# ISITEP
# D5.5.2 – SEMANTIC/SYNTACTIC TRANSLATOR TEST REPORT

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## Publishable extended abstract

This deliverable provides the test report of the Semantic and Syntactic Translator (SST), which is one of the applications of the ISITEP enhanced terminal.

It describes for every test case the actions to be executed and the associated expected results.

The SST app was tested on different devices in order to evaluate both the validity, as well as the compatibility of its functionality; the tests took place on a One Plus One (LTE) running Android 6.0.1, on a Samsung Galaxy A3 (LTE) running Android 5.0.2 and on a Asus TF300 (only Wi-Fi) running Android 4.2.1.

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# 1 Introduction and scope

The aim of this deliverable is the reporting of the application testing of both the server and the terminal side of the Semantic and Syntactic Translator (SST) application, as part of the ISITEP Enhanced Terminal.

As described in [1]the SST application is distributed across two network architecture components, namely the TETRA/TETRAPOL communication server and the TETRA/TETRAPOL terminals. In addition, the SST application comprises the following functional components:

- The Request Processing Component (RPC). The RPC is one of the main functional blocks of the described architecture. The RPC is in charge of performing tasks, such as handling the requests from the terminals, forwarding translation requests to the translation engine, receiving translated commands and sending them back to the terminals.
- The Remote Service (RS), which is responsible for providing the target languages of the translation.
- The Translation Engine (TE), which is in charge of preparing the query statements and executing queries to the commands' database, retrieving the query results, forwarding back the results to the RPC, etc.

The design and requirements of SST have already been presented in [1]; this document focuses on the tests that have been conducted, with respect to the requirements, to verify the correct behavior of the app.

## 2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

| Acronym | Definition |
|---|---|
| API | Application programming interface |
| DB | Database |
| EME | Enhanced Message Exchange |
| HMI | Human Machine Interface |
| IET | ISITEP Enhanced Terminal |
| PIN | Personal Identification Number |
| IF | Interface |
| SDS | Short Data Service |
| SST | Semantic and Syntactic Translator |
| TETRA | Terrestrial Trunked Radio |
| URL | Uniform Resource Locator |

# 3 Testing environment

The tests are performed on a One Plus One (LTE)running Android 6.0.1, on a Samsung Galaxy A3 (LTE) running Android 5.0.2 and on a Asus TF300 (only Wi-Fi) running Android 4.2.1.

During the tests of the SST on the client side, no other application provided by the IET is available. To overcome this limitation, the applications are simulated with a test Application provided that showcases the valid operation of the SST app and its proper interactions through Intents and Broadcast Receivers with other applications of IET.

Regarding the tests on the server side of the SST, since the API providing access to TETRA/ TETRAPOL networks were not available, they have been developed exploiting a sample web service and tested through a python script executing all the possible actions a client could perform through the web service, according to the description of the SST implementation details ([1],[2]).

# 4 Test cases

In the following, the analyzed test cases are listed on both server and client side.

## 4.1 Test server side core

### 4.1.1 SST_SERVER_1 –Web translation

| Semantic and SyntacticTranslator Core | | |
|---|---|---|
| SST_SERVER_1<br>The SST shall run as a service to perform translation not available on terminals. | | |
| **Objective(s)** | | |
| Verify that the SST runs as a service and offers an interface for interaction with terminals | | |
| **Pre-Conditions** | | |
| • The ISITEP environment is up and running<br>• SST service is started | | |
| **Test procedure** | | |
| **Action** | | **ExpectedResult** |
| 1 | Access to the URL of the SST service | The service page is shown |

### 4.1.2 SST_SERVER_2 – Translate requested command(s)

| Semantic and SyntacticTranslator | | |
|---|---|---|
| SST_SERVER_2<br>The SST shall provide a method to perform translation of requested command(s) | | |
| **Objective(s)** | | |
| Verify that the SST user is able to perform translation of command(s) | | |
| **Pre-Conditions** | | |
| • The ISITEP environment is up and running<br>• SST service is started<br>• Google API key is installed for the service | | |
| **Test procedure** | | |
| **Action** | | **ExpectedResult** |
| 1 | Access to the URL of the SST service | The service page is shown |
| 2 | Type existing commands for translation and select language to translate | The service returns a list with the translated commands |
| 3 | Type non existing commands which are available on Google API for translation and select language to translate | The service contacts Google API and retrieves the requested translation<br>The service stores the translated command on its local DB for future requests<br>The service returns the requested translation |
| 4 | Type non existing commands which are not available on Google API for translation and select language to translate | The service contacts Google API but does not retrieve any translation<br>The service attempts to identify possible suggestion for translated command<br>The service returns the identified translation as suggested translation. |

