Politecnico di Milano

A.A 2016-2017

Integration Test Plan Document

Version 1.0

PowerEnjoy

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1. INTRODUCTION

1.1 Purpose and Scope

The purpose of the **Integration Test Plan** is to describe the necessary tests to verify that all of the components of the *PowerEnjoy* platform are properly assembled. Integration testing ensures that the unit-tested modules interact correctly.
The description of the testing process includes:

- A high level specific of the tests

- A testing strategy

- An overview of the testing tools

The document is aimed at stakeholders ,developers in charge of the testing implementation and engineers.
It is important to notice that the focus of the document lies essentially towards **integration** whereas **unit-tests** are ignored and considered as already conducted.

1.2 Definition and Abbreviations

Throughout the document the following *abbreviations* are used and not further explained:

- **RASD**: Requirements And Specifications Document

- **DD**: Design Document

- **ITPD**: Integration Test Plan Document

- **API**: Application Programming Interface

- **RESTful**:REpresentational State Transfer

Each **integration test** has a unique identifier that follows the syntax:

$$I[0-9]^+$$

Each **test case** has a unique identifier that follows the syntax:

$$I[0-9]^+T[0-9]^+$$

1.3   Reference Documents

For a full understanding of the content of the ITPD ,it is strongly advised to read the **RASD** and especially the **DD** as they contain more in-depth explanations for the majority of the subjects.
A complete overview about documents and the general system description can be found int the **Assignments AA 2016-2017.pdf** file.

2. INTEGRATION STRATEGY

2.1 Entry Criteria

The **Integration tests** are meant to be developed and conducted only after **single units** have been successfully and thoroughly tested ,with particular regard towards those parts involving intermodule communication.

2.2 Elements to be Integrated

From what we can infer from the previous documents , the to-be tested platform used the **client-server paradigm** as its main architecture with the addition of intra module communication , especially in the **back-end system** where the *business logic* lies, and direct communication happening back and forth on separate channels between the **back-end** and the **client-side applications.**
The following components described in *section 2* of the *Design Document* need to be tested:

- **Server Components**:

    - Ride Manager
    - Notification Manager
    - User Manager
    - Search Manager
    - Position Manager
    - Database Interface

- **Mobile & Web Application**

    - SignIn Action
    - SignUp Action
    - Main Action

- **On-Board Application**

  - SignIn Action
  - Navigation Action
  - EndRide Action

The client-side applications communicate with the *back-end system* through the **RESTful API** and the **Notification Manager**. To simply test planning, from now on *Mobile & Web components* and *On-Board components* are grouped together in a single entity called **client-side components**.With this considerations in mind , integration test need to be performed on the following pairs:

- Client-side components → RESTful API

- RESTful APi → User Manager

- RESTful API → Search Manager

- RESTful API → Position Manager

- RESTful API → Ride Manager

- Position Manager → Vehicle Manager

- User Manager → DBMS

- Ride Manager → DBMS

- Vehicle Manager → DBMS

- Search Manager → Notification Manager

- Ride Manager → Notification Manager

- Notification Manager → Client-side components

- **STATION MANAGER!!**

2.3 Integration Testing Strategy

The *PowerEnjoy System* is composed of many components which are subject to a lot of interactions : the system , as already shown in the Design Document, is thus quiet **complex**. Structural testing strategies , such as top-down or bottom-up, are *simpler* whereas more complex strategies provide better process visibility in cases like ours.

The strategy we adopted is the **functional grouping strategy** , a highly *modular* strategy allows the *separate* development of the various parts of the system.

Moreover the integration test should be performed mostly on *actual code* in order to reduce the number of *stubs and mocks* and reduce the use of *dummy code*.

2.4 Integration Sequence

The **Integration Test** is meant to be performed in the following order in compliance to the aforementioned strategy:

1. Server application components

2. Client applications components

3. Client-Server

3. INDIVIDUAL STEPS AND TEST DESCRIPTION

4. TOOL AND TEST EQUIPMENT REQUIRED

5. PROGRAM STUBS AND DATA TEST REQUIRED

6. APPENDICES

6.1 References

The following tools where used in the creation of this document:

- *TexMaker 4.5* as Editor

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- Chianella Claudia Beatrice   h
- Giovanakis Yannick   h