

The Impact of Industry 4.0 on Your Business Model

Session Leaders

D. Scott Sink, Ph.D., P.E., Director, Integrated LeanSigma Certification Program, ISE at OSU

Thorsten Wuest

Assistant Professor for Smart Manufacturing & J. Wayne and
Kathy Richards Faculty Fellow in Engineering

Agenda

12:00

Scott Tee-up

Quick Overview of Purpose and Objectives of Webinar Series and Recap of our Kick-off Industry 4.0 Webinar

High Level Overview of this Abstraction

12:15

Thorsten—Impact of Industry 4.0 on Business Models

12:45

Q&A and tee up the rest of the Series

1:00 pm

Adjourn

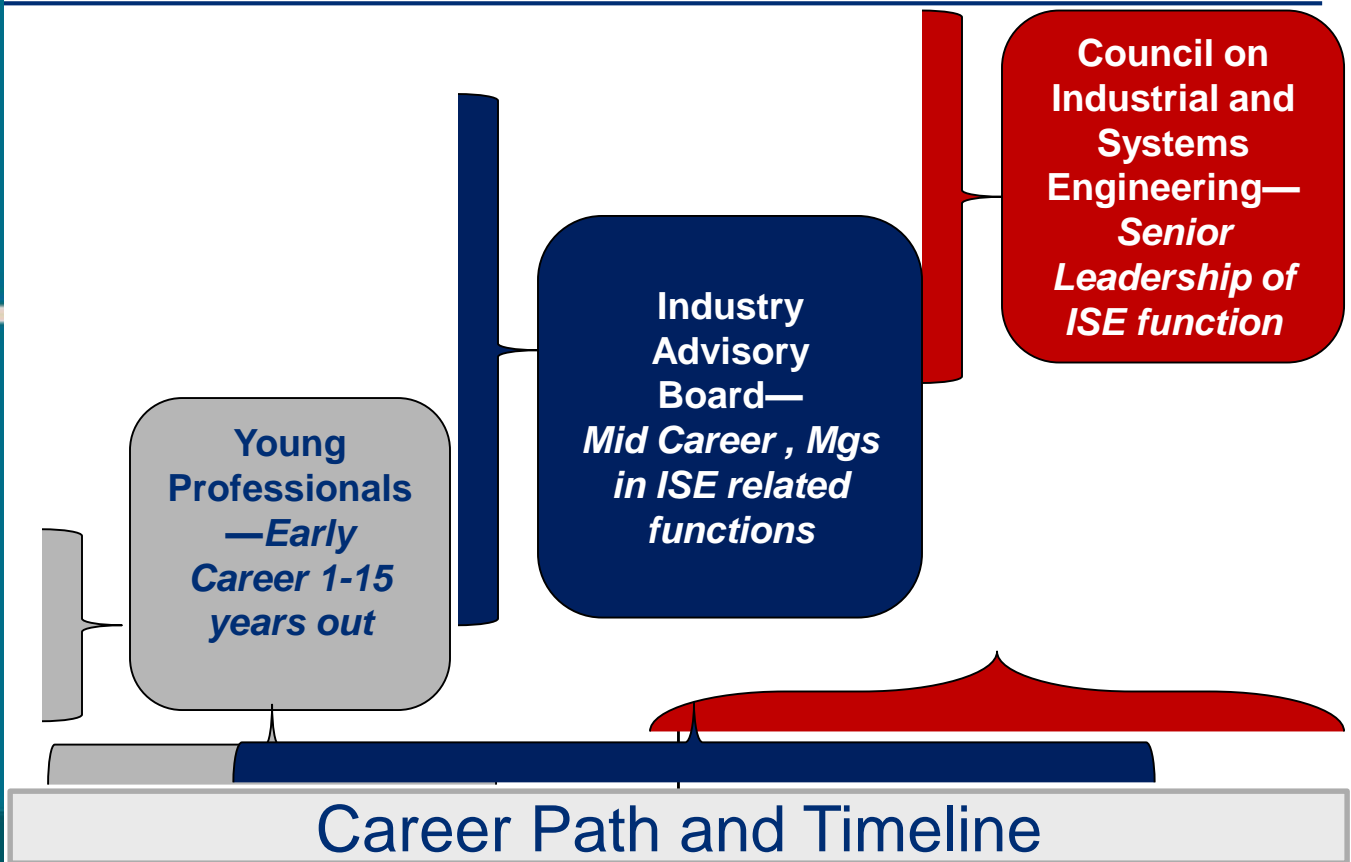
Questions?

How We'll Handle



Please write your question in the webinar question web form. We will address as many as we can at the end of the webinar and send an email with follow up's to attendees for those not able to be responded to.

ISE and IISE for Life—how IISE supports you for your entire Career.....



The “Industry Track”

Orlando May 18-21 2019

- We have built a mini-conference specifically designed for Young Professionals, Seasoned ISE Practitioners, Leaders and Managers of the ISE Function in Business and Industry.
- Four Focus Areas with 6 great presentations in each of the four areas:
 1. **Soft Skills Development:** improving your change leadership and management knowledge and skills
 2. **Career Development:** Trends and Emerging Opportunities in our Field
 3. Continuing to **broaden and deepen** your ISE Foundational Knowledge and Skills
 4. How to **create more Value** for your Organization and in doing so advance your career faster
- All Invited Speakers will ensure every session is outstanding.
- **Jim Tompkins** is our Industry Track Keynote Speaker—
if you haven’t heard Jim speak you are in for a treat!!
- Balanced presentations across Industry Segments (Services, Healthcare, Manufacturing, Supply Chain and Logistics)
- Goal is to make it efficient and fun for you to do some Personal and Professional Development in 2019



Chapter #1 Highlights— *IISE's First Chapter (1949)* *and also the first Virtual IISE Professional Chapter (2016)*

1. **304 Professional Members** in Region IV but also from around the Country/World.
 2. **Support and partner with Student Chapters:** Youngstown State, Ohio University, Purdue, and Ohio State University Student Chapters, and also in Michigan.
 3. **Partner with IAB--Industry Advisory Board, CISE, and the Young Professionals Group** and a number of **Societies and Divisions**.
 4. **Partner with our Sister Chapter #2** in Dayton/Cincinnati on our Annual IISE All Ohio Event and other things
 5. **10+ timely, Valuable Webinars** each year; topics developed from Voice of Member
 6. **12 Monthly Memo's** help Members get to know each other and keep members aware of upcoming opportunities AND also provide Self-Help Features on personal and professional mastery
 7. quarterly **GoToMeeting small group calls** with members that focus on topics of interest from 'affinity groups'/segments of our members.
-

We created and delivered a series of webinars on Operational Analytics in 2017-18

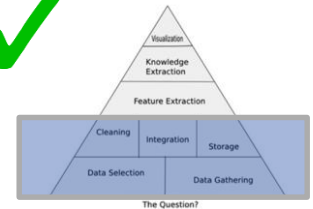
Webinar #1: Foundations 7 Dec 2017 (and GLR Conference)

Share the Framework, the Models, the Abstractions, the Principles
Management Systems Model
Intel "Triangle" Model



Webinar #2: Foundational Data Role--Measurement and Analysis Planning 20 March 2018

Measurement Planning using Value Stream Maps, Data Models derive from refining the Management System Model, The Data Management Role of ISE's in Process Improvement Projects



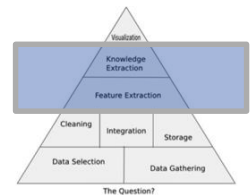
Webinar #3: Best in Class ILSS Project Final TG's 25 April 2018

Showcase best in class projects, shine spotlight on Op Analytics



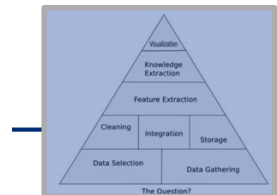
Webinar #4: Decision Support Role—M&A Execution 12 June 2018

Feature and Knowledge Extraction, Creating Chartbooks and VSM's, supporting the evaluation phase of DMAIC projects and then also the Control Stage.



Webinar #5: Putting it all together 24 July 2018

Revisiting the Management Systems Model with Case Examples



That has led to the creation of this Industry and Service Systems 4.0 Series

Webinar #1: Overview Industry 4.0 **11 Oct 2018** (Jack Feng, Paul Cohen)

Overview the History and Evolution of NNMI and Industry 4.0
Discuss ISE and Corporate/Plant Implications and Strategies
Discuss ISE Mftg Systems Eng Research Implications

Webinar #2: Industry 4.0 Impact on Business Models (Thorsten Wuest) **22 Jan 2019**

Webinar #3: Smart Logistics: Industry 4.0 and the End2End Supply Chain (Jim Tompkins, Tompkins Int'l; David Poirier, The Poirier Group; Benoit Montreuil, Ga Tech) **6 Feb 2019**

Webinar #4: Smart Analytics (Scott Sink, ISE at OSU; Jared Frederici, The Poirier Group; and Matheus Scuta, Ford) **26 Feb 2019**

Webinar #5: Smart Grids (Elaine Johns, CEO Enervision)

Webinar #6: Smart Factory (TBD)