### 4.1.3 SST_SERVER_3 –Submittranslation score

| Semantic and SyntacticTranslator | | |
|---|---|---|
| SST_SERVER_3<br>The SST Server Application through the Web Service, shall provide to users the means to submit translation score for a translated command. | | |
| **Objective(s)** | | |
| Verify that the SST Server Application is able to provide to users the means to submit translation score for translated commands. | | |
| **Pre-Conditions** | | |
| • The ISITEP environment is up and running<br>• The SST service is started<br>• SST user is authorized | | |
| **Test procedure** | | |
| **Action** | | **ExpectedResult** |
| 1 | Access to the URL of the SST service | The service page is shown. |
| 2 | Type a score command | The service updates command's score to the local DB<br>The service responds with a successful score submission response to the user |

### 4.1.4 SST_SERVER_4 – Update service database

| | | |
|---|---|---|
| Semantic and SyntacticTranslator | | |
| SST_SERVER_4<br>The SST Server Application through the Web Service, shall provide to the Administrator the means to update the commands' DataBase. | | |
| **Objective(s)** | | |
| Verify that the SST Server Application is able to provide to the Administrator the means to submit update the commands' DataBase | | |
| **Pre-Conditions** | | |
| • The ISITEP environment is up and running<br>• The SST service is started<br>• SST Administrator is authorized | | |
| **Test procedure** | | |
| **Action** | | **ExpectedResult** |
| 1 | Access to the URL of the SST service | The service page is shown. |
| 2 | Edit a DB entry | The service updates the entry to the local DB<br>The service responds with a successful update response to the Administrator |

### 4.1.5SST_SERVER_5–Exchange SDS messages with TETRA/TETRAPOL terminals

| Semantic and SyntacticTranslator | | |
|---|---|---|
| SST_SERVER_5<br>The SST Server Application, through the Web Service, shall receive the messages from TETRA/TETRAPOL terminals. | | |
| **Objective(s)** | | |
| Verify that the SST server is able to receive information from terminals in SDS format | | |
| **Pre-Conditions** | | |
| • The ISITEP environment is up and running<br>• SST service is started | | |
| **Test procedure** | | |
| **Action** | | **ExpectedResult** |
| 1 | Access to the URL of the SST service | The service page is shown |
| 2 | Send a translation request from the terminal | The service receives the request<br>The service performs the translation<br>The service sends a response with the translated text |
| 3 | View the translated text on the terminal | The terminal is updated with the translated text details |

## 4.2 Test client side app

### 4.2.1 SST_CLIENT_1 - SST App run as a service on the mobile terminal

| Semantic and Syntactic Translator | | |
|---|---|---|
| SST_CLIENT_1<br>The SST App shall run as a service on the mobile terminal. | | |
| **Objective(s)** | | |
| Verify that SST App runs as a Service | | |
| **Pre-Conditions** | | |
| • The device needs to have developer option turned on and SST Service needs to be launched | | |
| **Test procedure** | | |
| **Action** | | **ExpectedResult** |
| 1 | Tap on developer tools, developer options, and then running service. | SST Service appears on the list of services running in the background |

### 4.2.2 SST_CLIENT_2 - Iconapp

| Semantic and Syntactic Translator | | |
|---|---|---|
| SST_CLIENT_2<br>The SST App shall provide the “SST” icon on the main screen of the ISITEP Application, in order to allow the user to interact with the Application itself. | | |
| **Objective(s)** | | |
| Verify that the SST can be launched from the icon provided by the HMI ISITEP interface | | |
| **Pre-Conditions** | | |
| • HMI ISITEP needs to be installed and running, and user needs to be authenticated | | |
| **Test procedure** | | |
| **Action** | | **ExpectedResult** |
| 1 | Launch ISITEP HMI Application, insert user PIN | SST icon appears on the list of the available Added Value Apps |

