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Congress of the United States
House of Representatives
COMMITTEE ON ENERGY AND COMMERCE
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**MEMORANDUM**

**January 16, 2018**

**To: Subcommittee on Digital Commerce and Consumer Protection Democratic Members and Staff**

**Fr: Committee on Energy and Commerce Democratic Staff**

**Re: Hearing on "Disrupter Series: The Internet of Things, Manufacturing and Innovation"**

On **Thursday, January 18, 2018, at 10:00 a.m. in room 2123 of the Rayburn House Office Building**, the Subcommittee on Digital Commerce and Consumer Protection will hold a hearing titled "Disrupter Series: The Internet of Things, Manufacturing and Innovation."

## I. BACKGROUND

The Internet of Things (IoT) generally refers to objects with the ability to connect to the internet and to send and receive data.[1] Smart manufacturing generally refers to monitoring, measuring, and sensing control systems that collect and analyze data, and allow for greater control over a manufacturer's production.[2] IoT is the technology used in smart manufacturing to ensure that a manufacturer's equipment works together, the right raw materials are available when needed, and workers are used where needed most.[3]

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[1] Federal Trade Commission, *Internet of Things: Privacy & Security in a Commercial World*, FTC Staff Report (Jan. 27, 2015).

[2] American Council for an Energy-Efficient Economy, *Smart Manufacturing Technologies and Data Analytics for Improving Energy Efficiency in Industrial Energy Systems* (2017) (aceee.org/files/proceedings/2017/data/polopoly_fs/1.3687886.1501159066!/fileserver/file/790269/filename/0036_0053_000028.pdf).

[3] *The Internet of Things Will Make Manufacturing Smarter*, IndustryWeek (Aug. 14, 2015).

Smart manufacturing can help improve energy efficiency in factories, reduce waste of time and materials, and enable detailed monitoring of quality and costs.[4] For example, a steel plant in Indiana found that installing IoT-enabled cooling systems reduced its energy and water use and improved product quality.[5] It also is leading to more customization, allowing customers to access more one-of-a-kind products.[6]

Experts have raised concerns regarding the cybersecurity risks to smart manufacturing, and whether manufacturers are sufficiently aware of and prepared for such risks.[7] Network disruptions or malicious cyberattacks on smart manufacturing systems have the potential to affect production ability, product quality, intellectual property, and worker health and safety.[8]

## II. FEDERAL GOVERNMENT ROLE

Former President Obama established the National Network for Manufacturing Innovation (NNMI), a network of nine federally supported manufacturing research institutes throughout the country.[9] NNMI institutes include the Clean Energy Smart Manufacturing Innovation Institute in California, the Advanced Robotics Manufacturing Institute in Pennsylvania, and the Digital Manufacturing and Design Innovation Institute in Chicago.[10]

Broad support for smart manufacturing research and commercialization comes from multiple federal agencies, including the Department of Commerce, Department of Energy, Department of Defense, Department of Homeland Security, and the National Science Foundation.[11] President Trump's proposed budget for FY 2018, however, significantly cuts government funding for a number of programs that support manufacturing innovation in the United States.[12]

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[4] National Science and Technology Council, Subcommittee for Advanced Manufacturing, *Advanced Manufacturing: A Snapshot of Priority Technology Areas across the Federal Government* (Apr. 2016).

[5] *See* note 2.

[6] *Is That a Robot in the Driver's Seat at Ford's F-150 Plant?*, Washington Post (Apr. 15, 2017).

[7] MForesight: Alliance for Manufacturing Foresight, *Cybersecurity for Manufacturers: Securing the Digitized and Connected Factory* (Sept. 2017).

[8] *Id*.

[9] Manufacturing USA, The National Network for Manufacturing Innovation (www.manufacturing.gov/nnmi) (accessed Jan. 12, 2018).

[10] Manufacturing USA, Institutes (www.manufacturing.gov/nnmi-institutes) (accessed Jan. 12, 2018).

[11] *See* note **7**.

[12] *Trump's Budget Could Hurt Manufacturing and Innovation*, The Atlantic (Mar. 16, 2017).

The Subcommittee has held three hearings on smart manufacturing topics as part of the Disrupter Series, including 3D printing, robotics, and advanced materials production, and two IoT showcases in 2015 and 2017.

## III. WITNESSES

**Thomas Kurfess, Ph.D., P.E.**
Professor and HUSCO/Ramirez Distinguished Chair in Fluid Power and Motion Control
George W. Woodruff School of Mechanical Engineering
Georgia Institute of Technology

**Rodney Masney**
Vice President, Technology Service Delivery, Information Technology
Owens-Illinois

**Sanjay Poonen**
Chief Operating Officer
VMWare

**Thomas Bianculli**
Chief Technology Officer
Zebra Technology