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Back to the Future: Technology Trends in 2017 and Beyond

Daphne Stanford · Wednesday, January 4th, 2017

There are a number of exciting new technology-related trends on the horizon. Access to the internet is expected to improve, due to plans for widespread open-source networking and wireless access. Drones, like self-driving cars, will become more widespread and sophisticated. And lastly, scanning will expand beyond applications like Google Pay to include more body-scanning, biometric capabilities.

Universal Internet Access

Facebook's plan for more universal access to the internet is still in its nascent stages, since exactly *how* it plans to allow access to the some four billion people without WiFi is yet to be clarified: basically, they are creating a kit which "bundles together some basic controlling hardware and radio chips inside a cheap plastic case, which can then be strapped to something—a tree, a lamppost, or any other nearby tall object." In addition, Google is in the process of developing "[b]alloons that float in the stratosphere and function as aerial cell towers to provide Internet access in areas with poor infrastructure." Similarly, Facebook is developing solar-powered drones in order to carry out the same task.

However, Nicholas Negroponte, a professor at MIT, argues that "[f]or billions more people to be brought online, it needs to be deployed by the public sector." In other words, it will still be up to IT leaders "to create open-source hardware and software blueprints." This means that start-ups will need to fill the void of internet service providers, but if they can accomplish this, then connectivity will not only become more accessible but more affordable, as well. The Open Compute Project can be explained as helping telecoms improve the hardware inside their data centers, as well as the rest of their networks; in other words, it aims to improve the wireless networks that already exist and build on them to make WiFi access available to more people.

According to Wired:

> Facebook plans on building everything from new wireless radios—the hardware that shuttles wireless signals to and from our phones—to new optical fiber equipment that can shuttle data between those radios. Then, the company says, it will 'open source' the designs, so that any wireless carrier can use them.

What seems to be emerging is an attempt by Facebook to level the playing field and create a fertile atmosphere for healthy competition so that there are more players in the wireless connectivity market and open the door for more affordable internet access. So far, however, Facebook has only tested the open source cellular network at their labs in California; test results to date include SMS messages, voice calls, and 2G data connectivity—with improvements planned for later versions of the network.

In addition to ideally making internet access more affordable, due to increasing the competition, the open compute project is also designed to be energy efficient, since it incorporates a 'vanity-free design,' which "eliminates nearly 6 pounds of material per server, reducing the amount of materials that need to be produced, transported, assembled, and eventually, disassembled." Taking a cue from open source networking, many electricity companies are getting in on the opportunity to provide wireless to rural communities via state funding to help subsidize the effort—originally established by President Roosevelt's Rural Electrification Administration, a central component of the New Deal.

Drones & Self-Driving Cars

The main difference, I suppose, between drones and self-driving cars are that the cars are, well, self-driving—whereas the drones are still controlled by a pilot, albeit remotely. What they have in common, of course, is the collision avoidance feature. Of course, it's smart of drone companies to make potential collisions into less of a risk: collision avoidance systems apparently map out the area surrounding a drone with three-dimensional stereoscopic images, hence acting as virtual eyes through the use of two or more cameras.

It's not clear just when self-driving vehicles will start becoming the norm, but personally, I'd rather control a flying drone remotely than step inside a supposedly self-driving vehicle—if only because I don't trust the computer programming to be fail-safe, as of yet. However, the disconnected factor seems to make it too easy for active drivers to fall by the wayside, regarding insurance coverage. As I'm sure has already been asked, what will this do to the insurance industry? Will it render all collisions the responsibility of the vehicle's manufacturer?

In particular, it makes a lot of sense for a collision avoidance system to become a regular feature of drones, simply due to the relatively high price tag. Besides serving as high-end entertainment for big spenders, a few future uses include the following: Amazon delivery for Amazon Prime members; drone cameras; private surveillance; air quality measurement; and Internet access for remote areas.

There's also potential applications in agriculture: aerial imagery for preseason scouting and monitoring crop health; preplanning planting areas by gathering footage of specific possible areas, beforehand; in-season assessment of crop health; and long-term analysis of a planting area, over time. Of course, one other major different between drones and self-driving cars is that the latter is much more potentially disruptive to societal norms, such as pleasure-driving and the insurance industry.

Scanning the Body

You may have seen hi-tech eye/iris scanners in *Mission Impossible*. Believe it or not, scanning technology is coming, and it's not just affecting our eyeballs: fingerprint scanners may soon become part of laptop technology. Although there was a somewhat unenthusiastic introduction of

fingerprint scanning with the last few models of iPhone, laptops have actually had the technology capability for quite a while, now—such as with Toshiba computers. However, a new touchpad technology from Synaptics called a SecurePad are designed with a sensor in the upper left corner of your touchpad. Part of the idea is to protect against identity theft, so as to prevent theft of user passwords.

Beyond fingerprint scanning, biometric scanning techniques are gaining in popularity as iris-scanning has been adopted at a few banks and credit unions, and some financial institutions are working toward adopting more futuristic methods like measuring body heat and blood pressure. Citigroup also has the technology to identify credit card customers with their voice. However, all of this technology is notably optional, still allowing customers the option of logging into their accounts using their username and password, as usual.

Much of this scanning technology has actually been in use for quite a while, via supermarket scanners and near field communication (NFC) technology. The latter form of payment technology is a type of radio frequency identification (RFID) technology that is able to identify objects via radio waves. Payments are made when customers hold their smartphones up to a payment reader, in order for the two devices to communicate with each other sans wires, through the use of radio frequency waves. There is also facial scan technology, but this from of scanning has been widely criticized because of the fact that facial scans can take place without the subject's permission, raising potential privacy concerns.

Scanning technology is tied to a larger effort on the part of tech leaders like Google to "kill the password." The alternative personalized encryption comes in the form of voice prints, fingerprints—even iris scans and voice recognition. A number of ATMs are beginning to incorporate biometrics in order to counteract fraud, though the exorbitant cost threatens to slow down the process, a bit. And then there are a few technical glitches, like what to do if you happen to be sick and your voice sounds different than usual. Overall, biometrics-based security is supposed to be eerily accurate but also (as mentioned earlier) vulnerable to security gaps and hacking, ironically, by anyone with a high-resolution, zooming camera or the tenacity to track a stranger.

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The future is, as of yet, unwritten. However, there are some technology trends that are beginning to solidify and become slowly integrated into our society, many of which reflect the general increase in connectivity between all of us—whether through the Internet of Things or sensors that detect potential obstacles or payment information. Also, the walls between all of us are becoming less and less tangible: pretty soon, every person on the planet will have access to the Internet; moreover, this access will be considered fundamental to our rights as citizens and curious human beings in continual search for more information, to assist us in living our daily lives.

Image Source: Peter Linehan

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