



Transcription of UX Soup Episode 6: Haptics

[music]

00:14 Derek Viita: Hello and welcome to UX Soup, a short form podcast that looks beyond the buzz words to give you the latest developments impacting views or experience of personal devices and services in the home, in the car and while mobile. I'm Derek Viita, and I am joined today by my co-host, Lisa Cooper.

00:30 Lisa Cooper: Hello.

00:32 DV: And Chris Schreiner.

00:34 Chris Schreiner: Hello.

00:35 DV: Hello everybody. As always, UX Soup is presented by Strategy Analytics, a global research and consulting firm providing our clients all over the world with insights, analysis and expertise. Today, we're going to talk about haptics.

00:49 LC: Wohoo!

00:50 DV: What is a haptics? Who's doing it? Killer use cases, and most importantly, why? Why haptics? Where do we see it going?

01:00 CS: So I'll start today by talking about what is haptics? We've all experienced haptics in some form of another, if you own a smartphone, if you use the vibration of it, there's some feedback that you feel that lets you know that something is happening. Smartphones, you have it with the home button on all recent phones. When you're typing and you get feedback on the keyboard, that's all haptics. But of course, the most important question that is, why haptics?

01:29 LC: Why haptics? So I'll take this on board. So haptics has a lot of potential. It can add a great deal to the quality of any interactive experience by providing all this extra feedback for user's actions and really enhance the experience. You can convey useful information, whether something is right or wrong. You can confirm various actions and you can grab user's attention. You can also enhance communication between the real world and virtual worlds, where you can interact with objects and people and avatars. It can really bring about great immersion and realism in virtual environments, and can enhance social and spatial presence. But we really need to be careful with its application and needs to be appropriately timed. It can be done so badly as we've probably experienced. It has to be well-timed, has to be of value and compliment, and not distract from other forms of feedback, as well as consistent and not drain battery life, things like that. So there's a lot of areas, pitfalls and challenges to it. It can be done very well or it could be on very badly.

02:41 DV: Indeed. And some of those issues that you bring up Lisa are no more clear than in automotive. So when we see haptics or vibration in cars, it's typically used for one of two things. One is for safety alerts in the steering wheel or in the seat pan. The other is for touch sensitive infotainment controls on the console embedded within the touch screen or next to a... Or embedded within a touch sensitive volume control, things like that. The main challenge with haptic... And with touch in general, if we think back to early human factors research is that it's a low "amplitude modality". So you think about our senses. Sight is very rich. It conveys a lot of information just inherently. Sound is also a fairly rich modality. Touch itself doesn't convey a whole lot of information. It's very binary. It's either there or it's not. So for safety-related mornings, it's great to indicate that, "Hey, there's something there." It brings a driver to attention, much like what Lisa was mentioning. It's a great way to push someone toward situational awareness. You need to augment that with some visual or audible alert to bring more information in, but just the vibration will indicate that something requires action. Much in the same way that doctors and surgeons will use



beepers in hospitals to indicate like, "Hey, there's something wrong that requires my attention." Not necessarily what it is in a whole lot of information beyond that, but at least brings them to attention.

04:08 DV: For infotainment uses are less clear. So buzzers on the touch screen can be used to indicate that something has been pressed, but not necessarily what has been pressed. So especially if stimuli are all located in the same location, users are still going to need to look at it. If you introduce shape, so gesture controls, for example, that allow a driver to grasp something mid-air that can be identified. That could potentially add value. But again, it needs to be pretty obvious what the difference between these virtual objects are. So think about back in the day when we had knobs on our car consoles and dedicated buttons. After a period of ownership, you generally knew where each of those buttons were and what each of them controlled. So you could control temperatures up here or radios down here with minimal glances. That's what you need to go for with haptics and vibration. You need to differentiate enough by shape or location or whatever that you can actually use it for multiple tasks. Otherwise, all you're doing is saying, "Hey, I've touched a button," frankly.

05:10 LC: Frankly. Yeah.

05:12 CS: And that's typically the type of thing that we see on smartphones. Like I said, this is where most people are familiar with haptics. The home button on your phone is all haptics. And for some, that works very well. I've talked to people that have an iPhone that didn't realize that their home button wasn't actually a button anymore. So they've done that at least pretty well. But we're seeing haptics move even further in the smartphone space is they've tried to move toward more... As everyone moves toward a more clean design, trying to get rid of buttons. Everyone is trying to get rid of buttons on every device and haptics is of course key for this. And smartphones, it has the added benefits of if you remove buttons, that's more... That's fewer creases that dust or water can get in. It makes a device more durable. And we've been looking at some of the latest developments in smartphone haptics.

