

# Requirements Specification

*For*

***DSIC***

**Distribution System for Information and Collaboration**

*Version*

**1.0**

*Date of the Document*

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# Table of Contents

<b>1. Introduction.....</b>	<b>4</b>
<b>1.1 Purpose of Document.....</b>	<b>4</b>
<b>1.2 System Overview.....</b>	<b>4</b>
<b>1.3 User Personas.....</b>	<b>4</b>
1.3.1 Cal Poly Students.....	4
1.3.2 Cal Poly Professors.....	5
1.3.3 Cal Poly Staff.....	5
1.3.4 Cal Poly Alumni.....	5
1.3.5 Industry Relations.....	5
1.3.6 San Luis Obispo Community.....	5
1.3.7 Others.....	5
1.3.8 Possible Use Cases.....	5
1.3.8.1 Senior Project Discovery .....	5
1.3.8.2 Quarter Long Projects .....	6
1.3.8.3 Volunteering and Paid Work.....	6
1.3.8.4 Events.....	6
<b>1.4 Operational Setting .....</b>	<b>6</b>
1.4.1 Information involved.....	6
1.4.2 Maintainers.....	7
1.4.3 Advertisements.....	7
<b>1.5 Impacts.....</b>	<b>7</b>
1.5.1 Filter Bubbles.....	7
1.5.2 System Abuse and Disciplinary Action.....	7
1.5.3 Freedom of Speech VS University Web Policy.....	7
<b>1.6 Related Systems to Note.....</b>	<b>7</b>
<b>2. System Requirements.....</b>	<b>8</b>
<b>2.1 Functional Requirements.....</b>	<b>8</b>
2.1.1 Posts.....	8
2.1.1.1 Name.....	8
2.1.1.2 Information.....	8
2.1.1.3 Example Posting.....	9
2.1.2 Tags.....	9
2.1.2.1 Default System Tags.....	10
2.1.2.2 Rating System.....	10
2.1.2.3 Tag Disambiguity.....	10
2.1.3 Reader Stream.....	10
2.1.3.1 Folders.....	10
2.1.3.2 Custom Folders.....	11
2.1.3.3 Familiar Interface.....	11
2.1.4 User Profiles.....	11
2.1.4.1 Public Information.....	11
2.1.4.2 Private Information.....	11
2.1.4.3 Profile.....	11
2.1.4.4 Tag Preferences.....	11
2.1.4.5 User Scores.....	12
<b>2.2 Non-Functional Requirements.....</b>	<b>12</b>
2.2.1 Privacy.....	12
2.2.2 Performance.....	12
2.2.3 Simplicity VS Power.....	12
<b>2.3 Assumptions.....</b>	<b>12</b>
2.3.1 Establishing DSIC is Not Trivial.....	12
2.3.2 This Specification is Vague and Incomplete.....	13
<b>2.4 Out of Scope.....</b>	<b>13</b>
2.4.1 Priority Notifications.....	13
<b>3. Developer Overview.....</b>	<b>13</b>
<b>3.1 Portal Information.....</b>	<b>13</b>
<b>3.2 Authentication Service Request.....</b>	<b>13</b>
<b>4. Concerns to Address.....</b>	<b>13</b>
<b>4.1 Malicious Community.....</b>	<b>13</b>

<b>4.2 Marketing.....</b>	<b>13</b>
4.2.1 Get Users Using The System.....	13
<b>4.3 Authentication.....</b>	<b>14</b>
4.3.1 Authenticate On-Campus Individuals.....	14
4.3.2 Authenticate Off-Campus Individuals.....	14
4.3.3 Yet Another Website.....	14
<b>4.4 Automation.....</b>	<b>14</b>
4.4.1 Post Creation.....	14
4.4.2 Moderation.....	14
4.4.3 Tagging.....	14
<b>4.5 Initial Values.....</b>	<b>14</b>
<b>5. Definitions, Abbreviations, and Acronyms.....</b>	<b>15</b>
<b>6. Appendices.....</b>	<b>15</b>
<b>6.1 Appendix A: Poll Conducted.....</b>	<b>15</b>
<b>6.2 Appendix B: Survey Following Poll.....</b>	<b>15</b>

# 1. Introduction

## 1.1 Purpose of Document

This Requirements Specifications document communicates the system and functional requirements that will guide development and implementation of DSIC. It defines the users, concerns for the project, and the requirements for the system.

