

3.1 Functional Requirements (Bliss)

The requirements necessary to build a functional prototype that will prove the viability of a solution to Strome Entrepreneurial Center's lack of ability to make, maintain, and track connections. Each of the following sections will address specific portions of the digital solution, how they will be used, and their constraints.

3.1.1 Database (Bliss)

Implementing a PostgreSQL database provides a structured format for saving, editing, and accessing data for a given concept of the prototype. Figure 1 shows the tables and their primary and foreign keys. Data shall be saved to meet the following requirements and formats:

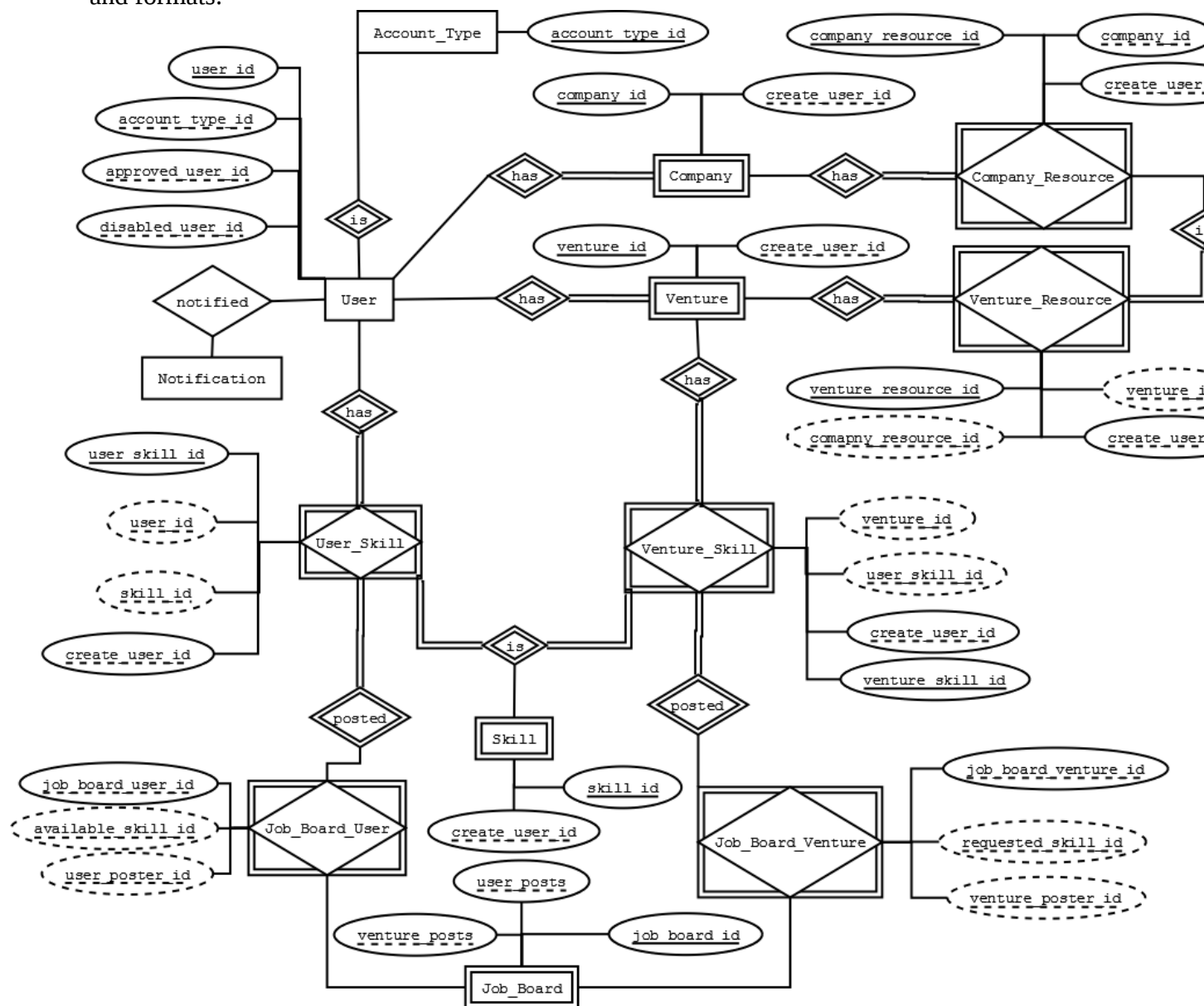


Figure 10. Database schema of tables and keys.

