

# A Policy Agenda to Support the Transformative Potential of Artificial Intelligence



Artificial intelligence is disrupting many industries. At Autodesk, we are working at the intersection of AI and engineering - pioneering the use of AI in building and construction and in manufacturing. We are helping our customers meet the demands of a rapidly growing global population for more and better public infrastructure, buildings and consumer products that are produced more sustainably with less waste.

We believe in the transformative potential of AI, but also recognize that AI is an emerging technology that poses challenges that policymakers around the world need to understand and address. We highlight below several key policy issues governments should consider, mindful that this is a rapidly evolving area of technology and policy issues will change over time. In some cases, existing laws and regulations may be sufficient to address concerns, in other areas policymakers may need to enact new rules or convene stakeholders to develop standards and best practices.

**We believe governments should pursue policies that bolster development and deployment of AI to help tackle important societal needs and challenges, while acting to mitigate risks where necessary.**

## The Challenge

The global population is rapidly growing and expected to reach 10 billion people by 2050. At the same time, the numbers of people considered middle class is quickly expanding. This puts enormous pressure on the construction and manufacturing industries to meet the need for more housing and consumer products. For example, some estimates say we need to build 13,000 buildings per day on average to meet escalating demand.

But we also live in a world of finite resources (labor, skills, raw materials, etc.), so the challenge we have is to meet these demands in a more efficient and sustainable way. That means minimizing our use of resources and ensuring we get the most output out of what we use.

## How AI Can Help

One of the tools to help us meet these challenges is AI. AI-enabled technologies can assist architects, engineers, construction companies, product designers and manufacturers to optimize their designs and processes, limit design flaws, minimize material waste and reduce project time and costs.

## AI in the Construction Industry

In construction, AI can analyze construction site data to help construction managers identify priority issues to address. Machine learning (a subset of AI) can be used to identify construction quality and safety issues that pose the biggest risk to a project at any given time. This enables teams to act quickly, prevent catastrophes, and avoid downstream problems that create cost overruns and schedule delays. The result is fewer delays and safer construction sites.

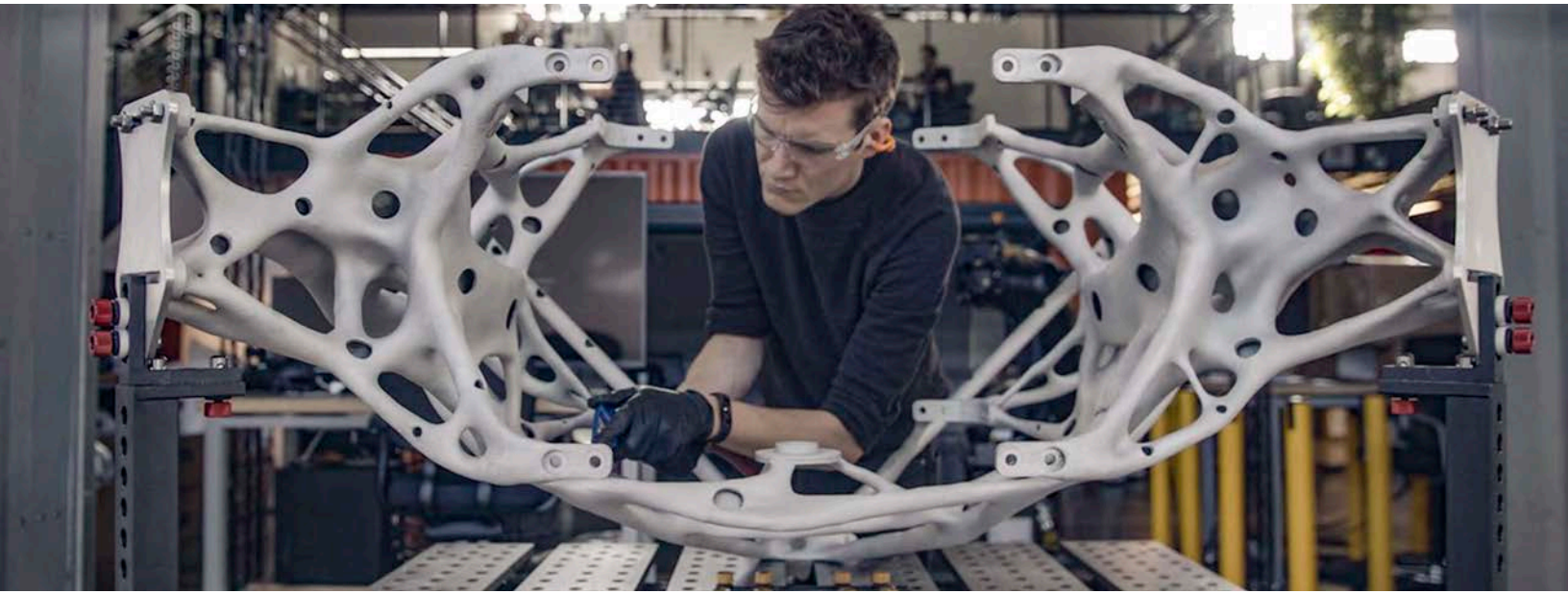
In one case study, a construction company using Autodesk's AI-enabled construction management technology was able to spend 25% more time focused on high-risk issues and saw a 20% improvement in on-site quality and safety.

