Making Value for America

Summary of NAE Report

Kate S. Whitefoot
Assistant Professor
Mechanical Engineering, Engineering & Public Policy
Carnegie Mellon University

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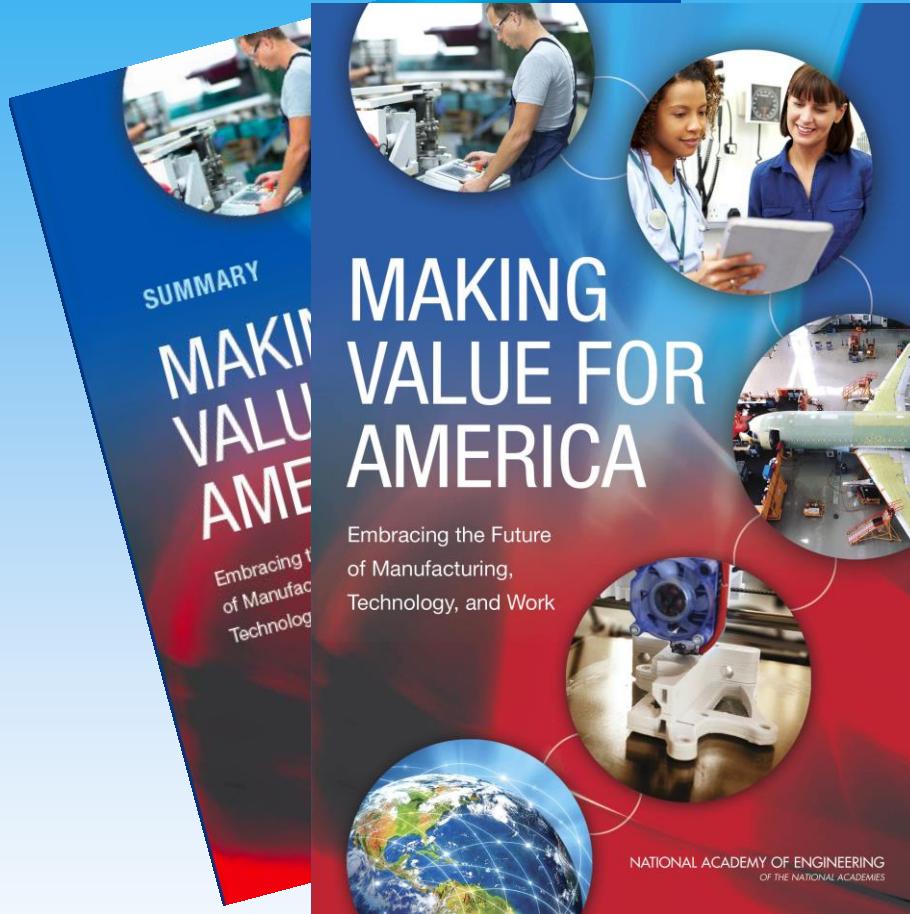
www.nap.edu/makingvalue

