# **Project 3: Employment Application Review System**

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# Table of Contents

1. Vision	
2. Use Case Modelling	
a. Use Case Diagram	
b. Use Case Descriptions	
c. System Sequence Diagrams	
d. Operation Contracts	
3. Domain Modelling	28
Appendix 1: Supplementary Specification	29
Appendix 2: Glossary	31

## Part 1: Iteration 1

## **Version History**

Version	Date	Description	Author
1.0	Feb 15, 2017	First draft outlining project potential	Sydney Turnbull, Joseph Tassone, Brandon Juli
1.1	Feb 18, 2017	Use-Cases discussed and created	Sydney Turnbull, Joseph Tassone, Brandon Jull
1.2	Feb 19, 2017	Use-Case Diagram Created	Sydney Turnbull
1.3	Feb 23, 2017	Supplementary Specification and Glossary drafted	Sydney Turnbull, Brandon Juli
1.4 =	Feb 24, 2017	Domain model created	Joseph Tassone
1.5	Feb 25, 2017	System Sequence Diagrams and Operation Contracts drafted	Brandon Jull, Joseph Tassone
1.6	Feb 27, 2017	Document edited and prepared for next iteration	Joseph Tassone

#### 1. Vision

#### Introduction

We have been tasked with creating an employment application review system, where faculty members from the International School of Software can review applicants and collaborate asynchronously in order to find the best applicant for a given job opening.

## **Positioning**

#### **Business Opportunity**

As there isn't an application review system currently in place, it's in the client's best interest to relieve the resulting overhead by acquiring one. Reviewing applications is a tedious process for faculty members, with plenty of overhead that can be problematic during the review process. Currently faculty cannot work effectively asynchronously in order to find the best applicant for a given position. There is a dissatisfaction with the inflexibility of the review process and the division that is forced between faculty members when reviewing applicants. Overall, short of physically meeting, faculty have no efficient way to collaborate in order to find the best match for a position.

#### **Problem Statement**

A traditional Employment Application Review Systems doesn't currently exist making collaboration during the review process difficult, tedious, and almost impossible. The result of this issue, has caused an abundant amount of overhead during the review process. This unneeded workload is strenuous for individuals and could easily be rectified by peer collaboration.

#### **Product Position Statement**

EARS will reduce overhead and allow faculty members to work together when reviewing applications to find the best match for the posted position. EARS will reduce workload by allowing the Chairperson of the hiring committee to collaborate and gain much-needed input from other faculty members. The allowed collaboration will reduce overhead, leave less margin for error, and therefore make the review process as productive as can be.

### **Stakeholder Descriptions**

#### Non-Users

- Applicant:
  - These are the individuals who are responding to job postings that appear outside of the scope of the system. They are looking for their application to be submitted to the system and reviewed.

#### Users

- Chairperson:
  - Head of the individual department's hiring committee and traditionally the head of the actual department.
- Committee Members:
  - Secondary members of the hiring committee who review and give their input on the submitted applications. Traditionally these are faculty members who have been given approval towards hiring for new positions.
- Secretary:
  - A front-line employee (often the department secretary), that receives and forwards applications for the Chairperson and Committee Members to review.
- System Administration:
  - An IT employee that manages the EARS system and ensures that it's running efficiently.

## **Key High-Level Goals and Problems of the Stakeholders**

High-Level Goal	Priority	Problems and Concerns
Simplicity/Usability	High	The program must be able to be used by those who aren't necessarily technologically adept. A concern is that the program will be too complicated for the average user to operate effectively.
Compatibility	Medium	The program must be able to run on all modern Windows based desktops. The school currently utilizes the Windows system on all staff computers, and since these are the primary users we must ensure that the program is compatible.
Security	High The system must securely maintain passwords and other sensitive information. A concern is that an outside non-use may login and alter the secure details in the system.	
Efficiency	Medium	A slow and inefficient program is a fairly self-explanatory, undesirable result. Users will be less inclined to make use of a system that isn't operating at peak efficiency.
Universality	Medium	The system must be able to fit the needs desired by all the individual departments. A worry is that the system will be made to fit everyone's need, but won't be inclusive to a certain group.

