

# Autodesk BIM solutions for construction



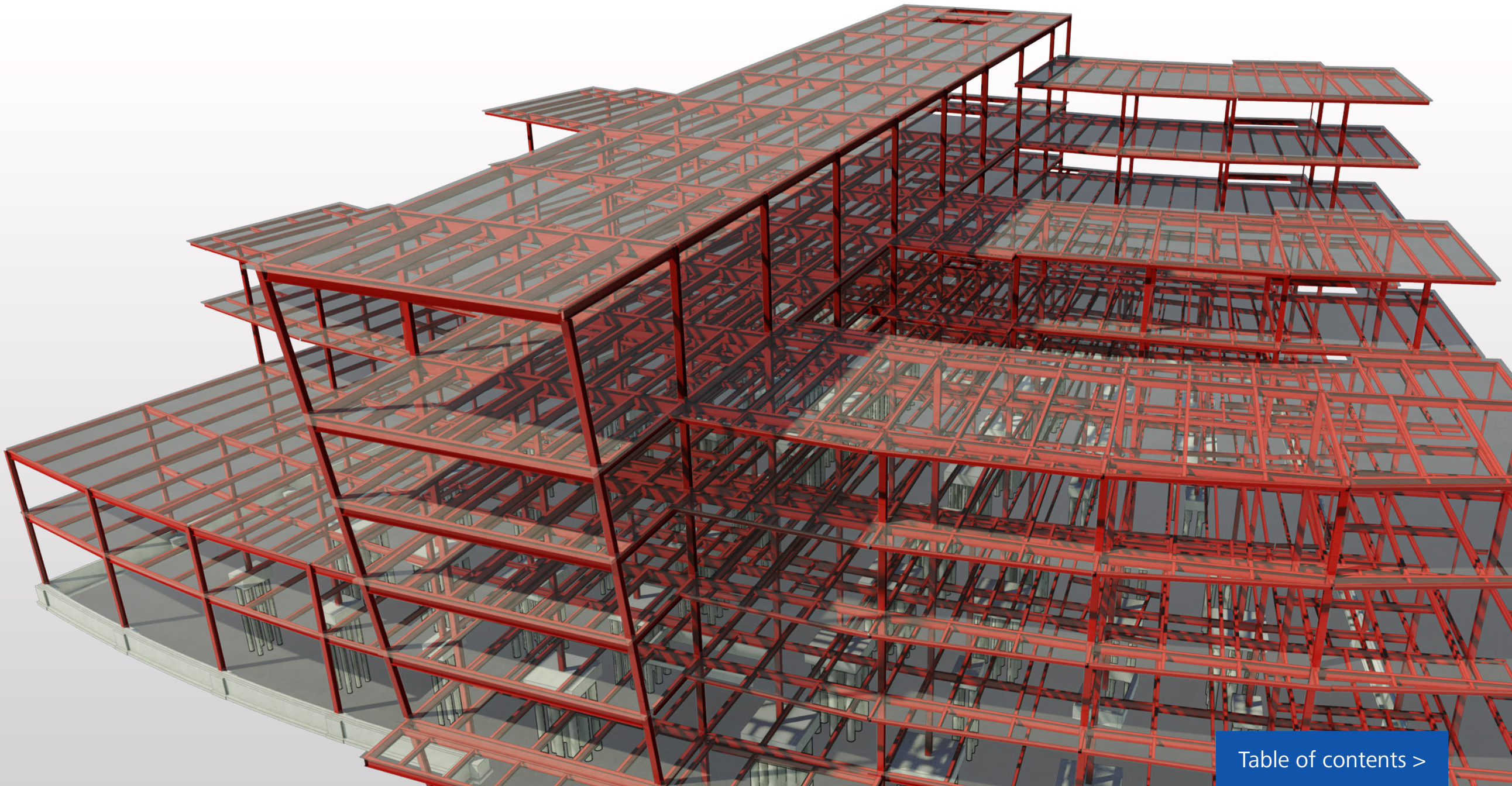
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# Introduction

Today's successful construction firms are adopting new practices that help them improve all areas of their business and create a competitive advantage. These new ways of working are aided by great advancements in technology that can not only impact how a project is completed from the planning phase to handover, but can help firms win new business. Understanding how technology can help improve constructability, planning and logistics, team coordination and collaboration, and more is the first step in evolving your business. The Autodesk BIM solutions for construction ebook provides a high-level review of how technology can boost productivity, help your firm better differentiate themselves, and improve overall project delivery.



