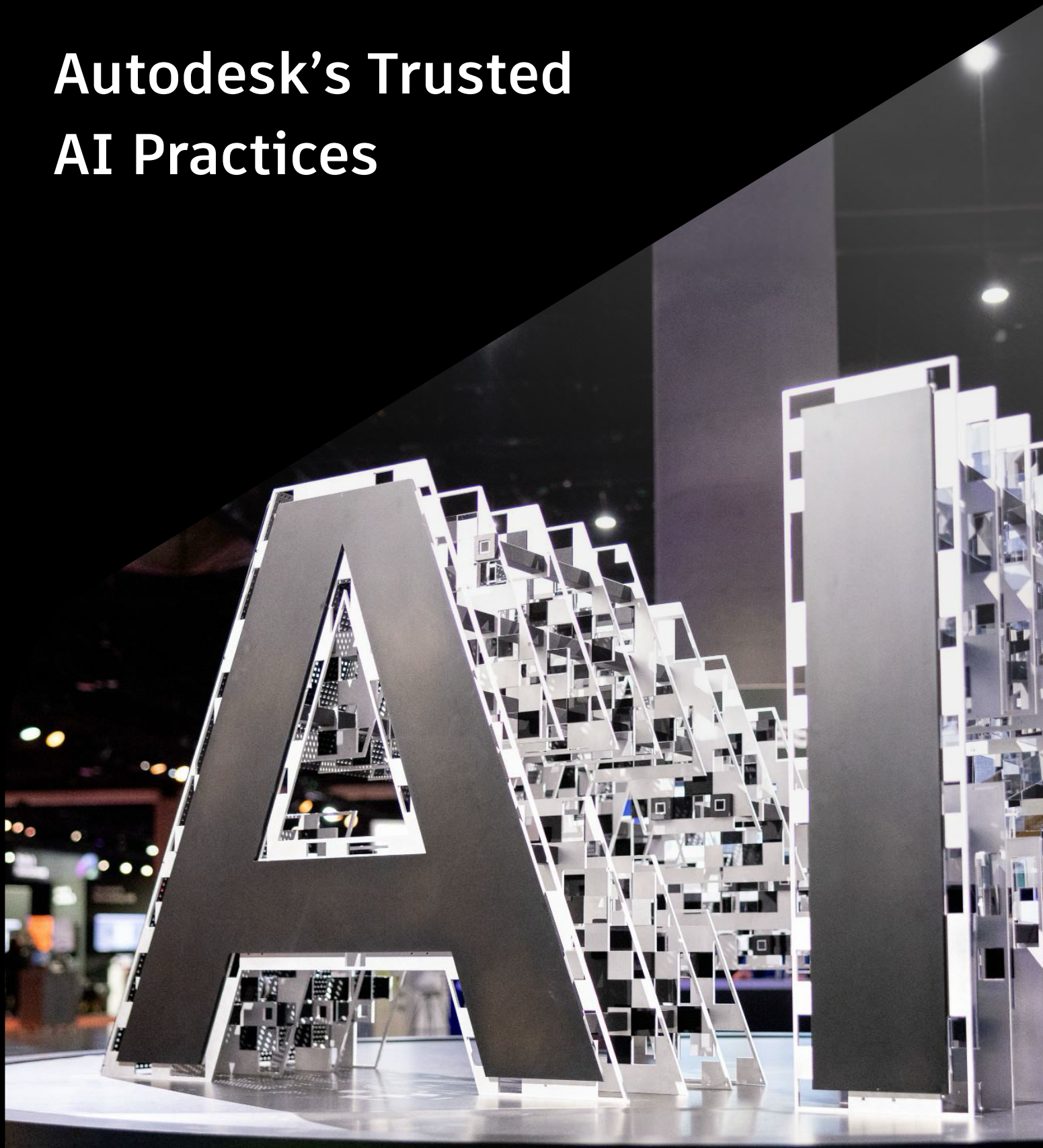
AUTODESK

Autodesk's Trusted AI Practices



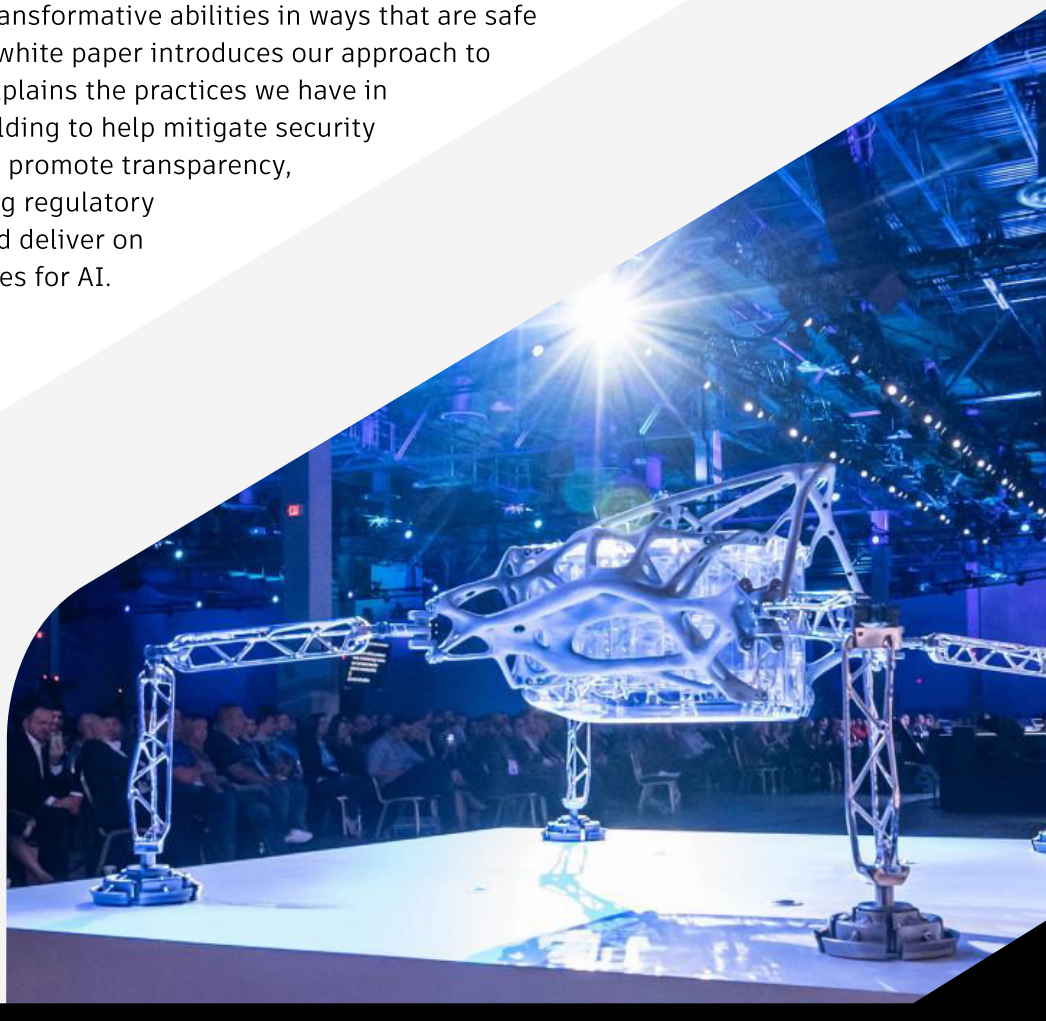
Introduction: The Autodesk AI difference

From the buildings we live in to the products we use to the movies that inspire us, Autodesk software helps designers and makers build a better world. Our artificial intelligence (AI) capabilities are a part of that vision, offering tools to realize human potential and enhance human ingenuity. But as new breakthroughs in AI technology continue to make headlines, our customers may have questions about how we build our AI features and what that means for their data and intellectual property (IP).

Unlike consumer generative AI tools that have burst onto the scene in recent years, Autodesk has offered AI-powered automations for years. We recognize the transformative power of AI for the industries we serve—which is why we've been conducting and publishing original, peer-reviewed research in artificial intelligence since 2009, making us the world's largest publisher of AI research for CAD geometry. We're focusing on leading responsible AI practices in our research and development, and we demonstrate our commitment to trusted AI by participating in voluntary pledges like the EU AI Pact.

