Integration **T**est **P**lan **D**ocument

Version 1.0

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Contents

1 Introduction

1.1 Revision History

Date	Description	Authors
21/01/2016	Delivers of version 1.0	Pea, Sessa

1.2 Purpose

The purpose of the integration test plan is to describe the necessary tests to verify that all the components(see **DD**, reference section) of MyTaxiServive are properly assembled. Integration testing ensures that the unit-tested components interact correctly.

1.3 Scope

The aim of this project is to develop MyTaxiService, a web/mobile application that makes easier and quicker taking taxies within the city's borders. Thanks to MyTaxiService, anyone can request or book a taxi and get realtime information about how long it will take to be picked up or about the taxi's current position and identification code. In addition to that, MyTaxiService provides an efficient way to allocate taxies by dividing the city in zones and using a queue based allocation system, in order to reduce the average waiting time and city's traffic.

1.4 Terms Definition

1.4.1 Glossary

- **Mtaxi:** A taxi that joined MyTaxiService
- **User:** Refers to either a logged registered user or a generic user(see RASD)
- **MyTaxiService(B):** see RASD
- **Administrator:** see RASD
- **Mtaxi bad beahvior**: see RASD

1.4.2 Acronyms

- **RASD:** Requirements Analisys and Specification Document
- **DD:** Design Document
- **MVC:** Model View Controller

- **GUI:** Graphic User Interface
- **GPS:** Global Positioning System
- **CM:** Communication Manager
- **DB:** DataBase

1.5 Reference Documents

- [**RASD**] Requirements and analisys specification document(RASD)
- [**DD**] Design Document(DD)
- [**A1**] Project's assignement number 1
- [**A2**] Project's assignement number 2

2 Integration Strategy

2.1 Overview

In the first part of this section the components to be tested are mentioned, moreover the testing strategy is chosen and the integration testing order defined.
A more detailed specification for each test case is given in the third chapter.

2.2 Entry Criteria

The main entry conditions for this phase is that each of the system components low level functions has been previously subjected to a unit test process.

2.3 Elements to be integrated

For a detailed description of each components function and interaction refer to the **DD**
Three main subsystem can be individuated in the general architecture of MyTaxiService:

1. **Client Side Components**
    - MyTaxiServiceAppUser GUI
    - MyTaxiServiceMYT GUI
    - MyTaxiServiceWebUser GUI
    - MyTaxiServiceWebAdmin GUI
    - MyTaxiServiceAppUser Communication Manager
    - MyTaxiServiceMYT Communication Manager
    - MyTaxiServiceWebUser Communication Manager
    - MyTaxiServiceWebAdmin Communication Manager
2. **Server Side Components**
    - Dispatcher
    - Request Manager
    - External Services Manager
    - Location Manager
    - Queue Manager
    - Request Receiver
3. **Model Side Components**
    - Data Manager

2.4 Integration Testing Strategy

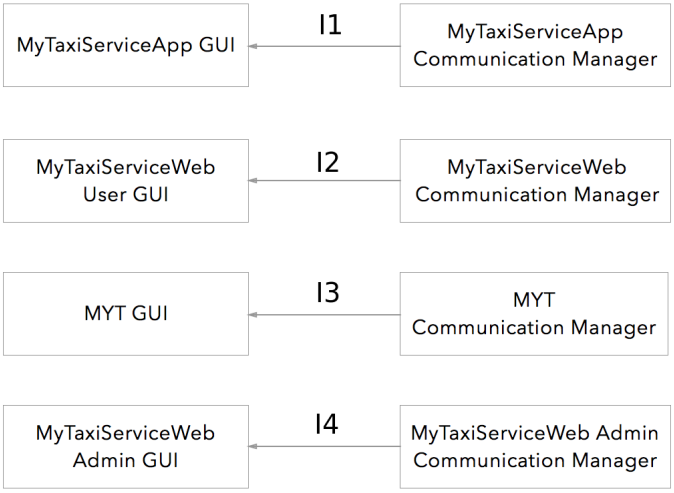
The strategy chosen for the integration of the components of the application is a grouped Bottom-Up integration: for each subsystem S of MyTaxiService, its components are orchestrated together following a bottom-up approach, when this procedure is finished a general integration of the subsystems of the application with each other is performed.
This integration testing strategy has been selected because it mimics very well the structure and the modularity of the software system. The bottom-up approach consists in integrating first those components that are at the low level of the component's dependency tree (see DD's component diagram).

