
Cooperative Cities extend and validate mobility services

WP4300

# D4.2 – **Reference platform, its configuration and usage manual**

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1.0

Dissemination level

Public

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## List of the Co-Cities Project Partners

| Partner no. | Partner name | Partner short name | Country |
|---|---|---|---|
| 1 | AustriaTech Gesellschaft des Bundes für technologiepolitische Maßnahmen GmbH | ATE | AT |
| 2 | Softeco Sismat S.P.A | SOF | IT |
| 3 | Telematix Software, a.s. | TMX | CZ |
| 4 | Fluidtime Data Services GmbH | FLU | AT |
| 5 | Brimatech Services GmbH | BRI | AT |
| Left intentionally Blank | | | |
| 7 | The Regional Organiser of Prague Integrated Transport | PID | CZ |
| 8 | POLIS-Promotion of Operational Links with Integrated Services | POL | BE |
| 9 | Atos Origin Sociedad Anonima Espanola | ATO | ES |
| 10 | PTV Planung Transport Verkehr AG. | PTV | DE |
| 11 | Asociacion Cluster Del Transporte Y La Logistica De EUSKADI | MLC | ES |
| 12 | Regione Toscana | FIR | IT |
| 13 | Reading Borough Council | RED | UK |
| 14 | MemEx S.R.L. | MEM | IT |

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# 1. Introduction to the Co-Cities Project

The currently existing bottleneck for the dynamic adaptation of traffic management measures according to policy goals is the information distribution to end users in urban areas and the adaptation of the information provided to the needs of the single user group. Further, current services are not able to deliver any feedback from the end-user to the Traffic Information Service Provider. These aspects are addressed by Co-Cities by providing one standard interface between city traffic information and the Traffic Information Service Providers, the In-Time common interface, secondly, the availability of the full "feedback loop" enables an end to end testing and validation process for the single traffic information service in the cities and elaborates the future expansion steps for cities and service providers.

In the following figure the main extensions of the approach in relation to cooperative services are shown in an overview.

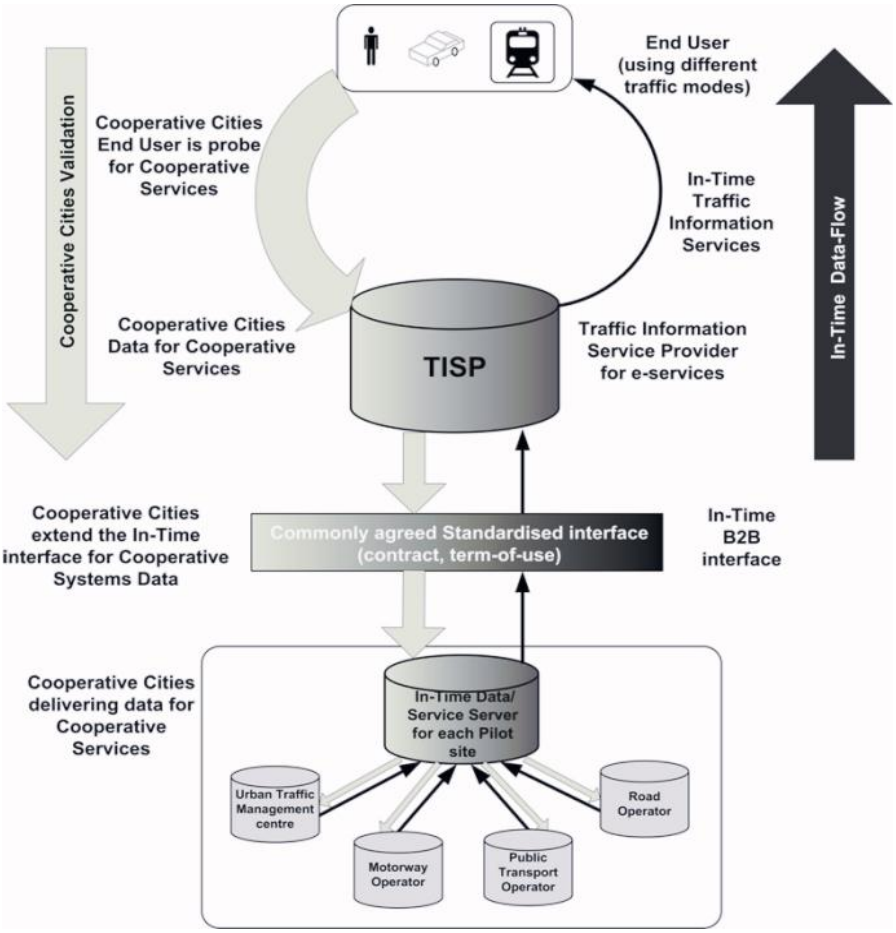



**Figure 1: Cooperative cities contribution to cooperative mobility services**

The Cooperative Cities proposal is using two main results of In-Time project:

- In-Time Commonly Agreed Standard Data Interface (CAI)
- In-Time Service Definition

## 2. Executive Summary

One of the main aspects of Co-Cities project is to extend the In-Time CAI (Commonly Agreed Interface) with a 'feedback-loop' to extend mobility services with cooperative elements where the services provision to End-User is based on the In-Time results and the services for feedback loop data provision is the concept developed in the context of Co-Cities project. While implementations and technologies used at the Traffic Information Service Providers' (TISP) and Regional Data and Service Servers' (RDSS) sides may differ, are generally proprietary and as a result have to be understood as black boxes in the scope of Co-Cities, data provided at the CAI is agreed upon, standardized and comparable. Consequently, the scope of detailed testing and validation in Co-Cities is bound to the CAI level. A large amount of testing, validation and reporting at this level can be automated with the help of a centralized Reference Platform that allows assessing the availability, conformity, as well as other key performance indicators of the data provision of each service/in each city.

This document, D4.2 "Reference platform, its configuration and usage manual", is one of the deliverables included in the WP4 – SWP4300.

# 3. Document structure and links

The content of this document is structured into the following chapters:

- An introduction to the document, including the scope and purpose of the document, and the intended audience.
- Description of the Reference platform, the requirements towards the system, its components and how it supports the validation at the CAI level.
- Details on the setup, installation and configuration necessary at TISP/RDSS sites.
- A GUI Manual describing the functionalities in each screen.
- Additional information for testing and validation procedures
- Finally, a chapter that summarizes the tasks that have been carried out in this deliverable, describing the work performed and the conclusions reached.

In the following subsections, this task is linked to other tasks in the previous work packages, and also within the overall project.

## 3.1 Link to the Co-Cities project structure

The work package WP-4 is structured in five sub work packages (SWP) which goals are specified as follows in the FPP/DoW (Full Project Proposal/Description of Work):

- SWP 4100 - “Coordination of development and procurement”
- SWP 4200 - “Development of interfaces, data structures and service contents”
- SWP 4300 - “Development of reference platform for services and cities integration levels”
- SWP 4400 - “Integration tests for single services (alpha test)”
- SWP 4500 - “Integration test for single cities (beta test)”

The SWP 4300 “Development of reference platform for services and cities integration levels” of the work package 4 also includes this document D4.2 – “Reference platform, its configuration and usage manual” which aims to provide the necessary information needed to harness the Reference Platform to its full extend. This includes a detailed description, necessary configurations of the platform but also at TISP and RDSS side and a user manual to the main functionalities. The SWP and this document are consequently strongly related to the integration tests in SWP 4400 and 4500.

Background information concerning Co-Cities and its ITS system is described in:

- Co-Cities SWP 3100 - “*Specification of ITS system, interfaces, extensions and modules, reference system*” [4], the SWP 2100 - “*Service definition and use cases” [1]*, the SWP 2200 - “*User group definition and selection*” [2], the SWP 2300 - “*Validation strategy for existing systems, including extensions and reference system test cases*” [3]. But also other results from the In-Time Project [8].

- The FPP/DoW (Full Project Proposal/ Description of Work) as a basic legal reference to be fulfilled.

### 3.2 Link to the Co-Cities annexes and Co-Cities deliverables

This document relates to the following deliverables:

| Document | Name |
|---|---|
| D2.1 [1] | *"Report of cooperative cities services and set use cases"* where the nature of the dependency is related to the definition and description of the use cases or scenarios and the corresponding services domains and feedback services, as well as the feedback dataset derived from use cases definition. |
| D2.2 [2] | *"List of user groups and interaction process"* where the nature of the dependency is related to the definition and description of the stakeholders, user groups and segment per services, user involvement process, as well as the definition of user interaction channels. |
| D2.3 [3] | *"Validation strategy for existing systems, including extensions and reference system test cases"* where the nature of the dependency is related to the definition and description of the testing and validation strategy overview, as well as the general approach and generic requirements for validation activities. |
| D3.1 [4] | *"ITS system specification description and reference platform for validation"* where the nature of the dependency is related to the detailed description of data and service model of Co-Cities CAI (Commonly Agreed Interface), system boundary and general agreements used during the modeling process, specification of the feedback services, as well as a description and specification of the reference platform for validation. |
| IR3.1 & IR3.2 [5] | *"Validated technical interfaces, reference platform and service packages from the service providers"* and "*Validated technical interfaces, reference platform and service packages from Cooperative Cities*" where the nature of the dependency is related to planning the validation of the interfaces between the TISPs and the RDSS with the help of the Reference Server. |
| D 4.1 [6] | *"Test report on interfaces, data structures and working service deliveries"* where the nature of the dependency is related to description of the validation of the interfaces between the TISPs and the RDSS with the help of the Reference Server. |

| | |
|---|---|
| IR 4.1 & IR4.2 [7] | *"Cooperative Services test report"* and *"Service interfaces and installations test report"* where the nature of the dependency is related to report of validating the interfaces between the TISPs and the RDSS with the help of the Reference Server. |

**Table 1: Overview about the document links**

# 4. Introduction

While implementations and technologies used at TISP and RDSS side differ, are generally proprietary and as a result have to be understood as black boxes in the scope of Co-Cities, data provided at the CAI is agreed upon, standardized and comparable. Consequently, detailed testing and validation in Co-Cities is focused, but not limited, to the CAI level. A large amount of testing, validation and reporting at this level can be automated with the help of a centralized Reference Platform that allows assessing the availability, conformity, as well as other key performance indicators of the data provision of each service/in each city. After a description of objectives, target groups and a short overview of Co-Cities service delivery chain, the requirements towards the platform and necessary features are analysed. Based on the results, the Reference Platform and its components are described and specified.

## 4.1 Scope

The Reference Platform is a tool for testing and validating the Co-Cities services' complete delivery chain at the Common Agreed Standardised Interface (CAI) in each city. It simplifies error analyses, as it allows quickly assessing which data and in which quality was available at the interface. Furthermore comparability between cities and services is ensured.

