Automation Alley®

White Paper

Shaping the Future of Manufacturing & Production in Michigan

Key Roundtable Findings & Recommendations from the State's Industry Leaders

Presented by Automation Alley in partnership with the World Economic Forum, Nov. 5 - 6, 2019

A Path to Industry 4.0 Success in Michigan

Introduction

Automation Alley, in partnership with the World Economic Forum, recently launched the Advanced Manufacturing Hub (AMHUB) for Michigan—a globally recognized initiative and distinct honor for our region and state. As part of our mission, we held invitation-only roundtable discussions at Integr8: The Industry 4.0 Conference on Nov. 5 and 6, 2019. The core topics for each roundtable revolved around technology, talent and the future of production.

The goal of the AMHUB roundtables was to provide a safe space for Michigan business leaders to share and exchange ideas on a regional level and then connect them in a global environment through the World Economic Forum. Each 75-minute roundtable was made up of a broad diversity of views and opinions, captured in the following roadmap. Automation Alley and the World Economic Forum believe that the opportunity to collaborate and share ideas is important to help companies adapt to Industry 4.0, and the following recommendations should be considered by Michigan policy makers to help drive a path to Industry 4.0 success in Michigan.

Q: How would you describe the current state of advanced manufacturing in Michigan? What are the main barriers and opportunities facing Michigan manufacturing today?

Barriers:

- Companies in traditional industries are reluctant to change. Example: Using robots alongside human workers. Companies must create cultures that embrace technology, where employees are willing to change and adapt and become lifelong learners.
- Industry 4.0 creates job uncertainty. Will people be displaced by automation? How can we upskill our workforce at scale?
- Manufacturers are experiencing rising materials costs and need to see return on investment of technology adoption. ROI on Industry 4.0 projects can vary widely. For example, according to the World Economic Forum, industry leaders (which tend to be larger by revenue) achieve productivity gains of about 70%, while industry followers (including many SMEs) are more likely to see gains of approximately 30%. In addition, companies are facing increasing cost of materials and implications of China tariffs are impacting manufacturers.
- Industry 4.0 hype vs. reality. Is there a mechanism to extract value from Industry 4.0? To see value, companies must integrate teams doing physical work with tech solutions.
- Avoiding pilot purgatory. How do you go from a pilot, drive it through the organization and across factories around the world?
- Negative interest rates. Creates uncertainty for the global economy.
- Industry needs a better system of standards and regulations. Examples: Materials used in 3D printing and data sharing and usage.
- There is not enough collaboration between industry and education. Educators and industry leaders should join forces to review current curriculum methods and develop a plan to strengthen the creativity and innovation skills of the talent pipeline.

Opportunities:

- Use available resources: How do you learn lessons from companies that have done digital transformation right? It's important to get hands-on with the technology to see the real value.
- Predictive analytics can create great value. Example from FCA: Using predictive analytics to reduce overmanning due to absenteeism.
- Potential of 5G technology. 5G is an ecosystem. It's about a change in the culture of how we do business. Speed and bandwidth will allow businesses to capture more data, data allows for analytics, analytics allows for insights to make real-time decisions to improve functions and performance for businesses around the globe.
- Industry 4.0 technologies allows for design thinking.

Design thinking creates better products and allows for creative problem-solving that pushes organizations to focus on the people, users, or customers they are creating something for.

Desired Outcomes & Actions:

- Government should help organize academic programs and certification: Leverage input from engineers, businesses and infrastructure.
- Skill Mapping and Alignment: A range of inefficiencies and collaboration costs are driven by persistent differences in the language and definition of skills among stakeholder groups. It is becoming increasingly evident that the labor market must establish skills as a common currency to support collaboration between employers and educators. Consideration should be given to a common method for updating and consolidating skills nomenclature, skills clustering and skills definitions. Such a shift has the potential to establish a foundation for a more effective marketplace for upskilling and reskilling. Today, new efforts aimed at aligning skills taxonomies across labor markets are urgently needed. (Centre for the New Economy and Society White Paper, World Economic Forum, 2019) Our group found that there is a dire need for more data science degrees and coding camps. It is imperative for employers and academia to find skill alignment between disparate industries and develop an educational system and interdisciplinary degrees based on commonality.
- Apprenticeship Models Reconfigured for Industry 4.0 Dynamics: Our group expressed that it is important for the state of Michigan to be involved in changing the apprenticeship model and updating programs to develop the next-generation of manufacturing workers.
- Investment in Pilot Factories: Companies need to fail fast on a small scale. Pilot factories would allow companies to make errors, test and figure out issues on a small scale before a product launch.
- Implementing Effective Industry Incentives: Our group recommended investment in shared economic resources so companies can clearly understand the business case for making a digital transformation. For this to happen, Michigan must make a massive investment in Industry 4.0 knowledge sharing and training. Companies need cross-industry collaboration and a trusted guide to help them navigate Industry 4.0. Industries can learn from one another and from other's mistakes. The group expressed a need for forums for communication, benchmarking against other countries and innovation centers and capstone projects with students and schools.