Autodesk AI supports customers by analyzing, automating, and augmenting their work so that they can focus on creativity. When it comes to Autodesk technology, the transformative factor isn't AI—it's you.

At Autodesk, we focus on ensuring that our AI capabilities empower our customers' transformative abilities in ways that are safe and ethical. This white paper introduces our approach to Trusted AI and explains the practices we have in place and are building to help mitigate security and privacy risks, promote transparency, adhere to evolving regulatory requirements, and deliver on our Trust Principles for AI.



Autodesk's AI commitments

At Autodesk, responsible AI development and use as well as trust and transparency with our partners are central to our AI initiatives. We demonstrate our leadership in AI through our dedicated research and Trusted AI programs, by our membership in industry organizations dedicated to AI safety, and by our voluntary commitments to support AI regulatory readiness, like the EU AI Pact. We are also committed to sustainability in the development and use of AI, and we mitigate the environmental impact of cloud and data centers using the practices outlined in our Impact Report.

Public policy

EU AI Pact

In September 2024, Autodesk joined more than 100 companies as the first signatories of the EU AI Pact. This voluntary pledge to help drive trustworthy and safe AI development reflects a commitment to apply the principles of the legally binding EU AI Act ahead of its phased adoption.

AI Verify Foundation

Autodesk is a member of AI Verify, a global open-source community launched by the Singapore Government's Infocommunications Media Development Authority that convenes AI owners, solution providers, users, and policymakers to build trustworthy AI.

Industry partnerships

NIST US AI Safety Institute Consortium (AISIC)

Autodesk is an active member of AISIC, a group created by the US National Institute of Standards and Technology (NIST) to support development of guidelines and standards for AI measurement and policy.

Content Authenticity Initiative (CAI)

Autodesk is a member of CAI, a cross-industry community that works to create a secure system for digital content provenance and media transparency through the development of open-source tools.

Autodesk's Trust Principles for AI

Autodesk is committed to responsible, ethical, and secure AI development, deployment, and use. We adhere to strict governance processes to protect our customers' personal data and intellectual property. We implement responsible testing and monitoring practices throughout the AI lifecycle to mitigate or avoid instances where our AI might perpetuate biases, amplify social challenges, or lead to new avenues of risk.

We adhere to high standards in acquiring and managing data, and in training and delivering fair and safe AI models.

We are forthcoming about the design, development, and intended use of AI systems and data.

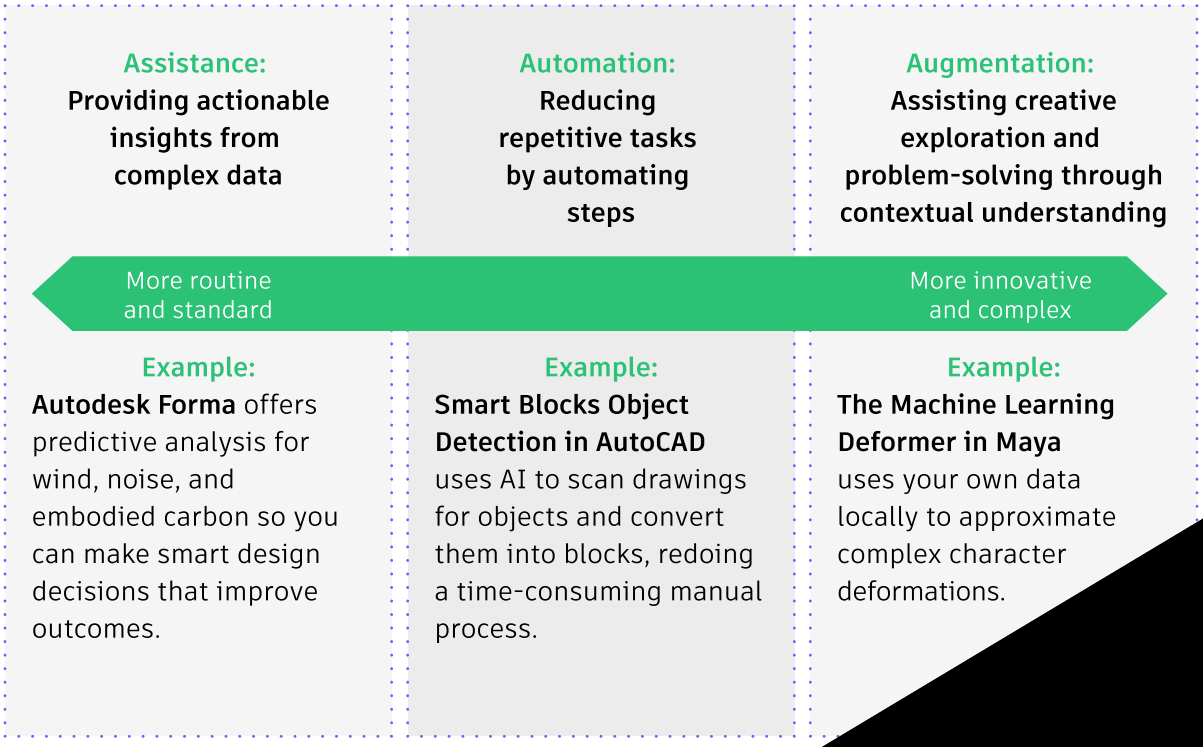
We respect our customers' choices and align to laws and regulations.

