SOFE 3650U: Software Design & Architecture

Project Progress Report - Iteration 1

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Iteration 1

Step 1: Review Inputs

| Category	Details
Design purpose	This is a Theatre Ticket Booking System which allows users to book tickets and seats for their preferred movie.
Primary functional requirements	From the use cases provided in the project progress report, we determined the primary ones to be: **UC-1:** Directly Supports Core Business **UC-6:** Directly Supports Core Business **UC-7:** Directly Supports Core Business **UC-8:** Directly Supports Core Business **UC-9:** Directly Supports Core Business
Quality attribute scenarios	<table><tr><td>**Scenario ID**</td><td>**Importance to the Customer**</td><td>**Difficulty of Implementation According to the Architect**</td></tr><tr><td>QA-1</td><td>High</td><td>High</td></tr><tr><td>QA-2</td><td>High</td><td>Medium</td></tr><tr><td>QA-3</td><td>Medium</td><td>Medium</td></tr><tr><td>QA-4</td><td>High</td><td>High</td></tr><tr><td>QA-5</td><td>High</td><td>Low</td></tr><tr><td>QA-6</td><td>Medium</td><td>Low</td></tr><tr><td>QA-7</td><td>High</td><td>Medium</td></tr></table>
Constraints	All of the constraints will be added as drivers.
Architectural concerns	All architectural concerns below are included as drivers: **CRN-1:** Establishing an overall system structure **CRN-2:** Leverage team's knowledge about the WAMP stack including its integration with Javascript, HTML and CSS. **CRN-3:** Allocate work to members of the development team

Step 2: Establish Iteration Goal by Selecting Drivers

The drivers that the architect must be mindful of for the first iteration are:
- QA-1: Availability
- QA-2: Interoperability
- QA-4: Performance
- QA-5: Security
- QA-7: Usability
- CON-2: Developer and Technician communication relationship
- CON-4: System accessibility and availability
- CON-5: Untreated faults leading to compromisation of system security
- CRN-2: Use the teams knowledge of Web Programming

Step 3: Choose One or More of the Elements to Refine

The element chosen to be refined for this Theatre Ticket Booking effort is the entire FCAPS system (shown below). The refinement will be done through decomposition.
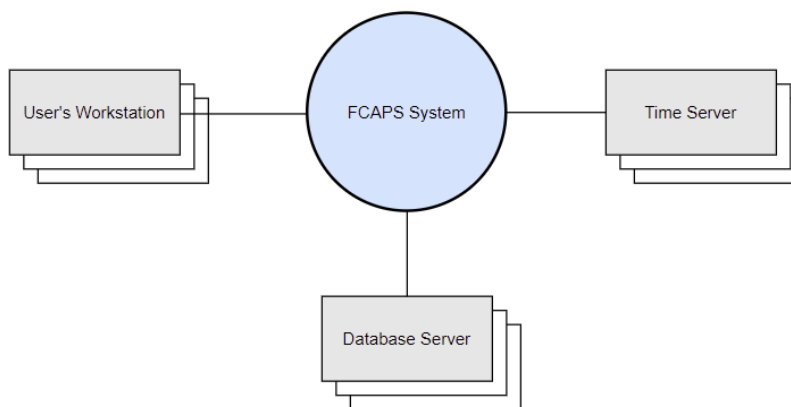
Step 4: Choose One or More Design Concepts That Satisfy the Selected Drivers

Chosen Alternatives:

Design Decision and Locations	Rationale
Logically structure the client and server part of the system to use **Web Application** reference architecture	The Web Application reference architecture supports access to applications though the web browser. Plus this application does not require a rich user interface thus this reference architecture would be perfect to implement with minimal effort. Furthermore, this architecture also facilitates deployment and updating plus it provides high portability of the application.

| Logically structure the client and server part of the system to use **Rich Internet Application** reference architecture	The RIA reference architecture is oriented towards the implementation of rich user interfaces in web applications that run inside a web browser.

Discarded Alternatives:

Alternative	Reason for Discarding
Mobile Applications	This reference architecture enables the use of handheld mobile devices, however since our system does not support this type of device, the architecture was not considered for accessing our system.
Rich Client Applications	This reference architecture requires the installation of applications on the user's PC without network connectivity . It also does not run in a web browser, unless an external technology is used. This was not considered for accessing our system since we do not require external applications to be installed and only want web browser capability.

Step 5: Instantiate Architectural Elements, Allocate Responsibilities, and Define Interfaces

Design Decision and Location	Rationale
Remove the Isolated Storage from Rich Internet Application	Because the isolated storage is unneeded storage in the client layer and a rich user interface is not needed for this application.

