Innovating with Autodesk Consulting
Innovation is in our DNA

A trusted partner to leading firms

- 19 of the ENR Top 20 Design Firms
- 17 of the ENR Top 20 General Contractors
- 13 of the ENR Top 20 Environmental Firms
- 8 of the top 10 Automotive companies

Autodesk has been recognized by Fast Company in its list of the World’s Most Innovative Companies

Autodesk R&D Spend

- FY19: $717M
- FY20: $824M
- FY21: $882M

Global Consulting Practice

- Data to Insights
- Platform for New Business
- Future of Work
- Sustainability
- Process Automation

1. The 10 Most Innovative Data Science Companies of 2020
Innovation Areas

Autodesk Consulting is focused on developing innovative solutions in 5 key spaces
Data to Insights

Draw actionable insights with data analytics & machine learning

Example Use Cases

Model Insights
Manage model data & content quality
Improve quality and reliability, reduce errors and rework, improve forecast accuracy

Process Insights
Track metrics & optimize performance
Reduce non-value-add processes, manage complexity, optimize schedule duration

Business Insights
Make data-driven decisions
Increase revenue, maximize team resource utilization, improve win rate
The Data Harvester connects cloud data in the BIM 360 platform to an enterprise system dashboards with near real-time automation.

**Challenge:** Connect BIM data to enterprise systems, balanced complexity with UI simplicity

**Solution:** Created innovative yet configurable data connection solution solving multiple use cases

**Outcome:** Mission critical data integration and visibility of large data sets in dashboards

“The automated process saves us a significant amount of time...data enables us to strategically prioritize our resources and solve problems quickly and efficiently over a wide variety of projects.”

Design Practice Lead
Organizing all data across all projects, the Model Development Suite enables a common data environment with specification, management and checking tools.

**Challenge:** Create standard information taxonomy for BIM.

**Solution:** Starting small, looked for ways to normalize data standards. Through iterative and agile approach built a family of tools around data.

**Outcomes:** Data interoperability and data hygiene, critical to efficiency & government regulations.

“We anticipate £1m savings on each one, potentially even increasing as Highways England increases the complexity of information delivery on their projects.”

Transportation Consultant
Platform for new business
Expand your products and services using the Autodesk platform

Example Use Cases

**Digital Twin Services**
Asset planning services for owners
Reduce CAPEX, OPEX, maintenance, and replacement costs

**Operational Services**
In-house services for project teams
Improve operational efficiency, reduce non-value-add processes, manage complexity

**Product Configuration Services**
Configurable product catalogs
Enhance customer experience, diversify revenue streams, improve operational efficiency
JELD-WEN increases its online product display from 30% to 90% with a custom-built tool.

**Challenge:** Product required up to 120,000 assets that need to be generated manually, then need to be named, managed, uploaded to the cloud, and entered in a database.

**Solution:** Custom Autodesk® Forge® configurator for web connects to products using Autodesk® Fusion 360®, managing relevant data and generating visualizations automatically.

**Outcome:** 700 hours of time saved in the overall workflow for existing products; for new products, process was reduced from up to 10 weeks to a maximum of 3 weeks.

“Within our industry, no one else is doing this. It was a pioneer project for us. That's why we partnered with Autodesk... Our customers love it. They love the fact that they can see the product online, which allows for more inspiration.”

Director of Digital Marketing
### Challenge
- Be able to start programming CAM projects as soon as a first draft of CAD is available
- Have a revision control over CAM and NC data
- Be able to deliver configured NC to the machine controllers

### Solution
- Major and minor released states allow CAD to be released to programming early
- Vault used to configure CAD, CAM, and NC with traceability throughout
- Vault for MAKE allows DNC to network connected and RS232 machines

### Outcome
- Elimination of wasted time waiting for files to open/save/close (estimated at 30% or engineer’s time)
- Unproven and proven lifecycle states allows for full control and management of NC files
- NC file transfer to and from machines simplified into a single, standard user interface

No risks, no ambiguity, no emailing files - it's just **beautiful**.
Future of Work

Strengthen your resiliency with agile operating models

Adaptable Collaboration
Rapidly & seamlessly redeploy teams
Ensure business continuity, increase workload capacity, improve remote collaboration

Virtual Environments
Remote access to on-field asset data
Analyze real-time information and augment capacities with multi-sensory experiences

Health & Safety Protocols
AI & robotics for safety checks
Ensure safety on the jobsite and factory floor, assess risk, and redirect resources

Example Use Cases
Success Story: Groupe Beneteau

Boat manufacturer Groupe Beneteau reduced scrappage costs to €0 and production time by 12%. They also minimized health and safety risks for their employees.