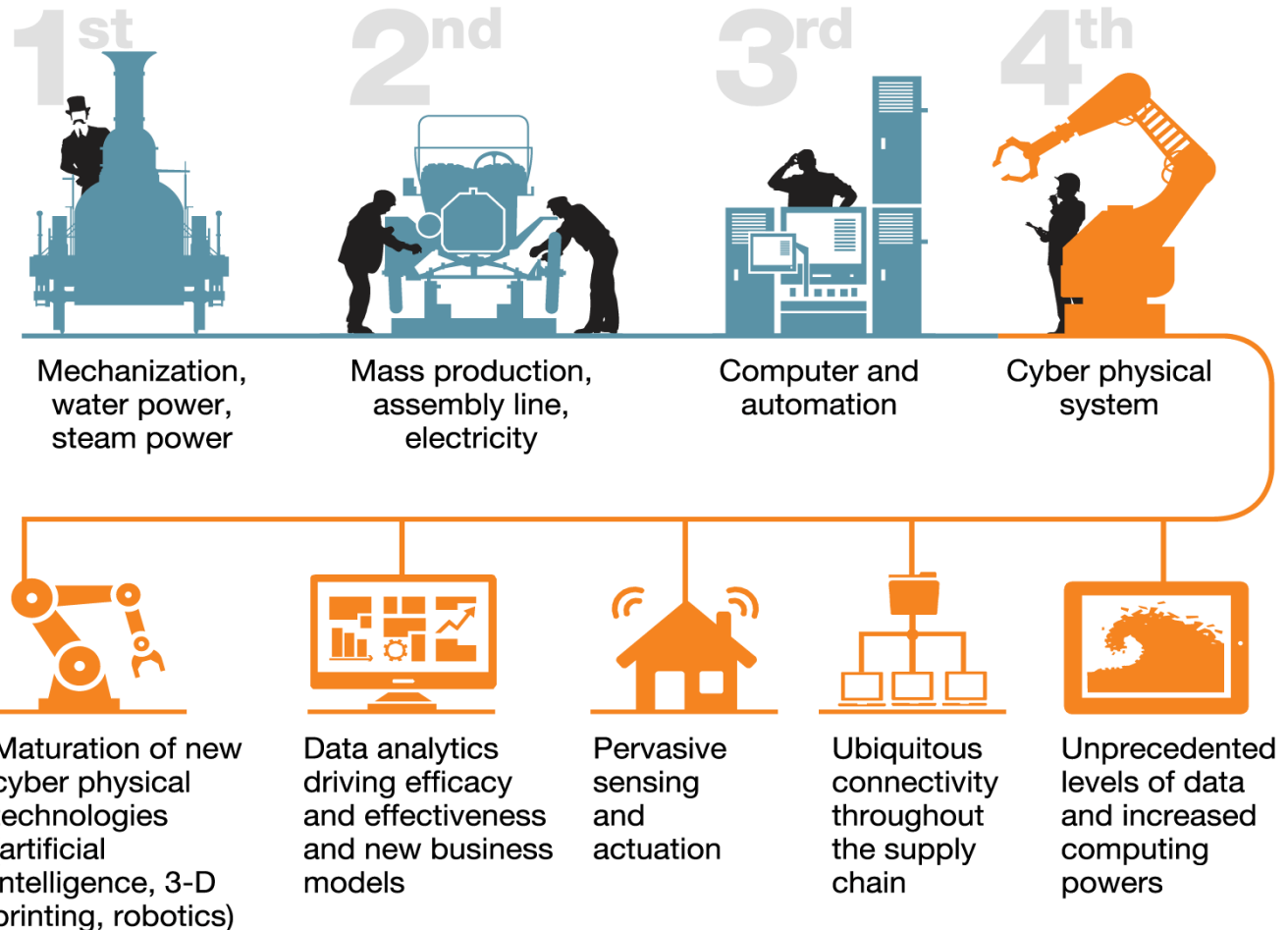


Key Context Points as to why succeeding with “Industry 4.0” is important to the US

- the standard of living, quality of life, cost of labor gaps are still significant and a big factor impacting our competitiveness which is why the Trade War is raging and will probably escalate.
- **Trade wars win battles they don't win the War.**
- “Industry 4.0” is just a label we've given to the integration of technology and data utilization that reflects a solution/path forward for us. It's an umbrella term for the confluence of a large number of innovations that are coming to fruition and now being integrated.
- **We want to help you understand this buzz word, “Industry 4.0” and then think about how you can play a role, as an ISE in making it happen.**
- We also want to help you understand what the US Government is doing with initiatives like NNMI to facilitate a speedier migration to the future state.
- **And, for most manufacturers in the US, there are still significant gaps in understanding all this and therefore the migration strategies of often flawed and moving too slowly.**

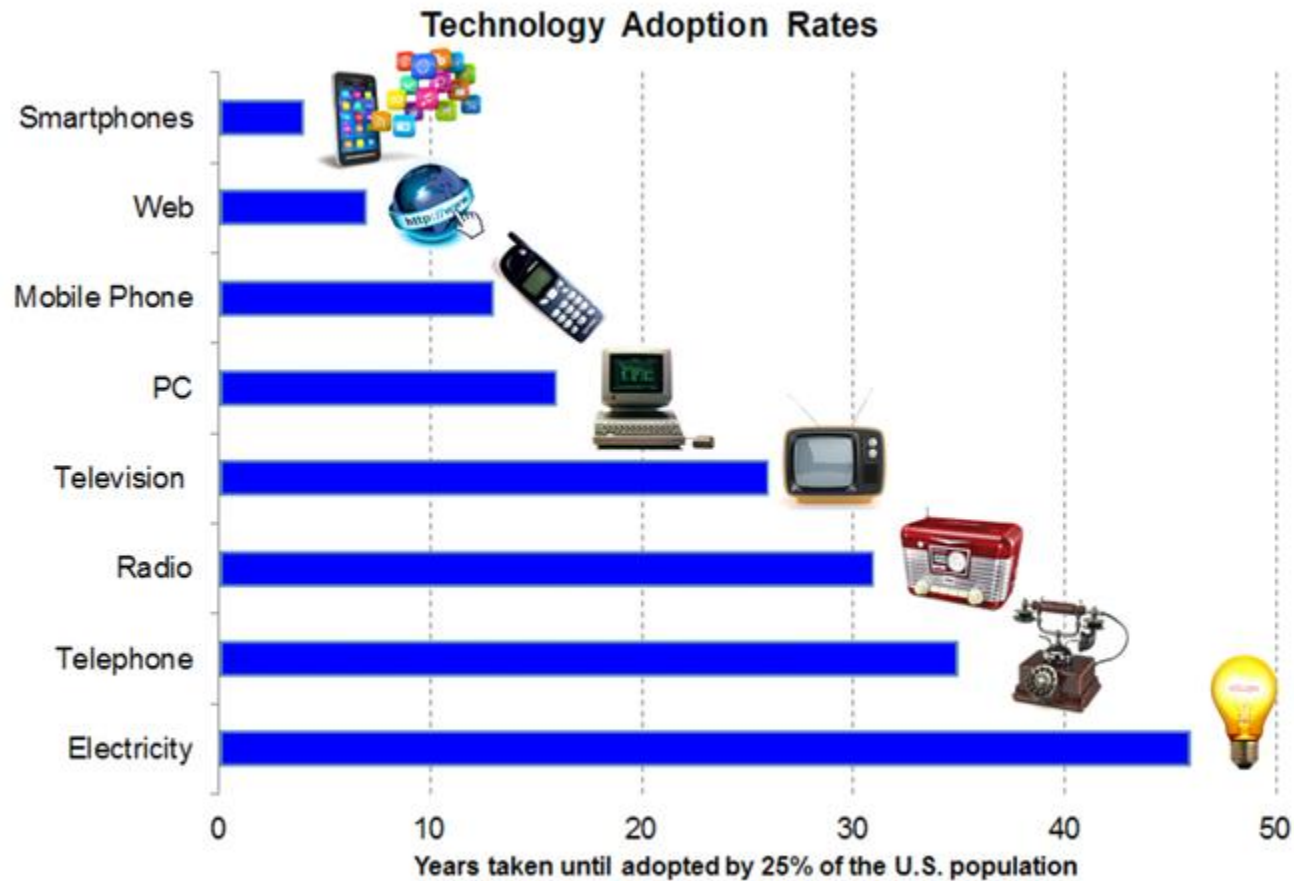
Let's look at some High Level “Models”/Views of this
Abstraction

In the fourth industrial revolution, digital analytics enables a new level of operational productivity.