This document describes the Reference Platform, how it is set up, functionalities and the GUI of the system. It focuses on how the system can be used to support validation and, where applicable, links to the relevant documents for further information.

## 4.2 Intended audience

Project partners, Traffic Information Service Providers (TISP) and Local Data Providers (RDSS) can use the Reference Platform to monitor the CAI-interfaces, run automated tests and access reports/statistics depending on their permissions. This document describes how the system can be used to achieve these objectives.

## 4.3 General remark

This document follows the ISO/IEC Directives, Part 2: Rules for the structure and drafting of International Standards w.r.t. the usage of the word "shall". The word "shall" (not "must") is the verb form used to indicate a requirement to be strictly followed to conform to this specification.

In whole of this document, the definition of the terminology "Reference Platform for validation" or shortly "reference platform" is stated as:

A reference or core system, which provide the components, functionalities and applications for:

- Collecting and monitoring the relevant data, characteristics or attributes related to the performance and quality of services and data.
- Validating the elements, services and data related to the service domains and associated scenarios or group of use cases.

- Evaluating and reporting the results of monitored and validated services and data.

In this context, the Reference Platform should be understood as a “Collecting, Monitoring, Validation and Evaluation System Reference”, as it is defined in this general remark section.

# 5. The Reference Platform

## 5.1 Requirements and components

Based on Co-Cities' architecture, lessons from In-Time, the validation strategy and several discussions with project partners the following requirements for the Reference Platform were identified:

- Relay all traffic between the TISPs and the RDSS while affecting the performance of the service delivery chain as little as possible.
- Log incoming and outgoing messages in a standardized way.
- Aggregate and prepare these messages for further analysis and to get an up to date status.
- Support a hierarchy of different user roles (Administrator/User) with different permissions (e.g. read only) at each level.
- Offer monitoring and analysis capabilities in a Web-GUI to users, depending on their permissions.
- Login with Username/Password.
- Allow mobile access in the field.

Based on the identified requirements the Reference Platform is set up as a central, rule based, configurable communication platform, serving as a reference system for all involved partners. Its functionality is offered via two components:

- **Reference Server:** Traffic between the TISPs and the CAI is relayed through the Reference Server (Proxy) to allow enhanced logging of received and sent data as well as test case monitoring.
- **Reference OBU (On-Board Unit; Tablet)**: The Reference OBU acts as a mobile interface to the Reference Server (via a Browser / Webview) and other available web services. As a result, the Reference OBU simplifies integration and validation tests in the field. The Reference OBU is not used as a HMI design reference and does not offer end-user services.

The following figure provides an overview of the Reference Platform components in the context of the Co-Cities architecture:

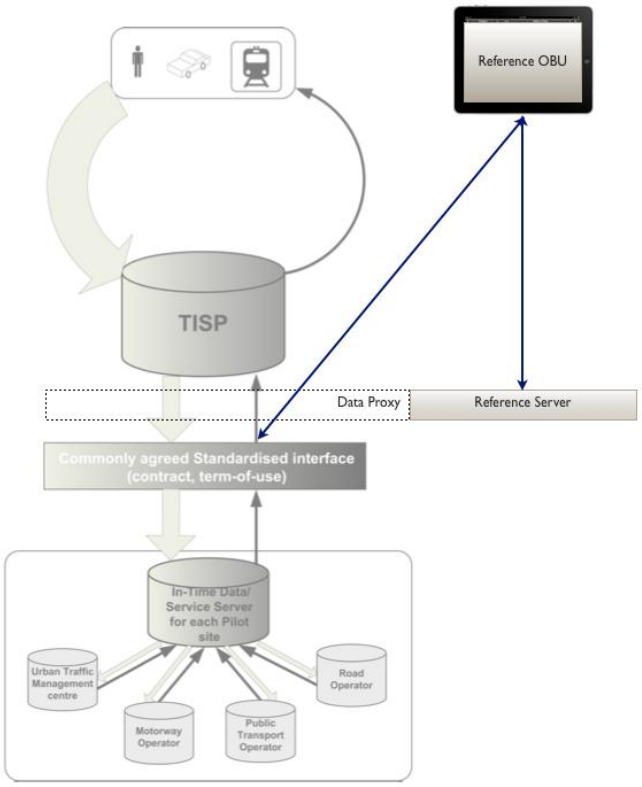



**Figure 2 – Reference Platform – System Context**

Data relayed through the Reference Server's Proxy component is logged and stored to a database/data-warehouse for asynchronous analysis. This data is not only made available to the server's monitoring and reporting components, but can also be accessed by the Reference OBU.

## 5.2 Business Case Engine

The Reference Server receives messages via HTTP input channels (TISP/RDSS) and synchronously forwards these messages to the corresponding output channels. Between input and output the messages can be processed (e.g. validated and stored). These process chains or *business cases* can be reused and combined in a flexible way. All processing steps are documented and hence can be easily analysed ex post. While the business logic itself is agnostic to the Co-Cities domain, the domain specific knowledge is implemented in the individual segments of each business case.

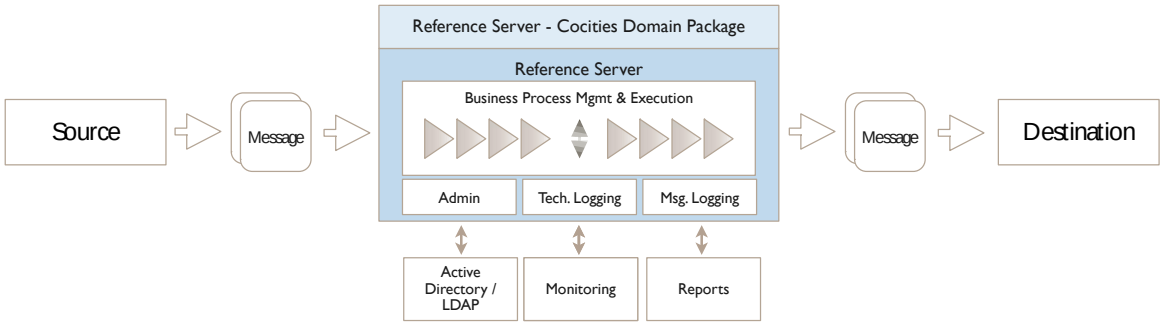



**Figure 3 – Reference Server – Business Case Engine**

A request (e.g. routing request) received can therefore be validated using a validation component, stored in the domain specific data structure and forwarded to its destination. The response generated by the destination server (e.g. routing result) can again be validated, stored and forwarded to the actual source:

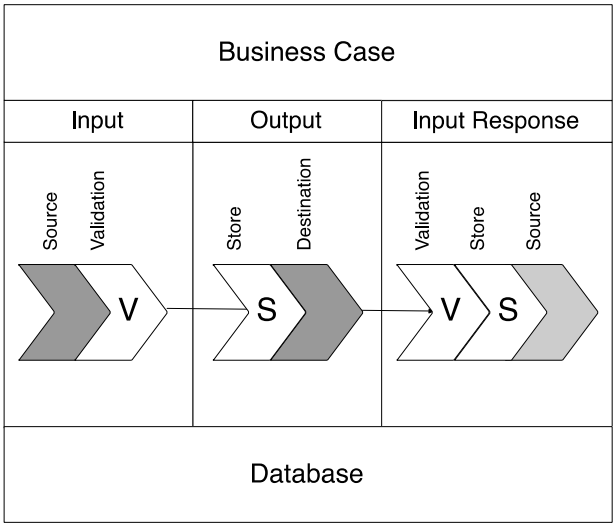



**Figure 4 – Reference Server – Business Case Example**

A central instance of the Reference Server was set up and dispatchs the messages according to the defined business cases for each service/city:

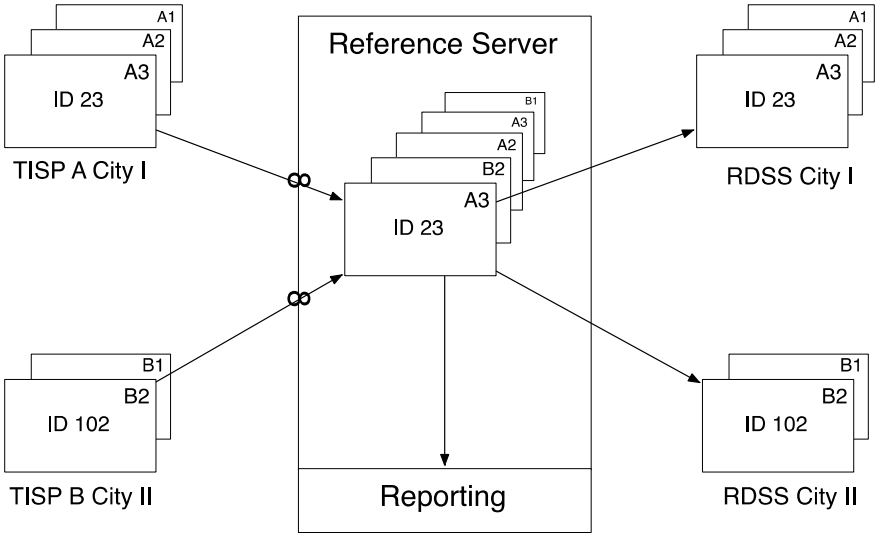



**Figure 5 – Reference Server – Data Dispatching**

## 5.3 Message handling

The Reference Server supports the following features:

- All incoming and outgoing messages are logged and forwarded based on predefined rules.

- All messages / transactions can be identified with an external (Request ID) or internal ID.
- Statistics for each message are calculated and stored (e.g. response time, validity).
- Error messages are distinguished and flagged (technical errors, invalid requests, security,…)

### 5.4 Web GUI

The system supports a hierarchy of different user roles, which have access to the Reference Platform's functionalities based on their permissions. Users are administered with the help of a LDAP directory. After logging in, the Web GUI offers access to monitoring and analysis capabilities. A Dashboard shows the current status of all business cases. Further analysis is possible with the help of a detailed message log. This message log lists all executed business cases and their results at each processing step and can be filtered by parameters such as status, time period etc.. Technical background information is logged in a technical/system log. This log comprises info/warning and error messages thrown by the Reference Server and is meant for debugging purposes. Furthermore, Accessing the Web GUI with the Reference OBU allows mobile access to relevant data for testing and validation in the field. Additionally, due to the fact that data about each business case execution and processing step are stored, statistics necessary for validation are provided and test messages generated by TISPs / RDSS can be easily traced.