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# Preconstruction

Project success relies heavily on decisions made at the initial stages of a construction project. Learn how Autodesk® BIM solutions for construction can help construction professionals work better with multidiscipline teams and enable greater predictability to help win more work and reduce the risk of unforeseen issues before construction begins.



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Constructability

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## Constructability

### Challenge

The design to construction process is fragmented. Often, construction professionals receive design intent models that are not optimized for construction (or downstream BIM workflows). This can create a lot of guesswork and make the optimization process more time-consuming and costly.

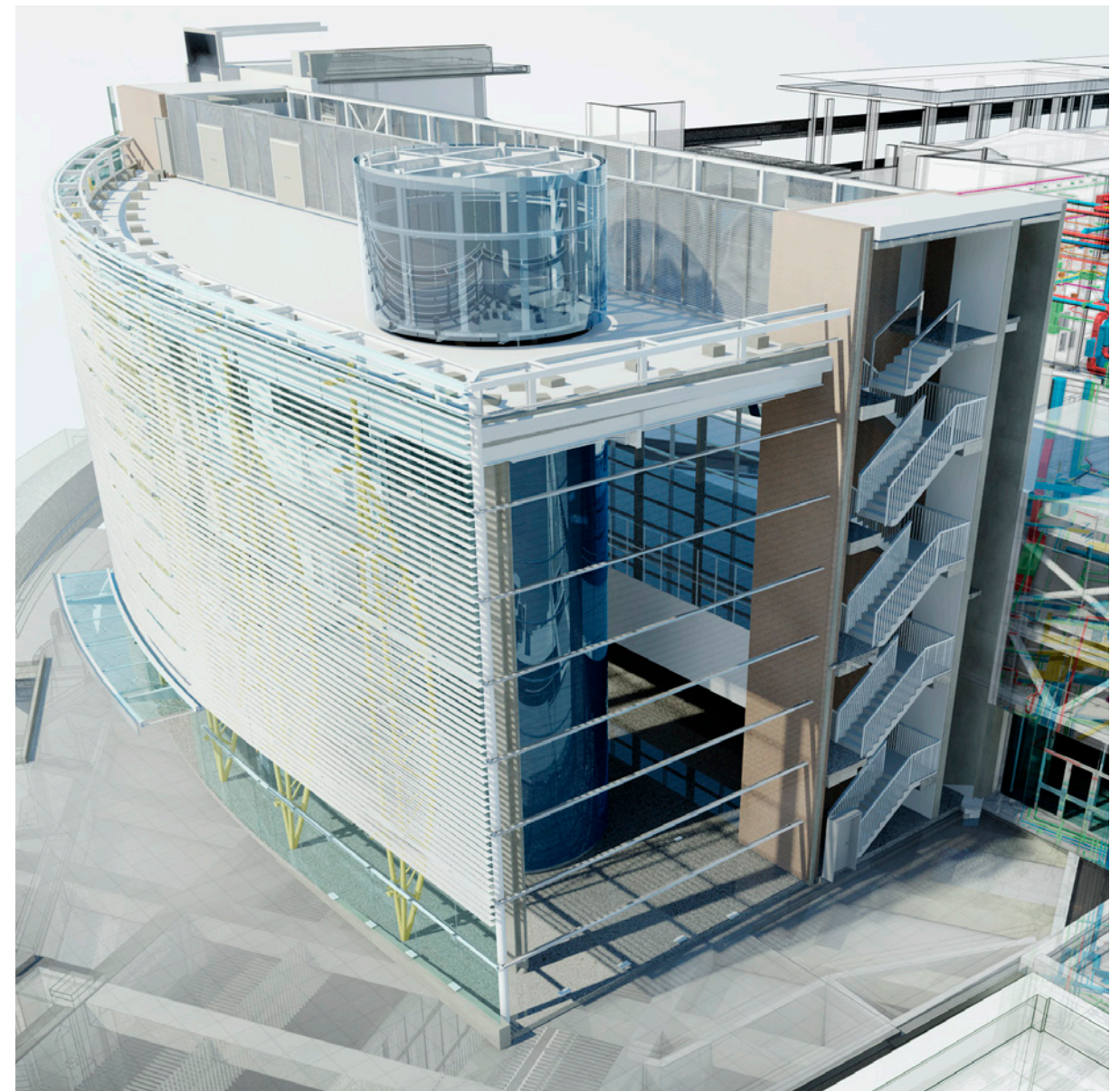
### Solution

With Autodesk BIM solutions for construction, collaboration with the project team can happen early in the design process—helping to streamline construction execution. Access to integrated tools can help you contribute construction knowledge to the design process, to better manage projects and more quickly realize a project's design.

#### Autodesk BIM solutions for construction can help:

- Utilize reality capture to understand real world conditions for renovation and retrofit projects.
- Gain and contribute insights that enhance constructability early in the process.
- Access timely multidiscipline building content to better manage projects.
- Create extensible BIM data for use in clash detection, construction analysis, and fabrication.
- Support more sustainable and cost-effective construction practices.
- Adopt more efficient processes and procedures.

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London Blackfriars station, courtesy of Network Rail and Jacobs®



Constructability

Cost reliability

Planning &amp; logistics

Business development

## Cost reliability

### Challenge

In a competitive market, construction companies must be able to provide more accurate and reliable material quantities and cost estimates—or risk reduced profits on projects that exceed budgets and schedules. Manual processes are time intensive, error-prone, and can produce very inaccurate estimates.

### Solution

The Autodesk® BIM quantification workflow can help cost estimators rapidly generate material takeoffs on construction projects to maintain more accurate project budgets and better evaluate the cost of design alternatives.

