ACME Software, Inc.

Course Registration System
Vision Document

Version 0.1

Document Revision History

Date	Version	Description	Author
09/19/2015	0.1	Draft version for Dr. Barber's Requirements Engineering course.	Gabrielson Eapen

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Vision

1. Introduction

1.1 Purpose

This document describes the high-level requirements for the proposed Course Registration System product in terms of the user needs and features.

1.2 Product Overview

The Course Registration System is designed to be the complete class registration and accounts receivable system for a University X's Continuing Education Program (CEP) that is geared for working professionals. CEP personnel use a web interface (or desktop interface) to register a student for a class and to track the details of student's registration including any payments processed. At the end of the specified enrollment window, the system cancels incomplete student registrations and helps identify which of the classes are going to be unprofitable to offer and therefore be cancelled.

1.3 Definitions, Acronyms and Abbreviations

- ACCTG-X – Legacy Accounting System
- ANSI – American National Standards Institute
- CEP – Continuing Education Program
- COTS – Commercial-off-the-Shelf software product
- CPU – Central Processing unit (processor)
- DB – Database
- GB – Gigabyte
- GHz – Gigahertz
- K – Thousand
- LAN – Local Area Network (the local communication network)
- Mbps – Megabits per second
- OS – Operating System
- RDBMS – Relational Database Management System
- RFP – Request for Proposal
- SQL – Structured Query Language
- Wintel – Computer hardware based on the Intel microprocessor and running a Windows operating system

1.4 References

- Acquisition notes gathered from interviews on 02/01/2015 with potential users at University X.
- University X's University Policies Manual
- 2015-2016 Fee Publication promulgated by the legislature and the university.
- ANSI Course Description Standard.
- Survey of related COTS products conducted by ACME Software, Inc

2. User Description

2.1 User/Market Demographics

University X's current course registration system does not support any automation for the prescribed registration workflow or enforce any of its constraints. Department personnel operations seem to be very manually driven. There are no off-the-shelf products that will meet University X's desired needs. This new automated system that integrates course registration and accounts receivable functions can streamline the entire registration process workflow at all universities like X that have a CEP program and be a far more scalable and cost effective solution. It can potentially support processing larger volumes of CEP student registrations and allow more course offerings

without expanding department personnel or needing longer working hours.

2.2 User Profiles

The primary users will be CEP and the teaching department personnel. Staff in the student counselling offices and alumni relations may want to use the system in the future. However, the product is being marketed to University Administration or college department heads who are interested in expanding the CEP program without expanding associated support or administrative staff.

2.3 User Environment

The CEP and department personnel will be using the system and accessing the professional student files from terminals throughout the building. During peak usage (when a registration window is open), multiple users concurrently access the system and every transaction request must at most take only two seconds to complete. The University will not accept RFP bids exceeding $20K and does not have additional budget at this time. So they intend to only implement a minimal set of functionality at this time.

The university currently uses a SQL Server system developed in house. However, IT management has selected Oracle as the new DB vendor and it does not have a site license. Oracle is licensed based on the number of users using it.

The University IT Management has approved procurement of new computers and networking systems before the automated system arrives. The systems will be a Window-based servers with 1GHz processors, 1GB of memory, and using 100Mbps communication networks.

The new system must interface with a legacy accounting system (ACCTG-X) and also be capable of importing approved statewide continuing education course descriptions which are generated externally by the State's higher education coordinating board and formatted using the ANSI Course Description Standard. IT Management is also all new software purchased to have its configuration, software installation pages, and help guides to be accessible via a web interface only.

2.4 Key User Needs

The users are in need of a new computer-based registration and accounts receivable system that will automate some of the CEP department’s current manual labor-intensive processes. The department personnel should be able to access the student files from any terminal throughout the building. They need to be able to access the registration and payment services by clicking on the respective icons on their desktop for each service.

During peak usage times, multiple users need concurrent access to the system and every transaction request must never take more than two seconds to complete. The system must be flexible to allow personnel in the student counseling offices and alumni relations to access student records in the future. The system should also be easily extensible to all addition of several new features in the coming years and will go live with only a core set of features today.

All help documentation, installation guides, and configuration screens for all new software including this system should be online accessible via standard browser web pages.