3.1.1.1 User Table (Strong)

Attribute	Datatype	Key	Requirement	Null	Notes
user_id	BigSerial	Primary key	Must auto-increment starting at 1	Not Null	
last_name	Text			Not Null	
first_name	Text			Not Null	
email	Text		Must be unique	Not Null	
password	Text			Not Null	
register_dttm	Timestamp			Null	Populated after email verification
create_dttm	Timestamp		Must default to SYSDATE when record is created	Not Null	
account_type_id	Integer	Foreign key to Account_Type (account_type_id)		Not Null	
approved_dttm	Timestamp			Null	Null value assumes user is not approved
approved_user_id	Integer	Foreign key to User (user_id)		Null	
disabled_dttm	Timestamp			Null	Null value assumes user is active
disabled_user_id	Integer	Foreign key to User (user_id)		Null	
gcm_token	Text			Null	

Table 2. User table for database.

Space left intentionally blank.

3.1.1.2 User Account Types (Strong)

Attribute	Datatype	Key	Requirement	Null	Notes
account_type_id	BigSerial	Primary key	Must auto-increment starting at 1	Not Null	
name	Text		Must be unique	Not Null	
description	Text			Null	

Table 3. User account types table for database.

3.1.1.3 Ventures (Bliss)

Attribute	Datatype	Key	Requirement	Null	Notes
venture_id	BigSerial	Primary key	Must auto-increment starting at 1	Not Null	
description	Text			Null	
create_user_id	Integer	Foreign key to User (user_id)		Not Null	
create_dttm	Timestamp		Must default to SYSDATE when record is created	Not Null	
public_info	Text			Null	
approved_dttm	Timestamp			Null	
approved_user_id	Integer	Foreign key to User (user_id)		Null	

Table 4. Ventures table for database.

3.1.1.4 Skills (Bliss)

Attribute	Datatype	Key	Requirement	Null	Notes
skill_id	BigSerial	Primary key	Must auto-increment starting at 1	Not Null	
name	Text		Must be unique	Not Null	i.e. Web Developer
description	Text			Null	
create_dttm	Timestamp		Must default to SYSDATE when record is created	Not Null	
create_user_id	Integer	Foreign key to User (user_id)		Not Null	

Table 5. Skills table for database.

Space left intentionally blank.

3.1.1.5 User Skill (Bliss)

Attribute	Datatype	Key	Requirement	Null	Notes
user_skill_id	BigSerial	Primary key	Must auto-increment starting at 1	Not Null	
user_id	Integer	Foreign key to User (user_id), partial key (user_id, skill_id)		Not Null	
skill_id	Integer	Foreign key to Skill (skill_id), partial key (user_id, skill_id)		Not Null	
create_dttm	Timestamp		Must default to SYSDATE when record is created	Not Null	
create_user_id	Integer	Foreign key to User (user_id)		Not Null	

Table 6. User skills table for database.

3.1.1.6 Venture Skill (Bliss)

Attribute	Datatype	Key	Requirements	Null	Notes
venture_skill_id	BigSerial	Primary key	Must auto-increment starting at 1	Not Null	
venture_id	Integer	Foreign key to Venture (venture_id), partial key (venture_id, user_skill_id)		Not Null	
user_skill_id	Integer	Foreign key to User_Skill (user_skill_id), partial key (venture_id, user_skill_id)		Not Null	
create_dttm	Timestamp		Must default to SYSDATE when record is created	Not Null	
create_user_id	Integer	Foreign key to User (user_id)		Not Null	

Table 7. Venture skills table for database.

Space left intentionally blank.

3.1.1.7 Companies (Bliss)

Attribute	Datatype	Key	Requirements	Null	Notes
company_id	BigSerial	Primary key	Must auto-increment starting at 1	Not Null	
name	Text		Must be unique	Not Null	i.e. Olive Garden
description	Text			Null	
create_dttm	Timestamp		Must default to SYSDATE when record is created	Not Null	
create_user_id	Integer	Foreign key to User (user_id)		Not Null	

Table 8. Companies table for database.

3.1.1.8 Company Resources (Bliss)

Attribute	Datatype	Key	Requirements	Null	Notes
company_resource_id	BigSerial	Primary key	Must auto-increment starting at 1	Not Null	
name	Text		Must be unique	Not Null	i.e. Kitchen Space
description	Text				
company_id	Integer	Foreign key to Company (company_id)			
create_dttm	Timestamp		Must default to SYSDATE when record is created		
create_user_id	Integer	Foreign key to User (user_id)			

Table 9. Company resources table for database.

Space left intentionally blank.

