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A SIRIES OF UNFORTUNATE EVENTS:
Users' Emotional Responses during the First Month of Siri Use

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Abstract

Blink Interactive, Inc. conducted a month-long study of new iPhone 4S owners to find out what they think about and how they interact with Siri speech recognition technology during the first 30 days of use. What we uncovered was a series of emotional responses to the technology as users approach Siri for the first time, begin exploring its capabilities, and ultimately come to terms with how it can truly fit into their lives. These responses paint a telling story about the ways that speech recognition technology on mobile devices can and should elegantly integrate into users' lives, and what it means for users' experience when things fall short.

Figure 1: Four stages of emotional response to Siri during the first month of use.

The Key Question

Speech recognition and speech-controlled interfaces have been touted as the next generation of human-computer interaction for decades. Unfortunately, this technology has not gained much traction in the consumer space, aside from its use in accessibility tools (such as for users with visual or motor skills impairments) or for niche markets such as dictation software. When Apple presented its own speech recognition technology, called Siri, as a new way to interact with smartphones, technology bloggers and critics immediately leapt with excitement back onto the speech recognition bandwagon. Seemingly everybody hoped that Apple would instill the company's famous "it just works" mantra and vision to "help ordinary people do extraordinary things" through speech-controlled interfaces.

After the launch of Siri, the user experience team at Blink was interested in seeing whether Siri was indeed living up to these hopes. Specifically, we had a number of key questions about how users would respond to Siri when using it on their own time.

- Is the idea of Siri compelling enough for consumers to upgrade to the iPhone 4S and try it on their own?

- What do new iPhone 4S users expect of Siri before they try it? How do these expectations change over time as they begin to use and explore Siri's capabilities?

- How do users try using Siri? How successful are they at using it for these activities? In what ways does their use of Siri change over time?

- What frustrations do users encounter as they learn to use Siri? What frustrations persist over time? Which frustrations are resolved?

- After the novelty wears off, does Siri become an integrated part of users' lives or do they abandon it? In either case, what leads to this happening?

As a user experience consulting firm, Blink provides user-centered research and design services to many companies working in the mobile sphere who want to provide elegant solutions to their users. Our questions about users' response to Siri are vital to our continued understanding of mobile devices in users' lives. For us, this is not simply a question of whether speech recognition on a mobile device works. Rather, we seek to understand why users would want speech recognition on their mobile devices in the first place and how speech recognition could make a lasting positive impression on mobile device usability.

Approach

To answer these questions, we conducted a longitudinal study of new iPhone 4S owners to capture their use and impressions of Siri during the first month of iPhone 4S ownership. The purpose of this study was not to simply identify usability issues that made using Siri difficult, but to understand from a broader perspective whether Siri fit into users' lives at all, and if so, how, when and why it did.

Siri Research Participants

Blink recruited 12 participants who were planning to buy an iPhone 4S within a week prior to the commencement of the study. Participants met the following criteria:

- Were upgrading to iPhone 4S from an older iPhone or other smartphone

- Planned to use iPhone for more than just texting and calling

- Mix of genders and ages, skewing slightly younger (20s to 30s)

Additionally, all participants had some prior exposure to speech recognition technology, such as Dragon Naturally Speaking dictation software or speech-based input for a GPS device. We did not explicitly recruit for this criterion. Instead, it was something we learned about participants throughout the course of the study that, at times, influenced their use of and reactions to Siri.

Figure 2: Blink interviewed 12 participants who represented a variety of ages, genders and demographic backgrounds.

Understanding Use

Throughout the month-long study, Blink researchers interviewed and learned from the participants through three rounds of interviews. Because the goal of this study was to observe and learn from users' natural inclinations towards using Siri, we did not want to explicitly inform participants during these interviews that we were studying Siri or that we were most interested in their thoughts about Siri. Instead, participants were interviewed about their overall usage of the iPhone and asked about their use of a variety of native and third-party apps in addition to Siri.