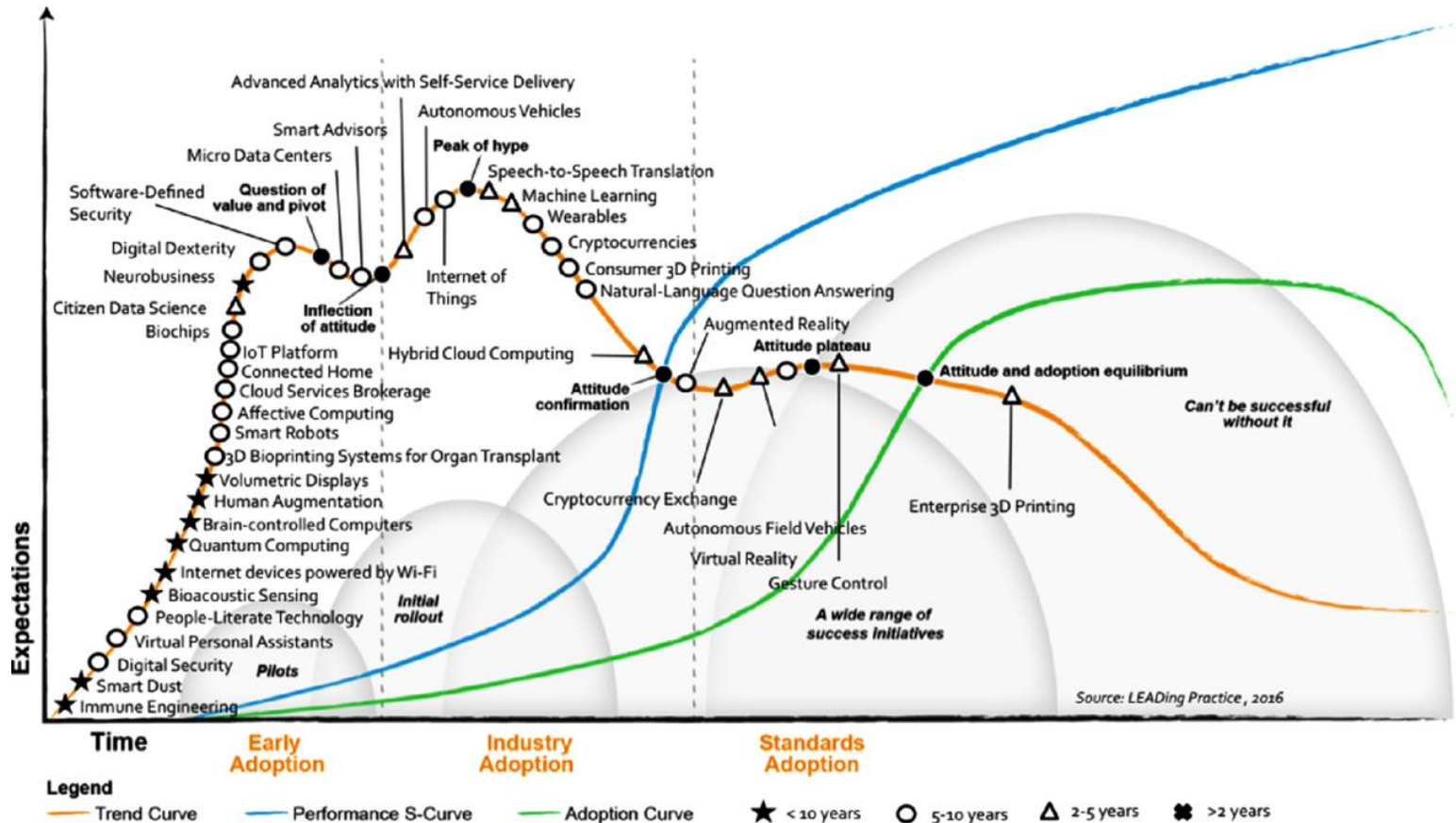


McKinsey&Company | Source: *Forbes*; World Economic Forum

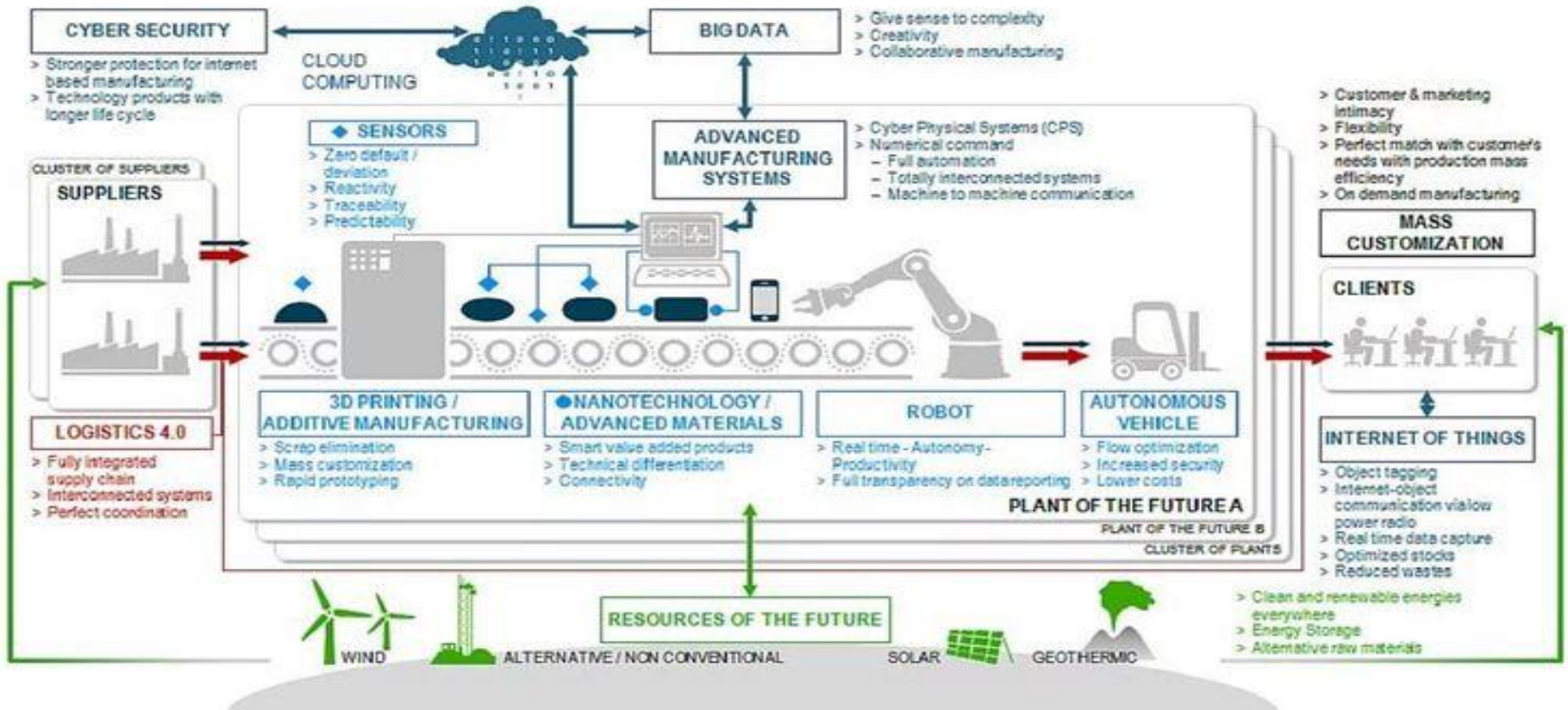
We do know that Adoption Rates of “Technology” have dramatically gotten faster—but how does that translate in the world of industry



The Hype Cycle



The Industry 4.0 Ecosystem



The Connected Factory in Action



INNOVATION

TAP COMMERCIAL INNOVATION

Mobilize employees and supervisors to move across the factory floor and access data wherever they are. The iPad and other like devices are making their way into industrial settings – along with an expectation that much of the commercial innovation it brings will also apply to industrial activities.

CONNECT ENGINEERS WITH MACHINES (M2M)

Apply predictive maintenance. Gain early warnings when production, machinery or network performance is about to degrade.



EFFICIENCY

LINK INFORMATION & OPERATIONAL TECHNOLOGY

Bridge the gap from data center to control room to collaborate and share best practices and common goals between manufacturing and IT.

OPTIMIZE ASSETS

Identify where your people, equipment, works in process and finished goods are in real-time. Adjust the schedule and inventory on the fly.



AGILITY

CONNECT & COLLABORATE EXTERNALLY

Extend visibility beyond your four walls. Link the extended supply chain and distribution to create dynamic workflows. Help and expertise are available in an instant.

EXPANDABLE INFRASTRUCTURE

Design and build an Industrial Ethernet infrastructure to minimize cost and effort to expand or improve processes. One infrastructure for safety, control, SCADA, Physical Security, and LAN.



RISK

SECURE PHYSICAL & CYBER ASSETS

Traditional security devices, like keypad entry systems, call boxes and security cameras, need power from Industrial Ethernet cables, with secure networks, to protect your processes, people, and plans from cyber sabotage.

MAXIMIZE UPTIME

Design ruggedized industrial networking infrastructure that will endure in harsh environments with redundant communications, power and configuration backup – especially for business processes under extreme conditions.

How are various Nations doing?

INDUSTRY 4.0: THE STATE OF THE NATIONS

01 Industry 4.0: Enabling manufacturers to increase competitiveness...

Business growth:
Smart products
Smart services

Efficiency gains:
Smart production
Smart factories

02 ...but are businesses making the most of the opportunity?

The first in-depth study into Industry 4.0 readiness

400+
Industrial manufacturing executives

Asset efficiency focus - a key driver of competitiveness
China, France, Germany, UK, US

- Aerospace
- Automotive
- Electronics
- Machinery
- Process

03 Key findings

85% of businesses see the potential of Industry 4.0
Yet only **15%** have dedicated strategies in place

Almost 87% see the value of a predictive maintenance strategy - driven by real-time data

Yet **91%** of surveyed companies in German speaking countries don't measure operating efficiency based on real-time data

89% are aware of the potential of information efficiency through the implementation of data standards
Yet only **11%** have systematically implemented data security and standards

81% are aware of the potential of monitoring machine status for maintenance purposes
Yet only **17%** have put principles into practice

88% consider energy management important
Yet only **15%** regularly implement practices into their processes

04 Industry maturity in Industry 4.0 implementation



05 Country maturity in Industry 4.0 implementation

The most mature adopter:
China 57%

Countries with similar maturity footprints:

United States 32%
United Kingdom 26%
Germany 21%

The least mature adopter:
France 14%

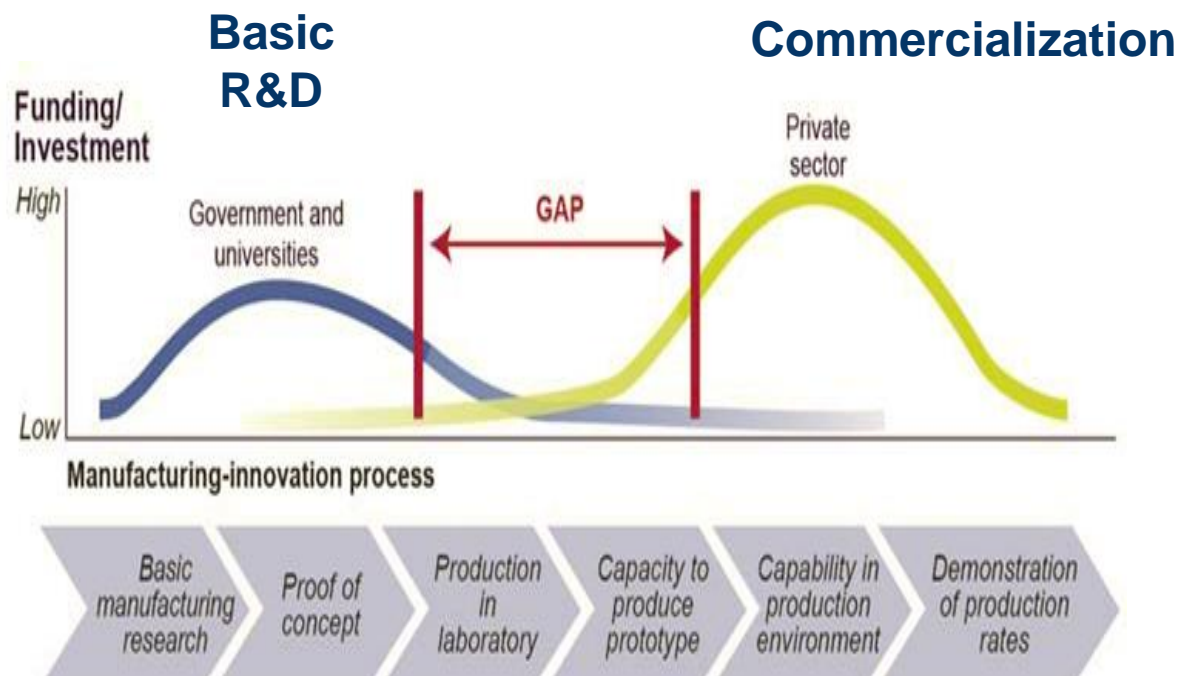
06

**Towards 2020:
The 5 Leadership characteristics to help seize competitive advantage**

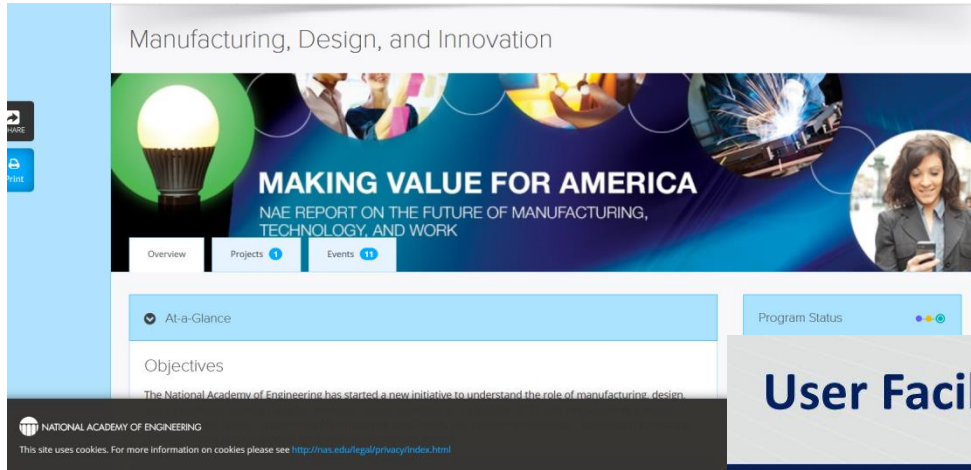
- 01** Agree and implement industry-wide data standards
- 02** Be flexible in sourcing key skills
- 03** Build strong partnerships in order to innovate quickly
- 04** Focus on quick wins
- 05** Build a clear, holistic roadmap

