CS 350: Computer/Human Interaction
Lecture 04 Overview

- Requirements analysis
  - Root concept
  - Getting users involved
  - Analyzing work practices
- Scenario-based Design
  - Problem scenarios
  - Claims analysis
- Requirement specifications
- Assignment out: Homework 1

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Requirements Analysis

- Goal: Understand users’ current activities well enough to reason about technology-based enhancements
  - Mission statement
  - Meetings and studies with clients
  - Requirements specification
- In SBD this is an on-going process that tracks changes in specifications as clients see what technology can do for their goals

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Requirements Analysis

- Understand the work that goes on now
  - to specify functionality that meets real needs but identifying problems and opportunities for improvement
- Learn about the people that use current technology
  - to specify functionality that is convenient and satisfying to use

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Class Registration Example

- Many years ago, the procedure for registering for the next term’s classes at UE was:
  - An advisor receives registration cards.
  - A student makes an appointment with her advisor to pre-register.
  - At the meeting, the advisor and student agree on a set of classes that are written on the card.
  - The card is signed by the advisor and student, and taken by the student.

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Class Registration Example

- Several years ago, UE decided they wanted an on-line course registration system. First attempt (Aspen) was to make then current system available on the Web for faculty to enter student registrations.
- First use of WebAdvisor also duplicated prior procedure. More recently, UE decided to make students responsible for their own registration.
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**Root Concept**

- **Root concept** is a multi-faceted statement that provides shared understanding of the project participants
  - Project vision and rationale
  - Starting assumptions
  - Initial analysis of stakeholders

**Stakeholders**

- Who are the users?
- **Stakeholder** is anyone who is impacted by the system. Document relationships and dependencies.

**Stakeholders**

- Four categories
  - **Primary** – those who use the system
  - **Secondary** – those who provide input or receive output from the system
  - **Tertiary** – those affected by the success or failure of the system
  - **Facilitator** – those whose job is to create the system

**In-class Exercise 1**

- Formulate a root concept for the UE course registration system. Who are the:
  - Primary stakeholders?
  - Secondary stakeholders?
  - Tertiary stakeholders
  - Facilitators?

**How Are Users Involved?**

- Often easy to determine organizational workflow through documents like procedures manuals
- Also want to uncover **tacit knowledge** held by experts.
  - **Contextual inquiry**: observe and ask questions during observation
  - **Participatory analysis**: observe and ask questions later during discussion

**Analyzing Work Practices**

- What is work?
- Three components
  - **Activities**: goals and actions of individuals and groups
  - **Artifacts**: designed objects used by workers such as information, tools
  - **Social context**: users, organization, roles, interdependence
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**Ethnography**

- is an analytical technique to study the experiences of people whose reality is vastly different from the analyst’s.
- Full study is weeks to months in length, too long for software development process.
- HCI professionals conduct quick **field studies** that are more intensive and focused to learn just enough to guide design.

**Field Studies**

- Includes workplace observations, recordings, interviews, artifacts
- Root concept determines which activities to observe, what questions to ask
- Try to observe or interview each stakeholder group at least once

**Task Analysis**

- Document what users are doing now
- **Hierarchical Task Analysis (HTA)** – tasks (activities) are broken down into subtasks until desired level of detail is reached.
- Selection and repetition of subtasks are noted.

**In-class Exercise 2**

- Develop an HTA for the problem of adding or dropping a course during the first week of classes at UE.
- Consider what exception conditions might arise and how they are handled.

**Artifacts**

- Document artifact features: may suggest particular users or uses. E.g., crayon vs. pencil.
- Observe artifacts in use: often actual meaning is apparent when in use. E.g., name badge at a conference is used to identify “important people”.
- Interview users about artifact use.

**In-class Exercise 3**

- To add/drop a course at UE, a student needs to have a signed add/drop slip. What does this slip imply about the UE registration system?
Summary of Analysis

- For stakeholders: background, expectations, preferences
- For tasks: HTA or similar
- For artifacts: features, implied information or procedures
- Workplace themes for social context: categories of related observations or discussion points, both good and bad

Problem Scenario

- Problem scenario synthesizes analysis by telling a story about current practice.
  - Called a “problem” scenario because describes activity in problem domain.
  - Creative endeavor, most scenarios are entirely fictional; use hypothetical stakeholders as actors.
  - Goal is to reveal aspects of stakeholders and activities that impact design. Provide enough background to illustrate motivation of behavior.

Claims Analysis

- Claims feature is anything with notable effect on a stakeholder’s experience
  - Object, procedure, other person
- Claims analysis considers consequences of feature on stakeholders as illustrated by a problem scenario
  - Interleaved with writing problem scenario
  - Document both positive and negative impacts
  - Motivate design to increase positive impacts while decreasing negative impacts

How Many Scenarios/Claims?

- Enough to illustrate all of the important activities, artifacts, and stakeholders
- At least one scenario for every stakeholder
- At least one or two claims from each scenario
- Multiple scenarios for complex tasks or stakeholder with multiple interactions

Requirement Specifications

- Problem scenarios and claims analysis describe current practices, not what new system should do.
- Therefore, they are not requirement specifications.
- But they imply requirements by describing problems and opportunities of the current situation.
- They are interleaved with design phases.
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Homework 1

• Identify stakeholders and write a problem scenario and a problem claim resulting from the scenario for the problem of an online grocery shopping service.

• Use as reference the garden.com case study in Usability Case Study website at http://ucs.ist.psu.edu

• Due at beginning of class on Thursday, will discuss and compare submissions.