First Use Interview. Shortly after purchasing the new iPhone 4S, each participant brought their phone to the Blink usability lab in Seattle for an initial in-person interview. The focus of this interview was to understand users' motivations for choosing the iPhone 4S over a competitor device, their experiences with the activities they had already done with the phone since purchasing it, and their expectations about how, when and why they would use the iPhone in the future. Special attention was paid to any initial attempts at using Siri and thoughts about Siri during the first few days of use. For example, participants who had tried Siri on their own were asked to recall a recent use of it, demonstrate that to the researcher, and talk about their reactions to the way Siri responded.

In-Use Interview. Approximately two weeks after the First Use Interview, participants completed a follow-up phone interview with the Blink research team. The purpose of the In-Use Interview was to find out whether participants had tried anything new since the initial interview, whether any impressions or uses of the phone had changed, and what participants planned to do with their phone in the coming weeks. Participants were asked during this interview to walkthrough a few examples of how they had used their phone, especially if that use included Siri.

One Month Wrap-Up. At the end of the month, participants returned with their iPhone to the Blink usability lab for a final in-person interview. During this interview, participants answered the same set of questions as in the previous interviews about what they had done with their phone, any changes in behavior or impressions, and any future plans for use. Participants were also interviewed at length about Siri, specifically around their overall thoughts about it, the ways they had used it, and the reasons for not using Siri when they knew they could use it.

Daily Journaling. Between each interview, participants completed a daily online journal that captured a summary of their use and impressions of the phone for that day. Feedback collected from these journals was used as conversation points during the In-Use and One Month Wrap-Up interviews.

Insights

Our study findings revealed that iPhone 4S users go through four stages of emotional response to Siri during the first month of use. Although the stages may happen at slightly different times for each user, the end result is similar: Users start out with a high level of optimism about integrating Siri into a broad variety of tasks in their daily routines and eventually become resigned to using Siri as a single-purpose tool infrequently for very specific types of tasks.

Initial Excitement

Excitement about Siri reached its highest point before users had even purchased the iPhone 4S. During the pre-purchase stage, participants reported that they had heard about Siri from a variety of sources, including Apple's engaging television advertising campaigns, technology blogs that reviewed the iPhone 4S, and friends or family who had bought the device in recent weeks. From these sources, participants learned the basics of Siri's capabilities. Notably, they learned that they could speak commands to Siri that would launch applications, initiate communicate with contacts, and look up information on the internet.

Additionally, participants were excited about Siri because they hoped it represented the next generation of speech recognition technology. All of the participants had some prior experience with speech recognition, such as using Dragon Naturally Speaking to dictate text or speech input methods in their car's GPS device, but had found these technologies were not very accurate in understanding their spoken commands. Several participants commented that they hoped Siri would be better than these previous experiences and were excited to see how it compared.

This initial excitement was evident in participants' behavior. Participants reported that their excitement made Siri one of the top reasons they purchased the iPhone 4S instead of a competitor device. Participants also reported that Siri was one of the first things they tried out once they started using their new phone.

"I considered buying other phones, but I kept leaning toward the iPhone 4S because of Siri. I had heard rumors about Siri, that it was a cool intuitive thing, and that it would be a hands-free way to use the iPhone. There's a lot of times when I'm in the middle of something and don't want to type everything out. It would be so much easier to speak it out rather than type it in." – **Jason, Study Participant**

Optimistic Curiosity

After participants purchased their new iPhone, they put their initial excitement to use by trying out Siri right away. Because of their prior exposure to Siri from commercials and peers, most of the participants had fairly strong preconceived notions about how well Siri would work. For example, the Apple commercial featuring Zooey Deschanel gave the impression that she was having a fluid, seamless conversation with a friend or personal assistant rather than a piece of technology. As a result, participants were optimistic that:

- Talking to Siri would be like talking to a person; some participants even referred to Siri as a "she" at this stage

- Siri would learn and remember things

- Siri would be able to answer both simple and complex questions

- Siri would understand a majority of commands and accurately dictate text

"Siri is going to be like a computerized personal assistant or girlfriend. She will keep me organized. Every time I want to know something I could ask Siri and she'll answer it for me. It eliminates people!" – **Jane, Study Participant**

Additionally, participants were curious about exploring Siri and finding ways to integrate it into their daily lives. Through exploration, participants wanted to test the limits of Siri by:

- Asking Siri silly questions ("Where can I hide a body?" or "What is the meaning of life?") to see how Siri responds

- Using Siri in a variety of environments to see if Siri performs equally well when at home, on a noisy street or while driving

- Speaking to Siri using different conversation styles, such as speaking in short, terse phrases versus verbose sentences

Figure 3: Study participants expected to use Siri in a variety of environments and information-seeking situations, including times when they wanted to ask a silly question.