## 5.5 Architecture

The Reference Server's modular architecture allows stepwise implementation, flexible configuration and good performance:

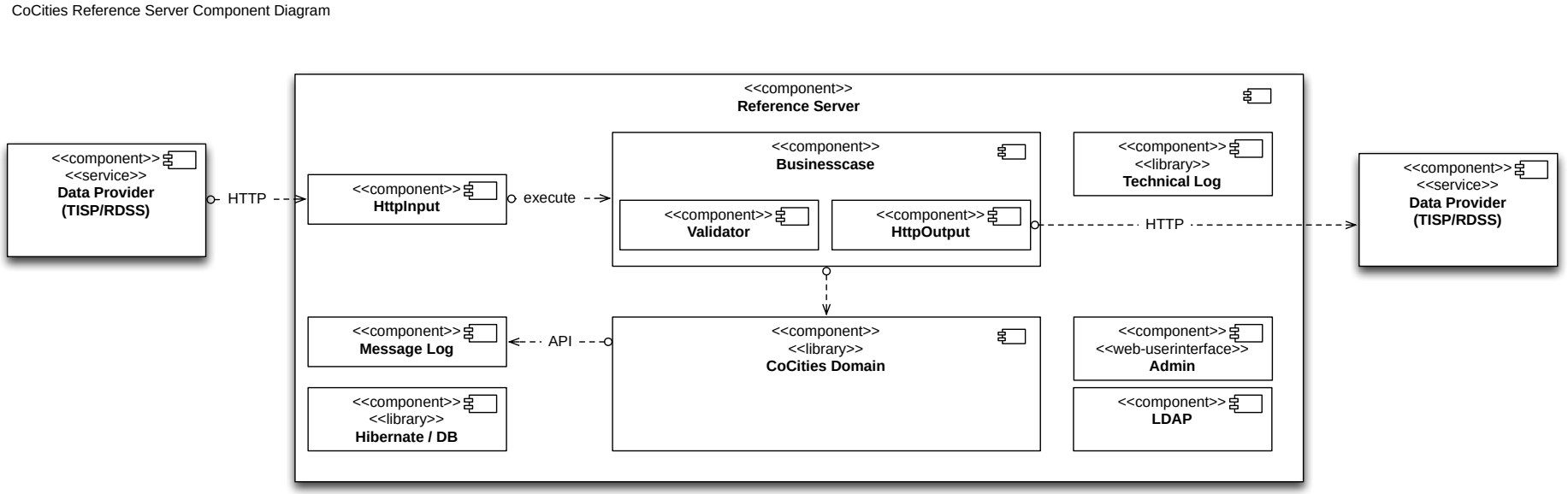



**Figure 6 – Reference Server – Component Diagram**

As a consequence, the Reference Server is an efficient tool for an end-to-end service assessment in terms of data and service quality. It can be used for automated CAI testing, monitoring and analyses of all incoming and outgoing data at the CAI level. Additionally, predefined statistics can be generated to get an up-to-date status and compare results between services and/or cities.

### 5.6 Testing the complete service delivery chain at the CAI level

Each service / use case consists of a maximum of 5 steps (note that some use cases are no direct responses to service requests and as a result only cover the feedback loop):

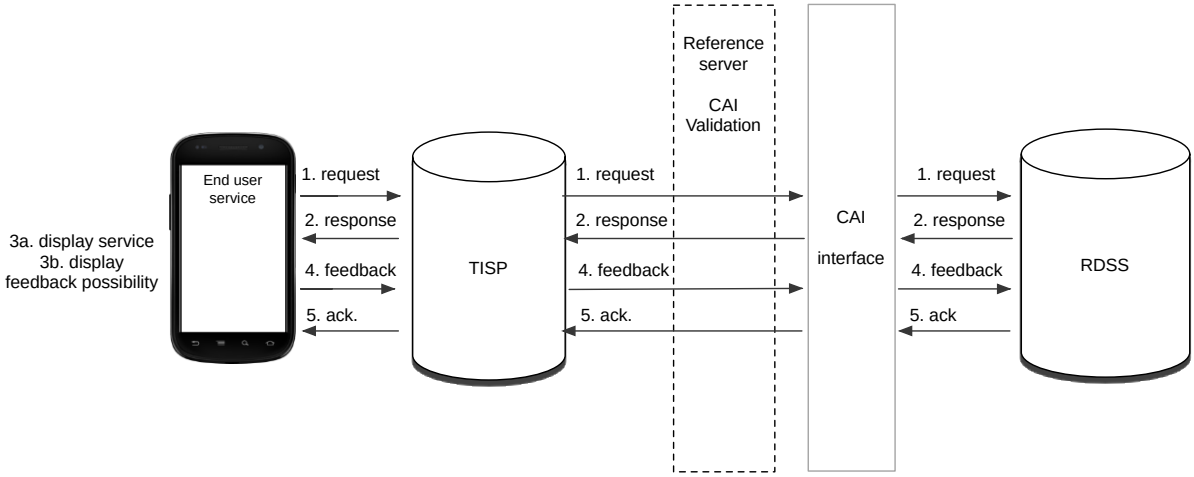



**Figure 7 – Service delivery chain, including display at the end-user device**

| Blocks | Steps | Description |
|---|---|---|
| In-Time Service | 1. Request: | The end-user (client) sends a request to the TISP service provider for a specific service. The TISP service provider forwards the request to the local RDSS in the CAI format, which is responsible for the provision of the corresponding service data. |
| | 2. Response: | The RDSS provides the requested service to the TISP and forwards it to the end-user. |
| | 3. Display: | End-user devices visualize the service (3a) and feedback capabilities (3b). This step is not visible at the CAI level. |
| | 3a. Service: | The result of the called service is displayed in the mobile device or terminal of the end-user depending on the TISP application and associated services installed on the user mobile or terminal |
| Feedback Extension | 3b. Feedback | Depending on the kind of the current service, the |

| | | |
|---|---|---|
| | Possibility | end-user will have the possibility to provide feedback on the service itself. Based on the client interface design there will be three different ways of providing feedback. The end-user can provide feedback specifically related to the received service, general service feedback, or new data. The latter two cases do not require the before mentioned steps (1-3a). |
| | 4. Feedback | The feedback information is send to the TISP and forwarded to the RDSS via the CAI interface. |
| | 5. Acknowledgement: | The feedback reception is acknowledged by the RDSS. |

**Table 2: Service delivery chain, including display at the end-user device**

The Reference Platform supports validation and testing efforts at the CAI level. Even though Step 3 (Display) is not visible at the CAI, using the Reference Platform eases error analysis as request/response can be traced back. For a detailed description of testing and validation methodology as well as relevant criteria see deliverable D2.3 [3], the internal reports of SWP3300/SWP3400 [5], SWP4300/SWP4400 [7] and deliverable D4.1 [6].

# 6. Setup, Installation and configuration

A centralized instance of the Reference Server was set up and is maintained by Fluidtime.

It is available via http://cocities.fluidtime.com/ec_cocities/admin.

## 6.1 Configuration of the Reference Platform

### 6.1.1 Users and Permissions

Users and their permissions are maintained in a local LDAP maintained by Fluidtime. Credentials (user name /password) can be obtained from Fluidtime.

### 6.1.2 Business Cases, Input and Output Channels

The Reference Server supports Co-Cities' feedback services and In-Time's services (WFS/SOAP). Each service (business case) has to be set up by Fluidtime. The business case consists of the input URL (the interface to the Reference Server), the output URL (the interface to the RDSS) and the HTTP method (GET/POST) used to query the service.

## 6.2 Configuration at TISP Side

In order to relay all messages via the Reference Server, TISPs have to query the relevant In-Time/Co-Cities input URL of the Reference Server (See the Business Cases Tab described in 7.3.)

The following Headers have to be used:

| | |
|---|---|
| Content-Type | Text/xml |

**Table 3: Overview of status codes**

Processing at runtime at the reference platform is kept to a minimum. However, relaying the traffic (request/response) via the reference platform is slightly slower than directly calling the RDSS services (typically 200-500ms). This has to be taken into account when evaluating response times.

## 6.3 Configuration at RDSS Side

The RDSS has to whitelist the Reference Server's IP address in case there are any restrictions in the firewall. Fluidtime can provide the IP address of the server by request.

# 7. GUI Manual – Reference Server

## 7.1 Login

At the site “login” the user can enter his/her username and password in the fields of the same name. After entering the correct information, a click on the <Login> button brings the user to the dashboard (6.2 Dashboard). New users have to be defined in the local LDAP by and credentials will be provided by Fluidtime. Existing Users can be examined in the “Users” tab (6.7 Users).

### 7.1.1 Description Login

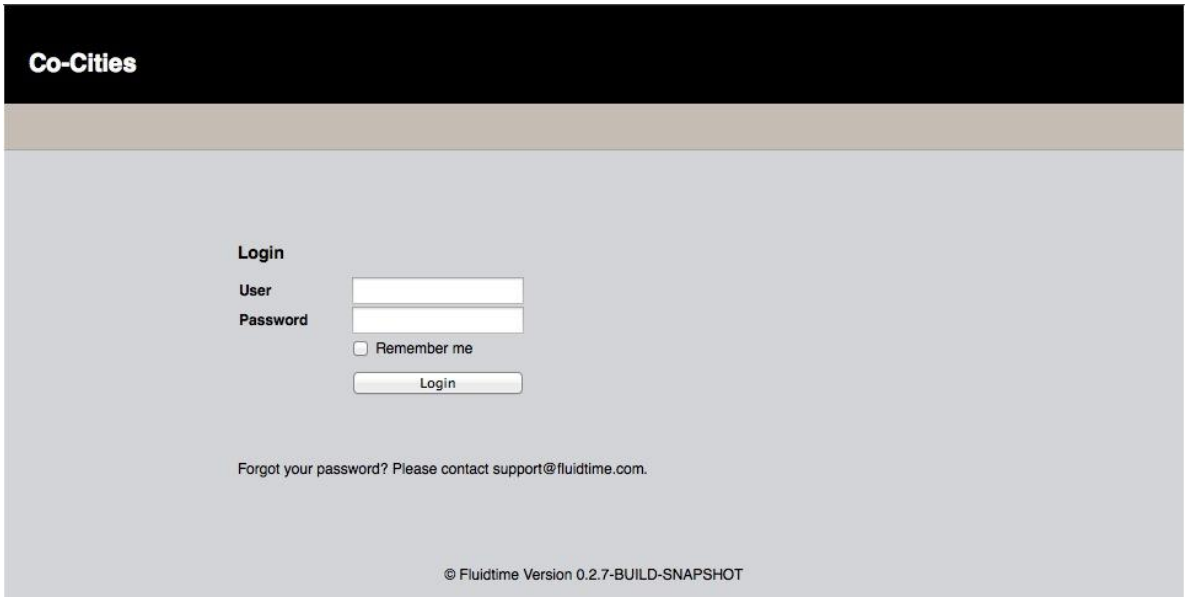



**Figure 8: Login Screen**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **User** | Text | Enter a valid username. |
| **Password** | Text | Enter the corresponding password. |
| **[Remember me]** | Checkbox | Tells the browser to save your inputs in “User” and “Password".<br><br>**Default:** unchecked |
| **Login** | Button | Starts the validation of “User” and “Password”. If there is a user with the given username and the password is correct for this user, the button brings you to the page dashboard |

| | | |
|---|---|---|
| | | (6.2 Dashboard). If not, please read section 6.1.2 Invalid Login. |
| **Forgot your password?** | Text | Information where you can ask for a new password if you forgot your current one.<br><br>**Default:** support@fluidtime.com |
| **Version Info** | | Shows the current version number you work with. For any annotation to this program, please use this version number in your comments. This will help us to understand your problem. |

