Graduate Student Information System (gSIMS)
Walkthrough

Kartik Thakore[1]

[1]Department of Software Engineering
University of Western Ontario

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Outline

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Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Project Details

Outline

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Western Ontario

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Project Details

Project Inception

- Advisor: Dr. Hanif Ladak
- Concerned with managing students in the graduate program for BioMedical Physics.
- Current system has lots of problems.
  - Calculations and updates are mostly manual.
  - Need to keep the paper copies of meetings.
  - Takes lots of time to create reports.
  - Hard to track when a student must have a requirement done.

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Project Details

Current System

Demo of the Current System.

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Project Details

Project Organization

Two components of the problem:

- (ECE4416) Business rules:
  - Graduate program milestones and dataflow.
  - Direct interaction with the User.
- (SE4450) Technical requirements:
  - Provide the functionality for the User Interfaces.
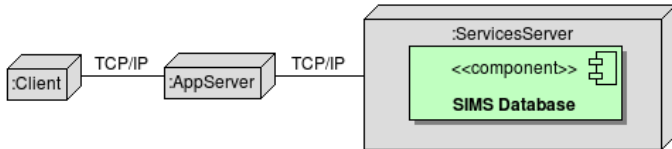 - Adhere to required constraints.

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Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Project Details

Proposal

Figure: The proposed system

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Technical Requirements

Outline

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Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Technical Requirements

Interfaces

- Graphical User Interface:
    - The implementation of the Business Rules defined as HTML pages.
- Electrical User Interface:
    - Collect signatures from a Wacom ©Tablet and store securely in the DataBase.

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Technical Requirements

Graphical User Interface

Specific requirements for the view of the Web Pages:

- Set of HTML pages that are to be the template of the system.

Figure: Sample GUI provided

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

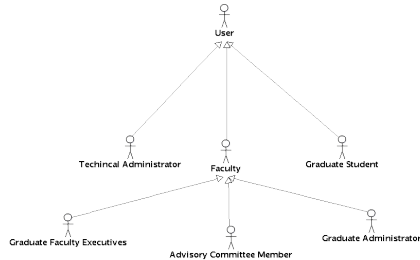Technical Requirements

Electrical Device Interface

- Provide an interface for the User to sign on the screen.
- On the client side acquire a bitmap of the signature and encrypt the bitmap data.
- The image should be viewable only by the user who signed and the graduate admin.

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Technical Requirements

System Features

- User Administration
- Tracking Data
    - Student Data
    - Student Term and Funding Data
    - Student Program Data
    - Student Advisory Commitee Meeting
- Reporting
    - Customized Queries
    - Student Output Reports
- Triggering System

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Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Technical Requirements

Constraints

- Security
  - System Security
  - Roles and Operational Access

Figure: Roles of the SIMS system

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Analysis
Architecture

Outline

School of Graduate and Postdoctoral Studies

The University of
Western Ontario

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Analysis
Architecture

Organizing Data

- Seperate Authentication Data from Critical Data

Figure: 3 general data use cases

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Analysis
Architecture

Conceptual Model of the Student

- Student can be treated as a ticket, which needs to go through steps to be completed.
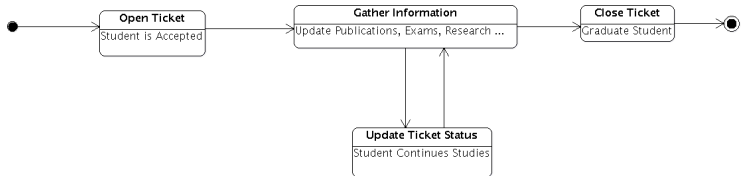
Figure: The simple steps of Grad School

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Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Analysis
Architecture

Critical Assumptions

- Seperation of Data
  - Student Data is kept around even after student has graduated.
- Student as a Bug Ticket
  - Student will be responsible for their own data.
  - Student can only be a student if they have a funded term.
- Data entry will be done manually at this point.

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Analysis
Architecture

Outline

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Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Analysis
Architecture

Hardware

- Clients
- Application Server
- Services Server
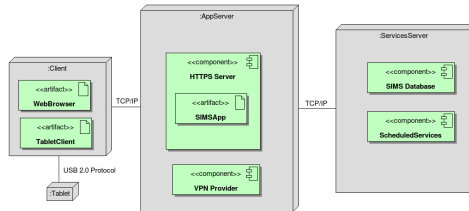
Figure: The System Overview

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Analysis
Architecture

Software

- Client E-Signature Capture
- OpenVPN
- Production HTTP server
- Database Server
- Perl Modules

Network Protocols and Schemes

- OpenVPN
- SSL
- Internal Role Based Security

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Analysis
Architecture

REST Web Applications

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Analysis
Architecture

Perl Batch Services

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Iteration 1
Iteration 2
Test Plans

Outline

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Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Iteration 1
Iteration 2
Test Plans

System Features

Intrinsic Data of a Student

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Iteration 1
Iteration 2
Test Plans

Role Based Authentication

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Iteration 1
Iteration 2
Test Plans

Outline

School of Graduate and Postdoctoral Studies

The University of
Western Ontario

System Features

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Iteration 1
Iteration 2
Test Plans

E-Signature Client

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Iteration 1
Iteration 2
Test Plans

Outline

School of Graduate and Postdoctoral Studies

The University of
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Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Iteration 1
Iteration 2
Test Plans

Unit Tests

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Iteration 1
Iteration 2
Test Plans

Integration Testing

Introduction
Requirements
Architectural Analysis
Iterative Design
Summary

Iteration 1
Iteration 2
Test Plans

System Integration Testing

Summary

- Requirements and Analysis has received direct user feedback.
- Architecture based of the Analysis has been clarified and prototyped.
- The iterative Software Life Cycle has produced useful work quickly and with less effort.
- A strong emphasis on 3 testing levels is present from the starting.