



CATALYST CONNECTIONSM
Your Strategic Partner for Manufacturing Growth

THE RESURGENCE OF MANUFACTURING: FOUR TRENDS YOU SHOULD NOT IGNORE

PETRA MITCHELL
PRESIDENT AND CEO
CATALYST CONNECTION



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AGENDA

- Overview of the Manufacturing Economy
- The Role of the MEP Program
- A Local Perspective: SW Pennsylvania
- Trends in US Manufacturing
 - US Shale Gas and Low Cost of Energy
 - Innovation Management
 - Additive Manufacturing
 - Social Media for Business
- Wrap Up: National Academies of Science, Recommendations for a US Manufacturing Policy



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WHY DOES MANUFACTURING MATTER?



INNOVATION



EMPLOYMENT



NATIONAL SECURITY

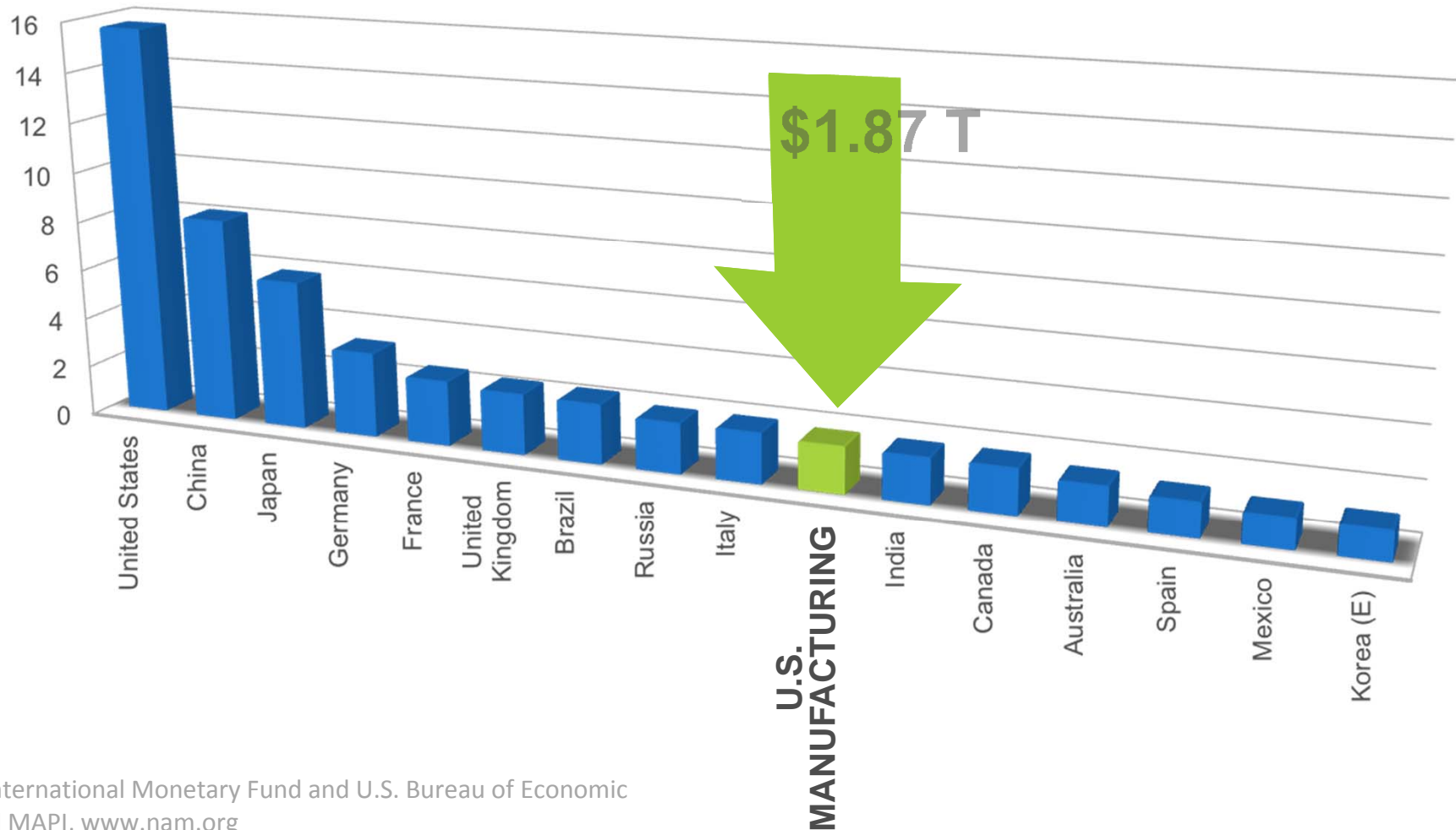


Source: National Association of Manufacturers, 2009



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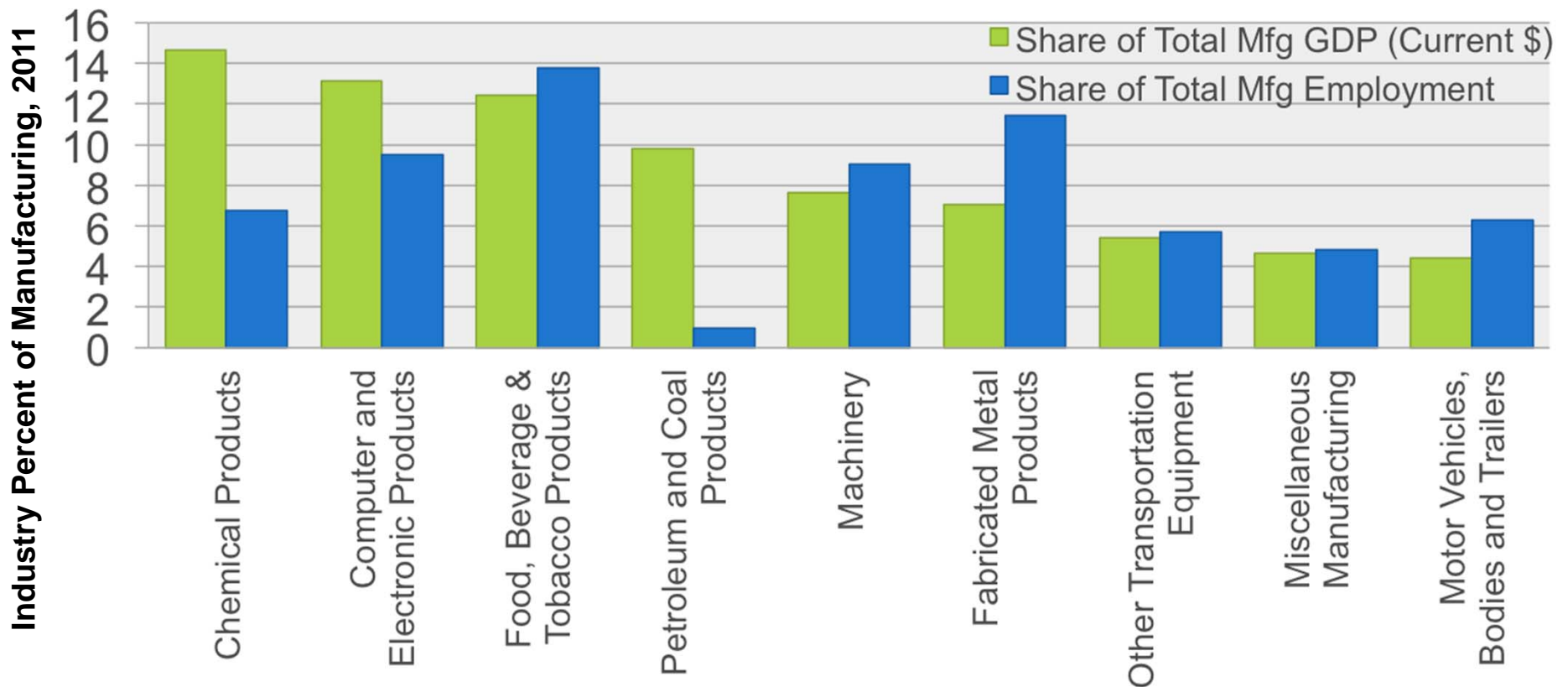
THE U.S. MANUFACTURING SECTOR IS THE TENTH-LARGEST ECONOMY



Source(s): International Monetary Fund and U.S. Bureau of Economic Analysis and MAPI, www.nam.org