- Challenge
  - Reduce manual steps during manufacturing
  - Reduce health and safety risks
  - Simplify process to make onboarding new staff easier
  - Provide operators time to perform other duties

- Solution
  - Automated integration with ERP and machine tool reduces “hands-on” time
  - In-process probing removes the need to access the machine during the process
  - Automated part alignment means staff do not need to learn CAM tools

- Outcome
  - Process reduced to six simple steps
  - Manual measuring and finishing operations removed from process
  - Machining time decreased by 12% per boat, unattended running time increased
AECOM leverages BIM 360 Design to realize 20% time-savings on global collaboration.

**Challenge:** Collaborators were unable to access work via the project server, which required using a server at another location to share large files at project milestones.

**Solution:** Implementation of cloud-based environment that enabled teams to collaborate simultaneously on live models.

**Outcome:** 20% improvement in production time for 8 work packages delivered in final 6 weeks of project.

The adoption of BIM 360 Design on this project simplified the workflow immensely for external work-sharing, the old workflow of file handovers created a real risk to project deadlines. Having real-time access to the project status resulted in greater confidence across the project team.

BIM Manager
Sustainability

Ingrain sustainability into your business processes

Example Use Cases

High Performance Buildings
- **Embedded Intelligence**
  Optimize a building’s energy efficiency, durability, life-cycle performance and occupant productivity

Resilient, Smart Infrastructure & Cities
- **IOT, AI, 5G, blockchain**
  Develop roads, buildings, energy, and water infrastructure with due consideration to environment

Low-Waste Construction & Manufacturing
- **Digital prototyping, industrialized construction**
  Reduce material consumption and total carbon footprint
With Autodesk® Fusion 360™, Claudius Peters re-designs key manufacturing part, reducing material by 25%.

**Challenge:** Reduce material used for concrete cooling equipment “Clinker Cooler”

**Solution:** Fusion 360 for digital prototyping to optimize key part of conveyor system based on constraints

**Outcome:** Generated part with 25% reduction in material used and improved structural integrity

...with Autodesk as a strong partner on our side, we achieved remarkable results and improvement on our innovation journey. We are convinced that if we continue our journey with partners like Autodesk, we will avoid extinction or disruption, and we will stay competitive in the market.

Chief Digital Officer and Operations Director

Read the full story
Success Story: Royal BAM Group

The Royal BAM Group saved up to 50% in material (resulting in a significant reduction in CO2), 60% of time on the jobsite, and 80% in labor, all while improving quality.

Challenge
- Up to 5 different are needed to program the robots
- Programming one toolpath takes two hours in average
- Non-working programs lead to repeated programming

Solution
- Using PowerMill with Robot Plugin as a single robot programming environment
- Fast toolpath calculation with dedicated additive strategies
- With robot simulation they have a true “what you see is what you get” solution

Outcome
- Average programming time reduced to 30 minutes per part
- Saving up to 50% on material resulting in a significant reduction in CO2
- Saving about 60% of time on the jobsite and 80% in labor
- Based on parametric models and proven production processes guarantee a constant quality
Process Automation

Improve your productivity through process automation

Example Use Cases

Computational Design
Rule-based modeling
Automate repetitive tasks and decisions based on pre-defined parameters

Generative Design
Iterative, object-driven design
Explore multiple design options to determine the optimal solution

Machining Automation
Automated toolpaths & parts setup
Reduce manual CNC programming operations for subtractive manufacturing and automate parts setup
CivilConnection facilitates coordination between disciplines, using computational design to dynamically link buildings and civil infrastructure models.

