AUTODESK Forma

The Owner's Guide to Running More Valuable Capital Projects

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Introduction

How to unlock value and propel growth

Built assets are a foundational part of society, supporting community growth, creating jobs, and providing vital services. These assets, however, can take years to imagine, plan, and construct, with a diverse mix of stakeholders involved—from general contractors to architects—to bring them to life.

For those responsible, it's a complex road to delivery, often fraught with challenges. Mounting costs during and after the build, coupled with tight deadlines and margins, put owners under pressure to deliver quality and value for their customers—and the business.

And owners face a number of challenges in the current economic climate. The global construction industry's growth was forecast to expand by just 0.8% in 2023. Excluding China, the industry was set to contract by 0.1% due to the weak economic backdrop, high material costs, and labor shortages.[1]

In addition, sector growth in some areas remains sluggish. While investment in manufacturing and infrastructure continues, other spaces like distribution centers, offices, and warehouses are experiencing a spending decline, indicating less demand in these areas.

Today's owners need a more robust, catch-all solution for the full asset lifecycle—from design through operation—that can integrate with a project's various processes and stakeholders.

New technologies and digital tools help owners unlock value from their capital projects. In fact, the biggest difference between top-performing owners and lower-performing owners is the innovative use of technology that provides real-time insight into projects.[2]

While digital tools are transforming some companies, it's not as black and white for others. The pace of change, skills shortages, and complex processes can lead to resistance or slow adoption of tech solutions.

In fact, a lack of skilled staff is one of the greatest barriers to integrating data-driven insights into business processes, according to commercial development services companies.[3]

Digital technologies help owners create more value and grow at previously unimaginable speeds. To succeed, however, this new tech era needs a skilled workforce and company-wide buy-in.

Four ways to create more value

Throughout this ebook, you'll discover recommendations and tools to help you create more value with your capital projects. You'll also find stories on how Autodesk customers are using technology to drive greater efficiency and growth.

- **Use past and present data to make informed future decisions**
- **Get the best results with active engagement from the start**
- **Hit your goals quicker with a standardized approach**
- **Increase operational efficiency**

Use past and present data to make informed future decisions

As an owner, you need to consider the entire lifecycle of your capital assets, including forecasting and planning for new construction, expansion, renovation, or replacement of your assets. Therefore, well-thought-out capital planning is a surefire way to set your project up for success.

When developing a plan, you need to take into account current conditions, future requirements and demands, as well as financial constraints. This will help you effectively manage your assets, boost their longevity, and save time and money in the long run.

Improve planning and decision-making with data

Construction projects generate vast amounts of data—but it's often created in silos and different formats, leading to inefficiencies and costly waste. In fact, 95% of data generated through the construction process is lost and not shared downstream in operations, while 12% of time is wasted through fragmented data.[4]

Analyzing your project data can support your planning and help you make informed decisions from the start. Nearly 90% of facility managers plan to use more data and analytics in the future to shape decision-making.[4]

95%
of **construction data is lost** after construction[4]

87%
of facility managers will use **more data and analytics** to shape decision-making[4]

Tools to help you succeed

Asset management software

To make well-informed planning decisions, you need to understand the current state of your assets and how they're performing.

Asset management software can help keep a detailed inventory of all your assets. It can also provide clarity on what needs to be maintained or extended and what's reaching end of life.

Lifecycle costing

To plan for a profitable project over the long term, you'll need to know an asset's current market cost, but also how much it will cost to run, and when it will start depreciating.

Considering the whole lifecycle also means accounting for decommissioning costs or residual value. This step lets you determine whether it's worth your while building a new asset or better to maintain an existing one.

Centralized data platform

Your insights into the performance and costs of your assets need to live on a single platform. There, all stakeholders can easily find information and make side-by-side comparisons.

By maintaining your data in one place, you can expose bottlenecks, trends, and efficiencies to make better decisions across your portfolio.

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Pure Salmon uses past performance data to boost efficiency

Pure Salmon, a land-based Atlantic salmon farming company, uses state-of-the-art technology to ensure fish are reared in the healthiest living conditions possible. Free from antibiotics, pesticides, hormones and microplastics, this improves food quality for the better.

With two new facilities under development in the US and Brunei, the team turned to Build and BIM Collaborate Pro to create efficiency gains when it came to project delivery.

