



IEDC 2019

ECONOMIC FUTURE FORUM

Pioneers in a New Global Market

June 9-11, 2019 • Salt Lake City, UT

THE ENGINE OF ECONOMIC PROSPERITY AND GROWTH



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By 2030, approximately

85%

**HAVE NOT BEEN
INVENTED YET**

Of the jobs taken by
today's learners

TEN^xEcosystem
for Advanced Manufacturing

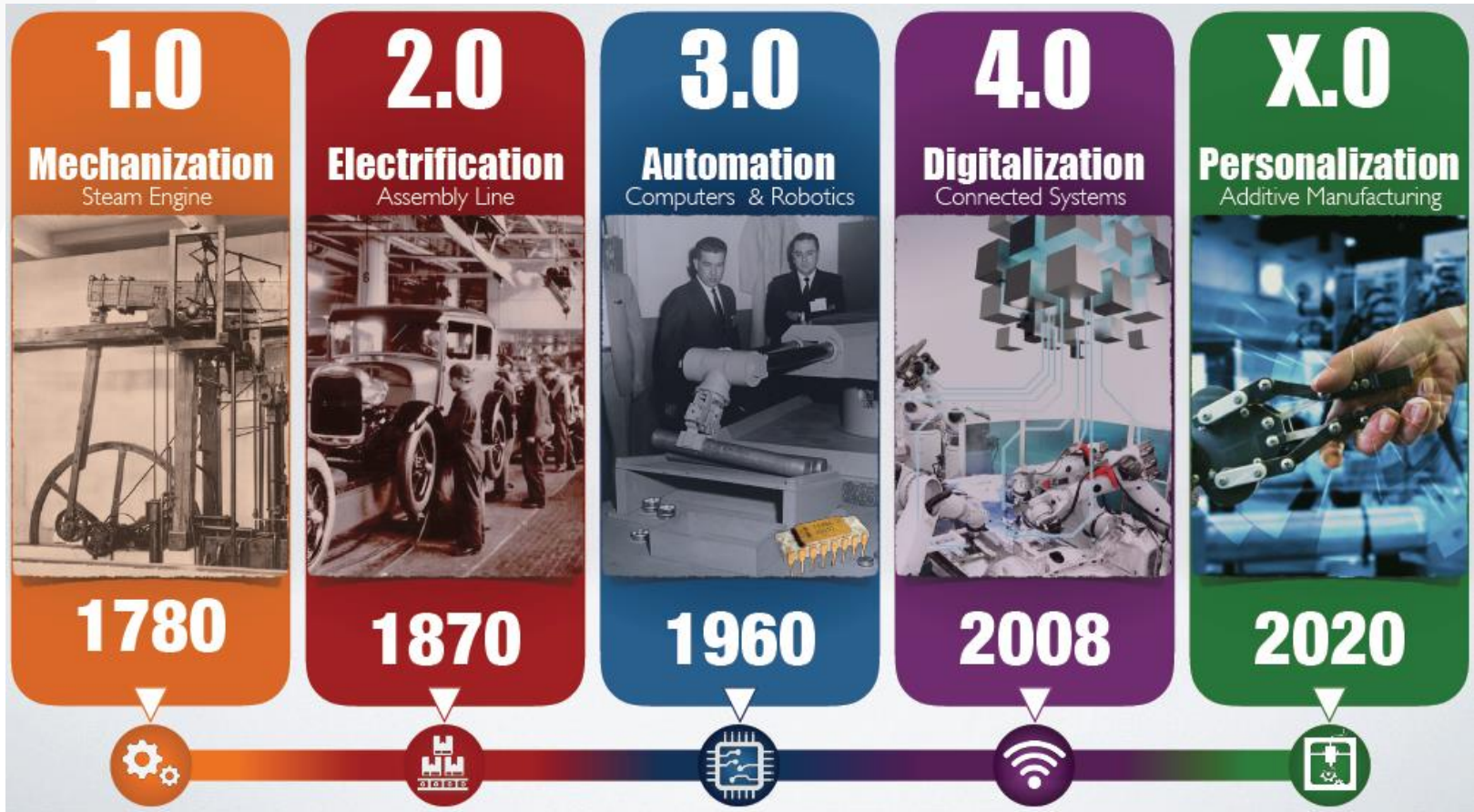


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Timeline of Industrial Revolution





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Unless humanity finds new ways
to do more with the same amount
of labour and capital, growth in
incomes peters out to nothing.