CHEMICALS LEAD MANUFACTURING IN TERMS OF OUTPUT BUT NOT EMPLOYMENT

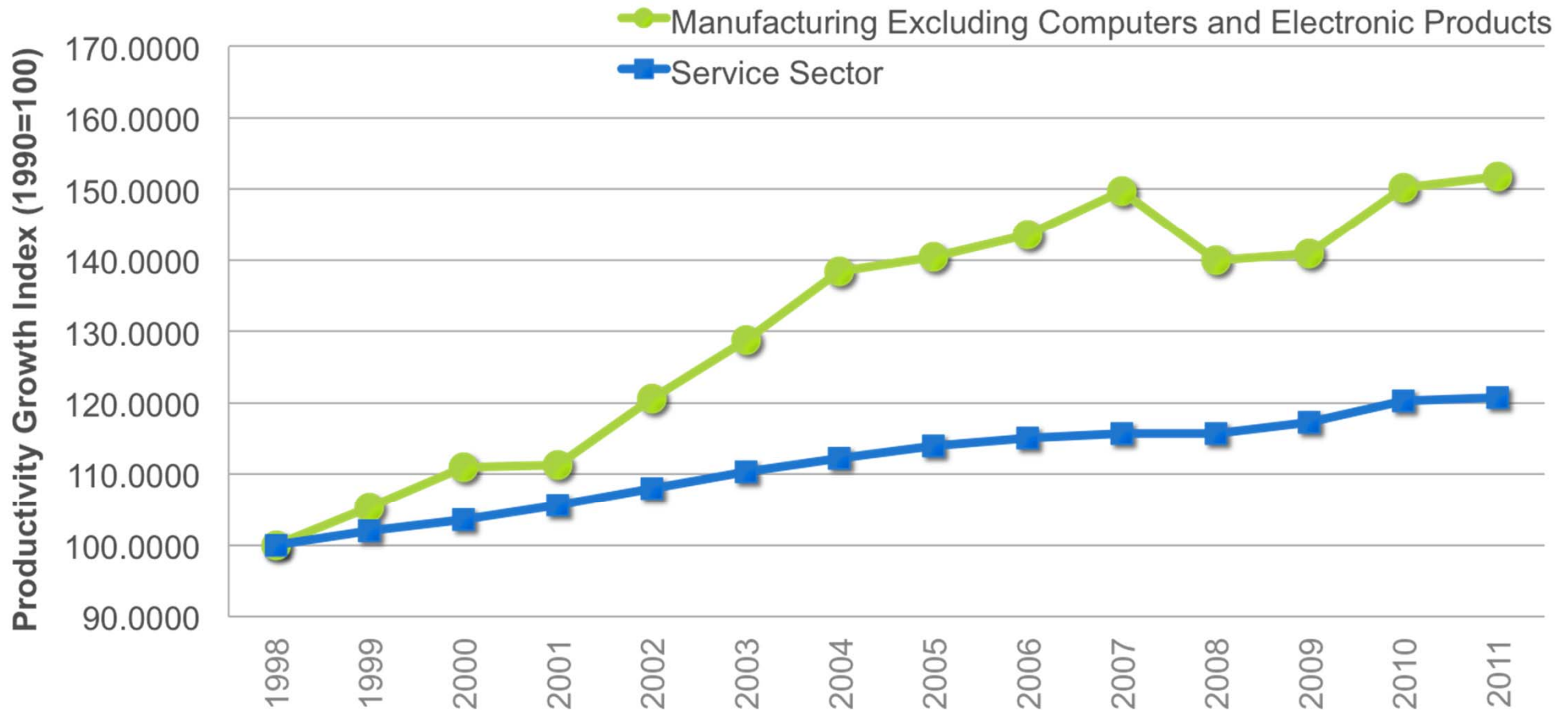


Source(s): MAPI calculations from U.S. Bureau of Economic Analysis data, www.nam.org



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PRODUCTIVITY SHOWS OUR STRENGTHS

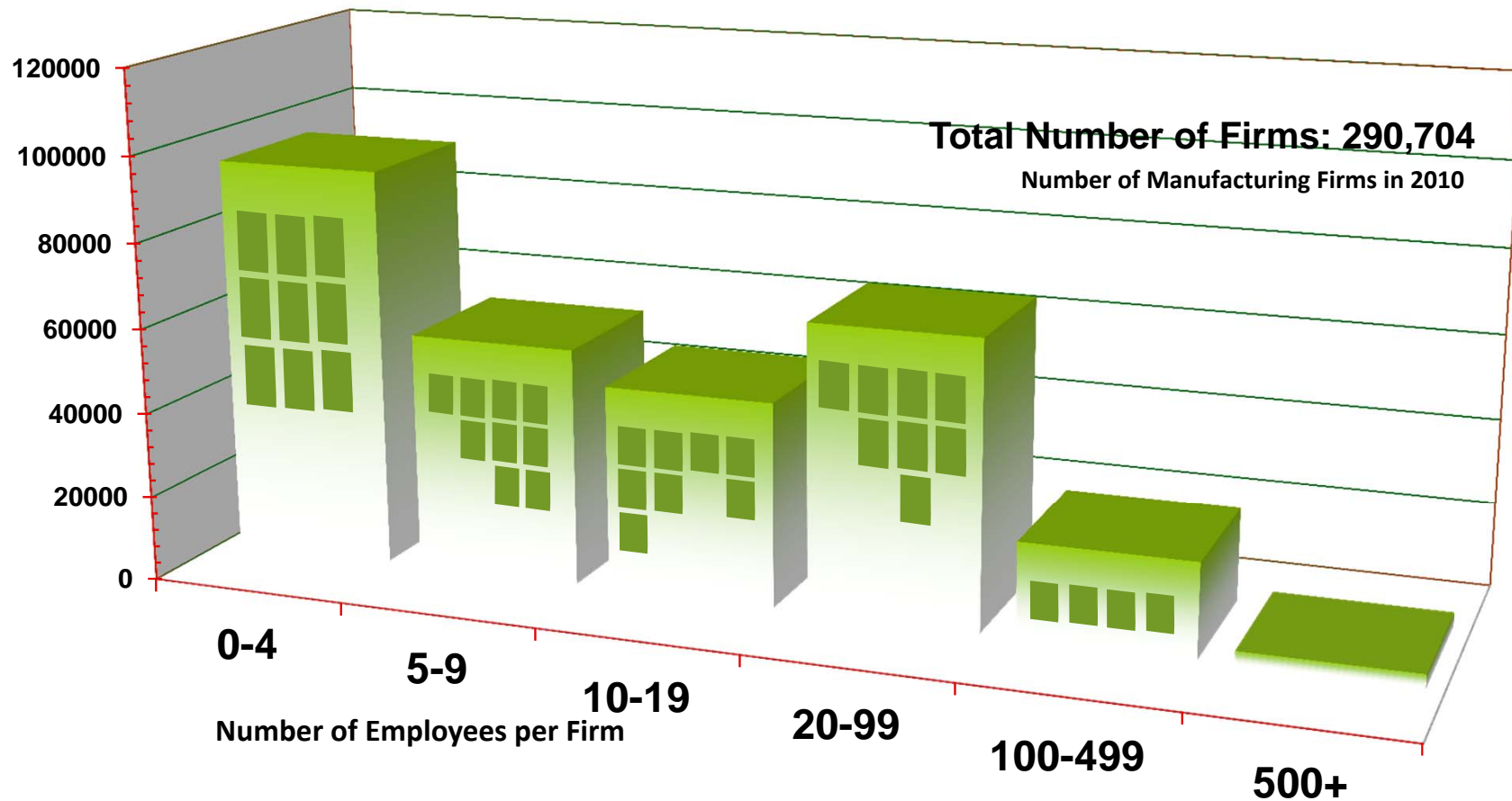


Source(s): U.S. Bureau of Economic Analysis and MAPI, www.nam.org



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SMALL COMPANIES DRIVE GROWTH