## 1.2 System Overview

There seems to exist an invisible barrier between people that should be connected but for whatever reasons (don't hang out in the same circles, don't go to the same meetings, or are geographically separated) haven't met each other yet.

Normally these people will only meet when others bring them together or they are thrown together on a project. DSIC aims to preempt the person discovery process by allowing a way for people to post ideas, events, and other collaborations in a single place that can then be searched by other users.

The system utilizes postings, user profiles, and a tagging system to connect users together. The purpose of the system is not to replace other collaboration and information systems completely, but to help reduce the noise that they create and give users more control over their content consumption.

The scope of this project seems wide and the number of users is vast. The system is purposefully generalized in order to try and better connect people and solve several problems at once; DSIC is believed to be able to address several issues the users have with current systems.

## 1.3 User Personas

For each of the user groups there are two user types, posters and readers.

Posters are users that have content to share, a project to work on, or have a need for resources. They log onto the system and will post this content in whatever form they deem the best for the readers to find. Since the posting itself is small, it is expected that the content will either fit within this constraint (see section 2.1.1) or readers will be linked to outside sites.

Readers are the users that will either browse content looking for interests or read what the system has found for them based on criteria they have set in their reader stream. Readers in this system can be either passive (allow the system to find them content) or active (create new folders with new tags) in what data shows up to them.

The following user groups are not exclusive and a given user may fit into several of the persona categories.

### 1.3.1 Cal Poly Students

These are the users that attend Cal Poly and are actively taking classes and pursuing degrees.

They are pursuing higher education and want access to knowledgeable resources, namely professors, alumni, and industry professionals. They also want access to other students and community resources for events and for collaboration.

### **1.3.2 Cal Poly Professors**

These are the users that teach at Cal Poly and are actively teaching classes or performing research.

They are training the next generation of thinkers while advancing research their field of study.

They want access to talented students and their ideas; industry professionals in order to teach the most relevant and useful content; and alumni to be involved with their classes.

### **1.3.3 Cal Poly Staff**

These are users that are employed at Cal Poly.

They provide services and support to the professors and students of the university, as well as try to connect them with community resources. They are most interested in having these groups be aware of the services that they provide, so that they can be utilized to their full extent.

### **1.3.4 Cal Poly Alumni**

These are previous students that have graduated from Cal Poly.

They are looking to hire talented students, have professors assign company projects in their classes, and network with other industry professionals interested in Cal Poly. They want to try and give back to the university but need the connections to funnel their efforts to the best place.

### **1.3.5 Industry Relations**

These are users that are in the work force that have an interest in Cal Poly.

They are interested in interns and new hires from the campus, involving professors' classes in projects, and working with campus staff in order to create events on campus to promote their company.

### **1.3.6 San Luis Obispo Community**

These are users that are in the surrounding San Luis Obispo area that have an interest in Cal Poly.

They are intrigued by the talent and resources offered by the university and would like to be involved with the development of students and their respective fields. They would like to channel the energy created from the campus back into the San Luis Obispo community.

### **1.3.7 Others**

The system shall be flexible to add in additional users that do not fall under the user groups I have defined here. All that needs to be addressed is how the new user will be identified in the system and how they will be held accountable for their actions. Authentication is discussed for each group in section 4.3.

### **1.3.8 Possible Use Cases**

This document will outline some of the general ideal use cases that the system wants to solve. The system has been designed to try and solve several problems and it is likely that there are more use cases possible than those that have been listed.

#### ***1.3.8.1 Senior Project Discovery***

Senior project discovery and choice can be difficult. There have been many attempts by the

university to create a central repository for senior project ideas, but they were unknown and remain unused. This system would be a way for professors (group 2) to post project ideas and then students (group 1) would be able to search project ideas. After finding an idea, they can get more details from the professor.

