

Computer Science Capstone Design

Assignment: Design Review 1



Draft review: 20pts; Presentation: 100pts

Overview

In real CS corporate practice, Design Reviews are a common way for active teams to communicate their current work status to others within the organization, e.g., their division manager, the CIO of the company, or to other working groups. The main goal beyond simply reporting status is to gather input and critical feedback from these groups that could help improve the design or project outcome. Plus, as always, the goal is to remind the audience how vital/cool/necessary your project is, and what a complete and competent job your team is doing in executing it.

Because of this somewhat “internal” focus, the end-user client may or may not typically be invited to the Design Review in a real corporate setting; the decision on whether to do this depends somewhat on the nature of the project and the involvement and technical proficiency of the client. For our Capstone course, however, *you should always invite your client to attend all design reviews*. Let them know at least a week in advance, so they can block out the time!

In this assignment, you will prepare and present the first formal Design Review for your project. The overall content focus for this and all upcoming Design Reviews is the same:

- Intro: Intro the overall project area, sell that it is a vital/valuable market. Intro the client and his/her needs.
- Problem and Solution Statement: Remind us of what’s broken/inefficient, and what your vision for a solution is.
- The Requirements, Software Architecture, and other technical “meat” for that particular document. What you focus on here depends on how far along in the project the DR happens.
- Update on Risks/Challenges/Resolutions. Again, what exactly happens here depends where you are on the project. Basically gives an update on status of project risks, plus any particular obstacles you’ve encountered/solved since the last review.
- Update on the project plan and schedule: Update us on how it’s going and what’s left to do.
- Conclusion: summarize and wrap it all up nicely.

Again, this is the basic outline for *any* Design Review; every single review is going to have the Intro and Problem/Solution pieces, and the schedule and conclusion pieces at the end. What varies between reviews as the project goes along is where you place the focus of discussion, i.e., where you spend most of your time in that particular review talk. So for this first review, the focus will be on what you’ve been doing this semester: Requirements acquisition, including feasibility, risks and early design.

Design Review 1: Content Outline

As just discussed, every Design Review has the same basic outline, aimed at reminding the audience of the project, then updating them on recent progress. For Design Review 1, this means you’ll focus on your Requirements Engineering efforts. The basic content and flow of info is about the same as the Requirements Document; **consult the guidelines posted for that document for more detailed discussion of what the**

following sections contain! I'm just going to outline it here. Obviously, you have much less time for detail than you do in the written document. Your goal is to summarize your work effectively and compactly in oral presentation form, which is a vital skill for success in professional practice.

Introduction (0.5 minutes)

The usual. Begin by introducing yourselves briefly: Go through each team member's name and role(s) on the project, as well as your team name, client, faculty mentor.

Problem Statement (about 2-3 minutes, depending on domain complexity)

As we've said from the start, this is an absolutely key section. If you don't explain and motivate your project *very very clearly* here, you'll be in grave danger of having lost your audience. Lacking a clear idea of what you're doing, they literally won't be able to grasp the rest of your talk. And lacking a strong motivation of why this project matters, what its impact for the client and/or society might be, they won't care enough to listen. This is a part of your oral presentations that you should perfect each Design Review so that it's really strong by the time the Capstone Conference rolls around.

As discussed in the spec for the written document, begin by talking about the overall business area that your client is in: introduce the area, explain briefly how it works, and try to give some motivating info on how big/active/important that sector is. How many people are involved, how much data is transacted, etc. If it's a complex area, graphics that help you explain processes, entities or data flow can help support you. THEN introduce your introducing your sponsor and the organization they're attached to, and say how they and their organization contribute within the larger picture of the sector you intro'd. What do they produce, how does it fit into that larger sector, and what is the volume/importance/user base of their part? What is the process by which your client produces whatever data/product that they are producing?

Ok, now the audience hopefully fully understands what your client does and how it matters. Now you can go on to describe what's broken, why you were hired. This should be easy if you've already described the workflow/dynamics of how your client's production/business process works: you then just have to explain what's bad/inefficient about it. Describe the problem in overall terms briefly, then get down to bulleting out a few specific things that are not satisfactory. By the end of this, your audience should be really clear on what needs fixing.

Solution Overview (about 1-2 minutes, depending on solution complexity)

So now you need to outline your plan for fixing the problems you just outlined. Again, this is easy if you've done a good job of describing the business workflow, and then pointing out specific problems with it: you just connect your solution right into this discussion. Again, begin with a broad statement of your overall solution, e.g., "The solution that we envision to address the client needs just outlined is to transition the entire workflow to a secure, highly reactive web application that ...". This is a great place to have process- or data-flow graphics you used to describe the client's business re-appear, with the elements you are fixing/adding clearly highlighted. Then present a list of bulleted specific features of your solution; choose them so that it's pretty clear to listeners that your solution features will certainly address the problem issues bulleted out earlier. Explain as much as needed (e.g. walk us through figures, whatever) to make it clear.

DO NOT succumb to the temptation to get too detailed or technical here! You want to present the vision in a way that any reasonably tech-competent listener could relate to. More detail will come in future sections (or even in future Design Reviews).

If you've done your work in the Problem Statement and Solution, your audience will (a) understand the problem domain and what problems your client has; (b) will have a solid overall idea of what you have in mind to fix it; and (c) will be strongly convinced that your solution vision will actually fix the clients problems completely and elegantly.

OK, this is the end of the critical info. You're about 3-5 minutes into the talk and everyone is hopefully absolutely clear on what you're up to, and hooked on your project. Time to get to detail of this particular Design Review! As always, smoothly lead in with a nice segue: "Now that we've established what we're doing, let's look in more detail at some project details and status".