#### **User-Level Goals**

- Chairperson: login, manage account, review applications, set application status, assign review
- Committee Members: login, manage account, review applications, post feedback, assign review
- Secretary: login, submit applications, manage account
- System Admin: create account profile manage account profiles

*Note*: an Applicant is a non-user as they are simply submitting their applications to the Secretary (exist outside of the direct scope).

#### **Product Overview**

#### **Product Perspective**

EARS will be used primarily by the International School of Software faculty members. It will provide faculty and department chairs the ability to access and review applications in an effective manner. It will typically be used by staff on their school computers, in their offices. Committee Member can collaborate with each other through the system (assign review and leave comments), and the Chairperson will post the updated status on a completed application.

#### Summary of Benefits

Supporting Feature	Stakeholder Benefit
System login	Security features in play
Application review and collaboration by faculty	Collaboration allows for speed and accuracy, less overhead
Application status update by Chairperson	Fast response, ease of use, user friendly
Automated updates	Automatically updates direct users when applications are updated and/or added to the system (convenience)

## **Summary of System Features**

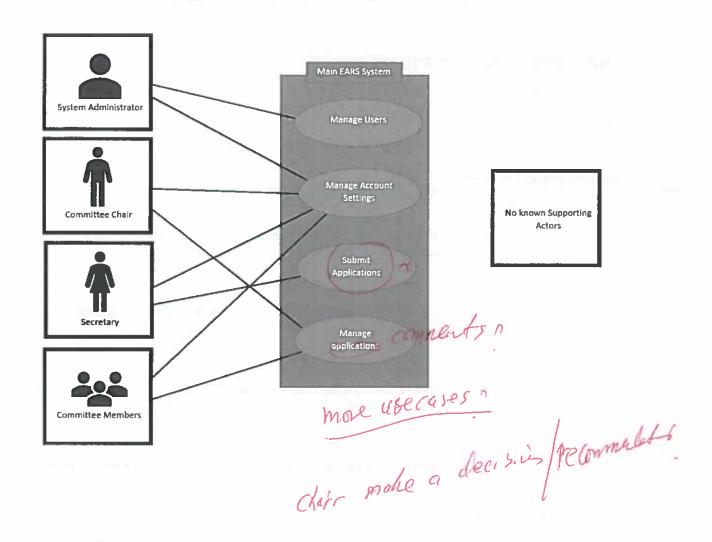
- Login system
- Resume/application upload
- Application review collaboration
- Comment system for applications
- Manage and view profiles
- Update application status
- Notifications of approval
- Assign faculty to applications

## **Other Requirements and Constraints**

See the Supplementary Specification and Use Cases.

## 2. Use Case Modelling

## a. Use Case Diagram



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## **b.** Use Case Descriptions

## **Use Case UC1: Submit Applications**

Scope: Employment Application Review System

Level: User Goal

**Primary Actor: Secretary** 

#### Stakeholders and Interests:

- Secretary:
  - o Wants entry to be clear cut and simplified; as any misplaced applications will be put on them (they're the front line of the system).
- Applicants:
  - o Wants to ensure that their application is getting into the right hands quickly, so that it can be reviewed.
- Chairperson:
  - Wants to be able to simply assign and review applications without worrying how they are getting into the system.
- Committee Members:
  - o Wants to be able to simply assign and review applications without worrying how they are getting into the system.
- System Administrator:
  - o Wants the submission process to run smoothly, so that their involvement only occurs during issues.

Preconditions: Secretary is identified by the applicant.

Success Guarantee (or Postconditions): The application is in a particular department's file storage dropbox); ready for review by the Committee Members and Chairperson.

## Main Success Scenario (or Basic Flow):

Step	Detailed Step	
1	Applicant emails a copy of their application to the Secretary.	1
2	Secretary receives the application.	1 , ,
3	Secretary logs onto the EARS system.	a sout
4	Secretary determines the department for the job posting.	systems pesponse
5	Secretary submits the application to the department's file storage (dropbox).	
6	Secretary logs out of EARS	Saml for use case
7	Secretary informs the Applicant that their resume will be reviewed by the Committee Members.	use case
8	Chairperson and Committee Members receives automatic email that an application has been added to their file storage.	1

#### **Alternative Flows to the Main Success Scenario**

Alternate Step	Detailed Step	
1 a	The secretary receives the application physically in person.	
1 b	The secretary receives the application through a job posting service.	
2 a	If the resume is physically given to the secretary then it must be scanned into file form before submission.	

