

Module_9

Phases of User Interface Design

CS 4712 UIE

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Introduction and Background

- **User interface design has many steps to create the perfect product.**
- The main goal behind user interface design is defining a goal of
 - how the product will be used and
 - whom the product is intended for.
- Business functions will introduce the idea of activities that carry out part of a function of an organization
- Some of these steps include
 1. **Business Functions,**
 2. **Collection & Analysis,**
 3. **Conceptual Model Development,**
 4. **Guidelines For Screen Design,**
 5. **Evaluation and Usability Test**
 6. **Prototype Design**

Introduction and Background Cont...

- Most of the time products are created for a company to distribute to users or simply to help run a business more efficiently
- **3 Main Stages:**
 - User Research
 - Design and Prototyping
 - Evaluation
- **Goals**
 - Give the perfect user experience
 - Making a product cost effective
 - Making a product as reusable as possible

User Design Diagram

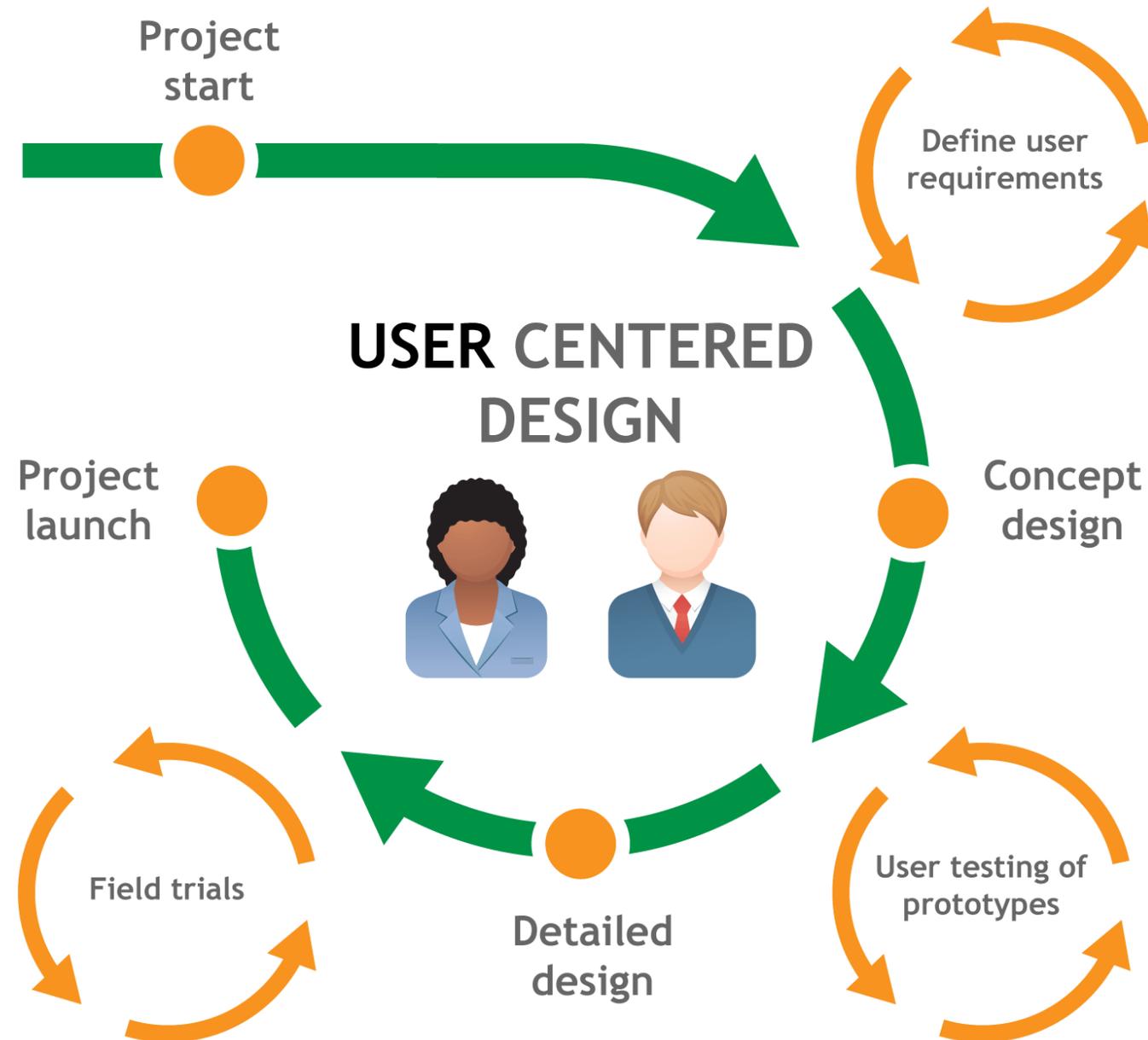


Chart by: Hank Grebe

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1. Business Functions

- Definition:
 - Activities carried out by an enterprise; they can be divided into core functions and support functions (EuroStat).
 - **Business function** will include a cycle of accounting, marketing, human resource and production. Most businesses will focus on marketing as the average consumer is subjected to advertisements throughout the day
- Two main functions:
 - Planning
 - Organizing

Conceptual Model

- What is a conceptual model?:
 - It is an outline of what people can do with the product
 - How people interact with the product
- Purpose of a conceptual model?:
 - One of the most major milestones to reach as learning how to develop a product for someone else is difficult

2. Collection and Analysis

- A key step in UI design is determining the requirements are for a project.
- A requirement is typically dispositioned across multiple parties before obtaining business approval, as building the end-product requires overhead expenses (software development time).
 - *For example, a company may want a website built with specific requirements. Some requirements for a website may be, what colors the website incorporates, how easy it is to navigate the site the overall page layout and how to advertise the product in a way that makes users want to buy it. There are even several methodologies used for requirements.*
- The two types of gathered usability requirements are
 - 1) qualitative and 2) quantitative.

Usability Requirements Cont.

- Quantitative Requirements Definition:
 - Things that can be measured
 - Things that can be observed
- Quantitative Requirements Examples
 - Performance
 - Data collection

2. Collection and Analysis Cont ...

- Use Cases and Use Scenarios are assigned to each requirement to provide further justification/clarification to the requirement.
- For the above requirement example, a general Use Case could be, “Analyze Financial Data”, and a User Scenario could be, “Financial Analyst measures financial performance to prepare for monthly budgetary review.”

3. Conceptual Model Development