2.5 Sequence of Component/Function Integration

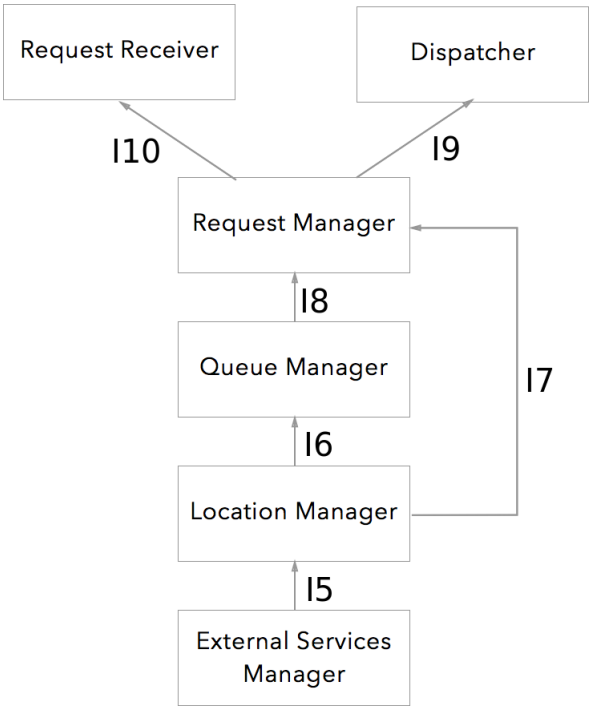
In this section we included the integration sequence for the software components.
The arrows used in the following diagrams reflects the bottom-up integration sequence; in case the arrows does not fix a particular ordering in the integration of some components then the testing phase should give priority to the more critical or more complex component.

2.5.1 Software Integration Sequence

In the following diagram is represented the integration of the View subsystem

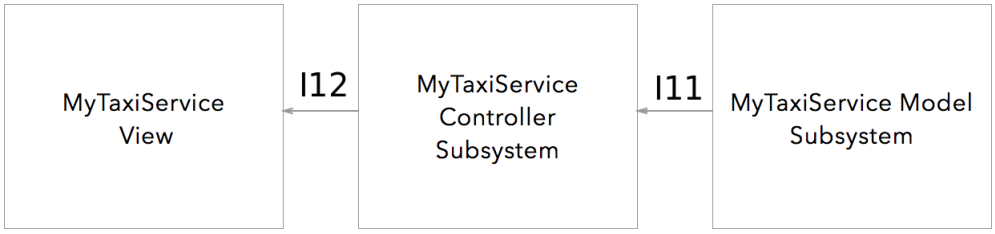


In the following diagram is represented the integration of the Controller subsystem



2.5.2 Subsystem Integration Sequence

In the following diagram is rapresented the general integration sequence between the three subsystems.



3 Individual Step and Test Description

In this section is included the high level description for each step of the integration plan. Each test case corresponds with to an arrow in the previous diagram(see chapter 2)

3.1 Test Case I1

Test Item(s)	MyTaxiServiceApp CM $\longleftrightarrow$ MyTaxiServiceApp GUI
Input Specification	Create a typical set of methods calls performed by MyTaxiServiceApp GUI on MyTaxiServiceApp CM
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	N/A
Purpose	Verifies if MyTaxiServiceApp CM can handle correctly MyTaxiServiceApp GUI methods calls

3.2 Test Case I2

Test Item(s)	MyTaxiServiceWeb CM $\longleftrightarrow$ MyTaxiServiceWeb User GUI
Input Specification	Create a typical set of methods calls performed by MyTaxiServiceWeb GUI on MyTaxiServiceWeb User CM
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	N/A
Purpose	Verifies if MyTaxiServiceApp CM can handle correctly MyTaxiServiceApp GUI methods calls

3.3 Test Case I3

Test Item(s)	MYT CM $\longleftrightarrow$ MYT GUI
Input Specification	Create a typical set of methods calls performed by MYT GUI on MYT CM
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	N/A
Purpose	Verifies if MYT CM can handle correctly MYT GUI methods calls

3.4 Test Case I4

Test Item(s)	MyTaxiServiceWeb Admin CM ⟷ MyTaxiServiceWeb Admin GUI
Input Specification	Create a typical set of methods calls performed by MyTaxiServiceWeb Admin GUI on MyTaxiServiceWeb Admin CM
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	N/A
Purpose	Verifies if MYT CM can handle correctly MyTaxiServiceWeb Admin GUI methods calls

