



The Manufacturing Mandate

Harness the Power of Manufacturing Technology to Spur Innovation

Inject Predictability and Stability into Tax, Trade and Regulatory Systems

Transform the Workforce into a Smartforce Skilled in Manufacturing Technologies

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Resilient. Transformative. Innovative. Manufacturing is an American success story.

Since the beginning of this great nation, manufacturing has lifted us in times of hardship and propelled us higher in times of growth, providing good jobs and a middle-class way of life for millions of American families. Now as the United States emerges from the pandemic, manufacturing, armed with advanced technology, data, and digitalization, will again play a pivotal role in our recovery. It's government leadership, commitment, and support that will put us over the top.

AMT appreciates the work accomplished through our collaborations with government, academia, community organizations, and industry stakeholders. Today, those relationships are more critical than ever as supply chain disruptions, intense global competition, and a declining technical workforce make the U.S. vulnerable as our overseas competitors threaten to overtake us in critical areas of advanced technology.

We are committed to expanding our public-private partnerships, accelerating the adoption of transformative technology, improving supply-chain access, facilitating increased market opportunities and growth, and developing a

workforce for competitiveness and sustainability. By working toward these tenets, we can build a stronger country. However, neither industry, academia, workers, nor government can accomplish the goals alone. Strong national leadership and cooperation are required.

On the following pages, AMT outlines recommendations for an advanced manufacturing plan that builds on previous progress to spur innovation, drive economic growth, and build a more diverse smartforce for today's job market. Through action, we can out compete our most formidable competitors.

When manufacturing is strong, the United States is strong.

Douglas K. Woods

President

AMT - The Association For Manufacturing Technology

The Manufacturing Mandate.

The Manufacturing Mandate is a prescription for building manufacturing strength through legislation and policy. In recognition of the industry's national importance to a vital, sustainable economy and a strong industrial base, **AMT recommends the U.S. government implement the priorities set forth below.**



Harness the power of manufacturing technology to spur innovation.

- Elevate the focus of advanced manufacturing and transformational technologies to the top of the national agenda.
- Implement policies that accelerate the adoption of smart manufacturing (Industry 4.0), especially in startups and small and medium-sized manufacturers (SMMs), including incentives for manufacturers to transition to a smart factory.
- Invest in collaborative applied research initiatives that benefit all stakeholders and lead to faster commercialization and application of manufacturing technologies.
- Develop policies for ensuring supply chain security favoring the use of technology that enables supply chains to perform better.



Inject predictability and stability into tax, trade, and regulatory systems.

- Enact tax policy that encourages investment in U.S. manufacturing, including permanent expensing of manufacturing technology and R&D costs, increased support for small and medium-sized family-owned businesses, and incentives for reshoring and creating manufacturing jobs on U.S. soil.
- Counteract the 8%-27% tax advantage imports get when entering our country.
- Open doors to new markets and hold trade violators accountable through coalition-building, international tax and regulatory policy, and trade agreements that support U.S. manufacturing.
- Collaborate with industry to better assess the unintended impact and compliance issues of new regulations on manufacturers.



Transform the workforce into a smarforce skilled in manufacturing technologies.

- Develop federal policies that encourage the hiring of additional Career and Technical Education (CTE) teachers.
- Develop federal policies that incentivize schools to purchase manufacturing technology equipment for high school, community college and engineering school programs.
- Improve perceptions about careers in manufacturing that will incentivize families to consider dual credit programs and “earn and learn” apprenticeships as a method for reducing dependence on student loans.
- Increase the adoption of smart industry-recognized standards and credentials using a central repository to track digital badges, micro credentials, certificates and degrees using blockchain-type technology that provides companies with a method of finding workers on-demand who possess the transformative technology competencies that are in demand.

The Importance of Manufacturing Technology.

AMT members provide the crucial equipment technologies that manufacturers rely on to be productive, innovative, and competitive. From startups to centuries-old companies, these primarily small and medium-sized businesses make an outsized contribution to U.S. economic growth, national security, and job creation.