2.5 Alternatives and Competition

A survey of COTS products by ACME has yielded two potential competitive options: a phone-based system called Phone-a-Course and a web-based system called e-Reg. Neither product satisfies all the stated needs. Phone-a-Course only provides registration capabilities and no financial functions. e-Reg offers both registration and financial functionality but does not support Oracle.

University X currently uses a SQL server based system but it does not have any automation capabilities or financial functions. Both existing systems and competitive alternatives offer no automation or integration with Oracle. If our product also provides a web interface, we can become the dominant player in this market space.

3. Product Overview

3.1 Product Perspective

Figure 1 provides a high-lever overview of the interfaces to the external environment.

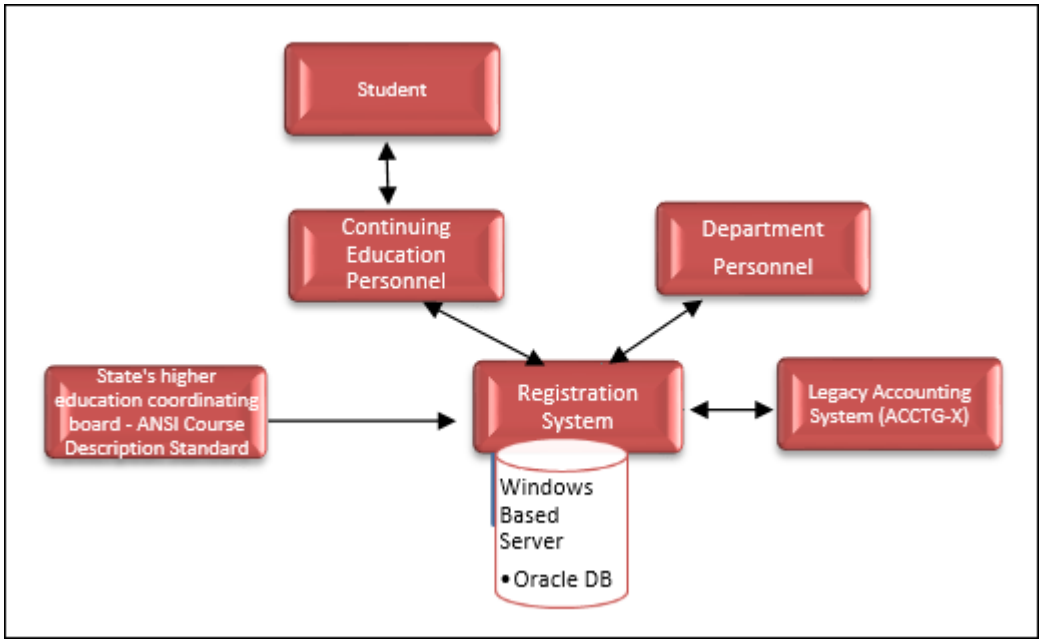


Figure 1: Overview of interfaces to external environment

3.2 Product Position Statement

With a cost effective implementation, the new system will offer a complete customized solution for the department personnel so that the current procedures get automated.

3.3 Summary of Capabilities

- Automated procedures for the Continuing Education department personnel.
- No more than 2 seconds per transaction during Peak period of times.
- Database will save student's course schedule and semester enrolled.
- Course schedule includes the name, date, time and room number of each course the student is taking
- Course registration: add / drop classes
- Process payments for registered students

3.4 Assumptions and Dependencies

It is assumed that the old servers will be replaced with new Wintel servers and at the same time the old network infrastructure will also be replaced with a new one. A new Oracle Database will be installed and it is likely that all employees will get new 21 inch monitors. All of these changes are expected to be completed prior to the installation of the new Course Registration System.

3.5 Cost and Pricing

The cost for the new system cannot exceed $20K as an upper limit. The university is seeking RFPs for under $20K.

4. Feature Attributes

In order to compare the main system features, the following attributes will be used:

- **Cost:** An approximation of the total cost of a feature's development for the first release, including maintenance to resolve issues.
- **Priority:** The relative desirability of a feature, based on the needs described in this document (expressed as low, medium, or high).
- **Risk:** The relative risk that a feature cannot be developed within estimated cost or that the feature will not address the need as expected (expressed as low, medium, or high). It expresses the weight of the feature relative to the other features in the system.

5. Product Features

The following outlines the features that differentiates it from the current system.

