

Tech Connect Frontend MTM Program Product Software Requirements Specification

*Version 1.1
May 26, 2021*

Standard Version Number: 3.5
Standard Version Date: March 10, 2018

Version History

<i>Version</i>	<i>Date</i>	<i>Authors</i>	<i>Comment</i>
0.1	2/10/2021	Class of ESOF 328, spring 2021	Information from 1 st client meeting
0.2	2/24/2021	Class of ESOF 328, spring 2021	Information from 2 nd client meeting
0.3	3/8/2021	Class of ESOF 328, spring 2021	Information from 3 rd client meeting
0.4	3/23/2021	Class of ESOF 328, spring 2021	Information from 4 th client meeting
1.0	4/14/2021	Class of ESOF 328, spring 2021	Information from all client meetings, spring 2021
1.1	5/26/2021	Celia Schahczenski	Information from final presentation, spring 2021

Montana Tech Software Engineering Students:

These Montana Tech Method software engineering standards encapsulate Dr. Ackerman's decades of experience in the software industry, the IEEE software engineering standards, and many suggestions from various texts. They have gone through many revisions and additions over the last several years. They are part of your software engineering studies so that (1) you may have the experience of developing software to a standard (which you may find you need to do if you take a job that requires high reliability software), and so that (2) you will have the experience of developing high quality software. You are also invited to participate in the continuing evolution of these standards by studying them critically and making suggestions for their improvement and correction.

TABLE OF CONTENTS

1	INTRODUCTION.....	5
1.1	SOFTWARE PURPOSE AND SCOPE.....	5
1.2	DOCUMENT PURPOSE AND CONTENTS	5
1.3	REFERENCES	6
2	GENERAL FACTORS.....	6
2.1	PRODUCT PERSPECTIVE	6
2.2	PRODUCT FEATURES	6
2.3	ENVIRONMENTAL CONDITIONS.....	7
2.4	USER ROLE CHARACTERISTICS	7
2.5	DEPENDENCIES	8
2.6	ASSUMPTIONS.....	8
3	USE CASES/USER STORIES.....	8
3.1	ROLES	8
3.2	USE CASES.....	9
3.2.1	<i>Activate Profile</i>	<i>9</i>
3.2.2	<i>Initialize consent information</i>	<i>10</i>
3.2.3	<i>Modify message notification status.....</i>	<i>11</i>
3.2.4	<i>Send message</i>	<i>12</i>
3.2.5	<i>Update consent information.....</i>	<i>13</i>
3.2.6	<i>Update profile</i>	<i>14</i>
3.2.7	<i>User search.....</i>	<i>15</i>
3.3	USER STORIES.....	16
3.3.1	<i>Tech news.....</i>	<i>16</i>
3.3.2	<i>Viewing times series information.....</i>	<i>16</i>
4	SPECIFIC REQUIREMENTS.....	17
4.1	FUNCTIONAL REQUIREMENTS	17
4.1.1	<i>Login</i>	<i>17</i>
4.1.2	<i>Activate profile.....</i>	<i>17</i>
4.1.3	<i>Notifications on data usage</i>	<i>17</i>
4.1.4	<i>Update profile</i>	<i>17</i>
4.1.5	<i>Setting initial consents</i>	<i>17</i>
4.1.6	<i>Updating consents.....</i>	<i>18</i>
4.1.7	<i>Display profile activation status</i>	<i>18</i>
4.1.8	<i>Filtering searches</i>	<i>18</i>
4.1.9	<i>Pinning profiles.....</i>	<i>18</i>
4.1.10	<i>Unpinning profiles</i>	<i>18</i>
4.1.11	<i>Disallow multiple pins</i>	<i>18</i>
4.1.12	<i>Disallow pinning own profile.....</i>	<i>19</i>
4.1.13	<i>Messaging other users</i>	<i>19</i>
4.1.14	<i>Opting out of message groups.....</i>	<i>19</i>
4.1.15	<i>Search for Tech information.....</i>	<i>19</i>

4.1.16	<i>Time series data display order</i>	19
4.1.17	<i>Times series data display information</i>	19
4.1.18	<i>User death</i>	19
4.2	QUALITY ATTRIBUTES	20
4.2.1	<i>Availability</i>	20
4.2.2	<i>Enhanceability/Extendibility</i>	20
4.2.3	<i>Human Factors</i>	20
4.2.4	<i>Integrity</i>	20
4.2.5	<i>Modifiability and Maintainability</i>	20
4.2.6	<i>Performance and scalability</i>	20
4.2.7	<i>Portability</i>	21
4.2.8	<i>Privacy</i>	21
4.2.9	<i>Security</i>	21
4.2.10	<i>Usability</i>	21
4.2.11	<i>V&V Activities</i>	21
4.3	NON-FUNCTIONAL REQUIREMENTS WHICH ARE NOT QUALITY ATTRIBUTES ...	21
5	FUTURE ENHANCEMENTS	22
	APPENDICES	23
	APPENDIX A: DEFINITIONS, ACRONYMS, AND ABBREVIATIONS	23
	DEFINITIONS	23
	ACRONYMS AND ABBREVIATIONS	23
	FIGURES	
	Figure 1: Ecosystem Map	6
	Figure 2: Context Diagram	7

1 Introduction

This section provides an overview of *Tech Connect*. It describes the business objectives and vision of *Tech Connect*, as well as the purpose and contents of this document.