### 4.2.3 SST_CLIENT_3 - TSListenerIF

| | | |
|---|---|---|
| Semantic and SyntacticTranslatorApp | | |
| SST_CLIENT_3<br>The SST App shall provide a TSListenerIFimplemented on Android Service Bus. | | |
| **Objective(s)** | | |
| Verify that the SST offers an interface for communication intent based | | |
| **Pre-Conditions** | | |
| • The ISITEP environment is up and running<br>• The EME App is running<br>• The SST App is running | | |
| **Test procedure** | | |
| **Action** | | **ExpectedResult** |
| 1 | EME sends an intent to the Android Bus with the text for translation | SSTtranslates the requested text and a notification is shown on the terminal |
| 2 | SST sends an intent to the Android Bus with the translated text | EME displays the translated text details and a notification is shown on the terminal |

### 4.2.4SST_CLIENT_4 - SDS Messages between App and Server

| | | |
|---|---|---|
| Semantic and SyntacticTranslatorApp | | |
| SST_CLIENT_4<br>The SST App shall be able to exchange messages with the SSTServer using SDS messages. | | |
| **Objective(s)** | | |
| Verify the message exchange between SSTServer and SST App | | |
| **Pre-Conditions** | | |
| o SST Service is running<br>o The Communication manager is running<br>o SST App is running<br>o EME App is running | | |
| **Test procedure** | | |
| **Action** | | **ExpectedResult** |
| 1 | SSTApp sends a translation request to the Service | SSTservice performs the translation and responds to the terminal with the translated text<br>SST App receives the translated text from the SST service through an intent raised from the CM |
| 2 | SST App broadcasts an Intent with the translated text | EME App shows the translated commands |

# 5 Requirements mapping

In this section, all test cases aremapped, if possible, to project requirements.Each test suite is mapped over a requirement and contains several test cases.

## 5.1 Test Workflow Manager Server

| REQUIREMENT ID | REQUIREMENT DESCRIPTION | TEST CASE ID |
|---|---|---|
| REQ#1 | The SST shall run as a service to perform translation not available on terminals. | SST_SERVER_1 |
| REQ#2 | The SST shall provide a method to perform translation of requested command(s) | SST_SERVER_2 |
| REQ#3 | The SST Server Application through the Web Service, shall provide to users the means to submit translation score for a translated command. | SST_SERVER_3 |
| REQ#4 | The SST Server Application through the Web Service, shall provide to the Administrator the means to update the commands' DataBase. | SST_SERVER_4 |
| REQ#5 | The SST Server Application, through the Web Service, shall receive the messages from TETRA/TETRAPOL terminals. | SST_SERVER_5 |

## 5.2 Test Workflow Manager Client App

| REQUIREMENT ID | REQUIREMENT DESCRIPTION | TEST CASE ID |
|---|---|---|
| REQ#6 | The SST App shall run as a service on the mobile terminal. | SST_CLIENT_1 |
| REQ#7 | The SST App shall provide the “SST” icon on the main screen of the ISITEP Application, in order to allow the user to interact with the Application itself. | SST_CLIENT_2 |
| REQ#8 | The SST App shall provide a TSListenerIF implemented on Android Service Bus. | SST_CLIENT_3 |
| REQ#9 | The SST App shall be able to exchange messages with the SST Server using SDS messages. | SST_CLIENT_4 |

## 6 Test report

| TEST ID | TEST TITLE | EXECUTION DATE | RESULT |
|---|---|---|---|
| SST_SERVER_1 | Web translation | 11/04/2016 | Asexpected |
| SST_SERVER_2 | Translate requested command(s) | 11/04/2016 | Asexpected |
| SST_SERVER_3 | Submittranslation score | 12/04/2016 | Asexpected |
| SST_SERVER_4 | Update service database | 12/04/2016 | Asexpected |
| SST_SERVER_5 | Exchange SDS messages with TETRA/TETRAPOL terminals | 12/04/2016 | Asexpected |
| SST_CLIENT_1 | SST App run as a service on the mobile terminal | 13/04/2016 | Asexpected |
| SST_CLIENT_2 | Iconapp | 13/04/2016 | Asexpected |
| SST_CLIENT_3 | TSListenerIF | 13/04/2016 | Asexpected |
| SST_CLIENT_4 | SDS Messages between App and Server | 14/04/2016 | Asexpected |

# 7 References

[1] ISITEP D5.5.1 – Semantic/Syntactic Translator Database population
[2] ISITEP D5.5.3 - Semantic/Syntactic Translator Engine Design Description