Graduate Student Information System (gSIMS)

Walkthrough

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Outline

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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.

Current System

Demo of the Current System.

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.

Proposal

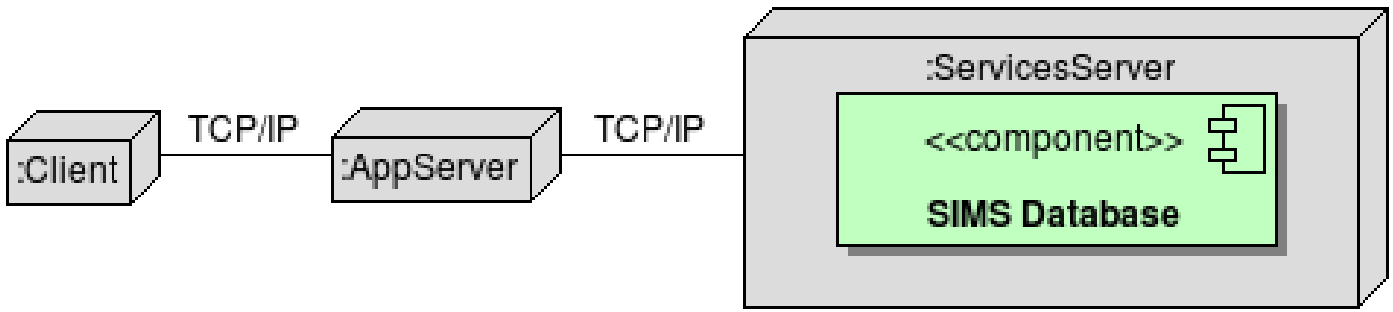

Figure: The proposed system

Outline

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.

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.

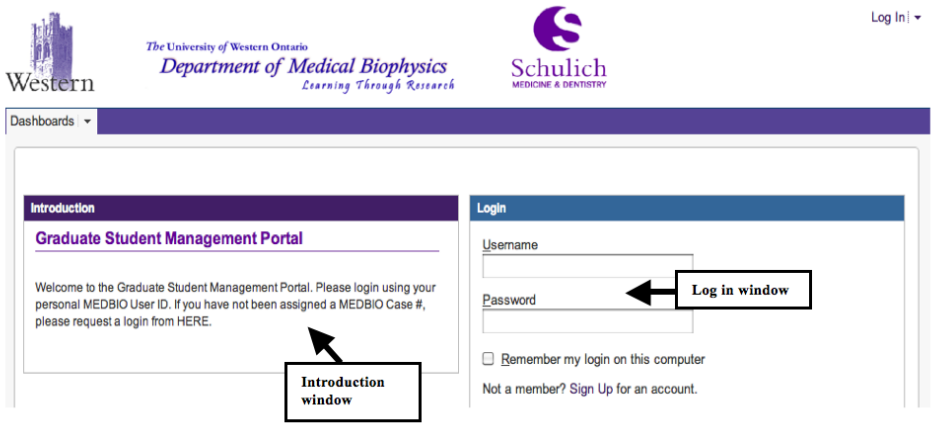

Figure: Sample GUI provided

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.

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

Constraints

- Security
  - System Security
  - Roles and Operational Access

Outline

Organizing Data

- Seperate Authentication Data from System Data

Conceptual Model of the Student

- Student can be treated as a ticket, which needs to go through steps to be completed.

Critical Assumptions

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

Outline

Hardware

- Clients
- Application Server
- Services Server

Software

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

Network Protocols and Schemes

- OpenVPN
- SSL
- Internal Role Based Security

REST Web Applications

Perl Batch Services

Outline

System Features

Intrinsic Data of a Student

Role Based Authentication

Outline

System Features

E-Signature Client

Outline

Unit Tests

Integration Testing

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.