1.1 Software Purpose and Scope

The business objectives of *Tech Connect* are to:

- Provide the ability to connect with the Tech family for professional or social purposes with graduates informally sharing information about potential jobs, internships, events, and start-up opportunities.
- Enable Montana Tech to share information and provide a portal to other Montana Tech systems, such as Digger Recruiting.
- Encourage and make it easy for alumni and graduating students to add data to the system and to keep it updated.

Its vision follows:

For Montana Tech alumni and graduating students who wish to maintain strong networking relationships with other users and Montana Tech itself, the *Tech Connect* frontend is a web application that allows users to distribute their information, view the information of others, and socialize. Unlike general social media platforms, our product will have the advantage of being the first system created specifically for Montana Tech that allows users the ability to connect after they graduate.

1.2 Document Purpose and Contents

The purpose of this Software Requirements Specification (SRS) document is to give readers an understanding of Montana Tech's goals and needs for a *Tech Connect* frontend to the *Graduate Information Tracking Webservice* (GIT Webservice). This document is a guide to future developers on the desired features, functionality, and behaviors of the *Tech Connect* frontend. This document can also be used to design tests to ensure the module behaves as intended.

This SRS was developed by the students of the spring 2021 offering of Software and Requirements and Specification course, ESOF 328, at Montana Tech. It has been developed in part by alumni, faculty and administrative personal of Montana Tech. Thanks goes to Natasha Chadwell, Phil Curtiss, Justin Malsam, Kelvin McManus and Diane Warthen. The main audience of this document are the clients as well as the developers that will use this document to implement the system.

1.3 References

Michelotti, Jacob (2020). *Graduate Information Tracking Webservice (GIT Webservice), Product Software Requirements Specification Document v1.0*, Aug. 2, 2020.

https://katie.mtech.edu/classes/esof328/Project/Graduate_Webservice_SRS.pdf

2 General Factors

This section provides a high-level view of the *Tech Connect* system, its major functions, environment, users, and dependencies.

2.1 Product Perspective

Tech Connect is a web application that will use the *GIT Webservice* to store and manipulate data. *Tech Connect* will be one, of possibly many frontends, of the *GIT Webservice*. Figure 1 show the ecosystem map for *Tech Connect*.

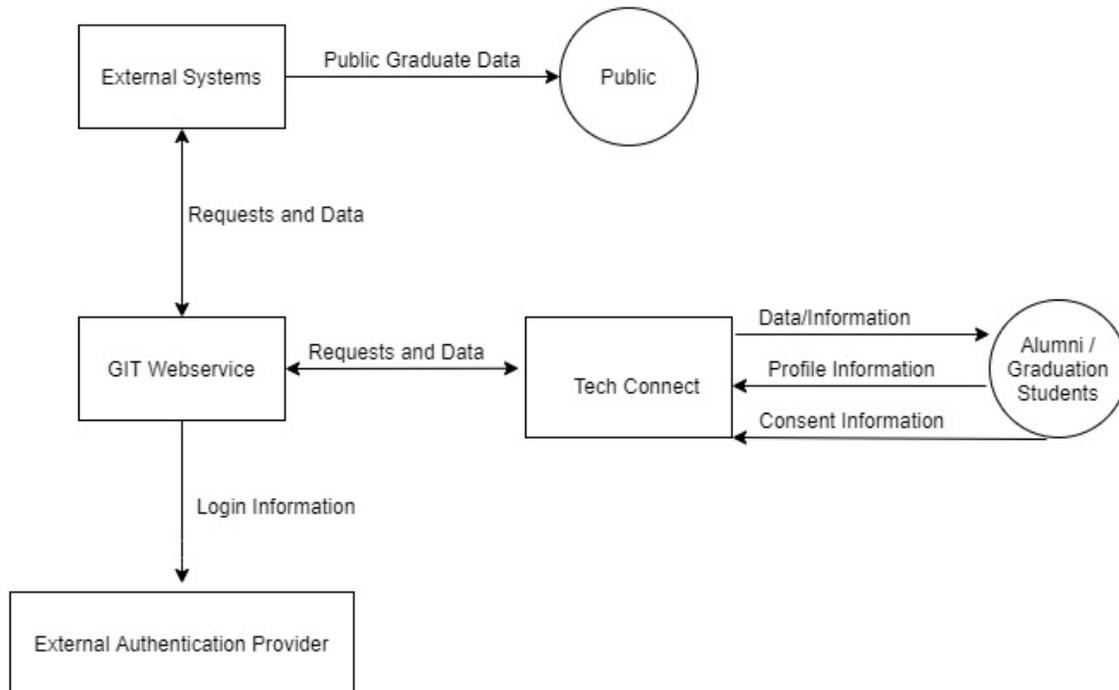


Figure 1: Ecosystem Map

2.2 Product Features

Tech Connect will have the following features:

1. **Profiles:** *Tech Connect* will allow alumni and graduating students to activate and personalize their profile to share their personal and professional information with other users.
2. **User to user connections:** *Tech Connect* will provide a messaging system and a search system to facilitate connections between users within the system.

- Montana Tech to user connections: *Tech Connect* will enable users to view information about Montana Tech, and be directed to existing Tech information or services, allowing Montana Tech faculty to keep users up to date on Tech happenings.

2.3 Environmental Conditions

Tech Connect will work in conjunction with the *GIT Webservice*. As this webservice will interface with external authentication providers such as Montana Tech’s *Central Authentication System, CAS*, *Tech Connect* will also. Additionally, the *GIT Webservice* will have its own internal authentication, so *Tech Connect* will utilize that as well. Figure 2 depicts the environment of *Tech Connect*.

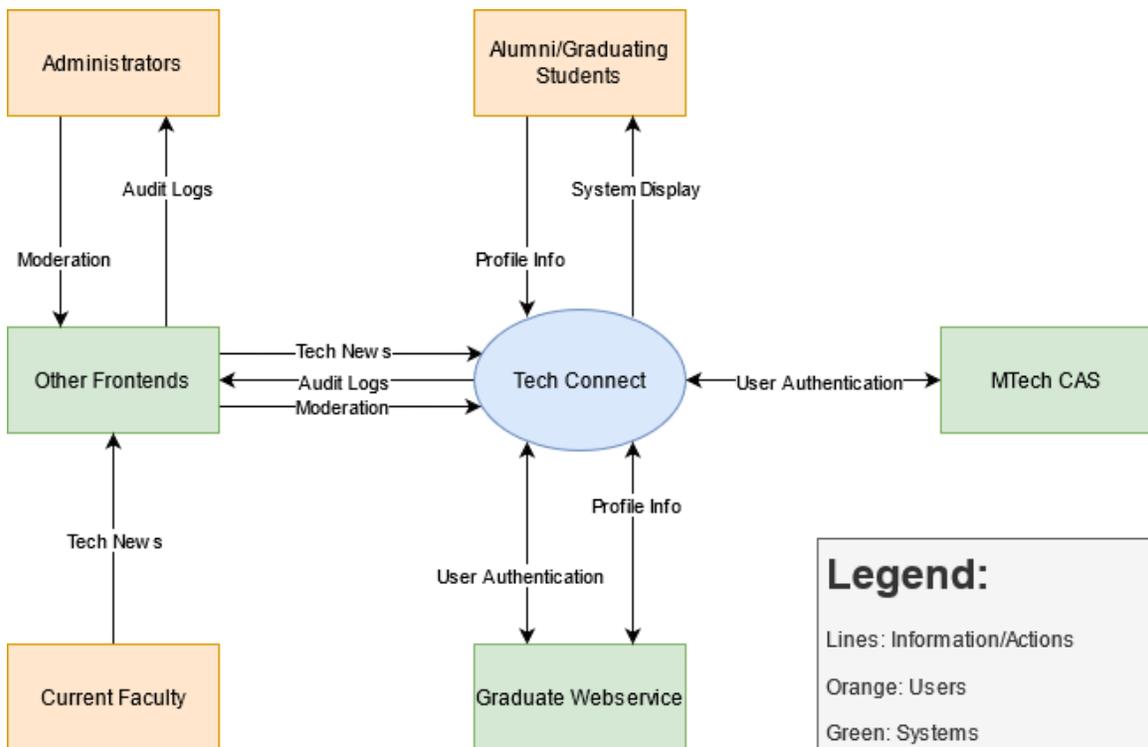


Figure 2: Context Diagram

2.4 User Role Characteristics

Following are the primary user roles of *Tech Connect*.

- Alumni
- Graduating Students

Users in the role of Graduating Students and Alumni will interact with *Tech Connect* in the same way. The only difference is that users with an active *CAS* account, will utilize that for authentication, while others may use another method.

Users in the role of Alumni must have a diploma from Montana Tech. Graduating Students are users who expect to be graduating from Tech within the next year. That is,

system will create profiles for students who expect to graduate in May, or the summer of a given year. These students may activate their accounts in *Tech Connect* any time after the beginning of the fall term of the previous year. Students who expect to graduate in December of a given year may activate accounts in *Tech Connect* any time after the beginning of the spring term of the previous year. Other Montana Tech students will not get assigned profiles/accounts in *Tech Connect*, but may be able to interact via a different frontend in a similar way that the General Public may interact.