3.1.1.9 Venture Resources (Bliss)

Attribute	Datatype	Key	Requirements	Null	Notes
venture_resource_id	BigSerial	Primary key	Must auto-increment starting at 1	Not Null	
venture_id	Integer	Foreign key to Venture (venture_id), partial key (venture_id, resource_id)		Not Null	
company_resource_id	Integer	Foreign key to Company_Resource (company_resource_id), partial key (venture_id, company_resource_id)		Not Null	
create_dttm	Timestamp		Must default to SYSDATE when record is created	Not Null	
create_user_id	Integer	Foreign key to User (user_id)		Not Null	

Table 10. Venture resources table for database.

3.1.1.10 Job Board (Strong)

Attribute	Datatype	Key	Requirements	Null	Notes
job_board_id	BigSerial	Primary key	Most auto-increment starting at 1	Not Null	
user_posts	Integer	Foreign key to Job_Board_Users (job_board_user_id)			
venture_posts	Integer	Foreign key to Job_Board_Venture (job_board_venture_id)			

Table 11. Job board table for database.

Space left intentionally blank.

3.1.1.11 Job Board Users (Strong)

Attribute	Datatype	Key	Requirements	Null	Notes
job_board_user_id	BigSerial	Foreign key to Job_Board(job_board_id)	Most auto-increment starting at 1	Not Null	
available_skill_id	Integer	Foreign key to Skill(skill_id), partial key (user_id, skill_id)			
user_poster_id	Integer	Foreign key to User(user_id), partial key (skill_id, user_id)			

Table 12. Job board users table for database.

3.1.1.12 Job Board Ventures (Strong)

Attribute	Datatype	Key	Requirements	Null	Notes
job_board_venture_id	BigSerial	Foreign key to Job_Board(job_board_id)	Most auto-increment starting at 1	Not Null	
requested_skill_id	Integer	Foreign key to Skill(skill_id), partial key (venture_id, skill_id)			
venture_poster_id	Integer	Foreign key to User(user_id), partial key (skill_id, venture_id)			

Table 13. Job board ventures table for database.

Space left intentionally blank.

3.1.1.13 Notification (Strong)

Attribute	Datatype	Key	Requirements	Null	Notes
notification_id	BigSerial		Must auto-increment starting at 1	Not Null	
message	Text			Not Null	
read_dttm	Timestamp			Null	Null values assumes message not read
create_dttm	Timestamp		Must default to SYSDATE when record is created	Not Null	
create_user_id	Integer	Foreign key to User (user_id)		Not Null	
to_user_id	Integer	Foreign key to User (user_id)		Not Null	

Table 14. Notifications table for database.

3.1.2 Web Service (API) (John S.)

The Web service shall support the front end of the application by providing an interface for common functions of the database. The web service shall restrict access to data contained in the database based on the specifications of the Access Control Table, as shown in Table 1.

3.1.2.1 User Services (John S.)

User services shall provide any logged in user with the ability to

- 3.1.2.1.1 Register
Shall allow a visitor to register as a SI user
- 3.1.2.1.2 Midas Login
Shall allow a visitor to login using their Midas credentials
- 3.1.2.1.3 SI Login
Shall allow a visitor to login as an SI user
- 3.1.2.1.4 Lookup User Profile
Shall lookup information about a single user
- 3.1.2.1.5 Edit User Profile
Shall modify a single user profile
- 3.1.2.1.6 Push Notification Registration
Shall register a device to a user for google cloud messaging
- 3.1.2.1.7 User Profile Associate Skill
Shall add a skill to a user profile
- 3.1.2.1.8 User Profile Remove Skill
Shall remove a skill from a user profile
- 3.1.2.1.9 User Profile Notifications Lookup
Shall retrieve unread notifications for a user

3.1.2.1.10 Retrieve Users with Skill

Shall return a list of users with a specified skill

3.1.2.2 Venture Services (Shawn)

Venture services shall provide any logged in user the ability to

3.1.2.2.1 Create a new venture

Shall create a new venture to modify

3.1.2.2.2 Lookup an existing venture

Shall lookup existing ventures user has created in order to perform various operations upon them

3.1.2.2.3 Edit ventures the user owns

Shall modify the current venture projects they own

3.1.2.2.3.1 Update progress of current venture

3.1.2.2.3.2 Add user roles for users involved in current venture

3.1.2.2.3.3 Request companies join current venture

3.1.2.2.3.4 Manipulate privacy settings of venture profile

3.1.2.2.4 Request a meeting with SEC personnel

Shall request meetings with SEC mentors to discuss various aspects of current venture

