



University
of Regina

Faculty of
Engineering and
Applied Science

Faculty of Engineering URSource Functional Requirements Document

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1 INTRODUCTION

Faculty of Engineering and Applied Sciences, like other faculties and departments at the University of Regina (hereafter referred to as University of Regina or University) makes use of various resources to host their data which they need to do their job duties efficiently. Some of these resources are University of Regina's public facing website, University of Regina's intranet for internal use of departments, shared network drives on internal server among others.

With regards to the University's public sharing website, it is understood that a lot of data including web pages and documents that are not meant for public consumption reside there from when the website was designed the last time. On the other hand, the data, folder, and documents on the internal shared network drive are unorganized, essentially dumped into various folders due to lack of consistent process, naming schemes and training among other reasons. This has also led to a lot of redundant and duplicate documents as well as failure to maintain latest versions of documents at a centralized location.

The intranet website URSource built using Cascade server aims to solve some of these issues by standardizing the nomenclature used to name files/documents, easy navigation to find documents of all kinds, role based restricted access for privacy reasons and fulfill various stakeholder needs as discussed in this document.

1.1 Purpose

This document describes the functional requirements gathered by Boiled Frogs to design the new internal Engineering web site at the University of Regina and reorganize the content on the website from internal network drive to address the concerns of various stakeholders with the current system and offer a better approach to overcome current shortcomings.

Based on these functional requirements, Boiled Frogs will implement an internet website design on Cascade server which will be done as we move forward in completing subsequent milestones.

1.2 Scope

The document will cover the new system design aspects, the methodology used, the functional requirements including the user requirements, data flow diagrams, as well as other related logical data models.

1.3 Background

Students, staff, and faculty utilize the Engineering section of the University of Regina's website for a number of activities. Students utilize the site for finding specific program information and requirements, course schedules, and information on faculty members, among other activities. Staff and faculty utilize the site for finding information regarding purchasing, advertising, advising, committee stewardship, lecturing, and research, among other activities.

With respect to staff and faculty, they also share a network drive that houses some of this content as well, e.g. documents detailing how to apply for funding, purchasing a new device, posting/sharing lecture notes, and housing committee meeting minutes.

Over the years, given a lack of consistent process and education/introduction of a standardized content model, it has become increasingly difficult for all stakeholders to find up-to-date and accurate information on both the external website and network share. Streamlined content models for each section/stakeholder group (students/public and staff/faculty), more well-defined processes for updates and improvements, faculty and staff training, and introduction of distinct and more user-friendly information displays for all stakeholders may help students better find content relevant to them, as well as help staff and faculty to do the same

Highlighting the above needs, Boiled Frogs is developing this Functional Requirement Document derived from user requirements to implement website re-innovation, as well as the network drive filing structure, to meet the user's requirements for efficient, professional and easily accessible documents.

1.4 References

- 1) Project high-level requirements (charter and vision)
- 2) Project data (Committee names and security roles)
- 3) Milestone 1 deliverables: Extended requirements digging & empathy mapping File
- 4) Customer's presentation about their needs
- 5) Public Engineering Website Content Quality Review

1.5 Assumptions and Constraints

1.5.1 Assumptions

Boiled Frogs has made following assumptions:

- A. They will have an access to the Cascade Server tool as well as to the internal network drive.
- B. That the customer has competency to operate the tool to be able to make modifications to the proposed model and uploaded documents.
- C. The system is to be used on a desktop machine and using it on smaller screens such as tablets, smartphones can result in unexpected behaviour.
- D. The system can be used on the following web browsers: Mozilla Firefox, Google Chrome, Microsoft Edge, Internet Explorer, Safari
- E. The system can be used from the following OS: Windows 7/8/10, Macintosh 10+, Linux

1.5.2 Constraints

This project has following constraints:

- A. The core interface of the intranet website which is essential for unified branding of the website cannot be altered

- B. The development technology is restricted to the functionalities of the Cascade server
- C. Privacy and confidential requirements related to certain documents
- D. Final project delivery date is on or before December 6, 2018

1.6 Document Overview

This document is divided into sections to cover different topics and then into subsections to cover related topics under a common heading. While the index for the document on page 3 lists various sections, following is a short summary of each section.