5.1 Feature: Interface with Legacy Accounting System (ACCTG-X)

The system should be able to communicate and share data with the legacy accounting system (ACCTG-X) of University X.

- Cost: 3K
- Risk: High
- Priority: High

5.2 Feature: Import statewide continuing education course description

The system should be able to communicate and share data with the legacy accounting system (ACCTG-X) of University X.

- Cost: 2K
- Risk: Low
- Priority: Medium

5.3 Feature: Automate department personnel procedures

The system should automate existing department personnel procedures.

- Cost: 6K
- Risk: High
- Priority: High

5.4 Feature: Process course registration

Students should be able to Add/Drop classes. At the same time, a course could be cancelled during the registration period or at the end of the registration period.

- Cost: 4K
- Risk: High
- Priority: High

5.5 Feature: Maintain student records

Saving students records and allowing departmental personnel in the student offices and alumni relations for future access to the data base.

- Cost: 1K
- Risk: Low
- Priority: Low

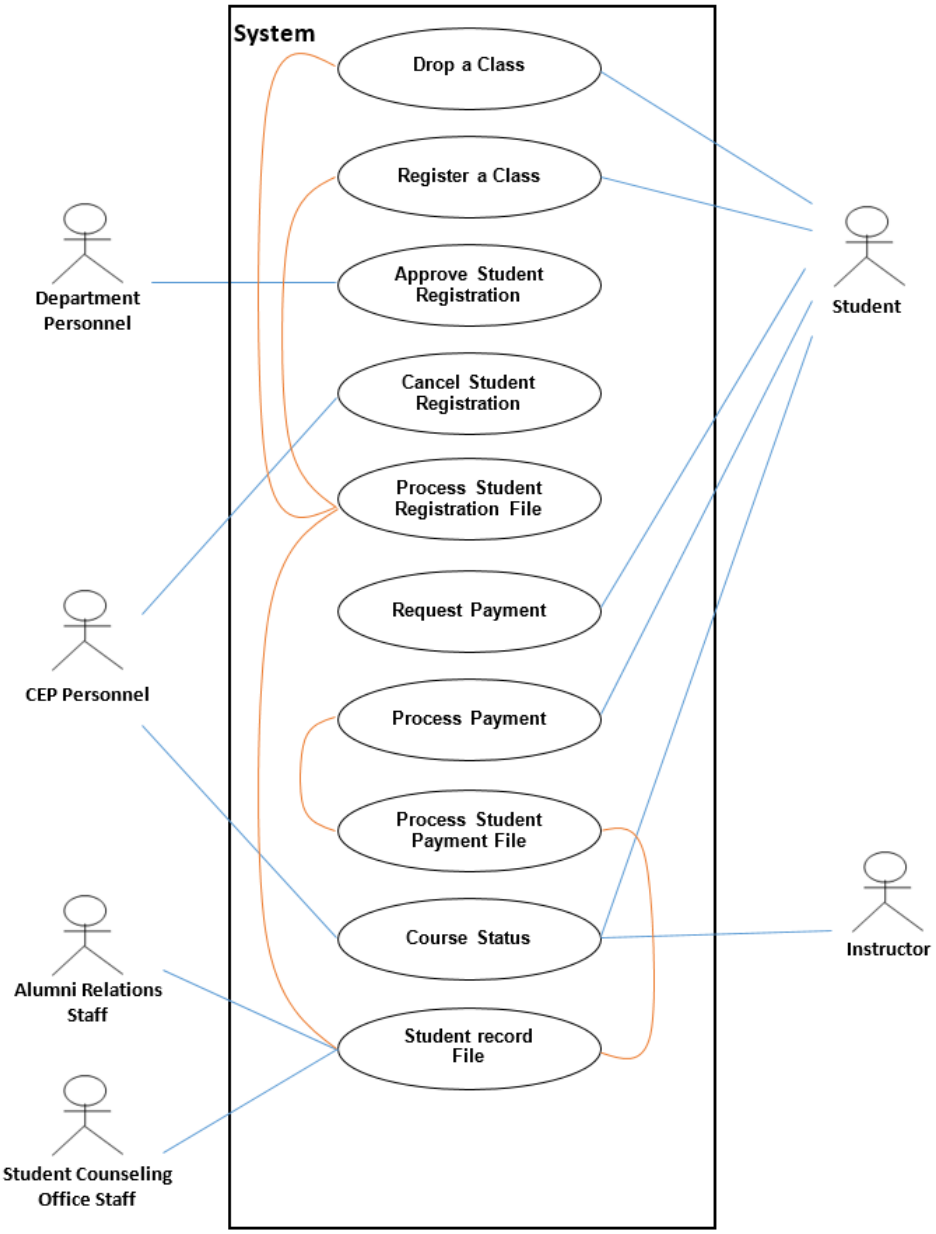
5.6 Feature: Transaction duration of at most 2 seconds

