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Miller, Robert. "Lecture 6: User-Centered Design." MITOpenCourseware. Massachusetts Institute of Technology, 2011. Web. 8 Dec. 2016.

Summary:

User Interface (UI) design is the engineering of the design of the interfaces of software and machines like home appliances, mobile devices, and other electronic devices and interfaces. The specialization focuses on maximizing user usability and perfecting the user's' experience. When designing an UI there are a few models of the design process that can be followed like the waterfall model or the iterative model. User Centered design processes often focus on the interaction between the customer/user and the software.

Analysis:

User Interface (UI) design is the specialization of engineering that focuses on maximizing user usability. There are different types of methods that are used when designing a User Interface. A commonly used design process is the waterfall method, often used for software engineering problems. Another method is the iterative method, a repetitive form of the waterfall method. Each of these methods have their own benefits and downsides and both waterfall and iterative can be used when designing User Interfaces.

The waterfall method is one of the earliest "carefully-articulated" design processes in software engineering, it breaks down the process of developing software into a sequence of steps. Each step results in a concrete result that leads into the next step and is imperative to complete the next step effectively. At the end of every step there is a validation phase where the work completed is validated according to the requirements provided, this bring a unit-tested approach to software development. The biggest accomplishment of this process is the implementation of the "think first, code second" principle, by requiring developers to design

prior to coding/implementation they are forced to "think first, code second." However, even though the waterfall method validates the work at the end of every step, some problems are missed until later causing implicit feedback between the different steps. When designing UI there are many unforeseen issues that may occur including changes or misinterpretation of the requirements. Due to the high chance of unforeseen changes the waterfall method is highly discouraged for complex UI designs, and only recommended for simple UI projects to maximize efficiency.

Another method that is used for user interface design is the Iterative method. The iterative method a repressive form of the waterfall method that goes through "Design, Implement, and Evaluate" in a cycle until the design is complete. At first the iterative design process may seem like the worst case waterfall process due to the number of repetitions involved with implementing this process. But this design process is a way to manage inherent risk in designing a UI. However, to solve this issue of the repetitions and maximize efficiency the iterative method has an alternative form, the spiral design process. The spiral design process builds room for several iterations, and makes the primary iteration as cheap as possible. For example, when designing a UI instead of checking with the customer after designing and implementing a solution, the developer should sketch multiple solutions on paper then implement the customer's choice.

Both the waterfall method and the iterative method have multiple steps and their own approach to designing a UI. The waterfall method implements the "think first, code second" principle, but can be risky when working on User Interfaces. The iterative method has cheap prototypes and follows a parallel design resulting in the most accurate and mature prototype leading the fewer changes when a UI is implemented. Regardless of the approach used, UI design is risky: customers are fickle and change their mind often; and developers frequently misinterpret what customers want. Two common methods of UI design are the waterfall and iterative(spiral) methods. Each of these methods have their pros and cons. However, with the riskiness and volatile nature of UI design, the Iterative design would be the best choice in order to maximize efficiency and usability.