**Table 4: Login – Available commands/options**

### 7.1.2 Invalid Login

7.1.2.1 Bad credentials

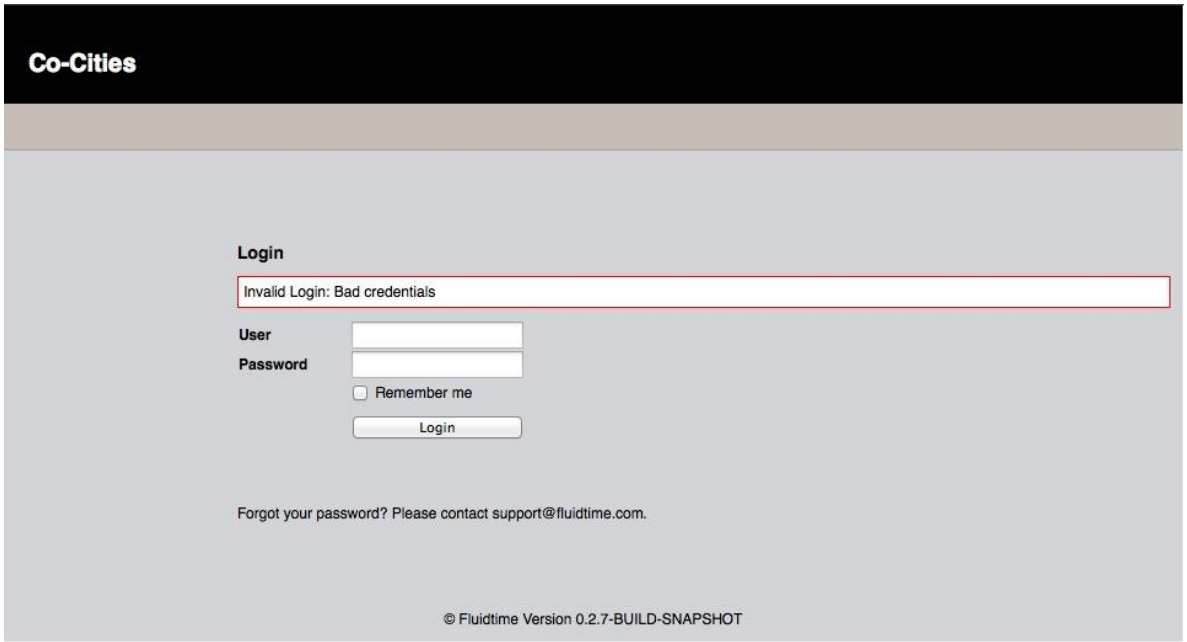



**Figure 9: Login Screen – Bad credentials**

Valid credentials are needed to login into the system:

| | |
|---|---|
| **Problem** | If you fill in the wrong password and/or the wrong user, the error above is shown. |

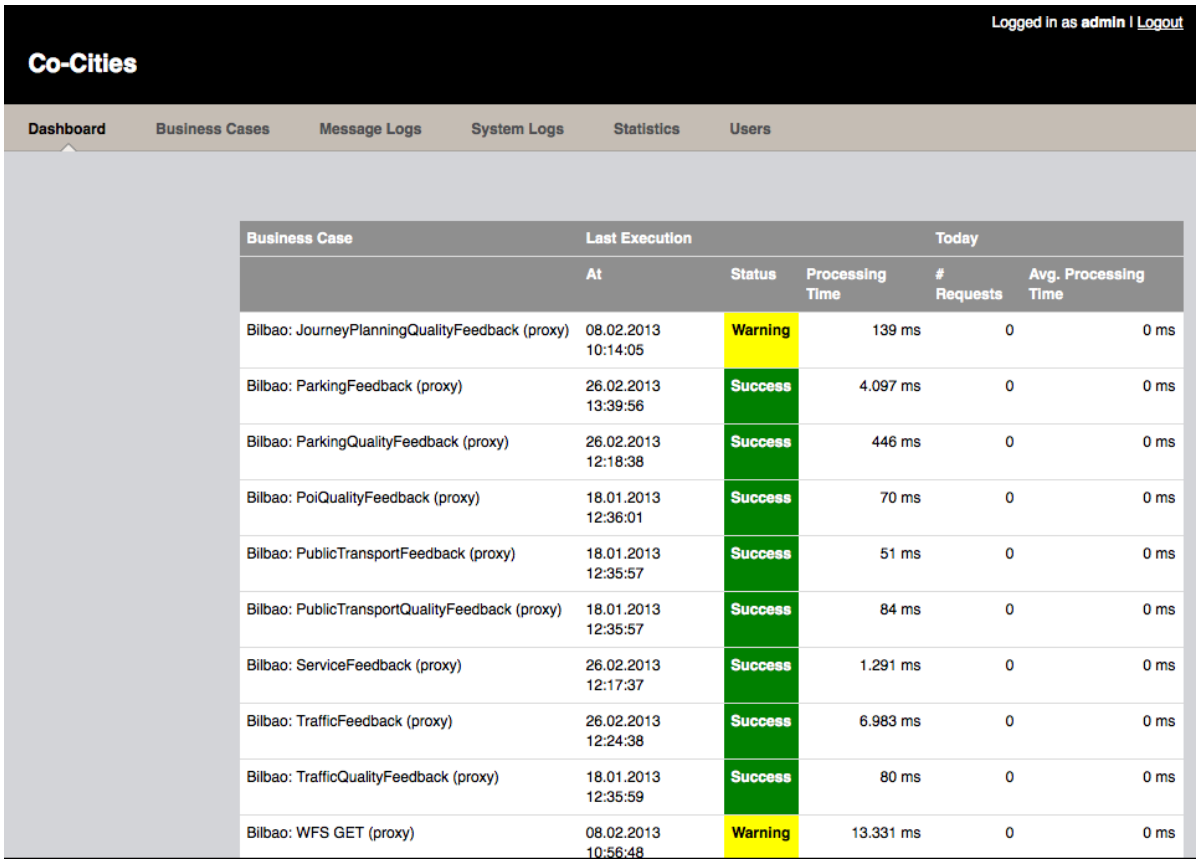
| | |
|---|---|
| **Solution** | Fill in the correct user and/or password. If you forgot your password, please contact support@fluidtime.com. If you forgot your user, please contact your local admin. |

**Table 5: Invalid Login – Problem & Solution**

## 7.2 Dashboard

In the dashboard the user finds an overview of the defined business cases and their last execution, the result of this last execution and some further daily statistics for each business case. They are ordered alphabetically.

### 7.2.1 Description Dashboard




| Business Case | Last Execution | | Today | | |
|---|---|---|---|---|---|
| | At | Status | Processing Time | # Requests | Avg. Processing Time |
| Bilbao: JourneyPlanningQualityFeedback (proxy) | 08.02.2013 10:14:05 | Warning | 139 ms | 0 | 0 ms |
| Bilbao: ParkingFeedback (proxy) | 26.02.2013 13:39:56 | Success | 4.097 ms | 0 | 0 ms |
| Bilbao: ParkingQualityFeedback (proxy) | 26.02.2013 12:18:38 | Success | 446 ms | 0 | 0 ms |
| Bilbao: PoiQualityFeedback (proxy) | 18.01.2013 12:36:01 | Success | 70 ms | 0 | 0 ms |
| Bilbao: PublicTransportFeedback (proxy) | 18.01.2013 12:35:57 | Success | 51 ms | 0 | 0 ms |
| Bilbao: PublicTransportQualityFeedback (proxy) | 18.01.2013 12:35:57 | Success | 84 ms | 0 | 0 ms |
| Bilbao: ServiceFeedback (proxy) | 26.02.2013 12:17:37 | Success | 1.291 ms | 0 | 0 ms |
| Bilbao: TrafficFeedback (proxy) | 26.02.2013 12:24:38 | Success | 6.983 ms | 0 | 0 ms |
| Bilbao: TrafficQualityFeedback (proxy) | 18.01.2013 12:35:59 | Success | 80 ms | 0 | 0 ms |
| Bilbao: WFS GET (proxy) | 08.02.2013 10:56:48 | Warning | 13.331 ms | 0 | 0 ms |

**Figure 10: Dashboard**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **Logged in as <username>** | Info | Name of logged in user. |

| | | |
|---|---|---|
| **Logout** | Link | Logs out the current user and bring the user back to the login page. |
| **Business Case** | Column | The name of the business case. The description of the business case consist of:<br><br>**city:** name of the city the business case is defined for.<br><br>**subject:** the subject of the business case. Find the list of the implemented business cases in chapter 6.3 Business Cases. |
| **Last Execution At** | Column | Date and time of the last execution. |
| **Last Execution Status** | - | Status of the last execution (see chapter 7.4.1) |
| **Last Execution processing time** | Column | Duration of the last execution. |
| **Today # Requests** | Column | Number of requests on the current day. |
| **Today Avg. Processing Time** | Column | Today's average processing time. |

**Table 6: Dashboard – Available commands/options**

## 7.3 Business Cases

In the "Business Cases"-tab the user find the details to the defined business cases (see 5.2 for a definition), see if a single business case is active (or not) and can view the latest log file for a business case. They are ordered alphabetically. Inactive business cases do not relay any data to their output channels.

