

SWEN 444 Human Centered Requirements and Design

Project Breakdown

Team Status Reports:

Your team will **report weekly** project status to your instructor, and as you wish, capture other project related information. The weekly status report should contain:

- The **number of hours** each team member contributed to the work. This information will help evaluate individual team participation along with peer team reviews.
- A list of project related **risks, challenges, or issues** that you need to share.
- A link to your hosted prototype (weeks 5 to 10).
- A report template spreadsheet will be provided.
- The status report will be reviewed as part of each project deliverable evaluation starting in Week 2 with project Deliverable 1.

Note: All due dates are listed on myCourses.

Note: Develop your project documents in Google Docs. Submit completed project documents to the myCourses Assignment dropboxes as pdf files. Add a note with the submission that lists the URL to the Google Doc. Instructors and Course Assistants may use this to track individual contributions to the document.

Deliverable 0: Project Startup

The instructor will determine team membership. Once team membership has been identified, as a team perform the following tasks.

- Meet to get acquainted and discuss project process and logistics. It is highly recommended that one team member take on the role of coordinator. Who will be responsible for the status report?
- Choose a **team name**. The default will be “Team n” where n is the group number.
- Brainstorm at least **three ideas for a project topic**. Document in the shared Google spreadsheet that will be provided. Rank the ideas in order of team preference. The instructor may assign problem domain themes that require some preliminary research to become familiar with the problem domain and/or find users with domain knowledge. The goal is variety in class projects.

You will be developing an **interactive prototype** of your interface design. By default, the prototype will be a **web app**. Your final chosen topic needs to balance between two objectives. It must enable an **“interesting” interactive design** problem for more than one

user role. But it must also enable the development of a working coded prototype that is not **too ambitious** to be completed within the time constraints of the course. The instructor will provide additional information on prototyping technologies.

- The team's **preferred project** topic shall be reviewed and approved by the **instructor**. The instructor may request modifications or ask you to come up with more ideas.
- Once you have an approved project topic, write up a **system concept statement**. Document your current thinking of the **project team processes and logistics** you plan to practice this semester. Submit it to the appropriate **Project Dropbox " Deliverable 0: Project Startup"**.
- Once your project is known, **recruit four users** from the **target population** for your system. None of your users should be enrolled in SWEN-444. These individuals must be willing to answer questions during requirements elicitation, and eventually participate in user testing.

Deliverable 1: Contextual Inquiry and Analysis

1. Review and update as necessary the **system concept statement**. Use it for interviewing and observation.
2. Interview/observe your four candidate users. **Document the interview and observation process** - who, what questions, what notes.
3. Identify and document **work roles**.
4. Create a big picture **work flow model** diagram shows the major system nodes and the interactions between them. Show work flow, information flow, and all communications among the components. Write a short overview introduction.
5. Use the **requirements template**.
6. **Team status report**.

Deliverable 2: Work Activity Affinity Diagram and Requirements

1. Each team member should independently synthesize **work activity notes** from the raw interview notes. Then as a team create a work **activity affinity diagram** using the work activity notes using the process discussed in class. Submit a (high resolution) **image of the completed WAAD** and a short **synopsis** of the team's reflection on the process experience.
2. Derive **interactive design requirements** (not software requirements) by walking the WAAD one work activity note at a time. What **user needs** are implied by the work activity note? **Translate** each **user need** into one or more **interactive design requirements**.
3. Document relevant quantified **usability goals** for learnability, memorability, efficiency, understandability, and satisfaction.
4. Document the requirements using the **requirements template**.
5. **Team status report**.