We are rigorous in building AI systems that strive to provide accuracy, validity, and consistency.

We are committed to protecting data, intellectual property, and privacy, and producing safe outcomes.

Evolving our AI capabilities

Autodesk's AI features fall into three broad capabilities: analysis, automation, and augmentation. When developing AI features, we focus first on analysis and standard automations to help our customers work faster and more efficiently, then progress to more complex features, listening to and incorporating customer feedback along the way. We don't currently offer a standard mechanism for customers to make choices about use of their data for Autodesk AI. Right now, certain product features do offer some form of customer choice based on the use case and data collection. As we release advanced AI features that augment and generate sophisticated ideas and designs, our customers will be able to make choices about these features and how we use their data to enhance the way customers work.



How Autodesk protects your data

Our AI features deliver value in a way that prioritizes customer privacy and security. For example, some of our AI features use aggregated and de-identified data, while others use data trained locally within a customer's product instance. To find out what types of data are used and what additional safeguards are in place for an AI feature, review its AI transparency card in the Trust Center. We understand that customer IP and data are important, and it's just as important to us that we continue to keep it secured and confidential. To learn more about how data is protected, see Data protection.

Autodesk's Trusted AI program and practices

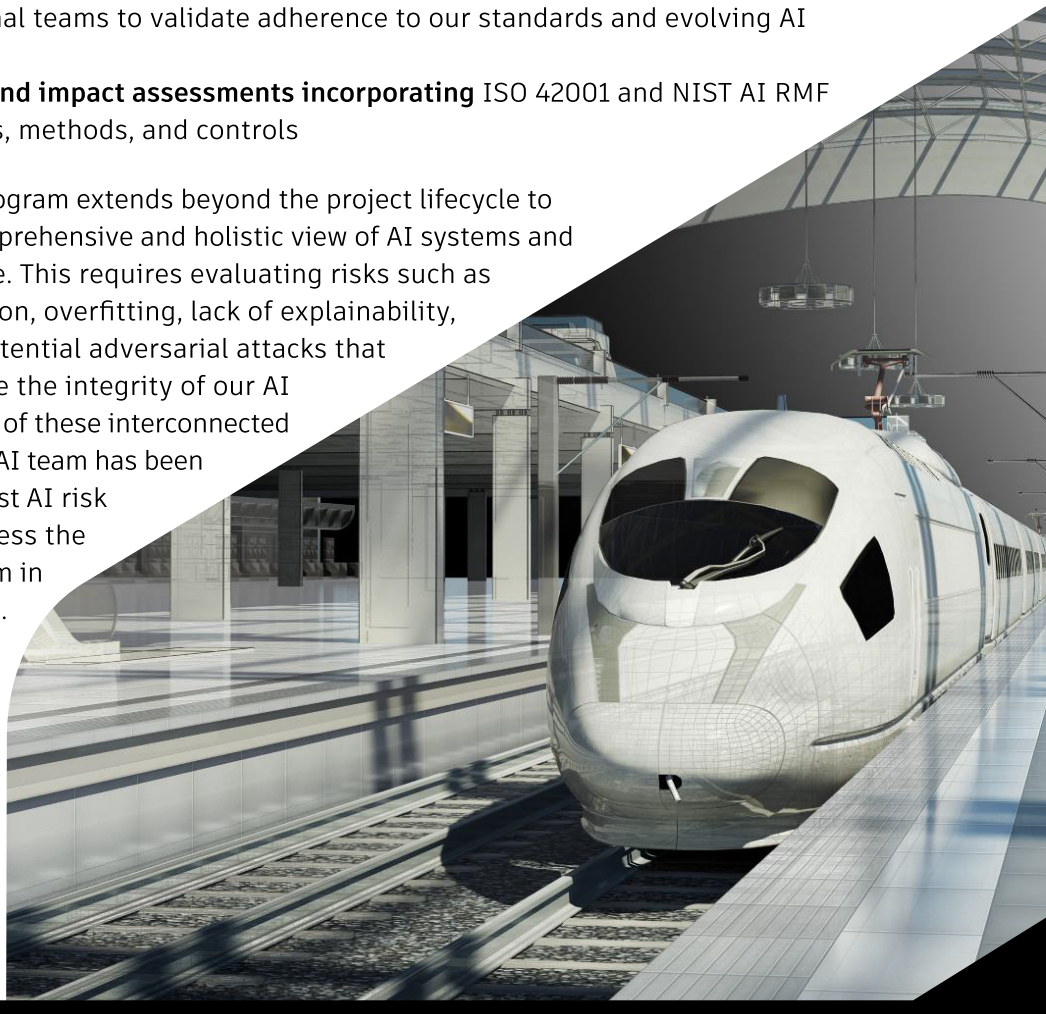
Governance