- A. INTRODUCTION - Provides an overview of the system and some additional information to place the system in context
 - i. Purpose - Provides an overall description of the FRD, its purpose. Reference the system name and identifying information about the system to be implemented.
 - ii. Scope - Discusses the scope of the document and how it accomplishes its purpose.
 - iii. Background - Describes the organization and its overall responsibilities. Describes who is producing the document and why.
 - iv. References - List references and controlling documents, including: meeting summaries, white papers, other deliverables.
 - v. Assumptions and Constraints - Provides a list of contractual or task level assumptions and constraints that are preconditions to preparation of the FRD.
 - vi. Document Overview - Provides a description of the document organization.
- B. METHODOLOGY - Describes the overall approach used in the determination of the FRD contents. Describe the modeling method so non-technical readers can understand what is being conveyed.
- C. User Requirements - Provides requirements of the system, users and business, taking into account all major classes/categories of users. Provide the type of security and other distinguishing characteristics of each set of users. Lists the functional requirements that compose each user requirement.
- D. Functional Requirements - Lists the functional requirements of the system derived from user requirements.
- E. Interface Requirements - Describe the user interfaces that are to be implemented by the system. Includes hardware and software interface requirements
- F. Operational Requirements - Provide the operational requirements in this section including Security and Privacy.

2 METHODOLOGY

The functional requirements of this project are derived from user requirements and the documents listed in Section 1.4 - References. Fact finding activities were undertaken such as attending the presentation by Meigen Schmidt (University of Regina Engineering Faculty Administrator) during lab 1 and inquired for more information where there was doubt. In addition to that, the team incorporated any information relayed by the instructor during regular lectures in regards to the assigned project. Additional information was

found in the documents or web pages titled “Project high-level requirements (charter and vision)”, “Project data (Committee names and security roles)”, “Milestone 1 deliverables: Extended requirements digging & empathy mapping” and “Milestone 2: Faculty of Engineering public website, content analysis & quality review” provided by the instructor on <https://urcourses.uregina.ca/course/view.php?id=13080>

The skills learned in lecture 4 about Design Thinking and by doing the in-class activity were used to determine the functional requirements. The team conducted meetings to come to a consensus on the functional requirements of the project by analyzing the various resources noted in the previous paragraph.

For the Milestone 2, a careful analysis of the University’s Engineering website was undertaken to review the quality and relevancy of the content as well as ease of navigation. The UR Engineering website can be visited at <https://www.uregina.ca/engineering/>

The team subdivided the team in smaller teams of 2 individuals each to work on different parts of the website. The results of the Milestone 2 activity are in document titled “Public Engineering Website Content Quality Review”.

The team combined all these skills and resources to do requirements gathering and analysis, including gathering user requirements which were used to derive functional requirements.

3 FUNCTIONAL REQUIREMENTS

3.1 User Requirements

By using the methodology described in section 2, our team compiled the following list of User Requirements:

- A. Make information easy to find for students, teachers, admin staff, research groups
- B. Have better organization of data, documents, folder and files
- C. Keep confidential data secure to prevent unauthorized access
- D. Prevent redundant and duplicate data caused by large number of users accessing the data
- E. Access to information regarding policies, forms easy to find for faculty members
- F. Should be easily accessible to a user working anywhere in the world as a user might be working while on travel or researching in a foreign country
- G. Would like to have ease of use for various faculties, departments and faculty committees including Admissions and Studies, Dean's Executive Group, Engineering Equipment Fund Committee, Faculty Executive, Graduate Studies Committee, Outcomes-Based Assessment, Local Safety Committee, Planning Committee, Scholarship Committee, Student Appeals Committee, Workshop Committee, Co-op Committee, Lab Instructor Group / Computer Committee
- H. Ability to assign proper access to new users
- I. Keep documents up to date and remove or relocate older versions, especially forms and policies
- J. Easy layout of information for different faculties about where to find what information or documents pertaining to their faculty or department

- K. System for standardizing naming scheme for files, documents and folders
- L. Remove files, documents and information not intended for public consumption from the public facing website
- M. Adaptable and flexible design
- N. Position/role based access to data
- O. Historical data regarding past employees, documents, policies
- P. Remove data irrelevant to anyone other than faculty and staff from the public engineering website

3.2 Functional Requirements

Using the methodology described in Section 2 and using User Requirements listed in Section 3.1, our team compiled the following list of functional requirements:

- A. The system shall group all the forms at a central location with headings and subheadings to group forms for similar tasks together.
- B. The system shall group all the policies at a central location with headings and subheadings such as “HR and Benefits” being the main heading and then “Travel Policies” being the sub-heading
- C. The system shall provide links directly from forms and policies web pages between each other when a form has a policy related to it.
- D. The system shall link forms, policies and other documents to a permanent link to maintain the most up to date version of the document on the website, reduce duplicates and redundancy.
- E. The system shall provide links and space to store archived information pertaining to forms, policies and other documents which includes details such as archive date and version identifying information.
- F. The system shall group similar information at the same place as far a navigation is concerned. All the information related HR such as benefits, travel, reimbursement can be grouped with “HR and Benefits” whereas information pertaining to co-op, career-fair, workshops for students and internships can be grouped with “Student Development”
- G. The system shall make navigation folders and sub folders to group similar information based on type of information, group accessing the information, type of documents i.e. “Co-op Program” being a subheading under “Student Development”
- H. The system shall make separate navigational sections for different majors within Faculty of Engineering to group information pertaining to each easily accessible
- I. The system shall create security policies and put documents, files, documents in those policies
- J. The system shall grant security policies to roles and the roles to users to grant role based access to information
- K. The system shall provide ability to clone an existing access of a user to grant to a new user.
- L. The system shall be accessible from anywhere in the world.
- M. The system shall have a web page with a directory of the website to make it easier to find information

- N. The system shall have a web page with tips and tricks on how and where to navigate on the website to find certain information
- O. The system shall use standardized naming for documents to identify version and other important information
- P. The system shall put files, documents and information removed from the public facing website into appropriate groups
- Q. The system shall have clear guidelines on how to change or update information on the website.
- R. A process will be setup to evaluate whether the data is relevant to external users before putting that data on the public facing UR Engineering website

4 OTHER REQUIREMENTS

The system needs to have a unified brand and look and still be easy to use for the users. To achieve these requirements, we determined some additional requirements related to interface of the system as detailed below.

4.1 Interface Requirements

The unified brand and look of the website has already been established and implemented by the IT department of the University. The core look and interface of the intranet website cannot be altered as part of this project but our team will add additional menu items with headings and subheadings to make it easier for navigation for the end user.

4.1.1 Hardware Interfaces

The system supports desktop machine hardware. It cannot be used on smaller screens such as tablet or smartphones. In the backend, Cascade Application server is hosted on a linux machine and interacts with Data and Asset Repository where all the data is stored. It also interacts with a Web Pool which has multiple pools to make it easier to do maintenance tasks on the server without bringing the application down. All of the applications and databases are hosted on linux machines in the backend.

4.1.2 Software Interfaces

The system should be accessible and provide satisfactory performance from most commonly used web browsers such as Mozilla Firefox, Google Chrome, Microsoft Edge, Internet Explorer, Safari on recent versions of common OS such as Windows 7/8/10, Macintosh and Linux.

The system shall be able to interact with other University websites to gather and display information.

4.2 Operational Requirements

The following subsections will outline the operational requirements of the system including Security and Policy.

4.2.1 Security and Privacy

- A. Consequences of the following breaches of security in the subject application:
 - a. Loss or corruption of data: sudden loss or corruption of data will cause disruption in the use of that specific part of the application. In time

sensitive cases, this can be critical to provide efficient service to the customer

- b. Disclosure of secrets or sensitive information: disclosure of confidential information to the unauthorized user may lead to negative legal implications to the University, and can lead to loss in revenue
 - c. Disclosure of privileged/privacy information about individuals: disclosure of confidential information to the unauthorized user may lead to negative legal implications to the University, and can lead to loss in revenue and public disgrace
 - d. Corruption of software or introduction of malware, such as viruses: this can lead to disruption in the use of the system for all users. Additionally, the culprit may use malware, or ransomware to extort money from University
- B. Following security measures will be undertaken to prevent security breaches:
- a. Physical Security: this is out of the scope of this project.
 - b. User roles: Access to data, files, folders, documents, etc shall be granted to roles based on various job duties. Users shall be granted access through user roles based on their position.
 - c. Roles will be based on read and write access. Different roles will have different read and write access to different parts of the system.
 - d. Users will need an Update role for the application and for the specific component to update or make changes to the application.
 - e. Change management principles will be implemented to document changes to the application to keep track of the users who make the changes.
 - f. Regular backups are taken to guard against loss of data - this is out of the scope of the project
 - g. Corruption of software or introduction of malware, such as viruses - security measures are taken by University's IT department to mitigate these risks. This is out of the scope of the project.

APPENDIX A - GLOSSARY

University/U of R/ UR - University of Regina

FRD – Functional Requirement Document