– *The Economist*



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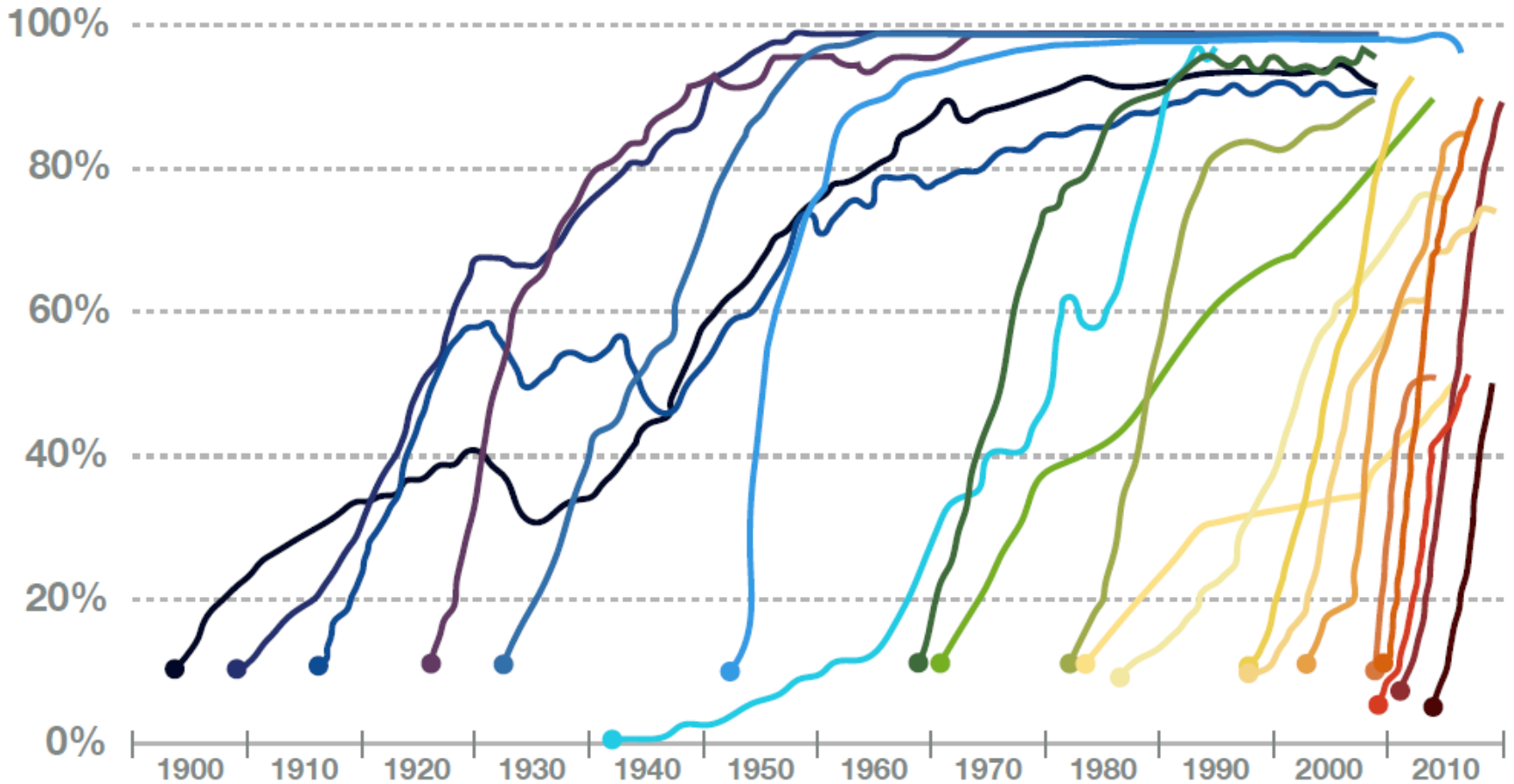
ACCELERATING TIMELINES OF INNOVATION



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Adoption of Technology in the United States