Deliverable 3: Design Models

1. Review and refine work roles and the work flow model as appropriate.
2. Create a **social model** diagram. Identify active entities and represent as nodes. Show norms of behavior, concerns of individuals in specific work roles, influences, feelings, and environmental factors. Write a short overview introduction.
3. Write task based **usage scenarios** for **five** non trivial tasks supported by the system. Describe key usage situations happening over time for specific people with work goals.
4. For the relevant work role perform **hierarchical tasks analysis**(HTA) modeling for **five tasks traceable to the usage scenarios**. Document in the **requirements template** each HTA using the **descriptive format** (the graphical format is not required).
5. **Team status report.**

Deliverable 4: Conceptual and Intermediate Design

1. Construct a **persona** for one work role.
2. Hold a team ideation session to produce a conceptual design. The design should be represented as **sketches** and **possible features**.
3. Create **storyboards** (ecological, interaction, and emotional perspectives) for your design. What **mental models and metaphors** are represented?
4. Refine the design as a **wireframe** in preparation for in-class cognitive walkthrough evaluation.
5. Submit the persona description, sketches, storyboards, metaphors/mental models considered, and wireframes. Use the **Interactive Design template**.
6. **Be prepared to present in class.**
7. **Team status report.**

[Mid-Semester “Show and Tell”]

Be prepared to present the state of your project design in class. Your discussion should include an introduction to your system concept and a walkthrough of your intermediate design wireframe screen shots for the five tasks modeled. Briefly highlight your design thinking. The objective is to inform the class on the state of design of other project teams. This will be graded for class participation as a class activity. *Submit your presentation (Powerpoint/ PDF) to the myCourses assignment folder*). Plan to spend ten minutes. The instructor will schedule the presentations.

Deliverable 5: Detailed Design

Refine the intermediate design to provide a more detailed design prototype. Incorporate feedback from the cognitive walkthrough. Apply design guidelines. Record the rationale for your design decisions.

This exploratory prototype should be:

- **High fidelity in look and feel.** Use this prototype to explore the graphic design of your final implementation. Lay out screens as you want them to appear in your final implementation. Make choices about colors, fonts, alignment, icons, and white space. Your prototype need not be pixel-for-pixel identical to your final implementation.

- **Medium fidelity in breadth and depth.** Your prototype should be able to handle at least the **five tasks** you described in your **task analysis**.

The **minimum** expectation is a **detailed wireframe prototype**. However, the final prototype required for user testing must be programmed to be interactive. **DO NOT DELAY** too long in starting development.

Submit:

- **Prototype screens.** Label each screen in your prototype, and provide a short narrative of the user's task interaction with the screen including any navigation to another screen. A diagram mapping hierarchical screen navigation is recommended.
- **Design rationale** – what affordances are represented and what design guidelines and principles were used?
- Use the **Interactive Design template**.
- **Team status report.**

Deliverable 6: Heuristic Evaluations (Done in Class)

Your prototype will be distributed to at least **two** of your **classmates**, who will do heuristic evaluations of it in class. Since your evaluators must be able to view and interact with your prototype, this will impact the extent or type of revisions that you implement in your system. If you have a programmed prototype, be sure your system works/is viewable in the labs/team rooms. Given the time constraints, your system may not be completely refined (prioritize) for heuristic evaluation. At a minimum you need to be able to support the **five tasks** you identified in your **task analysis**. Prepare a HTA based description of each task on an index card ahead of the evaluation.

Each evaluator should be paired with an observer from the team who will fill out the “Heuristic Testing Worksheet”. After the evaluations are complete, consolidate the individual observations into one problem list. As a team assign each of these problems a severity rating (cosmetic, minor, major, catastrophic), and brainstorm possible solutions for it. Plan system revisions to correct as many of the problems found as possible (in priority order) in time to begin user testing.

Submit an evaluation report that includes the following information to the “Heuristic Evaluation” dropbox.

- The two original heuristic testing worksheets
- The consolidated problem list with severity ratings
- Summary of the teams problem analysis and plan forward

The deliverable will be graded based on the completeness of the material submitted. Note: if you aren't in class for this, then you don't get credit.

Team status report.