During this stage of optimistic curiosity, participants tried Siri on a number of occasions to get a feel for its capabilities. Participants reported that only about 50% of their commands were accurately understood, but that they remained positive because they assumed they had not yet figured out the most effective ways to use Siri. For example, some participants thought that their errors were due to them speaking at the wrong speed or not enunciating their words enough for Siri to understand them, while other participants thought that they simply had not yet learned the commands that Siri could understand.

Frustrated Exploration

As participants tried using Siri more, their optimistic curiosity about Siri's capabilities quickly turned to frustration. Participants began to question whether their 50% failure rate was truly due to their own mistakes in using Siri, or if Siri was simply less sophisticated and less capable than they had assumed. Participants began to reconcile the assumptions they had initially made about Siri during the Optimistic Curiosity phase.

Previous Assumption	Reality
Talking to Siri would be like talking to a person	Siri can only understand simple short commands; words must be over-enunciated and spoken at a loud volume
Siri would learn and remember things	Siri does not seem to remember past conversations; each interaction is treated like a separate command rather than building off a previous command
Siri would be able to answer simple and complex questions	Siri does not support a majority of attempted commands; no immediately intuitive way to find a list of Siri's capabilities
Siri would accurately dictate text	Siri frequently misspells or misunderstands words and omits punctuation, making text quality too poor to use

I find myself speaking slower to make sure Siri understands me. In some cases it still doesn't. I'm definitely not speaking normally to it. I have to speak slowly and enunciate. When it works, it's great. When it doesn't it's REALLY frustrating. –**Billy, Study Participant**

There were several specific shortcomings with the way that Siri integrated with iPhone applications that made participants feel frustrated with Siri.

- **Siri only works with a subset of native iPhone apps.** Most of the participants loved the variety of apps available in the App Store, and were disappointed that Siri could not work with any of them. In some cases, this prevented them from using Siri with apps that were a regular part of their iPhone habits. For example, many of the participants used Pandora music streaming instead of the built-in Music app but were unable to use Siri to open or interact with Pandora.

Figure 4: Participants were frustrated that Siri was not powerful enough to understand many of their expected commands, such as opening third-party apps.

- **Siri does not support requests for external schedule information.** Another common activity that participants wanted to do with Siri on their phone was look up schedules for movies, sports events or public transportation while on the go. Siri, however, interpreted all commands involving schedule information as a request for appointments from the built-in Calendar app. Participants were frustrated that they could not take advantage of Siri to look up this information, especially while on the go or in a situation where typing in a search request would have been difficult (such as while driving).

Figure 5: Siri misunderstood commands about schedules for external events (movies, public transit schedules) as requests for appointment details from the Calendar app.

- **Apps cannot use Siri as a speech-based output method.** Some participants noticed that Siri could speak its own responses back but apps could not use the Siri text-to-speech engine to verbally convey information to the user. For example, participants appreciated being able to use Siri hands-free while driving to get directions to a location, but were frustrated that they had to pick up the phone, look at the screen, and use touch-based interaction to get the directions.
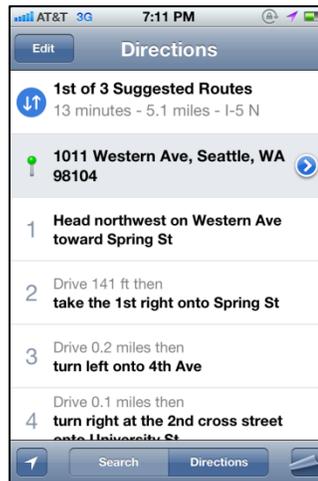

Figure 6: Although Siri can be used to request driving directions to be displayed in the Maps app, the Siri text-to-speech engine cannot be used to read the directions aloud to users.