**Challenge:** Model tunnels using BIM, coordinate between disciplines

**Solution:** Computational design solution allowing rapid coordination between Revit and Civil 3D

**Outcomes:** Radical efficiency gains, and a tool that was adopted by customers worldwide and the product team

"The only way an engineering company can keep up with the requests on a 450km rail project is through computational design, the model is just too big to rely on manual modeling."

BIM Leader
Success Story: Panasonic

"It was quite remarkable. Ultimately, we obtained smoothly contoured CAM data, fulfilling our goal of working with automated design."

**Challenge**
- Injection molding is essential to mass-producing plastic parts with complex shapes.
- To create higher-quality products at lower costs, the priority has been to develop advanced cooling systems for melted materials.
- It takes an experienced engineer around eight hours to design a mold.

**Solution**
- Applied generative design to mold-cooling water channels for fan blades used in duct-ventilation systems.
- Expert designer provided constraints for the fan blade’s initial shape, a range of conditions for the water channels to be generated, and restrictions to prevent the channel paths from influencing the fine details of the molded product.

**Outcome**
- Reduced cooling times by 20% compared to conventional methods, where channels are drilled straight through the mold.
- Very little difference in performance between a mold using automatically generated cooling channels compared to the veteran engineer’s design.
Transformation Services

Advisory Services & Implementation Services
Supporting your digital transformation

Transformation Services

Transformation Services give you flexible access to the full-breadth of Autodesk’s Consulting practice, from strategic advisors to technical implementation experts.

**Direct**
Work directly with Autodesk to co-solve today's biggest design & make challenges

**Flexible**
Draw from our global team with expertise across products, industries, and markets

**Easy**
Easily schedule stand-ready consultants without amending or creating new contracts
Transformation Services

What kind of partnerships drive successful transformation?

Key Characteristics

Innovative
Agile
Holistic

Our approach to partnerships
Advisory Services

Assess
Evaluate your current transformation strategy, processes, practices, and plans for implementation

Shape
Refine or define a strategy based on your business requirements and informed by Autodesk insight

Design
Define architecture from business, data, application, infrastructure, and integration perspectives

Validate*
Verify workflow automation, application integration, data connection, and API feasibility

Plan
Create a path to develop, integrate, and deploy the solution with visibility of key dependencies

Implementation Services

Plan
Schedule, budget, and plan implementation activities in detail

Define
Define and document solution processes and workflows

Configure
Adjust settings of standard software and configure content

Develop*¹
Sprint-based development using public APIs

Deploy
Install or upgrade Autodesk technology in the solution

Train
Train key users and project teams on the new solution

Support
Analyze and troubleshoot implementation related issues

*Not available for MAKE technology
¹Development environment only
20% Reduced design time

25% Reduced build time

50% Faster time to market
Flexible Engagement Options

Resource Increments:
Purchase one or more in the following increments:

- Advisory Services: 1/3rd full-time resource
- Implementation Services: 60 days

- 12-month terms
- Services do not need to coincide
- Includes Project Management & Travel Time
### Example Enterprise Timeline

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<th>Year 2</th>
<th>Year 3</th>
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**Example Enterprise Timeline**

- **Token Flex**
  - Year 1: X Annual Tokens, X Multi-Year Tokens, Monthly Manual Adjustments (Tokens/Month)
  - Year 2: X Annual Tokens
  - Year 3: X Annual Tokens

- **Enterprise Success**
  - Year 1: Enterprise Priority Support
  - Year 2: Customer Success Management

- **Consulting**
  - Year 1: 60 Days Implementation Services, 1/3 Advisory Services
  - Year 2: 60 Days Implementation Services
  - Year 3: 60 Days Implementation Services

- **Success Plan Initiatives**
  - Year 1: IS Initiative, AS Initiative
  - Year 2: IS Initiative, IS Initiative
  - Year 3: IS Initiative, IS Initiative, AS Initiative
Transformation Services