06:12 CS: Our colleague, Diane O'Neill recently published a report on where haptics is going and pointed out some of the concept smartphones that we've seen. For instance, Meizu Zero. They debuted a concept smartphone last year that had no buttons at all and everything was going to be provided by haptic. So if you were looking for the volume control on the side of the phone, it would be haptic feedback that you were getting. Another example I have to you is haptics company and they came out with a very interesting concept phone where the screen has haptics built in. So on your display, you can have your finger go up and down the display and start to feel things like the demo that they had had to do with fish scales. Yeah, I know it sounds a little odd. I don't know why they chose fish scales. You would see an image of fish scales and rub your finger up the display and it would... I don't know why you would wanna feel... [chuckle] It doesn't sound like the greatest feeling. But just to demonstrate that, you can have that kind of added element. And they showed it off with different controls to sliders and buttons that you could have that would give you that haptic feedback that you're doing something.

07:36 LC: And going another step further, we now have mid-air haptics where you have touchless haptic sensations using ultrasound. They have done this also for blind users, something called HaptiRead, allows blind users to read Braille without touching the surface, which in this post-Covid world I think is something that we really need.

07:57 CS: Definitely a better use case than fish scales.

08:00 LC: Yes.

08:00 DV: Certainly.

08:01 LC: And that's research going on in Germany right now so. But as far as augmented reality and virtual reality, which obviously is a very easy in for haptics, especially in gaming, where it enhances realism, you can use these vests and gloves to feel explosions and bullets and things like that, and be able to touch virtual objects. There's also other great use cases that just can be applied to. For example in tourism, you can use augmented reality for tourism. You could touch and feel virtual objects. It's such a great use case. As well as with digital twin cities, you



can have virtual reality tourism. You could potentially shop for virtual objects using haptics and feel and touch objects that you could then buy and then have delivered to your home.

08:55 CS: So where do we see haptics going and how do we get there? Obviously, we were seeing design trends for driving much more toward a clean and minimalist design, trying to get rid of all buttons. But we need to be able to of course as we said throughout this, not just be able to know that something is pressed, but know where buttons are. We don't want to be trying to find... We need to be able to find if we're putting our thumb on the side of our smart phone where that volume button is and not just did we just press something. You need to know what it is that we're pressing. And that kind of haptic feedback has to provide that. And certainly with the advent of Smart Surfaces, Smart Fabrics, that is going to require haptics. And again, it has to be a bit better than what we're seeing right now, even some of the demos. They're almost there. They're pretty good, but there's still a lot of work that needs to be done.

09:56 DV: We run into many of the same issues that we discussed a bit on our previous episode about augmented reality, where we see a lot of companies just throw the technology into every vertical and kind of see what happens. Haptics, if you think about the use cases that Lisa walked through, there are many of those that require some sort of other modality like augmented reality or virtual reality. So vision, hearing, whatever, to convey that sort of additional information. So haptics augments that experience, but it doesn't necessarily deliver that experience on its own.

10:36 LC: What do we think about mid-air haptics where we're using ultrasound, where everything is touchless? Do we think that's the way we're going now? We see Ultraleap doing various things in that space.

10:51 CS: Well, I can certainly see specific use cases for it. I think both will move forward and ultrasound will find its niche as to what use cases that can develop. I think the more touch-based haptics that you would see on smartphones that you would put in Smart Surfaces in that I think they're certainly going to keep proliferating in talking with people like Ultraleap, public kiosks. Again, in this kind of Covid era, something that they were talking about.

11:24 LC: Anything in public, the public space, I would see the mid-air haptics being really useful.

11:30 CS: Yeah. And it has a lot of potential. But again, it's...

11:34 LC: There's a lot of challenges to overcome with it.

11:36 CS: There are challenges in terms of its both hand tracking because you have to know where the hand is in space, if you don't have a glove on or some kind of wearable on. And speakers positioned in the right way and enough speakers that can provide that ultrasound in a way that actually is compelling. So right now, I see ultrasound is being much more of a basic control type of experience, just the cost element in providing enough speakers to do more of the subtle haptics that might be needed for future use cases. I think it may struggle with that. But I wanted to get back to your use case about shopping and being able to feel for something.

12:25 DV: Oh yeah.

12:26 CS: That isn't there. That's a very... It sounds like a very interesting use case. And as we have more people adopting 5G phones and broader 5G networks, that would reduce the latency, that would provide some of that. So you can go to a website and actually have some idea of the feel of what you're buying. That sounds great. The haptic technology isn't quite there yet where you would be able to really replicate that in a way that if I was selling a silk shirt or something like that, that I could be convinced if the customer really get the same feel.

13:01 LC: I would pay to see you in a silk shirt.



