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The Internet of Things: Revolutionizing the Retail Industry

By Jonathan Gregory



Connected devices aren't just changing the way consumers live, work and play—they're dramatically reshaping entire industries. Adding more intelligence and more connectivity to the objects that surround us—everything from utility meters to home thermostats—will produce enormous amounts of data that companies can leverage to improve their operations, serve customers better, and create entirely new ways of doing business.

The Internet of Things (IoT) is driving innovation and new opportunities by bringing every object, consumer and activity into the digital realm. At the same time, leading businesses are making similar changes within their enterprises by digitizing every employee, process, product and service. The proliferation of connected devices coupled with improved, less-expensive technology platforms and adoption of common standards will only increase the rapid growth of IoT-enabled capabilities across industries.

The IoT will be particularly disruptive to the retail industry. Already, we're seeing retailers experimenting with ways to use intelligent, connected devices to offer new services, reshape experiences and enter new markets by creating digital ecosystems.

The IoT movement offers retailers opportunities in three critical areas: customer experience, the supply chain, and new channels and revenue streams. While the IoT may seem like science fiction, it is becoming reality faster than most of us can comprehend. Retailers that hesitate to develop and execute an IoT strategy will open the door for competitors—old and new alike—to swoop in and capture early IoT mind share and market share.

1. Improving the customer experience

Many companies can already mimic customer intimacy—as seen in online ads that quickly reflect your latest purchases—but the IoT promises something much more authentic and meaningful to the individual. What's happening now is that every experience is becoming a digital experience as ordinary "things" become intelligent devices. These experiences are coalescing into what some are calling the "Internet of Me," which describes an interconnected environment in which businesses are building products and services to be designed for, created for, and specifically centered on the individual.

Consumer adoption of IoT devices is expected to rise quickly: The "State of the Internet of Things" study from Accenture Interactive found that nearly two-thirds of consumers intend to purchase a connected home device by 2019, while ownership of wearable technology is expected to double year over year in 2016.¹

The Internet of Things presents an opportunity for retailers to develop a vastly improved ecosystem that connects physical and digital worlds, allowing bidirectional, real-time interaction with consumers both inside and outside the store. The increasingly ubiquitous smartphone will be the hub for these interactions. Retailers are slowly evolving from fearing smartphone-toting shoppers who "showroom" (browse products in-store and then purchase online, often from competitors) to exploring new ways to connect with them to enhance the in-store experience. One way is through location-based beacon technology, which retailers can use to interact directly with customers as they enter the store. Department store brands such as Lord & Taylor and Hudson's Bay are already using Apple's iBeacon technology and a mobile marketing platform called Swirl to deliver personalized promotions to customers who download the brand's app.²