#### **Failure and Recovery Scenario**

Failed Step	Failed Situation	Recovery Operations
3 a	Login Issue	Password Recovery Secretary changes password. Secretary continues to Step 4. Password Recovery Fails Secretary contacts System Administrator. System Administrator performs account diagnostic. System Administrator performs system diagnostic. System Administrator resolves the issue.

		Secretary continues to Step 4.  Larger System Level Issue Secretary skips to Step 5.  All other steps ignored until the issue is resolved.
5 a	Submit to the wrong file storage	Move the Application Secretary locates the misplaced resume. Secretary identifies the correct department. Secretary performs a move action to transfer the application to the correct department. Secretary continues to Step 6.
8 a	User wants to revoke submission	Remove the Application Secretary logs into EARS. Secretary identifies the correct department file storage. Secretary performs a search for the application. Secretary performs a delete operation on the application. Chairperson and Committee Members are informed of the deleted application.

#### **Special Requirements:**

- As per Step 4-5, EARS must have separate file systems for each individual department.
- As per **Step 8**, the application system must have an automated email response for the Chairperson and Committee Members.
- The Secretary must have access to a terminal for application input.
- The Secretary must have access to a scanner for physical applications.

Frequency of Occurrence: ongoing as job postings appear

#### Open Issues:

- Does there need to be a separation of job postings in the individual department file storages?
- Does the system fill the need for every department?
- Is the Applicant informed where the resume is reviewed?

## **Use Case UC2: Manage User Accounts**

Scope: Employment Application Review System

Level: User Goal

**Primary Actor: System Administrator** 

#### Stakeholders and Interests:

- Secretary:
  - o Wants an account that suits their needs and has accurate permissions/user access with accurate profile information (special: submit applications into dropboxes)
- Applicants:
  - o Wants the users of EARS to be able to access the applications via a secure account.
- Chairperson:
  - Wants an account that suits their needs and has accurate permissions/user access with accurate profile information (special: approve/deny applications, comment on applications)
- Committee Members:
  - o Wants an account that suits their needs and has accurate permissions/user access with accurate profile information (special: comment on applications and assign other members to view the applications)
- System Administrator:
  - Wants user accounts to be accurate and secure so that they do not have to step in and be a middle man throughout the review process.

**Preconditions:** System Administrator must be logged in and authenticated. Administrator must have accurate information about the accounts he is managing and what permissions they have.

Success Guarantee (or Postconditions): The users are granted secure accounts with accurate information (department title, position, contact information, passwords, etc.) and accurate permissions so that they may utilize the EARS system appropriately.

## Main Success Scenario (or Basic Flow):

Step	Detailed Step
1	System Administrator is given member information by an authority member such as the chair and asked to make an account for said member.
2	System Administrator logs into their account (with administrative access) and selects "create new user"
3	System Administrator enters the appropriate user information including: permissions (secretarial, committee member, committee chair) Password/username Email, phone number, office address Position (which department/committee the individual belongs to) Availability (default is set to active)
4	System Administrator saves changes ("Save new user") to user account and enters administrator password.
5	User receives email alert of new account including information on how to access their new account (i.e. Username and password).
6	Committee chair and members receive email alerting them of new member.
7	*New users are saved in database along with personal information and account creation date.

#### **Alternative Flows to the Main Success Scenario**

Alternate Step	Detailed Step
8	Deleting a user can be done by logging in with administrator access to the database where users are stored and deleting them from the database. This will remove the user's access to their account.
9	Managing users pre-existing accounts can be done by logging in with administrator access, finding the user in the database, selecting "edit user account" and changing information such as password from there.

