

Software Engineering Senior Project Instructions for Completing a Project Proposal

Introduction

Thank you for supporting RIT's Software Engineering Senior Projects. This document provides instructions to guide you through the preparation of your proposal. Typical project proposals are 4 to 6 pages in length. If you have any questions while writing your proposal please contact the SE Senior Project Coordinator at seniorprojects@se.rit.edu.

The project proposal form is at <http://www.se.rit.edu/~swen-561/CourseInformation/Senior Project - Proposal.docx>.

Responsibilities as a Senior Project Sponsor

During the project, you are expected to commit the resources needed to ensure the project's success, including personnel, documents, specifications, etc.

We expect you to be engaged with the project team through that entire period. Your engagement will be in the form of a weekly meeting with the team either at RIT or through some other communication mechanism.

Specific responsibilities include:

- Prepare this project proposal.
- Ensure the accessibility of personnel throughout the project to help the team understand both the domain and the problem being addressed - such accessibility is particularly critical during the initial phases and will require that the sponsor's personnel participate in meetings at RIT, or remotely with the student team.
- **The time to meet with project sponsors is set for Tuesday and Thursday from 5:00 – 6:30pm Eastern US time.** You should need to be available at that time on one of those two days. Making accommodations for meeting at other times is difficult, but we will work with a sponsor in this regard when necessary. In between these meetings, we would request your timely response to emailed questions and requests to review project artifacts.
- Provide any hardware and software not currently available at the RIT facilities, including software licenses or remote access so that the team can perform all project work from the RIT facilities. Hardware and software can be a permanent donation to the Department of Software Engineering or loaned only for the project duration.
- Participate in team, product, and process presentations and reviews.
- Provide information the faculty can use to assess the success of the project.
- Assess the completed project, document your assessment, and submit it to the Department of Software Engineering.

Proposal Review and Project Timing

We run two project cycles for Software Engineering Senior Projects. The major cycle runs during the academic year from the end of August through early May with a four-week break over the New Year's period. This is nominally two 14-week terms. A smaller cycle runs in the spring and summer terms from mid-January through mid-August. This is nominally one 14-week term and one 12-week term. During the fall and spring terms there are also mid-term breaks.

The following table indicates the timing for review of project proposals.

| | Fall – Spring Cycle | Spring – Summer Cycle |
|---|----------------------------|------------------------------|
| Request for Proposals sent | Early March | Early September |
| Proposal submitted | Early May | Early November |
| Faculty review of proposals | End of May | Mid-November |
| Proposals published to students | Middle of June | End of November |
| Project teams, faculty coaches, and project assignments announced | End of July | Early January |
| Project kick-off meeting | End of August | Middle of January |

If this is your first time submitting a project proposal, we strongly advise you to submit the proposal early so that there is opportunity for the Senior Project Coordinator to review the proposal and suggest areas for improvement.

Senior Project Proposal

The remaining sections of these instructions provide you with guidelines for completing your senior project proposal. Please consider them as you prepare your proposal. If you have any questions, contact the SE Senior Project Coordinator at seniorprojects@se.rit.edu.

Background Information

- Suggested length is 1-2 paragraphs.
- Use this section for basic information on your organization and the project application domain that will provide teams with the context of the project.

Project Description

- Suggested length is ½-1 page.
- Please provide a narrative describing the project, possibly augmented by diagrams, illustrations, etc. This section will describe what problem the project will solve. This will usually be in the context of your needs and motivation for the project.
- If this effort is part of a larger project, please provide the necessary contextual information in this section.

- As these are student teams, there is a small but non-zero probability that nothing useful will be delivered; thus projects on your organization's critical path should not be proposed.

Project Scope

- Suggested length is 1-1½ pages.
- Describe what you consider to be the scope of the project. This may be in terms of a specific software system to design and deliver, prototypes to develop, technologies to explore, etc.
- The ideal project will challenge a team of 4 or 5 students to use a broad range of the software engineering skills they have learned. This would include skills, such as, requirements elicitation and analysis, architecture and design to implementation, testing, project tracking and management, risk management, deployment, training, and documentation.
- You should not be afraid of project scope. A team of 4 or 5 students will each work on the project about 10 hours per week for the period of the project cycle. Rarely does a project proposal come in over the top in project scope. More often, a project proposal will be removed from the pool by the faculty due to insufficient scope. Part of the team's experience will be to analyze what is being asked of them, estimate the effort involved, and then if they think there is too much to do, negotiate with you to identify project priorities or elements that you are willing to put out of scope, or as stretch goals.
- Some proposals that we will occasionally accept as projects, but generally tend to have insufficient scope for a software engineering senior project are:
 - Mainly client-side website development without significant middle-layer business logic, or interactions with other systems,
 - Providing simple web- or mobile-based access to existing data sources,
 - Development of a mobile application alone.
- It is unlikely that the students will have detailed knowledge of the project application domain, and thus they will develop the necessary domain knowledge during the course of the project. Your organization must provide access to resources necessary for the team to acquire any such knowledge, and time for this must be factored into the project's scope.

Project Challenges

- Suggested length is not more than ½ page.
- Sometimes the challenges in a project are not apparent to a reader unfamiliar with the project application domain and need to be explicitly stated. In this section, please describe what you believe are the primary technical and non-technical challenges of the project.
- You will not be at a "competitive" disadvantage if you have a non-technical background, and are not sure of the technical challenges that the project poses. Sometimes learning the domain and gaining an understanding of what you really need provides a significant challenge. We like to select a range of projects from sponsors with both technical and non-technical backgrounds, and various levels and types of challenge.