Automation Alley's Recommendations & Next Steps:

1. **Create a standard for systems engineering**
   The pace of the Fourth Industrial Revolution is surpassing industry's ability to develop standards in a conventional way. Our roundtable participants emphasized that the lack of updated standards is contributing to the struggle to develop advanced technology strategies and invest wisely in Industry 4.0 technologies.
2. **Create a repository of use cases for Industry 4.0 for talent and technology adoption and development**
   Real-world examples of Industry 4.0 implementation can provide great value to companies going through the digital transformation. Our roundtable participants expressed a need for a repository of use cases to help guide their strategic decision-making process and see return on investment from industry peers.

Roundtable Participants:

David Darbyshire, Cyb Llings, Inc.
Tom December, Makware, Inc.
Jim Ebels, Feyen Zylstra
Bonnie Fahoome, Design Core Detroit
Shelley Fellows, AIS Technologies Group
Renata Galle, Stefanini
Jeff Hendry, CIBC
Marcus Jones, Plex Systems
Chris Moultrup, Three Rivers Corporation
Joe Panella, X2F
Scherdel Schmieder, Scherdel Sales & Technology Inc
Brandon Williams, DreamLab Industries
Joe Rocca, Delray Systems
Marc Joppich, Parker Engineering
David Porada, Apex Advisors
Brandon Williams, DreamLab Industries
Bryan Crutchfield, Materialise
Cathy Hacker, FCA
Kraig Yeck, Sherdel Sales & Tech
Jim Kelly , MH Technologies
John Bedz, Automation Alley
Sean Carlson, Oakland County
Paul Curtis, Cintel
Pete DiSante, Automation Alley
Will Irby, Cintel
Ron Lamparter, DC3S
Vicky Selva, MEDC
David Taylor, Thunder Bay Consulting
Jennifer Tisdale, GRIMM
Jeff Burnstein, Association for Advancing Automation
Jolene Chapman, Oakland Community College
David Corba, Macomb Community College
Charles Crespy, Central Michigan University
Shuvra Das, University of Detroit Mercy
Dr. Florian Feucht, Thinking Habitats LLC
Shannon Flumerfelt, Oakland University
Anthony Hughes, Tech Elevator
Erik Johnston, Peckham, Inc.
Kevin Kerrigan, LIFT
Kevin Ketels, Wayne State University
Darrell Kleinke, University of Detroit Mercy
AL Lecz, Washtenaw Community College
Bruce Marble, Central Michigan University
Sriram Narayanan, Michigan State University
Raja Narreddy, Excyl, Inc
Joe Petrosky, Oakland Community College
David Pistrui, University of Detroit Mercy
Dave Schippers, Walsh College
Doug Smith, Oakland Community College
Irene Spanos, Oakland University
Todd Sperl, Lean Fox Solutions
Ron Stefanski, Penn Foster
Daniel Stewart, Excyl, Inc
Andy Storm, Eckhart, Inc
Ed Terris, Peckham, Inc.
Ken Truss, Chapman Black
Robert Van Til Van Til, Oakland University
Don Watza, DonWatza.com
Joe Wiesner, Manpower Group, Inc
Gary Abusamra, Oxus, Inc.
Kevin Aretha, Rockwell Automation
Jonathon Baugh, Accenture
Jim Birley, Ford Motor Company
Joshua Bryant, Thumb Tool & Engineering
Michael Cotter, Feyen Zylstra
Ron Crabtree, MetaOps, Inc.
Timothy Faillo, Parker Hannifin
Paul Fleck, Dataspeed Inc.
Doug Gregory, Kors Engineering Company, Inc.
Andrew Kalinowski, Thunder Technologies
Paul Meloche, Fori Automation
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Ben Stewart, Plex Systems
Michael Swenson, Design Systems, Inc.
Chad Tothero, Fives Group
Andy Van Hoef, Kollmorgen
Joseph Wyrzykowski, Ford Motor Company
Navid Yazdi, Evigia Systems
Monish Jirge, Lawrence Tech University
Bill Mcguire, Detroit Manufacturing Systems
Daoxia Ding, UmLaut
Dave Grossman, SBDC
Shawn Gutierrez, Atom Tech

David Zeidan, Verizon
Gaurav Agrawal, Soothsayer Analytics LLC
Franco Bevione, Wedoo
Jackie Black, Consumer Technology Association
Bryan Crutchfield, Materialise
Patrick Fetterman, LNS Research
Tim Finerty, Clayton McKervey
Jerry Foster, Plex Systems
Eileen Gilbert, Opentext
Nikki Gordon, Suburban Bolt and Supply
Stu Johnson, Plex Systems
Reinhard Lemke, AmCham Germany
Tim Mullahy, Liberty Center One
Matt Myrand, Faurecia
Kris Powell, HRPro/BenePro
Aric Rusk, Kenmar Corporation
Jake Sigal, Tome Software
Kristin Welch, Ford
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Sanjeed Malhor, NASSCOM
Marcus Jones, Plex Systems
Bryce Mulligan, NLB Corporation
Marc Joppich, Parker Engineering
Rajeev Veoma, Magna International
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John Cook, BenePro
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Cathy Hacker, FCA US LLC
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Dave Grossman, SBDC
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