The Internet of Things and Marketing . . . The Future is Now

Dear Friends:

A connected world of billions of sensors, machines, and other non-human objects was the stuff of Hollywood science fiction not that long ago. No longer. Though still in its infancy, the Internet of Things, or IoT, is growing fast, and all of us in the media industry need to stay knowledgable about its profound effects on marketing. This issue's feature article takes us on a brief tour of the IoT landscape, including challenges and innovations we can expect to see in the near future.

Our spring calendar features the MFM/BCCA 56th annual conference, "Media Finance Focus 2016," on May 22-25 at the Sheraton Denver Downtown in Denver, Colorado. Szabo is pleased to sponsor the opening night party, featuring "That Eighties Band," at the Mile High Station.

Best wishes for a wonderful spring,

Robin Szabo, President
Szabo Associates, Inc.

What do you think of first when someone mentions the Cold War? Bomb drills where you crouched under your school desk? Rumpled trench-coated spies slinking around Eastern Europe? Khrushchev banging his shoe on a table, bellowing "We will bury you!"?

Actually, a few pretty good things came out of the Cold War. One, it didn't get hot. Two, it inspired some thrilling novels. And three . . . it brought us the internet. That's right, the internet. Back in the 60s, the country's leadership faced a serious question: How could U.S. authorities communicate after a nuclear war? A new kind of command-and-control network would have to be developed—a decentralized system that would operate even if and when its structures were destroyed. A collaboration between the U.S. Defense Department and private sector created the solution: a network of nodes, all of which could originate, pass, and receive messages. Messages would be divided into packets, each separately addressed to a specific destination node. If pieces of the network were destroyed, the packets would "fly" around via surviving nodes until they arrived at their destination. Voila—a blast-proof packet-switching network—which later became known as the internet.

The system did have limitations, however, until a British computer scientist named Sir Tim Berners-Lee realized that an emerging technology called hypertext could be used to advance the concept of information sharing. His invention was the World Wide Web, and the first Web page was served on the open internet in 1990.

A quarter-century later, the internet has evolved into a connected world of billions of sensors, machines, and other non-human devices—the Internet of Things, or IoT, so named by British technology pioneer Kevin Ashton. Marking the Web's 25th birthday, Berners-Lee remarked that it was "the largest repository for information and knowledge the world has yet seen, and our most powerful communications tool." It is no wonder, then, that advertisers are recognizing the IoT's enormous potential for connecting goods and services with their target audiences.

Humans and Not.
When we talk about internet "users," we are usually referring to human beings who personally interact with a device to access the internet. The IoT phase of the internet's evolution demands that we expand that definition to include non-humans—objects that can digitally "talk" to each other and to us and, as a result, create a detailed store of information.

Any object on the planet, if it were assigned an IP address, is a potential player in the world of IoT. Given the possibilities, industry analysts' predictions for the number of connected devices by the year 2020 vary wildly, from 21 billion (Gartner) to 34 billion (BI Intelligence) to 50 billion (Cisco).

The Internet of Everything. The Internet of Things stands to shake up everything we know about marketing. Arguably, it also stands to shake up virtually everything in our daily lives. The reason is that IoT innovations are driven by "disruptive technology," a term coined by Harvard Business School professor Clayton M. Christensen. In his 1997 book, *The Innovator's Dilemma,* Christensen separates new technology into two categories: "sustaining," which relies on incremental improvements to established technology, and "disruptive," which has no predecessor at all.

A few examples of disruptive technology in the recent past are the personal computer, mobile phone, smart phone, and social networking. All of these innovations forever changed the way we work and communicate. One example of new IoT disruptive technology is a wireless glucose monitoring system for diabetics that enables doctors to automatically access data and intervene when required. Another is smart wearables such as fitness trackers and smart watches. Because it has nothing to build and improve on, disruptive technology in its early days lacks refinement, often has performance problems, appeals to a limited audience, and may not have proven practical application. For these reasons, businesses are usually slow to adopt disruptive technologies, and IoT technology is no exception. According to a study by staffing firm TEKsystems, as reported last month by Sarah K. White for CIO.com, fewer than a quarter of businesses have reached the point where the IoT has started to impact their organizations in a meaningful and measurable way. The biggest reported roadblock is establishing return on investment and a sound business case, making it difficult to encourage funding and support for IoT. Additional challenges are the business side's and IT side's ability to work together to implement change along with the lack of talent with the right skills.

That said, the study indicates that companies believe that IoT initiatives will have a long-term impact on their businesses. Additionally, they know how they want to use the IoT within the next five years. Not surprisingly, the number one objective is to help improve user and customer experiences.

In order for the IoT to reach its potential, telecoms and governments must also innovate, overhauling infrastructure and creating avenues for digital devices to communicate. As microprocessors and bandwidth become greater and less expensive, the IoT should gain much broader acceptance at an accelerated pace. Also, as the cost of making "smart things" drops, as it surely will, the impact of IoT on our lives will quickly increase.

