15-413: Introduction to Software Engineering

Jonathan Aldrich

Assignment 5: Prototyping

Part 1 Due: Monday, September 26, 11:30am (hardcopy at beginning of class)
Part 2 Due: Monday, October 3, 11:30am (hardcopy report at beginning of class)
Part 3 Due: Monday, October 3, 11:00am (email Powerpoint or PDF for in-class presentation)
60 points total

This assignment is a group assignment. Each project group should turn in one response to each part, with all the names of the group members.

Parts of this assignment depend on interaction with clients. Occasionally, you may not be able to meet with clients for reasons outside your control, e.g. they are traveling. If this is the case, contact the instructor or TA to get an extension on the assignment. However, you are expected to contact your client promptly so as to avoid any possible delays.

NOTE: You will have several opportunities to present in class over the course of the semester. For the presentation in Part 3, you should choose only one or at most 2 members of your group to present, but over the course of the semester, everyone in your group should present at least once.

Part 1: Prototype Plan (10 points)

For this assignment, you will build a prototype that is relevant to your project. The first deliverable is a short (1-page or less) prototype plan. For this deliverable, turn in short (1-3 sentence) answers to the following questions:

a. What is the goal of your prototyping activity? Be specific. For example, if you are trying to refine the requirements, describe which ones are uncertain. If you are exploring a user interface, explain what part of the UI you are focusing on. If you are exploring a new design or technology, describe the design or technology.
b. What specific risk are you trying to address?
c. What will you build for the prototype?
d. How will you use the prototype to address the goal above? For example, if you are prototyping a user interface, this might be a walkthrough with your client.

The expected scope of the prototype is 3 hours per person on the team, including the write-up; this time is assignment work beyond the 6 hours/week of normal development work you are doing for your project. Feel free to expand the scope (using project time) if that provides value to your client.

Part 2: Prototype Results (30 points)

Carry out the prototype experiment described above. Analyze the results and discuss them with your client, if relevant.

Turn in:

a. A short (1-2 paragraph) description of what you did for your prototype (including any differences vs. your plan).
b. Describe any changes to your requirements that came out of the prototype (if any; this may not have been the point of your prototype).
c. For new or changed requirements, give the complete new story in the same format as for Assignment 4.
d. Update your risk management analysis based on your prototype experience, including new risks that were identified and old risks that have changed in severity, likelihood, or other characteristics.
e. Describe informally how the prototype experience changed your risk management.
f. Describe any other key lessons you learned from the prototype experience. For example, if you were not successful in addressing one or more risks, explain how the prototyping could have been done differently to address that risk. Or if your prototype was aimed at UI design, explain what you learned.

Part 3: Class Presentation on Prototyping and Requirements (20 points)

Prepare a class presentation for Monday, October 3.The presentation should cover ***either:***

(1) something interesting you learned while doing the prototype (e.g., discovered a new requirement, found a new solution approach, came up with an interesting UI solution), ***or***
(2) something interesting you discovered as part of the XP requirements elicitation and planning process with your client (e.g., some aspect of XP that did not work well and why, or any adaptations you had to make to the XP process, or conversely that the XP story and planning process helped you or your client in unanticipated ways).

Try to be deep rather than broad—i.e., it is better to communicate a single aspect of your experience effectively than to give a broad overview of your prototyping or requirements process. Give enough project context that the class can understand the software engineering issue, but avoid irrelevant details beyond this. The assignment gives you broad flexibility to choose a presentation topic; pick the one you think will be most insightful and interesting to other members of the class.

Your presentation should be about 6 minutes long (this is a hard limit—time a practice talk to make sure!) and there will be a couple of minutes for questions from the instructor and the class. Email your presentation slides in PDF or PPT format to the instructor (jonathan.aldrich@cs.cmu.edu) at least 30 minutes before class; we will be using one laptop for everyone to save time in switching between presentations. Also, please bring 2 hardcopy handouts of your slides to class for grading purposes.