

Extreme Manufacturing Workshop

NIST, Gaithersburg MD

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Future Manufacturing Enterprise

Breakout Session Overview

Mike McGrath

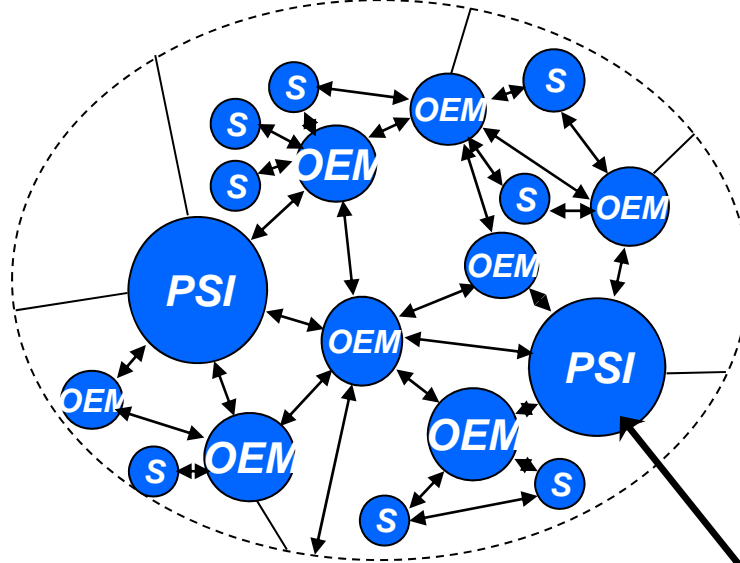
ANSER

michael.mcgrath@anser.org

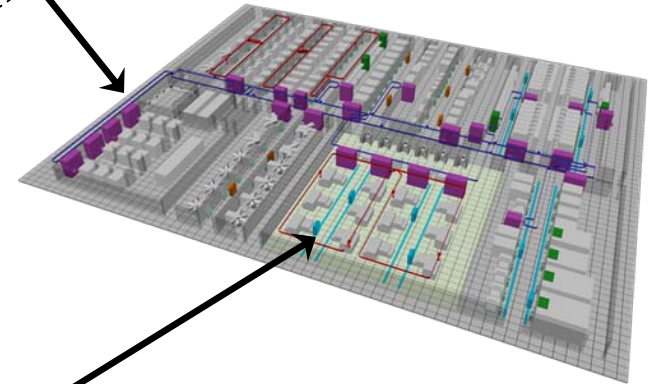
Defining the Topic

Scope of the Manufacturing Enterprise

Macro
Globally Networked
Organizations



Meso
Multi-function Facilities and
Organizations



Micro
Manufacturing
Processes



Why is This Important?

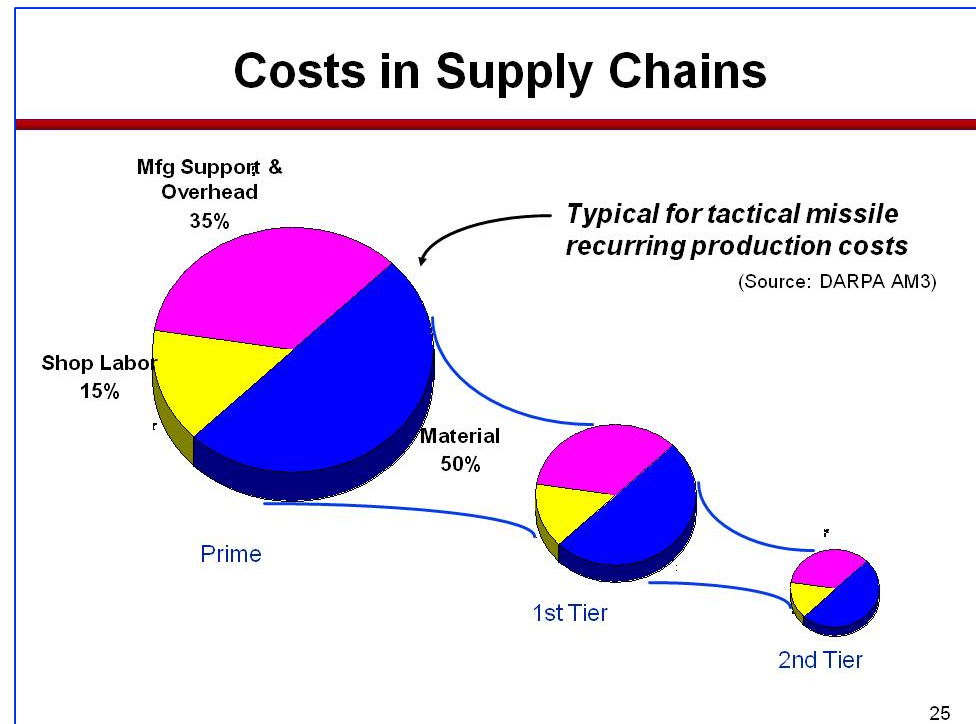
“Because that’s where the money is ...”

