With a robust digital infrastructure, premier clinical and research institutions, educational and workforce development options, and entrepreneurial support organizations, Northeast Ohio is an ideal location for companies focused on smart devices and systems. Our region has become a hotbed of these companies as well as world-class institutions deeply involved with the Internet of Things (IoT). This growing cluster of organizations is poised to leverage emerging opportunities, as our IoT infrastructure enables the realization of Smart Buildings, Smart Manufacturing, Digital Manufacturing, Industry 4.0, Smart Healthcare, Smart Cities and Intelligent Transportation applications.

**ROBUST SUPPLY CHAIN**

Our interconnected businesses and institutions work collaboratively toward advancements in integrating embedded intelligence into smart products and systems. Our supply chain includes developers of materials, components, device hardware, software, communications, security and end-user applications to support the Industrial Internet of Things (IIoT), healthcare and other industries.

**INDUSTRIAL AUTOMATION**

In industrial manufacturing, the Internet of Things holds great potential for supply chain management, operating efficiency, product quality, predictive maintenance, inventory control and occupational safety. Northeast Ohio is strong across the entire supply chain, anchored by industry leaders:

- **Rockwell Automation** is a world leader in industrial automation solutions. Throughout the world, Allen-Bradley® and Rockwell Software® brands are recognized for innovation and excellence. Through “The Connected Enterprise” IIoT product and service strategy, Rockwell enables manufacturers to implement Smart operations where devices and processes are highly-connected, monitored and optimized at the machine, plant and enterprise level.

- **Eaton** is a power management company with a sophisticated approach to digital solutions in a connected world. Eaton has an extensive portfolio of smart electrical, fluid power, mechanical power and automation products suitable for many “smart” applications. Eaton continues to grow its portfolio of highly functional, connected digital assets; infusing acuity through-out the product line supported by imbedded intelligence and software applications of big data, data analytics and artificial intelligence.

- **Parker Hannifin Corporation** is a global leader in motion and control technologies, Parker has branded its approach to IoT as the Voice of the Machine™.

This framework includes Parker’s centralized initiative to standardize IoT technology across their businesses, as well as IoT-empowered products that result from that initiative. Parker has also implemented an exchange-based architecture that simplifies integration with third-party products, platforms and services.

**SMART HEALTHCARE**

Known as “The Medical Capital,” Cleveland has been named a top 10 location for medical innovation by Qmed, in part because of its numerous supply chain assets in diagnostic devices, contract manufacturers and telemedicine, among other areas. Within this dynamic medical innovation ecosystem, new manufacturers of smart healthcare products and services are thriving, including:

- **Blue Spark Technologies** manufactures TempTraq, the first and only 24-hour intelligent thermometer that continuously senses, records and sends alerts of a child’s temperature to your mobile device. With strong support from regional supply chain partners, the product launched nationwide in 2016 at retailers and is now enjoying the same growth in clinical uses.

- **ScottCare** delivers telehealth services to remote patients nationwide and manufactures advanced cardiovascular monitoring products. ScottCare’s Novi patch is a wireless, patch-based Holter monitor, bringing a new level of comfort and convenience to the user.

**ROBUST DIGITAL INFRASTRUCTURE**

Northeast Ohio’s digital infrastructure — an ultra-high-speed, open and neutral fiber network — spans 24 counties and 2,500 miles. In addition, the Cleveland Health-Tech Corridor, a 1,600-acre area connecting biomedical, healthcare and technology companies, boasts the fastest commercially available internet network in the nation (100-gigabit bandwidth).
ENTREPRENEURIAL ECOSYSTEM SUPPORT
Northeast Ohio provides strong incubators, entrepreneurship support and venture attraction programs. Indeed, according to NerdWallet, Cleveland is ranked among the Top 50 Entrepreneur-Friendly Cities in the world. Here are just a few sources of entrepreneurial support NEO offers:

Ohio Third Frontier (OTF) is a $2.1 billion initiative supporting the formation of new technology companies and fostering collaboration between industry, economic development agencies and universities to commercialize technology.

JumpStart Entrepreneurial Network has helped nearly 1,000 early-stage entrepreneurs obtain $1.7 billion in additional risk capital, generate more than $1 billion in revenue and create more than 10,000 jobs. JumpStart also manages the OTF-supported NEO Entrepreneurial Services Program, a collaboration of 15 organizations supporting entrepreneurs’ technology-based commercialization efforts.

BioEnterprise is a business formation, recruitment and acceleration initiative designed to grow healthcare companies and commercialize bioscience technologies.

NEO ReADI (Regional Acceleration in Digital Innovation) is a center focusing on an emerging cluster of core digital technologies with next-generation applications that collect, process, integrate and analyze data.

DigitalC Fund is an equity-based seed fund focused on NEO ReADI’s core digital innovation cluster. DigitalC, a civic tech collaboration that partners with the community to design technology-driven programs and services, launched this fund in October 2016 to support technology start-ups.

Innovation Fund Northeast Ohio is a nonequity-based seed fund that has served as the template for Innovation Fund America. It has invested $11.06 million in 165 companies since 2007. In all, there are more than 30 NEO seed funds totaling more than $70 million. Ohio-based medical technology investments exceeded $499 million in 2014.

Youngstown Business Incubator is an internationally recognized program focused on the development of early stage IT and additive manufacturing companies.

SMART DEVICES AND SYSTEMS INNOVATION CLUSTER
Team NEO, the region’s economic development organization focused on creating jobs and helping business thrive in Northeast Ohio, supports the smart devices and systems supply chain by facilitating cluster-building project teams, conducting knowledge-building events and tools, and providing member-customized growth services.

RESEARCH INSTITUTIONS
Northeast Ohio’s research community is supported by 26 universities and many other anchor research institutions, such as Case Western Reserve University (CWRU), Cleveland State University, the University of Akron, Kent State University, Cleveland Clinic, University Hospitals, and NASA Glenn Research Center. Among the smart devices & systems research initiatives currently under way:

CWRU Institute for Smart, Secure and Connected Systems is dedicated to advancing research on the Internet of Things. This new institute is helping the university leverage its strengths in sensors and electronics, networks and communications, systems and control, data science and analytics, as it leads initiatives in data science, cybersecurity, networks, embedded systems and more.

Internet of Things Collaborative is an initiative made possible by a grant from the Cleveland Foundation. With the foundation’s support, CWRU and Cleveland State University (CSU) are partnering to transform Northeast Ohio into a national model of collaboration, research, technology transfer, workforce development and community infrastructure in the emerging area of the Industrial Internet of Things.

SMART Microsystems, LLC, also known as the Lorain County Community College (LCCC) SMART Center, was designed to accelerate the commercialization of microelectromechanical systems (MEMS) sensor products.

ACCESS TO TALENT
Northeast Ohio has 26 accredited colleges and universities with almost 400 more within a 150-mile radius. Many of these institutions offer curricula and workforce training dedicated to smart devices and systems, including software development.

Source: EMSI: 2016.2

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