Source(s): U.S. Census Bureau and MAPI, www.nam.org



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NIST

**MEP • MANUFACTURING
EXTENSION PARTNERSHIP**

NATIONAL INSTITUTE OF
STANDARDS AND TECHNOLOGY

U.S. DEPARTMENT OF COMMERCE



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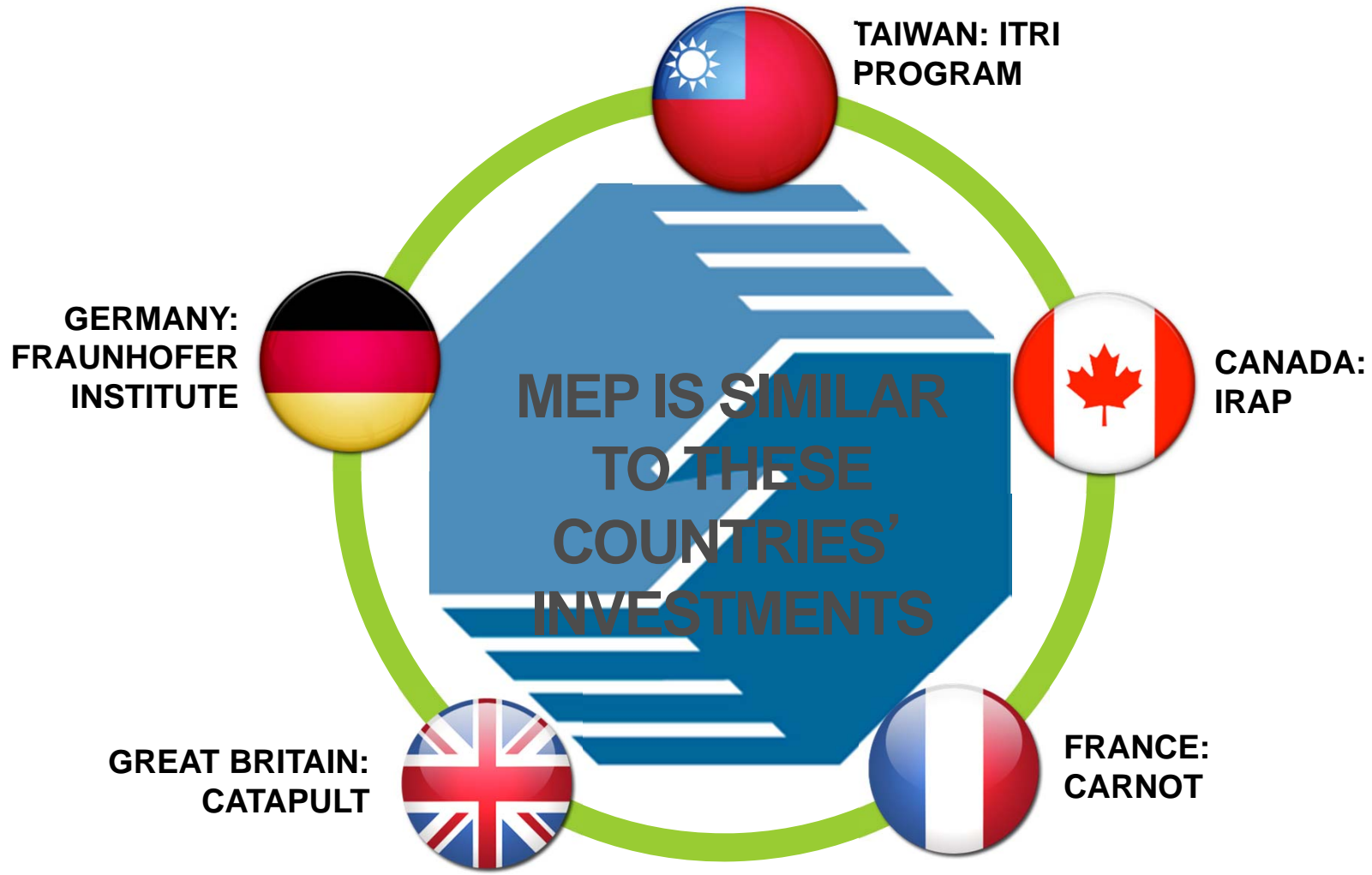
**MEP • MANUFACTURING
EXTENSION PARTNERSHIP**
NATIONAL INSTITUTE OF
STANDARDS AND TECHNOLOGY

THE MANUFACTURING EXTENSION PARTNERSHIP: A CRITICAL RESOURCE FOR MANUFACTURERS





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Source: "21st Century manufacturing Challenge: The Role of the MEP Program", The National Academies of Science, 2013 © Charles W. Wessner Ph.D.



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OUR MISSION:

*We help manufacturers compete
in a global economy.*





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**LET'S TALK ABOUT
LOCAL LANDSCAPE**