Data and More Data. The value of the IoT to marketers lies not in the object or device itself; rather, it lies in the data generated. The real-world, customer-specific applications of data made possible by the IoT will take consumer convenience—and expectations—to a whole new level, and marketers will be expected to meet those expectations. As marketing automation software company Marketo explains, more connectivity leads to more data, leads to smarter data, leads to more relevant campaigns, leads to more customer engagement.

When Netscape introduced "cookies" in 1995, advertisers gained the ability to peek into the digital lives of consumers. Twenty years later, device IDs enabled advertisers to link consumers (and their personal data) to a specific device, providing a new way to measure advertising effectiveness. More recently, technology developed beyond simply connecting devices to consumers' online behavior. Today, with the introduction of wearables and beacons, devices bridge the digital and physical worlds, connecting with an individual consumer's day-to-day real-world behavior.

The future of wearables extends far beyond smart watches.

Wearables that are swallowed or implanted will monitor your body's condition and health in real time and communicate that information to other devices. The possibilities are endless, from instructing your car not to start because your blood alcohol level is too high for safety, to telling your home air conditioning system to turn on because your body temperature is too high for comfort.

Beacon technology allows Bluetooth devices to broadcast or receive data within short distances. A broadcasting device (Beacon or iBeacon, Apple's version of the Bluetooth-based concept) sends out a small amount of data every second or so, and the customer's smart phone, with the appropriate app enabled, receives it. Some of today's retailers use beacons to enhance in-store shopping experiences, sending ads, coupons, loyalty discounts, and product information to customers. In addition to increasing sales, the retailer can collect valuable data that help them identify their customers and advertise accordingly. The benefit to customers must be significant since the process requires them to download the store's app, open it in the store, turn on the Bluetooth signal, and share data.

While beacon technology is still in its infancy, many types of applications are arriving as the technology and acceptance evolve. For example, entertainment company Fox has become the first brand to use beacons on London buses as part of a campaign promoting the movie Kung Fu Panda 3. This month, passengers on about 500 buses will be prompted to open on their smart phones the popular streaming app Shazam, which will listen for the beacon signal, display the film's trailer, and offer the opportunity to buy cinema tickets directly from their devices. The data gathered will enable Fox to plan upcoming marketing efforts.

Beacons and WiFi connectivity can track not only people but also things, such as inventory in stores. At the National Retail Federation (NRF) Big Show in

January, digital signage company Scala showcased how an RFID (Radio Frequency ID)-tagged clothing item on the move to a dressing room could trigger a video screen showing additional items that would go with the clothing selected. The company also demonstrated how, using beacon technology and a retailer's app, retailers can detect and act on an in-store customer's profile and purchase history.

Nowhere to Run.
With the IoT, we no longer need to "access" the internet. Connected objects will be literally everywhere. Consumers will need to abandon the antiquated idea that they can hide from its reach, even in their most private spaces. Take, for example, the IoT-connected shower head, introduced at the Experience 2015 IoT conference by Symmons Industries, a 75-yr.-old manufacturer of plumbing products. Designed to "enhance the [hotel] guest experience, reduce operating costs and generate revenue opportunities," the smart device's screen indicates how much water would be saved by ending the shower at various points in time. The screen is also capable of conveying messages, including

incentives, advertising, coupons, and deals.

A key insight from the 2016 Consumer Electronics Show, as reported by Chuck Martin in *IoT Daily,* is that the IoT is moving from smart objects (connected to the internet) to interconnected objects (connected to each other). In previous years, a smart lock could lock or unlock a door only via the company's app. Now, with Apple's HomeKit, numerous Apple-approved devices can be controlled with simple voice commands to Siri using an iPhone, iPad, iPod, Apple watch, or Apple TV. The HomeKit framework allows the user to group actions, activated by a single voice command. For example, "Goodnight" might tell Siri to lock the doors, turn off the lights, and set the alarm.

Apple is not the only player on the home automation field. Following its 2014 acquisition of Nest Labs, the maker of the Nest smart learning thermostat, Google established a new developer program called "Works with Nest." The program provides a set of application program interfaces that manufacturers can include in their smart devices, allowing them to link the devices with Nest and other Google products. A more recent entry into home automation

is Samsung SmartThings, which turns your smart phone into a remote control for devices in the home.

For IoT products to be successful, they must meet expectations for convenience, offer rewards for shared data, and/or provide solutions to problems. Our interconnected lives allow marketers to dive deeply into our lives in pursuit of data. If customers are to embrace this intrusion, the benefits must be worth it. Imagine your smart refrigerator communicating with your smart car, which is driving by a grocery store, which sends you a message that the chips and salsa you forgot to pick up for tonight's big game are on sale. Now that's an intrusion worth some consideration.