The primary users of *Tech Connect* are graduating students and alumni. These users should have a basic understanding of profiles, messaging systems, and interacting with web information in general.

2.5 Dependencies

This system depends on the *Graduate Information Tracking Webservice*, which itself depends on Montana Tech's *Central Authentication System* and possibly another authentication system.

2.6 Assumptions

Tech Connect is dependent only on the *Graduate Information Tracking Webservice*. Although it can include connections to other Montana Tech systems, these are not necessary to *Tech Connect*'s functionality.

3 Use Cases/User Stories

Use cases and user stories describe how users will interact with *Tech Connect*. In this section the roles in which users will interact with *Tech Connect* are listed, along with use cases and user stories that users playing that role, may perform.

Use cases outline, from a user's point of view, *Tech Connect*'s behavior as it responds to user interactions. User stories provide less detail than use cases. This section begins by listing what user cases and user stories each role can perform. Linked use cases and user stories are detailed in this section. Non-linked use cases and user stories are suggested but not described.

3.1 Roles

The following table contains roles in which users can interact with *Tech Connect*, along with the use cases and user stories, they can perform.

Role	Use Cases / User Stories
Alumni / Graduating Students	<ol style="list-style-type: none"> 1. Activate profile 2. Initialize consent information

	<ol style="list-style-type: none"> 3. Modify message notification status 4. Send message 5. Update consent information 6. Update profile 7. User search
--	--

3.2 Use Cases

The following use cases outline, from a user's point of view, *Tech Connect's* behavior as it responds to user interactions. Each use case is represented as a sequence of steps, beginning with a user's goal, and ending when that goal is fulfilled, or the user has exited the use case.

3.2.1 Activate Profile

Created By:	Burak Adam	Last Updated By:	Class
Date Created:	3/2/2021	Date Last Updated:	3/23/2021
Actors:	Alumni, Graduating Students		
Description:	User activates a profile and enters profile information		
Preconditions:	<ol style="list-style-type: none"> 1. User is authenticated 2. User has a profile created by the system. 3. User has not activated his/her profile. 		
Postconditions:	<ol style="list-style-type: none"> 1. User profile is activated. 		
Normal Flow:	<p>1.0 Activate Profile</p> <ol style="list-style-type: none"> 1. User indicates desire to activate profile. 2. A profile information interface appears that allows actions such as: <ol style="list-style-type: none"> i. Fill in mandatory personal information ii. Select/upload profile picture. iii. Fill in job related information iv. Approve/reject public and analytic consent for items 3. User makes changes to form and submits 4. Profile is saved and user is informed that the profile is activated.. 		
Alternative Flows:	<p>1.1 User does not submit, and no changes were made (branch during step 2)</p> <ol style="list-style-type: none"> 1. User navigates away from the interface or indicates a desire to exit the interface before any changes were made. 2. Use case exits. <p>1.2 User does not submit after changes were made (branch during step 2)</p> <ol style="list-style-type: none"> 1. User navigates away from the interface or indicates a desire to exit after changes have been made. 2. User is warned that they have unsaved changes and asked if they wish to proceed. 3. User indicates preference. 		

	4. If ‘yes’ use case exits; if ‘no’ the user remains in the interface (i.e. they return to step 2).
Exceptions:	1.0.E.1 Internal error (branch after step 2) 1. The system is not able to connect to the database or some other internal error. 2. User is informed that an error occurred and that no changes were made to the system.
Includes/Extends:	None
Priority:	High (User to user connection cannot be achieved without an active profile)
Frequency of Use:	One time for each user. A user can activate only one profile.
Business Rules:	None
Special Requirements:	None
Assumptions:	
Notes and Issues:	Several fields in the GIT Webservice (name at the time of graduation, graduation year, honors, major, department graduated from, country and state of home address when graduating, are read-only. It has not yet been determined how these fields will be populated. These fields are populated from the system and cannot be changed by the user.

3.2.2 Initialize consent information

Created By:	Andrew Moreno	Last Updated By:	Class
Date Created:	March 2, 2021	Date Last Updated:	March 23, 2021
Roles:	Alumni, Graduating Students		
Description:	User initializes consent information		
Preconditions:	1. User is authenticated 2. User is in the process of activating a profile		
Postconditions:	User may have initialized their consent information for both analytic and public use		
Normal Flow:	1.0 Initialize Consent Information 1. User reaches the “Consent Information” step inactivating a profile. 2. System displays a form allowing users to consent to individual or groups of information for analytic and/or public use. 3. User fills out the form. 4. User submits the form. 5. System saves the consent information in the Graduate Web Service. 6. System displays confirmation to user that form was submitted.		
Alternative Flows:	1.1 Abort Profile Activation (branch before step 4) 1. User indicates that they would like to abort profile activation. 2. System aborts profile activation.		