### **1.3.8.2 Quarter Long Projects**

Giving real world experience is what Cal Poly strives to teach its students. This system could provide a means for professors to find quarter projects for their classes that can collaborate with alumni, industry professionals, or community members. DSIC would give campus access to these groups that may have a difficult time getting university interest in their projects.

### **1.3.8.3 Volunteering and Paid Work**

Everyone has a unique background yielding skills and viewpoints that they can offer. DSIC can help facilitate the sharing of knowledge and skills that is difficult to find by other conventional means (craigslist, eHarmony, resumes, LinkedIn).

Users may have an interest or skill where they don't consider themselves an expert but are completely qualified for a given task that needs completing. All user groups can benefit from a way to seek out unique talents. Several representatives of these groups expressed interest in this specific use of the system.

### **1.3.8.4 Events**

Things are happening all of the time but unless the marketing of an event is publicized correctly, those who might be interested will not know about the event. DSIC would offer a way to advertise events to users that they know are interested in their content because the users themselves have explicitly chosen what they are interested in.

This also facilitates a different way of event discovery. Currently, users must constantly check what is happening at a given venue for a given week. DSIC could allow the user to know about what they are interested in regardless of where it is located.

## **1.4 Operational Setting**

### **1.4.1 Information involved**

User created content is what this system will organize. A list of some possible data users will create and want access to:

1. Volunteer Opportunities
2. On and Off Campus Events
3. Meetings and Deadlines
4. School Registration Dates
5. Senior Projects / Side Projects / Hobby Work
6. Promotions/Coupons
7. Available Internships / Short Term Jobs

## **1.4.2 Maintainers**

Data will be maintained by users. All users will have the ability to flag abuse and moderators will enforce policies on a case by case basis (see 1.5.2).

## **1.4.3 Advertisements**

This specification proposes that advertisements be left out of the system since it will be school funded. However if the budget for this project is insufficient for completion, ads may be added in order to have this come into existence.

# **1.5 Impacts**

## **1.5.1 Filter Bubbles**

Giving the users complete control over their filter settings could possibly lead to a filter bubble problem. A filter bubble is a bubble that is created around the user where the user only sees the things that they are interested in or have similar viewpoints and not things contrary to that. This creates a problem of a warped world view in which everything you read and see agrees with you, which may or may not be healthy. Alex Abrahamian wrote a paper on the use of Google Filter Bubbles and if you are interested in reading it, request a copy at [arabaha@calpoly.edu](mailto:arabaha@calpoly.edu).

## **1.5.2 System Abuse and Disciplinary Action**

All users of the system will have the the ability to report abuse. When abuse violation is reported, the posting is hidden from all users until a committee consisting of equal number of University Staff and Students can review it to check for policy violations.

If approved (determined to not be in violation of the abuse policy) the posting will be immune to abuse reports, as long as it remains unmodified, and will be visible by all users. The system shall identify such a post with a stamp or marking that indicates to users that the DSIC committee has approved of the content.

If denied (determined to be in violation of the abuse policy) disciplinary action will be taken against the offending account and dealt with according to university policy. The posting will then be logged for disciplinary records and then deleted out of the DSIC system.

## **1.5.3 Freedom of Speech VS University Web Policy**

All information will be public on this system. As it will be a university system, the university web policy will be in effect. The system should not be used for anything that would conflict with university policy.

# **1.6 Related Systems to Note**

Email Clients : want to match inbox so users don't have to learn completely new interface.

[Facebook](#) : Popular social network that works for some collaborations.

[Flapon](#) : Topic based social network in alpha that uses some similar tagging ideas.

[Flipboard](#) : Dynamic gathering of information around the web in an iPad application.

[Google+](#) : Google's social network.

[Google Groups](#) : Collaboration groups that is widely used for team collaboration.

[Google Reader](#) : Ideas for the reader stream and how to manage several inputs.

[Google Wave](#) : Waves sound like postings, worth looking into.

[Meetup](#) : Groups for doing stuff, falls in the same realm for this project but has a smaller scope.

[Mindbody](#) : Web-based appointment scheduling solution for businesses.

[Ning](#) : Create a social network with this site, definitely worth looking into for implementation.

[Reddit](#) : Ideas for making most popular posts visible via up and down votes (tag voting).