3.1.2.2.5 Request a meeting with Company personnel associated with current venture

Shall request meetings with company mentors associated with current venture or request help for specific parts of the venture

3.1.2.2.6 Add other users to current venture

Shall add other SEC, Company, or Student users to current venture as members in various roles to assist in current venture

3.1.2.2.7 Remove other users from current ventures

Shall remove a user who is no longer involved in current venture

3.1.2.2.8 Request a company resource

Shall request a resource posted by a Company as an available resource to venture needs

3.1.2.2.9 Add resource request

Shall add a specific resource need to current venture through the Job Board

3.1.2.2.10 Remove resource request

Shall remove a specific resource need to current venture through the Job Board

3.1.2.3 Company Services (Shawn)

Company services shall provide companies various means to manage their involvement in SI by

3.1.2.3.1 Creating a Company

Shall create a profile for a company to be represented in SI in various roles

3.1.2.3.2 Modifying a Company

Shall modify current company profile to reflect various aspects of the company

3.1.2.3.2.1 Update company information

3.1.2.3.2.2 Update company users

3.1.2.3.2.3 Add a venture company is associated with

3.1.2.3.2.4 Remove a venture company is associated with

3.1.2.3.2.5 Manipulate privacy settings of company profile

3.1.2.3.3 Offering Resources

Shall offer resources

3.1.2.3.4 Removing a Resource Offering

Shall remove resources offered to SI ventures

3.1.2.4 Resources Services (Shawn)

Resources service provides an interface for users to

3.1.2.4.1 Create a new resource

Shall make a new resource

3.1.2.4.2 Create a new resource request

Shall create a request for a specific resource and post to job board

3.1.2.4.3 Search for Resource

Shall search through database to find specific resources available

3.1.2.4.4 Notification Services (John S.)

Notification services shall provide an interface to

3.1.2.4.4.1 Create New Notification

Shall create a new unread notification targeting a list of users.

3.1.2.4.4.2 Get Unread Notifications

Shall provide the authenticated user with a list of notifications that have not yet been read by the user

3.1.2.4.4.3 Get All Notifications

Shall retrieve all notifications for the authenticated user with a flag for whether or not that user has read the notification

3.1.2.4.4.4 Read Notification

Shall mark a pending notification of the authenticated user as read

3.1.2.4.4.5 Send Aggregate Email

Shall send an email message containing any unread notifications to that user's email address

3.1.2.5 Admin Services(Shawn)

Admin services shall provide an interface to.

3.1.2.5.1 Add Domain Whitelist

Shall add specific domains to a whitelist to allow for quicker registration under that domain

3.1.2.5.2 Remove Domain Whitelist

Shall remove specific domains from the whitelist for any reason

3.1.2.5.3 Add Test User

Shall add a test user for SEC Admin to manipulate

3.1.2.5.4 Approve User

Shall approve user for full access to SI based on user type

3.1.2.5.5 Deactivate Test User

Shall remove test user once SEC Admin no longer needs said user

3.1.2.5.6 Remove User

Shall remove a user from SI for any reason

RED restricted access
Yellow requires prerequisites
Green allowed

	SEC Staff	ODU Student	External Company
General			
Automatic Registration	RED	Green	Yellow
Send Notifications	Green	Yellow	Yellow
View Notifications	Green	Yellow	Yellow
Create User	Green	RED	RED
Add SEC Staff	Green	RED	RED
Add/Remove Domain Whitelist	Green	RED	RED
Student			
View Student Profile	Green	Green	Green
View Student Skills	Green	Green	RED
Add Skill	Green	Green	RED
Delete Skill	Green	Green	RED
Venture			
Search Venture	Green	Green	Green
View Venture	Green	Green	Green
Request Venture	Green	Green	RED
View Venture Skills	Green	Green	RED
Add/Remove Members	Green	Green	RED
Edit Venture Details	Green	Green	RED
Approve Venture	Green	RED	RED
Delete Venture	Green	Green	RED
Approve Join Venture Request	Green	Green	Yellow
Request Skills/Resources	Green	Green	RED
Request to Join Venture	Green	Green	Yellow
Company			

Search Companies			
View Company Profile			
Edit Company Profile			
Add Company Resource			
Remove Company Resource			
Approve Company			
Delete Company Profile			
Job Board			
Search Job Board			
View Job Board Listing			
Post to Job Board			
Remove Posted Listing			
Report Spam			
View Spam Reports			
Remove Job Board Listing			

Table 15. Access Control Table, green indicates the action is accepted, red indicates it is not allowed, and yellow indicates a scenario with pre-requisites.