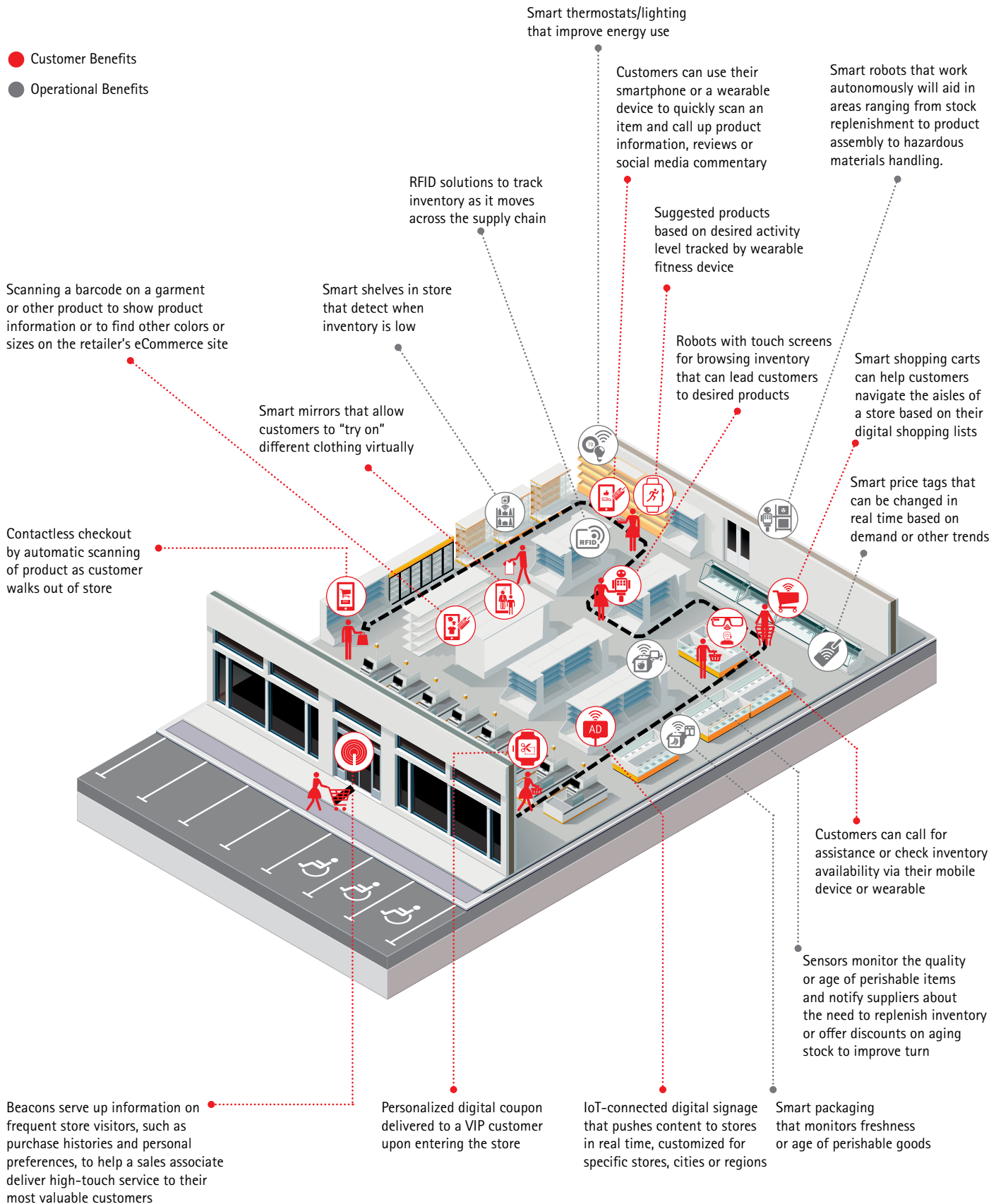
Retailers can leverage the copious amounts of data produced by these interactions to improve the customer's in-store experience. Using sensors to track customers' paths through a store, for example, can help managers improve store layout and merchandise placement strategies. Hugo Boss has already deployed heat sensors in its clothing stores to track customer movements, which helps managers place premium products in high-traffic areas.³

1 "The Internet of Things: The Future of Consumer Adoption," Acquity Group, an Accenture company, 2014.

2 <http://mashable.com/2014/07/28/lord-taylor-ibeacon/>

3 <http://www.reuters.com/article/2013/11/15/retail-tracking-idUSL5N0IY3JL20131115>

The In-store Experience of Tomorrow



2. Optimizing supply chain operations

The "Industrial Internet" has emerged as a term to describe how companies are leveraging cloud, mobile, big data and other technologies to improve operational efficiencies and foster innovation by tightly integrating the digital and physical worlds. The combination of the Industrial Internet and IoT devices could add more than \$14 trillion to the global economy by 2030.⁴

Connected devices and products provide retailers with the opportunity to help optimize operations in the face of a more complex supply chain, increasingly important digital channels, and a more demanding customer. RFID technologies, for example, can improve the precision of inventory tracking. Data visualization technologies make it easier for employees to track products across the supply chain. This service could even be extended to customers—allowing them to track, for example, where a custom order is in the production and distribution process.

Managers could begin to adjust pricing in real-time, using Internet-enabled smart tags to lower prices on promotional or low-turnover items or increase pricing on higher-demand items. A fully integrated pricing system would help retailers improve synchronization of prices between the shelves and the registers and also across channels, to verify prices are consistent between online and brick and mortar stores.

Other IoT devices can be integrated within the supply chain to further improve store operations and help reduce cost. For example, IoT-enabled sensors confirm store managers to monitor lighting and temperature control and adjust settings to improve customer comfort and support more cost-effective energy usage.

Using sensors to automate many of the functions that employees currently have to perform manually, such as tracking inventory or changing prices on individual items, gives sales associates more time to spend interacting with customers—further improving the in-store experience.

3. Creating new channels and revenue streams

The true power of the Internet of Things lies in the opportunities it presents to retailers to create new revenue streams or, in some cases, build entirely new channels. We're already seeing examples of incremental revenues retailers can help achieve by expanding into new channels or creating new, high-margin product categories for the emerging "connected home."

Household appliances, home security and comfort products, even health and wellness products are all becoming part of the Internet of Things ecosystem. Retailers in home improvement or consumer electronics sectors not only can drive more sales of these connected devices—Home Depot already stocks more than 600 "smart" products in its stores⁵—they can also tap into the data they provide to extend their touch into customers' homes.

Some retailers are taking further advantage of the wide array of connected products by becoming an integration "platform." The concept behind these platforms is to make it easier for customers to make all of their in-home devices talk to one another.