## **Failure and Recovery Scenario**

Failed Step	Failed Situation	Recovery Operations
3 a	Login Issue	Password Recovery System Administrator goes through password recovery steps. These steps are different from normal members as the System Administrator must have a more secure account.  Password Recovery Fails This is a serious issue. If there are other system administrators then they may recover the current System Administrator's account by changing the password for them.
5 a	Create an unexpected user	Remove User Immediately  If a user is created accidentally then the system administrator can simply login with administrator access and delete the user.  Edit User Information  If a user is created with faulty information the system administrator can login with administrator access and edit the user's profile.
8 a	Accidentally remove a user	Recovery Reversion  Each time a user is created the database settings/changes are stored on a server or hard drive. If a User account is deleted prematurely we can revert back to the last saved changes by opening up the recovery version of the database. All changes made but not saved post recovery must be re-done at this point.

#### **Special Requirements:**

- The User Database must be backed up as frequently as possible in order to assure system recovery if something goes wrong.
- System Administrators must have a more complex method of recovering their password than normal members so that their account is extra secure since they have more rights than other members.
- Committee chairs must be able to submit requests to System Administrator via the EARS system for a new member to be added. This can be done via the "submit request" button on the chair's account which then grants the chair an application to fill out for the member so that the System Administrator has all the information they need in order to create the account.

Frequency of Occurrence: ongoing as new faculty and members are welcomed into the review process.

#### Open Issues:

- How will the System Administrator password recovery process be more complex?
- What do we do if there is only one System Administrator and (s)he forgets their password and cannot recover it?
- Will there be a limit as to how many System Administrator's there can be? If so- what will the limit be?

## **Use Case UC3: Manage Account Settings**

Scope: Employment Application Review System

Level: User Goal

Primary Actor: Secretary, Committee Members, Chair

#### Stakeholders and Interests:

#### - Secretary:

 Has/needs the ability to change their login information (i.e. password), their contact information (i.e. email, office phone) and their activity information (i.e. away until x date or present)

#### Applicants:

 Wants the users of EARS to be able to access their account securely and efficiently so that their applications are not being viewed by unauthorized personnel.

#### Chairperson:

 Has/needs the ability to change their login information (i.e. password), their contact information (i.e. email, office phone) and their activity information (i.e. away until x date or present) and position (i.e chair of x department)

#### Committee Members:

o Has/needs the ability to change their login information (i.e. password), their contact information (i.e. email, office phone) and their activity information (i.e. away until x date or present) and position (i.e member of x department)

#### - System Administrator:

 Wants the users of the EARS system to be able to do as much as possible without having to call for the System Administrator to do something as simple as changing a password.

**Preconditions:** Users must be identified and authenticated before gaining access to the ability to change their account system. I.e. Users must be logged in and are prompted for their password upon change of any setting.

Success Guarantee (or Postconditions): Member settings are changed/updated to reflect the member's current situation and preferences. System administrator is alerted of the change for documents sake. Success notification for member is generated.

## Main Success Scenario (or Basic Flow):

Step	Detailed Step	
1	Member logs into their EARS account using current username and password.	
2	Member selects account settings and is brought to their settings page.	
3	Member changes their password/availability/contact info/position	
4	4 Member selects the "save" button and is prompted for confirmation	
5	Member enters current password into confirmation box and hits okay	
6	Member receives a notification confirming their changes	
7	System administrator receives notification of member changes	
8	Member continues about their day knowing their account is secure and accurate	

#### **Alternative Flows to the Main Success Scenario**

Alternate Step	Detailed Step
1	System administrator is asked to change specific settings of a user's account via email or in person.
2	System administrator logs into his/her personal account and accesses the third party member's account with administrator authority.
3	System administrator makes changes on member's behalf.
4	Notification/email is sent to member alerting them of the change

## **Failure and Recovery Scenario**

Failed Step	Failed Situation	Recovery Operations
5	Login Issues	Password Recovery Member selects "forgot password" and follows password recovery steps such as secret questions. Password Recovery Fails Member contacts System Administrator for account assistance. System Administrator either walks member through resetting password or goes into the member's account via administrator access and changes password for them. Larger System Level Issue Member contacts System Administrator who then performs System Diagnostics.
6	Member enters wrong information for their account changes.	Edit account settings  Member logs back into their account and changes their settings to more accurately depict their current status.  Edit account not possible  Member contact System administrator in order to make the appropriate changes. System administrator logs in with administration access and changes the appropriate settings for the user.
7	User does not have permission to change settings	Submit a request User can submit a request to the system administrator to grant them access to certain account settings Request denied System administrator can login using administrator access to make changes on the user's behalf.