3.1.3 Web Application Interface (John S)

The web interface shall provide users with a front end interface for interacting with data accessible via the web service (Section 3.1.2). The interface must be well optimized and tested to work with mobile devices. The interface must also adapt in order to only show features allowed by the Access Control Table, as shown in Table 1.

3.1.3.1 Users (Matthew)

3.1.3.1.1 Registration

A registration page will allow users to register a new account with the Strome Entrepreneurial Center by supplying their first name, last name, and either a valid ODU email address or another email address that has been preapproved the Strome Entrepreneurial Center

3.1.3.1.2 Login

A login page will allow users to login to their accounts using their email address and a password that is initially supplied to them that they can change once logged in for the first time, assuming that they are properly registered first

3.1.3.1.3 Profile

Each user will have an individual profile page that will be visible to all other registered users that will include details about who they are, and what assets and abilities they would be able to supply to a venture

3.1.3.1.4 Profile Edit

Each user will have the ability to edit their own personal profile

3.1.3.2 Ventures (Matthew)

3.1.3.2.1 Create

Student and Staff users will be able to create new venture resources.

3.1.3.2.2 Modify

Users will be able to modify venture resources and their respective profiles that they have created or that they have been given permission to modify.

3.1.3.2.3 Profile

Every venture will have its own profile page that all users will be able to view that will give important information on what the venture is, and what it needs to be successful

3.1.3.3 Job Board (Matthew)

3.1.3.3.1 Skill Search

Registered users will be able to search through a job board listing for jobs that they are skilled in

3.1.3.3.2 Skill Request

Strome Entrepreneurial Center staff and approved students and companies will be able to post requests for resources on the job board

3.1.3.3.3 Skill Offer

Registered users will be able to post themselves as resources on the job board listing what skills they are capable of

3.1.3.3.4 Companies (Matthew)

3.1.3.3.4.1 Create

Strome Entrepreneurial Center staff and preapproved external company users will be able to create company resources

3.1.3.3.4.2 Modify

Users will be able to modify company resources that they have created or that they have been given approval to modify

3.1.3.3.4.3 Profile

Every company resource created will have its own profile page detailing information about that company and what sort of resources they need

3.1.3.4 Notifications (John S.)

Notifications shall provide the user with an indicator in order to bring the user's attention back into the application's front end

3.1.3.4.1 Unread Notifications

Shall be indicated by an icon and number on all pages that can be expanded in order to mark notifications as read.

3.1.3.4.2 Read notifications

A notifications page shall allow the user to view all notifications including previously read notifications. Read/Unread notifications must be indicated as such

3.1.3.5 Administration (Shawn)

Administration allows SEC user to have control over other users' access and accounts

3.1.3.5.1 Edit User Whitelist

Shall create whitelist rules for specific domains, edit current whitelist to add or remove a domain, or create whitelist for specific email addresses

3.1.3.5.2 Test User Create

Shall create a test user for SEC user to learn how SI works, teach others how SI works, or to test some functionality of SI. Shall also be able to remove Test user once done

3.1.3.5.3 Pending User Requests

Shall grant or deny access to new users that are not on whitelist

3.1.3.5.4 Send Notification

Shall send notifications through notification system to any or all users or create special user groups to send notifications to for any purpose

3.1.3.6 Notifications (John S.)

Notifications shall alert users that something needs their attention after they have closed the application. There shall be two methods outside of the web application's user interface mentioned in section 3.1.3.5

3.1.3.6.1 Aggregate Email

Aggregate emails shall summarize the previous week's unread notifications

3.1.3.6.1.1 Weekly Job

Notifications by email shall be sent as an aggregate email which includes all unread notifications of the previous week

3.1.3.6.1.2 Deep Link

Each notification item in the aggregate email shall link to a related page in the application

3.1.3.6.1.3 Unsubscribe

All emails shall include a direct link to unsubscribe from the weekly aggregate emails

3.1.3.6.2 Mobile Application

Users who access the service using the downloadable android application shall receive notifications via push notification service and have access to

3.1.3.6.3 Register Mobile Device

On first launch the device shall be registered to receive pushes notifications

3.1.3.6.3.1 Receive Notification

Notifications sent by the web services shall be received by the device to

3.1.3.6.3.1.1 Notify

Shall display a native notification

3.1.3.6.3.1.2 Deep Link

On tap shall link the user to a related page in the application

3.1.3.6.3.1.3 Mark as Read

On tap shall mark the notification as read

3.1.3.6.4 Web View

The webview shall provide the same user experience as in section 3.1.3 but launched as an android application