



Introduction to Scenario-Based Design

Parts of this presentation are
(C) 2005 Doug Bowman, Virginia Tech CS
with some additions and modifications by Robert Capra
Parts of this presentation are from the textbook, Usability
Engineering, by M.B. Rosson and J.M. Carroll. Academic
Press, 2002.



Scenarios in UE: A Simple Example

A problem scenario describing current situation:

Marissa was not satisfied with her class today on gravitation and planetary motion. She is not certain whether smaller planets always move faster or how a larger or denser sun would alter the possibilities for solar systems.

She stays after class to speak with Ms. Gould, but she isn't able to pose these questions clearly, so Ms. Gould suggests that she re-read the text and promises more discussion tomorrow.

A design scenario describing our initial vision:

Marissa , a 10th-grade physics student, is studying gravity and its role in planetary motion. She goes to the virtual science lab and navigates to the gravity room.

In the gravity room, she discovers two other students, Randy and David, already working with the Alternate Reality Kit, which allows students to alter various physical parameters (such as the universal gravitational constant) and then observe effects in a simulation world.


The three students, each of whom is from a different school in the county, discuss possible experiments by typing messages from their respective personal computers. Together they build and analyze several solar systems, eventually focusing on the question of how comets can disrupt otherwise stable systems.

They capture data from their experiments and display it with several visualization tools, then write a brief report of their experiments, sending it for comments to Don, another student in Marissa's class, and Mr. Arkins, Randy's physics teacher.



Elements of User Interaction Scenarios


- **Setting**
 - Situational details that motivate or explain goals, actions, and reactions of the actor(s)
 - Office within an accounting organization
- **Actors**
 - Human(s) interacting with the computer or other setting elements; personal characteristics relevant to the scenario
 - Accountant using a spreadsheet package for the first time



Elements of User Interaction Scenarios

- Task Goals
 - Effects on the situation that motivate actions carried out by actor(s)
 - Need to compare budget data with values questioned in memo
- Plans
 - Mental activity directed at converting a goal into a behavior
 - Opening the memo document will give access to memo information


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Elements of User Interaction Scenarios

- Evaluation
 - Mental activity directed at interpreting features of the situation
 - Dark borders indicate a window is active
- Actions
 - Observable behavior
 - Opening a memo document; resizing and repositioning windows

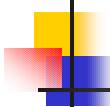
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Elements of User Interaction Scenarios

- Events
 - External actions or reactions produced by the computer or other features of the setting; some of these may be hidden to the actor(s) but important to the scenario
 - Window selection feedback; auditory or haptic feedback from keyboard or mouse; updated appearance of windows

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Scenarios and Use Case

- Use Cases
 - Enumeration of interactions between the user and system (general)
 - Full detail of all interactions
- Scenarios
 - Describe one use case thread (specific)
 - Functionality in context of use
 - More focus on design rationale and possible side-effects
- Use cases as a functional specification
- Scenarios as a way to consider usability aspects of the use case interactions

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Design Tradeoffs (UE, pp. 21-24)

- 1.3: Designers are motivated to make progress quickly, BUT premature decisions and commitment can lead to poor solutions.
- 1.4: Analyzing users' current tasks is essential in designing useful and usable systems, BUT new designs change what people can do and how they choose to do it.

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Design Tradeoffs (UE, pp. 21-24)

- 1.5: The rapidly evolving software market demands innovation and new features, BUT some functionality may actually undermine usability.
- 1.6: Technical design representations can increase the precision of communication, BUT may exclude participation by untrained team members.

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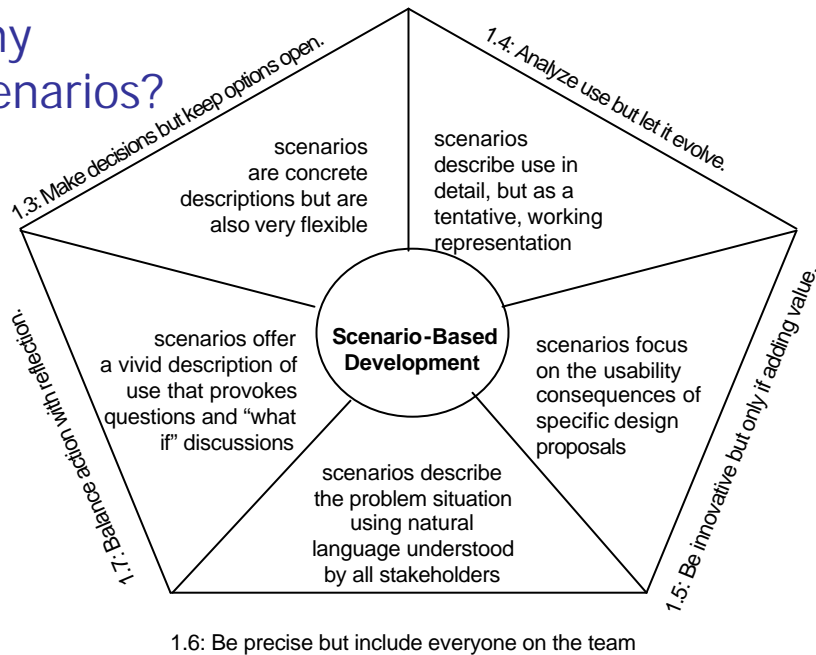


Design Tradeoffs (UE, pp. 21-24)

- 1.7: Software development provides concrete and rewarding evidence of progress, BUT can direct attention away from reflection and analysis.

