Testimony of
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Before the
Subcommittee on Communications, Technology, Innovation, and the Internet
Senate Commerce, Science, and Transportation Committee
"Advancing the Internet of Things in Rural America"
on
November 7, 2017

Thank you, Chairman Wicker, Ranking Member Schatz and members of the Subcommittee, for the opportunity to testify before you today. My name is Michael Terzich and I am the Chief Administrative Officer for Zebra Technologies. Zebra Technologies Corporation ("Zebra") is a global leader in bringing enterprise Internet of Things (IoT) solutions to Business-to-Business (B2B) and Business-to-Government (B2G) markets. With revenues of approximately $3.6 billion and 7,000 employees in more than 40 countries, Zebra is a trusted business partner with more than 95 percent of all Fortune 500 companies. We work with companies all across America, including in many rural communities.

While many Americans may not recognize Zebra by name, they come into contact with our solutions every day. For example, the barcode labels that are prominently featured on airline bag tags, express delivery packages, and pharmaceutical prescription bottles are often generated by a Zebra barcode label printer, and tracked and managed by Zebra scanners and mobile computers.

Zebra leads the growing category known as Enterprise Asset Intelligence (EAI) which describes the ability of businesses to track critical assets within their operations and know exactly what they are, where they are, and their condition so they can make smarter, faster decisions that improve their bottom line. EAI leverages and recognizes the fact that people, assets, and devices – especially mobile devices – are becoming increasingly connected and that this trend is advancing at an exponential rate. A few key facts help illustrate this point:

- By 2020, there will be 1.75 billion global mobile workers accounting for 42% of the global workforce.[1]

- By 2020, there will be 21 billion connected devices in a global Internet of Things.[2]

[1] Source: Strategy Analytics as cited in *Visibility That's Visionary*, Zebra Technologies Corporation (May 31, 2016, 11:15 AM), https://www.zebra.com/content/dam/zebra_new_ia/en-us/campaigns/brand-campaign/zebra-visibility-vision-report-en-us.pdf.

[2] Source: Gartner Group as cited in *Visibility That's Visionary*, Zebra Technologies Corporation (May 31, 2016, 11:15 AM), https://www.zebra.com/content/dam/zebra_new_ia/en-us/campaigns/brand-campaign/zebra-visibility-vision-report-en-us.pdf.

- By 2020, there will be 44 zettabytes of data with 10% of it coming from the Internet of Things.[3]

As a result, Zebra is working with companies all across the United States to provide solutions that yield real-time visibility into their processes, assets, and people so that faster – and more informed – decisions can be made. The key elements which enable this work include:[4]

- **Sense**. The employment of unrivaled expertise in sensor and device connectivity enables companies to inter-connect devices to software and to mobile workers so that decision makers and workers alike have substantially more real-time visibility into operations.

- **Analyze.** Equally important, the provision of easy access to an unprecedented amount of data that EAI enables allows companies to plan more effective short- and long-term strategies by delivering real-time insights into the critical data captured by the sensors in connected devices.

- **Act.** The explosive growth of mobile devices across the private, public, and non-profit sectors enables management and workers at all levels to act on these visibility-driven insights in real-time, anytime and everywhere.

Businesses, including those in rural America, are recognizing the transformational role of IoT solutions. These businesses represent many sectors, including retail, manufacturing, consumer products, transportation, healthcare, government, oil/gas, and hospitality. Companies deploy these IoT solutions to address a variety of strategic, operational, and business challenges.

The following are some industry sector examples being put to use in companies across rural America:

Manufacturing

In the manufacturing sector, companies are adopting IoT solutions and the smart factory. Through the principles of Manufacturing 4.0, the smart factory calls for providing actionable visibility to the entire operation as well as to those vendors who can help manage the supply chain. Workers use a combination of RFID, wearables, automated systems and other emerging technologies to monitor the physical processes of the plant and enable companies to make decentralized decisions. In the factory and across the supply chain, firms are also capitalizing on the Industrial Internet of Things (IIoT) to achieve real-time visibility into their goods, assets, processes and places.