AI is also helping to design better housing and communities. It can help building designers and urban planners optimize a home for solar panels and plan entire communities to optimize use of water, electricity and access to public transportation.

## AI in the Manufacturing Industry

In manufacturing, AI-enabled technologies are changing the way products are designed and made. Generative design technologies, powered by AI, give manufacturers a strong tool to optimize their product designs. Designers specify key functionality and attributes of the product and the software provides them with numerous design options – most of which human designers would not have been able to develop.

Autodesk worked with General Motors to use generative design technology to redesign a seat belt bracket that is 40 percent lighter and 20 percent stronger than the prior version. Broader application of generative design in the automotive industry will lead to cars that use less material and are more fuel efficient. Widespread use of this type of AI-enabled manufacturing technology can help create more sustainable products in a broad array of industries.



## Principles for AI Policy & Regulation

Polymakers should chart a path forward to maximize the benefits and mitigate the risks of AI. The Organization for Economic Cooperation and Development took an important step in pulling together AI Principles agreed to by 42 countries with input from government, industry, labor, civil society, academia and the tech community. This formed the foundation of AI principles supported by the G20 nations in 2019. We urge governments to take action to put these principles into practice. Autodesk supports the following:

**Improving Transparency:** Governments should work with industry to develop standards for enhancing the transparency and “explainability” of how AI systems operate. This can be done in ways that enhance public trust in the technology without jeopardizing proprietary information.

**Combating Bias and Discrimination:** Governments, industry and other stakeholders should jointly create processes and best practices to evaluate AI systems for potential bias and discrimination in the outcomes they produce. AI products and services should be developed by diverse teams who can best understand when biased data may be involved and how an AI system may be producing discriminatory outcomes.

**Ensuring Privacy & Security of Personal Data:** Autodesk supports strong privacy and data security laws that give consumers more control over the collection of personal data, how it is used, and who it is shared with, and that safeguard the confidentiality, integrity and availability of personal data. These protections are vital to ensuring responsible use of AI technologies that process personal data.

**Preparing for the Future of Work:** Deployment of AI technologies will have a significant impact on the workforce, eliminating some jobs and tasks and creating new ones. Governments, educators and industry must collaborate to provide students and workers the skills they need to use and benefit from AI, and to aid workers displaced by AI. Autodesk is working to better prepare our customers, communities and employees for the future of work.

**Increasing Government AI Use and R&D:** Governments can set an example for the safe and effective use of AI with more widespread adoption. Governments can also accelerate private sector work in developing AI technologies to address key societal priorities through the funding of basic, long-term research on AI.

**Leveraging Government Data:** Governments at the national and local level collect and generate significant data that, when run through AI systems, can provide valuable insights in many different areas. This includes data on weather, traffic and economic trends, among others. Policymakers should make more non-sensitive government data available to those working with AI systems.



### About Autodesk

Founded in 1982, Autodesk makes software for people who make things. If you've ever driven a high-performance car, admired a towering skyscraper, used a smartphone, or watched a great film, chances are you've experienced what millions of Autodesk customers are doing with our software. Autodesk gives you the power to make anything.

Over 200 million people worldwide use Autodesk software to unlock their creativity and solve important design, business, environmental, and societal challenges, pushing the boundaries of design in manufacturing, architecture, engineering & construction, and media & entertainment.

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