DESIGN

Chapter 5

TOPICS:

• Usage scenarios
• Conceptual design
• Detailed screen design
• Customized style guide
• Team exercise on design

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INTRODUCTION TO DESIGN

• Revisiting the usability engineering life cycle
DESIGN

• Scenarios and conceptual design
  * Interaction objects, properties, relationships
  * Different views
  * Access and operations

• Screen design
  * Screen pictures
  * Labels and notes
  * Iteration
USAGE SCENARIOS

• Scenarios: stories about people and their work activities

• Work-oriented: focus on needs and concerns of users

  * What customers and users would rather talk about (than abstract models, specifications)

  * Facilitate agreement on requirements

• Also called design scenarios

• Where do scenarios come from?

  * Brainstorming

  * Ethnographic field studies

  * Participatory design

  * Reuse of similar designs
USAGE SCENARIOS

• Scenarios should capture and make obvious in design:

* Tasks and task threads
  - Common, representative
  - Mission critical
  - Error and recovery situations
USAGE SCENARIOS

• Scenarios should capture and make obvious in design:
  * User roles
  * User interaction objects/artifacts
  * User actions on objects
  * User planning, thoughts, and reactions to system
  * Environmental and work context

  Example: phone ringing and someone standing waiting to schedule another appt

• Scenarios should drive preparation of representative tasks for usability evaluation
EXAMPLE: SCENARIO CREATION

• **Goal:** To gain understanding of tasks, user roles, actions, objects

• **Activities:**

  * Select one good representative task for each user class.

  * Construct a usage scenario. Make it up as you go! Get detailed and refer to actions and objects. Try to capture deep design issues, such as:

    - Application objects, their properties, and relationships among them

    - How objects will be viewed conceptually (not necessarily details of appearance) in interaction design

    - How user will access those objects

    - Operations to be performed on the objects as a result of user tasks

    - How users will invoke and carry out those operations, including navigation
EXAMPLE: SCENARIO CREATION

• Example of usage scenario for Y2K Calendar:

  Sue, a patient with an existing appointment with Dr. Kevorkian for next Tuesday, calls secretary at the physician’s office. Sue is unable to keep that appointment, and needs to reschedule it. The secretary must locate the current appointment, find an open time slot that also is a time the patient is available, and re-enter patient information into the new time slot. While the secretary is doing this, another phone line is ringing and another patient is standing at the secretary’s desk wanting to make a follow-up appointment with Dr. Kevorkian.

Whatever for?

• Developers make screen designs for other tasks that are implied in the scenarios
EXAMPLE: CONCEPTUAL DESIGN

• **Goal:** To create a conceptual design from scenario

• **Activities:**
  * Tease out as much conceptual design information as possible, extrapolating from scenario where useful

  - Application *objects:* Appointments

  - Application object *properties:* Date, time, description, length (?), alarm or not

  - *Relationships:* Only one object so far

  * How objects are represented conceptually in user interaction design

  - By month, week, day, hour (time slot?)
EXAMPLE: CONCEPTUAL DESIGN

- Conceptual design (continued)

* Access methods: How users get at objects

* Accessing an existing appointment
  - By viewing, possibly preceded by search or navigation through views
    Got "search" from needs analysis rather than from scenario

* Invoking and carrying out operations on objects
 Eventually more of this kind of detail needs to get into scenarios

- Menu? Pull-down?

- Small, fixed number of commands

- Implication for interaction style: Buttons or icons?
EXAMPLE: CONCEPTUAL AND SCREEN DESIGNS

• **Goals:**
  * To develop together initial screen designs, from conceptual information, scenarios
  * To perform an early cognitive-based evaluation of conceptual and screen designs

• **Assumption:**
  * Generic desktop platform (not specific to Windows, Mac, etc.)