### 7.3.1 Description Business Cases

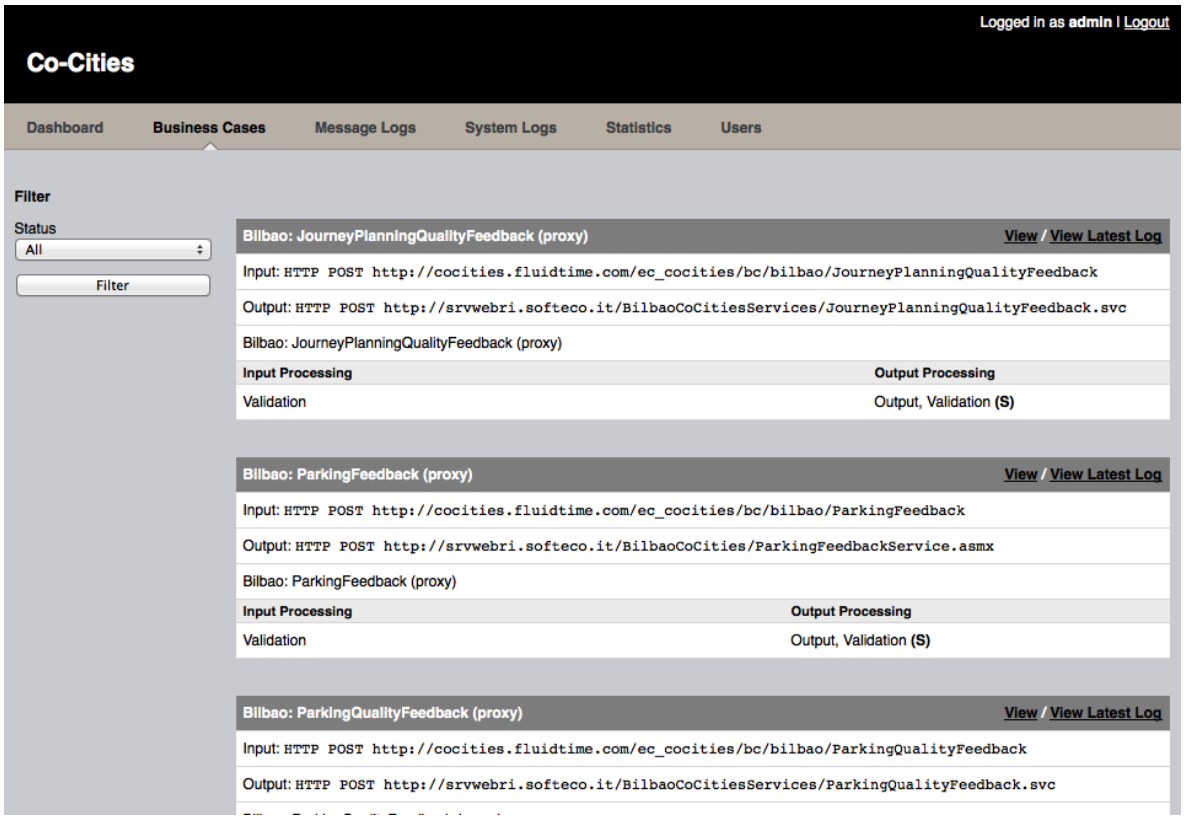



**Figure 11: Business Cases**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **Logged in as <username>** | Info | Name of logged in user. |
| **Logout** | Link | Logs out the actual user and bring the user back to the login page. |
| **Status** | Listbox | The user can filter the status of the business cases shown on the right side [All, Active, Inactive].<br><br>**Default:** All |
| **Filter** | Button | Activate the selected filter. |
| **Business case** | Box | Shows the details for a single business case. |

| | | |
|---|---|---|
| **Business case title** | Line | The title of the business case; describes which kind of service for the business is defined for. |
| **View** | Link | Opens the detailed view for the business case where the user can see if the business case is active or not |
| **View Latest Log** | Link | Opens the message log (See 7.4.1) site with the filters already filled for the particular business case. |
| **Input** | Line | The URL used for input in this business case. |
| **Output** | Line | The URL used for output in this business case. |
| **Description** | Line | The name of the business; describes which kind of service for the business case is defined for. |
| **Input Processing** | Column | Describes, what the business case will do with the input from the Input URL (see above). |
| **Output Processing** | Column | Describes, what the business case will do with the input from the Output URL (see above). |

**Table 7: Business Cases – Available commands/options**

### 7.3.2 Description Business Case Detail

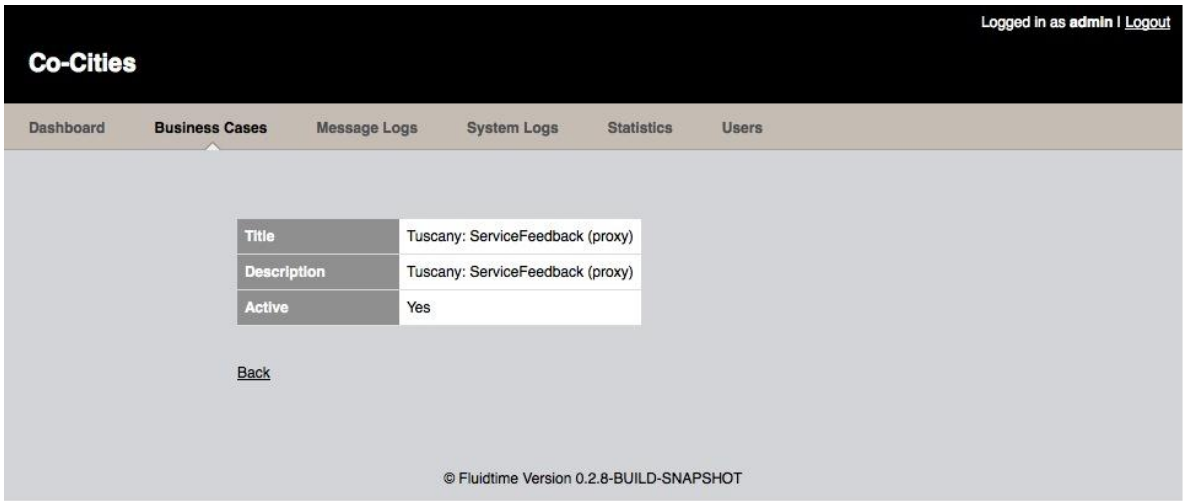



**Figure 12: Business Cases - Detail**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **Logged in as <username>** | Info | Name of logged in user. |
| **Logout** | Link | Logs out the actual user and bring the user back to the login page. |
| **Title** | Line | Title of the business case. |
| **Description** | Line | Description of the business case. |
| **Active case** | Line | Shows whether the business case is active or not. Inactive business cases do not relay any data to their output channels. |
| **Back** | Line | Brings the user back to the business case main site. |

**Table 8: Business Case Detail – Available commands/options**

## 7.4 Message Logs

In the "Message Logs" the user can see the log entries to the executed business cases.

### 7.4.1 Description Message Logs

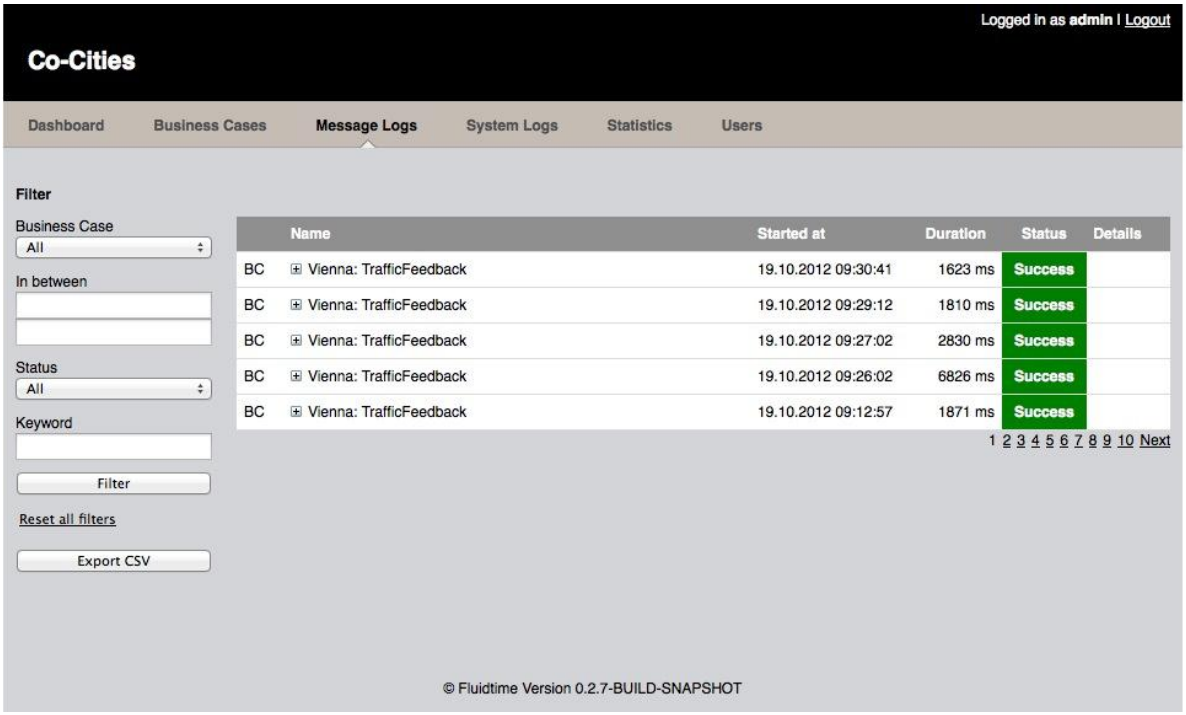


**Figure 13: Message Logs**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **Logged in as <username>** | Info | Name of logged in user. |
| **Logout** | Link | Logs out the actual user and bring the user back to the login page. |

**Table 9: Message Logs – Available commands/options**

**Explanation of Status messages:**

Each business case consists of different segments. When a business case is executed, each of the segments get its own status code. On the different hierarchical levels (represented by the lines in the form "message logs" with a plus ("+") or minus ("-")), the status codes of all segments within this level were combined to an overall status. This means, that there is an accumulated status for each:

- output chain
- business case execution

Every time, the status is used to represent the validation level of something (could be an single segment or a complete output chain or the entire business case) the following list is used:

SUCCESS, WARNING, PENDING, ERROR

If there is more than one value used (i.e. "success" and "warning" in an entire business case execution) then the first status from the right defines the appropriate status (i.e. "warning").