The software streamlined their processes, reduced costs, and allowed the team to focus on value-adding activities.

"Not only can we highlight issues earlier during the build phase to resolve things quicker, but we can learn from past mistakes and build these into our decision-making practices for the future."

–Azza Nureldin, BIM Lead

Get the best results with active engagement from the start

Every construction build has many moving parts and multiple stakeholders. Owners need to be actively engaged at the beginning of any project to ensure the best results and avoid costly errors or preventable changes down the line.

Outline your expectations

Before you begin a new project, you need to clearly outline your design intention and ensure your teams understand the output. By clearly defining your objectives upfront, you have a greater chance of achieving your results.

Get everyone on the same page

Collaboration is key on any project. Less than a third of construction projects are completed within 10% of their original budget due to poor communication.[2] Plus, incorrect designs are the second biggest cause of claims or disputes across the globe,[5] so bringing people together can help identify issues and reduce costly errors early on.

Make sure everyone is on the same page by getting input from all involved at the start.

69%
of construction projects **exceed the original budget** by more than 10%

2nd
most common cause of claims or disputes is **incorrect designs**

Tools to help you succeed

Building information modeling (BIM)

Digital tools like BIM help provide a digital representation of the physical asset and its components. This can help you better represent your design objectives and provide a space for all stakeholders to align on the project at hand.

By sharing BIM models, design teams can ensure field teams have access to full information on a collaborative platform. Designers know that their intention will be met, and builders know that their installations are correct.

Cloud collaboration tools

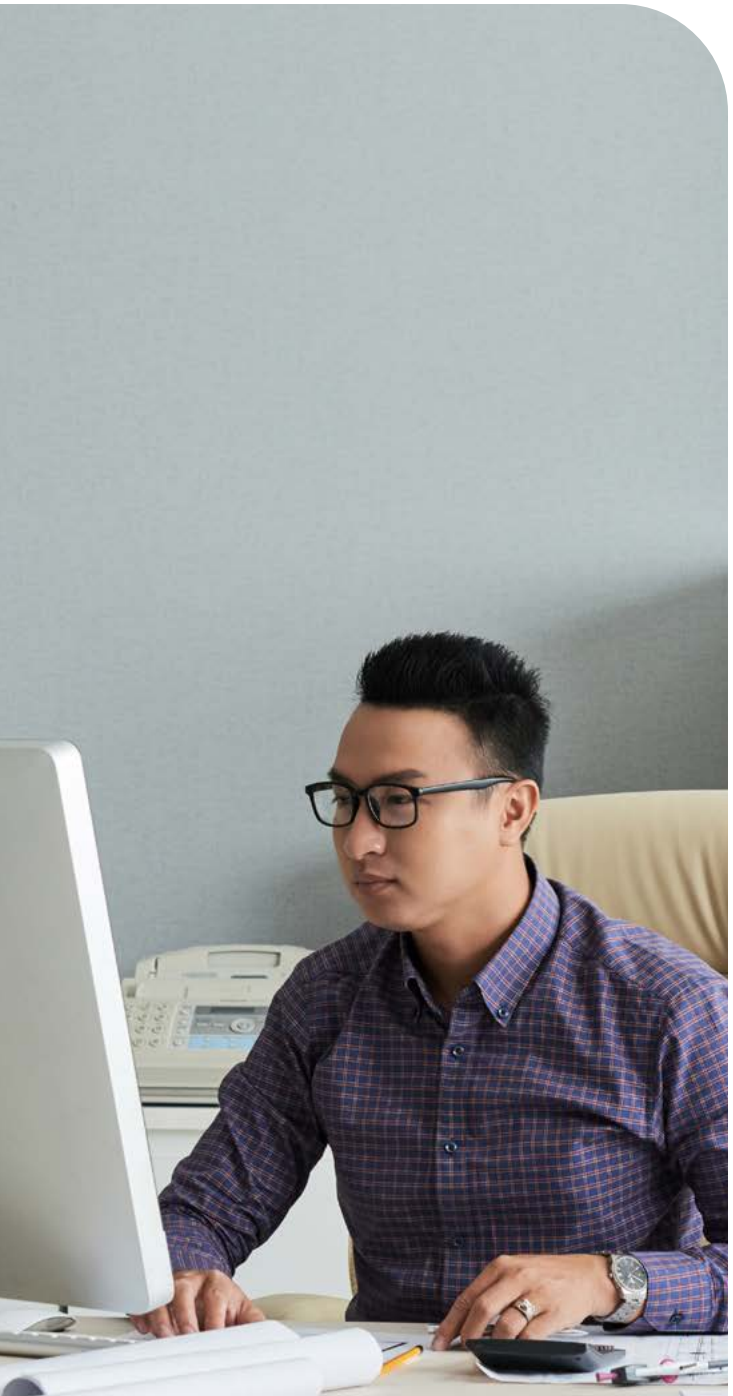
Collaborating in the cloud means all your teams are working from a single source of truth. From there, you can speed up design and coordination workflows with simple automation. You have visibility into end-to-end communications and your team can benefit from widespread accountability.