--- Willie Sutton

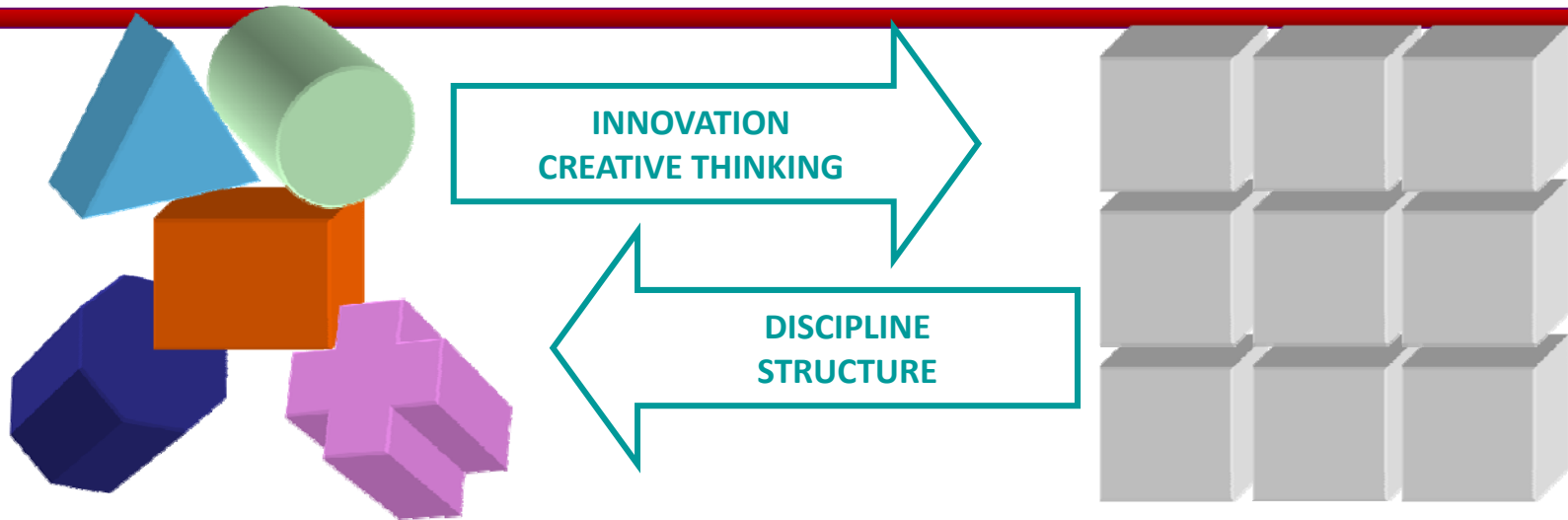


Leverage on:

- Cost
- Delivery Time
- Quality
- Agility
- Environmental Impacts
- Energy Efficiency
- Global Competitiveness
- . . .