Constraints & Assumptions

- Suggested length is not more than ½ page.
- A bullet list of items is the best format.
- Please list any specific assumptions and constraints that the team must adhere to. Include only those things that you consider to be absolute requirements for the project.
- Technical constraints could be: specific design or implementation methodologies and tools, operating system(s), hardware constraints, software frameworks, communications protocols, industry or your organization's standards, and external systems or interfaces.
- If you want the team to follow a particular development methodology, state that here. Otherwise, the specific software process methodology each team uses will be part of the discussion between you and the team under the guidance of the team's faculty mentor.

Sponsor-Provided Hardware and Software

- In this section, list any special hardware or software that you will provide for the team to use on your project. If there will be none, you can just specify None in this section.
- If the team will be required to use any hardware or software not readily available at no cost to the department, you will need to provide that to the team. This includes software licenses or remote access so that the team can perform all project work from the RIT facilities. Hardware and software can be a permanent donation to the Department of Software Engineering or loaned only for the project duration.
- For mobile application development, the sponsor will provide the team with any accounts needed for deployment of the application to an app store.

Project Search Keywords

- Provide three to five words or short phrases that you think would be descriptors of your project if someone was searching for it.
- Searching by sponsor name will be possible separately so do not provide that as one of the keywords.

Department of Software Engineering Required Deliverables

- This is the list of deliverables that the Department of Software Engineering requires every team to produce.
- You should not add to or otherwise modify this section.

Sponsor and Project Specific Deliverables

- Suggested length is not more than ½ page.
- A bullet list is the best format.

- In this section, list all of the deliverables that you want from the team that are beyond the generic project deliverables that the department requires for every project, as listed in the previous section.
- The department required project deliverables list does not include the delivery of any product artifacts, the specification of which is often very project and sponsor specific.
- List any other intermediate or final deliverables for the project. These can be: implementation code you want delivered in increments or at the end of the project; documents, such as, requirements, design, user manual, or installation instructions; additional presentations or training sessions; product deployment; or any other deliverables you believe are necessary for a successful project, and for you to use the system that the team develops.

Proprietary Information

- Portions of the project or related information may be proprietary to your organization – in such cases, identify in this section the documents, programs, and other artifacts known to be confidential. The project agreements, except for an open source project, provide a non-disclosure agreement between your organization and the individual team members. The faculty coach will also sign a similar non-disclosure agreement.
- Senior projects constitute an important element for advancing the students' career goals and the department's educational mission. We must protect the students' ability to freely talk about their capstone project work with potential employers or graduate programs. In recognition of that, no more than 25% of the project scope can be classified as proprietary.
- Commercial non-disclosure agreements typically do not provide the openness that we need to protect the students' interests. We will accept your project proposal only if the non-disclosure process in our standard agreements is acceptable to your organization or the team will not require access to any proprietary information and can freely speak about all their project work.
- If no aspect of the project work will be proprietary, please state that in this section. The disclosure process in the standard agreements handles a situation where you discover during the project that you must reveal additional confidential information.

Sponsor Availability

We appreciate your interest in working with a senior project team, and understand that this is often something added to your regular work responsibilities. Sponsor availability is very important for a successful project. It is difficult to find times to meet with a senior project team that are not during the times when the official class is scheduled. Time to meet with project sponsors is scheduled on Tuesday and Thursday from 5:00 – 6:30pm Eastern US time. In this section, please indicate if you will be available to meet with a team once a week during these regular class times by putting an **X** in the left box. If you are not available during this time, we will still consider your proposal, but all other things being equal, we will select one with a sponsor available during class time over one whose sponsor cannot meet during that time.

Project Agreements and Assignment of Rights

- RIT policy gives students full ownership of any work done as part of coursework which includes their work on senior project. The RIT policy also allows students to be asked to assign those rights to project sponsors as long as alternate projects are available where the students retain all rights to their work. You can read RIT policy at the link provided below.
- All students on a team will sign a project agreement based on whether you want full rights, limited use of the artifacts, or to have the project distributed through an open source mechanism. You can read the agreements at the links given below. The project agreements are consistent with RIT policy section C03.0 1.V.B.2.
- We have had several instances where the approval to use a standard project agreement was not sought until after project initiation. The project sponsor created a bait-and-switch situation where the sponsor was now requiring the team to sign more restrictive agreements. At that point it would have been a significant hardship to stop the project, and the teams felt that they had no real choice but to sign the agreements.
- At the beginning of this section, please indicate by placing an **X** in the left box that you have received all necessary internal clearances to use one of the standard project agreements **unmodified**. We will assign a team to your project proposal only if you indicate that you have obtained all necessary approvals and clearances.
- You can select one of three approaches for dealing with ownership of project artifacts and intellectual property, and the disclosure of proprietary information. Place an **X** in the box to the left of the approach you want to use for this project.

The agreements and policies can be found at:

- Student Course Project Intellectual Property and Non-Disclosure Agreement
<http://www.se.rit.edu/~swen-561/CourseInformation/StudentCourseProjectAgreement.doc>
- Student Course Project Limited Use and Non-Disclosure Agreement
<http://www.se.rit.edu/~swen-561/CourseInformation/StudentCourseProjectLimitedAgreement.doc>
- Student Course Project Open Source Agreement
<http://www.se.rit.edu/~swen-561/CourseInformation/StudentCourseProjectOpenSourceAgreement.doc>
- Faculty Course Project Non-Disclosure Agreement
<http://www.se.rit.edu/~swen-561/CourseInformation/FacultyCourseProjectAgreement.doc>
- RIT Intellectual Property Policy C03.0. The project agreements are consistent with C03.0 1.V.B.2
<http://www.rit.edu/academicaffairs/policiesmanual/c030>