



Transcription of UX Soup Episode 24: LiDAR Use Cases

[music]

0:00:15.2 Chris Schreiner: Hello and welcome to UX Soup, a short form podcast that looks beyond the buzzwords to give you the latest developments impacting the user experience of personal devices and services in the home, in the car and on the go. UX Soup is presented by Strategy Analytics, research and consulting firm providing our global clients with insights, analysis and expertise. I am Chris Schreiner, and I am joined today by my co-hosts, Derek Viita.

0:00:43.5 Derek Viita: Hello.

0:00:43.7 CS: And Lisa Cooper.

0:00:44.9 Lisa Copper: Hello.

0:00:46.5 CS: In today's episode, we're going to talk about LiDAR. Now, you may be asking, What is LiDAR? Well, we'll answer that for you. We'll also talk about where we see it being implemented, for what use cases is LiDAR best suited and what end user benefits will we see? But first, of course, we have to start with what is LiDAR? And Lisa, I'm gonna hand it over to you for this. Can you give us a brief explanation of what LiDAR is?

0:01:14.3 LC: LiDAR stands for Light Detection and Ranging. So the best way to really conceptualize what LiDAR is, it's very similar to radar, which sends out radio waves, or sonar, which sends out sound waves, LiDAR sends out infrared light in order to locate things. It is a type of time of flight sensor where it will send out those infrared light beams and it will detect how long it takes for those light beams to come back.

0:01:44.3 CS: So why are we talking about this? [chuckle]

0:01:47.5 LC: Why do we care? Well, LiDAR's been finding its way into various consumer products over the years, everywhere from robot vacuums to VR headsets, and more recently in phones, the iPhone 12 Pro has come out with LiDAR on their smartphone. Now, why is that useful? Everything that this infrared beams touch, it would be able to create a three-dimensional view of what this item object person seen is, and it has a much bigger range to it, so it can actually see up to 16 and a half feet. Why do we care about that? Much more precise mapping and helps with augmented reality sort of applications, there are so many applications for it that are very useful, but we'll talk about that later.

0:02:37.6 CS: So LiDAR is coming now into more and more consumer electronics products, but it's been around for several years, at least in cars. Derek, can you talk a little bit about that?

0:02:49.3 DV: Absolutely. LiDAR has been used in recent years, most commonly for automated driving assistance and automated driving test fleets. So if you've seen any of these cars driving around your area that have the little top hat or the old carriage candle holders, is best way that I've seen them referred, that sit on the front and rear corners of cars that allow these big light units to sit there and beam out light and find [0:03:19.3] ____ objects. That's what those are. It's been in the news relatively recently in automotive, with Tesla specifically, Tesla is very famously poo-pooing the need for LiDAR for its more advanced autopilot system.

0:03:32.0 LC: Here's the thing, consumers don't know what it is, you can't sell LiDAR in whatever vertical, especially in automotive, as, "This is LiDAR." It's sort of like when we talked in a previous episode about augmented reality, folks don't necessarily know what AR is, they know what Pokemon Go is, but they don't necessarily know what AR is. And it's the same thing with LiDAR. They know that safety is important, and you can frame your marketing in such a way that we use LiDAR, so that the car will drive itself more safely, but you can't use LiDAR as a value add in and of itself.



0:04:11.6 CS: Yeah, there seem to be one technology for which we're not seeing people try and sell the technology itself, they're actually doing what they're supposed to be doing and selling the use cases that the technology enables.

0:04:24.6 DV: Correct.

0:04:25.5 CS: Lisa, you mentioned that LiDAR is now out in the iPhone 12 Pro.

0:04:30.3 LC: Yes.

0:04:31.2 CS: You've had some experience with that. Can you talk about some of the use cases that it enables now?

0:04:34.4 LC: There are so many potential use cases, and some of which it can do now, but not very well, and some of which it will potentially do in the future. There's several different themes, so let's talk about augmented reality and virtual reality. So in terms of virtual reality, there is something called a shared Venn space, which is where you could scan your space and actually socialize in virtual reality with your friends, which is very cool. I've seen that done.

0:05:02.3 CS: So that would be like scanning your living room and then planting your friend in the middle of your living room?

