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Mediacent System Architecture

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# Introduction

## Purpose

This document provides a comprehensive architectural overview of the system, using a number of different architectural views to depict different aspects of the system. It is intended to capture and convey the significant architectural decisions which have been made on the system.

## Scope

This Software Architecture Document provides an architectural overview of the Mediacent Out of Home System. The Mediacent Out of Home System is being developed by Rydlr Cloud Services to support online content upload to Digital Out of Home venues.

# Architectural Representation

This document presents the architecture as a series of views; use case view, logical view, process view and deployment view. There is no separate implementation view described in this document. These are views on an underlying Unified Modeling Language (UML) model developed using Rational Rose.

# Architectural goals and constraints

# Use case view

A description of the use-case view of the software architecture. The Use Case View is important input to the selection of the set of scenarios and/or use cases that are the focus of an iteration. It describes the set of scenarios and/or use cases that represent some significant, central functionality. It also describes the set of scenarios and/or use cases that have a substantial architectural coverage (that exercise many architectural elements) or that stress or illustrate a specific, delicate point of the architecture.

The Mediacent Out of Home System use cases are:

* Login
* Open Wallet
* Post and schedule an ad/content
* Pay for post
* View reports

## Architecturally significant use cases

# Logical view

A description of the logical view of the architecture. Describes the most important classes, their organization in service packages and subsystems, and the organization of these subsystems into layers. Also describes the most important use-case realizations, for example, the dynamic aspects of the architecture. Class diagrams may be included to illustrate the relationships between architecturally significant classes, subsystems, packages and layers.

The logical view of the course registration system is comprised of the 3 main packages: User Interface, Business Services, and Business Objects.

The User Interface Package contains classes for each of the forms that the actors use to communicate with the System. Boundary classes exist to support login, maintaining of schedules, maintaining of admin info, selecting media, submitting posts, maintaining client info, and viewing reports.

The Business Services Package contains control classes for interfacing with the billing system, controlling client registration, and managing the client content evaluation.

The Business Objects Package includes entity classes for the application artifacts (i.e. content submission, schedule) and boundary classes for the interface with the Content Evaluation System.

# Process view

A description of the process view of the architecture. Describes the tasks (processes and threads) involved in the system's execution, their interactions and configurations. Also describes the allocation of objects and classes to tasks.

The Process Model illustrates the course registration classes organized as executable processes. Processes exist to support client registration, admin functions, and access to the external Billing System and Content Evaluation System.

## Processes

## Process to design elements

## 

## Process model to design model dependencies

## 

## Processes to the implementation

## 

# Deployment view

A description of the deployment view of the architecture Describes the various physical nodes for the most typical platform configurations. Also describes the allocation of tasks (from the Process View) to the physical nodes.

This section is organized by physical network configuration; each such configuration is illustrated by a deployment diagram, followed by a mapping of processes to each processor.

## External Desktop PC/Screens

Clients are able to view their scheduled ads at the scheduled time. External PCs running Screencloud instance registered to Mediacent via internet connection aided with the use of a Chromecast or Xiami Box for the case of media screens within sports bars and malls.

## Desktop PC

Clients register to the Mediacent platform via personal Desktop PC that are connected to the internet. These personal computers are used by clients to schedule and pay for content posted to the Mediacent servers. An admin uses a Desktop PC to monitor content and approve posted content by clients.

## Main Server

The main server is where all the business logic is stored. All interested clients have access to the server through a publicly available Unified Resource Location (URL) [https://app.rydlr.com](https://app.rydlr.com/) or [https://www.mediacent.com](https://www.mediacent.com/)

# Size and performance

# The chosen software architecture supports the key sizing and timing requirements, as stipulated in the Supplementary Specification [15]:

# The system shall support up to 2000 simultaneous users against the central database at any given time, and up to 500 simultaneous users against the hosted servers at any one time.

# The system shall provide access to the Screencloud API with no more than a 10 second latency.

# The system must be able to complete 80% of all transactions within 2 minutes.

# The client portion shall require less than 20 MB disk space and 32 MB RAM.

# The selected architecture supports the sizing and timing requirements through the implementation of a client-server architecture. The client portion is implemented on client desktop PCs or handheld mobile device. The components have been designed to ensure that minimal disk and memory requirements are needed on the PC client portion.

# Quality

# The software architecture supports the quality requirements, as stipulated in the Supplementary Specification [15]:

* The desktop user-interface shall be Windows 7/8/8.1/10, Mac OS, Linux compliant.
* The user interface of the Mediacent Out of Home System shall be designed for ease-of-use and shall be appropriate for a computer-literate user community with no additional training on the System.
* Each feature of the Mediacent Out of Home System shall have built-in online help for the user. Online Help shall include step by step instructions on using the System. Online Help shall include definitions for terms and acronymns.
* The Mediacent Out of Home System shall be available 24 hours a day, 7 days a week. There shall be no more than 4% down time.
* Mean Time Between Failures shall exceed 300 hours.