Like other companies, Whirlpool Corporation wanted to optimize mobile device management at its distribution centers. Whirlpool was having problems with misplaced devices,

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[3] Source: Digital Universe Study as cited in *Visibility That's Visionary*, Zebra Technologies Corporation (May 31, 2016, 11:15 AM), https://www.zebra.com/content/dam/zebra_new_ia/en-us/campaigns/brand-campaign/zebra-visibility-vision-report-en-us.pdf.

[4] Source: Zebra Technologies Corporation, *Visibility That's Visionary*, (May 31, 2016, 11:15 AM), https://www.zebra.com/us/en/cpn/visibility.html.

battery life, the inability to update devices in a systematic way, and a lack of data metrics around device performance. They needed a centralized management system to track device health, productivity, location, and ensure proper deployment.

To solve their problem, Whirlpool began using Zebra XT15 mobile computers, VH10 vehicle-mounted computers, and Zebra's Operational Visibility Service (OVS). The VH10 and XT15 are extremely rugged, reliable devices that suit the distribution center well. OVS helps Whirlpool and long-time Zebra partner, Industrial Service Technology (IST) right-size equipment and understand the needs of the pool as well as site-by-site needs. This combination allows Whirlpool and IST to sense when there could be a problem, analyze what it is, and act on a solution in real-time.

As we see with the Whirlpool example, automation provides instant access to data which is essential to ensuring that the production process operates smoothly. Manufacturers are realizing the very real benefits of data connectivity: increased visibility into the entire manufacturing process; an accelerated pace in shipping and receiving; faster identification of points-of-failure; and deeper insights into the inner workings of their operations.

Transportation & Logistics

Companies within the Transportation & Logistics (T&L) sector literally deliver the U.S. economy. The movement of goods and people across America and the globe represents the backbone of the overall supply chain. In T&L, the challenge continues to be how to optimize delivery as the average floor-loaded trailer could carry 30 percent more cargo. With tablet-based, trailer load analytics software, warehouses and fleet managers are given a clear image and the load statistics of each trailer, allowing them to easily track fulfillment and ensure cargo loads reach their full potential.

For the movement of goods, companies must leverage IoT solutions to maintain visibility that is critical to customer service as well as quality assurance and traceability. Adherence to regulatory compliance requires visibility often across a complex chain of custody, and that visibility is gained by transforming the reality of storage, transport, and delivery into systems of record. For the movement of people, their baggage, and cargo, IoT solutions offer real-time visibility across a complex chain of airports, planes, carts, and baggage claim centers. In each of these scenarios, workers use locationing solutions with a wide array of purpose-built mobile computing, conditioned labels, RFID, and other emerging technologies to maintain real-time operational visibility.

For example, ArcBest Corporation, based in Fort Smith, Arkansas, ships high-value, time-critical freight anywhere in the world with the highest level of service in the industry. To fulfill its commitment to supply chain optimization and premium logistics, ArcBest uses robust analytics data and advanced technology to develop a supply chain strategy for its customers to minimize cost and improve the shipping and logistics process. Ultimately, the power of analytics gives ArcBest and its customers a competitive advantage.

Retail

The shift to IoT technologies is an industry imperative to keep step with the shopping habits and expectations of consumers reshaped by the tech revolution that's still unfurling. Digital disruption — most profoundly, online shopping and smartphones — has birthed ever connected, savvy shoppers who have the globe's grandest mall at their fingertips. And retailers, whether they realize it or not yet, are now largely catering to Millennials — who have eclipsed Baby Boomers as the world's largest shopping group and will comprise 75% of the global workforce by 2025. The key takeaway here: this group born between 1980 and 1995 marks the first generation of digital natives, for whom technology is second nature.

