**Design Document**

CIS 4911 – Senior Project

Virtual Queue

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**Date**

October 8th 2014

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**ABSTRACT**

The Design Document gives a better understanding of the Virtual Queue system structure. The reader will be able to capture the idea of how the Virtual Queue system was implemented because the design methodology will be explained, as well as the system architecture and subsystem decomposition, the security and privacy of the system, software and hardware mapping, and persistent data management. Chapter 1 gives basic information about the Virtual Queue (VQ) system, including introduction, problem definition, design methodology used, definitions, acronyms, and overview of the document. Chapter 2 will describe the system decomposition of the VQ by giving an overview of the system, provide a detailed description of the subsystem decomposition, map the hardware and software, identify the persistent data management, and describe security and privacy.

Chapter 3 introduces the detailed design chapter starting with an overview of the behavior and structure of each subsystem, the static and dynamic diagram model, and a description of the code specification. Chapter 4 will have the glossary of terms used in the document, specially the domain specific terms. Chapter 5 contains the appendix of the project with the use case diagrams for the implemented use cases, document class interfaces and diary of meeting and tasks. Finally, Chapter 6 includes any other documents that have been used for reference.

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# 1. Introduction

The introductory chapter gives some background information about the Virtual Queue system. In the following sections, the problem definition, and scope of the system will be described. Following, the design methodology used is identified. In addition, definitions, acronyms, and abbreviations of terms used in this deliverable will be provided and explained on this chapter. Finally, the chapter will conclude with a brief explanation of what to expect from the following chapters of the document.

## 1.1. Problem definition

When going to a park, or to any other venue that provides multiple recurring rides or events, customers typically wait in line until is time for them to go into the ride or event. This is definitely time consuming, since one could be doing something else like be walking around, buying souvenirs, or food, or going perhaps to another ride or event. By waiting in line, the venue is making money for that specific ride/event, but is losing potential additional sales by customers being in line rather than walking around the venue visiting other areas of the venue.

The creation of the Virtual Queue system is the proposed solution to the problem explained above. The system will provide customers the benefit of enjoying other amenities offered in the venue (including, but not limited to rides, food) instead of waiting in line. In addition, the system will keep information about ride or event time and capacity and allow the customers to sign in to different events or rides. In this way, customers will not have the need to wait for a ride in line to go to another one. Furthermore, customers will be notified as their time on their rides or events approaches. At the same time, the business will take advantage of this system because of the fact that customers will now have the opportunity to either sign in to another ride, or walk around to buy souvenirs, food, or something else offered at the specific place.

## 1.2.   Design methodology used

## 1.3 Terminology - Definitions, acronyms, and abbreviations.

**Definitions**

* **Guest Users**: Anyone who wants to browse through the site and view offered deals before placing an order.
* **Registered Users**: Users that have already created an online account and can place orders and view previous orders they have requested.
* **System:** The system itself.
* **Theme park/Event**: Amusement park with a unifying setting or idea.

**Acronyms**

* **VQ**: Virtual Queue
* **FIU:** Florida International University
* **SCIS:** School of Computing & Information Sciences

**Abbreviations**

As of right now, there are no abbreviations for this project.

## 1.4.   Overview of document

In chapter 1, the main problem is introduced, along with the design methodology used for the project, definitions, acronyms and abbreviations. In chapter 2 the system decomposition of the VQ system will be described, and a detailed description of the subsystem decomposition, map of the hardware and software, identification of the persistent data management, and a description of security and privacy will be provided.

Following, chapter 3 will introduce the detailed design chapter giving an overview of the behavior and structure of each subsystem, the static and dynamic diagram model, and a description of the code specification. Consequently, chapter 4 will have the glossary of terms used in the document, specially the domain specific terms. Chapter 5 will contain the appendix of the project with the use case diagrams for the implemented use cases, document class interfaces and diary of meeting and tasks. Finally, Chapter 6 will include any other documents that have been used for reference.

# 2. System Design (i.e., overall system design)

This chapter will describe the system and subsystem design. It will explain the decomposition of the VQ by giving an overview of the system design architecture. It will provide a detailed description of the subsystem decomposition for each major subsystem. It will cover how the hardware and software are mapped. It will identify the persistent data management that needs to be stored and the structure of the data. Lastly, it will describe security and privacy user authentication processes, encryption of data and all other security parameters being implemented.

## 2.1 Overview

## 2.2 Subsystem Decomposition

## 2.3 Hardware-Software Mapping

## 2.4 Persistent Data Management

## 2.5 Security/Privacy

# 3. Detailed Design