Cloud-Based Manufacturing and Manufacturing Industry Perspectives
Biography

- Paul Evans
- Director of Research and Development for the Manufacturing Systems Department at SwRI
- Real-world problem solving through applied research and development
- Specialized in advanced industrial robotics and automation programs
- Graduated with a MSME from Iowa State University and a Professional Engineer
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Cloud Manufacturing

What does it mean to industry?

– Depends on the size and the talent
– Large Manufacturers already operate enterprise software and likely have a Product Lifecycle Management solutions
– Small and Mediums have challenges
  • Limited compute resources
  • Limited analytics capabilities
  • Limited IT resources
  • Limited time to do something new/different
Digital Manufacturing

• Pervasive, secure connectivity and scalable computing via the Cloud
• Enables complex products to be produced in less time and at lower cost
• Enables a dominate digital thread that supports all activities of the manufacturing enterprise from product conceptualization to post-sale support and maintenance
• Supports common models for Digital Manufacturing encapsulating all data, information, and knowledge for products, processes, and systems that create value
• Fosters a broad community of developers to create and support interfaces and software
• Modeling and simulation tools for even the smallest manufacturer
• real-time status of the manufacturing enterprise
Needs

• Cloud-based solutions and Software as a Service (SaaS) models are an enabler to overcome Small and Medium access challenges

• Sophisticated simulation technology more accessible to problem-solvers throughout the manufacturing supply chain.
Some Examples

“Industrial Internet”

Applications of the Industrial Internet

Reference for Images: General Electric Industrial Internet
http://www.ge.com/docs/chapters/Industrial_Internet.pdf
Some Examples

- **Product Lifecycle Management**
  - One of four cornerstones of Mfg. IT structure
  - Extend to include intelligent machines and production event data
- **Closed-Loop Lifecycle Management (CL$_2$M)**
- Management of complex products and the supply chain

Product Lifecycle Image Reference: National Institute of Standards and Technology
Some Examples

Smart Manufacturing Leadership Coalition – SM Platform

Source: https://smartmanufacturingcoalition.org/
Some Examples

Desktop Technical Computing in the Cloud

Sell your app in a Nimbis cloud portal.

BECOME A NIMBIS SELLER

BUILD, INSERT, DEPLOY

Seller Partner Program
Register now. There is no cost to register in the program. Use our free tools to build, insert, and deploy your portal application in our app store.

Hassle Free, On Demand, Easy Pay

MANUFACTURING AND POLYMER PORTAL
Some Examples

Source: http://www.mtconnect.org/
NCMS Digital Manufacturing Special Interest Group

300,000
Approximate number of manufacturers in the United States

95%
Of which are categorized as small or medium (1-500 employees)

200%
More jobs are provided by small and medium manufacturers than large ones

98%
Of all products will be developed and manufactured digitally by 2020

94%
Of all small and medium manufacturers have not yet adopted high-performance digital manufacturing

Source: http://digitallab.uilabs.org/
More Information

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