	1.2 Unfilled Information (branch after step 4) 1. User attempts to submit a form with required fields not completed 2. System displays error message asking user to complete the form 3. Return to step 2.
Exceptions:	None
Includes/Extends:	Extends “Activate Profile”
Priority:	Critical
Frequency of Use:	Once on account activation
Business Rules:	None
Special Requirements:	None
Assumptions:	None
Notes and Issues:	None

3.2.3 Modify message notification status

Created By:		Last Updated By:	Seth Bettwieser
Date Created:		Date Last Updated:	April 1, 2021
Roles:	Alumni, Graduating Students		
Description:	Modify message notification status		
Preconditions:	1. User is authenticated 2. User has a profile		
Postconditions:	1. User may have set or updated their message notification status		
Normal Flow:	1.0 Modify message notification status 1. User navigates to the message notification status in their profile. 2. System displays current message notification status on a form that allows users to update their notification status. 3. User completes and submits form. 4. System saves and displays the notification status.		
Alternative Flows:	1.1 Abort Notification Update (branch before step 2) 3. User does not submit the form, either cancelling or changing pages. 4. System aborts notification status update.		
Exceptions:	None		
Includes/Extends:	Extends “Create Profile”		
Priority:	Medium		
Frequency of Use:	Infrequently		
Business Rules:	None		
Special Requirements:	None		

Assumptions:	None
Notes and Issues:	None

3.2.4 Send message

Created By:	Burak Adam	Last Updated By:	Andrew Moreno
Date Created:	3/2/2021	Date Last Updated:	4/5/2021
Actors:	Alumni, Graduating Students		
Description:	User communicates with other users by sending a message		
Preconditions:	<ol style="list-style-type: none"> 1. User is authenticated. 2. User has an active profile. 		
Postconditions:	<ol style="list-style-type: none"> 1. Message is sent to target users. 2. If the user has opted in to email notifications, an email is sent to their email on file indicating that they have a new unread message. 		
Normal Flow:	<p>1.0. Send Message</p> <ol style="list-style-type: none"> 1. User indicates desire to send message to a user or group of users. 2. System displays a messaging interface to allow user to enter the recipient(s) and body of the message. 3. User submits entered text to target user/users. 4. System displays a confirmation message the message has been sent. 5. System sends message to target user/users. 		
Alternative Flows:	<p>2. User does not submit, and message does not send (branch during step 2)</p> <ol style="list-style-type: none"> 1. User navigates away from the interface or indicates desire to exit the application before submitting the message. 2. System terminates request. 		
Exceptions:	<p>1.0.E.1 Internal error (branch after step 2)</p> <ol style="list-style-type: none"> 1. System is not able to connect to the database or some other internal error. 2. System informs user that an error occurred and that no changes were made to the system. <p>1.0.E.2 User not found error (branch after step 3)</p> <ol style="list-style-type: none"> 1. System cannot find the user in the database. 2. System informs user that the target user does not exist in the system and that message cannot be sent. 		
Includes/Extends:	None		
Priority:	Medium		
Frequency of Use:	Frequent.		
Business Rules:	None		
Special Requirements:	None		

Assumptions:	None.
Notes and Issues:	None

3.2.5 Update consent information

Created By:	Andrew Moreno	Last Updated By:	Andrew Moreno
Date Created:	March 2, 2021	Date Last Updated:	April 5, 2021
Roles:	Alumni, Graduating Students		
Description:	User updates their consent information		
Preconditions:	<ol style="list-style-type: none"> 1. User is authenticated. 2. User has created a profile in which consent was initialized. 		
Postconditions:	<ol style="list-style-type: none"> 1. User has updated their consent information. 		
Normal Flow:	<p>1.0 Update Consent Information (Existing Consent Information)</p> <ol style="list-style-type: none"> 1. User navigates to where they can update their consent information in their profile. 2. System displays a form allowing users to update their consent to individual or groups of information for analytic and/or public use. 3. User completes and submits the form. 4. System saves the consent information in the Graduate Web Service, and displays a message that the form was submitted. 		
Alternative Flows:	<p>1.0 User is responding to system notification (branch before step 1)</p> <ol style="list-style-type: none"> 1. System notifies user that their consent information is going to/has expired. 2. User clicks link in system notification or navigates to where they can update their consent information in their profile. 3. Branch to step 2. <p>1.1 Abort Consent Update (branch before step 3)</p> <ol style="list-style-type: none"> 1. User indicates that they would like to about consent update. 2. System aborts consent update. <p>1.2 Unfilled Information (branch after step 4)</p> <ol style="list-style-type: none"> 1. User attempts to submit a form with required fields not completed 2. System displays error message asking user to complete the form 3. Return to step 3. 		
Exceptions:	None		
Includes/Extends:	Extends "Update Profile"		
Priority:	High		
Frequency of Use:	Occasional		
Business Rules:	None		
Special Requirements:	None		
Assumptions:	None		
Notes and Issues:	None		

