Chapter 5 – Performing User Interface Design

The Golden Rules

1. Place the user in control
2. Reduce the user's memory load
3. Make the interface consistent

1 Place the User in Control

- Define interaction modes in a way that does not force a user into unnecessary or undesired actions.
- Provide for flexible interaction.
- Allow user interaction to be interruptible and undoable.
- restructure interaction as skill levels advance and allow the interaction to be customized.
- Hide technical internals from the casual user.
- Design for direct interaction with objects that appear on the screen.

2.Reduce the User's Memory Load

- **Reduce demand on short-term memory.**
- **Establish meaningful defaults.**
- **Define shortcuts that are sensitive.**
- **The visual layout of the interface should be based on a real world symbol.**
- **Disclose information in a progressive fashion.**

3 Make the Interface Consistent

- **Allow the user to put the current task into a meaningful context.**
- **Maintain consistency across a family of applications.**
- **If past interactive models have created user expectations, do not make changes unless there is a compelling reason to do so.**

*User Interface Analysis and Design

- **User Interface Design Models**
- Four different models come into play when a user interface is to be analyzed and designed. "Prototyping"
- **User model**: a profile of all end users of the system
- Users can be categorized as:
  - No syntactic and little semantic knowledge of the system.
  - reasonable knowledge of the system.
  - *Knowledgeable, frequent users*: good syntactic and semantic knowledge of the system.

- **Design model**: a design realization of the user model that incorporates data, architectural, interface, and procedural representations of the software.
- **Mental model (system perception):** the user's mental image of what the interface is. The user's mental model shapes how the user perceives the interface and whether the UI meets the user's needs.
- **Implementation model**: the interface "look and feel of the interface" coupled with all supporting information (documentation) that describes interface syntax and semantics.

The Process

- The analysis and design process for UIs is iterative and can be represented using a spiral model.
- The user interface analysis and design process encompasses four distinct framework activities:
- User, task and environment analysis and modeling.
- Interface design
- Interface construction (implementation)
- Interface validation
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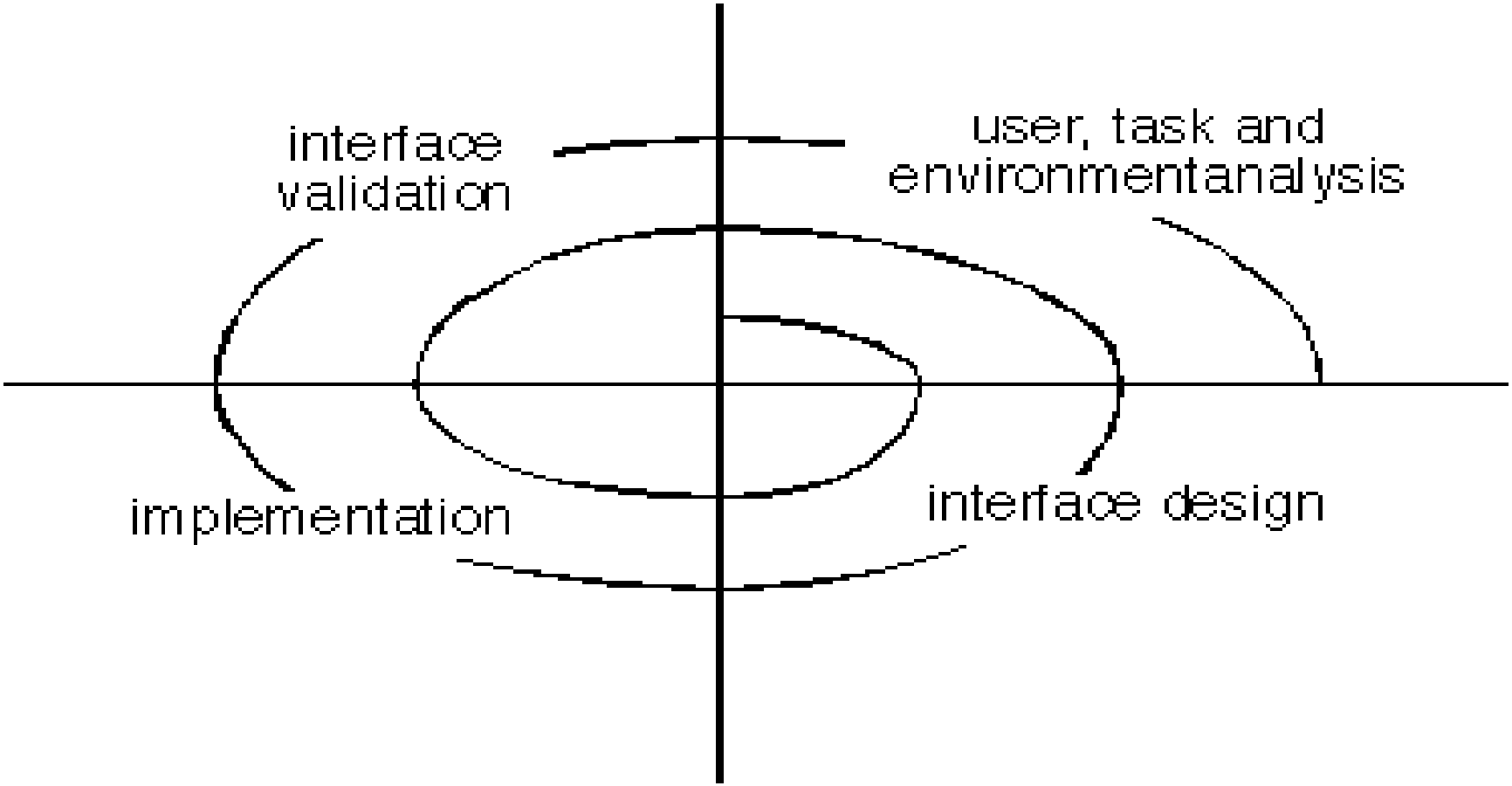
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Interface Analysis