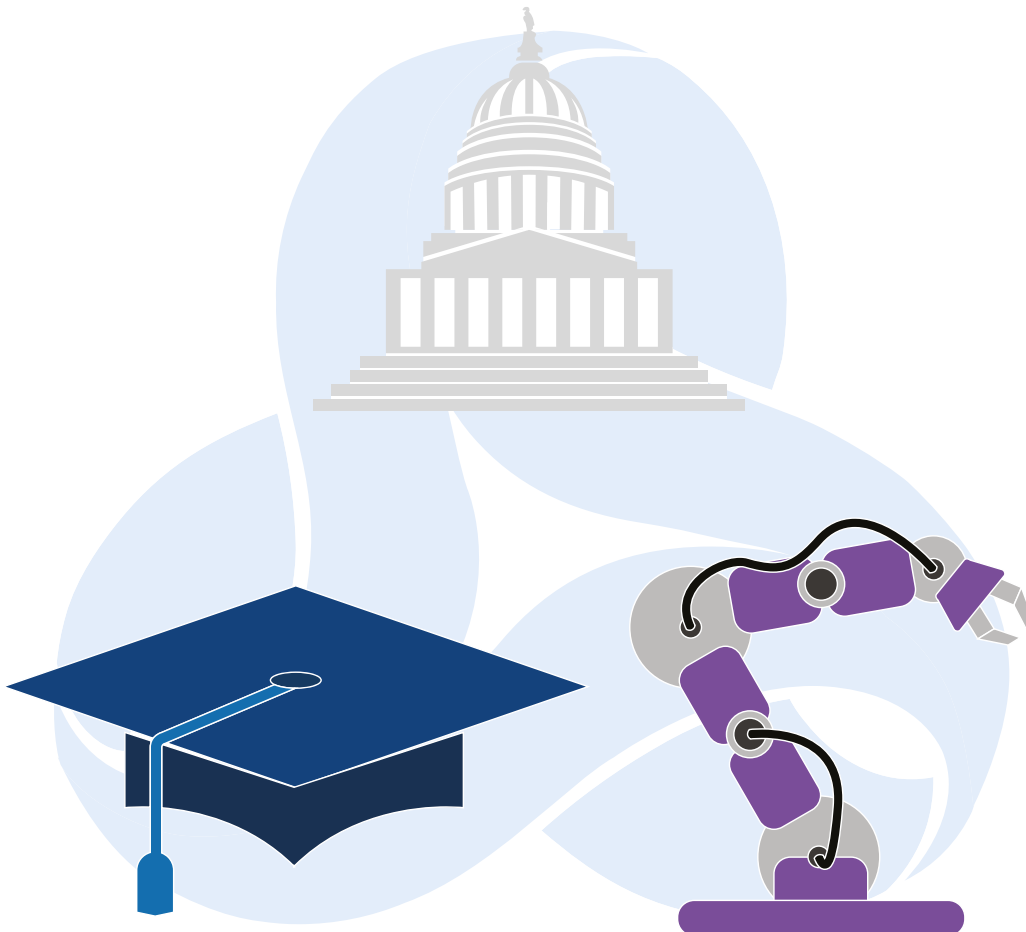


The Importance of Leadership.

AMT appreciates the work accomplished through our collaborations with the government, academia, community organizations, and industry. **With government leadership, we achieved several important successes.**

- There is more support to explore overseas markets with a streamlined export licensing process and increased export promotion services.
- Manufacturing USA and the Innovation Institutes are working to bring the latest in manufacturing technology to the industry.
- Investment in STEM, STEAM, and apprenticeships dramatically increased.
- Tax incentives and lower rates encouraged increased investment in manufacturing facilities, equipment, and R&D.

Government, industry, and education stakeholders must continue to work together on a national strategic plan to build on this progress. It should focus existing and future government resources on accelerating innovation, driving economic growth, strengthening national security, and supporting good-paying jobs.



Support Manufacturing Innovation.

It is vital to U.S. prosperity that the government supports the proliferation of advanced technologies in our manufacturing facilities. Technologically advanced industries have lower costs, higher profits, and unlock new value streams through innovation. Yet, small and medium-sized manufacturers (SMMs) are not making investments fast enough to maintain a competitive edge.



Accelerating Transformative Technology Adoption.

Finding the right technology fit for individual companies is challenging. According to a 2020 study by Deloitte, only 10% have a formal Industry 4.0 investment strategy.

(Source: Industry 4.0: At the intersection of readiness and responsibility, Deloitte.)



Leading in R&D.

Manufacturers are America's largest investors in R&D, accounting for roughly two-thirds of private-sector R&D spending while about 15% of private investments are made by small businesses with fewer than 500 employees.

(Source: R&D Coalition)



Commercializing Innovation.

The manufacturing sector continues to face challenges in translating technical innovation into U.S.-based production, and, as production has migrated overseas, research and development (R&D) and technical skills have often followed.

(Source: MFG USA)

Drive Economic Growth.

Manufacturing equipment and technology are the basic building blocks for all other industries including automotive, defense, electronics, and appliances. Considering the outsize contribution the industry makes to the economy, **it's important that the government assess the impact of tax, trade and regulatory policies on manufacturers, especially the small and medium-sized businesses that make up most of the industry, and take action to yield positive results.**



Making an Outsized Impact.

Manufacturing accounts for 11% of U.S. gross domestic product (GDP) and 68% of U.S. exports of goods. For every dollar spent in manufacturing, an additional \$2.74 is added to the economy.