Step 6: Sketch Views and Record Design Decisions
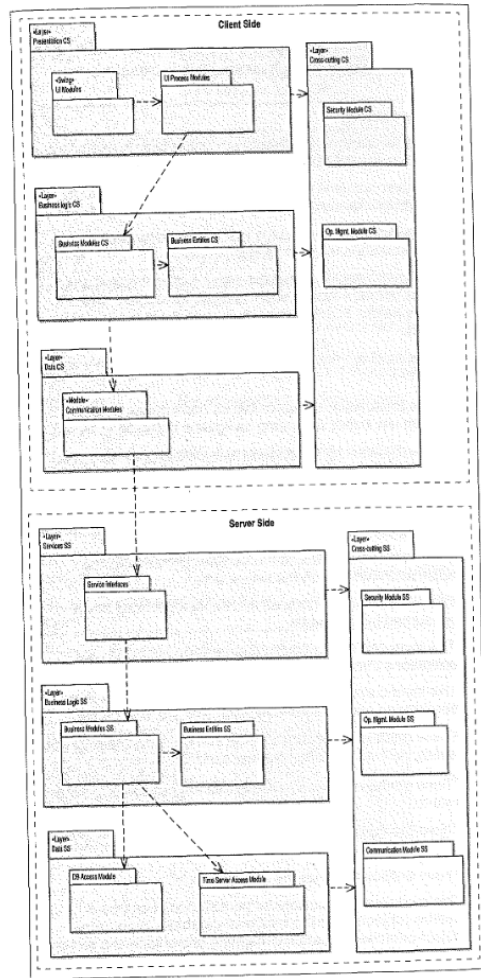
Element	Responsibility
Presentation Client Side (CS)	This layer consists of modules that showcase user interaction and control flow between use cases.
Business Logic CS	This layer consists of modules that can be executed locally on the client side and perform the business logic operations required of the system.
Data CS	This layer consists of modules that are responsible for communication with the server side.
Cross-Cutting CS	This layer consists of modules that go across different layers such as security, logging and communication, which helps with QA-5.
UI Modules	Module renders user interface and receives user input

UI Process Modules	These modules control the flow of all use cases of the system, including navigation between screens.
Business Modules CS	Module either locally implements business operations or exposes business functionality from the SS.
Business Entities CS	Entity makes up the domain model.
Communication Modules CS	These modules use the services provided by the application running on the server side.
Services Server Side (SS)	This layer consists of modules that expose services used by the clients.
Business Logic SS	Module performs business logic operations that require processing on the SS.
Data SS	This layer consists of modules that communicate with the time servers and handle data persistence.
Cross-Cutting SS	This layer consists of modules that go across different layers such as security, logging and communication.
Service Interfaces SS	These modules expose services used by the clients.
Business Modules SS	These modules implement business operations.
Business Entities SS	This module is responsible for persistence of business entities (objects) into the relational database. It performs OO to relational mapping and shields the rest of the application from persistence details
DB Access Module	This module maps objects to relational databases and shields the rest of the application from persistence details.
Time Server Access Module	This module isolates and abstracts operations to support communication between different types of time servers.

Step 7: Perform Analysis of Current Design and Review Iteration

Not Addressed	Partially Addressed	Completely Addressed	Design Decisions Made During the Iteration
		UC-1	Selected reference architecture establishes the modules that will support this functionality
	UC-9		Selected reference architecture partially establishes the module that will support this functionality
		UC-10	Selected reference architecture establishes the modules that will support this functionality
		UC-11	Selected reference architecture establishes the modules that will support this functionality
		UC-15	Selected reference architecture establishes the modules that will support this functionality
		QA-1	Reference of this quality attribute in the selected reference architecture. The application will be available on the internet 24/7 unless there is down time taken.
QA-2			No relative decisions made in this iteration for the quality attribute.
QA-4			No relative decisions made in this iteration for the quality attribute.
	QA-5		Reference of this quality attribute in the selected reference architecture.
		QA-7	Selected reference architecture establishes the modules that will support this quality attribute
CON-1			Decisions for the work efficiency of the technician have not been made yet.
CON-2			Decisions for the communication

			relationship between the developer and technician have not been made yet.
	CON-3		Constraint is referenced by the architecture model although no relative decision has been made.
		CON-4	Referenced architecture provides the modules that will support this constraint
		CON-5	Referenced architecture provides the modules that will support this constraint
CON-6			No relative decision has been made for this constraint.
		CRN-1	Selection of reference architecture and deployment pattern
	CRN-2		Technologies and reference architecture that have been considered up to this point have taken into account the knowledge of the developers.
CRN-3			No relative decisions have been made for this particular concern.