Lowe's, for example, has launched the Iris platform, a "smart home hub" that can communicate with any device using networking technologies like Wi-Fi, ZigBee, or Z-Wave. The hub was designed with an open interface so that manufacturers could integrate their products with the platform. Iris puts Lowe's in direct competition with telecommunications providers such as AT&T and Verizon, while opening up new opportunities for teaming with manufacturers to integrate their products with Iris.⁶ Other platform examples include Home Depot's Wink and Staples' Connect.

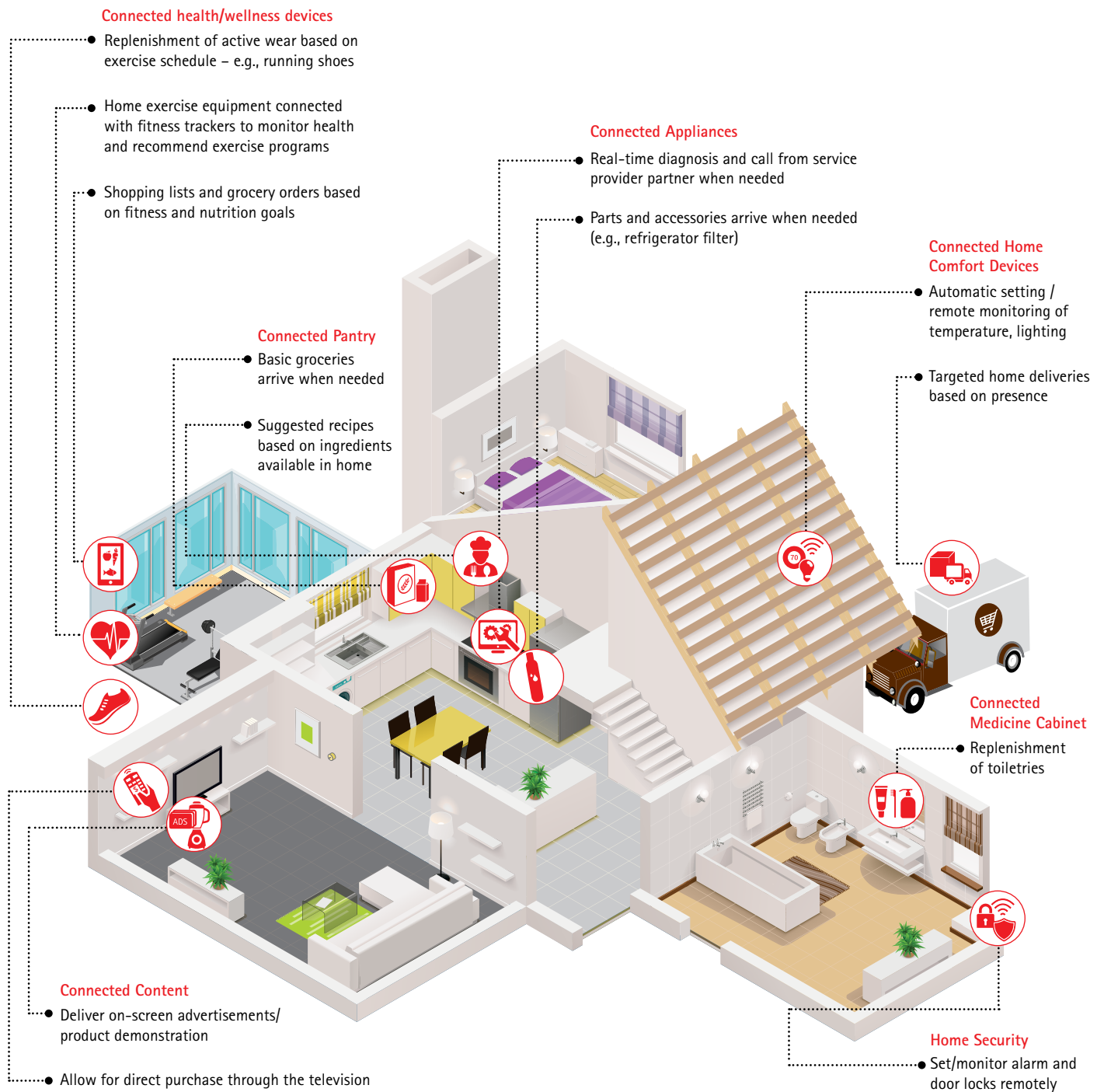
Retailers in other retail sectors, such as grocery, could potentially build or partner with these platforms as well. Connected platforms would give retailers another direct channel to customers, generating a potential gold mine of customer data—information associated with almost every aspect of the household, from utility usage to consumption trends. This information could help retailers to drive more targeted offers or, by integrating connected platforms with existing e-commerce channels, offer new services such as automated replacement of products based on the customer's consumption or by monitoring perishable dates.