Diminishing distinction between manufacturing and services

Manufacturers produce bundles of products and services

Services are a significant portion of manufacturers revenue

Manufacturers' Average Revenue **From Services**

Automotive 37%

Industrial 20%

Aero 47%

Medical Devices 21%
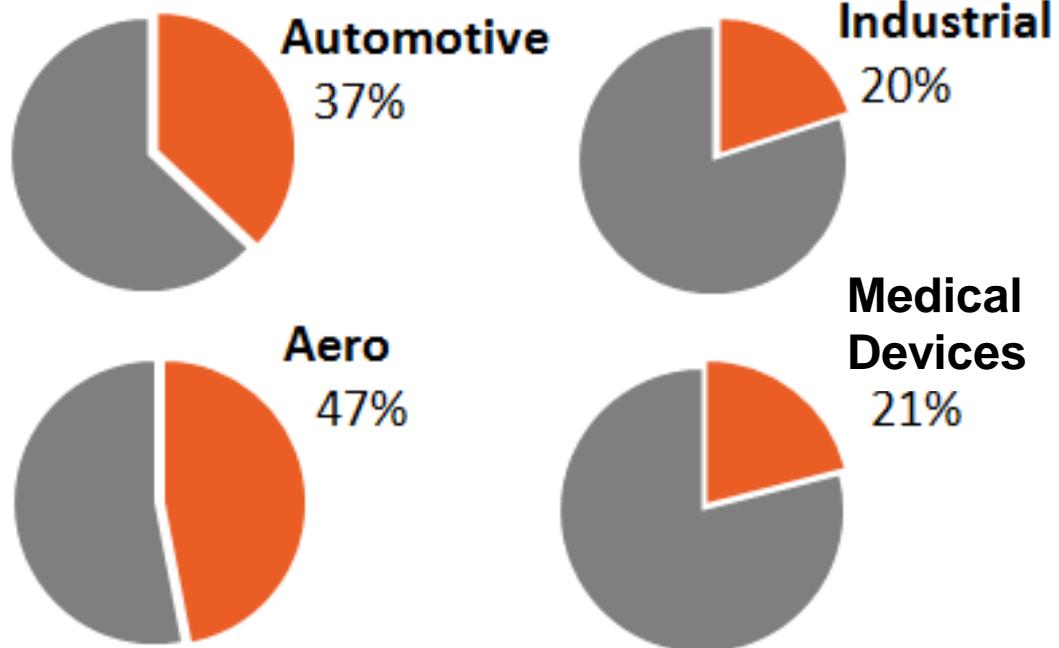
Data: Deloitte Research (2006)

New Capabilities are Transforming
Manufacturing Value Chains

How things are designed
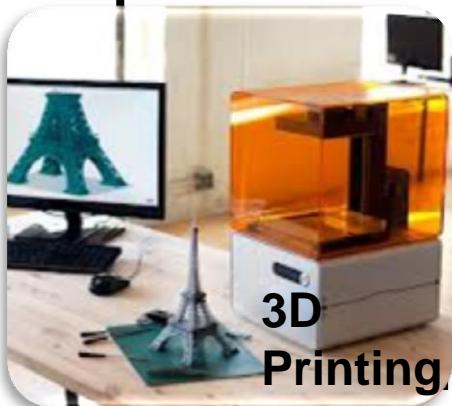
How things are made

And the types of products and services that can be created

How entrepreneurs start their businesses

3D Printing

Self-learning robots
baxter™

Crowdfunding
KICKSTARTER

Smart Products
fitbit
10934

These changes create new opportunities
But Many Americans are Being Left Behind

Fewer jobs and lower wages for workers without a higher degree

Growing importance of software, data, and digital tools

Further job displacement anticipated from automation

Lack of capital and resources to grow new businesses
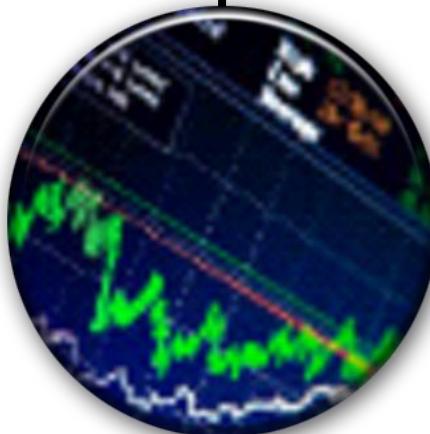
Trends in Employment in the Manufacturing Sector by Education


