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Trends in UX Design: the IoT perspective

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Many Internet of Things (IoT) companies are looking to improve an existing product or create a notable new product by investing in user experience (UX) design. This is one reason UX design is a booming profession and evolving quickly. We designers need to keep updating our design practices to apply ever–advancing technologies to old and new problems.

Industrial market sectors such as transportation, manufacturing and the medical device sector, under pressure or excitement (hopefully the latter) from the emergence of the IoT, have been progressively embracing UX for the past few years. Even though company commitments vary between diving in headfirst or just dipping toes in the water, with the success of products like the Nest Thermostat and the Amazon Alexa, a growing number of companies are swept up in the expectation of good user experience.

And there's no reason to think that this embrace of UX will stop anytime soon. On the contrary, it's expected to continue at a rapid pace throughout 2019. From the perspective of an embedded and IoT UX designer, here are some emerging trends UX professionals should be aware of:

1 Educating stakeholders is critical

Raising awareness of usability issues and practices has always been a part of our dynamic profession. You would think by now that everyone has at least a passing understanding of what UX design offers, but education may be a larger piece of any design project than you might expect. Since many IoT stakeholders are just getting their feet wet with UX, they need to learn as they go along. Many of the concepts and practices are new to them. And they need to justify to business partners the processes and costs involved. As designers, we need to spend the time to make our practices more transparent, and to explain why we do what we do.

2 Voice is the new touch

Or is it? Last year saw so much hype about voice interaction that some people consider voice to be the new touch. But touch isn't losing ground. Voice is just the newest interactive modality to mature enough to make an impact in the consumer marketplace. It's a more convenient modality in some contexts where touch is not the best solution, like in-vehicle interfaces, where taking eyes off the road to look at a screen is not the safest option. But in many devices, touch will remain as it is, or as a partner to voice just like on a smartphone, and users will choose what works best for them to use at any given moment. The growing presence of voice does mean that many more UX designers will be required to get up to speed with the principles of designing for voice.

3 Context of use is growing in importance

With the rise of IoT and a proliferation of specialty devices, context of use -- the conditions under which a given artifact or software product is used or will be used in a normal day-to-day situation -- becomes a more important component of design. When devices are specialized, each device can have a unique context of use -- unlike the case with desktops, laptops, tablets and phones, which each having their own relatively consistent context of use. For instance, with a phone app, designers barely have to think of context of use. That's because a user will likely hold the phone the same way and have the same mobility when using any app. Also, built into the OS components is usability for a phone context (although this may not apply for unusual apps like augmented reality games).

With IoT devices that's not the case, so context is everything. Say you're creating an airline check-in kiosk. You're dealing with a fairly unique context. The user is standing at a fixed device at a particular location, with a limited number of devices. And they are probably in a hurry. Here's another example. Say you're designing a medical device for use in an operating room. It could be positioned on a stand that is mobile or fixed, or it could be secured to a wall. It could require interaction using sterile gloves or some other replaceable sterile shield. Each element requires different design decisions. Considering context of use is vital when designing with most IoT devices.

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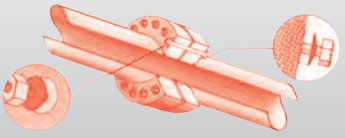

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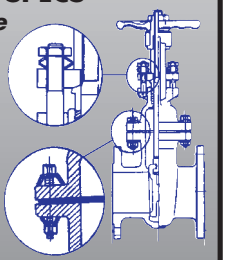

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4 Multi-device experiences are the new normal

The proliferation of special-purpose devices leads to experiences that can take place on multiple devices -- or what is referred to as multi-device experiences. A user will complete a task in the most convenient way for them, across devices. For instance, you might turn your security alarm "on" using your home-security system screen before leaving your residence, but you might reset your home-security code using your phone while sitting on the train on your way to work. Multi-device experiences are dynamic and adaptable for users. They let you complete your user journey in the most convenient way possible. Creating these experiences requires device-agnostic design, which asks designers to think holistically in terms of a user journey. The focus is on the user and what is most convenient for them, not on the devices and what they can do.

