Politecnico di Milano

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Design Document

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PowerEnjoy

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1. INTRODUCTION

1.1 Purpose

The presented document is the Software Design document (SDD) for the PowerEnJoy platform project. The main purpose of this document is to be a guideline for the concrete implementation of the platform, provide developers with high level descriptions of the main algorithms, describe the architectural styles and patter, and generally establish the design standards for the development phase.
This document is intended for stakeholders, software engineers, and programmers and must be used as reference throughout the whole development of the system. The secondary audience for this document includes system maintainers and developers who wish to integrate the platforms services within their own software. The design choices listed here must be respected throughout the whole development of the platform and any other further expansion of the codebase.

1.2 Scope

The descriptions listed in this document define the design language that must be used by design stakeholders, and implement the Design leads to code philosophy. These design standards represent constraints to the development of the codebase, with all unspecified design decisions left to the developers. Key reasons for the design language described in this document are:

1. To facilitate the development, integration, expansion and maintenance of the platform.

2. To define a business identity (kept consistent in UX and marketing design).

3. To implement the requirements listed in the RASD of the project in a consistent way.

1.3 Definitions,Acronyms,Abbreviations

Throughout this document, the following definitions will be applied without further explanations:

- **Platform**: the set of software applications and hardware infrastructure that are part of the PowerEnjoy service. The platform includes:
  - Back-End Server application
  - Web Application
  - Mobile Application
  - On-board Display
  - MySQL Database

  Other third party software may be necessary to interface different components or support the listed applications.
- **System**: any individual component of the platform.
- **Back-End**:the software run on the back-end server of the platform which is used to handle the communication between the user applications. The term also addresses all the necessary software components that are needed to store data, perform calculations and manage the hardware (e.g. an operating system).
- **User Application**: set of applications that are used by a user which are the Mobile Application ,Web application and On-Board display application. [1]
- **User**: any person registered and authorized to use the above mentioned systems.

In addition this document will contain the following acronyms:

- **RASD**: Requirements and Analysis Specifications Document
- **DD**: Design Document
- **DBMS** : Data Base Management Systems

[1] For more informations check Section 2.4.2 on the *RASD*

- **UX**: User Experience
- **API**: Application Programming Interface
- E TANTI ALTRI

1.4 Reference Documents

- IEEE 1016-2009: "Software design description"
- Project description: Assignments AA 2016-2017.pdf
- UML Language Reference : `https://www.utdallas.edu/œchung/Fujitsu/UML_2.0/Rumbaugh--UML_2.0_Reference_CD.pdf`
- JAVA/GLASSFISH/RESTFUL/GOOGLEMAPS API..

1.5 Document Structure

The presented DD is divided in sections and structured as follows:

- Section 1 - Introduction: contains support information to better understand the presented document.
- Section 2 - Architectural design: contains a description of the architectural styles and patterns selected for the platform, which serve as an implementation guideline for developers.
- Section 3 - Algorithms design: contains a high-level description of the core algorithms of the back-end.
- Section 4 - User interface design: contains a description and a conceptual preview of the user interface and UX.
- Section 5 - Requirements traceability: links the decisions described in this document to the requirements specified in the RASD.
- Section 6 - Effort spent: contains a summary of the hours spent in producing the document.

2. Architectural Design

2.1 Overview

2.2 Component View

2.3 Deployment View

2.4 Runtime View

2.5 Component Interfaces

2.6 Selected architectural styles and patterns

2.7 Other design decisions

3. Algorithm Design

4. User Interface Design

5. REQUIEREMENTS TRACEABILITY

6. Effort Spent

7. REFERENCES