*Employment data points between 1960 and 2000 are decadal. From 2000 to 2012, data are annual. SOURCE: IPUMS-USA, University of Minnesota, www.ipums.org.
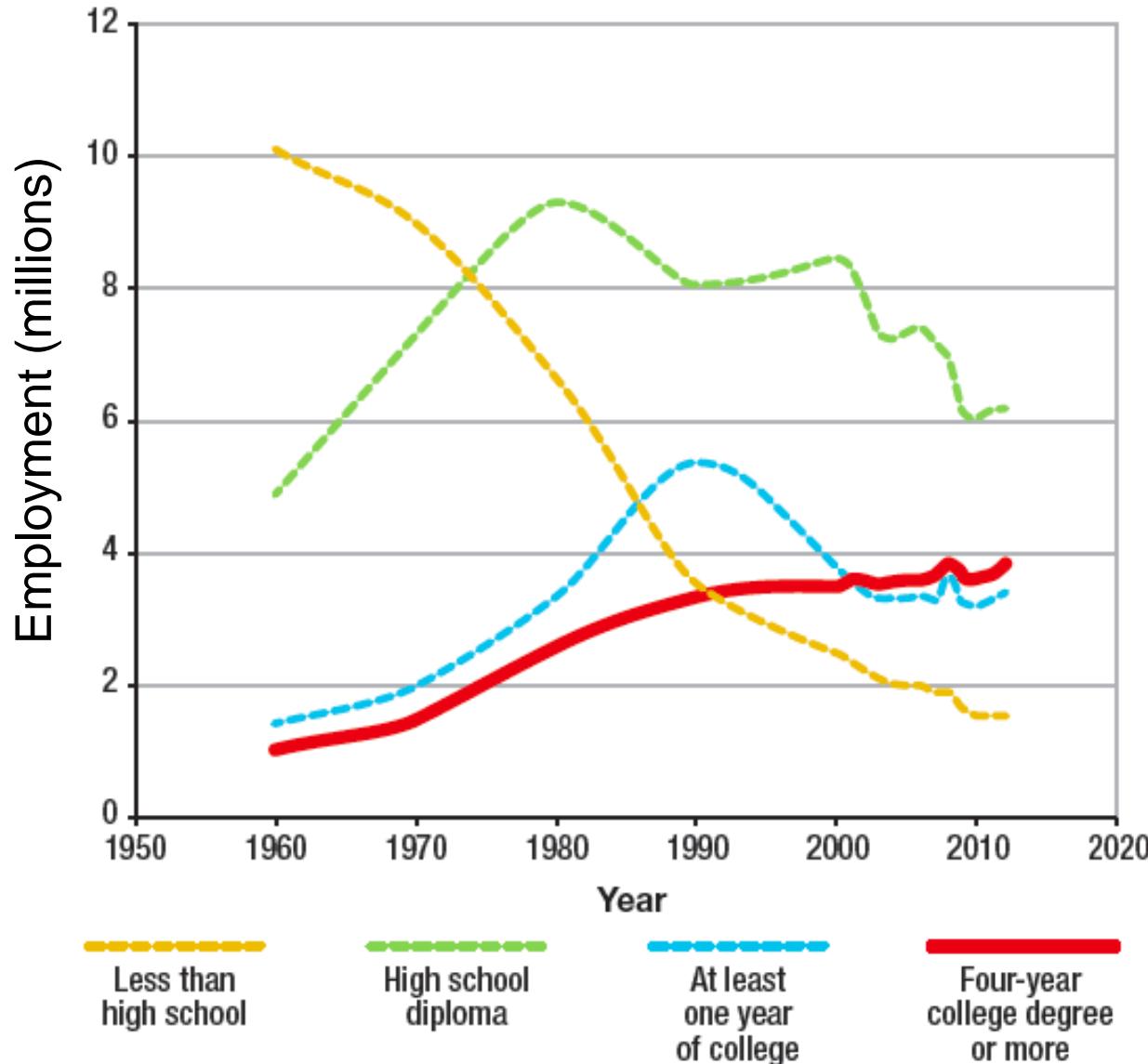
US employment in the value chain

Employment growth is in upstream services

Particularly for:

- Engineers
- Scientists
- Computer Programmers

Circle size = employment
- 2002
- 2010

Market analysis
+26%

R&D
+13%

After-market services
-5%

Design and technical services
+23%

Retail
-4%

Total value chain
-12%

Production
-25%

Wholesale
-7%
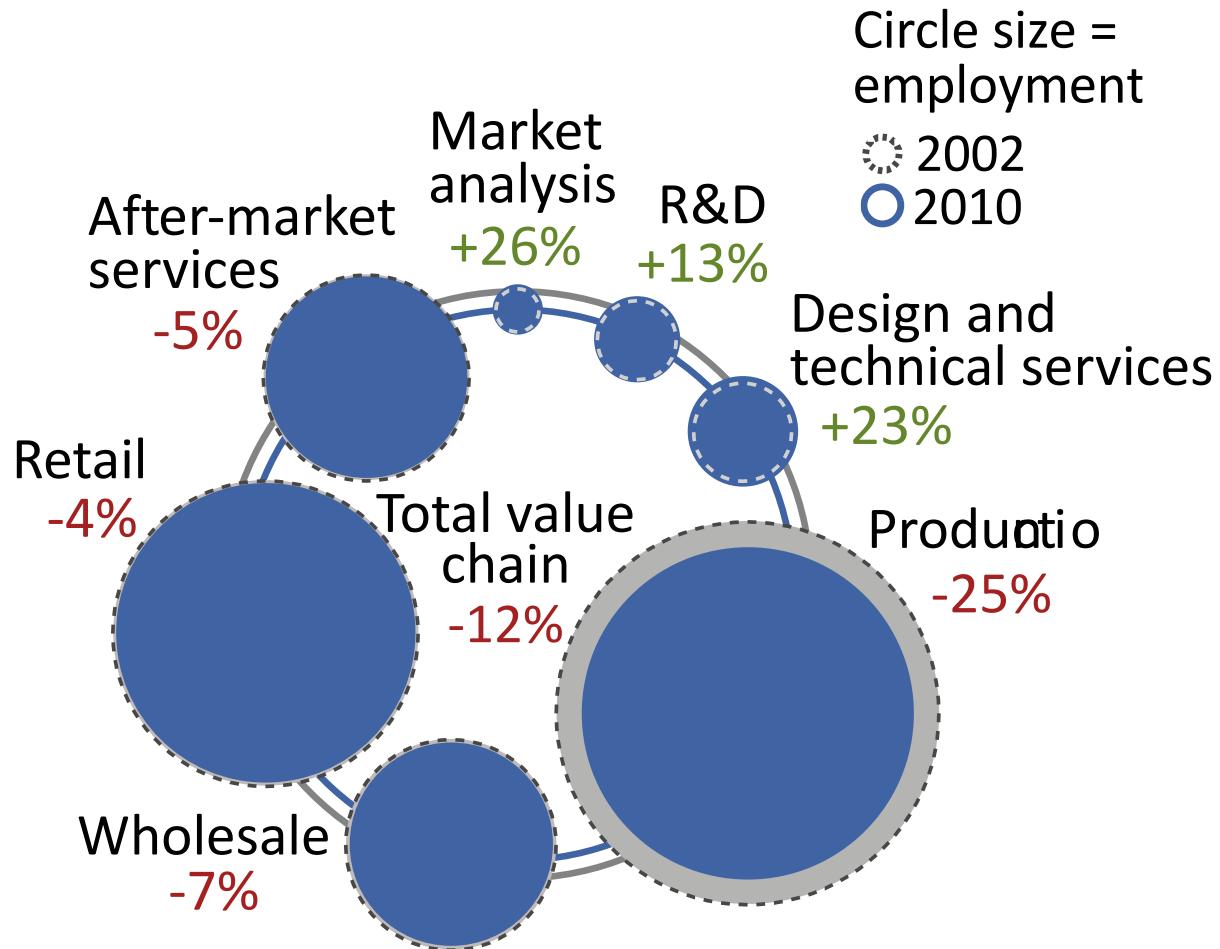
Government, Industry, and Education Must Take Cooperative Actions

Share the responsibility to
EDUCATE
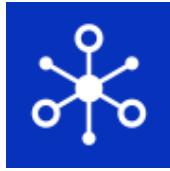
COLLABORATE
to spread best business practices, and enable more entrepreneurs

BE INCLUSIVE
Diversity benefits innovation
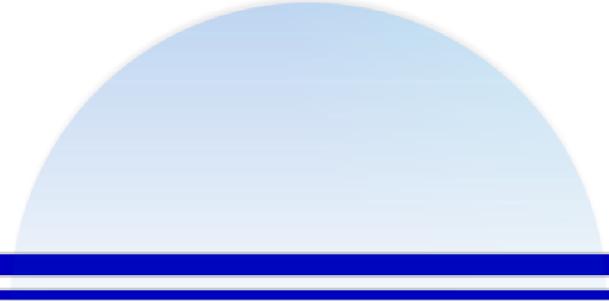
Advances in Additive Manufacturing

- Geometry and topology optimization

- Machine learning

- Technical pathways to commercialization

Coming in Fall 2017

BS minor in Additive Manufacturing

MS in Additive Manufacturing

NextManufacturing
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