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MANUFACTURING IN SOUTHWESTERN PENNSYLVANIA



3,000

MANUFACTURERS



96,000

**MANUFACTURING
EMPLOYEES**



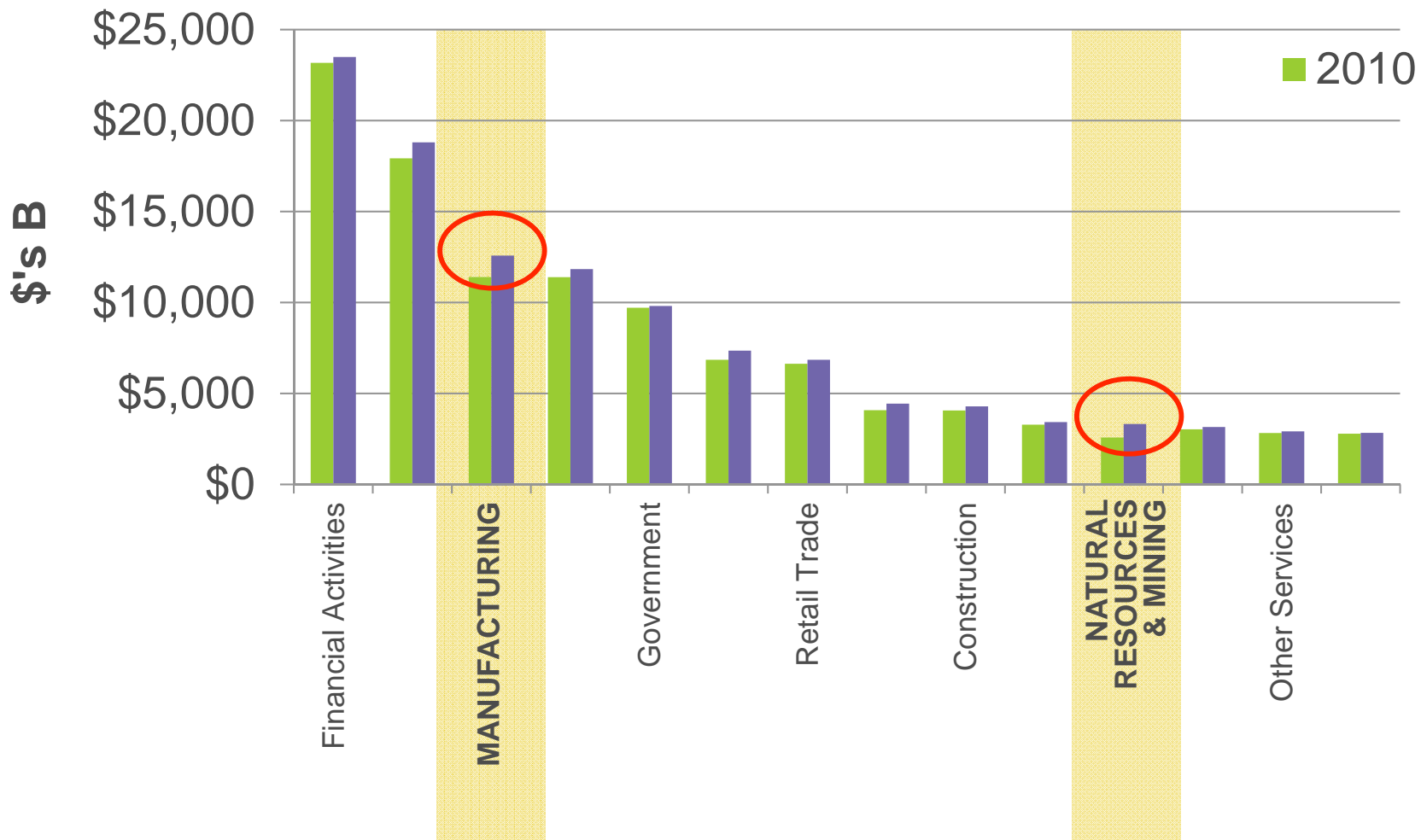
**\$12.6
BILLION**

**IN OUTPUT
(11% OF TOTAL)**



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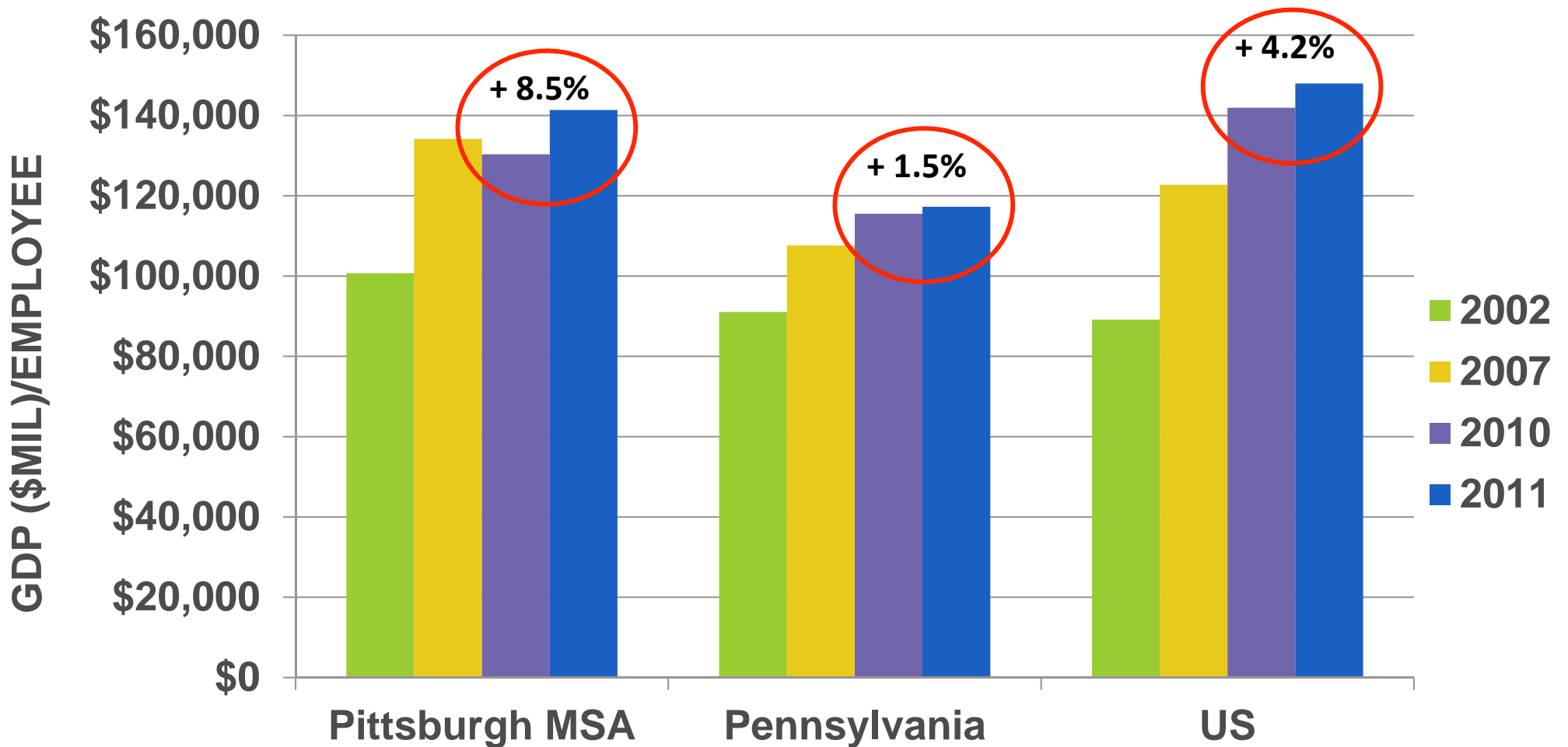
MANUFACTURING IS OUR THIRD LARGEST INDUSTRY





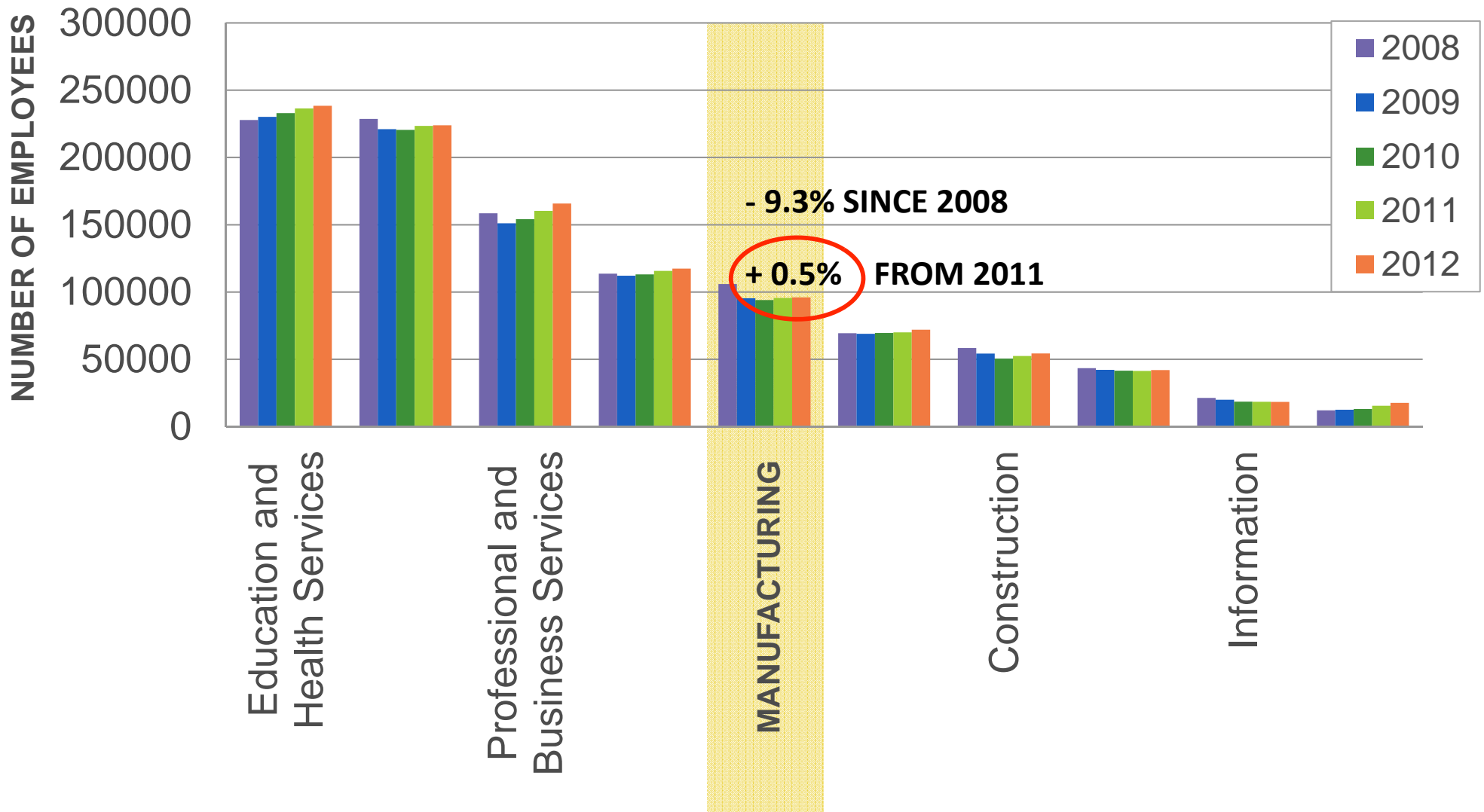
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PRODUCTIVITY





EMPLOYMENT BY SECTOR





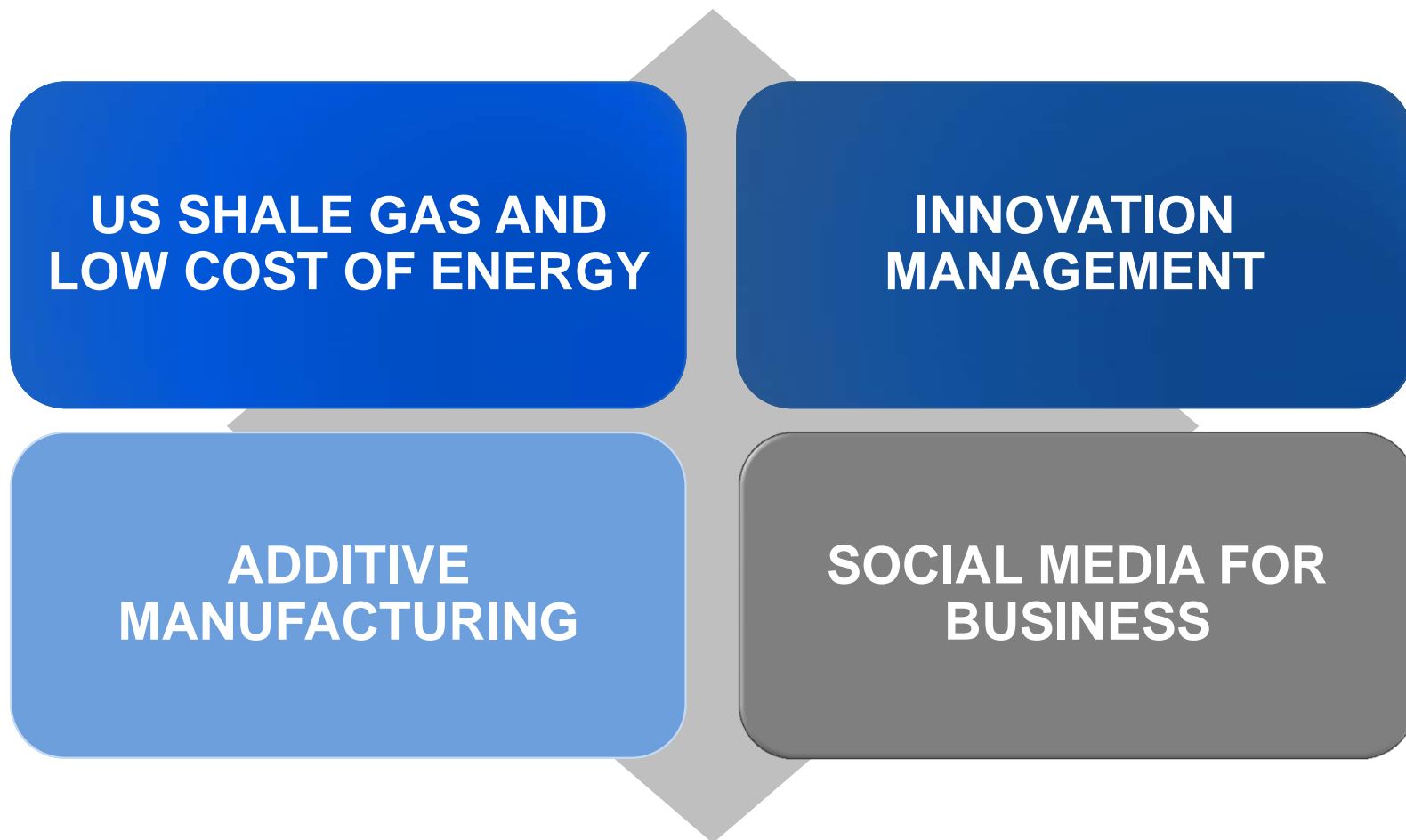
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FOUR TRENDS YOU SHOULD NOT IGNORE