Design and implement features that allow the users to process transactions from a Terminal to the Registration System in no more than 2 seconds per transaction.

- Cost: 3K

- Risk: High
- Priority: High

6. Key Use Cases



6.1 Use Case: Drop a Class

Brief Description

Student drops a course for the upcoming semester.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

Course is present in the list of courses to be registered for the upcoming semester.

Normal Flow of Events

1. Student logs in.
2. Student searches for the course to drop.
3. Student drops class.
4. Student registration file is updated and saved.
5. Student logs out.

6.2 Use Case: Register a Class

Brief Description

Student adds a course for the upcoming semester.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

Class is available and ready for registration.

Normal Flow of Events

1. Student logs in.
2. Student searches for the course to drop.
3. Student drops class.
4. Student registration file is updated and saved.
5. Student logs out.

6.3 Use Case: Approve Student Registration

Brief Description

Authorized department supervisor approves student registration.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

Student registration is in process and student's employer has provided approval for the registration.
Student file shows current desired classes in student's list for the upcoming semester.

Normal Flow of Events

1. Administrator logs in.
2. Administrator clicks Registration Service icon.
3. Administrator searches for student file.
4. Administrator selects student name.
5. Administrator approves student registration.
6. Administrator exits Registration Service.
7. Administrator logs out.

6.4 Use Case: Cancel Student Registration

Brief Description

CEP personnel (administrator) cancels the student registration for not meeting any registration requirements.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

Student file shows current desired classes in student's list for the upcoming semester.
Student registration is in process but student's employer has not provided approval for the registration.
Student registration is approved but student has not paid the fees in full for the upcoming semester.

Normal Flow of Events

1. Administrator logs in.
2. Administrator clicks Registration Service icon.
3. Administrator searches for student file.
4. Administrator selects student name.
5. Administrator cancels student registration.
6. Student's registration file is deleted.
7. Administrator exits Registration Service.
8. Administrator logs out.

6.5 Use Case: Process Student Registration File

Brief Description

A file is created for each student that is in the registration process.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

File does not already exist for the student.

Normal Flow of Events

1. Students adds a new class.
2. If a file does not already exist, a new file is created and the semester enrolled recorded.
3. File is updated with the student's preferred list of classes (course schedule).

Alternative Flows

Alternative Flow 1

1. Student drops a class.
2. File is updated with the student's preferred list of classes (course schedule).

Alternative Flow 2

1. Student registration is cancelled.
2. Student registration file is deleted.

6.6 Use Case: Request Payment

Brief Description

A notification is sent to the student requesting payment for the upcoming semester that the student is registered for.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

Student registration is approved by an authorized department supervisor.

Normal Flow of Events

1. Administrator approves student registration.
2. An automated notification is triggered.
3. Message is sent to student with list of classes registered, tuition and fees due, and request for payment to be made before registration window ends.

6.7 Use Case: Process Payment

Brief Description

Determines if all tuition and fees due are paid during the registration window.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

Student registration is approved by an authorized department supervisor. Registration window (period) is still open.

Normal Flow of Events

1. Checks that the registration period status is open.
2. Checks that the student's registration status is marked approved.
3. Student's balance due shows no money owed (i.e. payment status is complete).
4. Student's registration is marked complete and confirmed.
5. System sends registration confirmation to student.
6. System sends registration confirmation to CEP department.

Alternative Flows

Alternative Flow 1 – Registration period is closed; registration approved but student has not paid

1. Checks that the registration period status is open.
2. Checks that the student's registration status is marked approved.
3. Student's balance due shows money owed (i.e. payment status is still pending).
4. Student's registration is cancelled by System.
5. System sends registration cancellation confirmation to student.
6. System sends registration cancellation details to CEP department.