The Challenge Now



Value Creation

- Need Variation to Develop New Technologies and Approaches
- Creativity, Imagination
- Think “out of the box” – provide Customers with solutions before they even know they have a problem

Value Delivery

- Reduce Variation at all Cost
- Efficiency, Productivity
- Process Discipline

Need Both Creation and Delivery of Value to assure Customer Success

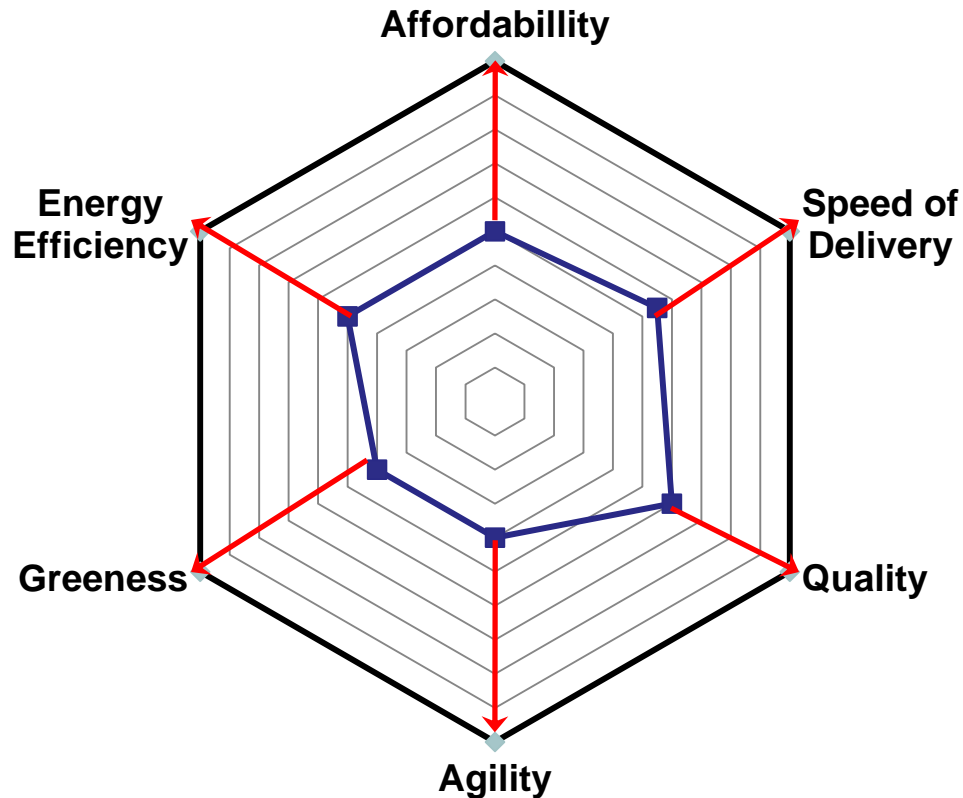
Enterprise Visions and Enablers

Many Common Denominators

- DoD Advanced Manufacturing Enterprise (AME)
 - Connect the enterprise
 - Build the digital thread
 - Create an agile factory floor
 - Ensure a robust infrastructure
- Smart Manufacturing* (** = Issue paper*)
 - Data for manufacturing intelligence – sense, collect, manage, share
 - Data analysis and M&S accessible to small, medium and large enterprises
 - Community-source IT platform with plug and play capability
 - Meaningful use in agile supply chains, enterprise optimization, sustainable production
 - Skilled workforce
- Other ideas from issue papers and presentations
 - Personal Manufacturing* and DARPA Adaptive Vehicle Make
 - Systems Approach to Future Manufacturing Enterprise*
 - DoD Systems 2020 and NDIA SE Producibility M&S*
 - Digital Manufacturing – National Innovation Network*
- Enablers – Service Oriented Mfg, Clean Energy Mfg*, Flexible Aircraft Production*

Pushing Toward the Extremes

Distinguishing the Ends from the Means



- *What are the axes on which we seek to advance?*
- *What goals and objectives will move us, and why?*
- *Where are the gaps (technology, infrastructure, stds)?*
- *What are the roles for gov't, industry, academia?*

Future Manufacturing Enterprise

Some thoughts for the breakout session

- Our scope is enormous
 - Suggest we focus on macro and meso level ideas that take advantage of anticipated advances at micro level
- Some concepts are general, others are domain specific
 - Even general concepts need to be developed in a domain
 - Suggest we have a couple of use cases in mind
- Enterprise visions are lofty
 - Suggest we dive down to meaningful enablers and gaps
- Infrastructure and Standards are important
 - Suggest we drive toward identifying needs and opportunities