0:05:07.7 LC: Yes, your friend's avatar, and then you sit and you socialize. I've seen that done fairly well, but the scanning itself still could use a little bit of work in terms of the detail. But so far, it's looking pretty good in terms of what the phone can do in mapping that space and bringing that into virtual reality. Apple is also collaborating with Snapchat, so if anyone's used Snapchat before, you know that you can put lenses on to your videos, and so on.

0:05:38.1 LC: So you can create characters that can be occluded, they can go behind the chair, they can go under something, on something, go up the side of something, it's very aware of your surroundings in reality, which is a big deal, so it really creates a much more realistic experience. And this, it can do very well, this means then you've got use cases in gaming, where you can have characters that can actually bounce around your own home on top of desks and chairs and go between various toys on the floor, things like that. So there are games now that you can get where you can use this.

0:06:19.3 DV: So what I'm hearing so far is use of LiDAR and mobile devices for essentially gaming in Second Life use cases, so using it to feed into some AR, VR thing, mapping your body for gaming. Have you seen any cases that are a little bit outside the gaming realm and more 'practical'? I don't like that word, but for example, using LiDAR to map an indoor space to just get automated measurements, so for example, if you're remodeling your kitchen or remodeling a living room, does it have the fidelity where you can get measurements of walls and objects and things like that, for that use case?

0:07:10.8 LC: Yes, it can be used in real estate, for example, where you can scan the inside interior of your home, and interior rooms, you can use it to measure walls. I actually tried scanning my interior of my room with it, and while you can do the scan, there are still some rough edges to it that would require further refinement, you would need to use another app in order to make it perfect. So it still needs a little bit of work. But yes, there's those kinds of use cases.

0:07:43.1 CS: The same element of being able to scan your body and scanning your room can be used for trying on clothes virtually, buying furniture or seeing how furniture is going to look in your house virtually, checking paint colors on your walls, it'll do that more accurately. And in previous research we've done, we always find that these kind of try before you buy use cases are the ones that consumers want augmented reality for, those are the most compelling use cases for it. So this would definitely make that a much more realistic and useful experience.

0:08:18.0 LC: This also helps with avatars, you can have a much more realistic avatar. Photogrammetry is where you can scan your body into a system. So for example, the Amazon halo, you can scan in your body in order to see



if you've lost weight, but to do that scanning, you require three or four different pictures of your body and then it will create the scan from that, which isn't super accurate, same with a lot of other avatars when you're creating avatars. With this though, you would be able to actually scan your physical body, you wouldn't be using photographs, so it's much more accurate in that way. Now, in terms of e-commerce, that's another area which could really benefit from having this capability on our portable devices, where you can actually scan your objects for sale, and be able to manipulate it to view it much more accurately, where you'll be able to look at it from all different angles and obviously place it in your home. And it would be context-aware too, it would be occluded by other pieces of furniture, or I can be placed on the top of tables and things like that, which you can do now, you can place something on a surface, but there are limitations when it comes to that surface, this sort of eradicates that problem.

0:09:35.9 CS: Are those scans done through built-in apps or are those all third party apps that you would have to rely on and try out and see which one's best?

0:09:44.5 LC: It depends. Apple comes with a 3D scanning app that helps you scan certain things, but in terms of refining it, it's left up to third-party apps. One of the use case that's close to my heart, because I'm an artist, is that you'd be able to use something like this in the future, it's not quite there yet, to be able to scan in sculpture. For me, I've gone on various workshops, where I've had to learn molding and casting techniques, whereas with something like this, I'd be able to 3D scan my art and I would be able to 3D print it. And to be able to get this scanned now costs a lot of money. And it isn't very accessible if you're using certain colors, but it does need more work to be able to capture smaller pieces. Another area close to my heart's accessibility, and one of the life-changing things that the iPhone 12 Pro has come up with, is that people detection feature, where you can hold that phone up and that LiDAR will tell you who is around you in real time and how far away they are. So in a COVID world where we having to social distance, where someone who is blind cannot do this, it tells them, "Male walking towards you, so many meters away or whatever it is, and it will do it in real time. So this is really important, a game changer for people who are blind or visually impaired.

0:11:15.0 DV: But I'm curious how useful it might be for certain medical contexts, I don't know how much data that LiDAR could perceive or collect on things like detecting BMI changes, for example.

0:11:30.6 LC: It has had some use in physical therapy that I've seen, where you can look at a range of motion. So I know that there are apps out there for health care providers in that space.