5 Design systems are gaining new fans

With the proliferation of IoT devices comes a proliferation of platforms. It's the Wild West in terms of design consistency. As a result, design systems -- shared design language -- are more popular as a way to fix the consistency problem for users, as well as address the extra work of dealing with multiple platforms. According to the 2017-2018 UXPin Design Industry Report, 67% of companies are now using a design system or are actively building one.

That's good news for designers and users. Design systems are "the single source of truth which groups all the elements that will allow the teams to design, realize and develop a product." In other words, they are patterns, components and guidelines for designers and developers. Embedded in these tangible tools are the principles a team wants to embody, such as brand values, shared processes, and shared beliefs. Well-known design systems include Material Design System, IBM Design System and ADG by Atlassian.

At first glance, design systems seem to benefit designers more than users because, once a system is established, it economizes work, reduces chaos and improves quality. But users are definitely beneficiaries of enhanced UX quality and consistency because they end up with a better product in the end.

6 UX designers are actively thinking about AI

Analysts have predicted that machine learning and artificial intelligence (AI) will become the key technology trends of 2019. That means designers need to think deeply about AI and how it impacts the user experience. Industrial IoT is considered the top use case for AI, which can assist in root cause analysis, outlier detection, and predictive maintenance of the equipment. Companies like Amazon, Google, Apple and IBM are investing heavily in R&D to bring AI closer to consumers. It's up to designers to find ways for AI to make sense for users.

7 Ethics is essential

By now, almost everyone has been the victim of some kind of data breach, which inflicts a huge amount of inconvenience and often fear. At the same time, we're witnessing first-hand how social media can affect a democracy, inciting divisiveness. Speaking of social media and time behind a screen, several major studies have found that more time spent staring at a screen leads to decreased happiness and at times depression for young people. While UX designers study the behavior of users in order to serve them better, they have also figured out how to manipulate them better with what have been called "dark web patterns."

As these issues continue to play out, there is growing interest in ethics as they pertain to UX design. In 2019, the conversation around ethics will grow louder. So who is talking about ethics in design? For one, the Center for Human Technology. They are directly concerned with UX design and have focused on user attention and dark web patterns. Others include the Palo Alto-based think tank Institute of the Future and a program in the investment firm Omidyar Network called the Tech and Society Solutions

Lab. Both groups are interested in the junction of technology and society and together have put together the Ethical OS guide. Their goal is to encourage communication between researchers who study technology's increasing impact on society and the large tech companies that produce this technology and the resulting products.

What it all means

In the last couple of years, digital technology has revealed it's dark potential. Although the IoT doesn't deal literally with dark web patterns, safety and security are huge issues with many IoT devices. That's why the onus is on designers to smarten up. Practicing user-centered design means creating designs that are good for users -- for people -- in all ways. Look for 2019 to bring new urgency in designers' understanding of user manipulation. And look for designers to gain better facility designing IoT devices in a way that limits potential for safety and security breaches.

As the proliferation of IoT devices continues, the demand for UX designers will continue to climb. This is all good news for UX designers. They are in higher demand than ever, with no end in sight. DW

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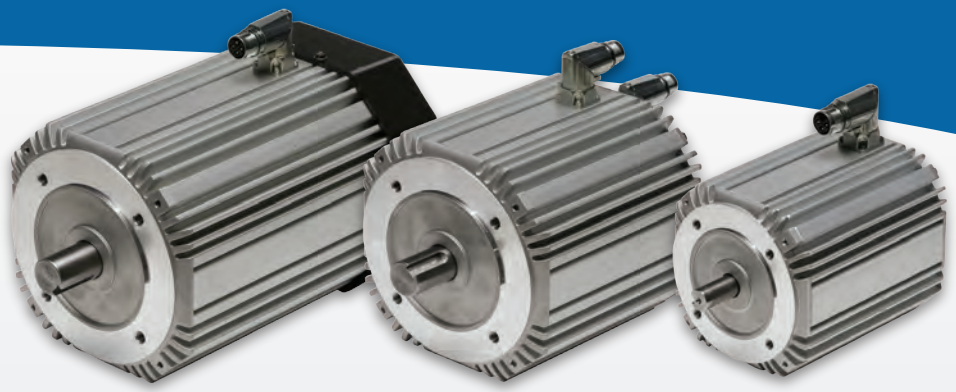

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