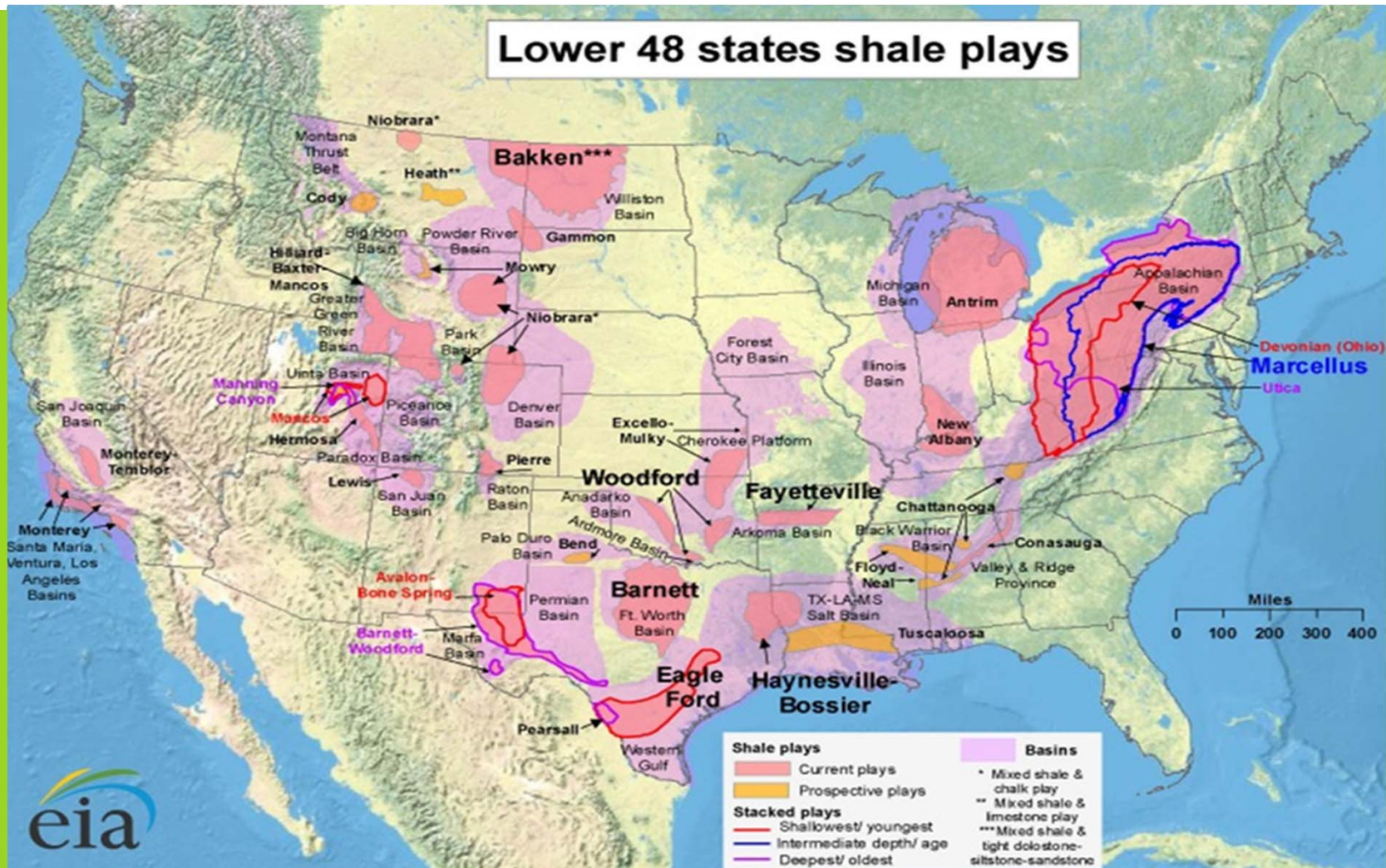
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TRENDS IN MANUFACTURING





