



# Research, Innovation and Technology: Powering Manufacturing 4.0

Manufacturers in the United States have created an innovation engine that has reshaped the world around us. New technologies and processes have brought us energy independence, new lifesaving medicines and medical devices and more efficient automobiles, to name a few. Countless other products are being developed and refined constantly to make people's lives better and secure our nation's global leadership position in manufacturing. Every day, manufacturers across the country are transforming their own operations to achieve greater efficiency, productivity and competitiveness while working to create a better tomorrow.

Manufacturers in the U.S. account for about two-thirds of private-sector spending on research and development, and manufacturing has been awarded more patents than any other industry. Innovation is the lifeblood of our economy, the foundation of a globally competitive

manufacturing base here at home and the driver for U.S. leadership in manufacturing abroad. Building on this history of innovation, manufacturers are leading the charge in the digital economy of the 21st century. Machine learning, additive manufacturing, the internet of things, robotics, cloud computing, augmented reality and virtual reality, advanced materials and other innovations are attracting significant attention and investment that will propel manufacturing into the future.

As modern manufacturing in the U.S. races toward the new economic era and pursues future technologies to lead new operational advances, federal policies must keep up with the industry's needs, prioritizing both investment and innovation. The application of advanced and digital technologies on the factory floor will contribute to a significant transformation already underway known as Manufacturing 4.0.

## A Research, Innovation and Technology Agenda for the Future Must:

- Adopt policies that will attract and retain investment in activities that drive innovation.
- Vigorously protect all forms of manufacturers' IP.
- Foster the growth of connected technologies and data-driven innovation across all manufacturing industry segments.
- Include cybersecurity policies that draw on the best industry practices.

**“ A digital transformation is underway in manufacturing. The technologies we choose, the solutions we deploy and the people who drive the change are essential to the future of the industry. Our policies must allow manufacturers to capitalize on this transformation rather than present roadblocks to its adoption.”**

**—Victoria M. Holt, President and Chief Executive Officer, Protolabs**

## Actions for Leaders to Take:

- ✓ Deliver strong IP protections as international trade agreements are being negotiated.
- ✓ Pursue a federal approach to data privacy that provides flexibility for innovation, addresses domestic and global inconsistencies and maintains U.S. economic growth and technological leadership.
- ✓ Enact policies that curb abusive patent lawsuits while respecting IP rights for all industry segments.
- ✓ Modernize our communications laws to reduce unnecessary regulations, spur investment in our digital infrastructure and promote the deployment of next-generation wireless technology.
- ✓ Maintain a strong mechanism for the public and private sector to share real-time cyberthreat information and increase the penalty on cyber criminals.