Covered Technology*

Autodesk® 3DS Max®
Autodesk® Assemble Systems
Autodesk® AutoCAD®
Autodesk® AutoCAD® Civil 3D®
Autodesk® AutoCAD® Electrical
Autodesk® AutoCAD® Mechanical
Autodesk® BIM 360® Build™
Autodesk® BIM 360® Design
Autodesk® BIM 360® Field
Autodesk® BIM 360® Glue™
Autodesk® BIM 360® Plan™
Autodesk® BuildingConnected
Autodesk® Configurator 360™
Autodesk® Dynamo Studio
Autodesk® Fabrication CADmep™
Autodesk® Factory Design Utilities
Autodesk® Forge
Autodesk® FormIt® 360 Pro
Autodesk® Fusion 360™
Autodesk® Fusion Lifecycle™ Enterprise
Autodesk® Fusion Team
Autodesk® InfraWorks®
Autodesk® Inventor®
Autodesk® Inventor® Nesting
Autodesk® Inventor Tolerance Analysis
Autodesk® Rendering
Autodesk® Simulation Moldflow® Insight Ultimate
Autodesk® Nastran®
Autodesk® Navisworks® Manage
Autodesk® Plan Grid
Autodesk® Point Layout
Autodesk® Recap 360™ Pro
Autodesk® Revit®
Autodesk® Robot™ Structural Analysis Professional
Shotgun™
Autodesk® Vault Professional
Autodesk® Vehicle Tracking
Autodesk® Vehicle Tracking
Autodesk® VRED

1. Manufacturing Workspace is excluded from Advisory Services’ Covered Technology.

Advisory Services

Assess
Evaluate your current transformation strategy, processes, practices, and plans for implementation

Shape
Refine or define a strategy based on your business requirements and informed by Autodesk insight

Design
Define architecture from business, data, application, infrastructure, and integration perspectives

Validate*
Verify workflow automation, application integration, data connection, and API feasibility

Plan
Create a path to develop, integrate, and deploy the solution with visibility of key dependencies
Advisory Services

How it works

Autodesk Administrator
Service Scheduled
Service Delivery
Autodesk PM
Approval Request
Service Delivery
Quarterly Report

Advisory Services
Advisory Services

Key:
- Activities with your sponsors
- Activities with your business units
- Recurring Activity

AS Service Categories
- Evaluations
- Strategy Definition
- Architecture Definition
- Architecture Feasibility
- Implementation & Deployment Planning

Terms and Conditions ➔
Plan
Schedule, budget, and plan implementation activities in detail

Define
Define and document solution processes and workflows

Configure
Adjust settings of standard software and configure content

Develop*¹
Sprint-based development using public APIs

Deploy
Install or upgrade Autodesk technology in the solution

Train
Train key users and project teams on the new solution

Support
Analyze and troubleshoot implementation related issues
How it works

Implementation Services

Autodesk PM  Approval Request  Service Delivery  Quarterly Report

Autodesk Administrator  Service Scheduled  Service Delivery
Implementation Services

Delivery Framework

Key:
- Activities with your sponsors
- Activities with your business units
- Recurring Activity

### IS Service Categories
- Detailed Implementation Planning
- Technology Deployment
- Technology Configuration
- Content Configuration
- Process Definition
- Technology Training
- Implementation Support
- Software Development
- Application Definition

Terms and Conditions →
A Strategy Definition Workshop is a collaborative workshop designed to enrich the strategy behind a new initiative or individual business unit with Autodesk domain acumen.

**BENEFITS**

- Enhances strategic vision with industry perspective and domain expertise
- Adds tactical measures to strategy with roadmap and timeline
- Helps stakeholders understand the business requirements for achieving success
- Helps inform change management strategy
- Assists in guiding resource allocation
- Accelerates decision-making
- Provides clear KPIs for measuring success
Production Assurance Credits (PAC)

Pre-paid credits can be used for work extending beyond the bounds of Transformation Services, including but not limited to:

- Delivering projects to a specification
- Developing applications to specification
- Supporting UAT & staging of custom applications
- Deploying custom applications into a production environment
- Delivering work outside the scope of Transformation Services
From Projects to Programs

PAC - Service Confirmation Order (SCOs)

- Prepaid credits purchased with EBA
- Custom scope and contract negotiation for each SCO
- Provide delivery guarantee for agreed upon deliverables

Transformation Services

- Stand-ready access to consulting
- Online scopes and fixed price at EBA level
- Simplified contracting at EBA level
- IS Forms for authorizing initiatives
- No deliverables to customer specs