At Autodesk, we maintain standards for responsible AI and governance, and we make adherence to those standards an inherent requirement for delivering AI features. We have a senior leadership executive committee that provides guidance and oversight for Autodesk's AI strategy, upholding trustworthy and responsible AI practices. Our Trust organization, led by our Chief Trust Officer, establishes and enforces policies and standards spanning Trusted AI, security, privacy, compliance, and resilience. We have also established a robust Trusted AI Program and are building governance processes in alignment with leading international standards and frameworks like ISO/IEC 42001, Artificial Intelligence – Management System (ISO 42001) and the NIST AI Risk Management Framework (RMF).

Our Trusted AI Program is woven into the development process and being engaged in the launch of our AI-powered product features and other AI projects to carefully evaluate them against our policies, standards, and Trust Principles for AI. Our Trusted AI assessment begins with a project registration, completed during an early exploratory phase of an AI project. As a project progresses, the Trusted AI team works with product owners to:

- **Document and evaluate datasets and models** to ensure data integrity
- **Perform privacy reviews and evaluate the intended** use of data with legal and other cross-functional teams to validate adherence to our standards and evolving AI regulations
- **Conduct risk and impact assessments incorporating** ISO 42001 and NIST AI RMF risk categories, methods, and controls

The Trusted AI program extends beyond the project lifecycle to encompass a comprehensive and holistic view of AI systems and their intended use. This requires evaluating risks such as model hallucination, overfitting, lack of explainability, bias, drift, and potential adversarial attacks that could compromise the integrity of our AI systems. Because of these interconnected risks, the Trusted AI team has been developing a robust AI risk framework to assess the broader ecosystem in which AI operates.