3.2.6 Update profile

Created By:	Burak Adam	Last Updated By:	Andrew
Date Created:	3/2/2021	Date Last Updated:	4/5/2021
Actors:	Alumni, Graduating Students		
Description:	User updates their profile		
Preconditions:	<ol style="list-style-type: none"> 1. User is authenticated. 2. User has an activated profile. 		
Postconditions:	<ol style="list-style-type: none"> 1. User profile is updated. 		
Normal Flow:	<p>2.0 Update Profile</p> <ol style="list-style-type: none"> 1. User indicates desire to update their profile. 2. System displays a profile information interface appears to allow user to make changes. 5. User makes changes to form and submits. 6. System saves changes to profile and informs user that the profile has been updated. 		
Alternative Flows:	<p>1.1 User does not submit, and no changes were made (branch during step 2)</p> <ol style="list-style-type: none"> 1. User navigates away from the interface or indicates a desire to exit the interface before any changes were made. 2. System terminates request. <p>1.2 User does not submit after changes were made (branch during step 2)</p> <ol style="list-style-type: none"> 1. User navigates away from the interface or indicates a desire to exit after changes have been made. 2. System warns user that they have unsaved changes and asked if they wish to proceed. 3. User indicates preference. 5. If 'yes': System terminates the request; If 'no': System returns to step 2. 		
Exceptions:	<p>1.0.E.1 Internal error (branch after step 2)</p> <ol style="list-style-type: none"> 1. System is not able to connect to the database or some other internal error. 2. System informs user that an error occurred and that no changes were made to the system. 		
Includes/Extends:	None		
Priority:	High (User to user connection cannot be achieved without a profile)		
Frequency of Use:	Once for each user.		
Business Rules:	None		
Special Requirements:	None		
Assumptions:	None		
Notes and Issues:	Another GIT Webservice frontend will enable administrators to generate audit logs in order for the administrator to check changes to profile data in order to make sure the changes are reasonable.		

3.2.7 User search

Created By:	John Nelson	Last Updated By:	Andrew Moreno
Date Created:	March 17, 2021	Date Last Updated:	April 5, 2021
Roles:	Alumni, Graduating Students		
Description:	User searches for other users		
Preconditions:	User is authenticated.		
Postconditions:	Search results are displayed to the user.		
Normal Flow:	<p>1.0 Search for a profile</p> <ol style="list-style-type: none"> 1. User indicates desire to search for a profile. 2. A search interface appears for user to enter a keyword or use search filters. <ol style="list-style-type: none"> i. User chooses to search with a keyword and enters a keyword. ii. User chooses to search with filter options. iii. User chooses one or more filter options of choice from listed filters. <ol style="list-style-type: none"> a. Name b. Major c. Graduation Year d. City e. Company f. State g. Country 3. User submits entered keyword or choice of filters. 4. If success a list of search results with profile information and picture appears. 5. User navigates on desired profile from the search result list and opens profile details. 		
Alternative Flows:	<p>1.0 User Aborts Search (branch at step 2)</p> <ol style="list-style-type: none"> 1. User indicates a desire to abort the profile search. 2. System terminates the request. <p>1.0 User Pins Chosen Profile (branch after step 5)</p> <ol style="list-style-type: none"> 1. User pins the chosen profile. 2. System indicates that this profile has been pinned. 		
Exceptions:	<p>1.0.E.1 Internal error (branch after step 2)</p> <ol style="list-style-type: none"> 1. The system is not able to connect to the database or some other internal error. <p>1.1. E.1 Search returns no results (branch after step 4)</p> <ol style="list-style-type: none"> 1. User submits a search input 2. No values are returned, system displays a no result message, and user is returned to the search interface. 		

Includes/Extends:	None
Priority:	High
Frequency of Use:	Frequent
Business Rules:	None
Special Requirements:	None
Assumptions:	None
Notes and Issues:	None

3.3 User Stories

User stories provide less detail than use cases, as it is expected that one or more clients will be available during the development of *Tech Connect*, to provide guidance on how the user story should unfold.

3.3.1 Tech news

As an Alumnus or Graduating Student, I would like to view Montana Tech news to be catch up on Tech happenings.

3.3.2 Viewing times series information

As an Alumni or Gradating Student, I would like to be able to view past information about other users.

4 Specific Requirements

This section is to contain all of the requirements for *Tech Connect*. Currently, however, it only shows a few example requirements. These could be alphabetized by name. Instead, they are presented in the order they are likely to occur.