U.S. SHALE GAS AND SHALE OIL PLAYS

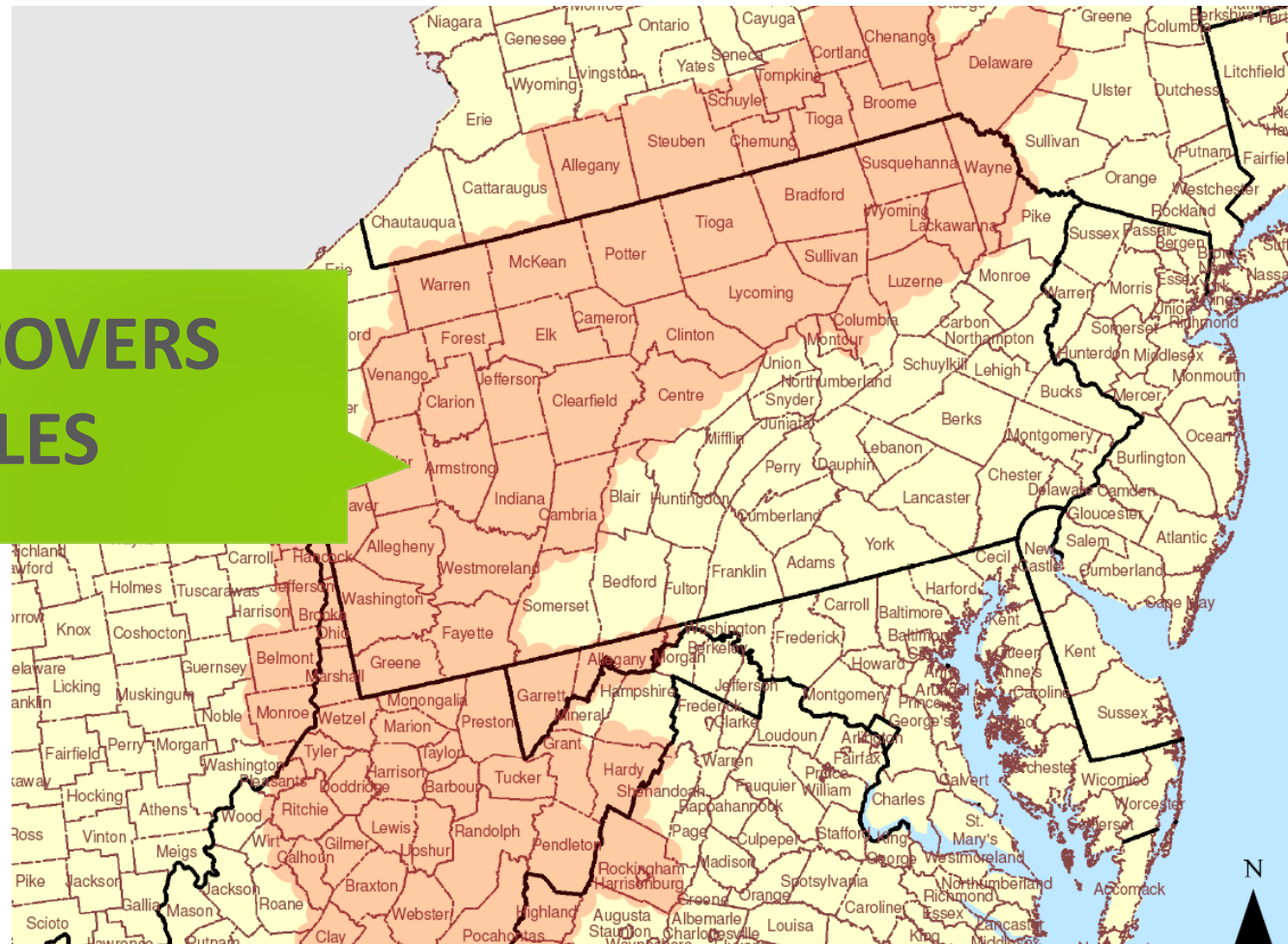




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MARCELLUS PLAY

**MARCELLUS PLAY COVERS
95,000 SQUARE MILES**



WHERE ARE THE OPPORTUNITIES

SUPPLY CHAIN

THE INSTITUTE FOR
ENTREPRENEURIAL
EXCELLENCE

THE POWER TO PROSPER™

KATZ UNIVERSITY OF PITTSBURGH
JOSEPH M. KATZ
GRADUATE SCHOOL
OF BUSINESS

**Understanding the Marcellus
Shale Supply Chain**

Shaun M. Seydor
Associate Director, Institute for Entrepreneurial Excellence

Eric Clements
Management Consultant, Institute for Entrepreneurial Excellence

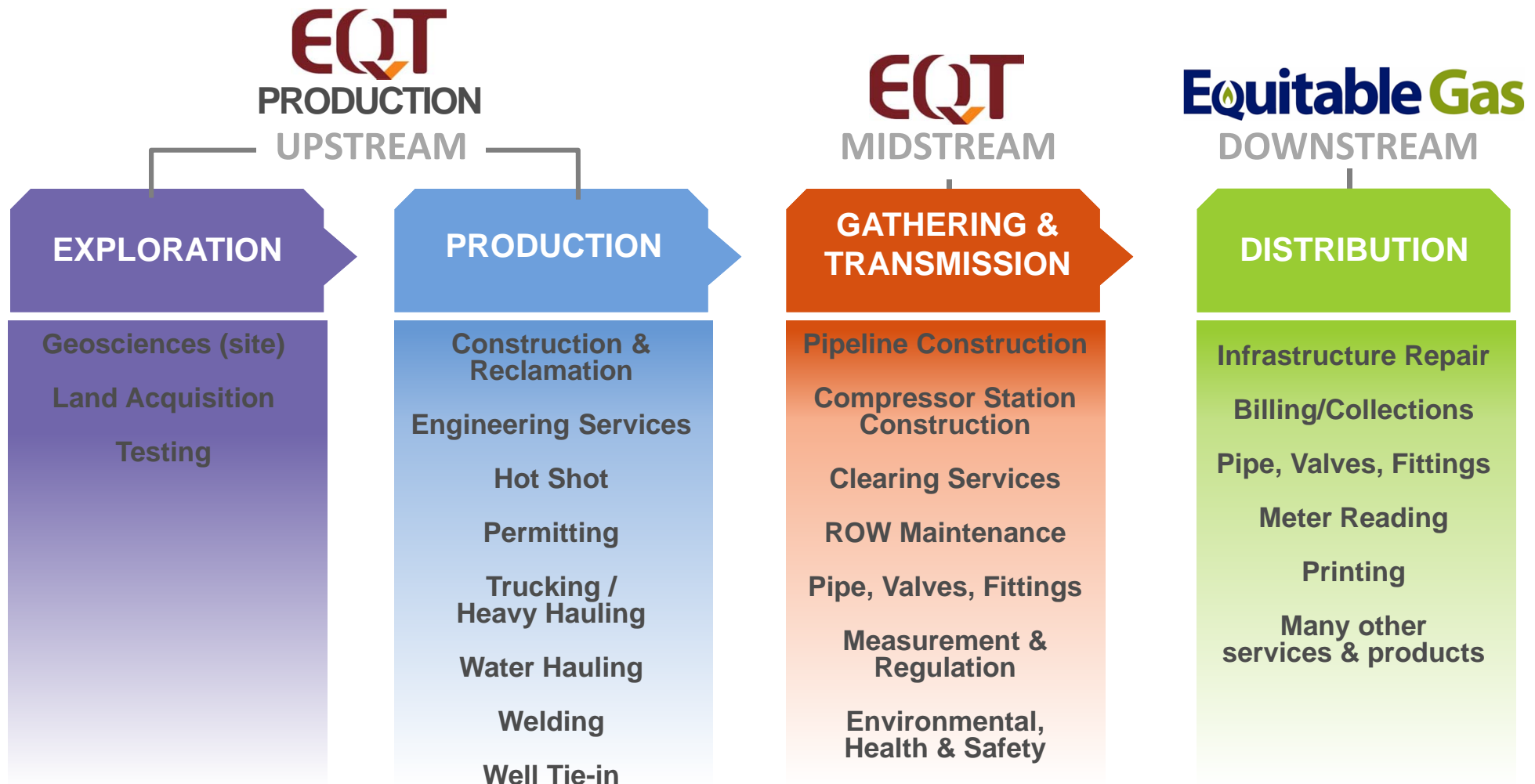
Spyros Pantoleonitis, Vinay Deshpande
Associate Professors, Institute for Entrepreneurial Excellence

MRIC

White
Grant
Chen
Amer



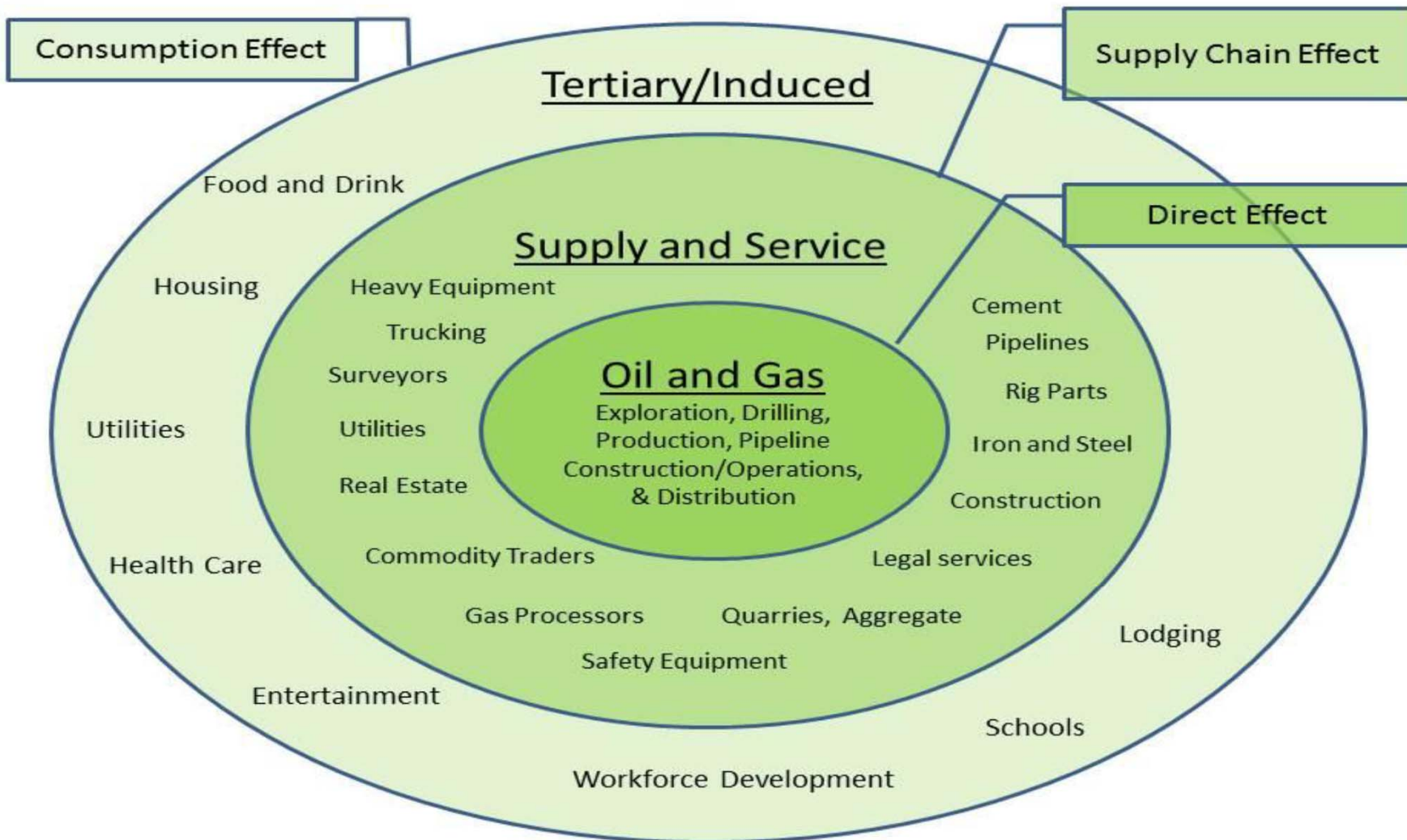
EXAMPLE SUPPLY CHAIN OPPORTUNITIES



Source: www.eqt.com



ECONOMIC IMPACT EFFECTS





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WHAT IS “INNOVATION”?

“Introducing New Products / Solutions that create new or unique value to your customers and your company.”