Closing the Gap

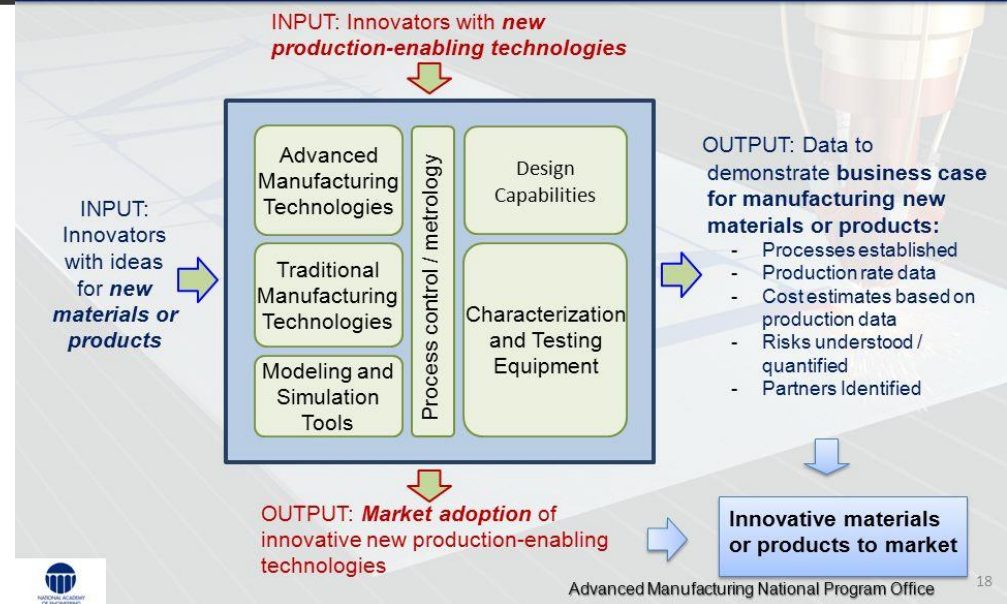
- Government investment in private-sector led partnerships
- Addresses the market failure of industry underinvestment in “pre-competitive” applied R&D
- Focus on “de-risking” new technologies and materials to scale-up for U.S. manufacturers



And NAE's Advanced Manufacturing National Program Office has a model for how to accelerate the transformation

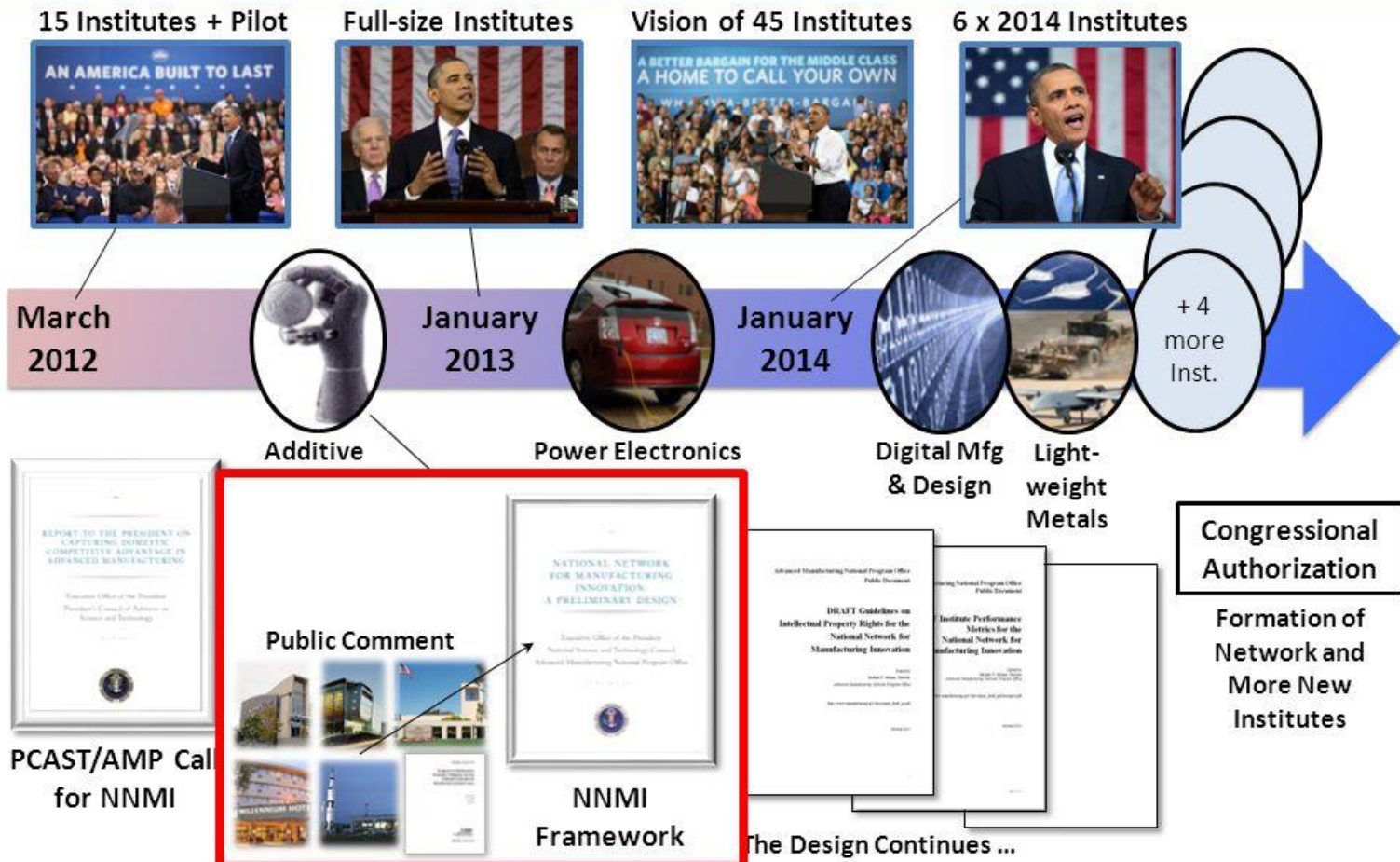


User Facilities to support Industry RD&D



Designing, Building and Growing the NNMI

3) Public Input and the NNMI Design



Manufacturing USA – 14 Institutes Now

Since Launching in 2012:

- Over \$1 billion Federal funding matched by over \$2 billion non-Federal funding
- 1,300+ companies, universities, and non-profits involved
- 40+ states participating