AI models

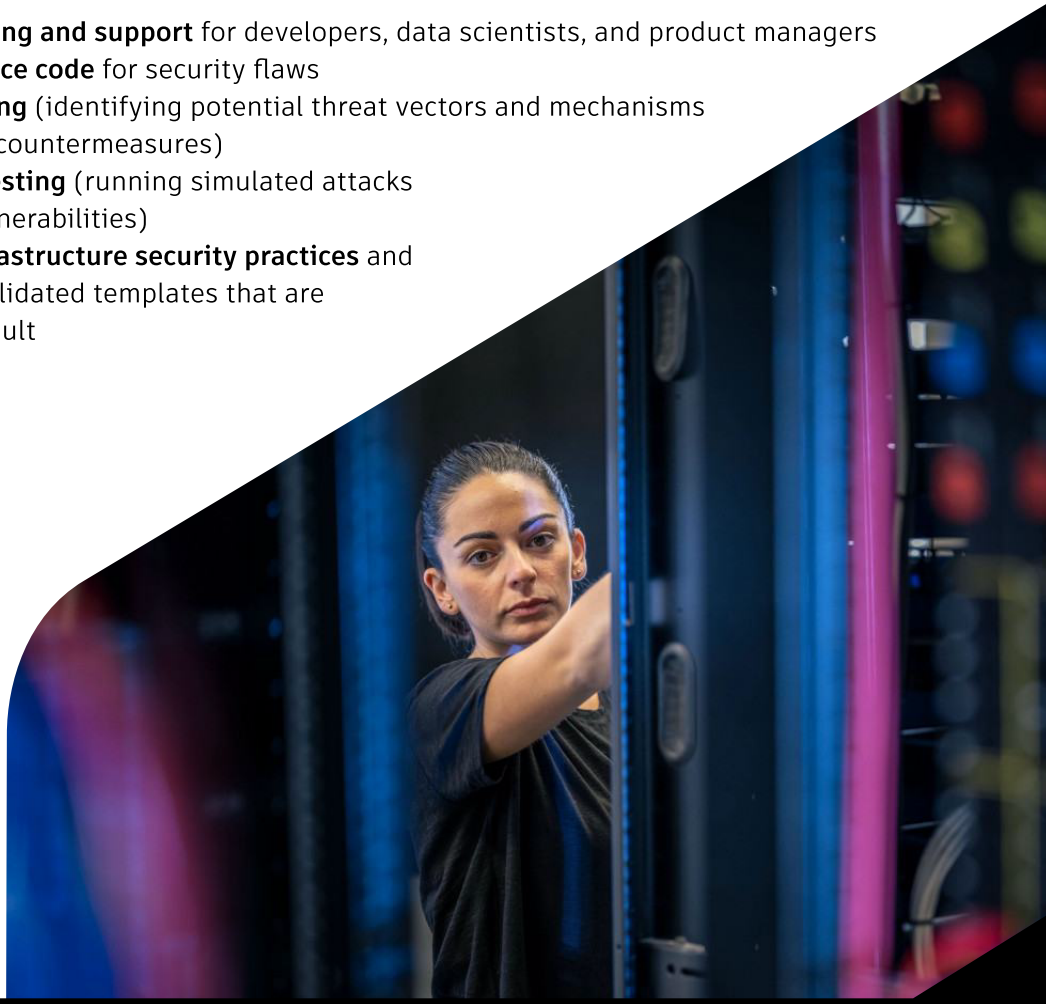
AI models are fundamental to Autodesk's industry solutions and AI strategy, and many Autodesk AI features use proprietary models developed by Autodesk. Our AI models follow the same governance and compliance policies and procedures as the rest of our software, and we test them rigorously for security, consistency, and accuracy.

Some Autodesk AI features use third-party AI models. As part of our Trusted AI program, we evaluate the AI models we use for potential risks, and we follow Autodesk's privacy principles and security standards when working with third-party providers.

Design, development, and testing

We design AI features in our software with security, privacy, and resilience built in from the beginning. As with all our software products and features, we follow sound design principles and secure software development practices when designing AI features. These include:

- **Security training and support** for developers, data scientists, and product managers
- **Scanning source code** for security flaws
- **Threat modeling** (identifying potential threat vectors and mechanisms to implement countermeasures)
- **Penetration testing** (running simulated attacks to identify vulnerabilities)
- **Following infrastructure security practices** and building on validated templates that are secure by default



Data sources and data usage

Autodesk uses data from various sources for its AI-powered features, including synthetic data, third-party licensed data, open-source data, and Autodesk internal data. For the development of certain AI features, we use training datasets that include elements of customer content in aggregated and de-identified form. Such training data includes common elements, industry standards, or otherwise not sensitive data. Examples include lines, shapes, geometries, standard symbols, and off-the-shelf parts, such as industry-standard construction elements and metadata in Autodesk Takeoff. We follow our Trust Principles for AI and adhere to strict policies and governance processes to safeguard and protect our customers' IP, confidentiality, privacy, security, and other rights.