Here is the meaning of the different status codes:

| Status Code | Explanation |
|---|---|
| PENDING | The execution of the segment has started but not finished. |
| WARNING | The execution of the segment has finished with a warning.<br>For the following events, warnings are defined:<br>- a validation (execution of a validation segment) was not successful AND in the configuration of the validator is defined that the |

| | |
|---|---|
| | execution is **not** aborted in case of an execution failure (breakChainOnFailure==false).<br>- a HTTP output (execution of a HTTP output segment) gets a server response with the code 4xx or 5xx. |
| ERROR | The execution of the segment has finished with an error.<br>For the following events, errors are defined:<br>- a validation (execution of a validation segment) was not successful AND in the configuration of the validator is defined that the execution is aborted in case of an execution failure (breakChainOnFailure==true) |
| SUCCESS | The execution of the segment has finished successfully. Occurs every time, when there is no WARNING and no ERROR while executing the segment. |

**Table 10: Overview of status codes**

The xml of requests and response are validated (whether they are syntactically correct xml files) and the status response of the server is evaluated.

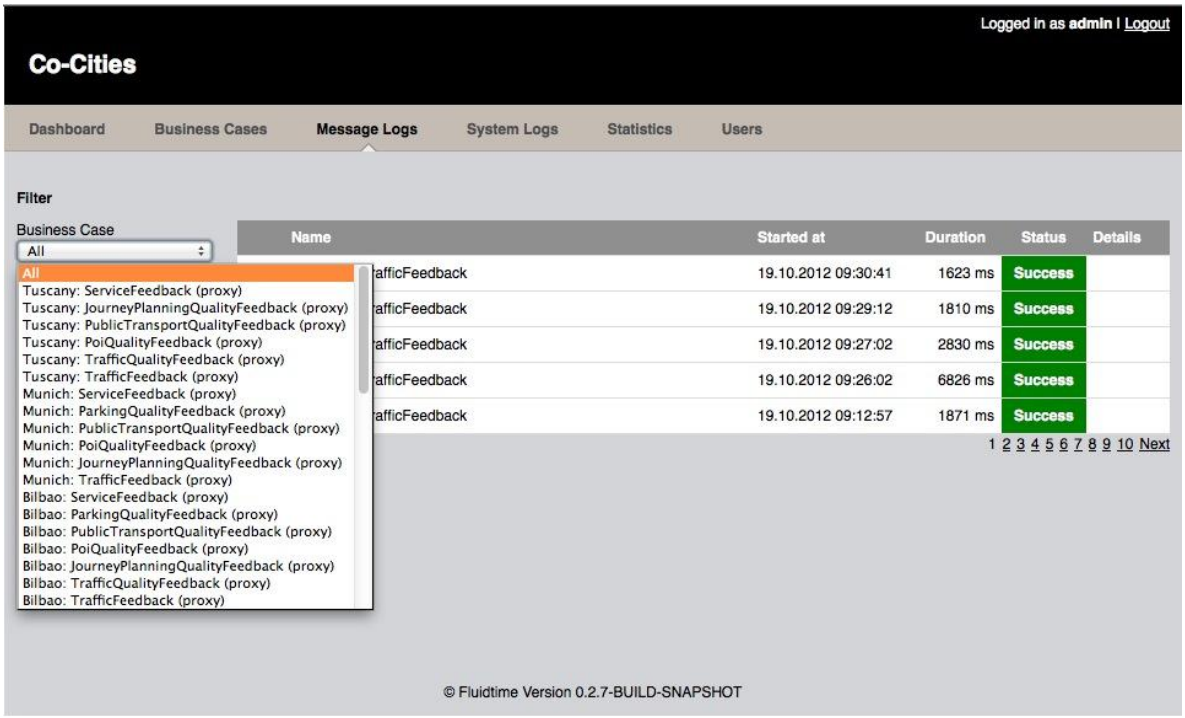



**Figure 14: Message Logs – Filter by Business Case**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **Business Case** | Listbox | With this listbox the user can filter the business cases. It is possible to select "All" business cases or a single one from the list.<br><br>**Default:** All |

**Table 11: Message Logs – Filter by Business Case**

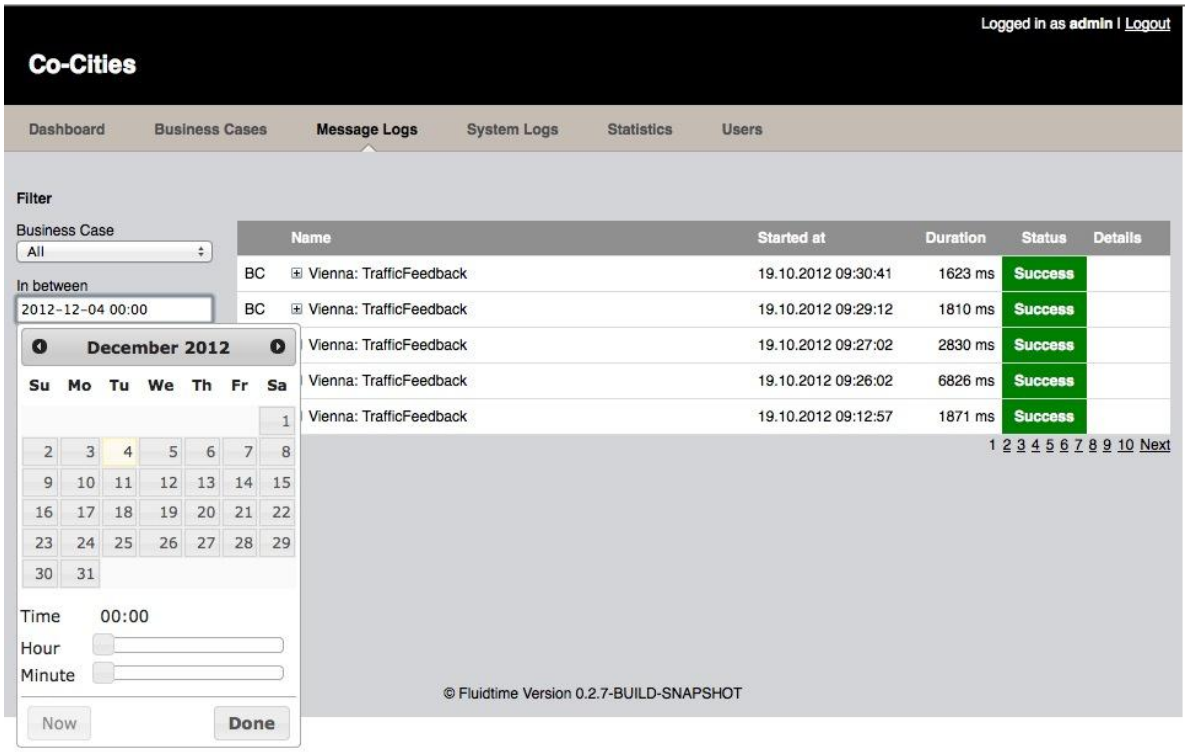



**Figure 15: Message Logs – Filter by Timespan**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **In between** | Date & Time | The user can define the period for the executed business cases he/she wants to see. The first date/time is the beginning of the period, the second date/time the end of the |

| | | |
|---|---|---|
| | | period. |

**Table 12: Message Logs – Filter by Timespan**

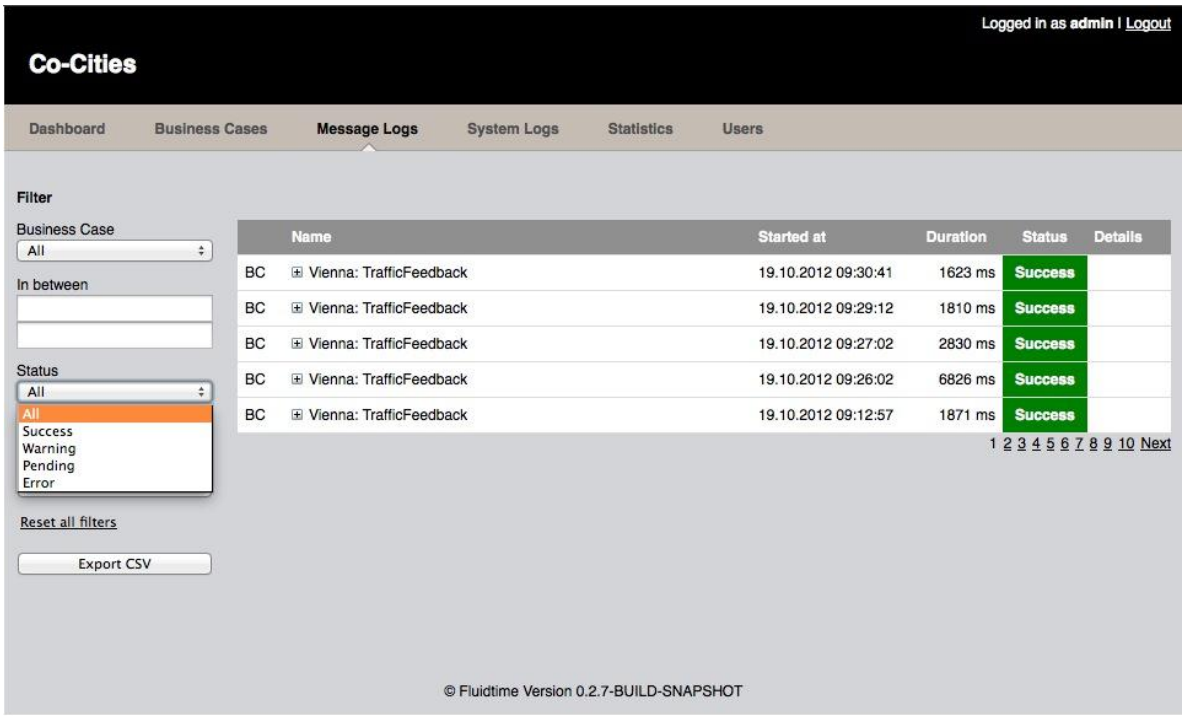



**Figure 16: Message Logs – Filter by Status**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **Status** | Listbox | The user can select the status of the business cases he/she wants to see. The meaning of the different error levels is described in chapter 7. – Testing and Validation procedure.<br><br>**Default:** All |
| **Keyword** | Text | The user can also search for a keyword in the logs of the executed business cases. |
| **Filter** | Button | With the filter button the user starts searching all log entries for the executed business cases for those equal to all defined filters above. |

| | | |
|---|---|---|
| **Reset all filters** | Link | Resets all filters above to their defaults. |
| **Export CSV** | Button | With this button the user can export the filtered information on this site in a .csv file. |
| **Name** | Column | The name (title) of the business case regarding to this logfile entry. |
| **Started at** | Column | Start date/time for the execution of the business case. |
| **Duration** | Column | Duration of the executed business case in ms. |
| **Status** | Column | Overall status for the execution of the business case. The meaning of the different error levels is described in chapter 0<br>Testing and validation procedure. |
| **Detail** | Column | See 7.4.2 |
| **Pages** | Links | The numbers indicate pages, so the user can go directly to the second page by pressing the figure “2” or can go to the “Next” (or “Previous”) page by using the corresponding link. |

**Table 13: Message Logs – Filter by Status**

### 7.4.2 Detail Message Logs

The user can see detail information for a single business case.