Additive Manufacturing
Youngstown, OH



Robots in Manufacturing
Pittsburgh, PA



Integrated Photonics
Albany and Rochester, NY



Recycling Materials
Rochester, NY



Tissue Biofabrication
Manchester, NH



Flexible Hybrid Electronics
San Jose, CA



Digital Manufacturing and Design
Chicago, IL



Clean Energy
Los Angeles, CA



Lightweight Metals
Detroit, MI



Fibers and Textiles
Cambridge, MA



Process Intensification
New York, NY

*States in blue have major participants in Manufacturing USA Institutes



Advanced Composites
Oak Ridge, TN



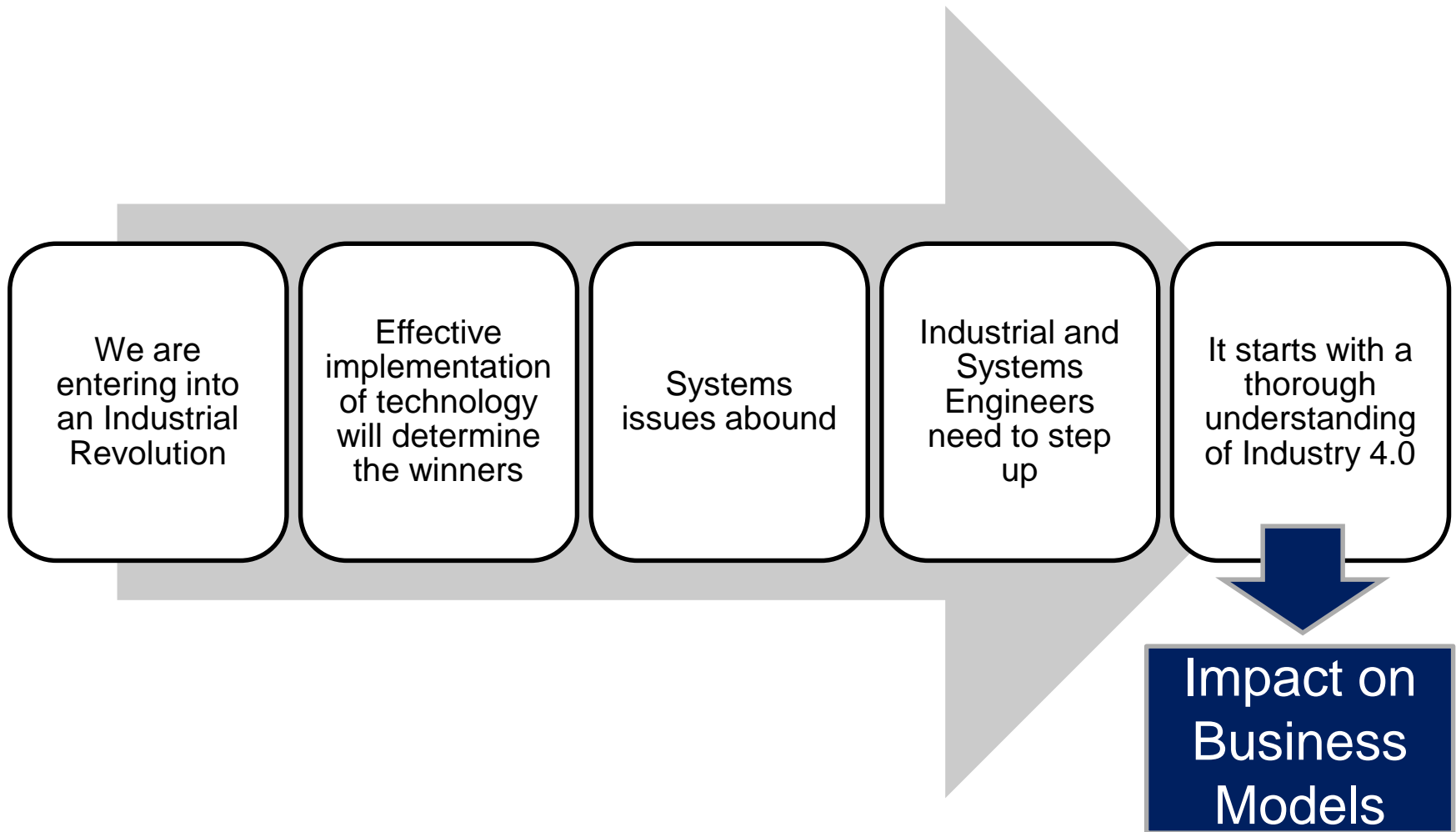
Wide Bandgap Semiconductors
Raleigh, NC



Biopharma Manufacturing
Newark, DE

Manufacturing
USASM

The Case for Action



Advanced vs. Smart Manufacturing

Two different ways of differentiation

Advanced Manufacturing

New technologies, products, materials and processes

Smart

Manufacturing

Use of data throughout the product life cycle

Source: Shipp et al. 2012

Advanced Manufacturing

Focus on physical manufacturing-technology

Smart Manufacturing

Focus on data and analytics

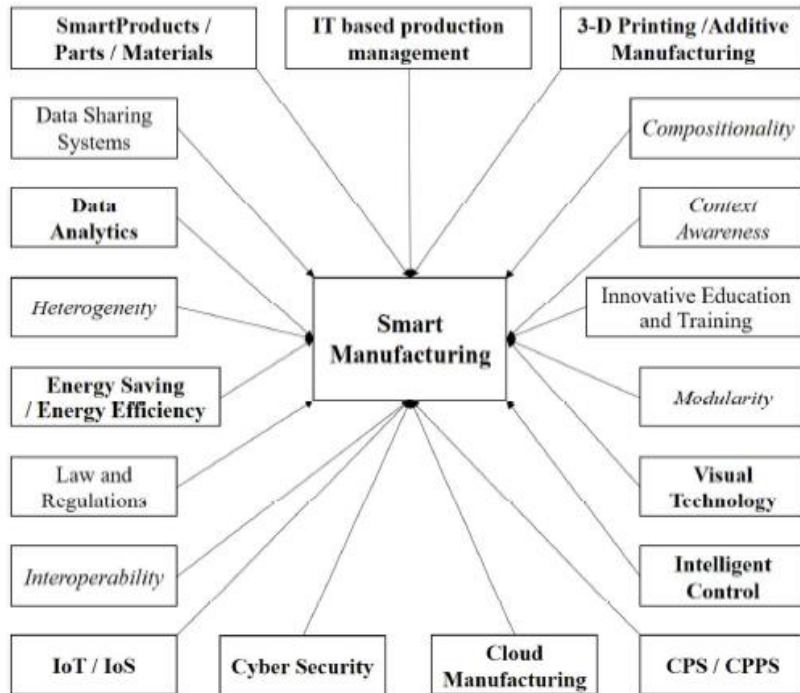
Source: Mittal, Khan & Wuest 2017

Schmid & Wuest, 2017

SMART MANUFACTURING PRINCIPLES

- / CONNECTIVITY
- / VIRTUALIZATION
- / DATA UTILIZATION

Schmid & Wuest, 2017



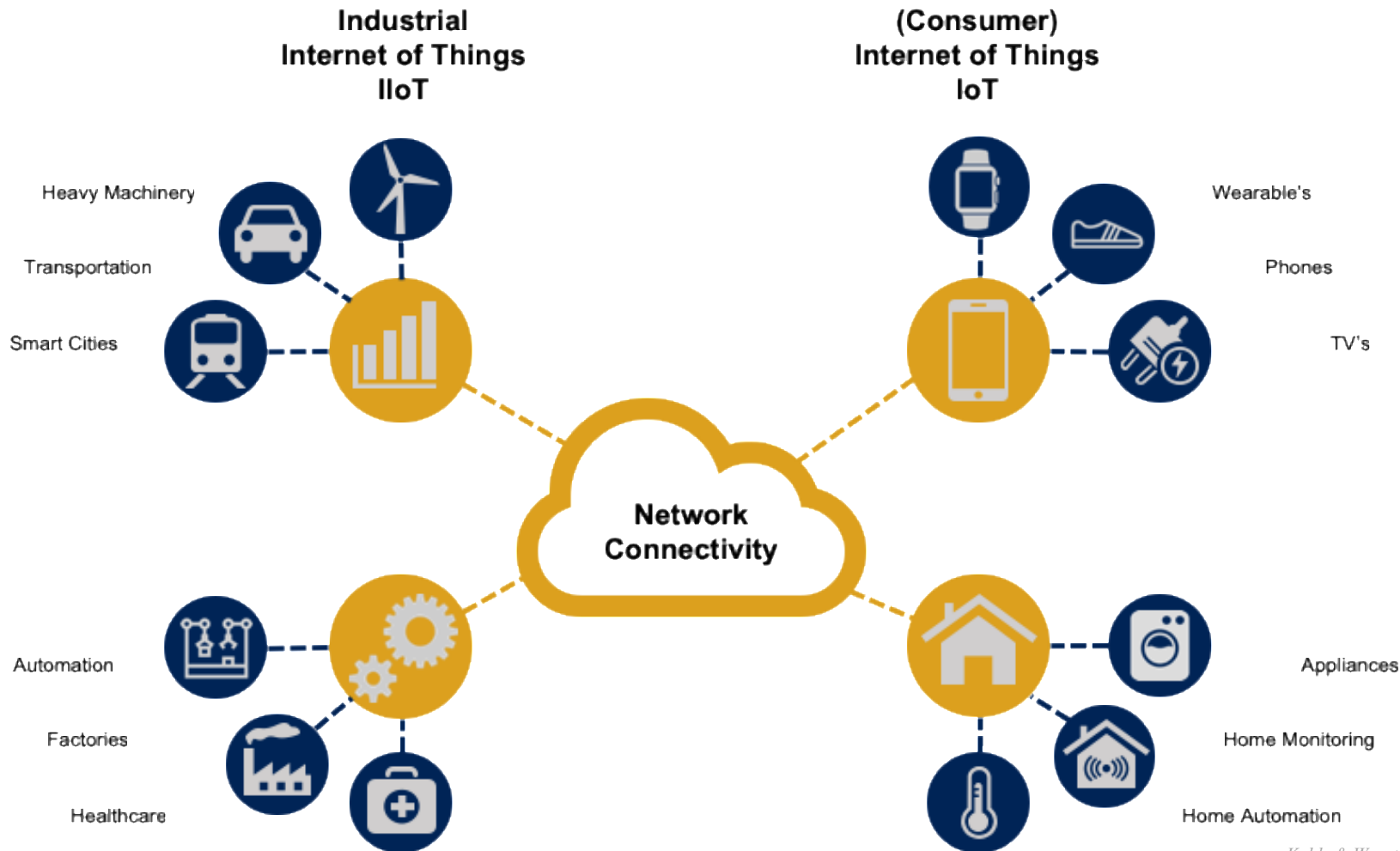
38 technologies (27 char. / 7 enabl. factors)

We decided to **cluster**, resulting in:

1. 3- D Printing / Additive Manufacturing
2. Cloud Manufacturing
3. CPS (Cyber Physical Systems) / CPPS (Cyber Physical Production Systems)
4. Cyber Security
5. Data Analytics
6. Energy Saving / Energy Efficiency
7. Intelligent Control
8. **IoT / IoS / IIoT**
9. IT based Production System
10. Smart Product / Part / Material
11. **Visual Technology**

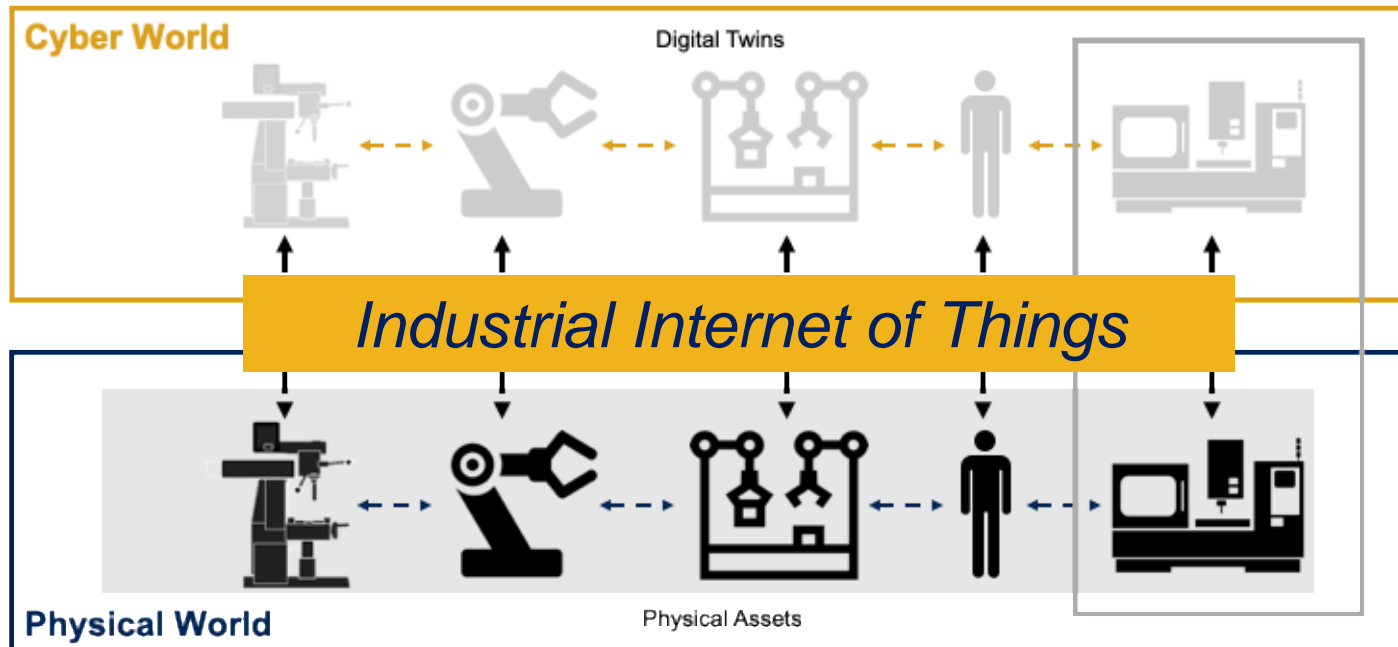
Source (Open Access): Mittal, S., Kahn, M., Romero, D. & Wuest, T. (2017). Smart Manufacturing: Characteristics, Technologies and Enabling Factors. *Part B: Journal of Engineering Manufacture*, Online first, 1-20. DOI 10.1177/0954405417736547