Privacy Please.
Privacy and security issues are among the top concerns arising around the IoT. This past year, security researchers and professional hackers have shown just how vulnerable to risk we are. From remotely disabling the transmission and brakes on a 2014 Jeep Cherokee to hacking the pacemaker implanted in a robotic dummy used to train medical students and "killing" it, the risk of digital insecurity has become not only financial but also potentially life-threatening.

Inexpensive and disposable devices, such as wearables, may pose the greatest risk. Because they are cheap to manufacture, companies are less likely to spend much money on security in the development phase. Wi-Fi-enabled devices are proliferating; however, securing the Wi-Fi has not been a top priority for product producers. Additionally, many of these products are being developed by newbies, startups without the capability to implement proper security.

In its Internet of Things State of the Union Study, HP Fortify on Demand reported the high incidence of privacy concerns, insufficient authentication and authorization, lack of transport encryption, insecure Web interface, and insecure software and firmware on popular IoT devices. The report concludes with
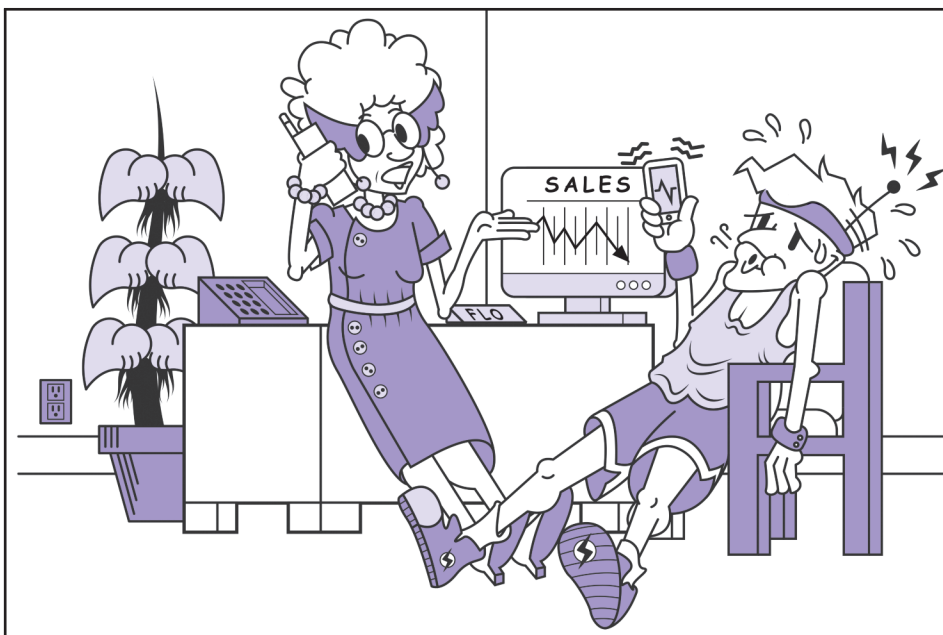
"Boss, your refrigerator texted that it ordered a case of beer, your house emailed that your furnace died, and Sales' smart watch, smart headband, and smart innersoles report that he's behind on a lot more than his monthly sales quota."

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recommendations for developers to conduct security reviews of devices and all associated components, implement security standards that all devices must meet before production, and ensure that security is a consideration throughout the product lifecycle.

Thankfully, industry groups and vendor alliances are attempting to address these issues. As examples, the International Standards Organization (ISO) is working on adapting its standards to the IoT, while the Institute of Electrical and Electronics Engineers (IEEE) Standards Association is working on an architectural framework that will address IoT security, privacy, and safety.

Advertisers, Agencies and the IoT.

The IoT is redefining the definition of advertising, placing ad messaging into the flow of every-day life. Advertising will no longer be a one-way scattershot of information; rather, it will integrate into its audience's activities and invite engagement. The more the audience engages, the more value it receives. In order to earn that engagement, however, the information received must be on-target, timely, and welcome.

For advertisers and their agencies, that means better creative and fewer ads, according to Matt Sweeney, CEO of Xaxis North America. Real-time data gleaned from geographic, demographic, behavioral and other factors will allow on-the-spot assemblage of targeted, relevant advertising. Additionally, progressive publishers will concentrate on providing less intrusive formats with emphasis on audience experience.

Into the Future.

The Consumer Technology Association (formerly the Consumer Electronics Association) predicts U.S. shipments, this year, of nine million smart home devices, 38 million wearables, one million drones, 27 million smart televisions, a million virtual reality headsets, and 183 million smartphones.

According to the Cisco Visual Networking Index, smart devices will account for 98% of mobile data traffic within four years. Cisco also forecasts that by the year 2020, there will be more than 600 million wearable devices in use, and more than three billion M2M (machine to machine) connections.

When asked about any milestone that might change the way we use the internet in the next 20 years, Sir Tim Berners-Lee replied, "When I have enough bandwidth to bring me a scene in wrap-around HD so my eyes and ears can't tell I'm not in the other place." Hmm. That might have a significant impact on the travel business. ♦