4.1 Functional Requirements

4.1.1 Login

Tech Connect shall provide an interface for users be authenticated by the *GIT Webservice*. For graduating students this will be via *CAS* (Montana Tech's *Central Authentication Service*). For alumni, another authentication service may be used.
Rationale: Graduating students will have an *CAS* account, while alumni, may not.
Priority: Critical

4.1.2 Activate profile

The system shall facilitate activating a new profile by a user who has a profile assigned by the system. After activation, the user will have an active profile on *Tech Connect*.
Rationale: Users need a way to start adding information to their profile.
Priority: Critical

4.1.3 Notifications on data usage

The system shall make it known to the user that the condition of using the system is their data will be used in analytics, however anonymity will be maintained, as it will only be used in a summary data. The system shall make it know that, by the user entering their information, the analytics will be more useful.
Rationale: A user should be informed on why it is required to have their data be used in analytics.
Priority: Medium

4.1.4 Update profile

The system shall facilitate updating a profile by a user who already has a profile. After the profile is updated, the user will have their new data in the system for their profile and the new information will be able to be used for analytics and searchable by other users
Rationale: A user should be able to update their information in the system to keep it current.
Priority: Critical

4.1.5 Setting initial consents

The system shall allow a user to set initial consents for data in their profile. After the consents are initialized, the data can be used in other parts of the system based on the consent choice.
Rationale: A user should be able to decide how their data will be used.
Priority: Critical

4.1.6 Updating consents

The system shall allow a user to update their consents. After the consents are updated, how the data is used will be based on the updated consents.

Rationale: A user should be able to change how their data will be used.

Priority: Critical

4.1.7 Display profile activation status

Tech Connect shall display a notice on profiles that haven't been activated by a student or alumni.

Rationale: Users may attempt to message another user who hasn't yet activated their profile and then get upset when no reply is sent. This will reduce conflict from such a misunderstanding.

Priority: Low

4.1.8 Filtering searches

Tech Connect shall provide means by which searches can be filtered by certain data fields (eg. name, major, graduation year, country, etc.).

Rationale: Filters help narrow down searches, as well as providing a means by which users can be searched for by something other than their name.

Priority: Medium

4.1.9 Pinning profiles

The system shall allow users to "pin" a profile which has been found via a search or in some other manor. Once a profile has been "pinned" the system will provide a method for the user to return to that profile, without needing to perform a new search.

Rational: Users may want to return to certain profiles more than once, and they should not be required to search for the profile each time.

Priority: Low

4.1.10 Unpinning profiles

The system shall allow users to "unpin" a profile which has previously been pinned by the user.

Rational: Users may decide that they no longer need easy access to a profile.

Priority: Low

4.1.11 Disallow multiple pins

The system should not allow a user to have multiple "pins" on the same profile. The system should allow a profile to be pinned, unpinned and repined, however.

Rational: The meaning of a multiply pinned profile would be no different than a singly pinned profile, so allowing this occurrence may be confusing to the user.

Priority: Low

4.1.12 Disallow pinning own profile

The system should not allow a user to “pin” their own profile.

Rational: The system should make it easy for users to view their own profiles, making “pinning” their own profiles unneeded.

Priority: Low

4.1.13 Messaging other users

The system shall enable a user to message another user, or a group of users.

Rationale: Messaging is an important part of purpose behind Tech Connect

Priority: Medium

4.1.14 Opting out of message groups

The system shall allow a user to opt out of message group they are a part of.

Rationale: A user should be able to decide if they want to continue getting messages from a group chat.

Priority: Low

4.1.15 Search for Tech information

The system shall enable a user to search for other profiles.

Rationale: Users must be found before messages can be sent to them.

Priority: Medium

4.1.16 Time series data display order

The system shall display time series data in reverse chronological order, from most recent to oldest.

Rationale: It is important to decide the how time series data will be displayed on page to make it useful to a user.

Priority: Low

4.1.17 Times series data display information

The system shall display time series data by month and year if that information is recorded.

Rationale: To make Time series data useful a user will need to be able to see time associated with it.

Priority: Low

4.1.18 User death

Tech Connect shall facilitate the deactivation of profiles of deceased users, that user’s optional information will become private and all consents removed.

Rationale: Users who have died no longer need to update their profiles. Allowing any updates to the profile of a diseased person is a security risk.

Priority: Low

4.2 Quality Attributes

Quality attributes are general criteria that are used to judge the effectiveness of the webservice. They are not meant to specify specific behavior but to guide developers that will design the system to the correct functionality.

Beside from the quality attributes listed in this document, *Tech Connect* will comply with all quality attributes listed in *Graduate Information Tracking Webservice (GIT Webservice)*, *Product Software Requirements Specification Document v1.0*, Aug. 2, 2020.

4.2.1 Availability

Tech Connect's down time will not exceed 1 hour every two weeks for maintenance purposes. The downtimes should be scheduled to occur during times when *Tech Connect*'s traffic is at its lowest.

Tech Connects maintenance schedule will be modified after tracking system information to see if the maintenance schedule is adequate or needs to be updated.