[Salesforce Chatter](#) : Enterprise solution for communicating at work.

[Stumbleupon](#) : New websites discovery based on interests.

[WordNet](#) : A lexical database for English, can be used for mapping synonyms.

[Zite](#) : Personalized magazine for iPad with similar “pull” aspect to this project.

## 2. System Requirements

### 2.1 Functional Requirements

#### 2.1.1 Posts

Postings are the main component of this system. They are the structure that holds all of the content that users create. They are like the standard email, blog post, wall post, etc.

##### 2.1.1.1 Name

For the purposes of this document, posts are referred to as posts or postings. However several alternative names have been suggested and brainstormed below. The name is important for marketing and getting people familiar with using the system.

- Quip
- Chatique
- Blurb
- Publique
- Snippet
- Chirp

##### 2.1.1.2 Information

The posting must have

1. A free-form text field for one thousand characters.
2. The ability for users to style and format font of text field.
3. The user's profile link for identification.
4. The ability to be edited by the owner after submitted.
5. The ability to add web links to it.

6. Tags (described in 2.1.2).
7. Time stamp when created.
8. Optional field designating start time of event. Default: creation date.
9. Optional field designating expiration of posting. Default: two weeks after creation date.
10. Ability to be flagged for abuse violations by readers (discussed in 1.5.2)
11. A flexible design that allows for additional information to be added in future versions.

### 2.1.1.3 Example Posting

This is just a rough idea of what a posting should look like. It is desired to have a simple interface for entering in content while still having a lot of fine control how this data is displayed and looks.

## Post a message

Use the form below to write the message. Click the "Post" button to submit your message.

Compose Options Video Poll Related Preview

**Subject:**

**B** **I** **U** **ABC** |

**Tags**

Select Tags...

Email me replies to this post.

Source: <http://publicminds.org.au/blogs/faq/archive/2008/06/24/adding-a-forum-post.aspx>

## 2.1.2 Tags

Tags are the connector pieces of this system. They allow reader streams to pick up what postings and help to decide ordering in those streams.

This is what enables the a piece of information/content to get to the right person. Tags are what

makes this system different than any other system currently studied.

#### **2.1.2.1 Default System Tags**

The system shall provide tags for the users to attach to postings. This will prevent users from creating tags that are misspelled or redundant due to capitalization.

The system should use a fairly large dictionary to seed the tag system.

When users (both readers and posters) want to add new tags, they can be suggested to the site and the same committee who disputes abuse violations will approve or deny new tags. When tags are approved they will become part of the standard system tags.

#### **2.1.2.2 Rating System**

Although tags are what make this system unique, it is really how the users interact with them that makes this system special.

Tags on postings will have a score attached to them. When a posting is initially tagged by a poster of that post, it is given an initial score (see section 4.5). This score is then adjusted by a one time vote by readers of this post, either giving it a +1 UVU or a -1 UVU to its score. This adjustment of the tag score by the DSIC community will allow correct tags on posts to rise in value for that specific post, while lowering the value on improper tags on posts.

This score is then picked up dynamically by reader streams and then decides where a posting should display in the folder of the stream based on both:

- The number of matching tags
- The relative scores for those tags

#### **2.1.2.3 Tag Disambiguity**

The system must account for ambiguities in tags, namely synonyms.

Synonyms of a given tag should be tracked in a way that allows the adjustment of their score for a specific posting to be influenced by the score of the given tag.

For example, if a posting is given the tag “class”, in the system, invisible to the user, the tag “courses” will also be weighted on this posting. The exact value of this tag for this posting will have to be carefully determined. It should not be as much as the originally chosen tag, but should remain significant enough to be picked up by reader streams with the “course” tag.

Tracking synonyms allows for recommendations for other tags on postings.

### **2.1.3 Reader Stream**

The reader stream is the main interface that users will use to consume and search content. It acts as the inbox for users, gathering posts based on the block and pull tags that the user has designated.

#### **2.1.3.1 Folders**

Four folders will come standard with every users reader stream:

1. Unread - postings not previously viewed; dynamically filtered.
2. Read – postings that have been viewed; can be set to dynamic or static filtering.
3. Favorites – postings marked for easy access; statically filtered.

