



A3 Advocacy Principles for the United States

Introduction

The Association for Advancing Automation (A3), is North America's largest automation trade association representing more than 1,250 organizations involved in robotics, artificial intelligence, machine vision & imaging, motion control & motors, and related automation technologies. We promote robotics and automation technologies and ideas that transform the way business is done, and are the voice of the automation industry to policymakers, the news media, and the general public, advocating on behalf of our members throughout the world. These Advocacy Principles represent key drivers for the support and expansion of the robotics and automation industries. While our focus is on the United States, these principles would also benefit allied countries in other regions, and we welcome their broader adoption by government officials elsewhere.

It is a primary government objective to bring jobs and manufacturing back to the United States, and for the country to become more self-sufficient in the manufacture of essential products. Automation and robotics technologies will play a key role in these policy objectives, keeping our economy competitive while also enhancing worker safety and productivity across countless industries. Government policymakers at all levels should have an interest in the benefits that these technologies can bring their constituents, and in understanding how their policy initiatives can help further these interests. Moreover, rapid developments in embodied A.I. enable real-world interactions and applications across various sectors. There is an urgent and immediate need for government leadership to initiate and resource efforts to make the United States a world leader in the application of innovative and modern automation, robotics and manufacturing technologies. A3 hopes that these five main Principles help focus the discussion and policy initiatives needed in the months and years ahead.

Principles

#1. The United States needs a national government strategy for robotics

The U.S. government should develop a national strategy for robotics, creating a cross-government task force and a central government point of contact (a so-called “czar”) for the industry to work with on important initiatives.

Currently, the U.S. government provides resources supporting robotics and automation initiatives through funding, federal agency initiatives and public-private partnerships. These include but are not limited to the Departments of Agriculture, Energy, Health & Human Services, Commerce, Labor, and Defense, the National Science Foundation, NASA, ARM Institute and Manufacturing USA.

Despite the much-needed cross-functional investments, the United States lacks a cohesive national strategy for robotics. Many countries, including notably our competitors in technology development and geopolitics, have established national strategies for robotics to provide overarching goals and strategy for growth and funding. These countries include but are not limited to: China, Japan, South Korea, and Germany.

China, for example, launched a "Made in China 2025" plan in 2015 which outlined a strategy for industrial development including a key focus on robotics, aiming to transform China into a global leader in advanced manufacturing and automation. Target metrics were established involving market share of domestically produced robots, funding for innovation and training, and robotic automation adoption across various industries. Most recently, China's government announced a plan to dominate humanoid robotics by 2027.

The U.S. should adopt a national government strategy for robotics to both capitalize on opportunities and real and perceived risks amongst the populace. A national strategy is crucial not only to industrial development, global competitiveness and economic prosperity, but also to the national security and defense industrial base of the United States and its allies. Factors for consideration in the development of a strategy include: Competitiveness, workforce development, innovation, risk mitigation, national security, advances in A.I. technology, secure supply chains, and education.

A3 and the robotics industry can play a leading role in educating and advising government stakeholders on these and other considerations.

#2: Communicate with us: Robots create better, more productive jobs.

Robots and automated technologies create jobs that are better paying, safer, greener, more productive and more rewarding than the physical tasks robots tend to do. The U.S. government should be a partner in helping the robotics and automation industry tell the story of how these technologies are used to bring back jobs to the United States and to increase worker productivity.

Today, U.S. manufacturers are struggling to fill hundreds of thousands of open positions, tens of thousands of which are in robotics. It is expected that millions of manufacturing jobs will be left open during the next decade due to a lack of trained workers, with an ever-increasing percentage requiring robotics and automation competencies as the foundational element of all advanced manufacturing. These will be the “new collar” positions that will replace the dull, dirty, and dangerous jobs of yesteryear. Rapid advancements in artificial intelligence will make robots even more capable, efficient, and effective than ever before.

On average, the new robotics roles pay about 30% more than entry-level, non-robotics manufacturing jobs. These jobs create new opportunities to engage and deploy underrepresented populations in manufacturing who can fill these positions with a modest amount of additional competencies. The deployment of robotics technology also creates demand for complementary jobs supporting the automation ecosystems and frees up company resources for new spending as goods and services become cheaper, locally produced and more available. Any chance at reversing the damage caused by exporting our manufacturing expertise overseas for so many years absolutely requires the deployment of a new community of robotics employees. Robotics also extend the viability of a person’s career, enabling additional years of productivity and delaying retirement for those who wish to stay actively employed later in life. Unfortunately, there tends to exist a persistent myth that robots simply eliminate jobs wholesale, and this myth feeds public negativity about the technology, and in some cases can lead to poor policy decisions. The federal government must urgently partner with the robotics and automation communities in telling the story across the nation of how robotics jobs are more rewarding, higher paying, and essential to bringing back critical supply chains to the U.S.