Deliverable 7: Test Plan (7a) and Programmed Prototype (7b)

You need to be done with the development of your system's prototype to at least “beta” quality in preparation for user testing. That means all features to be tested and the associated controls and aesthetics must be done. You will likely need to have simulated the back end of at least parts of your system, depending on its complexity. The completed prototype "beta" release should include an executable file or URL, and a README file. A good README file contributes to a successful UX. It describes the installation procedure and runtime environment, lists unsupported features and bugs, and provides introductory user operation instructions. The instructor will use the README to evaluate your prototype.

To accomplish user testing you first need to develop your Usability Evaluation plan and materials. As part of your plan, you will test your system with the same five tasks used in prior deliverables. Use the provided **test plan template**.

Find at least **four more** representative users for a total of eight users who will test your system. None of your users should be enrolled in SWEN444. You should strive to have all of your users be members of your target population, but that is likely not possible. **All** participants need to be volunteers and must sign the **Informed Consent Form**.

The evaluation session must be scripted, so that you do and say the same things for each user (including describing what the purpose of the system is). I highly suggest doing a pilot test with someone else in this class to work out any issues that could jeopardize your results. For each user your script should portray when you provide the tasks (one at a time), and how you observe and take notes. One member of your group should be the facilitator of the test, one should be timing tasks, and one should be taking notes.

Team status report.

Deliverable 8: Test Data (8a) and Analysis (8b)

After collecting all of the user data, analyze this information to derive any usability problems found by your user tests. These problems should be put into a **list**. I suggest you consolidate this list with the problems identified during heuristic evaluation. Assign each problem a severity rating as above (cosmetic, minor, major, catastrophic), and brainstorm possible solutions for the problems. Then fix your implementation to solve as many problems as you can in the time available, giving priority to severe problems. You may not be able to get to all of them, but you should at least address the severe ones wherever possible. **It is important that you convey this analysis and what you did with the results in your presentation (Deliverable 9).**

8a: Submit the **signed consent forms**. They may be handed in on paper or as scanned electronic documents (preferred). Submit the collected qualitative and quantitative **raw test data**.

8b: Summarize the test **data analysis**:

- Filled out UX Target Table. Testing goals met?

- Outliers discussion if any.
- Quantitative and qualitative data correlation.
- Problems identified with severity ratings in a consolidated problem list, and usability solutions to address at least critical and major problems.

Team status report.

Deliverable 9: Presentation and Final Product with Updates

At the end of the semester, your team will give a 20 minute **presentation** of your project. Your talk will need to discuss the following:

1. Summarize the **system concept**.
2. Summarize the **interactive design requirements** for the primary **work roles**.
3. Discuss how your **design evolved** through conceptual, intermediate, and detailed designs. Show sample screen shots. What metaphors, affordances, and design guidelines were most important?
4. **Demonstration** Demonstrate your design and implementation via a live demo of your system, working through the five core tasks at a minimum. **Discuss why this is a “good” design.**
5. **Evaluation and Reporting** Show your completed UX Target Table. Discuss the major findings from your user testing. Did you meet your goals? If not why not? Explain your analysis of any outliers, and quantitative-qualitative data correlations for critical incidents. Discuss your problem list and your proposed design improvements to address the critical issues.
6. **Reflection.** Reflect on what went well and what could be improved in the project, particularly relating to your UX goals but also for general software engineering concerns.

Be sure to turn in your **slides** by the due date and NOT when you give your talk. There will be a short Q&A after the talk that is not counted towards the 15 minutes. There is a rubric for your reference in myCourses.

In addition, turn in the final release of your project (the running prototype) with a **README** file. A good README file contributes to a successful UX. It describes the installation procedure and runtime environment, lists unsupported features and bugs, and provides introductory user operation instructions. The instructor will use the README to evaluate your prototype.

Where possible, correct critical usability issues identified in the usability testing. It will be subjectively graded from several perspectives. Is this a "good" interface to support user goals and a positive UX? Are severe usability issues addressed? Is the prototype sufficiently complete to yield meaningful user testing results? Degree of difficulty and the state of completion versus the specified requirements are also factors.

Team status report.