#### Using model-based quantification, you can:

- Estimate earlier and more often to help owners with decision making.
- Build on information as it becomes available.
- Use detailed spatial and material quantities to produce more accurate cost estimates.
- Perform takeoffs on aggregated design data.
- Support 2D and 3D design workflows.
- Integrate with Microsoft® Excel® and leading third-party estimating solutions for easier reporting.

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Constructability

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## Planning & logistics

### Challenge

The coordination and execution of complex building projects is a difficult and time-consuming process. Reducing costs and minimizing safety and environmental performance risks are critical for firms striving to grow their business. Small setbacks in scheduling have the potential to create significant delays in project delivery, drive up costs, and create client dissatisfaction.

### Solution

Simulate schedules and logistics in 4D to optimize the sequence of construction, help manage project safety and logistics, and more easily communicate the project plan to stakeholders with the Autodesk® BIM planning and logistics workflow.

#### Using a BIM-based process for planning and logistics, you can:

- Visualize proposed projects in the context of existing conditions more quickly and accurately.
- Support the identification and resolution of potential conflicts, environmental concerns, and safety issues before construction begins.
- Assess and quantify the impact of scope changes on all trade subcontractors and the overall project plan more quickly.
- Explore tradeoffs as you consider how to execute work.
- Better communicate project information to stakeholders with near-photorealistic renderings and animations of the project plan.

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Constructability

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## Business development

### Challenge

The competitive landscape in the construction industry is evolving rapidly. While projects are becoming more complex, customers expect more. To stay ahead, your firm must demonstrate that it is capable of tackling even the most complex jobs with capabilities that separate you from your competition.

### Solution

To gain a competitive edge, Autodesk® BIM solutions for the construction industry can help to strengthen your firm's reputation for delivering high-quality work for any size project. Share your project proposals virtually and engage your prospects using visualization techniques suited for different phases of the project lifecycle.