3.5 Test Case I5

Test Item(s)	External Services Manager ⟷ Location Manager
Input Specification	Create a typical set of methods calls performed by Location Manager on External Services Manager
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	GPS and traffic sample data available
Purpose	Verifies if External Services Manager can handle correctly Location Manager methods calls and can provide to the Location Manager digestable data about traffic and positions

3.6 Test Case I6

Test Item(s)	Location Manager ⟷ Queue Manager
Input Specification	Create a typical set of methods calls performed by Queue Manager on Location Manager
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	I5 succeeded
Purpose	Verifies if Location Manager can handle correctly Queue Manager methods calls ,can successfully provide traffic levels for a given zone and can properly provide mtaxies' positions

3.7 Test Case I7

Test Item(s)	Location Manager $\longleftrightarrow$ Request Manager
Input Specification	Create a typical set of methods calls performed by Request Manager on Location Manager
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	I5 succeeded
Purpose	Verifies if Location Manager can handle correctly Request Manager methods calls and can provide successfully AWT information about an mtaxi request

3.8 Test Case I8

Test Item(s)	Queue Manager $\longleftrightarrow$ Request Manager
Input Specification	Create a typical set of methods calls performed by Request Manager on Queue Manager
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	I6 and I7 succeeded and sample data about mtaxies distribution in city zones
Purpose	Verifies if Queue Manager can handle correctly Request Manager methods calls and can properly provide mtaxies' queues information

3.9 Test Case I9

Test Item(s)	Request Manager $\longleftrightarrow$ Dispatcher
Input Specification	Create a typical set of methods calls performed by Request Manager on Dispatcher
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	I6 and I7 succeeded
Purpose	Verifies if Dispatcher can handle correctly methods calls performed by Request Manager and can correctly deliver client addressed messages to the Dispatcher

3.10 Test Case I10

Test Item(s)	Request Manager ⟷ Request Receiver
Input Specification	Create a typical set of methods calls performed by Request Receiver on Request Manager
Output Specification	Check if the method calls mentioned above produce the expected results
Environmental Needs	I8 and I7 succeeded
Purpose	Verifies if Request Manager can handle correctly Request Receiver methods calls and can properly manage different types of client requests

3.11 Test Case I11

Test Item(s)	MyTaxiService Model ⟷ MyTaxiService Controller Subsystem
Input Specification	Create a typical set of remote methods calls performed by MyTaxiService Controller on MyTaxiService Model
Output Specification	Check if correct methods are called in MyTaxiService Model and the correct data are retrieved
Environmental Needs	All the previous test phase has succeeded and sample data must be present in the DB
Purpose	Verifies if the MyTaxiService Controller Subsystem can retrieve data from the DB system and if the MyTaxiService Model can correctly handle data request coming from the Controller

3.12 Test Case I12

Test Item(s)	MyTaxiService Controller Subsystem ⟷ MyTaxiService View Subsystem
Input Specification	Create a typical set of remote methods calls performed by MyTaxiService View Subsystem on MyTaxiService Controller Subsystem
Output Specification	Check if correct methods are called in MyTaxiService Controller and the correct data are retrieved
Environmental Needs	All the previous test phase has succeeded
Purpose	Verifies if the View Subsystem can correctly interact with the Controller subsystem

4 Tools and Test Equipment Required

In this section is included a set of suggestions about possible tools than could be used to perform the integration testing describe in this document.
The selection of these tools depends on the programming language chosen by the developer.
If the chosen programming language is Java:

1. To perform integration testing the developers can adopt Arquillian framework. This framework provides a series of preset environment configuration and utilities that can be used to test the integration of the different components of MyTaxiService. The specific test protocols will be specified and written in further documents.

2. Manual testing could also be needed to simulate the input of the user in order to generate typical input data used useful to integrate the various components of MyTaxiService.

5 Program Stub and Test Data Required

In this section is included each specification of particular input data or component's stub/driver needed to perform the integration steps describe in the previous section.

In order to perform some test cases sample user data should be inserted into the database system and made available for testing.
Proper stubs are needed to replace the two external systems: the GPS information and Traffic info providers. These stubs should provide sample data needed to the External Services Manager to correctly perform the test case **I1**
In general more drivers could be introduced: if the integration test phase is run in parallel with the development phase then some components may not be available yet for the integration test phase, such components will be replaced with an appropriate driver.

6 Appendix

6.1 Hours Of Work

- Giorgio Pea: 6 hours
- Andrea Sessa: 10.5 hours

6.2 Tools Used

- Atom/LaTeX: to redact this document