4 <http://www.accenture.com/us-en/landing-pages/Pages/industrial-internet-of-things-webcasts.aspx#TheOpportunity>

5 <https://gigaom.com/2014/08/15/home-depot-wants-every-connected-gadget-it-sells-to-be-wink-compatible/>

6 "Lowe's Wants to Be Your Smart Home Gateway," ComputerWorld, September 11, 2014.

The Connected Home



Making the Internet of Things a Reality

Leadership teams may find it difficult to get their arms around an Internet of Things strategy. CIOs in particular may be hard-pressed to accommodate entirely new classes of devices into their already complex IT infrastructures. But it's important for retailers to consider taking steps now to lay a foundation for IoT support later. Specifically, they'll need to think about building new capabilities in two key areas:

1. Organization

One of the most important pieces of driving the IoT-enabled agenda is ensuring that the right culture, organizational structure, governance and talent exist within the company. Business and IT leadership must work together to identify opportunities to leverage technology and ensure a strong partnership between IT and the business, empowered by executive leadership, to rapidly bring new ideas and solutions to market.

Key organizational elements required for IoT success

Culture

- A clear understanding of the business strategy to confirm that IoT-enabled solutions are consistent with business strategy
- An approach that prioritizes the impact and potential benefits of IoT investments around customer needs
- Alignment between IT and operations, marketing, supply chain and other business stakeholders to confirm that IoT-enabled solutions are designed and implemented with business needs in mind
- A willingness to rapidly test—and fail—in order to find the right mix of solutions and capabilities

Governance

- Reduce silos between business and IT initiatives related to IoT by building cross-functional project teams comprising IT, Marketing, Operations and Supply Chain
- Reduce internal competition for resources and experience
- Prioritize revenue enhancement vs. cost reduction opportunities for IoT (e.g., use cost reduction benefits to fund revenue enhancement initiatives)
- Adopt agile development techniques to improve deployment times for new IoT-related functionality
- Create new privacy policies that carefully account for the new relationship businesses will have with consumers and their data and how they will interact in the real world

2. Technology

A foundation of technical capabilities is critical to enable the IoT agenda. IT teams will need to build off of existing investments in key areas such as big data/analytics, in-store technology infrastructures and internal and customer-facing applications to take advantage of the wealth of data generated by IoT devices, while ensuring that the proper connectivity and security foundations are in place to support IoT-enabled initiatives.

Foundational technology capabilities required for IoT success

Big Data / Analytics

- Compatibility and use of existing data warehouses and database solutions for IoT applications
- On-premise and proprietary data management vs. cloud solutions to support IoT analytics
- Middleware solutions and data interchanges that optimize speed of queries for real-time analytics
- In-memory computing

Infrastructure

- Bluetooth LE Beacons that identify and send messages to registered consumers and unregistered devices that respond when the customer enters a store
- RFID for inventory management
- Network security policies and services to ensure customer data is secure across the entire supply chain

Applications

- Web services/APIs that define how devices send, receive and process information
- API management strategy to provide the business with API monitoring and visibility capabilities
- App factories
- Development and debugging tools
- Embedded operating systems

The Internet of Things is still in the very early stages of implementation. But IoT deployments are likely to mirror the rapid adoption curves of other recent digital technology revolutions, beginning with the birth of the Internet and continuing with the rapid-fire rise of mobile, ecommerce and social media. Rapidly changing customer expectations and industry competition may require retailers to look at the IoT even more aggressively than they have other technology disruptions. Waiting does not appear to be an option for retailers that want to protect market share and position themselves for future growth.

What to Get Done in the Next 60 Days

- Identify an executive sponsor and key business and technology stakeholders
- Identify existing products and channels that can easily be connected to IoT platforms or devices
- Develop a short and long-term IoT strategy and business case for garnering organizational support
- Evaluate the existing organization, culture and technology against the strategy
- Investigate and understand associated privacy and customer data security implications
- Build and begin to execute a plan to prototype two or three key opportunities that can be piloted in a limited footprint of stores

Retailers that take the lead in this space stand to gain an important advantage in an already competitive environment. Early adopters will be positioned to more quickly deliver IoT-enabled capabilities that can increase revenue, reduce costs and drive a differentiated brand experience. The IoT will be a disruptive force in retail operations. As companies begin to form an IoT strategy, one question must be at the forefront: Do you want to be a disrupter or the disrupted?

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Contact the author

Jonathan Gregory
Jonathan.m.gregory@accenture.com

Additional contributors

Michael Cremin
Michael.j.cremin@accenture.com

Munir Nasser
Munir.nasser@accenture.com

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