[laughter]

13:10 CS: Yeah. The technology just isn't there yet to be able to provide that kind of feel. Apple just came out with a patent recently that would provide not just a haptic feedback, but be able to alter the temperature. So if you're thinking about touching something like an animal fur or something that has some kind of heat element in it, this patent is for being able to alter the temperature that the finger would be feeling that might help make that haptic feedback more realistic. Again, I'm not convinced that I could get to some of the more subtler types of haptics that we would need for some of the use cases.

13:53 LC: So we have a long way to go.

13:54 CS: As always.

13:56 DV: Shoe shopping. My feet are basically modern sculpture art.

[laughter]

14:05 DV: There's just no way for me to buy shoes online unless they're just... The later model of something that I have worn and run in previously. So if there's any way to help with that experience without having me to go into the shoe store and try on a bunch of shoes and do that entirely virtually using haptics, please.

14:29 CS: I think there's some patents to be had in that.

14:32 DV: Absolutely.

14:33 LC: But just imagine, there's a lot of people with limited mobility that would really benefit from something like this. It would definitely help in the middle of a pandemic.

14:44 DV: Okay. Let's move on now to our regular segment called condensed soup.

14:49 LC: Wohoo!

14:50 CS: Condensed soup.

14:51 LC: Condensed soup.

14:52 DV: We do a little rapid fire round table on a particular best/worst topic. This episode, we're going to talk about the best and worst use of haptics or vibration that we've seen. So let's toss it to Chris.

15:08 CS: I'll start first. So my all-time favorite experience with haptics is actually in the car and having in-seat haptics for some kind of warning. Like if I'm going out of the lane on the left, the seat on the left side vibrates to let me know that. It's kind of like a rumble strip. And I've always found that kind of have to feedback to be one very helpful. It certainly gets my attention, if I'm for some reason not paying attention. But it's also much more of a private way of communication, much more than a beep or a warning that alerts everybody in the car that I'm a horrible driver. It's something this little auto-pilot telling me that I'm a horrible driver, nobody else has to know.

15:52 DV: That's right. Shout out to Dr. Greg Fitch, former colleague of mine at Virginia Tech Transportation Institute who worked on an early version of the safety seat alerters. Great stuff.

16:02 LC: Oh nice.



16:04 DV: I would like to throw in a bad example if possible this week. I used to have a Fitbit and this was many years ago. It was one of the early versions that I've used to track my runs and step counts. I un-boxed it. I created an account. Put it on, worn around. And sometime that afternoon, it just started buzzing. Just would not stop buzzing and I'm like, "What's going on?" It was very startling. It took a lot of post-research to determine that my step count had been set at something fairly low for me and it was letting me know that I had hit my step count. I didn't really need the urgent alert for that, but I have not owned a Fitbit since.

16:53 LC: Mine's similar. Mine's a smart watch. So it's good and bad. What I like about the haptics is when I type in my pin, there's a little shake. So I get the feedback that I pressed the button. And whenever I select things, because some of these things are very small, and it gets my attention and it figures out I'm doing some exercise or do you want to make this a workout, things like that. But it's also very annoying. This is my second go around with the smart watch, because the first round with it was just this constant vibration of you've got an email, you've got a Facebook notification. And you have to take the time to re-adjust all the preferences and things like that. That's annoying. And I know other people too who've got rid of it because of these constant interruptions.

17:52 DV: Can you adjust the settings on the smart watch itself or do you have to log in to a separate screen to do that?

18:01 LC: I believe it was on the...

18:02 CS: It's a lot easier to do on the phone.

18:05 LC: Yeah. Yeah. So tiny. It's so tiny. I believe there's a setup portion to it and I believe there's on the phone too. I don't really recall. But now it's not as bad and I don't... I only wear it when I'm exercising. So that's probably why I'm enjoying it more.

18:21 CS: But using it less?

18:22 LC: Mm-hmm. Yeah.

18:25 DV: Yeah. Okay. That's all for now. Thanks very much for listening. Thanks to my co-host, Lisa and Chris. A reminder that UX Soup is sponsored as always by Strategy Analytics. Check out our latest user Focused Insights in mobile automotive and smart home by visiting strategyanalytics.com. You can also go follow each of us on LinkedIn and Twitter through visiting our show page at ux-soup.captivate.fm. Please remember to subscribe to UX Soup on your favorite platform where you can also rate and review our show. Thanks again. Bye for now.



How Can We Help You?

Strategy Analytics provides strategic and tactical support to global clients through a range of customized solutions:

- Multi-Country [primary research](#) assignments using leading edge tools and techniques
- [User Experience](#) Design and Innovation engagements
- Real Time Mobile Consumer [On-Device Tracking](#) projects
- [B2B](#) Consulting Projects and Whitepapers

Please contact us at Custom@strategyanalytics.com with any questions and for further details and solutions on how we can work with you on creating a custom solution to address your specific needs.

Supporting Clients Across The Planning Lifecycle

STRATEGYANALYTICS