#### Special Requirements:

- There must be a "forgot password" button which include security steps to authenticate the user without a password (i.e. via authorized email)
- System administrator must have the ability to access all member accounts through his/her own account (with administrator privileges)
- Both the system administrator and the accessing member must be alerted to changes on the member's account for security reasons.
- System administrator must be able to lock out certain privileges when making the member's account (See "Manage User Accounts" use case for more details)
- Users must be prompted to change their password for security reasons every 6 months.

Frequency of Occurrence: Typically not often- passwords are done at least every 6 months, all other changes are made on a need-to-know basis (i.e. vacation, promotion to another field)

#### **Open Issues:**

- Will the members always receive an email notification of account changes or only an internal notification?
- Will the changes be stored somewhere by the System administrator or will it just be in their notifications?
- If changes are stored, where are the stored and how can they be accessed?
- If changes are stored, what amount of information is changed? (name of user who changed the information, date/time of day, what was changed)
- What form of authentication will be used through the "forgot password" method?

## **Use Case UC4: Manage Applications**

Scope: Employment Application Review System

Level: User Goal

Primary Actor: Secretary, Applicant, Committee Members, Chair

#### Stakeholders and Interests:

#### Secretary:

o The secretary wants to provide a brief overview of submitted application files and submit them into the respective drop-box for faculty member review and final approval from the Chair.

#### Applicants:

 Applicants look to make the original submission of the application to the secretary.
 Applicants can view status updates of the application as it is processed through the EARS system.

#### Chairperson:

o Has the ability to make the final approval after faculty members discuss and vote to approve or disapprove of the application.

#### Committee Members:

 Views applications in their respective drop-box within their committee. Committee members within the same committee hold a discussion on received applications followed by a vote on whether to approve the application or disapprove of it.

#### System Administrator:

o Looks to ensure the system can handle uploading of application files, allow the secretary to properly sort them, ensure the system sends e-mail updates to all party members, provide applications with a status, and allow approval voting.

**Preconditions:** Applications must be in a valid file format and applicants must meet minimum requirements before any applications are processed. Furthermore, the secretary must forward the applications to the correct drop-box for each application.

**Success Guarantee (or Postconditions):** Applications meet the file format specifications and requirements, are sent to the correct drop box, voted on, and passes through the final decision from the Chair if applicable.

#### Main Success Scenario (or Basic Flow):

Step	Detailed Step
1	Secretary receives application and forwards application to drop-box.
2	E-mail notification is sent to committee members and Chairperson.
3	Committee members open and review the application.
4	Committee members discuss each application or assign another member to it.
5	Committee members leave comments on application if desired.
6	Committee members make a vote (yes/no) for each application after discussion on the EARS system.
7	EARS system compares vote count after voting.
8	EARS system forwards applications with committee member to the Chairperson and updates status of denied applications.
9	Chairperson makes final approval or disapproval of application.
10	Status of applicant's application is updated and the applicant is notified.

#### **Alternative Flows to the Main Success Scenario**

Alternate Step	Detailed Step
3 a	Application doesn't meet committee wants although meets minimum requirements and is not discussed.
6 a	Voting numbers are a tie. Application is forwarded to Chairperson for decision on behalf of committee members.

## **Failure and Recovery Scenario**

Failed Step	Failed Situation	Recovery Operations
1	Application Processing Issues	Incorrect Drop-box Placement by Secretary Secretary edits application and changes drop-box setting. Continue to Step 2.
	1 — 111 — 1	Applications Not Transferring to Drop-box Secretary contacts the system administrator to investigate and resolve the issue. Secretary continues to Step 1.
2, 8, 10	Status updates	Application Status Not Updating Secretary is to contact the System Administrator who is to run diagnostics on the EARS e-mail system and resolve the issue. Continue to next step.
		Status-update email not sending System administrator notified and diagnosis/resolves the e-mail server issues. Continue to next step.
6	Voting	Voting system failure System administrator notified and performs diagnostics. System administrator resolves the issue. Continue to Step 7.