**Figure 17: Message Logs – Details**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| + | Button | By pressing the "+" button the user can take a look on the details of the execution for a business case. |
| **Name** | Column | The name of the business case segment regarding to this log file entry. |
| **Started at** | Column | Start date/time for the execution of this business case segment. |
| **Duration** | Column | Duration of the executed business case segment in *ms.* |
| **Status** | Column | Status for the execution of the business case segment. The meaning of the different error levels is described in chapter 0 Testing and validation procedure. |
| **Detail** | Column | Using the link the user can see the details for the executed business case segment. |

**Table 14: Message Log Details – Available commands/options**

### 7.4.3 Detail Message Logs for a business case segment

In a pop up window the user can see more detailed information for an executed, single business case segment. The user will find the complete header (and body) of the request and response as well as the URL and the remote address used in the particular business case execution.

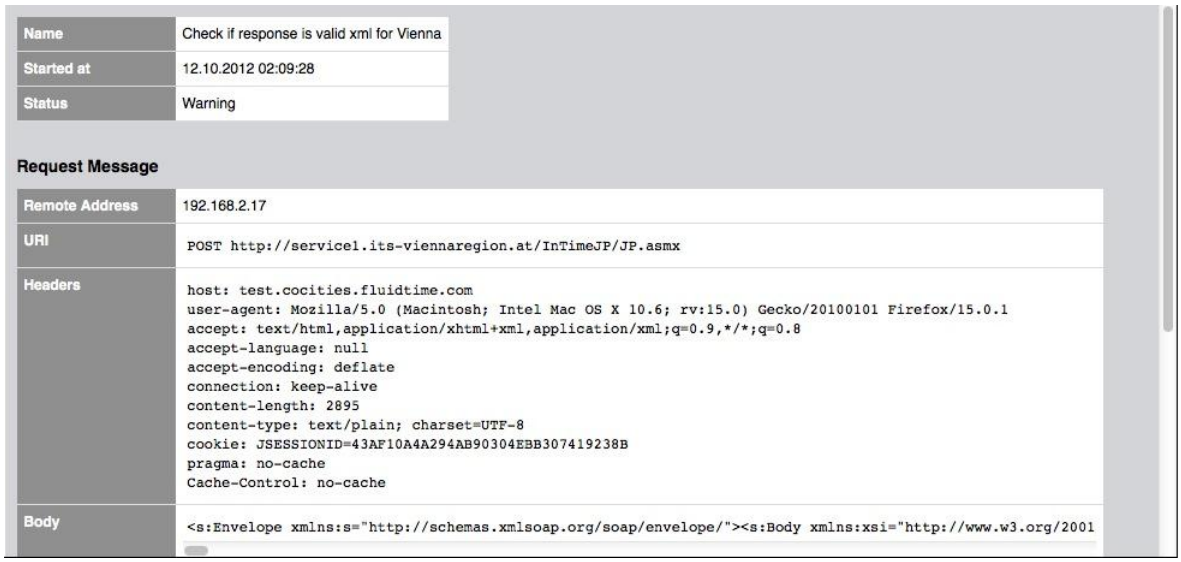



**Figure 18: Message Logs – Detail of segment (Request)**

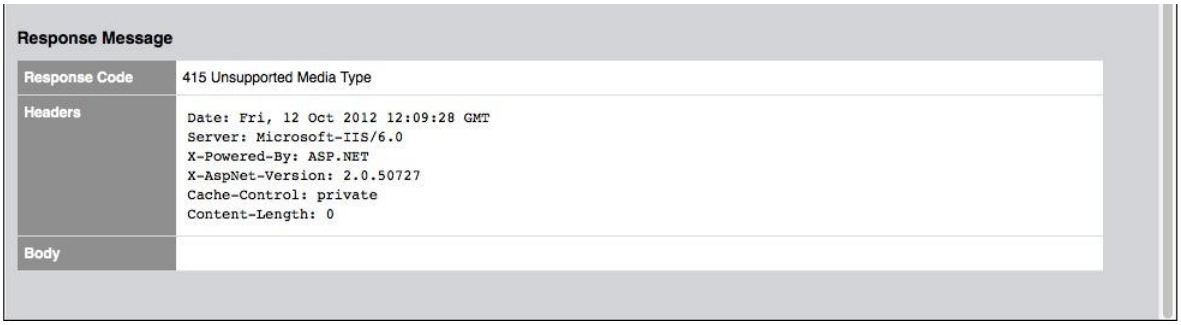



**Figure 19: Message Logs – Detail of segment (Response)**

## 7.5 System Logs

In the "System Logs" the user can see the system logs. This helps when debugging problems with the Reference Server.

### 7.5.1 Description System Logs

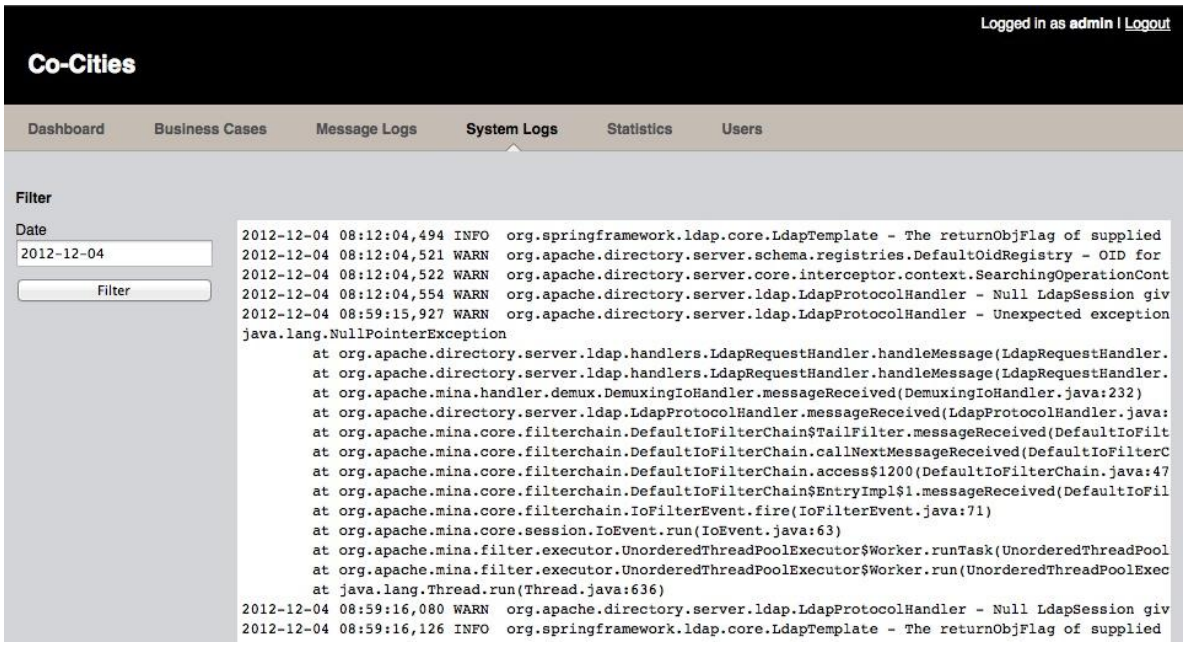



**Figure 20: System Logs**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **Logged in as <username>** | Info | Name of logged in user. |

| | | |
|---|---|---|
| **Logout** | Link | Logs out the actual user and bring the user back to the login page. |
| **Date** | Date | The user can enter the day he/she wants to see the system log files. |
| **Filter** | Button | Start searching the system log file entries for the given date. |

**Table 15: System Logs – Available commands/options**

## 7.6 Statistics

In the "Statistics" the user sees statistic information for each selected business case. The number of executions without an error (= "OK"), the number of executions pending, with warnings or errors and – of course – the number of all executions of a single business case. Also the percentage of well executed business cases and the average processing time of the particular business case is shown for each business case.

### 7.6.1 Description Statistics

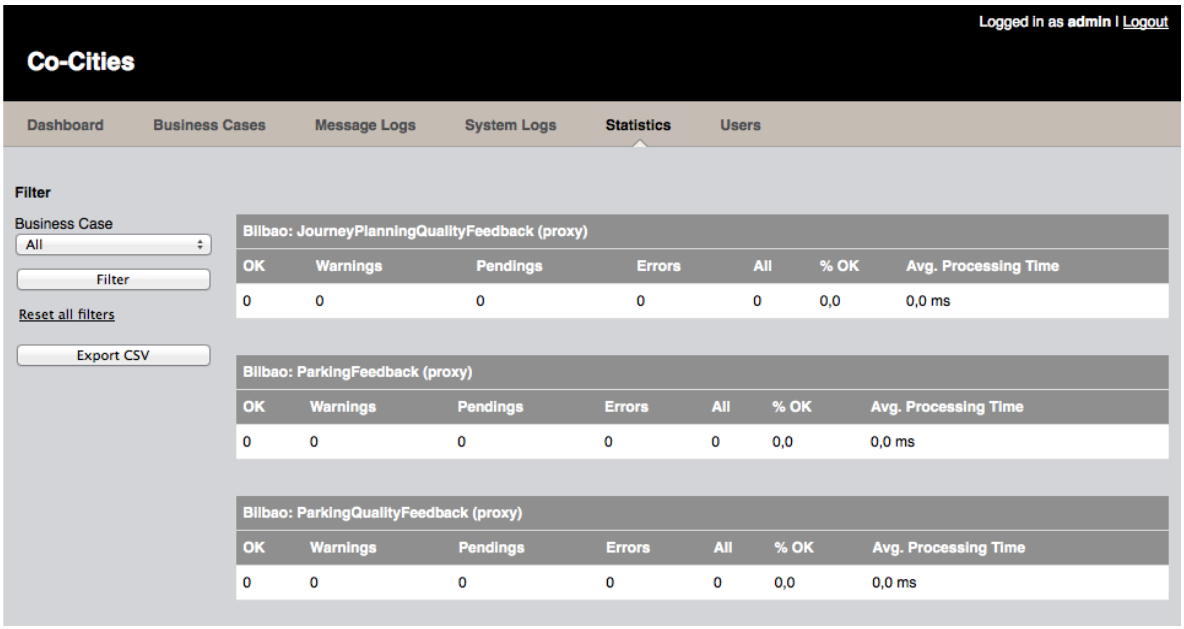



**Figure 21: Statistics**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **Logged in as <username>** | Info | Name of logged in user. |
| **Logout** | Link | Logs out the actual user and bring the user back to the login page. |
| **Business Case** | Listbox | With this listbox the user can filter the business cases. It is possible to select "All" business cases or a single one from the list.<br><br>**Default:** All |
| **Filter** | Button | Start searching the system log file entries for the given date. |
| **Reset all filters** | Link | Resets all filters above to their defaults. |
| **Export CSV** | Button | With this button the user can export the shown information on this site in a .csv file. |

**Table 16: Statistics – Available commands/options**

## 7.7 Users

In the "Users" mask the user find information about the defined users. Users are administered in a local LDAP.