IoT / Industrial Internet



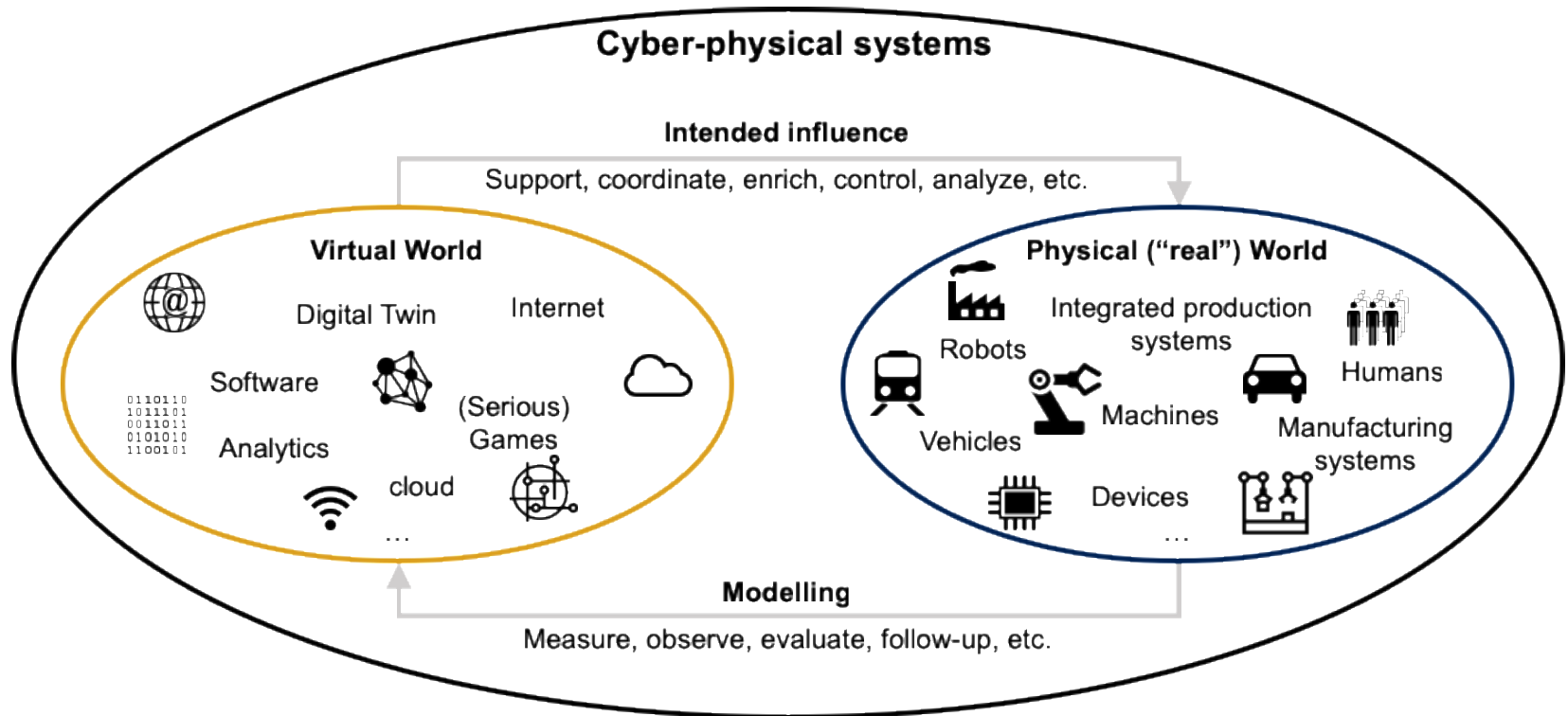
Kohls & Wuest, 2018

Digital Twin (1/2)



Kohls & Wuest, 2018

Digital Twin (2/2)



Kohls & Wuest, 2018

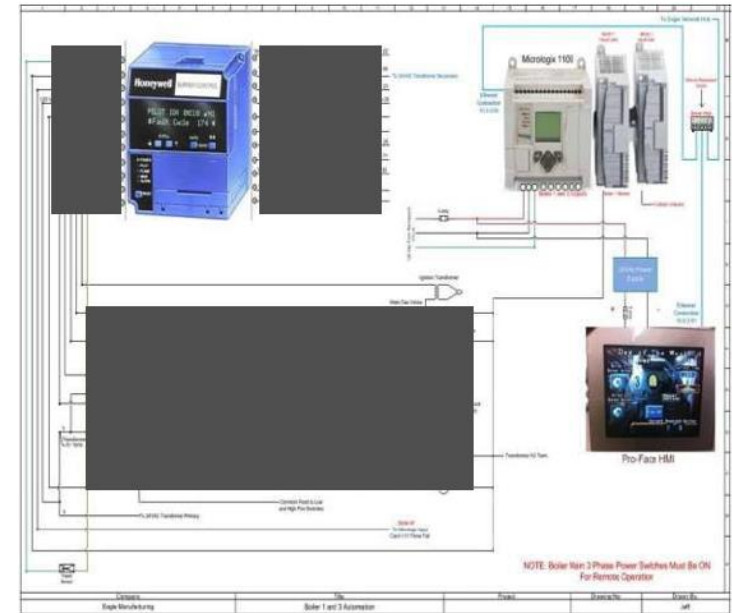
Business as usual?

Sounds great!

*We have a bunch of new technologies available –
can we not just get to work and use them to make our lives easier?*

Concept to revise boiler controls (goal)

Plant maintenance can **control and monitor the steam boilers** from **outside of the plant** instead of coming to the plant to schedule and check on them physically



Provided by : Eagle Manufacturing, jmcknight@eagle-mfg.com

Solution

- Using newer technology
- **PLCs** with integrated **Ethernet** and SMTP (email) protocol
- along with advanced HMI and **smart hub network** functionality

Benefits :

- **Better control** & scheduling of system
- **Real-time alarm** monitoring (through mobile devices)



After



Provided by : Eagle Manufacturing, jmcknight@eagle-mfg.com

Successful Smart Manuf. Project?

YES!

- Eagle Mfg. successfully developed their own SM solution, implemented it, & achieved their objective
- Great first step in their Industry 4.0 / SM journey
- Such projects are essential for many SMEs to 'get their feet wet'
- Evolutionary approach



***But are we not talking about the
4th Industrial REVOLUTION?***

- To truly transform your organization, we need to approach the Industry 4.0 & SM journey *holistically*
- Organizations can *not continue to develop small-scale solutions* without coordination
- Otherwise we *lose key benefits* such as insights from data analytics
- How can we *address this complexity*?
 - (IIoT) platforms
 - Marketplaces & composition of microservices & applications
 - Etc.
- There are various supporting *tools, models, & frameworks* available for companies to identify their maturity

Platform examples

General Electric's Predix, Microsoft Azure, CyberLighting's CyberVille, Schneider Electric's Wonderware, SAP Hana Cloud Platform (Connected Manufacturing & Predictive Maintenance and services), Bosch Production & Logistics, LifeCycle Care (Your KoneCranes + TrueConnect), John Deere, Forest Insight, Kaa IoT Development Platform
PTC ThingWorx, IBM BlueMix, Exosite, Google, Brillo, Sap IoT Platform, Intel IoT, Salesforce IoT Cloud, IBM Watson
Yammer, LinkedIn, Twitter

IndustryHack, GrabCad, InnoCentive

Menon, K., Kärkkäinen, H., Wuest, T. & Gupta, J. (2018). Industrial Internet Platforms: A PLM Perspective. Part B: Journal of Engineering Manufacture

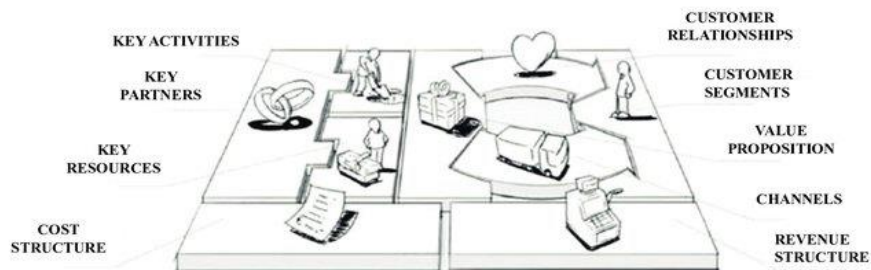
Models

- 1 A Categorical Framework of Manufacturing for Industry 4.0 and Beyond
- 2 Maturity Model for Assessing Industry 4.0 Readiness and Maturity of Manufacturing Enterprises
- 3 Towards Industry 4.0: Gap Analysis between Current Automotive MES and Industry Standards using Model-Based Requirement Engineering
- 4 Towards Industry 4.0-Standardization as the Crucial Challenge for Highly Modular, Multi-vendor Production Systems
- 5 An Overview of a Smart Manufacturing System Readiness Assessment
- 6 Three Stage Maturity Model in SME's towards Industry 4.0
- 7 IMPULS Industrie 4.0 Readiness
- 8 Building the Digital Enterprise
- 9 The Connected Enterprise Maturity Model
- 10 Guideline Industrie 4.0 - Guiding Principles for the Implementation of Industrie 4.0 in Small and Medium-sized Businesses
- 11 A Smartness Assessment Framework for Smart Factories Using Analytic Network Process
- 12 Industrie 4.0 Maturity Index
- 13 Development of an Assessment Model for Industry 4.0: Industry 4.0-MM
- 14 Maturity and Readiness Model for Industry 4.0 Strategy
- 15 Towards a framework for Assessing the Maturity of Manufacturing Companies in Industry 4.0 Adoption

Mittal, S., Khan, M., Romero, D. & Wuest, T. (2018). A Critical Review of Smart Manufacturing & Industry 4.0 Maturity Models: Implications for Small and Medium-sized Enterprises (SMEs). *Journal of Manufacturing Systems*, 49(2018), 194-214.

