Testimony of

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Thank you, Chairman Burgess, Ranking Member Schakowsky and members of the Subcommittee, for the opportunity to testify before you today. My name is Tom Bianculli and I am the Vice President of the Emerging Technology Office at Zebra Technologies Corporation. With nearly $4.0 billion in annual revenue, Zebra is a global market leader in a number of advanced technologies, including the Internet of Things (IoT) and the related area of wearable technologies.

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, mobile computers and wireless infrastructure. Avid skiers experience less time in lift lines because of Zebra RFID tags that are embedded in the lift tickets which enable resort operators to quickly move skiers through waiting lines. Retail shoppers see our tags on clothing as an inventory management tool that enables stores to have the right products available on the shelves in real time. Our pioneering technology vision and trusted enterprise solutions, particularly our wearable technologies that are the focus of today's hearing, are dedicated to helping business, government

and non-profits make smarter decisions and take smarter actions by providing them with real-time visibility and mission-critical information in an ever more efficient manner.

Zebra commends the Subcommittee for hosting this series of hearings on technological disrupters. America's future technological leadership is best expressed in our ability to continually upend and overturn existing technological and business models; and wearable technologies are a key example of how this remarkable capability continues to express itself in our economy.

Wearable technologies have long been the stuff of science fiction. In 1931, author and cartoonist Chester Gould introduced America to super-detective Dick Tracy and his 2-way wrist radio. Later, in the 1960s, Gene Roddenberry provided us with an early glimpse of 21st century technology through the devices we saw in each episode of Star Trek. Since then, technologies that were once portrayed as futuristic in movies and television have come to life and have set the stage for the technological disruption that the Subcommittee is now studying.

In the interests of time, Mr. Chairman, I will quickly stress five key points that I will be pleased to detail further during the question and answer period that follows the panel.

- First, Zebra's role in the wearable technology market,
- Second, why wearable technology is a disrupter,
- Third, what the future holds in wearable technology,
- Fourth, the economic benefits of wearable technology, and
- Fifth, what we would urge Congress and the Administration to consider in terms of policy.

Zebra's Role in the Wearable Technology Market

Let me begin with Zebra's role in the wearable technology market. Much like our role with other Internet of Things (IoT)-related technologies, Zebra's leadership in the wearable technology market derives from our creation of the overall wearable technology product category nearly twenty-five years ago with the launch of our wearable wrist mounted terminal and finger ring scanner in 1992. We invented the first hand held laser barcode scanner, the first barcode printer, and the first miniature scan engine. We remain at the very forefront of breakthrough innovation in this space as we continue to create wearable technologies that go from the wrist and hand to lanyards and heads-up computing solutions. For example, many in industry are well aware of our hands-free head-mounted computer, the HC1, which was first launched in 2013. Our entire wearable tech line leverages the deep knowledge and insight gained from our unique and extensive industry experience.

Why Wearable Technology is a Disrupter

Second, we commend the Subcommittee for its recognition of the wearable category as a disrupter technology. Wearables earn this status because they empower workers with total hands-free mobility in a manner that also provides instant access to business-critical information. Instead of needing multiple devices that are all directed by hand, wearable technology enables new levels of productivity by providing employees with tools that marry natural language interaction with immediately available information be visual, verbal or augmenting the user's physical reality.

With wearable technology, workers can instantly access and view essential documents and complex schematics with just a simple voice command or turn of the head. No hands, no

laptop nor any fixed mobile workstation is required to get a complex task completed. The savings in time, performance and accuracy are dramatic. Whether it's fixing machines in a manufacturing setting or treating patients, wearables are becoming ever more adaptable in their ability to add significant value and assistance to workforces and emergency responders in times of need.