### 7.7.1 Description Users

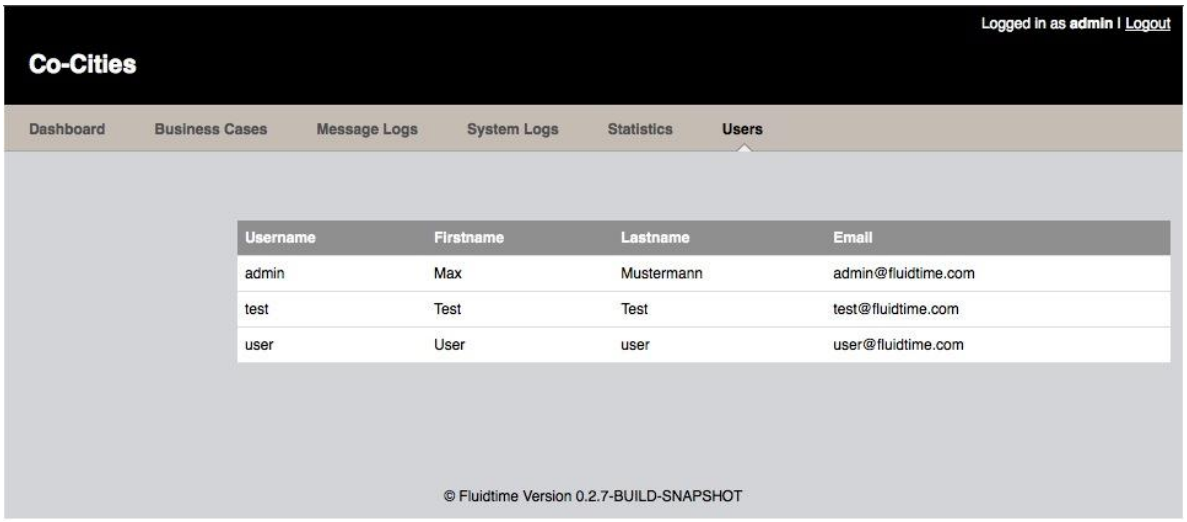



**Figure 22: Users**

**Detail Description**

| Name | Type | Explanation |
|---|---|---|
| **Logged in as <username>** | Info | Name of logged in user. |
| **Logout** | Link | Logs out the actual user and bring the user back to the login page. |
| **Username** | Column | Shows the users login name. The content off this column must be used in the field username on the login screen. |
| **Firstname** | Column | First name of the user. |
| **Lastname** | Column | Last name of the user. |
| **Email** | Column | E-mail address of the user. |

**Table 17: Users – Available commands/options**

## 7.8 GUI Manual - Reference OBU

The Reference Server can be accessed in the field (e.g. with a tablet). The same procedures apply as described in the previous chapter.

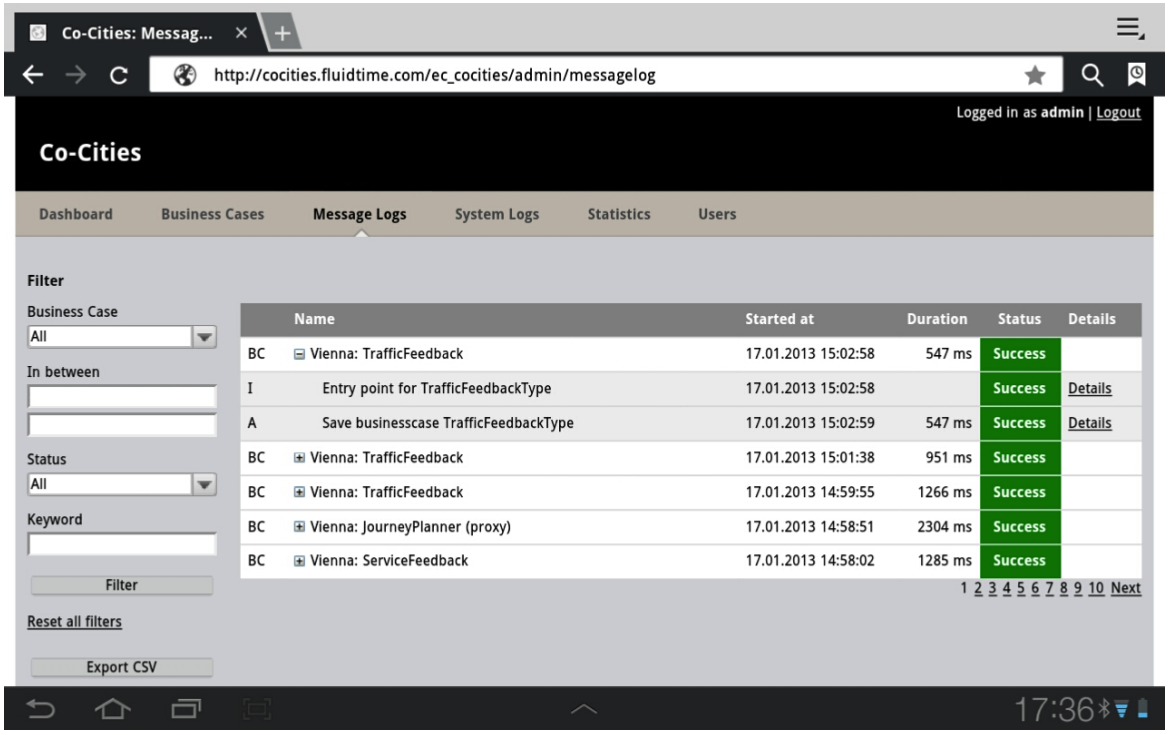



**Figure 23: Mobile Access (Samsung Galaxy Tab 10.1N)**

# 8. Testing and validation procedure

The Reference Server Validation at the CAI level is conducted by the responsible partner/TISP by using the reports produced by the Reference Server itself.

The following methodology is defined in D4.1 [6] to test the full service delivery chain:

- Setup:
  - The TISP has to set up the feedback URLs to invoke the feedback services via the Reference Server.
  - The RDSS has to whitelist the Reference Server's IP address in case there are any restrictions in the firewall.
- Use the services from the mobile apps (or invoke the related web services) multiple times
- Check individual requests/responses (optional) and feedbacks/acknowledgments at the first test and in case of any unexpected behaviour to assess whether the problem is located at the TISP/RDSS side.
- Check the statistics of the Reference Server to get information about errors, response times etc.
- The logs of the reference server are used to check the correct behaviour of the web services of the CAI installed in each Site: using the checklist for the validation of the communication between TISP and RDSS (defined in internal report IR3.1 [5]) the execution of each Business Case must result in a **positive** output from the Reference Server logs.
- For the current test the execution of a business case can be identified with the execution of a web service. A positive output can be identified in the log reports of the reference server with the corresponding entry having a "**Success**" status and marked in green. An entry of the log files has the following format:
  - Business case: name of the city and method of the web service
  - Started at
  - Duration
  - Status

Relaying the traffic (request/response) via the reference platform is slightly slower than directly calling the RDSS services (typically 200-500ms). This has to be taken into account when evaluating response times. Additionally, it has to be considered that there may be cases where there are no errors occurring at the servers involved, the user may still don't get the intended results (e.g. because he/she entered the wrong address).

# 9. Conclusions

This document described the reference platform, its configuration and usage. After an introduction of the Reference Platform, the setup and configuration was explained. The functionalities of the system were detailed in a GUI-Manual and information about the validation process where explained.

In case you have any questions concerning the reference platform, please contact Fluidtime.

# 10.Glossary

The glossary provides the coherent terminological framework used in this document.

## 10.1 Abbreviations

| | |
|---|---|
| DoW | Description of Work |
| GUI | Graphical User Interface |
| HTTP | Hypertext Transfer Protocol |
| IP | Internet Protocol |
| RDSS | Regional Data/ Service Server |
| SOA | Service Oriented Architecture |
| SWP | Sub Work Package |
| TCP | Transmission Control Protocol |
| TISP | Traffic Information Service Providers |
| UML | Unified Modeling Language |
| WP | Work Package |
| WSDL | Web Services Description Language |
| XML | Extensible Markup Language |
| XSD | XML Schema Definition |

# 11.References

The following references are used as background documents for the preparation of this document. References are categorized standards (i.e. standards and specifications from the consortium working groups or alliances and specifications or drafts standardization bodies) and other documents, publications and technical or scientific books.


| | |
|---|---|
| [1] | Co-Cities project. Cooperative Cities extend and validate mobility services. Deliverable D2.1 *"Report of cooperative cities services and set use cases" ("Service definition and use cases")*, January 2012. |
| [2] | Co-Cities project. Cooperative Cities extend and validate mobility services. Deliverable D2.2 *"List of user groups and interaction process" ("User groups and interaction process")*, January 2012. |
| [3] | Co-Cities project. Cooperative Cities extend and validate mobility services. Deliverable D2.3 *"Validation strategy for existing systems, including extensions and reference system test cases"*, March 2012. |
| [4] | Co-Cities project. Cooperative Cities extend and validate mobility services. Deliverable D3.1 *"ITS system specification description and reference platform for validation"*, March 2012. |
| [5] | Co-Cities project. Cooperative Cities extend and validate mobility services. Deliverable IR3.1&IR3.2 "*Validated technical interfaces, reference platform and service packages from the service providers*" & *"Validated technical interfaces, reference platform and service packages from Cooperative Cities"*, December 2012. |
| [6] | Co-Cities project. Cooperative Cities extend and validate mobility services. Deliverable D4.1 "*Test report on interfaces, data structures and working service deliveries"*, December 2012 |
| [7] | Co-Cities project. Cooperative Cities extend and validate mobility services. Deliverable IR 4.1 & IR4.2 *"Cooperative Services test report"* & *"Service interfaces and installations test report"*, December 2012 |
| [8] | In-Time project. Intelligent and efficient travel management for European cities.<br><br>http://www.in-time-project.eu/<br><br>http://www.in-time-project.eu/en/library/deliverables/ |