#### **Special Requirements:**

- Any application must be a proper file format and meet the minimum requirements for the position before being forwarded to the drop-box.
- Committee members must place a vote.
- On the event of a tie, the Chairperson will make the final vote regardless of vote counts.
- Committee members must have a private area to discuss applications.
- Applicants must be updated each time the application is transferred/processed.

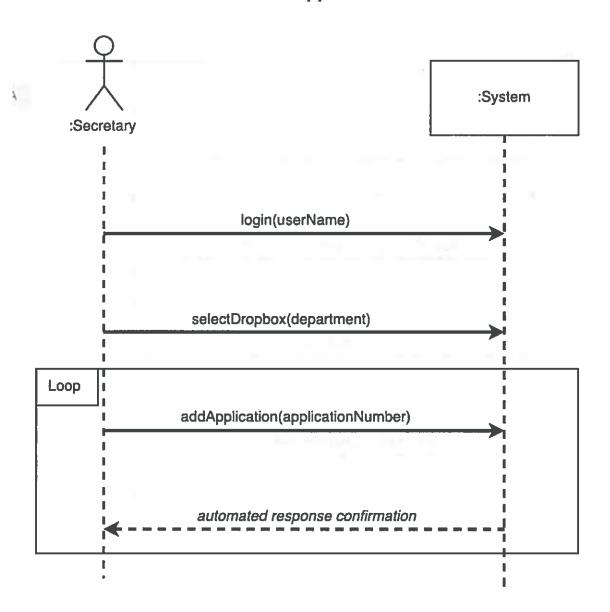
**Frequency of Occurrence:** Typically, will happen daily during the opening of a position. Much more infrequent when no postings are up.

#### **Open Issues:**

- How will biased decisions from Chairperson's be handled?
- Should the secretary be able to relocate the application or leave this to the System Administrator?
- Should approval of an application be notified over email or phone call?
- Can the Chairperson deny an application regardless of vote count? For example, 10 yes votes to 1 no vote; can this be denied?

## c. System Sequence Diagrams

## **Submit Applications**



committee members pande comments

HVISE comments

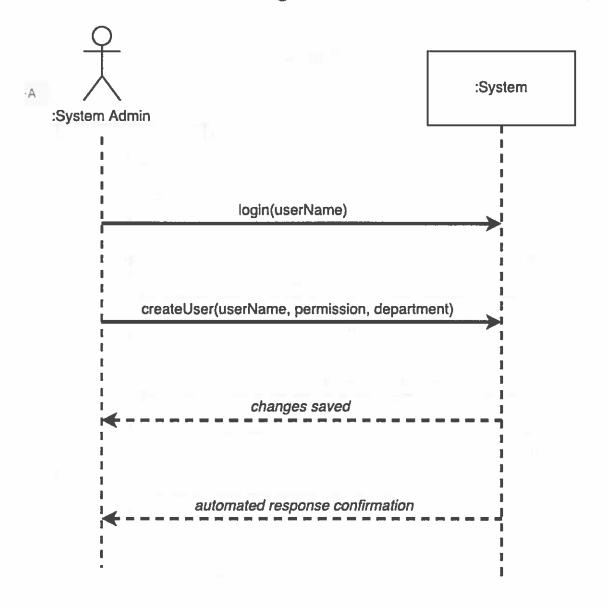
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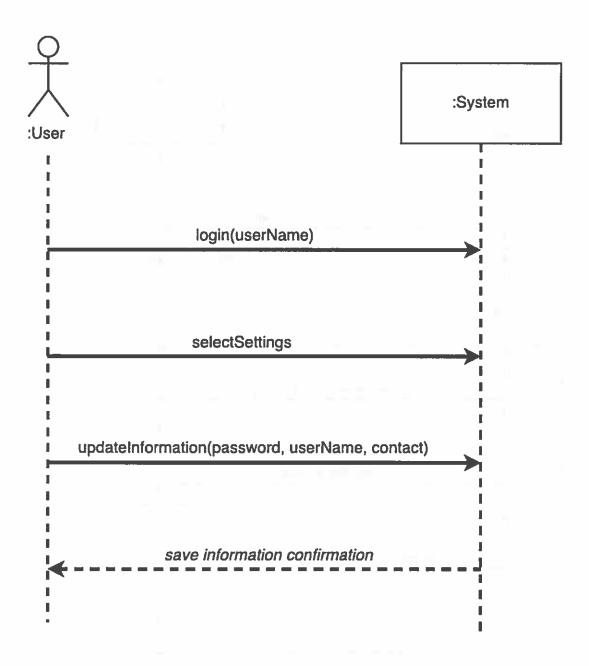
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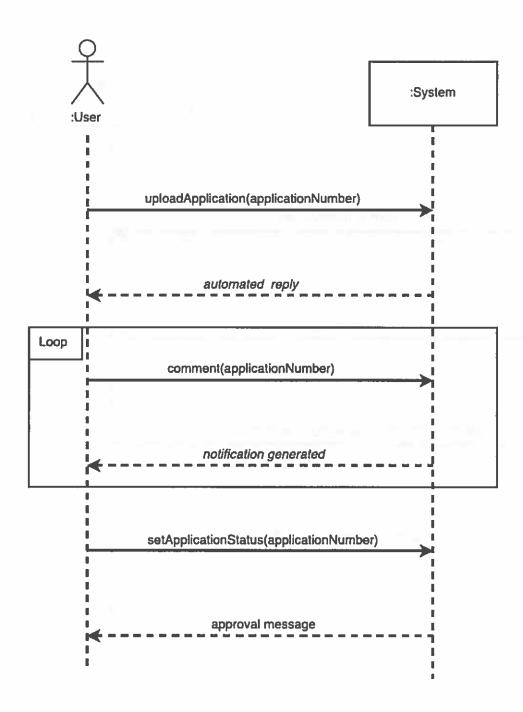
## **Manage User Accounts**