- Interface design analysis means understanding:
- (1) The people (end-users) who will interact with the system through the interface;
- (2) The tasks that end-users must perform to do their work,
- (3) The content that is presented as part of the interface,
- (4) The environment in which these tasks will be conducted.

User Analysis

- User Interviews: The software team meets with the end-users to better understand their needs, motivations, work culture, and a myriad of other issues.
- Sales Input: Sales people meet with customers and users to help developers categorize users and better understand their requirements.
- Marketing Input: Market analysis can be invaluable in the definition of market segments while providing an understanding of how each segment might use the software in different ways.
- Support Input: Support staff talks with users on a daily basis, making them the most likely source of information on what works and what doesn't, and what they like and what they don't.

Task Analysis and Modeling

- The goal of task analysis is to answer the following questions:
- What work will the user perform in specific circumstances?
- What tasks and subtasks will be performed as the user does the work?
- What specific problem domain objects will the user manipulate as work is performed?
- What is the sequence of work tasks—the workflow?
- What is the hierarchy of tasks?

*Interface Design Steps

- 1.Using information developed during interface analysis, define interface objects and actions (operations).
- 2.Define **events** (user actions) that will cause the state of the user interface to change. Model this behavior.
- 3.represent each interface state as it will actually look to the end-user.
- 4.Indicate how the user interprets the state of the system from information provided through the interface.

Interface Design Patterns

- Patterns are available for
  - The complete UI
  - Page layout
  - Forms and input
  - Tables
  - Direct data manipulation
  - Navigation
  - Searching

Design Issues

- **Response time**:
- **Help facilities**: Help must be available for all system functions. Include help menus, print documents.
- **Error handling**:
- **Menu and command labeling**: menu options should have corresponding commands.
- **Internationalization**: The Unicode standard has been developed to address the scary challenge of managing dozens of natural languages with hundred of characters and symbols.

*Design Evaluation

- Two interface design evaluation techniques are mentioned in this part, usability **questionnaires** and **usability testing.**