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DEFINING PRODUCTIVITY

GOODS PRODUCED

ALL INPUTS USED TO PRODUCE



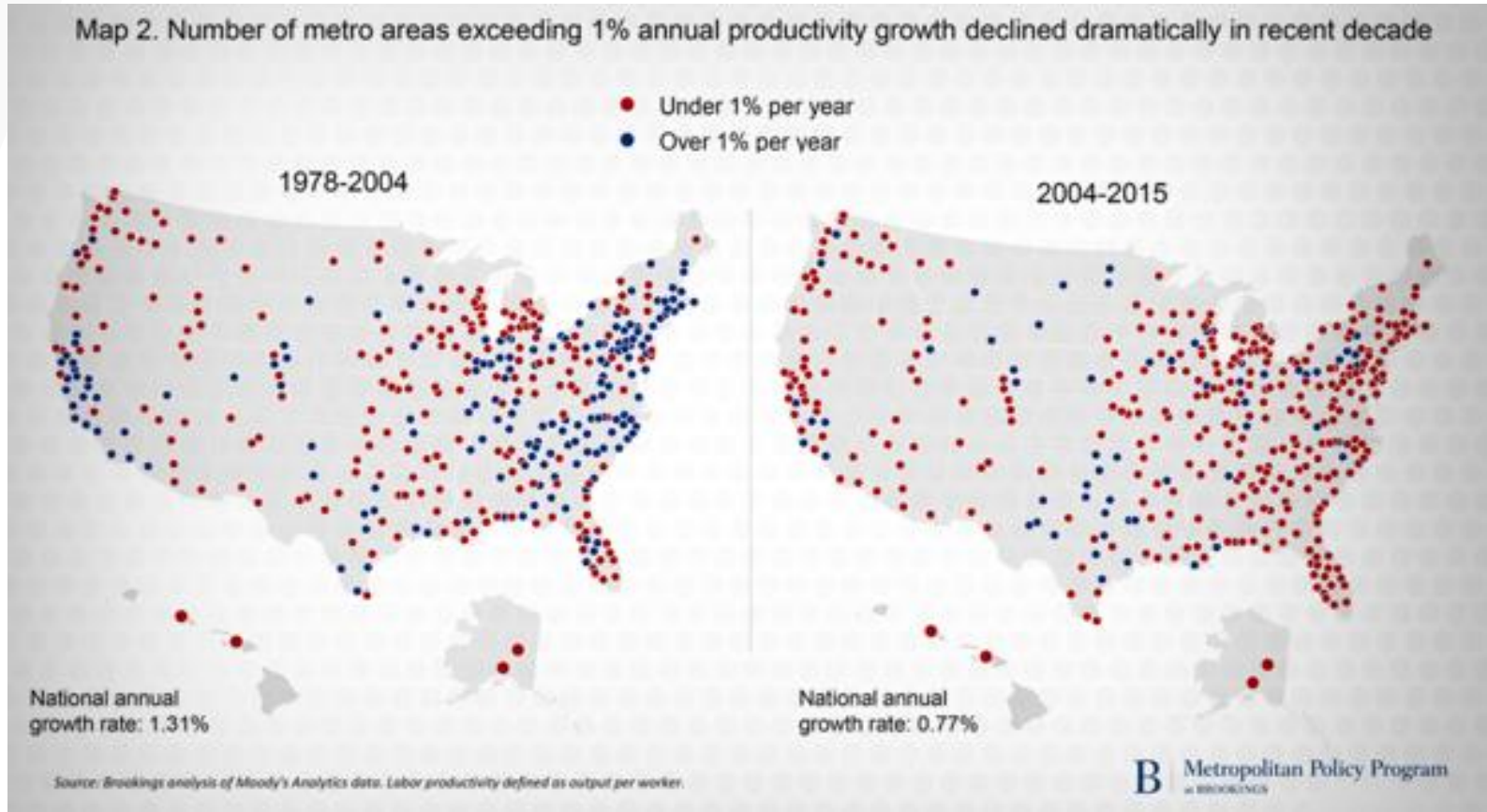
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DECLINING PRODUCTIVITY

Map 2. Number of metro areas exceeding 1% annual productivity growth declined dramatically in recent decade





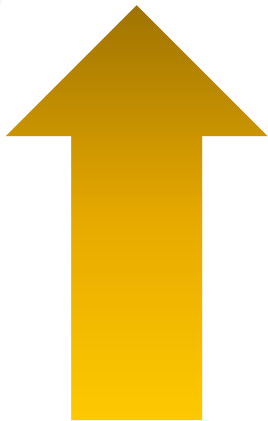
IMPROVING PRODUCTIVITY

- Efficiency of workers
- Investing in new equipment
- Developing new technologies
- Improving supply chain management
- Transforming production processes
- Mining data for operational trends





WHY PRODUCTIVITY?



