

RETHINKING DESIGN

AN INDUSTRY IN TRANSITION

Over the next 20 years, population growth, urbanization, and economic expansion are set to push demand for buildings and infrastructure to unprecedented levels. The building industry is about to be very, very busy, but before it can grapple with the need for much **more**—more buildings, more roads, more bridges, more of everything—it must confront the reality of **less**: increasingly scarce natural resources and a shrinking supply of skilled labor.

A NEW WAY FORWARD

Technology has had a profound impact on the building industry. Architects, engineers, and contractors are now incorporating BIM across the lifecycle of their building projects, from early-stage design to building operations and maintenance.

For example, when designing a new 300-space parking garage, one team used Autodesk BIM software including Dynamo Studio, Revit®, and FormIt® to explore an exhaustive range of potentially cost-saving design options early on. With a goal of creating the most usable space while saving time and resources, the team tested thousands of potential design geometries for the structure. After narrowing their options to the top ten, they created detailed models for in-depth cost analysis. The result was an optimized design, developed at lightning speed.

Computational design is becoming more common, and the implications have been profound. Now it's time to take the next step.

CONNECTING DATA AND TEAMS

As BIM processes become increasingly sophisticated in connecting teams and data, project stakeholders are learning to work together in new ways.

For example, Bates Architects designed a \$140 million state-of-the-art hospital expansion for Mercy Hospital, using BIM 360 as a collaborative hub for the three companies involved. Bates and McCarthy Building Company used the tool to share and review complex Revit models to cut down on feedback cycles, saving time and increasing transparency between the teams. Throughout the project's duration, team members could view and annotate 3D models in BIM 360; and even those who were not familiar with design and construction software were able to interact with the models and provide feedback.

This saved all three teams hours of time; and in place of costly reworks, they were able to integrate comments, request changes, and new features into the project early on, which helped to further expedite the design and building process.



TRACKING THE DIGITAL DISRUPTION

At Autodesk, we see this moment of change as a time of profound opportunity. We believe that the AEC industry can do more than just rise to the occasion: It can meet the growing demand head on while addressing its long-standing risk and profitability challenges.

It can do it all, but it's going to take a full-scale transformation—a technology-driven leap into an entirely new way of designing, constructing, and managing the built environment.

That future is here and it's taking the shape of:



Cloud Computing

With the ability to access vast amounts of computer processing power on-demand, building teams can collaborate across distances and disciplines, undertaking complex tasks quickly and effectively.



Generative Design

Using specific design parameters and project goals, designers and engineers can rapidly generate many—even thousands—of potential solutions.



Virtual Reality/Augmented Reality (Visualization)

The collision of the digital and physical worlds is here. AR/VR is creating immersive experiences that allow teams and clients to interact with buildings before they're built.



Analysis and Simulation

With centralized access to performance data and advanced analysis engines, teams can optimize designs early on to improve building performance and the quality of the built environment.

LEARNING TO DO MORE, BETTER, WITH LESS

Taken together, these and other innovations are making it possible to do **more**: create residential and business facilities for a growing population; do it **better**: improve living standards and adapt to changing demographics and climates; and do it all with much, much **less**: using fewer resources and having a lower environmental impact.

Autodesk can prepare you to succeed in this changing world. Learn more at [Autodesk.com/building](https://www.autodesk.com/building)

