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Course : COMP6176 / Human - Computer Interaction

Year : 2019

REVIEW II

SESSION 13

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LEARNING OUTCOMES

- LO 3: Choose the data gathering technique from user to develop successful interaction design
- LO 4: Design the user requirements with interaction styles
- LO 5: Evaluate the user interfaces of interactive software

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OUTLINE

- Discovering Requirements
- Data Analysis, Interpretation, and Presentation
- Design, Prototyping and Construction
- Introducing Evaluation
- Advanced Evaluation

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DISCOVERING REQUIREMENTS

- Different kinds of Requirements :

1. Functional Requirements :

   capture what the product should do.

2. Data Requirements :

   capture the type, volatility, size/amount, persistence, accuracy, and value of the required data.

3. Environmental Requirements :

   refer to the circumstances in which the interactive product will operate.

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DISCOVERING REQUIREMENTS

Data Gathering Guidelines for Requirements :

1. Focus on identifying the stakeholders' needs
2. Involve all the stakeholder groups
3. Involving more than one representative from each stakeholder group especially if the group is large.
4. Support the data gathering sessions with suitable props, such as task descriptions and prototypes if available.

DISCOVERING REQUIREMENTS

- There are three of common description types :
  - Scenarios
  - Use cases
  - Essential user cases (task cases)

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DATA ANALYSIS, INTERPRETATION, AND PRESENTATION

- Quantitative data :
  - Data that is in the form of numbers, or that can easily be translated into numbers.
  - Example : the number of years' experience the interviewees have
- Qualitative data :
  - It is not expressed in numerical terms.
  - Example : quote from interviewees, vignettes of activity, and images.

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DATA ANALYSIS, INTERPRETATION, AND PRESENTATION

- There are three simple types of qualitative analysis :
  - Identifying recurring patterns or themes
  - Categorizing data
  - Analyzing critical incidents
- **Tools** to support the organization and manipulation of data include :
  - facilities for categorization
  - Theme-based analysis
  - Quantitative analysis

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DESIGN, PROTOTYPING AND CONSTRUCTION

- There are two types of design :
  - Conceptual
  - Physical
- For users to evaluate the design of an interactive product effectively, designers must prototype their ideas.
- There are two distinct circumstances for design :
  - Starting from the scratch
  - Modifying an existing product.

DESIGN, PROTOTYPING AND CONSTRUCTION

- There are two prototypes :
  - Low-Fidelity Prototypes
    - Sketching
    - Prototyping with index card
    - Wizard of Oz
  - High-Fidelity Prototypes

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DESIGN, PROTOTYPING AND CONSTRUCTION

- There are different kinds of support available for design :
  1. Design Patterns for interaction design
     - Example : Pattern Languages of Programming, www. ui.patterns.com
  2. Open source systems and components
     - Example : sourceforge.net
  3. Tools and Environments
     - Example : many types of automated tools for support creative thinking, design sketching, simulation, video capture, library search. Development resource website e.g. iPhone app development.

INTRODUCING EVALUATION

- These are three classification of evaluation depending on the setting, user involvement and level of control :
  1. Controlled settings involving users (ex : laboratory and living labs)
  2. Natural settings involving users (ex : on line communities and public places)
  3. Any setting not involving users (ex : consultants, researchers critique)

INTRODUCING EVALUATION

DECIDE : A Framework to Guide Evaluation

- The DECIDE framework provides a checklist to help plan evaluation studies and remind about the issues that need to think about.
- There are the following six items :
  1. **D**etermine the goals
  2. **E**xplore the questions
  3. **C**hoose the evaluation methods
  4. **I**dentify the practical issue
  5. **D**ecide how to deal with the ethical issues
  6. **E**valuate, analyze, interpret, and present the data

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ADVANCED EVALUATION

- Usability Testing :
  - The usability of products has traditionally been tested in controlled laboratory settings.
  - It has been commonly used to evaluate desktop applications, such as websites, word processors, and search tools.
  - As mentioned in Session 11, a combination of methods is often used to collect data. The data includes video recording of the users including facial expressions and keystrokes and mouse movements that are logged. In addition, a user satisfaction questionnaire is used to find out how users actually feel about using the product. Also structured or semi-structured interviews may conducted with users to collect additional information.
  - Example of tasks that are given to users include searching for information, reading different typefaces and navigating through different menus.
  - There are two main performance measures used : the time it takes typical user to complete a task and the number of errors that participants make.

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ADVANCED EVALUATION

Conducting Experiments

- In order to test a hypothesis ,need experimental design.
- **A concern in Experimental Design is** to determine which participants to use for which conditions in an experiment.
- There are three kind of design based on participant:
  - **Different-participant design** : a single group of participants is allocated randomly to each of the experimental conditions.
  - **Same-participant design** : all participants perform in all conditions so only half the number of participants is needed.
  - **Matched-participant design** : participants are matched in pairs based on certain user characteristics such as expertise and gender.

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ADVANCED EVALUATION

Field Studies

- Field studies are evaluation studies that are carried out in natural settings
- The aim to discover how people interact with technology in the real world.
- Field studies that involve the deployment of prototypes or technologies in natural settings also be referred to as ‘ in the wild’.
- The field studies can range in time from just a few minutes to a period of several months or even years.
- Data is collected primarily by observing and interviewing people and collecting video, audio, and field notes to record what occurs in the chosen setting.

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ADVANCED EVALUATION

Inspection

- Heuristic Evaluations
- Cognitive Walkthroughs & Pluralistic Walkthrough

Analytics

- Analytics is a method for evaluating user traffic through a system.
- When used to examine traffic on a website or part of a website , known as web analytics.

ADVANCED EVALUATION

Predictive Models

- The GOMS Model
- The KLM Model
- Fitts' Law

- The GOMS, KLM Model and Fitts' Law can be used to predict expert, error-free performance for certain kinds of tasks.

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REFERENCES

- Interaction Design 5th Edition 2019, Chapter 9, 11, 12, 14-16.