- Conceptual design is the next step to requirements gathering and analysis. Once an appropriate and thorough list of requirements has been made, constructing conceptual designs from said requirements helps begin the process of creating plans, modals, and visuals.
- “A conceptual model is an outline of what people can do with a product and what concepts are needed to understand how to interact with it” (Preece, 2015, p. 397).

3. Conceptual Model Development Cont...

- In order to be most efficient in the conceptual model development phase of the design process, it's crucial to fully understand **what conceptual models are and what they are not**.
- *First*, let's establish what they are. "Concept models are diagrams that describe the relationships between different abstract ideas. They are also known as 'concept maps' or 'affinity diagrams'.
- This is your planning phase where you get to visualize how all of the bits and pieces of the interface work together. Being as thorough as possible will help you down the road by bringing down the chances of redesign and redevelopment because you created something before realizing that it needs to work a different way.

3. Conceptual Model Development Cont...

- *Second*, understand the purpose and value of this phase of the design process so that you do not give yourself more work than necessary and so you do not start overlapping with another phase of the process. First and foremost, “The conceptual model of an interactive system is not the user interface.
- *Third*, in compliment to the last point, are simply tools to help to frame the design problem, to facilitate your own creative process” (Lapierre, 2017).
 - *This actually simplifies this phase of the design process in that it relieves the worry of having to present the conceptual model to the client. It should be a piece that helps you and you alone.*



4. Guidelines and Screen Design

- Screen design is incredibly important to the interaction between a user and the product. If the user and the product do not interact well, then the user will most likely not use the product.
- There are guidelines to follow when design a product. Some of these guidelines include:
 1. user control and freedom,
 2. consistency,
 3. error prevention,
 4. flexibility,
 5. aesthetics,
 6. help buttons.

4. Guidelines and Screen Design Cont...

- Why are these guidelines important?
 - An import aspect for the interaction between the *user* and *product*
- There are some things to keep in mind when coming up with guidelines and screens designs, they're going to be broken down into two categories, Do's and Don'ts. For the Do's, when coming with guidelines and screen design, the designer should provide similar experiences regardless of the device, this means no matter if the user/consumer is using a tablet, a desktop or a phone, they are going to get the same experience across all the platforms.



Menus and Navigation Schemes

- Why should a developer implement these schemes?
 - Helps allow users to move around the product
 - Helps allow users to locate a particular part of the product quickly
 - Users depend on these tools
- What type should be implemented?
 - Users are more likely to click links as it is quicker
 - Menu bar

Menus and Navigation Schemes Cont.