Productivity = Wages





HOW TO GET THERE?

- Assist manufacturers in benchmarking their performance against others in their NAICS code
- Assist best-in-class firms in expanding the frontier through technology, operational and business innovation that will define the best practices of tomorrow
- Identify and quantify performance gaps
- Provide a roadmap, guidance and resources required to close the gap





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TRANSFORMATIONAL PRODUCTIVITY INITIATIVE

It's not about replacing people with machines—it's about maximizing efficiency with a combination of the latest technology and highly skilled workers who understand that technology.



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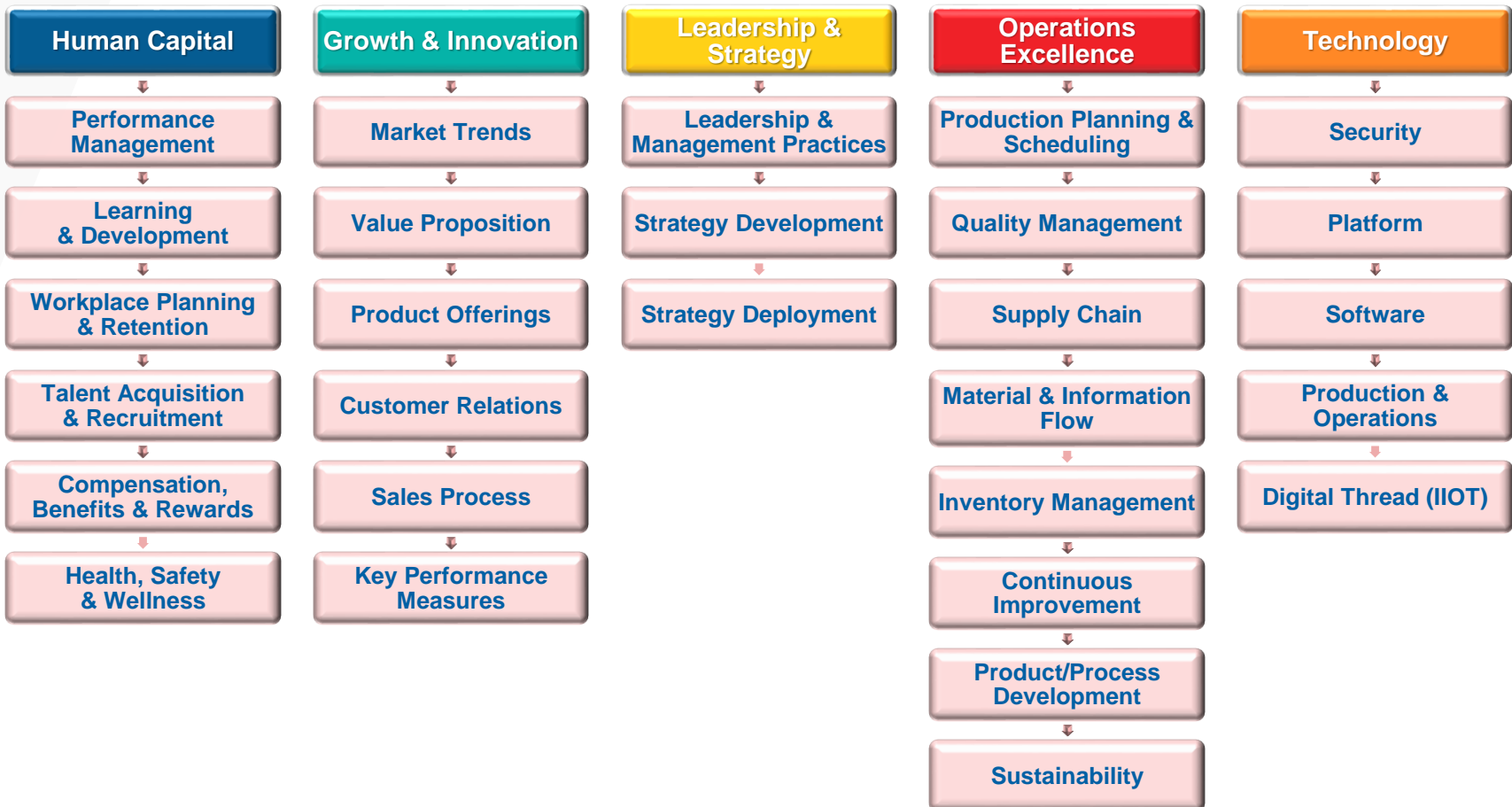
CLOSING THE GAP