6.8 Use Case: Process Student Payment File

Brief Description

A payment record file is created for each student that has paid the tuition and fees for the registered courses.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

Payment record file does not already exist for the student.

Normal Flow of Events

1. Students makes a payment by cash, credit card, or check and the payment is verified
2. If a payment record file does not already exist, a new file is created and the student's name is recorded.
3. File is updated with complete details of the payment made and should include: payment amount, type of payment, payment receipt confirmation number, confirmation date.
4. If amount paid is less than amount due, the balance due is recorded in the file. If no money owed, mark payment status as complete otherwise mark it as pending.

Alternative Flows

Alternative Flow 1 – Student registration is cancelled

1. Student's registration is cancelled.
2. If partial payment is made, initiate refund of payments made.
3. If money is refunded, update payment record file with details of the refund and include: refund amount, mode of refund, refund receipt confirmation number (or refund check number), refund date.

6.9 Use Case: Course Status

Brief Description

Compute the total income for the semester based on confirmed registrations and determine if any courses need to be cancelled.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

Must be the last day of the registration period and registration is still open. Courses exist for the upcoming semester.

Normal Flow of Events

1. Department personnel logs in.
2. Department personnel requests projected income for coming semester.
3. System computes projected income for upcoming semester based on confirmed registrations.
4. Validates income is greater than all costs.
5. Department personnel approves all courses for upcoming semester.
6. All courses are confirmed and will be taught.
7. Department personnel logs out.

Alternative Flows

Alternative Flow 1 – Projected income less than all costs

4. Validates income is less than costs.
5. Department personnel tag some courses for cancellation to bring costs down.
6. Send notification to course instructor for courses going to be cancelled.
7. Send notification to registered students for courses going to be cancelled.
8. Courses tagged for cancellation are cancelled.

6.10 Use Case: Student Record File

Brief Description

Displays all legally permissible information of the registered student's record.

References

Acquisition Notes gathered from interview on 02/01/2015 with potential users at University X.

Preconditions

Student's registration is complete and confirmed.

Normal Flow of Events

1. Department personnel logs in.
2. Department personnel requests student record.
3. Student record is displayed.
4. Department personnel logs out.

Alternative Flows

Alternative Flow 1 – Student counseling personnel request access

1. Student counseling office personnel logs in.
2. Student counseling office personnel requests student record.
3. Student record is displayed.
4. Student counseling office personnel logs out.

Alternative Flow 2 – Alumni Relations personnel request access

1. Alumni Relations personnel logs in.
2. Alumni Relations personnel requests student record.
3. Student record is displayed.
4. Alumni Relations personnel logs out.

7. Other Product Requirements

7.1 Applicable Standards

System must interface with ACCTG-X (a legacy accounting system) which is available through a recently added web interface.

The system must also be capable of importing approved statewide continuing education course descriptions generated externally by the state's higher education coordinating board. The course descriptions are formatted using ANSI.

7.2 System Requirements

The following are the expected installation requirements for the system implementation:

- Server OS: Windows Server
- Processor Clock Speed: 1GHz
- Server Memory: 1GB
- LAN Speed: 100Mbps
- End user monitor size: 21 inches
- Database (RDBMS) Vendor: Oracle System with no site license

7.3 Licensing Installation

The system will be licensed on an enterprise level and the customer will be required to procure Oracle RDBMS software and the necessary administrative user licenses.

7.4 Performance Requirements

During peak usage (when the two-week registration period is open), multiple users will concurrently access the system and every transaction request must at most take only two seconds to complete.

8. Documentation Requirements

8.1 User Manual

No user manual will be required since this is a customized software.

8.2 Online Help

The customer requires help guides and documentation be available online for the product to be installed. The user can access it via web pages.

8.3 Installation Guide, Configuration, and Read-Me Files

No hardcopy manuals will be provided for the installation of the system software. An online Installation reference manual will be provided that can be accessed via web pages.

8.4 Labeling and Packaging

The product will not be offered in a shrink-wrapped retail package since it will not be distributed via commercial retailers. This product requires customer-specific workflow customizations. It can be licensed as a service with a recurring monthly charge or site licensed with a one-time license purchase. Annual maintenance can be offered to

allow free upgrades to future version releases.