- Goals:
 - Prioritizing consistency
 - Clear interaction
 - Avoiding deep navigation
- Consistency :
 - Allows user to make sense of product
- Clear Interaction :
 - Informing users of which items are interactive
- Avoiding deep navigation :
 - Means to NOT allow users to access the deepest nested page/window within one or two clicks

5. Evaluations and Usability Test

- UI evaluation and usability testing are vital in finalizing a UI design. When the implementation of a project is completed, the next step and one that gets overlooked at times, is the evaluation and usability testing phase.
- Why is evaluations and usability testing needed?
 - Vital in finalizing user interface design
 - This is done after the implementation of a project
 - A designer cannot predicate the outcome of how a user or customer would interact with a product
 - A third party tester is guaranteed to make a product better

5. Evaluations and Usability Test Cont.

- Every method of evaluation and usability testing has its advantages and disadvantages depending on the nature of the UI design itself.
- Common evaluation method:
 - Experiential evaluation
- What is heuristic evaluation:
 - Uncovers the usability errors in a design
 - Heuristic evaluation is conducted by a small team of designer
 - It is an inexpensive way and quick to conduct

5. Evaluations and Usability Test Cont.

- **Four steps for success:**

- **Creating a test plan** - Creating a test plan consist of creating a scope, recruiting the users that will be testing the product, identifying the objective and establishing metrics.
- **Facilitating the test** - the second step, is done by observing the users as they navigate the product without leading them with the intention to reach the desired goal, the test must be as real-life scenario as possible, recognize if there are any problems users come across and coming up with quick solutions

5. Evaluations and Usability Test Cont.

- **Analyze data** - The third step for a successful evaluation and usability test is analyzing the data collected from the testing, this data comes from the numbers gathered from the established metrics calculated while implementing the test plan phase of this 4-step process. Once all the information is gathered, it is time to look for patterns and trends that may arise, problems may emerge, and solutions need to be made.
- **Create a report** - The last step is to create test reports, they are to be made every time a usability testing is completed. These reports must be kept together and consist of background summaries, explaining what was tested, and the desired goal for the session.
- The reports are to also have descriptions of how the tests were conducted, describing the scenarios and what metrics were established.



5. Evaluations and Usability Test Cont.

- **How to facilitate the test?:**

- ✓ Observe the users as they use the product without leading them
- ✓ The test should not have any influence from the designer
- ✓ Must be as much of a real-life experience as possible
- ✓ Observing if the user solving any issues they may come across
- ✓ Lastly, have an interview with users to determine what would make the product better

5. Evaluations and Usability Test Cont.

- How to analyze the data?:
 - Numbers gathered from the established metrics calculated from the process
 - Observe patterns or trends in the data
 - If problems emerge then a solution must be made

5. Evaluations and Usability Test Cont.

- Creating a test report:
 - To be made every time a usability test is completed
 - Must be kept together and consistent of the summaries
 - Explaining what was test
 - Explaining desired goal of the test

6. Prototype Design and Iterations

- Prototype definition:
 - Preliminary model of a project from which other forms are developed or copied
- Prototype examples:
 - Sketches
 - PowerPoint
 - Cardboard mock-ups
 - Storyboard
 - Software with limited functionality

6. Prototype Design and Iterations Cont.

- Why prototype?:
 - Built to help answer questions
 - Give more design ideas
 - Allows consumers to interact with the product
 - Much easier to see the product than to visualize it
 - Helps give feedbacks from users
- Two types of prototypes?:
 - Low-fidelity prototype
 - High-fidelity prototype

Low-fidelity Prototype

- Definition of low-fidelity:
 - Nothing like the final version of the product
 - Quick to make
 - Cheap to make
 - Can be altered easily
 - Used for exploration only
- Types of low-fidelity:
 - Sketches
 - Storyboard
 - Card prototypes

High-fidelity Prototype

- Definition of high-fidelity:
 - May be included in the final version of product
 - Looks almost exactly like the final product version
 - More expensive to make
 - Helps improve any errors in the product by interacting with the product
- Types of high-fidelity:
 - Program developed
 - Interactive product
 - Card prototypes

Summary

- User interface design is incredibly important to the success of a design process
- Business functions are key components to for planning and organizing
- Evaluations and usability testing is another important step to making sure any errors are correct
- Prototyping in design helps create the most optimal product to give a user

References

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