Robert B. Tucker

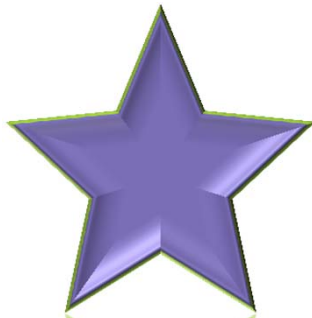
*Driving Growth Through Innovation:
How Leading Firms Are Transforming Their Futures*

1350



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BEST-IN-CLASS COMPANIES



NPD revenues range from

20-50%

of total revenues and also generate a significant portion of profit



2/3

of projects meet profit objectives



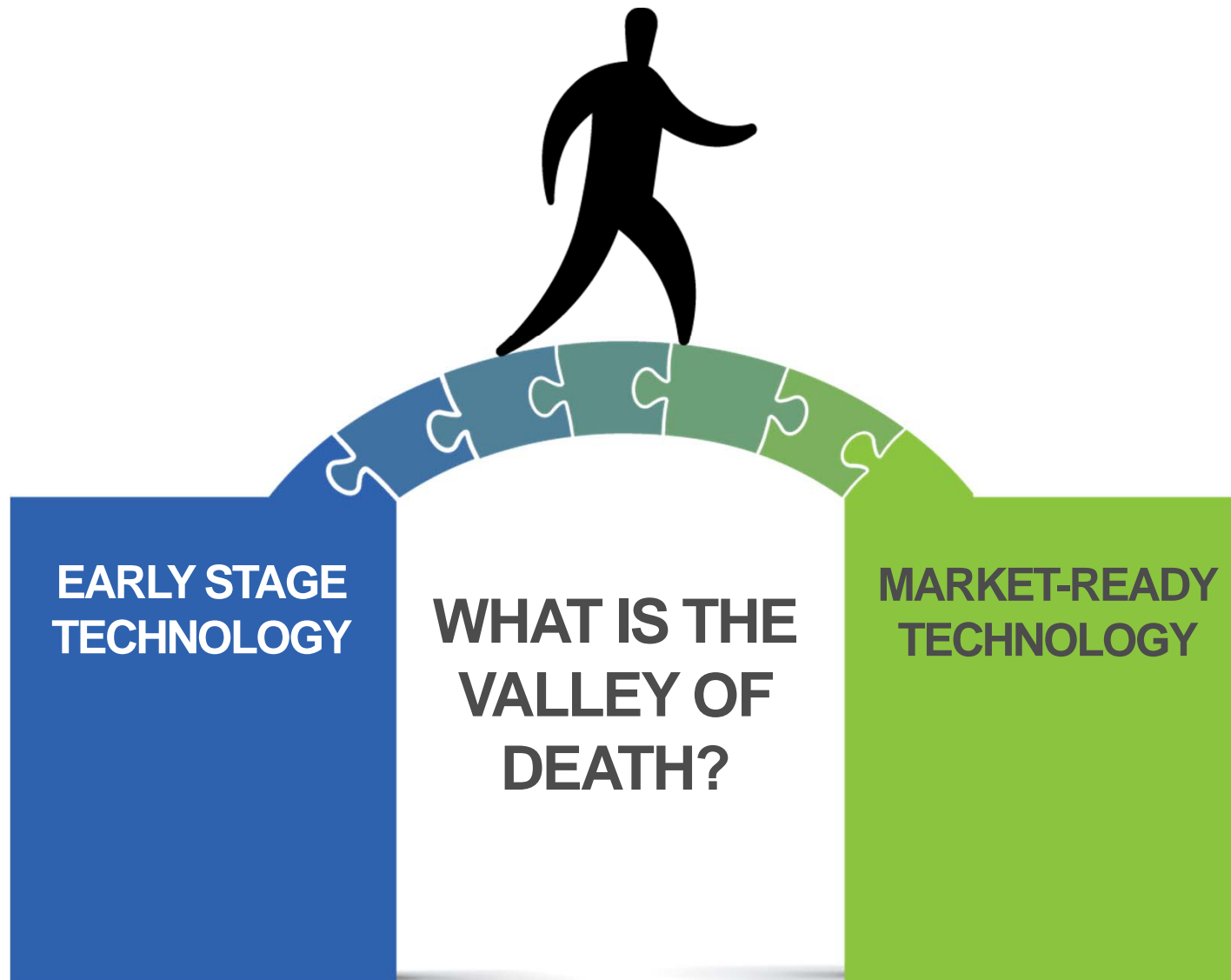
80%

are considered commercial successes & are launched on-time



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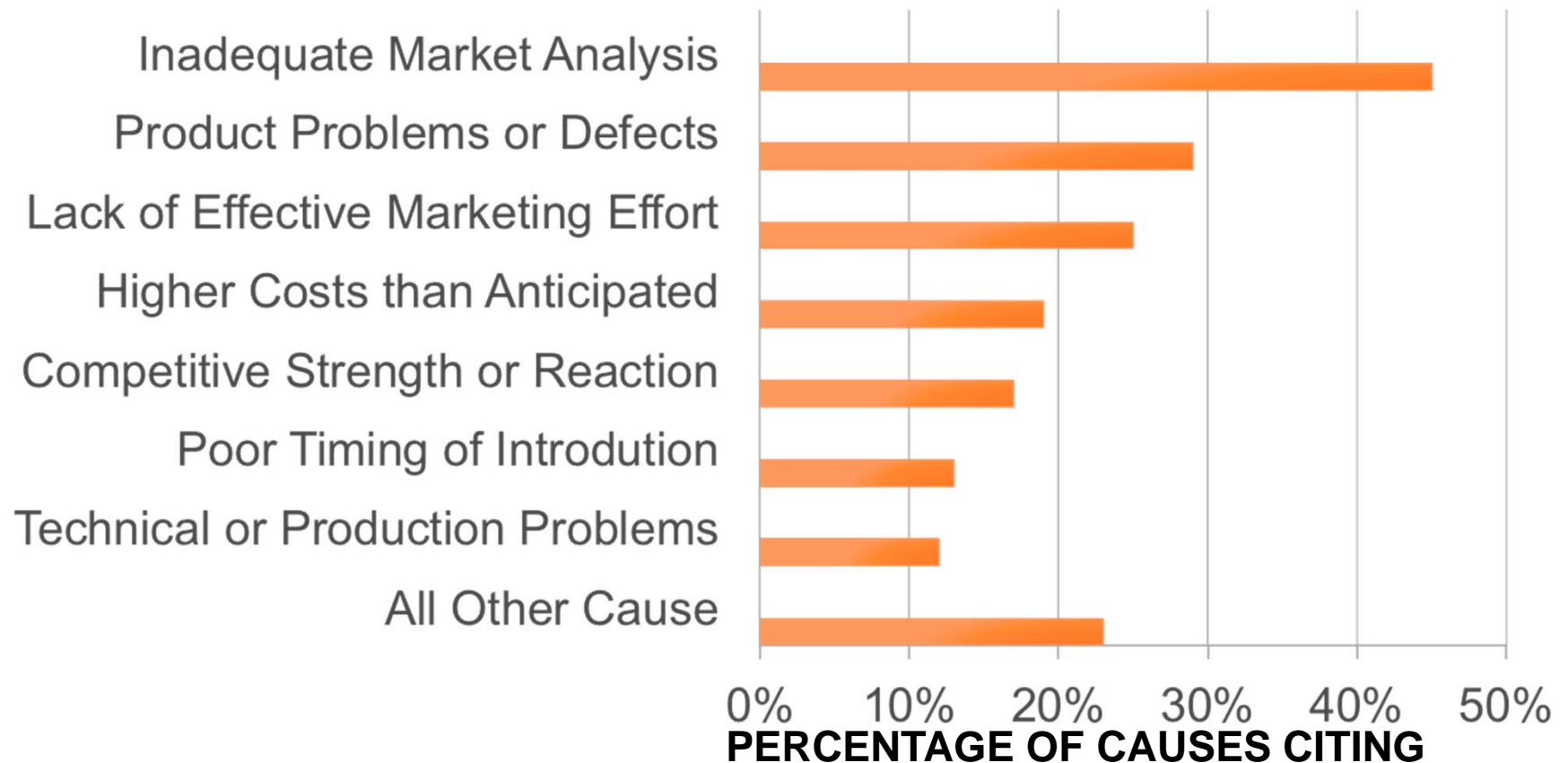
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A DOSE OF REALITY: CAUSES FOR NEW PRODUCT FAILURE





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PLAN

PLAN
FOR PRODUCT
DEVELOPMENT
SUCCESS



SELECT

SELECT
THE BEST IDEAS



DESIGN

DESIGN
PROTOTYPE AND
TEST QUICKLY AND
EFFECTIVELY –
ADDITIVE
MANUFACTURING



COMMERCIALIZE

COMMERCIALIZE
WITH STRATEGIC
SALES AND MARKETING
BEST PRACTICES –
SOCIAL MEDIA



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ADDITIVE MANUFACTURING

ADDITIVE MANUFACTURING OR 3D PRINTING

The process of making solid objects of any shape from a digital model by layering material together.