Top performers maintain their competitive advantage by innovating and excelling in five key areas:





TFP: FACTORS AND SUB-FACTORS





GENERALLY SPEAKING

- Pilot outcomes tended to validate World Manufacturing Survey, MOPS and McKinsey Institute research
 1. Larger companies tend to be more productive
 2. Management (Operational Practices) matter
 3. Three quarters of needed productivity improvements will come from broader adoption of leading practices





KEY STATISTICS

Pilot	FTE's	MOPS	Estimated % Productivity Improvement	Score 1 (low) to 5 (high)					
				Human Capital	Growth	Leadership	Operations Excellence	Technology	Average
A	60	0.47	38%	3.3	3.3	2.3	1.5	2.2	2.5
B	>500	0.69	9%	4.0	3.3	3.2	3.5	3.7	3.5
C	154	0.41	51%	3.8	3.2	1.8	2.5	3.6	3.0
D	70	0.59	27%	3.4	2.9	2.0	2.1	1.8	2.4
Average	196	0.54	31%	3.6	3.2	2.3	2.4	2.8	2.9





FACTOR RANK ORDER OF IMPORTANCE

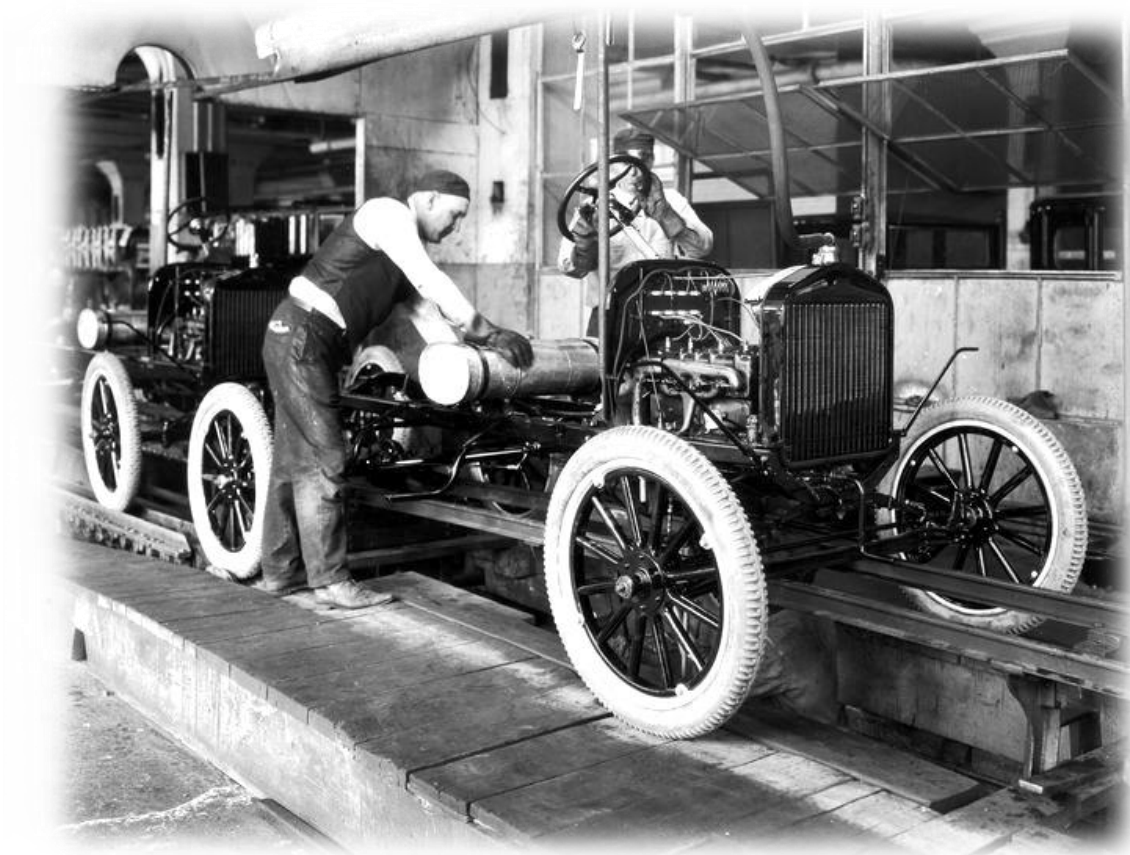
- 1. Leadership (Management Practices)**
 - 2. Operational Excellence**
 - 3. Technology**
 - 4. Growth**
 - 5. Human Capital**
- Leadership, operational excellence and technology most critical to improving productivity @ pilot firms





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THE NEXT REVOLUTION



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Industry 4.0

The industry 4.0 marries advanced production and operations techniques with smart digital technologies

It creates a digital enterprise that is only interconnected and autonomous, but can communicate, analyze, and use data to drive further intelligent action in the physical world.