## **Manage Account Settings**



## **Manage Applications**



## d. Operation Contracts

#### **Contract CO1: addApplication**

Operation: addApplication(application: applicationNumber)

**Cross Reference:** Use Case: Submit Applications

Precondition: Application has been received by the Secretary

Postcondition:

- A PendingReviewNotification instance (prn) was created.

- prn was associated with the Chairperson.

#### **Contract CO2: createUser**

Operation: addApplication(userName, position, department)

Cross Reference: Use Case: Manage User Accounts

Precondition: Request for a new account has been done to the System Admin.

Postcondition:

- An Account instance was created.

- An Account is associated with the specific dropBox.

#### **Contract CO3: comment**

**Operation:** comment(application: applicationNumber)

**Cross Reference:** Use Case: Manage Applications

Precondition: Application has been uploaded and users have received notifications.

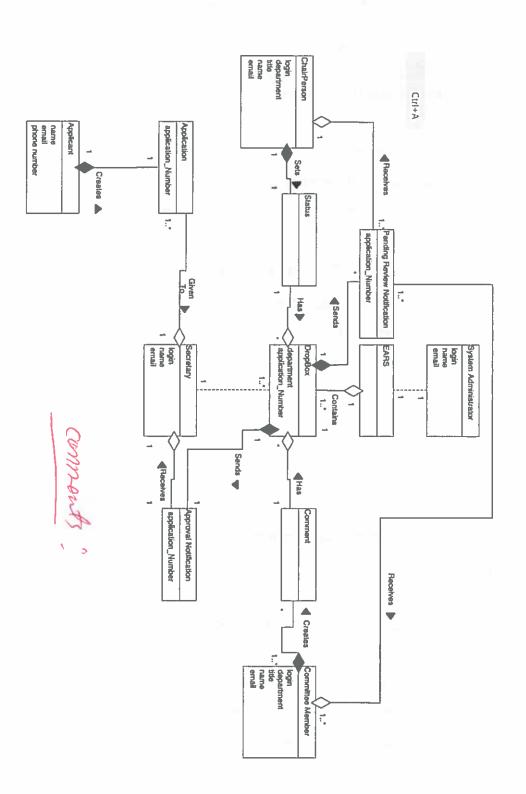
Postcondition:

- A Comment instance was created.