#### Autodesk solutions for construction can help you:

- Create more realistic and interactive simulations and visualizations to communicate how work may be executed.
- Quickly and easily generate multiple alternatives for your clients—within your budget constraints.
- Better communicate project information to stakeholders and compete for larger, more complex projects.

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Image courtesy of Arcmedia Ltd.



# Construction

Many industry sources indicate that as much as 30 percent of the money spent on construction is currently wasted in the field due to coordination errors, labor inefficiencies, wasted material, and other problems. Learn how Autodesk BIM solutions for construction can help you to navigate project complexity and improve your processes for better project delivery.



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Multidiscipline coordination

Extended team collaboration &amp; coordination

Field management

## Multidiscipline coordination

### Challenge

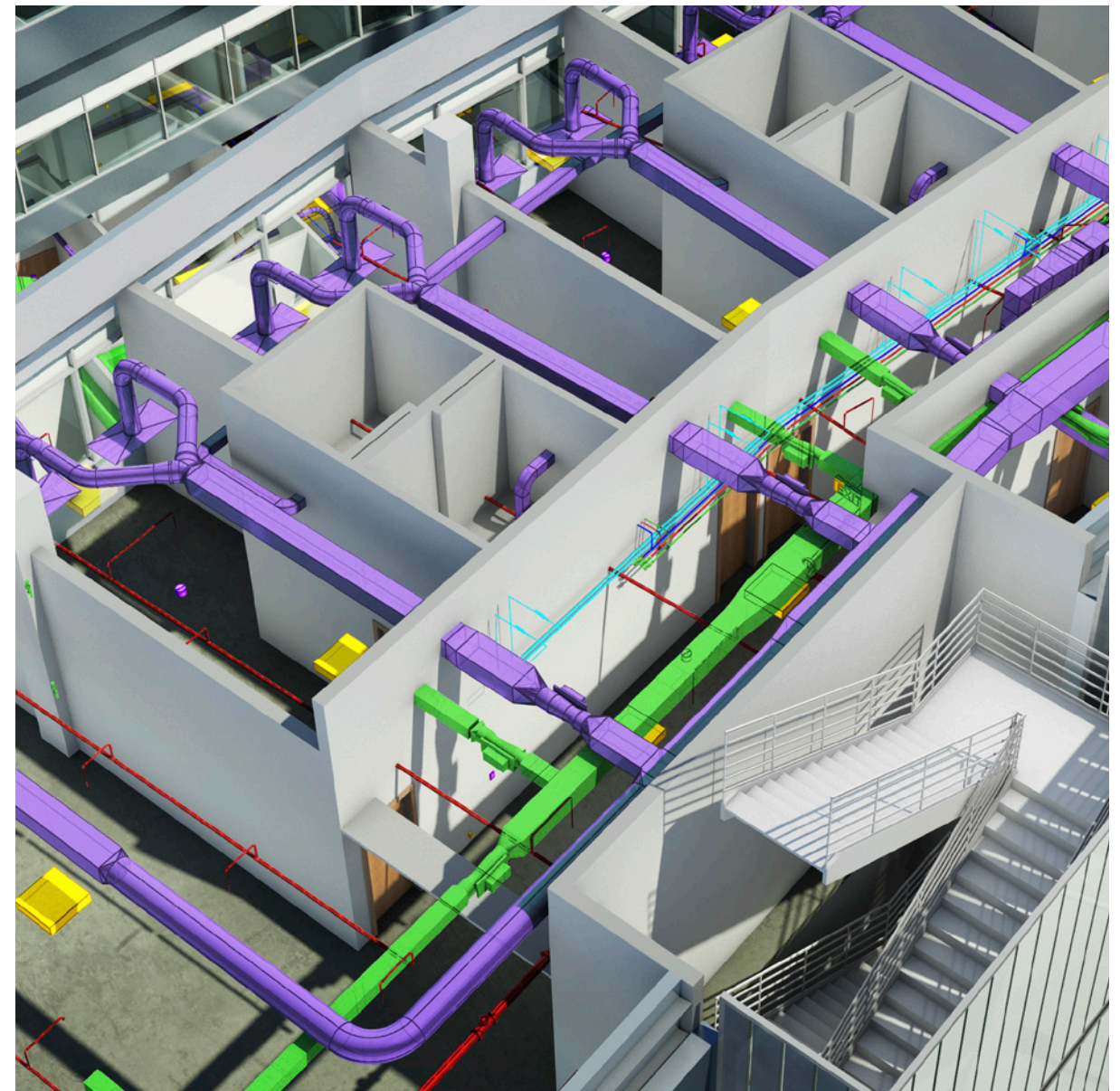
Project complexity, shrinking schedules, and multiple contributors make it critical to manage a project with as few RFIs and change orders as possible.