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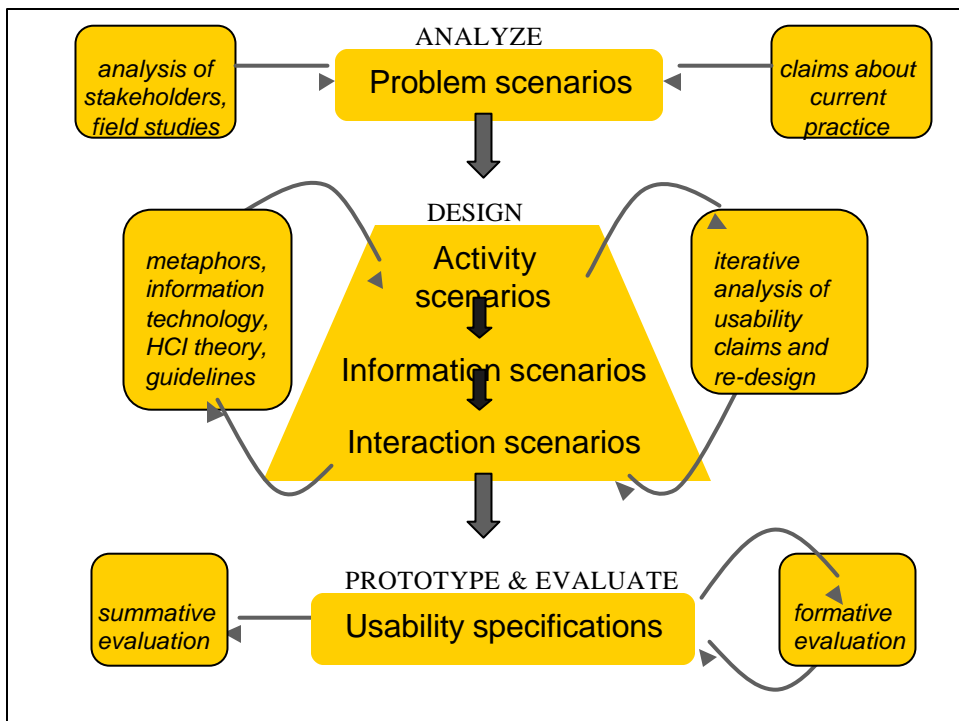
Why Scenarios?



Scenarios

- Scenarios are:
 - Good for “what-if” reasoning about alternatives
 - Lightweight
 - User-centered
- Scenarios are not:
 - A “cure-all” for a poor UE process

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Tradeoffs and SBD

- Design by definition is invention, creativity
 - Never just one approach, never one correct answer
 - BUT some answers are demonstrably better
- Interactive system design tremendously complex
 - Many interdependencies, eg schedule, cost, competitive advantage, local expertise, ...
 - Users and their needs are one large set of dependencies
- Tradeoffs are useful in analyzing these relations
 - Here, we focus on tradeoffs affecting *users' experiences*
 - Guides design thinking, also serves as design rationale

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Learning SBD - By Example

- Virtual science fair as a case study
 - Complement to real world physical science fairs
 - Goal is to extend interactions across time & space
 - Cumulative, illustrates activities at each phase
 - Detailed examples of the methods used in projects
 - Use as a model for group materials & analyses
 - Many details specific to this example
 - E.g., collaboration, community network, education
- Other case studies on the Web at <http://ucs.ist.psu.edu/>

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Scenarios in Usability Engineering

- Stories of people and their activities, sometimes includes computer use, always includes goals
- Typical elements of the story are:
 - A setting
 - One or more actors or agents
 - An orienting or motivating goal or objective
 - Mental activity, plans or evaluation of behavior
 - A “storyline” sequenced by actions and events
- Emphasis on use, i.e., people’s needs, expectations, actions, and reactions

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Scenarios and Claims

- Scenarios convey what actors are like, what forces influence their behavior
- Claims elaborate on scenarios, explaining how and why a feature has impacts
- Claims analysis documents why scenarios were written by isolating the most important features

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Claims (UE, pp. 73-4)

Repeated involvement by same students	+ increases competence + encourages community - hard to break in
Competition among students for prizes	+ rewards time/effort - increases frustration - hard to compare diversity