A business model “[...] describes the *method or means* by which a company tries to *capture value* from its business [...].”¹

Business Model Canvas



Osterwalder, A., & Pigneur, Y. (2010). *Business model generation: a handbook for visionaries, game changers, and challengers*. John Wiley & Sons.

Business Model 4.0

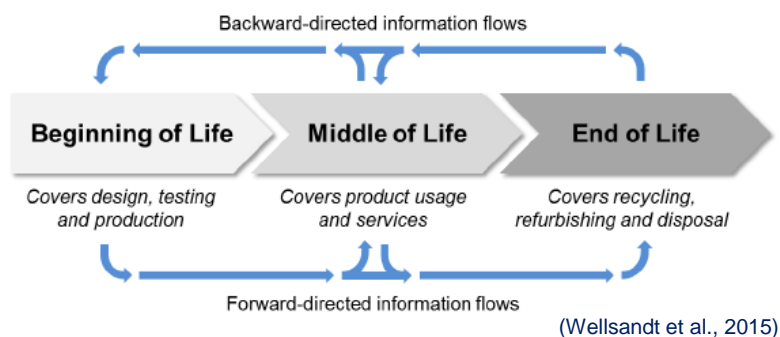
- Business model is a *key aspect* in the transition towards Industry 4.0
- *Often neglected and not a priority* as it is not ‘technical’, etc.
- However: We can *not continue ‘business as usual’* & expect to fully benefit from opportunity

Product Service Systems

“A [Product Service System] is an integrated product and service offering that delivers *value in use*. A PSS offers the opportunity to *decouple economic success from material consumption* and hence reduce the environmental impact of economic activity. The PSS logic is premised on *utilizing the knowledge of the designer-manufacturer to both increase value as an output and decrease material and other costs as an input to a system.*”

(Baines et al., 2007)

Continuous revenue creation (MOL) vs.
one time sale (BOL)



Typical examples:



Benefits:

- **Business**
 - Competition outside of ‘cost’
 - Installed base (No. unit sales vs. No. of units in operation)
 - Constant revenue
- **Strategy**
 - Lock-in effect (customers)
 - Lock-out effect (competitors)
 - Reduction of direct competitors through customization
 - ... customer demand!
- **Sustainability**
 - Less waste / better for environment

Pay-per-Use / Pay-per-Outcome

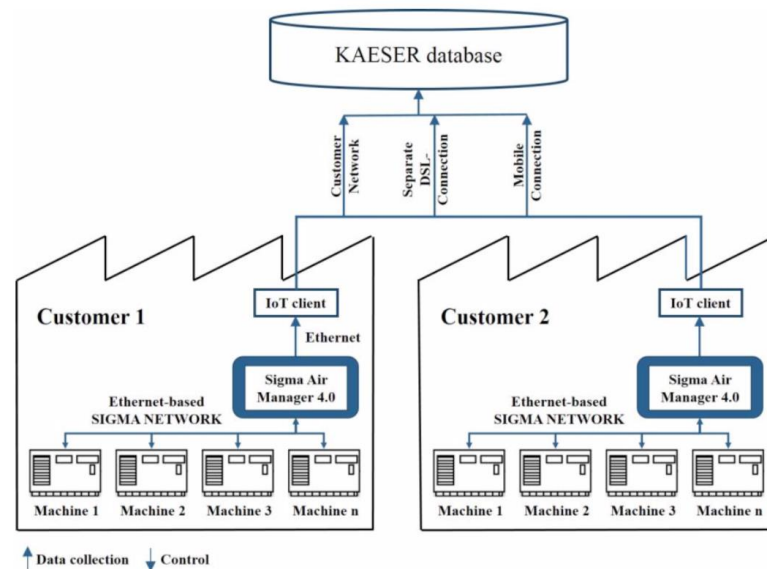


Based on Menon et al., 2018

Case 2: KAESER COMPRESSORS

Background:

- KAESER is a leading global manufacturer of compressed air systems and services
- Industry is characterized by high competition
- **Transformed towards service-based BM** in response to shifting customer demands
- Customers no longer purchase customized air compressors but **pay for used** compressed air
- KAESER manufactures, operates, & owns the systems
- **Industry 4.0 technologies play a key role** (e.g., data analytics & predictive maintenance)



Bock et al., 2019

Key benefits (customer):

- reduced cost & increased flexibility,
- transfer of operational risks,
- increased transparency,
- improved operational planning.

Key benefits (manufacturer):

- reduction in service cost,
- development of a long-term partnership
- synergies in product development & innovation

Lessons Learned

- Lack of cost transparency on customer side
- Changing role of sales dept. (**ISEs!**)
- Emphasis of partnerships & inter-disciplinary teams
- Introduction of new risks
- Need to 'ease in' the new BM
- Privacy & Security concerns

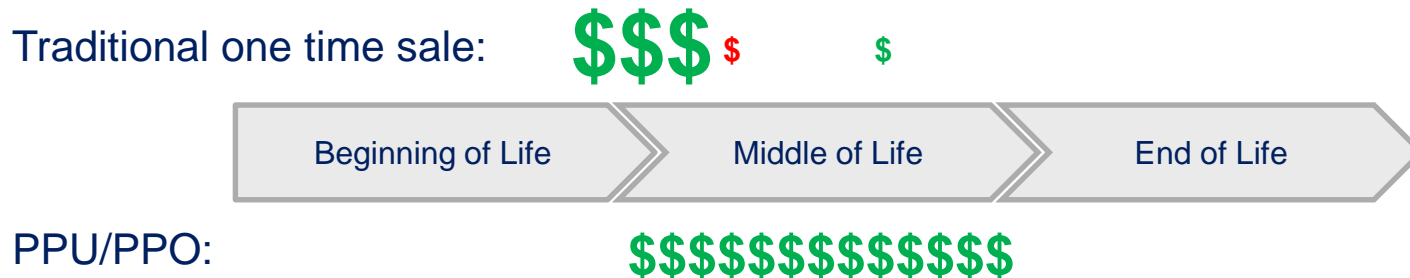
Morphological Box

*Interested in **rethinking your I4.0 BM and/or using the morphological box?***

Contact me or my colleagues to discuss options!

Conclusions

- We are in the midst of a **major disruption**: Industry 4.0 / Smart Manufacturing
- **New technologies**, such as IoT and Digital Twins open **new opportunities**
- **Difficult to translate** technological progress in business success
- Industry 4.0 needs to be approached **holistically**, and that includes rethinking the **business model and value proposition**
- **Pay-per-use / pay-per-outcome BM** are promising desirable benefits, yet developing sustainable and successful PPU/PPO BMs is challenging



- Our **Morphological Box** is a tool that can be used flexibly, at different levels of detail, and at different phases of the transition to support companies in the decision and design process

Key Takeaway

The big question remains: *Why should Industrial & Systems Engineers care?*

Well, I think it is safe to say we all agree that this is an inter-disciplinary challenge involving technology, business and economics, complex systems, people, you name it.

Industrial & Systems Engineers uniquely qualified to work in such an environment - the future of our profession is bright!

I challenge each of you today, to:

- *Think about the **impact of Industry 4.0 on your organization** as a whole, on your department, and on your main tasks,*
- *Embrace the emerging opportunities rather than fight the change, and*
- *take a few moments each day over the next week to (re)think about what a **PPU/PPO BM** might look like in your line of work!*

Further reading from our group

Smart Manufacturing Technologies (*Open Access*) -> [link](#)

- Mittal, S., Kahn, M., Romero, D. & Wuest, T. (2017). Smart Manufacturing: Characteristics, Technologies and Enabling Factors. *Part B: Journal of Engineering Manufacture, Online first*, 1-20. DOI 10.1177/0954405417736547

Industry 4.0 & Smart Manufacturing (*Open Access*) -> [link](#)

- Thoben, K.-D., Wiesner, S. & Wuest, T. (2017). “Industrie 4.0” and Smart Manufacturing – A Review of Research Issues and Application Examples. *Int’l Journal of Automation Technology*, 11(1), 4-19. DOI 10.20965/ijat.2017.p0004 (*Best Review Paper Award*)

Machine Learning in Manufacturing (*Open Access*) -> [link](#)

- Wuest, T., Weimer, D., Irgens, C. & Thoben, K.-D. (2016). Machine Learning in Manufacturing: Advantages, Challenges and Applications. *Production & Manufacturing Research*, 4(1), 23-45. DOI 10.1080/21693277.2016.1192517

Industrial Internet Platforms -> [link](#)

- Menon, K., Kärkkäinen, H., Wuest, T. & Gupta, J. (2018). Industrial Internet Platforms: A PLM Perspective. *Part B: Journal of Engineering Manufacture, online first*. DOI 10.1177/0954405418760651.

2018 World Manufacturing Forum Report (*Open Access*) -> [link](#)

- Taisch, M., Arena, D., Gorobtcova, P., Kiritsis, D., Luglietti, R., May, G., Morin, T. & Wuest, T. (2018). *World Manufacturing Forum 2018 Report*. World Manufacturing Forum.