Some processes require bonding agents, laser, or post process.



Source: ExOne Presentation to PEDAC Conference, Oct 2013

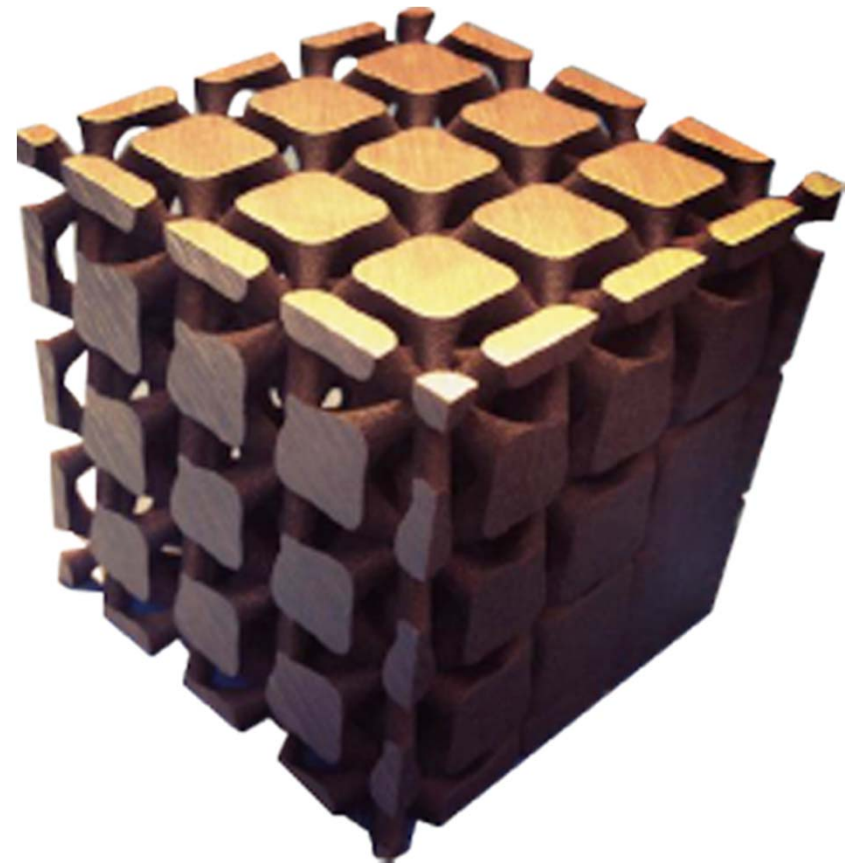


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AM AND INNOVATION MANAGEMENT

Most Common uses of Parts Built on AM Systems:

- Functional parts
- Prototypes for fit and assembly
- Patterns for prototype tooling
- Patterns for metal castings
- Visual aids (for engineers, designers...)
- Presentation models
- Education/Research
- Tooling components
(Created directly on AM systems)
- Other





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US INVESTMENT IN ADDITIVE MANUFACTURING



- ✓ **Community (Membership)**
- ✓ **Resources (Facility, equipment and training)**
- ✓ **Projects (Competitive, University led)**

Source: <https://americamakes.us/>



America Makes

National Additive Manufacturing Innovation Institute



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SOCIAL MEDIA – THE BIG 5



OUR REGIONAL MANUFACTURING COLLABORATION SITE



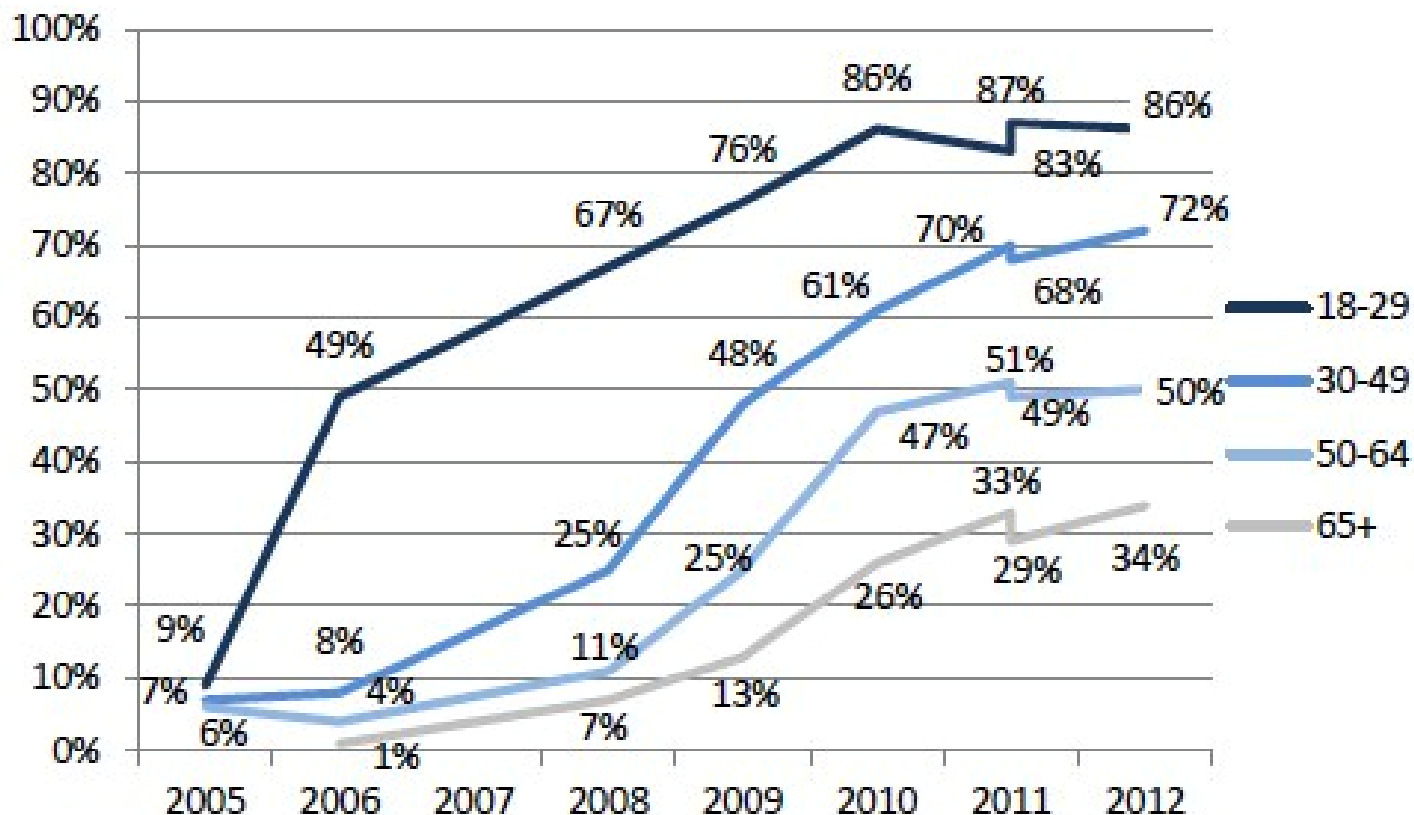


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SOCIAL MEDIA USAGE

SOCIAL NETWORKING SITE USE BY AGE GROUP 2005-2012



Note: Total n for internet users age 65+ in 2005 was < 100, so results for that group are not included.

Source: Pew Research Center's Internet & American Life Project surveys: 02/05, 09/06, 05/08, 04/09, 05/10, 05/11, 02/12.



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IS THE INDUSTRY USING SOCIAL MEDIA?

Manufacturers in general have been slower to fully adopt social media but things are changing rapidly...

In 2012, Kennametal announced that they will be using **Twitter, LinkedIn, Facebook, YouTube** and **Google+** to:



Kennametal is a \$3B maker of tooling for mining, construction, aerospace, defense and other industries located in Latrobe, PA



- Answer questions / customer service
- Recruit the best talent
- Make it easy to find info on their products and services
- Interact with their suppliers and dealers
- Announce upgrades to their products & process improvements
- Promote events like Manufacturing Summit
- Direct traffic to their blog and web site
- **@Kennametal** on Twitter



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WRAP – UP NATIONAL PERSPECTIVE ON MANUFACTURING STRATEGIES



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NEW (RECOMMENDED) US MANUFACTURING STRATEGIES



- Capitalize on lower energy costs
- Develop a better understanding of the importance manufacturing and the need for facilitating institutions.
- Make the US more competitive for manufacturing by lowering tax rates and modernizing infrastructure.



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NEW (RECOMMENDED) US MANUFACTURING STRATEGIES



- Spur innovation on next generation technologies through support for manufacturing institutes, investments in manufacturing R&D
- Strengthen workforce skills and regional clusters
- Improve market access with trade agreements

Source: "21st Century manufacturing Challenge: The Role of the MEP Program", The National Academies of Science, 2013 © Charles W. Wessner Ph.D.



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THANK YOU!

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