Usability and Its Impact on Risks

Description

How we design and implement systems and processes can play a large role in determining their usability. Poor usability can contribute to avoidable risks. This post addresses the need to employ risk identification and mitigation techniques in the course of designing things in order to minimize the probability of negative outcomes.

What is Usability?

ISO defines usability as â€œThe extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use.â€• It is most commonly associated with the design of websites and applications but it is equally applicable to all sorts of products and business processes. A common framework for assessing usability includes:

- **Learnability**â€”How easy is it for users to figure out how to perform the tasks necessary to achieve their goals? Design consistency and attention to creating easy-to-follow functional paths contribute to learnability.
- **Efficiency**â€”Have all unnecessary steps to achieving goals been eliminated? In website design, eliminating unnecessary clicks and page downloads is the holy grail of efficiency. The proliferation of â€˜one-clickâ€™ buying is testament to usersâ€™ short attention spans, impulsivity and the need for efficiency. (How many prospective job seekers abandon an application process when faced with the chore of reiterating all of the information on their resume into a series of forms on the employerâ€™s website?)
- **Memorability**â€”Having learned how to navigate an application or website once, how easy is it to remember how to do it again the next time? Forcing users to re-learn how to use an application or website creates fatigue and aversion. Memorability and learnability are positively correlated; systems that are difficult to learn are also difficult to remember.
- **Error Avoidance**â€”Is the application or website designed to help users avoid making bad choices or errors? There is an increasing focus among prominent Computer Science departments on exactly this subjectâ€”how to design interfaces that guide users in ways that help them to maintain the security of their personal information, as well as how to meet the other usability criteria.
- **Satisfaction**â€”Just as we appreciate the feel and function of a finely designed and made tool, we also appreciate interacting with a well-designed application interface, one that enables us to accomplish something with minimal effort, which we can remember how to work with from one use to the next and which leads us away from making stupid mistakes.

The Implications of Usability

So, websites, applications, business processes and products with good usability intuitively feel â€˜rightâ€™ in use, imbue users with a sense of satisfaction, make it easy to accomplish goals and help avoid making mistakes or bad choices. What about those with poor usability?

Poor usability leads to exactly the opposite results, as measured against each of the criteria identified, above. Websites, applications, business processes and products with poor usability are hard to learn, easy to forget, awkward to use, promote mistakes and errors and create little satisfaction among users. More importantly, they create risks that users will fail to achieve the goals that they are supposed to support and, thereby, create negative consequences; for instance:

- recruiting websites that frustrate job applicants to the point at which they abandon the application process, costing employers access to potentially well-qualified individuals,
- Department of Motor Vehicles process designs in which each function has a separate line, requiring users to re-queue for each step in the workflow in order to complete a task,
- uncoordinated warning systems in military aircraft that resulted in Viet Nam-era pilots disabling most alerts so that they could focus on flying their planes and reacting to threats instead of responding to alarms and
- aviation interfaces in commercial aircraft that may have contributed to a number of fatal accidents because pilots failed to register that autopilot systems had become disengaged or that the planes were descending to dangerous altitudes.

What to Do?

Certainly a comprehensive prescription is beyond the scope of this post. However, many of the same ideas about risk management that the PMI promotes are equally applicable to planning usability into design and implementation:

- **Thorough Use-Case analysis**â€”Understanding all the ways something might be used is the key to designing it for optimal usability. No one wants to build things that are frustrating or which obstruct discharge of tasks or achievement of goals. Comprehensive use-case analysis and documentation of goals to be served and workflows or navigation paths that will be enabled to meet them are crucial to good usability design.
- **Behavior Modeling**â€”This is a simulation technique used by usability specialists to understand how users will interact with a system, product or process. Often, behavior modeling reveals that users follow paths that are quite different from those anticipated by designers.
- **Risk Modeling and Design Revisionsâ€”**This is where the attention to usability is most highly focused. By identifying what can go wrong at each step in every use-case and then assessing the impact of the error, designers can focus on revising the design to help avoid errors and their negative consequences. All of the qualitative and quantitative techniques that project managers use are relevant here. Some design flaws are merely annoying, such as having to reload a web page unnecessarily, while others may be truly catastrophic, such as ignoring an avionics alert. All must be identified and addressed in order to mitigate design risks.

In the end, usability design is an important factor in overall risk-avoidance, mitigation and management. It applies just as much to business processes and physical products as it does to application systems and websites. When designing complex processes, the automation that supports them or commercial or consumer products, itâ€™s critical to develop a thorough understanding of how intended users will interact with them, where opportunities for error or misuse exist and revise the design to minimize the probability of such occurrences.

Usability is a highly evolved discipline and there are professional practitioners who should be consulted when it seems as if the scope of the design task has exceeded the experience or expertise of

designers. The risks avoided may be quite considerable.

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Author
howardmwiener