

Making Value for America:

Embracing the Future of Manufacturing, Technology, and Work

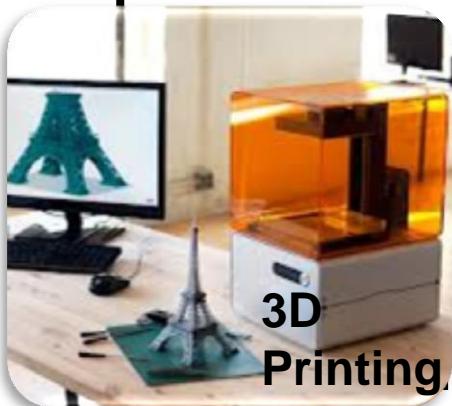
**Nicholas M. Donofrio, Chairman
NAE Committee on Making Value for America**

January 19, 2016



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



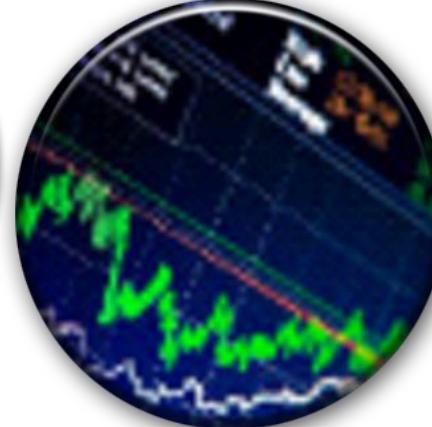
These changes create new opportunities But Many Americans are Being Left Behind

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

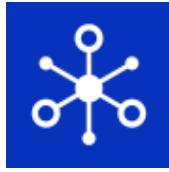
Lack of capital and resources to grow new businesses



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



EDUCATE

Businesses, local school districts, labor, community colleges, and universities should form partnerships to help students graduate from high school, earn an associate's or bachelor's degree, and take part in continuing education in the workplace

Congress and state legislatures should create tax credits or other incentives for businesses to invest and be involved in education programs that provide students and displaced workers with the knowledge and skills needed for higher-paying careers



COLLABORATE **to Spread Best Practices**

Federal agencies and interagency offices such as the Advanced Manufacturing National Program Office should convene stakeholders to identify and spread best practices for value creation, particularly for software, user interfaces, and high-tech services where best practices are less developed than production.

Research organizations should further investigate and codify best practices for innovation and develop effective methods of teaching them.

Federal programs and statistics should account for the complex relationships among manufacturing, information, and services, and partner with software and service providers as well as manufacturers.



COLLABORATE to Enable Entrepreneurship

The National Science Foundation, and other research funders should put a priority on understanding why the rate at which new businesses are created has declined in the United States during the past three decades.

The Small Business Administration should focus on helping young businesses become globally competitive. In particular, it should help new businesses connect with a local *innovation network* of investors, industry, and higher education; if such a network does not exist, it should encourage the formation of one.



COLLABORATE to Encourage Long-Term Investments

Federal agencies should facilitate industry and government cooperation to identify shared opportunities to invest in precompetitive research in long-term, capital-intensive fields such as next-generation batteries and biotechnologies, for which low-cost capital is scarce.

Congress should modify the capital gains tax rates to incentivize holding stocks for five years, ten years, and longer to encourage the long-term investments needed to create new products and businesses.

Congress should make the R&D tax credit permanent to allow businesses to have longer time horizons in their investment decisions



BE INCLUSIVE

Businesses, universities, and community colleges

should improve the participation of women and people of diverse races and socioeconomic backgrounds in US manufacturing and high-tech career paths.

Congress must reform immigration policy to welcome and retain high-skilled individuals with advanced STEM degrees, especially those educated in the United States. Currently these potential innovators are being turned away by a counterproductive immigration system.



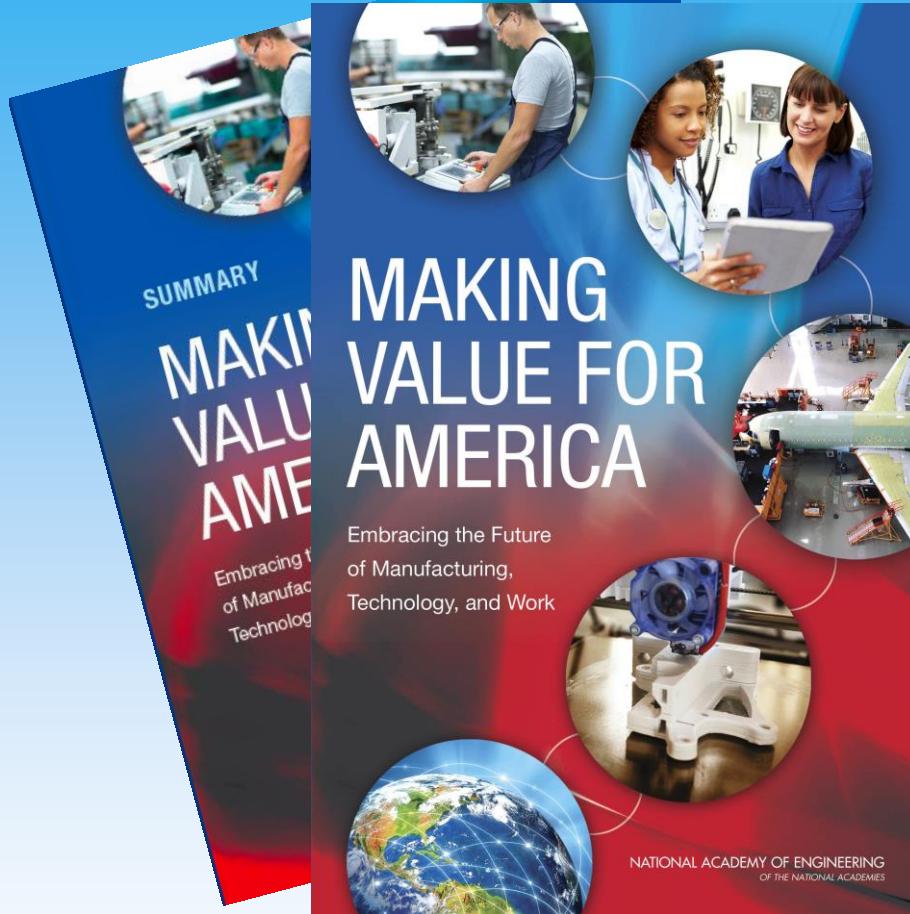
Phase II: Workforce Adaptability

Examine:

- competencies that improve the ability of the US workforce to proactively adapt
- education and organizational practices
- workflow and organizational structures and culture that facilitate workforce adaptability
- external factors in the ecosystem (policies and infrastructure) that facilitate or inhibit adaptability.

Provide a roadmap for businesses, educators, and policymakers to develop an adaptable workforce





www.nae.edu/Projects mdi/mva.aspx