(Source: BEA, US Census)



Improving Results Through Collaboration.

Research conducted by OECD and BLS suggests that a collaborative environment between public and private enterprises leads to knowledge spillover and higher productivity, translating to better research output and higher GDP growth. This could be further achieved by increasing the indirect support to private enterprises through incentives, such as higher R&D tax credits.

(Source: Advanced Technologies Initiative Manufacturing & Innovation, Deloitte)



Increasing Capital Growth.

Enacting a policy of full expensing for all capital investments, including machinery, equipment, buildings, structures, and R&D expenses, would increase the long-run level of GDP by 5.1%. The capital stock would expand by 13%, wages would increase by 4.3%, and employment would grow by more than 1 million full-time equivalent jobs.

(Source: Reviewing the Economic and Revenue Implications of Cost Recovery Options, Tax Foundation)

Strengthen National Security.

A strong industrial base is part of our national identity. Yet, our dependence on foreign sources and suppliers leaves the nation vulnerable. In a global or countrywide crisis, critical industry sectors, supply chains, and economies can grind to a halt. **The government must support initiatives that strengthen domestic capacity and capability.**



Restoring U.S. Technological Leadership.

Technological leadership has been at the core of U.S. national security for decades, but the United States faces intense competition, and important changes in America's innovation ecosystem have created new requirements for continued leadership.

(Source: Linking National Security and Innovation: Part 1, James Andrew Lewis, Center for Strategic & International Studies, Apr 2021)



Building Supply Chain Resiliency.

More resilient supply chains are secure and diverse — facilitating greater domestic production, a range of supply, built-in redundancies, adequate stockpiles, safe and secure digital networks, and a world-class American manufacturing base and workforce.

(Source: Executive Order on America's Supply Chains, Feb 24, 2021, The White House)



Reducing Dependence on Foreign Sources for Critical Supplies.

Macro forces have led to impacts primarily in the sub-tiers of the defense supply chain; a surprising level of foreign dependence on competitor nations exists; workforce challenges face employers across all sectors; and many sectors continue to move critical capabilities offshore in pursuit of competitive pricing and access to foreign markets.

(Source: Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States, Report to President Donald Trump, September 2018)

Support Good-paying Jobs.

It's imperative to narrow the chronic skills gap that is hampering growth and competitiveness in manufacturing. Government, educational institutions, and industry must work together to increase interest in STEM and CTE education and careers. We also must change perceptions about skilled careers among the next generations, as well as recruit dislocated workers and provide returning military veterans with viable opportunities in the civilian workforce.



Offering Competitive Compensation.

Wages in manufacturing in the United States averaged 9.78 USD/Hour from 1950 until 2021, reaching an all-time high of 23.71 USD/Hour in June of 2021 and a record low of 1.27 USD/Hour in February of 1950.

(Source: tradingeconomics.com; U.S. Bureau of Labor Statistics)



Upskilling the Workforce to the Smartforce.

Despite the high compensation level in manufacturing, the industry still suffers from a chronic skills gap with over 500,000 positions chronically open across many job functions as a result of an inadequate number of individuals seeking career pathways in manufacturing.

(Source: BLS JOLTS; revised April 2021)



Elevating the Perception.

Deloitte and The Manufacturing Institute and others project that the skills gap will expand to some 3-million plus positions by 2030 as new product innovations and emerging technologies take hold in the industry, coupled with increasing retirements by the baby boomer generation.

AMT.

AMT – The Association For Manufacturing Technology (AMT) represents and promotes U.S.-based manufacturing technology and its members – those who design, build, sell, and service the evolving technology that lies at the heart of manufacturing. AMT also owns and manages the International Manufacturing Technology Show (IMTS), the premier manufacturing technology event in North America. AMT was founded in 1902 and is headquartered in McLean, Virginia. **For more information, visit www.AMTonline.org.**



MTInsight is the game-changing business intelligence tool that companies must have to succeed in today's manufacturing world.

MTInsight is based on three key elements: Actuate software, AMT's experience and analysis, and our unique data warehouse — all of the information AMT tracks on markets, benchmarking surveys, industry forecasts, competitors, customers, and supply chain.

Learn more at www.mtinsight.org



MTConnect is an open, royalty-free standard intended to foster communication and interoperability between manufacturing controls, devices, and software applications to provide better data on machine utilization and productivity. The standard was funded and developed by AMT and is steadily gaining users from private industry, academic institutions, and government agencies.

Learn more at www.mtconnect.org



The largest manufacturing technology trade show in the United States takes place every even-numbered year at McCormick Place in Chicago, Illinois. Owned and managed by AMT, IMTS is recognized as one of the world's preeminent stages for introducing manufacturing equipment and technology and ranks among the largest trade shows in the world.

Learn more at www.imts.com