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Where are You in Usability?

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Abstract

As a QA professional, how are you contributing to the usability of your product? The usability, or user experience, of a product has steadily gained in importance over the last decade. Once, only a few people knew the phrase, but now the term usability is readily bandied about.

With a solid understanding of a good UI design process, you can effectively collaborate with the UI team throughout the development life cycle. In addition, you are in the unique position to overcome the following barriers to usability: (1) Production code is not implemented per the UI design, (2) the UI design cannot be implemented as specified, causing the developer to change the design “on the fly,” or (3) the company is not operating with the above UI model.

Biography

Kelcie Anderson is a Project Management Professional with a background in program management and usability engineering management. She spent 9 years in the User Experience group at Tektronix. She is currently streamlining the product development process at Acumed.

We've all experienced firsthand products with poor usability. Like the web application that displays a 16 digit code and then two clicks later asks you to enter the full number. What, were you expected to memorize it? Or the new software upgrade that crashes when you try to open a file created with the previous software version. Every time you feel the pain of a usability issue in your own life, you vow to do everything you can to ensure your own company's products are user friendly.

Usability and user interface (UI) design have gained importance to both customers and companies in the last decade. Fierce competition has created an environment where it is no longer good enough for a product to just work. Winning products work well for the customer, supporting their actual tasks and helping them accomplish their goals. This trend is good news for quality analysis (QA) professionals because good QA experts are characterized by sensitivity to the customer. The goal of QA is to ensure the customer receives a quality product that works well for them.

QA is well positioned to catch usability errors before the product is released. But it is difficult to test your way to a good user interface design. QA professionals can play a more influential role in the usability of the product by influencing the design throughout the design cycle. To increase your contribution to usability, you must understand the process for creating a good user interface design, how QA can contribute to the process, and how to recognize barriers to UI implementation that you are uniquely qualified to overcome.

Process for User Interface Design

Good user interface design is dependent on three key elements: customer-based requirements, iterative design, and iterative testing. To start, the UI team needs to understand the real customer requirements. These requirements are far more than a list of features. Customer-based requirements require a deep understanding of the user tasks and goals that the product is meant to support. The UI team puts themselves in the customers' shoes to understand the motivations, pressures, workflow, and pain points that customers experience. This in-depth knowledge provides the basis of customer problems the product can solve. Then, and only then, the customer problems are converted into a set of technical requirements.

Take, for example, a program I worked on at Tektronix. My team was in charge of defining and designing a new voltage probe to work with the new generation of oscilloscopes. The probe was capable of several technical features, including bandwidth limiting for increased resolution. Instead of designing a button or user interface to support the probe bandwidth limits, the UI team first conducted interviews with real customers. The team quickly realized that the customer didn't require a probe bandwidth limit feature. The customer was looking for options to limit the bandwidth of the system—both probe and oscilloscope together. By fully understanding the customer requirement, the UI team shifted to thinking about bandwidth limiting as a system instead of a specific probe feature.

With a solid set of requirements that are based in real customer needs, the UI team then proceeds with the design. The first design step is to produce use cases and usability goals—concrete tools

that narrate the customer task and guide the design. With the vivid, realistic detail of the requirements and use cases at hand, the user interface takes shape. But UI design, just like most good design, is an iterative process. The UI team does rapid design, test, and design modification to complete the full user interface.

The testing tool of choice for rapid UI design is usability testing. This form of testing involves recruiting real end customers to sit in front of a design prototype and complete various realistic tasks while being observed by the UI team. This feedback is immediately incorporated into the UI design.

Because UI design requires many different skill sets, the team is typically comprised of several individuals with different roles. A good UI design team includes a usability engineer, marketing representative, software architect (or developer), and graphic designer. These individuals bring the following necessary skills to the UI design:

- Usability engineer: customer interviewing and needs assessment, UI design, usability testing
- Marketing representative: customer interviewing, market size analysis, customer recruiting
- Software architect: technical feasibility, technical innovations
- Graphic designer: UI design

The UI design team typically finishes the design and turns it over to a software team for implementation and to QA professionals for production code test. You have undoubtedly noticed that QA is not included in the UI design team. But QA professionals have a crucial role to play in the successful implementation of a usable product.

QA Role in Usability

You may already be using a tool for production testing that is invaluable at the beginning of the design process: workflow testing¹. Workflow testing relies on solid task analysis and realistic use cases. The UI design team will be creating these tools as part of the design process. As the QA expert, you can coordinate with the UI design team and utilize the same workflow they used for your own testing. Better yet, you can contribute your expertise to create, review, and revise workflow scenarios with the UI design team at the beginning of the process.