As a decision-maker, you can easily connect with construction teams to manage design reviews. Cloud construction improves design quality and constructability from the office to the site.

Automated clash detection

BIM lets you upload multi-discipline, multi-format models where clashes can be detected automatically. You can then decide which clashes to turn into issues, and focus on those most important to your team.

Catching, clearing, and resolving clashes at the design phase ensures that only the highest-quality designs make it to the site, reducing rework for your construction teams.



IN FOCUS

How Thailand's Largest Development Project Is Staying On Time And On Budget

A budget of almost $US3.5 billion. A 158-acre development site. More than 500 contractors. 11 types of projects, spread across more than 50 sub-projects. By any metric, The Forestias by Thai developers MQDC is ambitious. It's the largest private-sector development in Thailand's history: a mixed-use development on the southern outskirts of Bangkok.

From the outset, the MQDC team knew that to hit its budget, schedule, and quality benchmarks, it was vital to keep its hundreds of contractors aligned and communicating effectively about design changes and plan updates. They also needed to foster this easy flow of information while maintaining data security. These requirements meant they needed a single, secure, and always up-to-date source of truth.

Notably, the software solution also allowed MQDC to create tailored access permissions for each user, ensuring every worker, both internal and external contractors, had access to precisely the information they needed to complete their tasks.

"We can now track all dimensions of data in one place, such as the project progress and coordination of 3D models, document control, schedules, CAD, and BIM approvals."

–Phakorn Phattrapornpisit, Assistant Vice President, MQDC

Hit your goals quicker with a standardized approach

Owners need to establish uniform processes before a project begins to ensure contractors can operate efficiently. For example, naming conventions, punch lists, asset data required, processes for change orders and request for information documents will save time and boost collaboration and productivity.

By applying a standardized approach to all projects, starting at preconstruction, you'll find smarter ways of working and reach completion on time and within budget. Your data quality will also improve, which will help during operations.

Get organized

Fragmented workspaces, multiple spreadsheets, and inconsistent naming conventions are unreliable, inefficient, and can lead to expensive mistakes. Implementing a single source of truth and enforcing standards means everyone is singing from the same hymn sheet and ensures the project runs smoothly.

Automation is also worth considering as it takes on repetitive jobs and cuts the risk of human error, allowing your teams to focus on other business activities.

Align your teams

Being in the trenches at the beginning gives you oversight of the full picture and helps ensure your teams and processes align with your project's priorities.

Here are some simple actions to align teams:

- Communicate the scope of the project, including how the business will be impacted if the end goal isn't met
- Align on construction schedule and activities needed during construction to ensure smooth operations once the work begins
- Streamline processes with integrated, digital tools
- Foster a collaborative environment by encouraging contribution and outlining expectations and celebrating successes

Tools to help you succeed

Customizable forms

Customizable forms let you streamline your data gathering, and better organize that data, for easy access and analysis.

Whether outlining your own requirements, identifying risks, determining quantities, or breaking down costs, having standard forms tailored to your project will save time and support data-driven decision-making. It will also help you save time on future projects.

Project management

Get your asset operational and generate revenue as soon as possible. Project management capabilities, including proper schedule management, are key to keeping your build on schedule, or even ahead of it.

Whether you're managing contractors directly or working through an owner's representative, you need to stay on top of timing, cost, and quality. Robust, cloud-based project management software lets you keep your project on track, improve collaboration, and reduce mistakes and rework.