4.2.2 Enhanceability/Extendibility

Tech Connect should have the enhanceability to be able to be update and adapt to changes that comply with industry standards. Additionally, *Tech Connect* quality attributes will extend to including all of the quality attributes that are part of the Graduate web service.

4.2.3 Human Factors

Tech Connect should be compatible with text-to-speech (TTS) narrators, and should accommodate color blindness.

4.2.4 Integrity

Tech Connect should take precautions that data fields are only populated with properly formatted data and that any necessary or required data fields are not left empty by a user.

4.2.5 Modifiability and Maintainability

Tech Connect will provide a dynamic interface that can be easily modified as data field changes in the *GIT Webservice*. The system should be easily updated to adapt changes to comply with industry standards.

4.2.6 Performance and scalability

Tech Connect should load within 3 seconds under typical internet speeds. It should also be able to handle several hundred concurrent users without any noticeable decrease in performance.

4.2.7 Portability

If *Tech Connect* is accessible via a web browser, it should be compatible with all major browsers, such as Google Chrome, Firefox, Microsoft Edge, and Internet Explorer.

If *Tech Connect* is an application, it should run on devices running Windows, MacOS, Android, and IOS operating systems.

4.2.8 Privacy

Privacy of user data will be protected by consent system and regularly updated. Users of the system should be able to easily change, revoke, or update their consent and profile information. Administrators will be able to retrieve audit files on user interaction.

4.2.9 Security

All data in *Tech Connect* will be protected from unauthorized individuals.

User actions will be recorded in audit logs, including but not limited to:

- Logging in and out
- Changing profile data fields
- Changing consent information
- Sending messages

Administrators will be able to retrieve the audit logs in a text format.

4.2.10 Usability

Anyone with a basic understanding of computers and the Internet should find *Tech Connect* easy to use, and give it a rating of at least 3.0 on a 5 point scale with 1 not easy to use and 5 very easy to use.

4.2.11 V&V Activities

Tech Connect should support a complete set of built-in tests to ensure that all functions are properly operating.

4.3 Non-Functional Requirements Which Are Not Quality Attributes

Tech Connect is not being held to any non-functional requirements that are not quality attributes.

5 Future Enhancements

It is expected that other frontends will be created for the *GIT Webservice*. For example, a separate frontend could use information stored in the *GIT Webservice* to generate analytic data for faculty and administrators. Another frontend could facilitate administration of the *GIT Webservice*; a third could facilitate faculty members adding forums and blogs for alumni to peruse. (The difficulty of monitoring forums and blogs was discussed, and is noted here.)

Basic profiles will need to be created in the *GIT Webservice* so that alumni and graduating students have profiles to activate. It was also noted that the process of verifying an alumni's identity so that a profile can be made for them should be saved for a later version after an appropriate process or datum for verifying identity has been determined.

Including support for reviewing or auditing data added by user to ensure all the information in the system is appropriate in an administration frontend was mentioned. It was decided to not include these in this first version of *Tech Connect*. They may be included in later frontends.

Time series data, meaning data that is expected to change over time, so should be tracked along a timeline, was discussed. It was established that the maximum "precision" of time series data should be by month, not by day or time. Data which is attached to a duration, such as employment, should display "present" for the end date if they are ongoing.

It was suggested that users should have the ability to "drill down" into time series data and see the exact time at which it was timestamped, even if it typically only shows a general date. However, it was later discussed that users do not need to see time stamps on time series data, since a time stamp would only be the date that the information was added, not when the event occurred.

It was noted that dependencies of *Tech Connect* to other systems could be problematic if those other systems are removed.

It was noted that consent is a stated agreement on the part of the alumnus for the Dept/Univ to use the data the alumnus has provided to the system for explicitly stated purposes provided by the Dept/University. It was further clarified that permissions are a property of a *Tech Connect* user (or system via an API key), functioning to sanction which behaviors and/or data are available to the user (or system).

It was noted that there is not a difference between the public (world) and the public (users of *Tech Connect*).

Appendices

Any information not covered in the above sections or any information that requires clarification or additional details will be further specified in this section.

Appendix A: Definitions, Acronyms, and Abbreviations

This section of the appendix further clarifies the definitions of terms and common acronyms or abbreviations used throughout the document.

Definitions

Current Faculty	Any current faculty member of Montana Tech.
Administrator	A Tech Connect user who acts in an administrative capacity.
Alumni	Any formerly enrolled student who has graduated with a degree from Montana Tech.
Consents	Giving permission for data use.
Current Faculty	Any current faculty member of Montana Tech.
Graduating Student	Any currently enrolled student who is expected to graduate within the next 2 semesters.
Profile	Where a user's information is located in Tech Connect.
Search	The act of searching for someone's profile, profile information, or Tech information.

Acronyms and Abbreviations

CAS	Central Authentication System
<i>GIT Webservice</i>	Graduate Information Tracking System Webservice
SRS	Software Requirements Specification