0:11:44.2 DV: It's hard for me to envision LiDAR, which is... It's not... So my first thought is, it's like, "Wow, this could be great for things like dermatologists that are checking, like things on the skin that might be growing or changing or just something that would be worth watching, melanoma, but LiDAR doesn't necessarily collect photography, it's just shapes, right?

0:12:11.2 CS: Yeah, that LiDAR data is just another data point, so it gives you the distance, but if you then have the image as well that you can feed with the distance information into AI to determine things like has a melanoma spot grown and has that lump raised a bit, it's just another data point that could be used combined with others.

0:12:33.0 DV: So what are the limitations of LiDAR right now? So it feels like as powerful as LiDAR is, it's just one data point. So it seems like the challenge in some of these use cases, for example, mapping areas of a house or areas of a street or mapping someone's body. That LiDAR data needs to be incorporated with something else. Is it fair to say that that is one limitation?

0:13:07.5 LC: Yeah, it is only one piece of the puzzle in terms of its potential in the future, because it has the ability to sense shapes, distance and so on, you do need other things to help it. In terms of where we are now with this new smartphone, the limitations or should I say the things to look out for, that I can see down the road is copyright and fraud. If I can scan anything and then I can 3D print anything, I see this as being an issue for small businesses, artists, any store selling anything as these technologies become more available, and this becomes more refined.

0:14:01.1 CS: The figurine back in your house.



0:14:04.2 LC: Anything. Anything you could reproduce. And I think that's going to be a big problem. Once this gets to a point where the average consumer can use it without having to go to a third party app or needing an extra skill set to refine it, we're going to see issues with copyright. It does suck your battery life and it makes the phone extremely hot, something else that we have to look out for. I think Apple needs to not leave it up to app developers to provide users with this way of cleaning up their scans, it needs to be something that Apple includes as part of the package.

0:14:46.5 CS: Alright. So let's move on then to Condensed Soup.

[vocalization]

0:14:50.6 DV: Condensed soup.

0:14:51.8 CS: We'll pick an easy topic for this week. So Lisa, you've gone through a number of current and future use cases for LiDAR, why don't each of us pick our favorite LiDAR use case?

0:15:04.9 DV: I love this idea of using LiDAR to scan an interior space for the purpose of collecting measurements for things like paint color, determining whether furniture will fit in the space, things like that. We're in the process of doing some minor home renovations, and we're having a really hard time with our kitchen that desperately needs updating, and needs a wall broken out. And we're sitting here just scratching our heads trying to figure out what fits where, if we knock down this wall, how will that affect the light that comes in. I would love to have some sort of automated LiDAR feature that will take all those measurements, we can plop new cabinets and new appliances in, we can maybe add different light sources to this virtual environments that are realistic to the lighting conditions in my region, and that sounds tremendously helpful. Just shut up and take my money.

[chuckle]

0:16:08.4 LC: There's one for landscaping too, there's an app for landscaping that uses it, if you need a landscaper.

0:16:15.2 DV: I am extremely interested in this.

0:16:17.4 CS: Mine's very similar to Derek's, I love to shop for houses, I don't necessarily intend to buy them, but I love to look to see what's out there and see if I can imagine myself in a house somewhere. I know that a lot of real estate places have better walk-throughs, where they take certain 360 cameras and do this, but to have it be more accurate and where I can walk around the house more freely, I guess, would be something of great interest to me.

0:16:51.8 LC: Well, for me, I'm an artist, so I see the value of the ability to create a 3D scan so that I can 3D print any of my creations, because that's a very lengthy costly process of molding and casting, and so it would take the burden off of sculptors to have to learn molding and casting techniques like I've had to do, which is a whole other skill in itself. So that for me would be very useful.

0:17:23.6 CS: So our UX Strategy Service recently published a report on LiDAR, so if you'd like to know more about that. Or to send us any questions or comments you may have, you can email us at uxsoup@strategyanalytics.com, all one word, [@strategyanalytics.com](mailto:uxsoup@strategyanalytics.com). So thanks so much for joining us. A reminder that UX Soup is presented by Strategy Analytics. Check out our latest user-focused insights on a variety of topics by visiting sa-ux.com. Please also visit ux-soup.com, our podcast website. To check out other episodes, subscribe to your preferred podcast platform or connect with Viita Derek or myself on LinkedIn or Twitter. Thanks again. Bye for now.

[music]





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

