure the performances of the rail transport system in terms of KPIs.

Test succeeded.

6.2 TEST RUN 6.2

6.2.1 SHOW KEY PERFORMANCE INDICATORS ON DASHBOARD – SHOW KEY PERFORMANCE INDICATORS ON TABLE

This test checks whether KPIs are retrieved and shown on table. The Presentation layer of the Business Analytics module encapsulates a dashboard containing indicators that evaluate the performances of the rail transport system for the Milan-Rome travel leg.

Test succeeded.

6.2.2 SHOW KEY PERFORMANCE INDICATORS ON DASHBOARD – SHOW KEY PERFORMANCE INDICATORS ON CHART

This test checks whether KPIs are retrieved and shown on chart. The Presentation layer of the Business Analytics module encapsulates a dashboard containing indicators that evaluate the performances of the rail transport system for the Milan-Rome travel leg. This test shows that key performance indicators can easily evaluated when they are shown on chart included in the dashboard of the Presentation component.

Test succeeded.

6.3 TEST RUN 6.3

6.3.1 SHOW GEOGRAPHICAL AND WEATHER INFORMATION – WEBGIS INTEGRATION WITHIN THE PRESENTATION LAYER

This test verifies the integration of a webGIS within the Business Analytics. The Presentation layer includes a webGIS (Google Maps, OpenStreetMap) that displays geographic information to the IT2Rail users who want to know more information about the current condition on events and weather data.

Test succeeded.

6.3.2 SHOW GEOGRAPHICAL AND WEATHER INFORMATION – SHOW BASE LAYERS ON MAP

This test verifies the retrieval of base layers from Google Maps and OpenStreetMap. The Presentation Component of the Business Analytics module shows a map with specific base layers retrieved from GoogleMaps and OpenStreetMap. The choice of the layer can be performed by clicking on the specific check box on the Presentation layer.

Test succeeded.

6.3.3 SHOW GEOGRAPHICAL AND WEATHER INFORMATION – SHOW WEATHER LAYERS ON MAP

This test verifies whether weather layers are shown on map. The Presentation Layer allows IT2Rail users to see layers enriched with additional weather information on map provided by the webGIS.

Test succeeded.

6.3.4 SHOW GEOGRAPHICAL AND WEATHER INFORMATIONS – SHOW EVENTS ON MAP

This test verifies that events are shown on map. Events retrieved and stored in WP6 repositories can be visualized by means of the Presentation component. Information displayed on map is related to details concerning events.

Test succeeded.

6.4 TEST RUN 6.4

6.4.1 PROVIDE EVENTS INFORMATION – COLLECTING EVENTS FROM EVENTFUL

This test verifies that events are collected from Eventful. Information about events is gathered by invoking web services made available by Eventful.

Test succeeded.

6.4.2 PROVIDE EVENTS INFORMATION – STORING EVENTS INTO BUSINESS ANALYTICS REPOSITORIES

This test verifies events are stored into Business Analytics repositories. Information about events from Eventful are parsed and then stored into Business Analytics repositories.

Test succeeded.

6.4.3 PROVIDE EVENTS INFORMATION – EXPOSING WEB SERVICES TO RETRIEVE COLLECTED EVENTS

This test checks events information can be retrieved by using WP6 web services. The Business Analytics exposes web services in order to collect events information stored in its repositories.

These web services are created by using REST technology and allow retrieving events by city and category. Data are formatted in JSON.

Test succeeded.

6.5 TEST RUN 6.5

6.5.1 COLLECTING ITINERARY OFFERS FROM IT2RAIL TRAVEL SHOPPING – RETRIEVING ITINERARY OFFERS FROM TRAVEL SHOPPING

This test checks itinerary offers are retrieved from IT2Rail Travel Shopping. The Business Analytics exposes web services in order to collect itinerary offers from WP2 Mobility Request Manager. These webservices are created by using REST technology and allow retrieving information containing itinerary offers.

Test succeeded.

6.5.2 COLLECTING ITINERARY OFFERS FROM IT2RAIL TRAVEL SHOPPING – STORING ITINERARY OFFERS INTO REPOSITORIES

This test verifies itinerary offers are stored into Business Analytics repositories. The Data Management component of the Business Analytics module stores itinerary offers into repositories in order to process information and turn them into useful indications.

Test succeeded.