- A Comment is associated with an applicationNumber in the dropBox

- Attribute change for application.commented (set to true).

# 3. Domain Modelling



## **Appendix 1: Supplementary Specification**

#### Introduction

This document is the repository of all EARS requirements not captured in the use cases.

#### Pluggable Rules

When a user account is created it is given certain permissions based on their department and position. Committee chairs will have different permissions from members who will have different permissions from secretaries. Each department member/chair only has access to their current department. In order to change departments a member must put in a request to the department head. Both the current department head and the migrated to department head must approve department change.

#### Security

All usage requires user authentication. (i.e. Passwords).

## **Usability**

#### **Human Factors**

Each user of the EARS system will have a display suited to their individual positions. For example, secretaries will be able to see all drop boxes so that they can choose which dropbox to deposit various applications to while the members of various departments will only see the dropboxes for their department. The application will be visually appealing and intuitive in order to improve functionality and usability by the users. At first the users will be presented with a login screen and upon logging in they may choose to view applications, notifications, or account settings. Users want to be able to view applications and comment on them quickly and efficiently.

## Reliability

#### Recoverability

User databases as well as drop boxes will be backed up on a hard drive regularly in case something goes wrong with the system. This way we avoid losing accounts and applications as well as review status of applications permanently.

#### Performance

Because users want to be able to review applications quickly and efficiently, response time has to be fairly quick. We want comments and checks to be automatic so that when one user comments on an application or tags another user in the application, the other users can see these changes automatically.

## Supportability

#### Adaptability

Different users have different abilities and permissions as mentioned in the pluggable rules. The pluggable rules thus come into play whenever a new user is created or logs in. We want to make sure that normal members cannot approve and disapprove applications for example.

#### Configurability

Users need to be able to let each other know when they are away, or when their contact information changes so that other members are not tagging them while they are away, or trying to call their old office for example. In this way users can configure their accounts to show their availability as well as update and change other crucial information such as contact information.

## **Implementation Constraints**

The International School of Software isn't putting too many constraints on the build of the EARS system. What they require is simple and we are allowed to use whatever sort of configuration we believe will prove to be most efficient.

## **Free Open Source Components**

In general, everything we will be using to construct this software is free based on what we have planned right now.

#### Software Interfaces

We need to have a database that we can use with our system. Right now we are planning on an SQL database because of ease of access and usability.

# Appendix 2: Glossary

## **Project Glossary**

Term	Description
Account	A profile for any user containing contact information, position if applicable, availability if applicable, and is authenticated with an email address and password.
Applicant	A user who is applying for a job posting.
Application	A single file or multiple files consisting of a resume, cover letter, and other information submitted in response to a job posting.
Approval	Done if the application meets all standards, passes the committee vote, and satisfies the Chairperson's requirements.
Chairperson	The Chair of a committee who makes the final decision on application.
Comment	Short remark left by committee members or the secretary on an application before final review.
Committee	A group of appointed faculty members within a specific department to evaluate applications.
Database	A relational collection of all user accounts within the EARS system.
Department	A subsection of faculty members which fall under the same education subject.
Discussion	A meeting help by committee members to discuss submitted applications and determine possible voting scenarios.
Drop-box	File-storage system assigned to each committee to review their respective application submissions.
EARS	Employment Application Review System.
Faculty	A member of the teaching or research staff.
Job posting	A posting for a job within the school that forwards all application entries to the EARS system for processing.
Login	The process of any user signing into their respective profile on the EARS system.
Logout	The process of any user requesting to no longer be logged into the EARS system.

Minimum Requirements	Requirements that must be met for each application to continue through the steps of the EARS system.
Secretary	Responsible for forwarding applications to committee drop-boxes and moving applications if necessary.
Status	A message displayed which contains the current level of processing the application is in.
Status Update	An email sent to committee members, the Chairperson, or the applicant notifying of a new application if applicable or application denial/approval if applicable.
System Administrator	Administrates the EARS system. In charge of the management and maintenance of backend systems and front-end software systems. Handles account issues and other high-level account modifications.
Vote	A yes or no decision done through the EARS system after discussion to signify each committee member's approval or disapproval of the application.