#### 4. Trash/junk folder – expired or “deleted” posts; static

Dynamic filtering will filter based on the current scores and may shift around while a user is looking at a folder. Static filtering will remain constant as long as a user is looking at the folder.

The dynamically sorted folders will check tags on postings and match that with the users' preferences. When expiration date on a posting is less than the current date, postings will be moved automatically to the trash/junk folder.

#### **2.1.3.2 Custom Folders**

The users shall be able to add custom folders. In creation of these folders the user must assign a filtering type (static or dynamic) and custom filter criteria. These will be applied to the content that comes into the folders. Some example folder filtering criteria are

- Date range
- Specific pull/block tags
- Posts from a specific user

The custom folders differ from the standard four folders because the global pull and block tags may or may not (user choice) be applied to these folders.

#### **2.1.3.3 Familiar Interface**

Implementors should make an effort to match/emulate the most popular features of the email clients in order to have familiarity with users. Additionally, the interface should be flexible enough so that the user has ability to customize the look and feel to match a specific client (match Gmail, Yahoo!, Zimbra, etc)

### **2.1.4 User Profiles**

Users will have a profile in the system in order to read and create postings.

#### **2.1.4.1 Public Information**

Profiles will have publicly available and visible information about the user, such as information visible on the Cal Poly Directory.

#### **2.1.4.2 Private Information**

EMPLID number will be used for user authentication and accountability but will not be publicly available.

#### **2.1.4.3 Profile**

The profile should remain customizable by the user and possibly incorporate pieces of current social networks.

#### **2.1.4.4 Tag Preferences**

Users must have the ability to choose their pull and block tags.

Pull tags are tags that the user has explicitly defined as tags they are interested in and want to show up in their reader stream.

Block tags are tags that the user has explicitly defined as tags they don't want to see in their reader

stream.

#### **2.1.4.5 User Scores**

There will be various scores attached to every users' account. This document will specify a few scores worth tracking and using, but the system should be flexible to add more scores.

UCS is a karma score that tracks the credibility you have with the community.

The score is adjusted when:

1. User tags a post they created
2. User suggests a tag for a posting

Depending on how the community rates this tag, the users credibility score will be adjusted accordingly; lowering their score if the community is rating down their tags and increasing their score if the community is rating up their tags.

Future tag scores by a user will be weighted with the user's UCS to determine how heavy user's tags should be weighted. This will promote positive tagging habits (only tagging things that are correct) and discourage tag spamming (adding hundreds of tags to a post).

## **2.2 Non-Functional Requirements**

### **2.2.1 Privacy**

The system does not claim privacy. Everything posted through this system is available and accessible to every other user of the system. Authentication pieces and information will remain encrypted to industry standards and will not be publicly viewable.

### **2.2.2 Performance**

Since postings will be mostly text based, the storage and retrieval of postings should not affect performance.

The filtering of folders is expected to take some time but should not keep the user waiting. The use of pre-fetching user data should be employed to reduce load times.

### **2.2.3 Simplicity VS Power**

The developers should address all concerns and requirements of this document while keeping the system as simple as possible. The use of wizards to guide the users in post creation and sharing is advised as well as offering YouTube training videos (that can be found through this system).

## **2.3 Assumptions**

### **2.3.1 Establishing DSIC is Not Trivial**

The inherent nature of the user credibility system this document suggests implies several iterations of tweaking values and several pilot studies will be required before a working prototype can be produced.

### **2.3.2 This Specification is Vague and Incomplete**

Adjustments and modifications will need to be made to this document once implementation begins because implementation details can reveal more problems/issue not explicitly addressed here. All changes to the specification should be noted in a change log that is carried with this document.

## **2.4 Out of Scope**

### **2.4.1 Priority Notifications**

Since users can choose to block tags, this system does not address the issue of unblockable tags or messages that must get to the users of the system (for example blocking of messages from school administrators notifying students to be out of housing).

## **3. Developer Overview**

### **3.1 Portal Information**

Talk to the Portal Team ([portalgroup@calpoly.edu](mailto:portalgroup@calpoly.edu)) about your general plans and questions, and discuss where we might place links and associated content in the portal, to bring your users to your application.