When it comes to the Internet of Things, stores are paying attention: nearly 70% of retail decision makers are ready to make changes required to adopt IoT. Already, 21% percent of have implemented IoT and another 27% are planning to deploy within a year.[5]

The Bon-Ton Stores, which operates Bon-Ton, Bergner's, Boston Store, Carson's, Elder-Beerman, Herberger's and Younkers stores, is a prime example of how retailers are using Zebra's IoT solutions to improve the in-store customer experience. Today, associates in more than 180 Bon-Ton retail department stores use Zebra's MC3190-Z RFID handheld readers on a daily basis to streamline the display compliance process and know with certainty that all available merchandise is on display.

As soon as associates arrive in the morning, they scan the selling floor using the MC3190-Z readers to compare items on display against on-hand inventories, helping them identify missing items that should be on the sales floor. Store audits revealed that with the previously used manual system, up to 20 percent of merchandise in certain categories might be missing from the sales floor during a given week, resulting in missed sales opportunities.

The RFID inventory system provides Bon-Ton with deeper visibility into what merchandise is available at all times. It dramatically increases inventory management efficiencies by allowing store associates to scan and tag new merchandise as it first arrives in-store so it can be immediately placed on display, leading to quicker item availability for shoppers and increased sales.

In rural America, retailers are seeking better ways to bridge their online presence with traditional brick-and-mortar stores through cross-channel selling. Having the ability to collect information, at every point whenever data changes status – from the manufacturer, through the distributor, to the sales floor – is significant. Coupling this data with sales and marketing metrics collected from fixed point-of-sale (POS) devices and smartphones can pay big dividends in driving customer loyalty programs. When properly implemented, retailers can link their smart devices together with their data center and capitalize on each facet of Big Data.

[5] Source: Zebra's 2017 Retail Vision Study

Healthcare

Heavily regulated and moving to further digitization, the healthcare industry faces major hurdles in the drive to improve patient safety, enhance worker efficiency, and control costs. Electronic health records (EHRs) adoption paves the way for maintaining detailed, accurate, and life-long individual patient records. In addition, medical facilities leverage RFID tags to achieve 100% asset visibility, which helps reduce theft, optimize response times and improve asset utilization by medical staff.

With the right IoT solution, healthcare professionals can integrate with EHR systems, minimizing medication and laboratory errors, while maximizing patient safety and improving the quality of care. One example is our work with Avera Health, an integrated health system based in Sioux Falls, serving South Dakota and surrounding areas of Minnesota, Iowa, Nebraska and North Dakota. Avera Health serves a population of nearly one million people through 33 hospitals, 208 primary and specialty care clinics, and 40 senior living facilities. Based on our partnership with Voalte, Zebra's technology is being used by Avera Health to improve patient outcomes by integrating voice calls, text messaging, and alarm and alert notifications on one enterprise smartphone platform. These technologies also work to improve the discharge process to speed patient throughput, streamline the medication order process and optimize alarm management to ensure patient safety.

B2B IoT Solutions Depend on Access to High-Speed Broadband

For companies in rural America to successfully utilize B2B IoT solutions, they must have unfettered access to quality high-speed broadband, both wireline and wireless. Without investment in broadband infrastructure in rural communities, companies, healthcare providers, and consumers will be left behind. Spectrum is the lifeblood of IoT, and that is no different for business IoT solutions.

We urge this subcommittee and the full Committee to support infrastructure legislation that promotes the deployment of mobile broadband networks, as well as directs the NTIA and FCC to allocate more commercial licensed and unlicensed spectrum in a technology neutral way. Additionally, we urge Congress to advance policies that increase broadband investment and deployment in rural America.

Zebra also supports coordination among government agencies to discourage overlapping government regulation of the Internet of Things which could impede innovation. We congratulate the Committee for your work to pass the DIGIT Act, and thank you for your efforts to ensure that industry has the ability to continue to roll out new technologies to improve the lives of American workers.

In Conclusion

IoT presents a transformative opportunity for enterprises of all types and sizes all over the Unites States. The benefits of B2B IoT solutions are allowing companies to work smarter,

enhance productivity, create jobs and improve the overall economy. At Zebra, we are committed to bringing IoT solutions to companies to help them work better and smarter, giving them a performance edge. Thank you for the opportunity to share our story.