### Solution

Autodesk's BIM coordination workflow helps reduce costly change orders by helping customers better understand potential conflicts before execution begins in the field. Simplify multidiscipline BIM coordination workflows by enabling 3D models and multiformat data to be integrated and shared for review between all project stakeholders. A comprehensive range of integration, analysis, and communication tools can help teams to better coordinate disciplines, resolve conflicts, and plan projects virtually before construction or renovation begins.

#### Autodesk BIM solutions for construction can help you:

- Provide a single whole-project view.
- Better coordinate site and work crew planning.
- Support the identification, management, and resolution of conflicts before construction.
- Improve project outcomes through fewer RFIs and field coordination problems.

[View the Video](#)



Multidiscipline coordination

Extended team collaboration &amp; coordination

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## Extended team collaboration & coordination

### Challenge

In the traditional collaboration and coordination practice, each discipline shares its models in linear succession. At any moment in time, team members might be working on a different, locally stored version of a model. This approach has the potential to create inefficiencies and expose all parties to more risk as the different versions of the model, and the information within them, becomes increasingly out of synch.

### Solution

With Autodesk's data-centric, cloud-based BIM management and collaboration and workflows, the extended project team can improve coordination and communication with one-click desktop or iPad® access to review the latest coordinated project models and run clashes in real time, promoting time and money savings on customer projects.

#### With Autodesk BIM solutions, you can:

- Extend BIM collaboration and project review across the broader ecosystem.
- Make better decisions earlier by communicating in the context of the coordinated project model.
- Let contributors run their own clashes anytime, helping to reduce time spent in coordination meetings.
- Improve team productivity with round-trip coordination workflows from Autodesk® Revit® software products, Autodesk® AutoCAD®, Autodesk® AutoCAD® Civil 3D®, and Autodesk® Navisworks® software products.
- Access the coordinated model data in external project control systems.

[View the Video](#)



Multidiscipline coordination

Extended team collaboration &amp; coordination

Field management

## Field management

### Challenge

Construction is known to be an inefficient process, with studies putting waste at 25 cents out of every dollar (source: Construction Industry Institute). The inefficiencies in construction have been difficult to address with technology because over 75 percent of the cost of construction is on the jobsite (outside of the trailer), and less than 10 percent of technology spending is there.

### Solution

Autodesk's field management solution for 2D and 3D environments enables construction industry professionals to transform the delivery and oversight of construction by combining cloud-based collaboration with mobile technologies at the point of construction. Automation of field processes—such as quality, safety, and commissioning checklists; distribution of plans and drawings; and mobile model access—helps to measurably improve quality, safety, and commissioning for construction and capital projects of all types.

#### With the Autodesk field management solution you can:

- Deliver faster, more accurate layout installation.
- Support 2D or 3D workflows.
- Minimize error-prone manual, paper-based processes.
- Enable one-time data entry at the point of construction.
- Gain faster access for all stakeholders to the most up-to-date field information.
- Help provide insight across projects for subcontractor performance, quality, and safety programs.
- Access the coordinated model data in external project control systems.

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Image courtesy of Bernards