Once you've decided to move forward (or at least do some prototyping), submit an Authentication Service Request Form including URLs and other information about your application.

### **3.2 Authentication Service Request**

To have an application use single sign on technology you need to fill out these forms:

<http://polydata.calpoly.edu/sites/polydata/files/requests/AuthenticationServiceRequestForm.doc>

## **4. Concerns to Address**

### **4.1 Malicious Community**

Accountability through Cal Poly Portal login and Comparison Scores can be used attempt to keep a potentially malicious community from happening.

However systems must be in place that are ready for the community to be malicious and will counter/deal with it so it doesn't affect users' experience.

### **4.2 Marketing**

#### **4.2.1 Get Users Using The System**

1. Integration with the portal for convenience.
2. Work with orientation programs and departments to bring awareness to system through mailings and newsletters
3. Inform on-campus services that could benefit and educate in use.

## **4.3 Authentication**

### **4.3.1 Authenticate On-Campus Individuals**

On-campus users can use their Cal Poly username and password to log into the system.

### **4.3.2 Authenticate Off-Campus Individuals**

To authenticate community users: Set up partners with chamber of commerce.

To authenticate alumni users: Allow access to Portal after graduation.

To authenticate industry users: Allow a representative to request an account for their company and tie information for that account to that representative.

### **4.3.3 Yet Another Website**

Integration with the portal, the use of FaceBook authentication, or use of student account information in order to reuse authentication of currently used systems by the users will prevent users from needing to create another Internet account.

## **4.4 Automation**

### **4.4.1 Post Creation**

Posts could be created automatically from other sites' RSS feeds, newsletters, or a custom web crawler. Since posting length is limited, these sources would then link back to the source site for more information.

### **4.4.2 Moderation**

Automatic checking for vulgar, obscene, or profane language would help relieve work for moderators. If found, not allowing postings and/or automatically flagging abuse violations would be desirable.

### **4.4.3 Tagging**

The ability for tags to be created from the content of a posting, instead of having to be hand selected by poster. The poster then would have the ability to choose which tags stay on a posting with a toggle checkbox for each tag.

Ability for meta data in a posting such as a special character (#) in front of words that are desired as tags may be a way to implement this idea and have the user have more control over what tags are suggested for a posting.

## **4.5 Initial Values**

This specification was very vague on the values for scoring on tags, weights, and user profile scores. It is considered a detail that will have to take into account several implementation factors and will need to be determined by best judgment of the developers of this system.

## 5. Definitions, Abbreviations, and Acronyms

**DSIC**- Distribution System for Information and Collaboration

Portal – The My Cal Poly Portal located at <https://my.calpoly.edu/cas/login> and used for several services for students and staff.

**UCS** – (User Cred Score) A credibility score that takes into account the credibility of a user based on how the community views their actions.

**UVU** - (User Vote Unit) the unit of score that affects how much a tag on a specific post from a specific user is incremented or decremented. This UVU is determined by the UCS.

## 6. Appendices

### 6.1 Appendix A: Poll Conducted

A poll was run from November 28 – December 5, 2011 to check interest in such a system on campus.

**How important is it that Cal Poly provide a tool that would help you collaborate and connect with others that share similar needs or ideas (i.e. Campus Events, Study Groups, Sporting Events etc)?**

The results (as of December 2 @ 4:30pm) are as follows

Really important	1402	/ 32%
Important	1413	/ 32%
Somewhat Important	890	/ 21%
Not that important	594	/ 13%
Total votes:	4299	

These results show that users of the Cal Poly Portal would like a tool that helps collaborations and connections.

### 6.2 Appendix B: Survey Following Poll

Users were given the option to take a survey to give additional information.

The age spans ranged from 18 to 63.

The most interesting set of results are as follows:

79% use the portal everyday, with 36% reporting using the portal greater than four times a day.

100% of responses had worked on at least one project with 50% having worked on thirteen or more projects.

86% believed that an identity system can help moderate user-created content.

71% believed that if identity accounts are linked with postings, users of the system will create a respectful web environment.

100% would try out a new collaboration system if it was offered through the portal.