Industry 4.0 represents the ways in which smart, connected technology can become embedded with organizations, people, and assets.

It is marked by emergence of capabilities such as robotics analytics, artificial intelligence and cognitive technologies, nanotechnology, quantum computing, wearables, the Internet of things, additive manufacturing, and advanced materials



Advanced Manufacturing Ecosystem Enabling Technologies

AI EVERYWHERE

- Deep Learning
- Deep Reinforcement Learning
- Artificial General Intelligence
- Autonomous Vehicles
- Cognitive Computing
- Commercial UAVs (Drones)

- Conversational User Interfaces
- Enterprise Taxonomy
- Ontology Management
- Machine Learning
- Smart Dust
- Smart Robots
- Smart Workspace



TRANSPARENTLY IMMERSIVE EXPERIENCES

- 4D Printing
- 8K Video
- Augmented Reality
- Brain-Computer Interface
- Connected Home

- Human Augmentation
- Mixed Reality (AVR)
- Nanotube Electronics
- Virtual Reality
- Volumetric Displays



DIGITAL PLATFORMS

- 5G
- Blockchain
- Digital Twin
- Edge Computing
- IoT Platform

- Industrial Internet (IIoT)
- Neuromorphic Hardware
- Quantum Computing
- Serverless PaaS
- Software-Defined Security





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NEW Manufacturing Alliance's Industry 4.0 Study



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Study Background

104 northeast Wisconsin manufacturers completed the online survey between February 2019- April 2019

All manufacturing sectors: metal, paper, and allied products, along with machinery

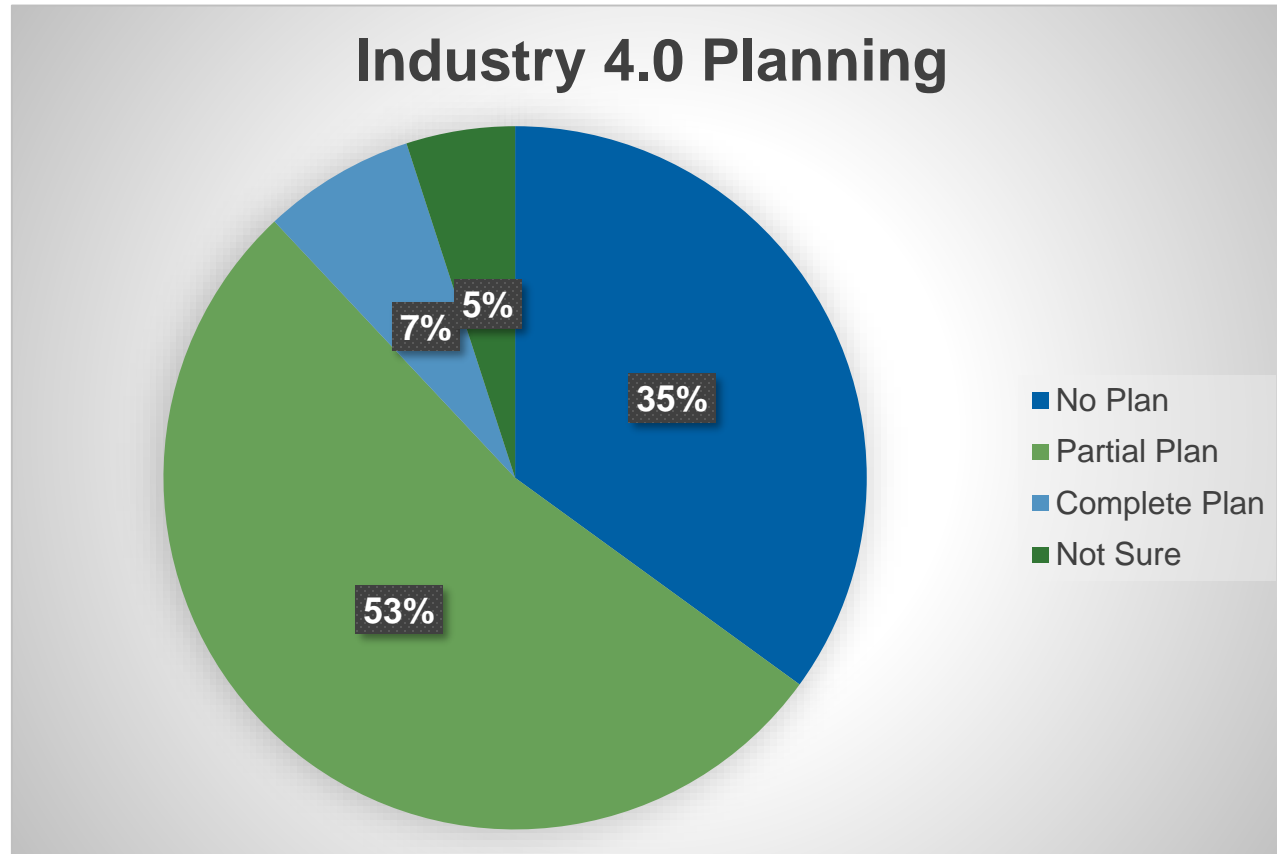
Median size of respondents 101-250 employees