Common data environment

A common data environment (CDE) is the single source of truth for all project stakeholders, and the basis upon which automated workflows can be built.

For owners as well as for every team involved, a CDE ensures project data is reliable, supporting informed decision-making and reducing risk. Appropriate levels of access can be granted based on users' roles and responsibilities.

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Dat Xanh streamlines processes and improves project visibility

Dat Xanh E&C is part of the Dat Xanh Group, a prestigious real estate brand with nearly 20 years of establishment and development across Vietnam. Using Build and BIM 360 for complete project management, the team's processes have been transformed. Project design drawings and construction plans, as well as machinery and equipment specifications, are just some of the documents being shared and approved much faster within the new system.

Using Reviews within Build, Dat Xanh teams are able to automate the process by using pre-defined review workflow template. They can seamlessly review Revit model and 2D PDF directly in Build without needing to convert to IFC. They can identify design issue by pinning them using markup, streamlining the review process.

30%
reduction in design conflict

55%
reduction in cost of paperwork

2-3 hours
saved per document approval

20%
reduction in management costs

"The use of technology has made project management more efficient and faster than conventional methods. Now, we're focusing on the further value of digitizing workflows and project data."

–Le Hao, CEO

Increase operational efficiency

When it comes to operating any asset, efficiency is key. From regular equipment maintenance to proper safety checks, keeping on top of your day-to-day operations will pay dividends in the long run, extending your asset's life expectancy, reducing downtime and minimizing risk.

Efficient operations with construction data

Utilizing construction data can help facility teams better manage their assets during operations. With standardized data during construction and complete digital documentation during handover, facility teams can utilize this insight to more proactively maintain their asset, reduce operating costs, and improve capital planning. In fact, 96% of facility managers believes that AEC data enhances key processes in their workflow.[4]

Minimize downtime

Equipment downtime can have long-lasting consequences like project delays and lost profits. Regular maintenance, data-driven insights, and proper planning can reduce the time your equipment is out of action, as well as the safety incidents associated with equipment failure.

96%

of facility managers believe AEC data enhances key processes

Tools to help you succeed

Building information modeling (BIM)

The bulk of your total cost of ownership (TCO) is going to come from operations and maintenance. But having a data-rich, 3D model of all of your assets and equipment can save you time and money every time work is carried out on your project – whether that's routine maintenance, repairs, or renovations.

Digital twins

Digital twins take BIM data and add a real-time element by integrating with inputs such as IoT sensors. You end up with an up-to-date virtual rendering of your physical space, with live operational data that can help you improve efficiency and lower your TCO. With digital twin, you can reduce environmental impact, optimize sustainability and performance, and proactively address issues before they arise.

Artificial intelligence (AI)

Working with IoT sensors, AI uses machine learning algorithms to predict your maintenance needs.

AI algorithms can also analyse human data such as footfall, automatically adjusting temperatures to optimise for comfort and energy efficiency, and letting you schedule maintenance for the least disruptive times.

IN FOCUS

Edged scales sustainable data center builds from design to done

Edged Energy is a global provider of sustainable data centers and a subsidiary of Endeavour, a company revolutionizing infrastructure technology. With operating assets around the globe, Edged wanted to standardize data capture across the project lifecycle from design to operations to unlock capital planning and management efficiencies.

With Forma Build, Edged's operations team can monitor all assets digitally and oversee preventative maintenance tasks, according to metadata and historical performance, to learn from their assets and change equipment as needed. Plus, Edged customers can access the same real-time asset data as Edged operations and communicate directly with Edged operations personnel.

"By using Forma Build, we can create templatized project management and turnover workflows across our portfolio for effective contractor data management. It streamlines data transfer among stakeholders and allows us to collect rich, valuable insights, while centralizing and unifying information."

–Claire Romaine, Platform Manager, Digital Program Delivery

Conclusion

The time to act is now

The road from project concept to completion is complex and challenging for any owner. With the right planning, processes, and insights, you can more easily achieve your goals in your capital projects.

By improving your asset's performance, efficiency, and delivery, you'll gain a competitive edge and future-proof your business. Take action today to reap the benefits tomorrow.

The steps outlined above aim to help you streamline your operations and make informed decisions to create a better built world. Learn how Autodesk Forma can give you a head start.