Acceptance and Habit Formation

Despite the frustrations that participants regularly experienced with trying to use Siri, most of the participants said that they planned to continue using Siri. Aside from wanting to "get their money's worth" from their iPhone investment, participants stated that they would continue using Siri because they felt that it truly became helpful and fun to use once they figured out the ideal scenarios and tasks for using it. To do this, participants needed to accept what they considered to be the limitations of Siri:

- The perception that Siri is only accurate about 50% of the time

- Misunderstandings or misspellings are a common occurrence

- Aside from driving scenarios, using Siri does not provide a faster or more convenient experience than tapping on the screen

- Siri does not work with third-party apps

- Shorter commands are better, as using more words increases the risk of Siri misunderstanding

Once participants came to terms with these limitations, they were able to build habits around using Siri.

- **When hands are occupied.** One of the main advantages of Siri is that it provides an alternate method of interacting with the iPhone when users' hands are dirty or occupied (while carrying a bag, while driving, etc.) Although this may involve more action on the user's part than tapping on the screen, it is often safer to expend the extra effort by using Siri.

- **When misspellings are acceptable.** Participants said that Siri's high rate of misunderstandings and misspellings made them hesitant to use it for more formal communications (such as an email to a client or manager). Sometimes, however, a typo was considered acceptable. When using Siri to send a text message to a friend or quickly create a calendar event, participants were more forgiving of misspellings because of the convenience offered by not having to touch the screen.

- **When issuing simple, one-off commands.** Most of the participants noticed that Siri was more error-prone when they tried to give it commands that were lengthy or required them to take secondary action (such as selecting from a list of results that Siri provided and issuing a new command with it). Simpler commands, such as "weather in Seattle" or "directions to Costco" were more likely to have a successful outcome because few words were involved and Siri would immediately display the sole piece of information requested.

We also heard from study participants, including those who found it difficult to use Siri on a regular basis, that they would miss Siri if it was removed from the next version of the iPhone. In spite of the issues they faced with Siri use, these participants felt that Siri represented an important step forward in the design and use of smartphones. There was a lingering hope that Apple and other mobile software developers would harness the power of speech-based interaction in two key ways:

- **Speech-controlled software interfaces.** Smartphone use could be made even more convenient and flexible with speech recognition support. This is especially the case for users who need to access features and information on their smartphone in situations where tapping on the screen is difficult or unsafe, such as while driving. Additionally, speech-based input could help users who may not be able to use a touchscreen, such as users with visual impairments or difficulties with fine motor skills.

- **Speech-based presentation or output of information.** By using Siri's existing powerful text-to-speech engine, the iPhone could take Siri a step further by returning information to users verbally as well as visually. As with speech-based input, this would make the iPhone and its robust capabilities accessible to a wider range of users and scenarios, such as information retrieval while driving.

Conclusion

Siri was released as a revolutionary way to interact with the iPhone and harness information it provides in a more personal manner. The star-studded media campaigns surrounding this launch certainly succeeded in catching the attention of users and getting their hopes up about how Siri might fit into their lives. Truly, users expect Siri to delight them and to change the landscape of mobile device, much like the iPhone when it was first released.

This excitement, however, is likely to fade if users continue to face the severe limitations of Siri in its current implementation. Its inaccuracies and unreliability, its lack of support for third-party apps, and its befuddling avoidance of text-to-speech as an output method all make Siri seem like a second-class citizen of iOS rather than an elegant and natural extension of the iPhone's visual interfaces and dazzling capabilities. More importantly, Siri fails to provide the same compelling, "it's that easy" user experience that customers have come to expect of Apple products.

Although much would be improved by fixing Siri's issues with inaccuracy and third-party app compatibility, there are still more important questions for mobile developers and designers to consider in learning how to make speech-based technology both functional and delightful. For example:

- How can speech-based input or output be used to make smartphones easier and accessible for users of all abilities?

- What are the unique situations in which speech-based input or output is the best or safest way to interact with a smartphone? How do we design with those situations in mind?

- How can speech-based input and output be harnessed to make smartphone use more delightful, surprising, or engaging?

- What types of information are best presented vocally rather than (or in addition to) visually?

- How can speech be more holistically integrated into the end-to-end mobile experience rather than being deployed as a single-purpose tool?

We believe that speech-based input and output can be successful in the mobile space, if it is treated with care.