User-Centered Design: The Key To Successful Software Modernization

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What is User-Centered Design?

User-Centered Design (UCD) is an iterative design process that focuses on the users and their needs throughout each phase of the design process. UCD processes can take a variety of forms depending on the needs of the customer, designer, or development methodology. However, all UCD processes include a short feedback cycle with users and stakeholders, which is represented in **Figure 1**.

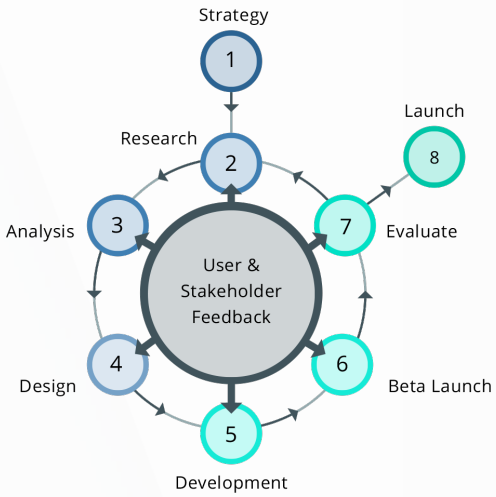

Figure 1. A representation of a UCD process. UCD processes an be tailored based on the needs of the customer, designer, or development methodology.

How Does UCD Enhance Modern Software Development?

Best practices of UCD include a short feedback cycle with both users and stakeholders to decrease the number of assumptions incorporated into all relevant design decisions. There are many design activities that aim to help the development team gain a comprehensive understanding of the problem space, the user's needs and widespread painpoints, the business goals of the stakeholders, and fielding possible design solutions.

What are the Main Goals of UCD?

User-Centered Design ensures that the solution fits the needs of the users and aims to create an impactful solution that addresses widespread pain-points. User-Centered Design aligns important information and design solutions with user needs and business goals to provide an effective and impactful user experience (UX), depicted in **Figure 2**. This alignment produces a modern and effective solution that is intuitive to use and accelerates user adoption.

User & Stakeholder Interviews: Interviews are conducted to gain insights on user pain-points, various workflows of different users, persona information (i.e., user group archetypes), and how users will interact with the product.

User Interface Design: Wireframes and Mock-ups are created to guide the development team through design implementation. These design deliverables ensure design consistency, enhanced usability, and 508 compliance.

User Research: User research is done to gain an intimate understanding of operations and mission. User Research is an ongoing activity examining key workflows, previous attempts to solve problems, and current workarounds.

Rapid Prototyping: INCATech quickly produces of a variety of prototypes to explore possible solution options. Prototypes are created to quickly test concepts and determine the right solution without expensive code development.

Usability Testing: Users engage with prototypes for analyzing the effectiveness of designs. User testing provides data to fine-tune user experience to ensure it fits the user/organization needs decreasing the need for training.

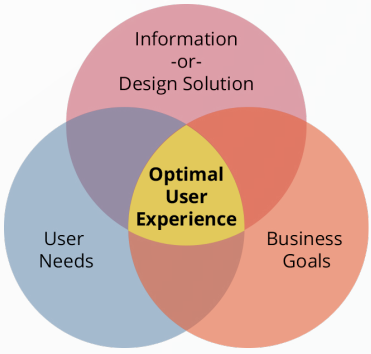

Figure 2. User-Centered Design aligns important information and/or design solutions with business goals and user needs to provide an effective and impactful user experience.

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How Does UCD Mitigate Risk to Ensure Mission Success?

The UCD process mitigates costly risk of developing software code before designs are clearly validated. INCATech iterates on short feedback cycles to ensure meeting user needs by interviewing users and stakeholders to eliminate any invalid assumptions about design. **Figure 3** shows how Agile software development in conjunction with UCD zeroes out the risk of unvalidated efforts in short increments when compared to traditional methodologies.

What Types of Risk Are Mitigated with the Incorporation of UCD?

The most pertinent mitigated risks to highlight includes:

- The software does not meet the requirements of the users nor the organization.
- The users do not adopt the new system and corresponding workflows.
- The software is difficult to navi gate and not user-friendly.
- Mission failure due to insufficient software product development and waste of funding.

UCD & Agile Methodologies Decreases Risk Over Time

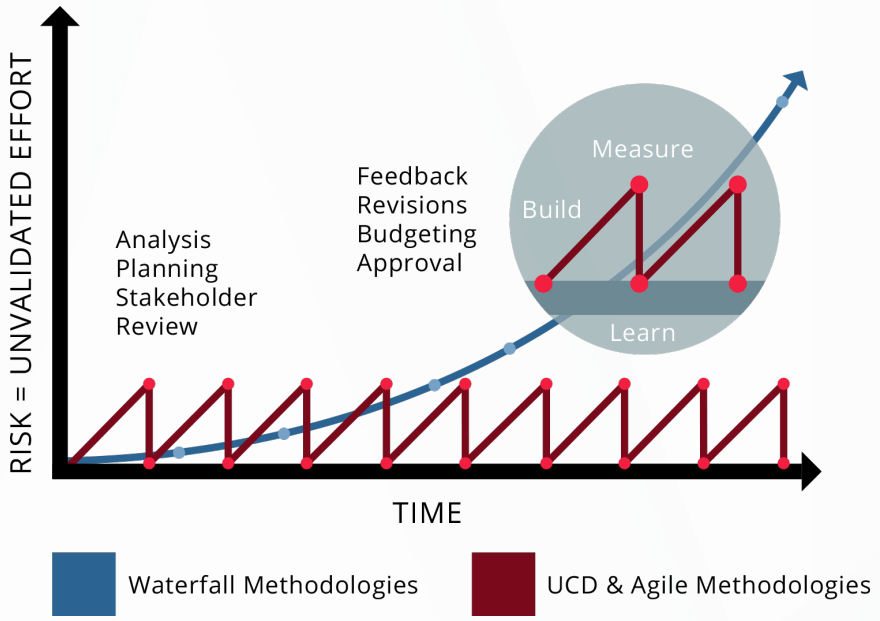

Figure 3. How UCD and Agile Methodologies can reduce risk over time over the course of a project in comparison to Waterfall Methodologies that gain risk over time during the lifecycle of the project.

Why Is It Important to Incorporate UCD?

- UCD promotes a common vision between stake holders and the software development team.
- UCD ensures that the right software solution is implemented to solve real problems that users care about.
- UCD is cost-effective because it utilizes testing methodologies that do not require expensive development time
- UCD ensures that software solutions are user-friendly and intuitive.
- UCD ensures that software solutions are 508 compliant and accessible to users with varying accessibility needs.
- UCD mitigates many risks to the project.

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