What this means is that performance will be improved and cycle time will be reduced as wearable technology provides enhanced situational awareness by giving people real-time access to critical data and video at the point of work. Again, Mr. Chairman, imagine a simple verbal command that provides a worker with full access to business critical data and subject matter experts in real-time. Imagine, further, the same worker using another verbal command to respond back and transmit data or pictures to a main office, a remotely located colleague, or to another machine. Now imagine having that ability while suspended high above the ground repairing the electrical grid or working inside an airplane engine. No hands required. Wearable technology makes it happen.

What the Future Holds

Third, I'd like to offer a quick look into what the future holds. Awareness and acceptance of smartphone technology has grown at a tremendous pace and has built the foundation for wearable device adoption. Current technologies will continue to evolve and revolutionize the way people instinctively work with computers and intuitively interact with their virtual or augmented reality environments.

Greater mobility, miniaturization, and the need to stay continuously connected are all current drivers of the wearable technology trend. Simplicity of use and the ability to work

independently or in conjunction with other external devices will continue to be some of the overall factors which drive the emerging wearable devices market which will change the way our economy works. Soon, we will see helmets, eyewear, vests, gear and clothing with interconnected sensor systems using standard off-the-shelf components. These will eventually evolve into heavy-duty, rugged functionality with basic plug-and-play capabilities ready for use in extreme field conditions and fully capable of supporting mission-critical applications.

It is not an overstatement to say that the possibilities of future wearable devices are limitless. Over the next few years, wearable devices will get smaller with technological improvements in computing, analytics, power and display optics. It may be too early to see biologically embedded or implantable devices, but more integrated devices using sensors that can enhance, monitor or tap into body signs are on the horizon. Many companies will create their own wearable technologies, creating a variety of different technology platforms and user experiences. The use of standard protocols such as Bluetooth and Wi-Fi will enable more wearable devices and peripherals to more easily talk to each other.

As part of this trend, we will continue to advance our portfolio of wearable technologies. We are presently leading the development of a see-thru visual computing experience to create a new wearable display system for augmented reality enterprise applications. We are strategically investing in emerging technologies to create a wide and see-thru visual computing experience for practical enterprise use – continuously mindful of human factors, ergonomics, and user experience. We're focused on developing an augmented reality wearable technology system for true hands-free application – providing a future solutions approach for uninterrupted workflow and opening up the possibilities of what real-time eye-level information can realistically do for business, government and non-profit users worldwide.

The Economic Benefits Associated With Wearable Technology

Fourth, the economic benefits of wearable technology come from its significant impact on productivity across virtually every industry and economic sector. This is because visual computing, or the ability to work hands-free while receiving eye-level information through wearable technology, will drive a major paradigm shift in how we, as humans, directly interface with computers. Visual, or hands-free, computing will enable this kind of frictionless, uninterrupted workflow. Even a small increase in the efficiency of manufacturing or warehouse workers through wearable technology could bring a profound economic benefit to our economy.

In a global economy which increasingly places a premium on compressed operational cycle times, dramatically reduced defect rates and ever-greater levels of workforce productivity, the impact of wearable technology will be significant as business, government and non-profits are better able to coordinate mission-critical and business-critical communications within and across organizations and make unlimited amounts of information available to individuals for better decision making.

Policy Considerations

Fifth, and finally, we urge Congress and the Administration to take a light touch where wearable technology is concerned – for the same reasons that many in industry as well as in Congress and the Administration have advocated for a light regulatory approach to the Internet of Things (IoT).

The primary challenge is to allow for the rapid development, deployment and subsequent advancement of wearable technology in a manner that simultaneously addresses concerns over

data security, encryption and privacy. In the ideal, the goal is to encourage technologies which provide enhanced, secure and real-time visibility and access to critical business information in a way that empowers employees and enables government, business, non-profits and individuals to undertake more effective and timely decisions and actions.

Conclusion

To this end, Mr. Chairman, Zebra stands ready to work with the Subcommittee in advancing policies which keep the United States at the leading-edge of this exciting technology and I, again, thank you for the opportunity to provide our views on wearable technology. I look forward to your and your colleagues' questions.