2/5 of companies had between \$1 million - \$15 million or more in total annual sales in 2018

50% of companies had more than \$30 million in sales in 2018



MANUFACTURERS NOT PLANNING



TECHNOLOGIES

Most likely to have impact in
the next 12 months

Process Monitoring – 44%

Mobile-Friendly User
Interfaces – 36%

Robotic Vision Systems-
31%

Inventory Tech – 25%

TECHNOLOGIES

Most likely to have impact in the next 2-3 Years

Connectivity Technologies
(5G wireless, Bluetooth
etc.) – 51%

Predictive Modeling
Systems – 45%

Mobile- Friendly User
Interfaces – 38%

Smart Energy Consumption
– 36%

Inventory Tech – 15%



NEW EMPLOYEES TO BE HIRED

Process Engineer – 33%

Application Developer –
23%

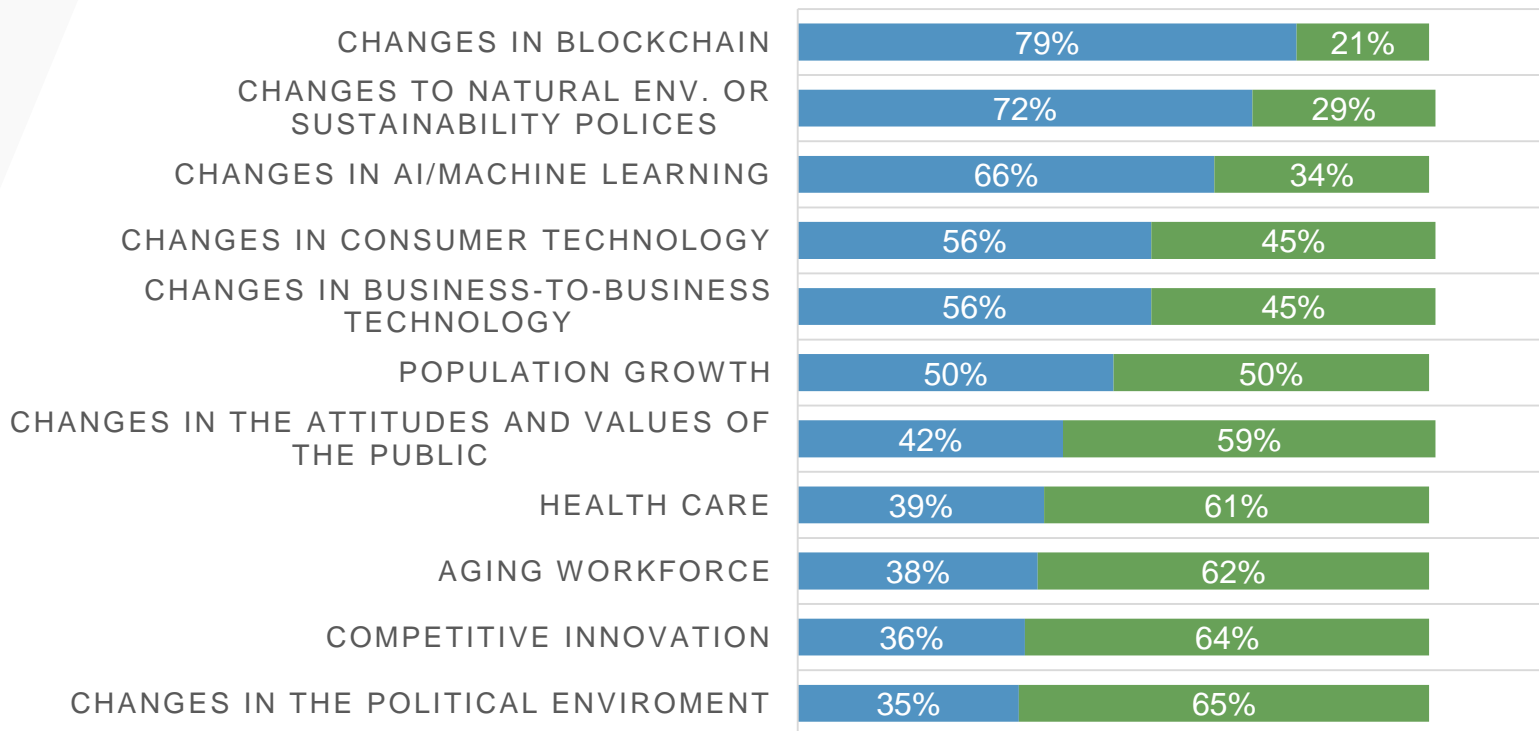
Industrial Computer
Programmer – 23%

Supply Chain Business
Analyst – 23%



How relevant are the following to the success of your business in the next five years?

■ Not at All/To a Limited Extent ■ To a Moderate / Great Extent





THE NEXT REVOLUTION

The Washington Post

August 5th, 2017

in son.
 history, what and the public
 has considered "newsworthy" has met dif-
 ferent definitions. For example, mid-twen-
 mains on political an-
 ever, the news media

National

Rise of the machines

By Chico Harlan August 5, 2017 [Email the author](#)



Rob Goldiez, co-founder of Hirecobotics, configures a robot at Tenere Inc. in Dresser, Wis. (Ackerman • Gruber/For The Washington Post)

The workers of the first shift had just finished their morning cigarettes and settled into place when one last car pulled into the factory parking lot, driving past an American flag and a "now hiring" sign. Out came two men, who opened up the trunk, and then out came four cardboard boxes labeled "fragile."

"We've got the robots," one of the men said.

They watched as a forklift hoisted the boxes into the air and followed the forklift into a building where a row of old mechanical presses shook the concrete floor. The forklift honked and carried the boxes past workers in steel-toed boots and earplugs. It rounded a bend and arrived at the other corner of the building, at the end of an assembly line.