An example of this beneficial collaboration between the UI team and QA early in the design phase comes from a colleague at General Electric. The UI team was creating a new wizard to aid doctors in filling out forms. No one knew the ins and outs of the existing forms better than the QA professional. The UI team asked for a review of their use cases and design requirements. The QA professional spotted a big hole: the UI team had not included a use case for doctors who want to skip around to various sections of the form rather than fill it out in a linear fashion. Through her experience with workflow testing the existing forms, she knew the “map view”

¹ Testing for the User Experience *User Workflow Testing*. By Lanette Creamer, October 2008 from http://www.pnsc.org/wp-content/uploads/2008/10/creamerc_pnsc2008.pdf

feature was designed to aid doctors in this very scenario. The UI team had been unaware of the existing map view feature and the requirement to skip around a form.

Collaboration with the UI design team can continue through the iterative design and testing phase. For usability testing, you can once again offer your expertise in creating, revising, and reviewing the testing. When testing begins, you can observe several of the usability tests to further deepen your understanding of customers and their goals. You may continue working with the UI design team during your testing of the production code, using members of the UI design team as expert testers. And better yet, you could work with the team to recruit real end customers to run through your workflow tests.

Overcoming Barriers to Usability

Of course, the description of the UI design process includes the implicit assumption that the design will be implemented per specification and the end result will be a highly usable product. In the real world, this assumption is often flawed and QA can be there to bring the usability of a product back on track. The following barriers to usability can arise: (1) Production code is not implemented per the UI design, (2) the UI design cannot be implemented as specified, causing the developer to change the design “on the fly,” or (3) the company is not operating with the above UI model.

The first barrier to completing a successful UI design is the case where developers are not coding to the design specification. This often occurs when a company has an established software requirement control system and is just starting a cross-functional UI design model. Sometimes, the UI team is not fully versed in the established procedures for how the development team tracks and tests against requirements. They may write a nice user interface specification document without fully integrating it into the technical specification documents that the developers operate against.

For example, at Tektronix the System Requirement Specification (SRS) was an established document the SW group had been using for many years. The User Interface Specification was a subset document that contained the technical parameters for each element of the UI. When a UI Team was formed, they began writing the User Interface Specification (UIS), with more emphasis on the task flow and how the user navigated from one element to the next. However, the software team was accustomed to coding based on the SRS document and largely ignored the UIS. After the coding was complete, they would update the UIS with the parameters and screen shots of what they had decided to implement.

In this circumstance, you, as the QA professional, are well versed in the procedures for documenting software requirements since these are the documents you test against. To increase the usability of the product, you can work with both the development team and the UI design team to gather all relevant specifications and ensure document control procedures are followed. You are then in the invaluable position of being able to highlight any discrepancies between the different documents. You can educate both the development team on the existence of the UI design document and the UI team on the existence of the software requirements document. Because both you and the design team are focused on ensuring an optimal customer experience,

you should take this as an opportunity to coach them-on the documentation procedures at your company.

The second barrier—the UI design cannot be implemented as specified—occurs quite often. No UI design specification perfectly anticipates the difficulties that may arise when implementing the design. The software developer must adjust the design but might not consult with the UI design team on the changes. Without the big picture of the customer problem and how the design was intended to solve the problem, these changes may reduce usability. Sometimes the developer feels forced to make the change without consulting the UI team due to tight deadlines. Occasionally the UI team has been disbanded or assigned to another product and is not readily available for a consult. In either case, the integrity of the design has been compromised and must be evaluated for the impact on usability.

As the QA professional, you are again in a good position to notice discrepancies between what was specified and what was implemented. In this circumstance, you can seek out the UI design team to highlight the differences and ask for a review of the new design. Because you collaborated with the UI design team earlier in the design process, you should be able to get their attention now, even if they have moved on to other products. In fact, most members of the UI design team will be happy to know that you're on the job, ensuring the usability of the product is preserved.

But what about those companies that do not use the UI design process described in this paper? What if the UI design is done by the developer who is writing the code—alone and at his desk? In these circumstances, QA has an even greater responsibility to start early in the product design phase to ensure usability. You should start by asking the following questions:

- Who is responsible for the design?
- Have any use cases been created or task analysis been done?
- Who reviews the design for usability?

The answers to these questions will guide your actions. The most important thing you can do is to find the use cases or, if none are available, create the workflow test. Seek out other customer-minded representatives, such as marketing, and ask for a review of the workflow you have created to further incorporate customer perspectives from different roles within the organization. Share this information with the person responsible for the design and let them know you will be testing against these criteria. Through your actions, the developer has an opportunity to design to real tasks instead of designing in isolation.

A good QA professional is focused on delivering a product to the customer that not only works but works well to support their tasks. By becoming more involved in the user interface design process throughout the requirements, iterative design, and iterative testing phases, you can enhance the quality, user experience and success of your company's products.