Data usage and collection differs by product and AI feature. Autodesk is committed to transparency about the data we collect and how it's used, shared, and stored, which is why we are creating AI transparency cards for our AI features that we publish on our Trust Center. We review for imbalances in data representation and outliers against training data, and we also review model outputs. These techniques are sometimes referred to as "sampling" or "weighted constraints."

Data protection

Data used for Autodesk AI is subject to the same privacy and confidentiality policies and security protections as all customer data. To protect and secure your data, we follow robust security practices and build privacy controls and settings (such as consent and permissions mechanisms related to the use of personal data) into our systems and product workflows.

Our cybersecurity framework is designed to help safeguard data and limit residual risk to our customers and to Autodesk. We continually work on improving our security mechanisms, leveraging secure-by-design templates that implement consistent security controls and configurations across the platform, and we invest in furthering our security technologies like endpoint protection, least-privilege access controls, encryption in transit and at rest, pseudonymization, tokenization, data filtering, and network and application firewalling. We continually assess our products, including APIs, for vulnerabilities to protect our customers from exploits used by attackers and to maintain compliance with cybersecurity standards. We work with third-party threat researchers to find and fix vulnerabilities on specific remediation timelines, while our Cyber Threat and Response team monitors our internal systems, products, and digital properties for threats and suspicious activity.

Training datasets are carefully selected to be relevant for the intended use case. When developing our AI product features, we employ processes and data filtering tools to exclude personal data from the datasets used for AI training. To reduce noise in the data and associated risks of model inaccuracies, we use only the elements that are relevant, rather than entire files. We also filter out sensitive data such as data within government user accounts and the data of students.

Bias and accuracy

In the context of Autodesk's product portfolio, bias refers to potential issues with representative data. These issues can have the potential for downstream effects on work created using Autodesk AI features. As an example, a model or dataset may include only data from North American companies and thus be biased toward construction practices used in North America. Evaluating the datasets and models we use for potential bias and making adjustments to ensure better representation (for example, including data from other regions) is a key consideration in our Trusted AI program.

An example of an approach we use to avoid bias is fine-tuning our models for accurate output. For example, the Autotag feature in Autodesk Build uses machine learning and image recognition to automatically tag construction photos with relevant keywords, enabling teams to quickly find the images they need to document projects. A typical dataset used to train for image recognition may include cats, cars, and buildings, but the specialized nature of Autodesk customer work requires the model to also recognize and correctly tag drywall, rebar, and formwork. In addition to just reviewing the datasets and models, the Autodesk team incorporated data and labels tailored to the construction industry to provide accurate and useful output.

Sometimes models are fine-tuned to influence them toward optimized results. For example, the AutoConstrain feature in Fusion automatically adds constraints to provide users with fully constrained versions of their sketches. To achieve this, we show the model only fully constrained sketches in the final stages of training, and we use a technique developed by Ho et al. called Classifier Free Guidance (CFG).

Our commitment to transparency

Trust is paramount in the adoption of AI. And trust starts with transparency. Here are some of the ways we emphasize transparency in Autodesk AI:

- **Our AI transparency cards explain** how each AI feature is built, the data used, and the safeguards in place.
- **We engage with customers** through our industry and Trust advisory councils to share, validate, update, and discuss our approach and AI roadmap.

Industries

Architecture, engineering, and construction (AEC)

In recent years, design processes have transformed to be more data-driven and connected, setting up architecture, engineering, and construction to take advantage of emerging technologies like AI. Architects and engineers are quickly entering a new era where AI-powered automation and insights cut through complexity so creativity and problem-solving can soar.