Area court in myster disappear





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WHAT MANUFACTURING FORWARD IS:

This by-invitation-only series is designed to assist the region's manufacturers in understanding the implications of 4.0, productivity, automation and other trends, and will provide specific takeaways for implementation. The series is specifically geared to manufacturers with 75 to 225 employees. Nominations' accepted from your financial institution, accountant or attorney.

WHY YOU SHOULD ATTEND:

Manufacturers will gain an edge to stay globally competitive and in a state of readiness. Each session will provide printed resources so you can implement and further explore the topic.

- ◆ **TIME COMMITMENT:**
Five, half-day educational sessions
- ◆ **LOCATION:**
TBD
- ◆ **DATES:**
Fall 2019; monthly
- ◆ **INVESTMENT:**
\$2,500 per company sponsorship

SESSION 1: ORGANIZATIONAL STRUCTURE & CULTURE

- Why does organizational structure and culture matter now more than ever?
- Cohort/intros/contact exchange/LinkedIn group will be created for discussions

SESSION 2: STRATEGY & ALIGNMENT FOR OPERATIONS

- Culture of performance
- Leadership

SESSION 3: OPERATIONAL EXCELLENCE

- What IoT means to me & automation
- AI & connected systems

SESSION 4: TECHNOLOGY IMPLEMENTATION

- Supply chain transparency demands from your largest customers
- Cyber security 101: Where do I start?

SESSION 5: HUMAN CAPITAL MANAGEMENT

- Talent: How to prioritize talent acquisition, retention & development

REGISTER TODAY!

Space is available for up to 20 companies to participate; registrations will be processed in the order received. To register, please contact Lauren Cooling, Greater Green Bay Chamber economic development, 920.496.2102.

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