• **Activities:**
  * Draw pictures of screens, including menus, buttons, icons, application objects
  * Label objects with behavior as appropriate
  * Do intuitive evaluation of design

• **Deliverables:**
  * A few representative screen designs
EXAMPLE: CONCEPTUAL AND SCREEN DESIGNS

- Conceptual design might lead to something like:

  ![Diagram of conceptual calendar design](image)

- Cognitive/human factors analysis
  
  * Design doesn’t closely match user’s concept of a calendar

  Paper calendar not necessarily the criterion. Can be creative. But still has to "feel" like a calendar to user.
EXAMPLE: CONCEPTUAL AND SCREEN DESIGNS

* Can do better with direct manipulation

- Have all view containers (day, week, etc.) on desktop and select to be on top

- Eliminates explicit view control/command

- Add and modify by typing (editing) directly on text of appointment; eliminate modify button
EXAMPLE: ITERATE CONCEPTUAL AND SCREEN DESIGNS

• Design discussion (continued)

* Decisions about container objects
  - Default display: Several months overlapped, with current month on top
  - In higher level objects user can select lower level objects (view control)
  - Try to show at least an indication of each appointment in each view (page preview idea)

* Appointment editing
  - Keep it simple (it’s not a word processor)
  - Do only at appointment slot (hour) level
  - Try for direct manipulation to add, modify, delete
EXAMPLE: ITERATE SCREEN DESIGN

- Month level (current month is default)
EXAMPLE: ITERATE SCREEN DESIGN

• Dialogue box for searching

![Diagram of dialogue box for searching]

ENTER STRING TO SEARCH FOR:

SEARCH  CANCEL
EXAMPLE: ITERATE SCREEN DESIGN

• Day level

* Appointments saved when deselect

Dilbert: photo copy ->>>->
DOCUMENTING DESIGN: CUSTOM STYLE GUIDES

• Documented internally within an organization
• Very specifically worded
• Support re-use of design decisions, consistency
• Describes specific interaction styles, layouts, formats, wordings, button labels, etc.
• Examples
  * Format to use for date everywhere
  * Where to put the date/time field on each form
  * Color choices to represent relationships among fields
  * Consistent use of defaults on buttons in dialogue boxes
CUSTOM STYLE GUIDES

• Every project needs one

• Include sample representative screen sketches (e.g., main window) with as much detail as known

  P. 25-26 in book give suggested topics for style guide

• Will change/evolve/grow during iterative development, as usability studies are performed; should improve with age

• Important acceptance process to get “buy in”

  * Must be accepted by team members, not just author(s)

• Does not eliminate need for usability evaluation

  * Belief that style guides are all you need gives false sense of security
INTRODUCTION TO TEAM EXERCISES

• Goal:
  * To learn how to perform activities in the user interaction development process, \textit{not} to develop world's best Web application

• Activities:
  * Screen design
  * Usability specifications
  * Rapid prototyping
  * Formative evaluation

  => \textit{Report to class on all of above}
TEAM EXERCISE: SCENARIO AND SCREEN DESIGN

• Goal:
  * To develop as a team an initial design for the screen(s) and interaction objects for a specific Web application: *A public ticket buying kiosk*

• Assumptions:
  * Generic desktop/workstation platform
  * Can assume knowledge of GUIs and Web browsers in general
  * Don't assume knowledge of particular browser
  * Use our systems analysis and conceptual design as example for your application; i.e., keep it very simple

• Requirement:

• Make it different from Web applications of the same type that you already know
TEAM EXERCISE: SCENARIO AND SCREEN DESIGN

• Activities:

* Start with home page design to show broad functionality and user tasks.

* Draw pictures of screens, including menus, buttons, icons, application objects, links.

* Label functions and behavior as appropriate.

* Design one main task thread over a few more screens/pages. Don’t go into too much breadth for whole system.

• Cautions and hints:

* Don't get too involved in human factors issues (e.g., icon appearance or menu placement).

* For the sake of progress, keep things simple (e.g. from Y2K Calendar: don't worry about what to do when a calendar gets full).
TEAM EXERCISE: SCENARIO AND SCREEN DESIGN

* Cut corners where it doesn't matter (e.g. from Y2K Calendar: number of days in a month, what day each month starts on)

* Control time spent on arguing; remember you are learning the process, not building a marketable product

* If team members have different ideas for a feature, consider offering both via "preferences"

* Use yellow "stickies" to be flexible in design

• **Deliverables:**

>>> A few representative screen designs on paper; be sure to do home page.

• **Completed by:**

One hour