Thanks to industry standards, Autodesk AI can use relatively mundane customer data like block names, geometry, associated metadata, and industry-standard objects and symbols to deliver outsized value through automation. For AEC industries, Autodesk AI focuses on augmenting creative exploration, automating tedious tasks, and analyzing data to provide predictive insights, helping customers stay ahead of industry demands.

Examples of Autodesk AI in AEC products

Autodesk Forma

Embodied Carbon Analysis

Analyze
In Autodesk Forma, designers can use intuitive, AI-powered analysis to better understand the carbon impacts of primary material choices and building form at the beginning of the project planning process, reducing costs and improving overall sustainable outcomes.

AutoCAD

Smart Blocks: Replacement

Automate
With potentially thousands of objects in a drawing, searching for and identifying objects that need replacement based on recent updates can be time-consuming. Autodesk AI recognizes a change to an object in a drawing and replicates that change across objects with similar geometry.

InfoDrainage

Machine Learning Deluge Tool

Augment
Autodesk AI enables designers to instantly pinpoint areas on a site with the highest risk of flooding while also highlighting the best spots for storage structures and stormwater controls like ponds and swales.

Product design and manufacturing (PDM)

When macroeconomic challenges slow down manufacturers, the industry innovates. AI has the potential to dramatically accelerate this industry's ability to manage product complexity, supply chain chaos, and labor shortages. With Autodesk AI integrated into the entire product development process, manufacturers are poised for greater outcomes from concept to production: faster time to market, improved sustainability outcomes, optimized manufacturability, and increased profitability.

Examples of Autodesk AI in PDM products

Fusion

Generative Design

Analyze
Autodesk AI enables the exploration and creation of complex, performance-optimized components by leveraging advanced algorithms to generate innovative design solutions.

Fusion

Automated Sketch Constraint

Automate
Ensuring designs are properly constrained is a tedious process, often resulting in a missed constraint and rework downstream. Autodesk AI streamlines the design process by automatically applying constraints and dimensions during 2D sketching, speeding up workflow and reducing manual input.

InfoDrainage

Form Explorer

Augment
Autodesk AI offers 3D proportional design assistance within Alias that enables rapid exploration and creation of automotive concepts, saving designers time and vastly expanding the range of concepts.

Media and entertainment (M&E)

Studios face the challenge of balancing creative workflows, production timelines, and demanding creative directives. For more than a decade, animation, visual effects (VFX), and game studios have embraced AI to enhance their processes and boost efficiency. However, the emergence of new generative AI tools has raised concerns around intellectual property, copyright, and the value of creativity. Autodesk is committed to protecting customers' intellectual property, and we handle customer data with care.

While the ways creative teams work will continue to change and evolve, the fundamentals of creativity will always be in demand. Autodesk AI empowers the industry's talent to focus on what they do best: creating exceptional work and bold storytelling—free of technical constraints and time-consuming manual tasks.

Examples of Autodesk AI in M&E products

Flow Production Tracking

Generative Scheduling

Analyze
Automate production scheduling by managing shifting variables between teams and budgets, producing results in minutes for a process that has traditionally taken days. This feature uses your own data for your benefit, without using models or data from other customers or third parties.

Flame

3D Camera Analysis, Salient Keyer, Sky Extraction

Automate
Autodesk AI features in Flame save time for artists by using object detection to automate manual tasks like keying, sky replacement, beauty work, and camera tracking.

Maya

Machine Learning Deformer

Augment
Use your own data locally to understand how a complex character moves, then approximate complex character deformations to pose characters in real time and speed up animating, blocking, or crowd scenes.

Autodesk aims to be a trusted partner to our customers, helping you navigate AI tools and technologies so that you can increase your productivity and innovation. As AI evolves, our Trusted AI practices will continue to evolve. Our guiding principles and practices provide strong guardrails for trustworthy AI, so that designers and makers everywhere can use trusted AI tools to accelerate making a better world for all.

For more information on our Trusted AI, security, and data protection practices, visit our Trust Center.

"With the unlimited possibilities that AI brings to society, it's our responsibility to do all that we can to build and refine the security, privacy, and governance processes through which trustworthy AI will emerge."

Sebastian Goodwin
Autodesk Chief Trust Officer