

The Role of the Voice User Interface Designer in Speech Technology Projects

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Many organizations think of a voice user interface (VUI) designer as the person who writes prompts for a speech application. In this view, VUI design is an isolated activity that is mainly concerned with making the application sound nice so customers will like it. In this paper, we argue that VUI designers can – and should – be responsible for much more than prompts.

For speech-enabled solutions to be successful, they must provide a comfortable and pleasing experience to the people who use them. This experience comes not just from the user's impressions of the prompts, but of the ease and efficiency of completing important tasks, how much they like and trust the system, and whether the system makes sense to them. Many individuals on speech project teams contribute to some portion of the user experience. But the VUI designer is uniquely qualified to define, create, monitor, and evaluate the overall user experience.

One way to conceive of the role of the VUI designer is as the voice of the end user in speech projects. VUI designers serve to maintain the focus on the people who will ultimately use the speech applications being built and ensuring that the systems meet their needs. Because the VUI designer is the sole representative of user centered design on a speech project, he performs valuable tasks throughout the speech project lifecycle.

Pre-Sales and Requirements

Even before speech projects officially kick off, VUI designers have an important role to play. Designers are often called on to support the pre-sales team by meeting with potential clients to introduce the concept of VUI design, explain its importance, and show the value of strong user centered design principles in the project. Designers also create sample dialogs and design demos that emphasize good VUI design and demonstrate positive customer experience to potential clients.

VUI designers take the lead during the requirements phase of speech projects. The designer is responsible for collecting information from several diverse sources, analyzing it, and developing a plan that balances all the goals and limitations. The VUI designer must collect requirements from the business in order to understand the organizational goals for the new system from the perspective of each of the stakeholders (who often disagree). Organizational goals include both the business purpose of the system and the system's impact on brand identity. The designer also needs to gather technical requirements both for any existing system and for the new system being built. For existing systems, the VUI designer must consider call statistics, analyze the functionality offered in the system, and

understand the system's relationship with any connecting systems. Sometimes the VUI designer must also collect information on the functionality and user experience of competing organizations.

Collecting user requirements is one of the most vital parts of the VUI designer's role because they understand why this data is important and have the skills to analyze it. VUI designers define user groups—sets of individuals who share traits and patterns of usage—and gather data on the situations in which they interact with the application (including where people are when they call, their state of mind, how frequently they call, etc.). On some projects VUI designers are able to collect first-hand data from end users by running user interviews or site visits, but often they gather user information indirectly. Once the designer has collected information about business, technical, and user requirements, the designer must create a design strategy that optimizes and balances the concerns of all three groups. Achieving such a balance can be difficult because requirements from different groups are often competing. The business may have a goal of deferring as many calls as possible away from call center representatives, for example; users, on the other hand, want access to a “real person” at all times. Thus the VUI designer must be knowledgeable about which compromises are likely to satisfy all stakeholders in a project. And because speech recognition is inherently error-prone, VUI designers need to understand the limitations of the technology and create a design using techniques that minimize technology-level errors.

VUI designers produce a preliminary version of the design at this stage to demonstrate design strategy in action. Equally important, the designer also defines criteria for success in the final application and determines which data is required to track the success criteria. These criteria and data-gathering plan are essential in judging whether the production application meets the requirements captured at this stage.

Design

The design phase is where VUI designers do what people expect – write prompts. Designers typically write prompts for the positive path through an application first, then write prompts for timeouts and no matches. Some VUI designers also write the grammars that underlie recognition, although this task may also fall to developers or speech scientists. Another task that may fall to either the VUI designer or developer is creating application prototypes. Prototypes are used to demonstrate the application to project stakeholders and in usability testing. VUI designers are often responsible for planning and executing usability tests and analyzing the resulting data to make changes to the VUI design.

The design itself – call flows, prompts, grammars, and definition of interactions with data sources and other applications – must also be documented. The VUI designer is responsible for creating a design specification containing all technical information necessary to code the application. The designer typically has a great deal of interaction with developers and system architects at this stage in order to understand any design restrictions that may exist due to technical limitations.

Once the design is documented, the VUI designer reviews the design specification in several contexts. Initial reviews are often peer reviews with other designers; these reviews differ greatly in formality and often occur throughout the design process. The VUI designer is also responsible for presenting the design to the client, both at a technical and business level, to ensure all parties understand how the application will behave.

Development and Beyond

VUI designers play a role even after the design specification has been signed off and turned over for coding. VUI designers support the development team, by clarifying the design specification when necessary and by making any design changes that come up due to development issues that had not been discovered previously. The VUI designer often continues to work on grammars and lexicons, either with the developers or solo, and may also work with developers on backend data iteration issues. The development phase may also be a time when usability testing is conducted by the VUI designer, followed by design revisions. This is also the stage in which final prompt recordings are done; the VUI designer is responsible for preparing prompt lists and coaching the voice talent during recording. VUI designers may also be involved in post-production work on prompts, ensuring they are aesthetically pleasing and ready for playback.

VUI designers also play an important role in testing speech applications, from planning and preparing test cases, early unit testing, support for the QA team, and even acting as QA testers. This testing is primarily functional – designers are helping to ensure the application works as intended – but many designers use this as an opportunity to further refine their designs.

VUI designers assist in planning for rollout of applications and carefully monitor applications as they go live. The VUI designer often helps clients prepare documentation about the release of a new application and trains the client’s call center staff on the new application. Once the application is taking calls, VUI designers monitor calls and talk to call center representatives to understand how the application is working for users. Designers also transcribe and analyze recorded calls during tuning and use the results to make further changes to prompts, grammars, and recognition parameters. Some VUI designers stay involved with applications long term by monitoring ongoing reports and periodically reevaluating the application’s performance.

Jack of All Trades, Master of Some

VUI designers as a profession perform a multitude of tasks throughout speech technology projects. To be a successful VUI designer, individuals need to possess a mix of technical and “soft” skills. Among the most important skills are public speaking and written and verbal communication; the ability to think logically, attention to detail, and the ability to be organized while multi-tasking; an awareness of linguistic and conversational patterns, and an ear for the aesthetics of spoken language; client-facing skills such as tact, patience, and the ability to communicate with people of many different backgrounds; a passion for user advocacy and evangelism for VUI design; basic technological aptitude and the ability

to balance technical and design considerations. No single designer possesses all these skills and each has his own strengths and areas of interest. The key to success for speech projects is to ensure that these skills exist within the overall team.