#3: We need to boost workforce training, robotics education, and career inspiration.

The U.S. government should fund and facilitate workforce training programs for jobs that leverage the automated technologies of the present and future, and engage in public-private partnerships. This initiative should include encouraging robotics education and inspiring younger students.

Upskilling America's workforce is critical to strengthening our nation's leadership and resilience. Careers in robotics and automation are growing, well-paying, and offer new opportunities for employment. When robots take on dull, dirty, and dangerous jobs, workers have new opportunities for doing more engaging work that takes advantage of unique capabilities. This will also result in less worker turnover and fewer injuries.

Innovation is the lifeblood of the American economy and workers in robotics are key to ensuring that the U.S. can compete globally. However, the skill sets required for today's robotics careers are very different. There is a serious supply chain problem in providing a sufficient workforce of technicians and engineers for the robotics and automation industries. The critical deficiency in the chain starts with the significant lack of K-12 students wanting to pursue an education and subsequently exciting careers in robotics and automation.

Numerous robotics training programs exist across every state of the nation but we must have a national campaign led by our government to entice more of our youth, as well as underserved adult communities, into these programs and subsequently into robotics careers. Without a concerted effort, we risk stalling the economic growth and resilience of our nation as a world leader in innovation.

Government must also invest in "marketing" of robotics and automation as a field to pursue. For example, T.V. and social media commercials can bring to light the opportunities and needs in robotics and automation.

The support of robotics programs in high schools, community colleges, and universities will allow multiple exit points for students with credentials to serve the robotics and automation industries - thus providing the "engine" for U.S. excellence in automated manufacturing.

#4: Make improvements to economic and tax policies

The U.S. government should re-examine its economic and tax policies, to support the development, manufacturing and adoption of robotics technologies that will boost US-based manufacturing.

The ability of United States-based manufacturing to compete globally is directly tied to manufacturing productivity. However, U.S. manufacturing productivity has been static (or even declining) for the past two decades, and other nations are catching up.

Automation in manufacturing is the pathway to increasing productivity in US-based manufacturing. Among other investments, such as workforce reskilling/upskilling, U.S. manufacturing must invest in automation to increase productivity and become competitive globally. While Congress is overwhelmingly committed to supporting US-based manufacturing, more can be done. One key initiative we recommend is a re-evaluation of tax policies. Government should use tax policy, including tax credits, to encourage investment in these technologies, with policies that include not only capital costs but also integration and training costs. These approaches will allow companies to de-risk their investments and experience a return on investment sooner. Similarly, any proposed tax specifically to be levied on robots or automation technologies is actually a tax on productivity, reduces investment, hurts U.S. competitiveness, and therefore should be rejected by policymakers.

#5: The government should invest in new and emerging applications for robotics that will benefit society and humanity

Advanced robotics are poised to bring unprecedented benefits to society, in ways we are only beginning to imagine. Government programs should research, explore, incentivize and invest in new and emerging robotic applications, and help lead the development of standards that ensure safety in new applications.

Robots have for decades been employed mostly in industrial applications, such as automotive manufacturing and warehouses. Recent advances in research and development have shown that robots can make a substantial difference in emerging applications that provide tremendous value to society, including new benefits for older adults, retirees, those with disability challenges, and underserved populations. For example:

- Exoskeleton robots that will help people walk;
- Guide robots that will help the blind and assist with other disabilities;
- Domestic robots that can cook, clean, and retrieve objects;
- Robots that will provide companionship and emotional comfort under the right circumstances, such as for persons with dementia and other ailments;
- Environmental robots that can clean parks, beaches, oceans, and waterways;
- Humanoid robots that will leverage A.I. to accomplish sophisticated tasks in home and work environments structured for humans; and
- Surgical robots that enable medical procedures, including in underserved populations.

The benefits of robots in these and similar applications is both physical and mental, as costs are reduced, older people and disabled individuals stay in their own homes longer, nursing care facilities provide a higher level of service, and persons with disabilities regain their perception and mobility. These are emerging but revolutionary applications for robotics, increasingly crucial as our population ages, and we call on government to invest funding in research and development.

Government should also play a role in convening the industry to help develop standards and best practices to ensure that the introduction of these technologies in new environments is safe and welcomed by the public. Such endeavors also have the benefit of convening diverse people and communities together in the name of safety.