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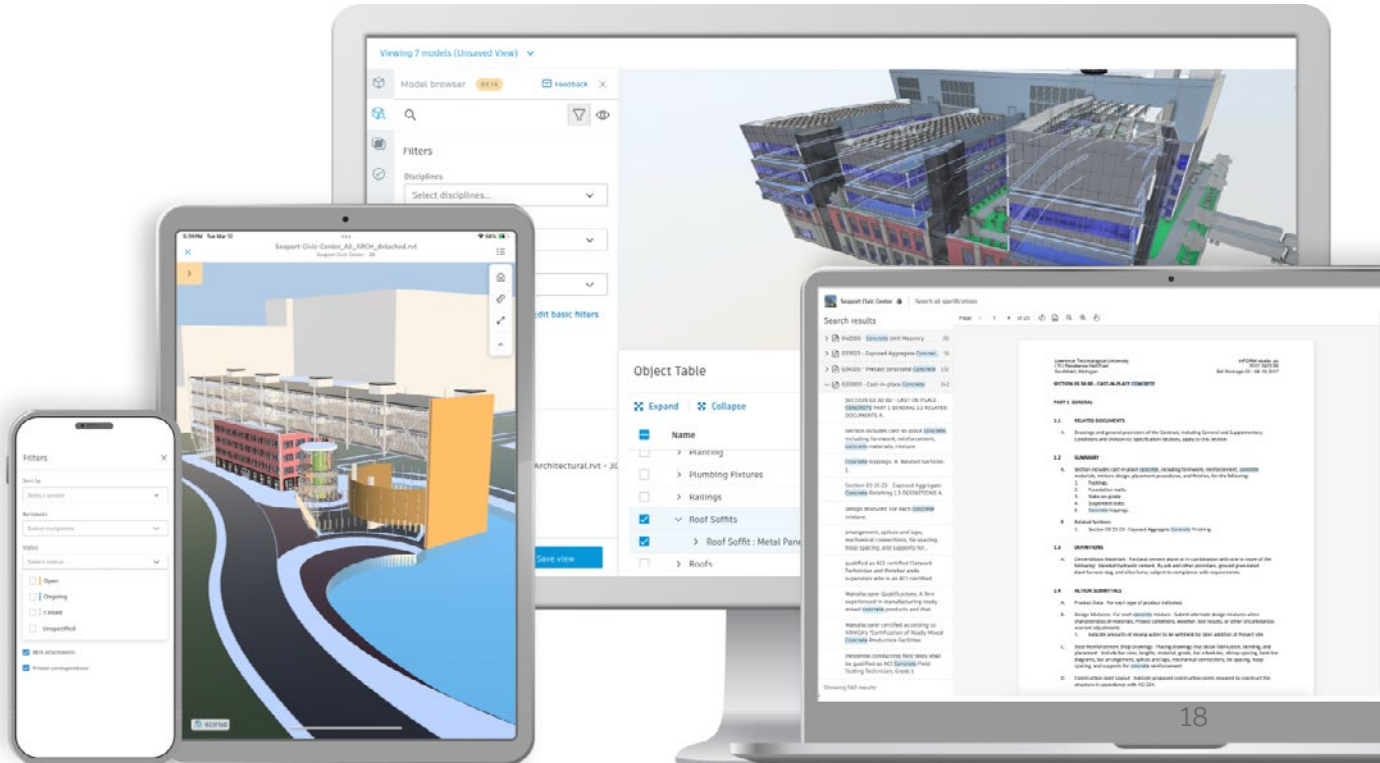
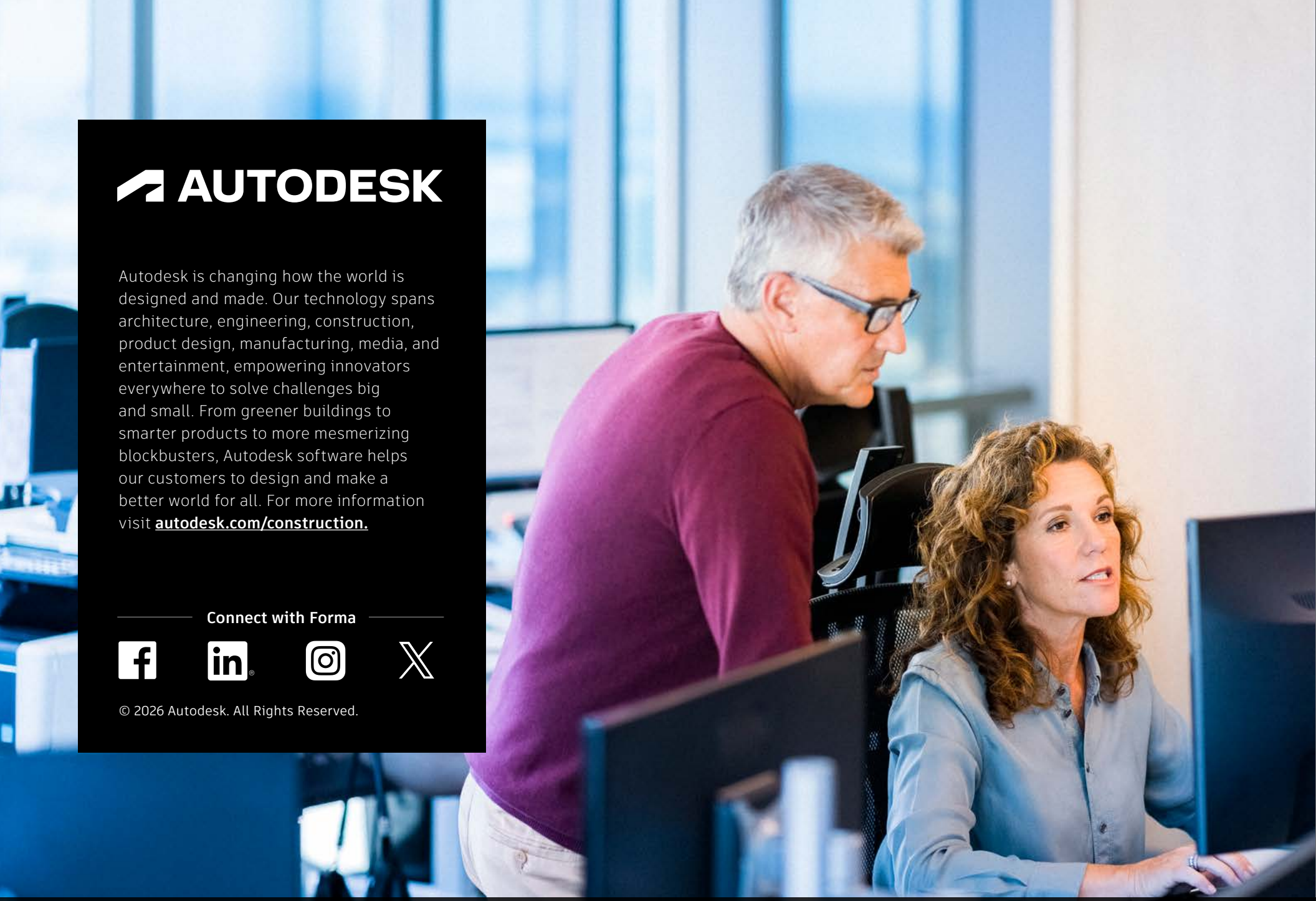
See the Future of Connected Construction

Our industry requires solutions that connect their information, teams, and technology —breaking down data silos and disconnected processes that hinder true transformation. As we navigate the ever-present push to do more with less, we need to uncover new ways of working, enhance connected digital workflows, and incorporate advanced analytics. To support us on this journey of transformation, we must lean into tools that connect construction — from design to plan, build, handover, and operations.

Built on a unified platform and common data environment, Autodesk Forma is a powerful and complete portfolio of construction management products that empowers general contractors, specialty trades, designers and owners to drive better business outcomes. Autodesk Forma combines advanced technology, a unique builders network and predictive insights to connect teams, workflows and data across the entire building lifecycle.

While the industry experiences unprecedented transformation, our mission remains the same: to help construction teams meet the world's rapidly expanding building and infrastructure needs while making construction more predictable, safe, and sustainable. And we've remained steadfast in our promise to deliver the industry's most compelling solutions, connecting data, teams and workflows from the field. This is our commitment to connected construction.





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