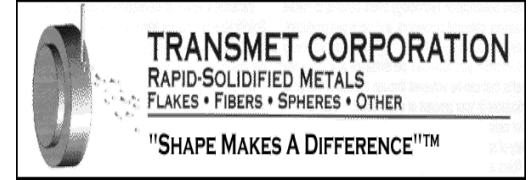
Data Analytics in Manufacturing -> [link](#)

- Lenz, J., Wuest, T. & Westkaemper, E. (2018). Holistic Approach to Machine Tool Data Analytics. *Journal of Manufacturing Systems*, 48(2018), 180-191. DOI 10.1016/j.jmsy.2018.03.003

Operator 4.0 -> [link](#)

- Romero, D., Stahre, J., Wuest, T., Noran, O., Bernus, P., Fast-Berglund, A. & Gosecky, D. (2016). *Towards an Operator 4.0 Typology: A Human-Centric Perspective on the Fourth Industrial Revolution Technologies*. International Conference on Computers and Industrial Engineering. 2016, October 29.-31., Tianjin, China. ISSN 2164-8670 cd, ISSN 2164-8689 online (*Best Faculty Paper Award*)

Questions

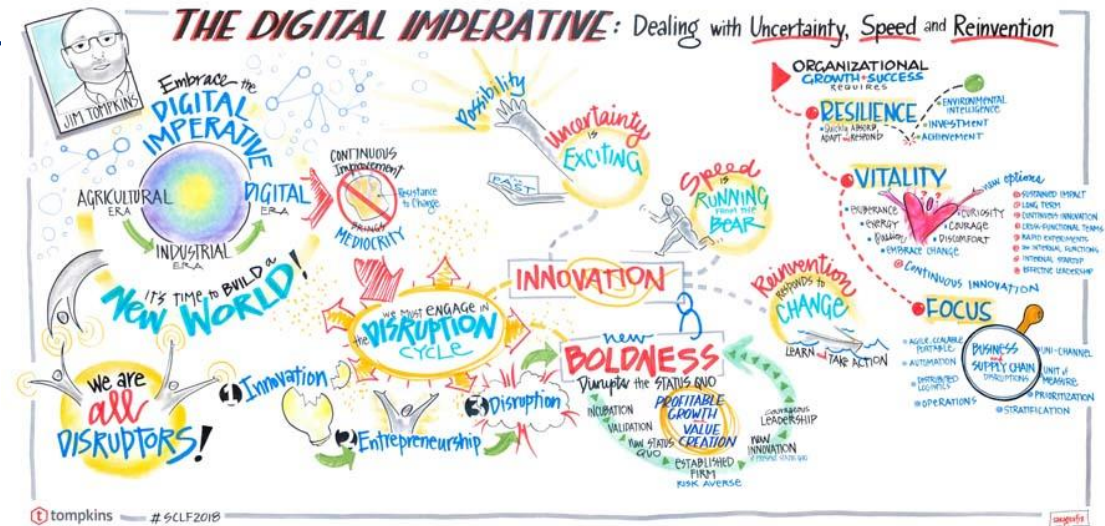


Upcoming Webinars from Chapter #1

Feb 6, 2018

Industry & Service Systems 4.0: Smart Supply Chains

- ▣ **James Tompkins**, Chairman, Tompkins, Int'l—
The Digital Imperative
- ▣ **Benoit Montreuil**, Director, Supply Chain & Logistics Institute, ISE at Georgia Tech—*The Physical Internet*
- ▣ **Scott Sink**, Senior Advisor to The Poirier Group
Practitioner View



The Physical Internet

Hyperconnected global logistics system
 enabling seamless open asset sharing and flow consolidation
 through standardized
 encapsulation, modularization, protocols and interfaces



A system is said to be hyperconnected when its components (agents, things, etc.) are intensely interconnected on multiple layers, ultimately anytime, anywhere

Interconnectivity layers notably include
 digital, physical, operational, business,
 legal and interpersonal

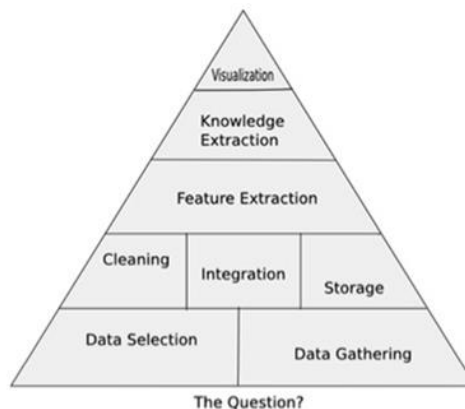
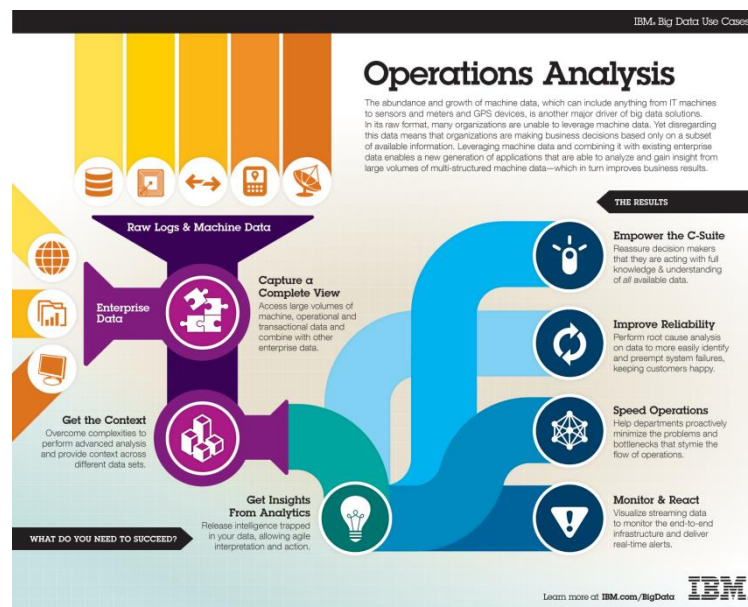
Hyperconnected system definition by B. Montreuil, July 2015
 PI definition adapted by Montreuil B, R.D. Meller & E. Ballot, June 2015
 from Montreuil B, R.D. Meller & E. Ballot (2012). Physical Internet Foundations, In: Service Orientation in Holonic and Multi-Agent Manufacturing and Robotics, edited by T. Borangiu et al., Springer

Image source: clydeathbone.com

Feb 26, 2018

Industry & Service Systems 4.0: *Smarter Analytics*

- ❑ **Matheus Scuta**, Global Manufacturing Analytics Scientist, Ford Motor Company—
Integrating Analytics into Manufacturing
- ❑ **Jared Frederici**, Sr. Consultant, The Poirier Group, Toronto, Canada—*Smarter Analytics*
- ❑ **Scott Sink**, Director, ILSS Certification Program, ISE at Ohio State—*Operational Analytics: By What Method*



Becoming a Change Master

March 5, 2018

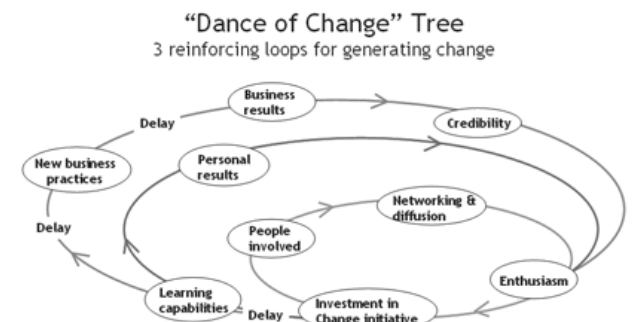
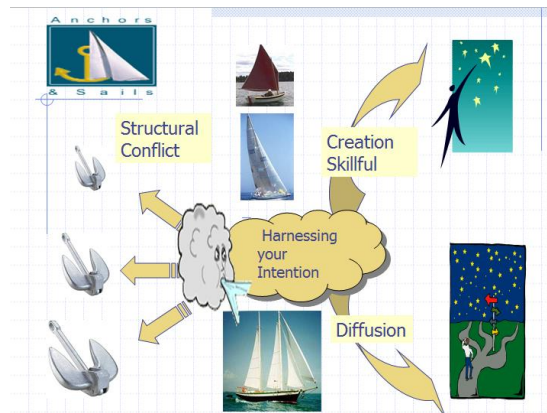
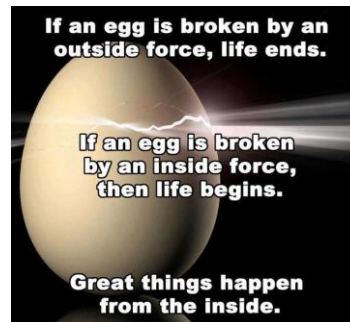
Soft Skills 4.0—Becoming a Change Master

- ❑ **Bob Gold**, Founder, The Gold Group, Behavioral Technologist—

The Art and Science of Persuasion

- ❑ **Scott Sink**, Director ILSS and Operational Analytics Certification Program, ISE at OSU—

How to Become a Change Master



Limiting Factors

- Challenges of Initiating – not enough time, no help, not relevant, not walking the talk
- Challenges of Sustaining – fear/anxiety, assessing & measuring, true believers & non believers
- Challenges of Redesign – governance, diffusion, strategy and purpose

Upcoming Webinars from Chapter #1: **IISE Annual Conference— Industry Practitioner Track**

March 21, 2018

The IISE Industry Practitioner Track—Orlando

- ❑ **Scott Sink**, Director ILSS and Operational Analytics Certification Program, ISE at OSU— *Overview of our Track for Young Professionals, Seasoned ISE's, ISE Students*

- ❑ **Kaz Takeda**, Disneyland Resort Manager, Industrial Engineering and Co-Chair Track-- *Highlights for Seasoned Practitioners*

- ❑ **Jared Frederici**, Sr. Consultant and Co-chair for Track— *Highlights for Young Professionals and Students*



The “Industry Track”

Orlando May 18-21 2019

- We have built a mini-conference specifically designed for Young Professionals, Seasoned ISE Practitioners, Leaders and Managers of the ISE Function in Business and Industry.
- Four Focus Areas with 6 great presentations in each of the four areas:
 1. **Soft Skills Development:** improving your change leadership and management knowledge and skills
 2. **Career Development:** Trends and Emerging Opportunities in our Field
 3. Continuing to **broaden and deepen** your ISE Foundational Knowledge and Skills
 4. How to **create more Value** for your Organization and in doing so advance your career faster
- All Invited Speakers will ensure every session is outstanding.
- **Jim Tompkins** is our Industry Track Keynote Speaker—
if you haven’t heard Jim speak you are in for a treat!!
- Balanced presentations across Industry Segments (Services, Healthcare, Manufacturing, Supply Chain and Logistics)
- Goal is to make it efficient and fun for you to do some Personal and Professional Development in 2019



The “Industry” Track for Orlando 2019

And, in addition to those 24 Practical, Pragmatic Presentations by hand-picked presenters we’ll wrap around some Networking opportunities:

- the Annual CISE Leadership Mixer
- the Annual Industry Advisory Board Mixer

- Industry Track Kick-off and Capstone Plenary Sessions
- The Executive Roundtable
- Townhalls for IAB and Young Professionals

- Huge opportunity to build your network and mentor and get mentored



So, First things First, take some time out and invest in yourself



It Pays Off—I've attended 30+ IISE Conferences and the Return on Investment has been 25+:1 !!!