

Cal Poly Software Engineering Capstone Project

Call for Proposals

May 9, 2017

Proposals are solicited from industrial sponsors for the 2017-2018 Cal Poly Software Engineering Capstone Project. The type of project specified, developed, and deployed in the SE Capstone strongly influences the intellectual content of these courses. The project must be chosen carefully in order to ensure that students have an intellectually substantive learning experience and are exposed to essential software design concepts. The SE Capstone directly supports the SE program's ABET accreditation.

The SE Capstone consists of three courses over three academic quarters:

CSC 402 Software Requirements Engineering (Fall)

CSC 405 Software Construction (Winter)

CSC 406 Software Deployment (Spring)

Three to five teams of four to six upper-level undergraduate students each develop the same system for the industrial sponsor. The industrial sponsor serves as the business customer, establishing requirements and acceptance criteria in consultation with the Cal Poly faculty. While the courses include typical academic activities such as lectures, readings, and exams, the capstone project is the focal point and primary outcome.

The capstone experience is frequently cited by students and alumni as their most significant learning experience at Cal Poly. It is praised for its real world character and launching off point for software engineering careers. Sponsors find value in the opportunity to work with Cal Poly faculty and students, the opportunity to explore requirements, architectures, and prototypes for applications of interest, and the opportunity to explore new technologies and software development practices.

Proposals should be one to two pages and should propose a specific project. Proposals should identify an executive sponsor and contact information for a primary contact person who would serve as the project customer throughout the project. Proposals will be accepted until the capstone customer is selected, but preference will be given to proposals received prior to June 12, 2017. A notice of intent to submit a proposal would be appreciated, and we would be happy to answer questions and help you identify an appropriate project and primary contact person. Questions and proposal submissions should be directed to Dr. David Janzen (djanzen@calpoly.edu). At least two projects are expected to be accepted for the 2017-2018 SE Capstone.

1 Requirements

Every software engineering capstone project must have the following characteristics:

1.1 Real World Character

The product must meet needs of real users and be deployed for use by those real users. The problem domain must be accessible to our students. Domains that require specialized knowledge are undesirable. In order to establish a legitimate customer role, domains for which students are not a primary user are preferred. For example, a system that is primarily used by a nurse, small business owner, or real estate buyer might be desirable.

1.2 Strong Sponsor Commitment

The industrial sponsor must agree to support the project for the three academic quarters (September through June). Weekly or every other week customer meetings will occur on Tuesday or Thursday during the window of 8-11am or 12-3pm PDT (could vary in later quarters). Meetings will typically include communication with students on requirements and acceptance criteria, formal reviews of product deliverables, periodic visits to the classes, and other activities necessary to meet the "real world character" of the project. Customer meetings may occur remotely via conference call/Skype/Hangout or face-to-face.

1.3 Project Size and Scope

The project must have sufficient substance to provide several team members major development tasks. The project size should be between 2000 and 5000 function points (not too big, not too small).

1.4 Language/Platform

Based on current curricular considerations, projects with a significant web and/or mobile application component are preferred. Additional platforms will be considered.

1.5 Project Completion

Completion of project must include: beta-level functionality of an advanced prototype, compliance with formal style guidelines, completed inline documentation, and other internal quality standards as determined by the instructor. Project requirements will be initiated by the customer. Complete project requirements will be developed collaboratively by the customer and the capstone students, and must include a set of nonfunctional quality attributes such as reliability, safety, legality, etc.

1.6 Customer Expectations

Industrial sponsors are expected to understand that students are not subcontractors. Projects should not be on any critical path in commercial development since students and faculty have limited skills, time, and structure available to dedicate to the project. The capstone is only one of many courses that students will be taking. Students and faculty will make “best efforts” in completing the project, but the primary goal is an educational experience, bounded by the constraints of the academic calendar.

1.7 Interaction Support

If not local to San Luis Obispo, the industrial sponsor must provide toll free conference call and web meeting services for the weekly meetings. The industrial sponsor must provide support for at least one face-to-face presentation near the end of each quarter.

1.8 Funding

The industrial sponsor must provide funding to cover direct expenses required for the project (e.g. specialized software tools/hardware/devices). In addition, sponsors may consider a donation in the range of \$5,000-\$20,000 to offset the substantial faculty costs of the capstone project. The funding is typically provided in the form of a gift to the Computer Science Department.

2 Other Expectations

In addition to the mandatory requirements, projects might include some of the following characteristics:

2.1 GUI Interface

The project may include a GUI interface that has menus, controls, and dialogs. The GUI must be designed for easy localization, and at least one non-English localized version should be developed.

2.2 Database Component

The project may include some use of a standard third-party database engine (e.g. MySQL) for storing persistent state.

2.3 Reuse of Existing Modules

The project may involve the integration of other existing components into the product.

2.4 Algorithmic Module

At least one significant module of the developed project may perform a practical task requiring algorithmic analysis, and the project would ideally include two or more algorithmically distinct implementations of this module to compare performance.

2.5 Intellectual Property and Non-Disclosure

It is acceptable for the customer to retain Intellectual Property rights if necessary. It is preferred that non-disclosure agreements **not** be required. It is very desirable that students be able to talk freely about and share artifacts from the capstone course when applying for jobs.