Key Requirements (about 4 minutes)

Begin discussing your requirements by mentioning (briefly) how you got these requirements, which could include things like interviews with the sponsor, reading provided documents, visiting a sponsor's place of work, or any other activity that helped you understand more about the problem and the functionality your system needs to provide.

Then present the key requirements that your system must meet from the domain perspective; this just means expressed in terms from the client's end domain, rather than in the more structured/technical functional and performance requirements you'll do to next. Most projects can summarize the key user requirements in about 5-10 bullets. Briefly explain each one.

Then go on to discuss top-level Functional Requirements, Performance Requirements, and Environmental constraints. You do not have the time to be super detailed here! So after you overview the key high level functions, just choose *one of them* to dive down deeper: you show how that high level function broke down into lower lever ones...and even lower level ones, however many levels of decomposition you had. And you mention the performance requirements associated with some of those functions. Then you wrap up saying "So that's just to give an idea of how we broke down high level functions into lower level ones, and how detailed we got with this. For those who are interested, we refer you to the written Requirements documents, which shows this kind of breakdown for all system functions". See what I mean? The Design Review does not *duplicate* your documents, but rather is *complementary* to them: the Design Review provides a compact oral summary, while directing the audience to the document for smaller details.

End with a summary statement about your Requirements to close the discussion. Usually something about how, of course, requirements will always evolve as the project matures, but that you feel you've done a solid job of getting a firm set of baseline requirements.

Risks and Feasibility (about 2 minutes)

Now provide an overview of the risks you perceive for your project, and how you analyze them (likelihood, severity, see your notes/book on risk analysis from 386). This then generally dovetails will with a discussion of feasibility, i.e., you were mitigating some technical risks by doing some feasibility analysis on key points. Summarize the outcomes and refer to your Feasibility Report for those wanting details.

Remember that these risks should be primarily relevant to the project, them market, and your customer, not your own personal/team failures. Think of how your software could affect the user and those that rely on your user's actions.

Schedule (about < 1 minute)

As usual, offer a short discussion of your project plan, as it stands right now. A Gantt chart is highly recommended, with a “now” line running through it. Go over your main functional milestones...which ones you’re through and what’s coming. Close with some summary statement of where you are “going well”, “somewhat behind, but we think we can catch up”, whatever.

Conclusion (about < 1 minute)

Finish your talk by providing a solid summary of your presentation: This is where you wrap it all up nicely and bring it all together. Start by briefly restating the importance of the domain, your client’s business and processes and what was inefficient about them. Then review your solution vision, and go on to review what key topics you’ve discussed in this Design Review; do NOT review the details of those topics (you did that already in the middle part), just review what you talked about and the overall outcomes: Requirements acquisition, development of detailed Functional, Performance, Environmental requirements, and risks/feasibility.

End your conclusion with a sentence or two about what’s coming up for you, what you’ll be focusing on in the next development phase. End the presentation with an energetic note that conveys professionalism and confidence that you’ll be able to solve the problems and satisfy your client.

Closing comments and Logistics

The times given for each of the topical areas to discuss are, of course, only nominal. It will be up to each time to tailor the amount of discussion in each section to the project...and, of course, to the overall time you have for the presentation. The point is that, if you go overtime, you’ll bore your audience and drown them with detail (not to mention losing points for overtime); and if you use less than your allotted time, you’ve left some valuable time on the table that you could have used to explain some key points in your project more clearly. So you’ll want to map out your time, test run the presentation, and adjust until you get it right.

You will be delivering this Design Review presentation twice:

1. **Dry Run.** Once as a dry run for your mentor, at some point before the actual Design Review. Just how you do this is for you and your mentor to decide. You can find a place to actually give the talk, you can gather round a laptop and walk through the slides, whatever. There will be points assigned to the Dry Run to help motivate taking it seriously.
2. **The formal Design Review.** The grade for the Design Review will be given during the formal presentation, when we split up into separate presentation rooms, with about 4-5 teams per room.

Some more details:

- The detailed room assignments for teams and faculty mentors will be announced shortly before the Design Review. Again, there will be three rooms, with reviews running in parallel.
- All members of your team must participate in the presentation.
- DO NOT consider the dry run a “rough draft”. It’s impossible to comment/critique productively on anything that only vaguely resembles a final product! Your mentors will literally expect finished presentations to review and give feedback on. Have all the figures in there, have the slides all organized, and make the timing approximate what you’re actual timeline will be.

- Each team will have a total of 12 minutes for their presentation, including some time for questions. Plan to talk for about 10 minutes, to leave a few minutes for questions and critique.
- Dress up appropriately, meaning looking professional and credible.
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Deliverables

Dry Run: You are required to schedule and deliver a “dry-run” of your presentation to your mentor, *at least three days before the actual talk*. This is the only time we’ll do this as a required, formal deliverable before Design Reviews (though you’re of course welcome to ask your mentor for review on subsequent DRs). The idea is to give valuable feedback on talk design *before* the actual talk, to help focus what you’ve learned about presentations throughout our CS program. Note that the emphasis is on talk *design* (structure, flow, slides) rather than oral delivery. Bring complete, polished, presentation-ready slides...but don’t worry terribly about smooth oral delivery; you can practice that once you have the talk solid.

DR 1 Presentation: After the dry-run, you’ll spend some days refining and practicing your talk, to prepare for the “real” delivery of the formal Design Review in front of classmates, clients, and CS mentors.

Thus, there are four deliverables for this assignment:

- Your dry-run presentation, given to your mentor. It’s up to your team to schedule this with your mentor.
- Your formal Design Review presentation, given at the designated time.