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How People Are Actually Using the Internet of Things

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In these early days of the Internet of Things (IoT), much of the focus has been on industrial applications, such as improving operations with autonomous machines, or standalone consumer products, like a Fitbit. But from our research, we're seeing a more human-centric category of IoT activity starting to emerge. It's less about automation and more about personal augmentation; less about individual devices and more about "living services" that let people program and connect smart devices however they want.

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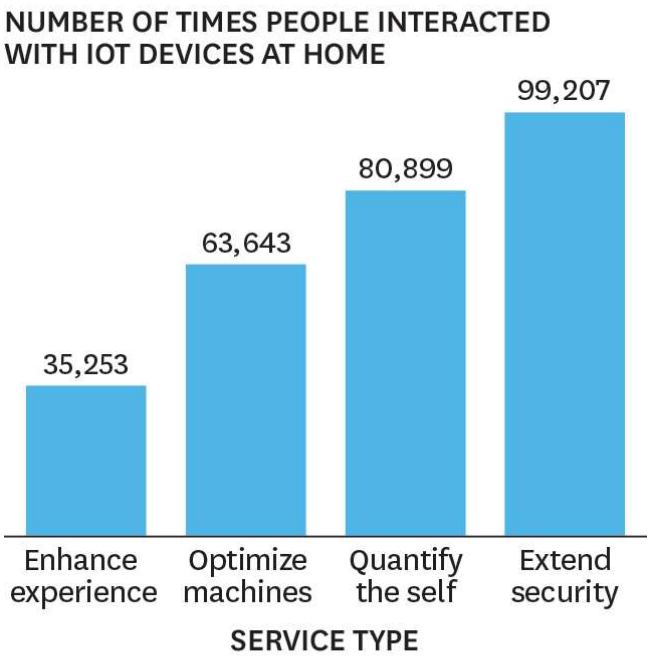
For instance, using one of these living services, I might connect my car to my smart garage door opener, which I've connected to my smart lock, which activates my smart thermostat that I've synced to my smart lighting system. I can program them all to simultaneously interact and do their jobs when I turn onto my driveway. My experience of coming home is enhanced, since everything is acting according to my preferences.

We did an open-source analysis of IoT user behavior, looking at 1,000 IoT technology platforms and services and more than 279,000 early adopter interactions with IoT devices. We found that consumers want an IoT that provides personalized services that can be adapted to different contexts. As with the Industrial IoT, the human IoT promises to be transformative.

What People Really Want from the Internet of Things



SOURCE ACCENTURE NETWORK ANALYSIS OF 1,000 IOT TECHNOLOGY PLATFORMS AND PLATFORM COMPLEMENTORS, MAY–SEPTEMBER 2015 © HBR.ORG

The data show that the most heavily used IoT programs are ones that make home life easier, more distinctive, and more pleasant. Respondents also show a big preference for services that don't require them to go out of their way to make something work. People using the Internet of Things increasingly prefer interfaces that are more natural and less visible (and attention-sapping) than screens. In other words, they don't want to type instructions on a tablet, interact with a device, or mess with settings on a cell phone to get what they want. Instead, they value these technologies as "living services" that anticipate their wants and act on them.

Here are four underlying types of living services we identified in the data, and what they mean for the IoT.

Technology that extends security. People want to be safe at home. There are literally dozens of IoT solutions in this area. For example, one system called Presence turns old iPhones and Android devices into rotating home cameras. It uses software that connects old phones with functioning cameras to your current smartphone or PC, so you can view areas in your house remotely. Other

companies are building more comprehensive solutions. For instance, Microsoft and SmartLabs have introduced a kit that allows people to remotely control motion sensors and surveillance cameras at home using the Internet Protocol. Basically, they can monitor their homes from anywhere—they can see who is entering the house when they're away, or they check in on a sick child or elderly parent. And Google's Nest and Apple's HomeKit are also working on technologies that will help people monitor their home security systems using the services they already provide.

Apps that quantify the self. People are interested in data that tells a story about themselves. We want to know how we compare to others—in terms of emotional intelligence, Body Mass Index, etc. You can pick pretty much any point of self-measurement and people will want to know their number. So it's not surprising that self-quantification is one of the most avidly downloaded IoT applications at home. Tracking our sleep patterns and levels of daily activity, and looking at simple dashboard analytics to understand this data, is just one example of how we self-quantify. The devices that do this, primarily wristbands with embedded sensors and software, are among the Internet-enabled consumer products that have taken off the fastest.

Services that optimize our machines. People like IoT services that automatically do what they would otherwise have to do manually. One of the most popular programs— turning on interior lights when the sun is setting—is a good example of how smart, connected devices can be optimized to save people time and money. There are new products that can automatically adjust air-conditioners, heaters, and other devices that use electricity, depending on when people are more likely to need them. The investments being made to add sensors and other internet technology to home appliances—by established companies such as General Electric and Whirlpool, and startups like Chai Energy—suggest that rising supply will lead to greater demand. This is also another area where we might be willing to let devices and appliances track our behaviors so that they can learn about our preferences and predict our needs.

Creative ways to enhance daily experiences. Few people can afford to spend thousands of dollars on putting sensors and custom-built technology into their homes (as Microsoft founder Bill Gates is said to have done with giant computer screens that display famous art and photos as people walk around his Seattle-area home). But as the Internet of Things scales up and becomes more ubiquitous, many experiences will become available in everyday homes, at less exorbitant prices. These could be IoT platforms that connect smart devices and sensors to augment everyday moments by tapping into sensory aspects of our environment like visuals, temperatures, and sounds. One of the most popular single programs we identified connects the Weather Channel

and the Phillips Hue Lighting system in which internet-enabled lights turn blue in specified rooms if it starts to rain. With living services, these elements are connected over the web and interact using sensor technology. You can think of many different uses for this type of experience-enhancing technology. For example, a writer who likes to increase focus with classical music and natural lighting won't have to manually get up and make those changes; the various devices in the room can activate those settings automatically. This personalization speaks to a hunger for technology experiences that make homes feel distinctive.

The human-centered applications that are so popular in our sample of early IoT adopters generally relate to home activities. But the larger trend—of personalized services that take up residence alongside us, so to speak, and learn from our behaviors—is context-agnostic. People at work, no less than people at home, are going to want this. So maybe the way to think about these human-aware home applications is that we're looking through a peephole. What we're getting a glimpse of now are digital services that will increasingly live with us at home, at work, anywhere in the future.

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