



How Industry Leaders keep their edge

Integrated engineering
for better outcomes





In today's rapidly evolving industry, real competitive advantage isn't achieved by working faster or harder. It's about working smarter.

See 4 ways engineering firms are embracing integrated workflows to eliminate repetitive tasks and accelerate productivity, freeing up valuable time for their teams to focus on what matter most - **designing innovative, optimized solutions for their clients and staying one step ahead of the competition.**

Read on to see how.

The industry is moving fast

It's time to move with it

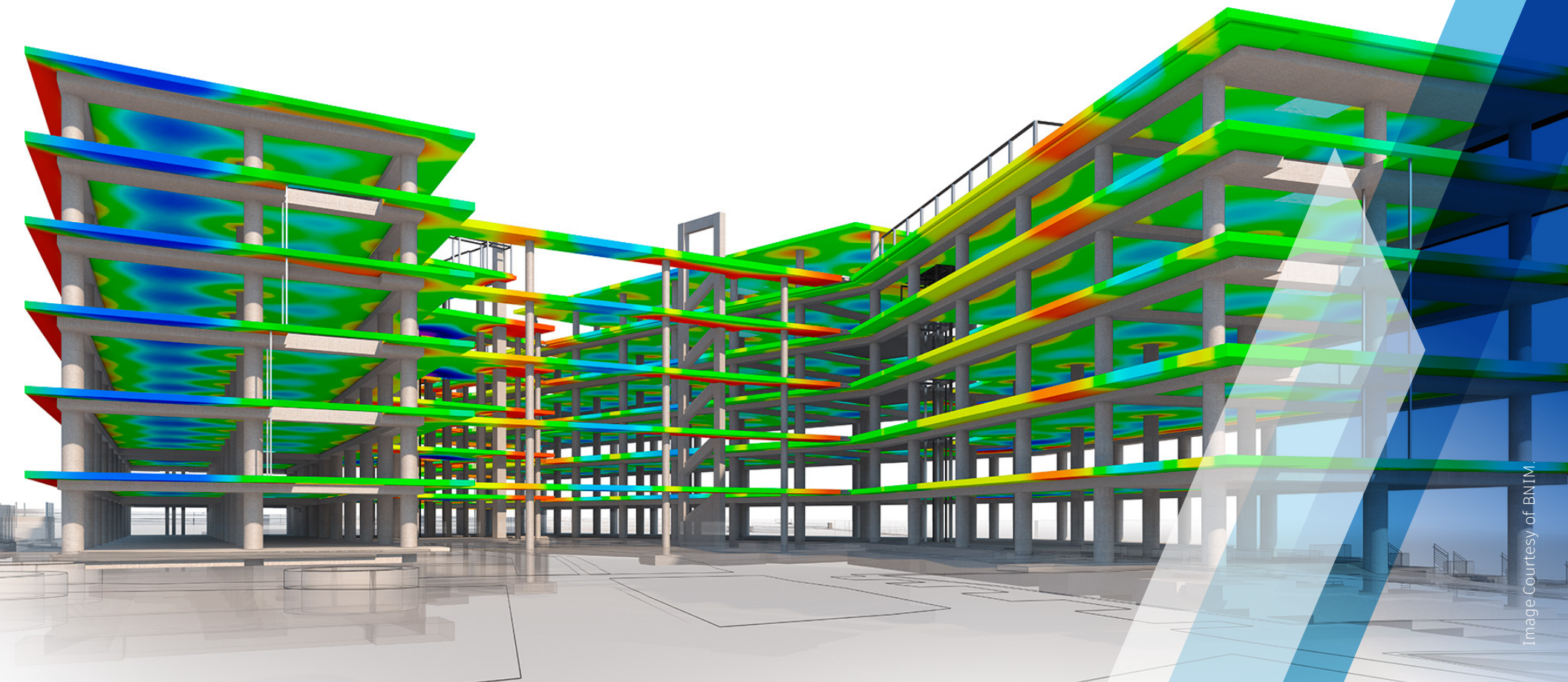
This is a rapidly changing world.
Today's clients are increasingly demanding:

- more complex buildings and structures
- delivered faster
- higher quality designs
- using more sustainable methods and resources

All of this is happening in an increasingly competitive landscape where firms vie with one another to recruit top talent and operate with razor-thin margins for error.

More and more, successful engineering firms are leaning into digital engineering capabilities to stand out from the pack.

The benefits are real. According to the 2019 NBS National BIM Report, 86% of projects with BIM reported cost savings from labor, collaboration, and/or materials, and 75% realized higher quality in the design and/or construction.





Leading engineering firms are pioneering a better way of working

BIM gives engineering firms a strong foundation to build on. With owner and government BIM mandates expanding globally, delivering projects with BIM is now 'the price of entry'.

BIM's benefits of enabling better project coordination and collaboration with stakeholders, efficient workflows, 3D visualizations, and resulting improved project outcomes are just some of the benefits of using BIM processes.

Today, leading firms are building upon this foundation to use BIM technology in even smarter ways.

They're taking advantage of more integrated engineering processes, enabled by data-rich models, and benefiting from better collaboration, and communication across the entire project life cycle.

Autodesk® Revit® models also provide a launching point for more integrated

analysis and calculations, designing for constructability, and design automation.

Integrated engineering workflows are making new levels of innovation and problem-solving possible, and projects more profitable.

Smarter workflows. Better outcomes.

Real competitive advantage is no longer about working faster or harder. It's about working smarter—and BIM technology has a big role to play in making that possible.

By innovating and automating engineering workflows, you can deliver better outcomes for your business, and better project outcomes for your clients.





The benefits are clear

Here are four ways firms are benefiting by building upon BIM and adopting an integrated engineering approach.

- 01 | Seamless Collaboration
→ Deliver better projects faster
- 02 | Design Optioneering
→ Optimize designs & win more work
- 03 | Integrated Analysis
→ More efficient processes & reduced risk
- 04 | Design Automation
→ Accelerate productivity & retain top talent



01

Seamless Collaboration

The Benefit:

Streamlined project delivery

In an integrated BIM environment, multiple design disciplines work closely to better coordinate their work. By linking their models together, teams can better visualize and identify clashes to coordinate. They can also connect their Revit models through the cloud using BIM 360, giving all stakeholders visibility and access to accurate information whenever they need it—always synchronized, always up to date.

This allows engineers and architects to stay on the same page throughout the design process, find better solutions to design challenges, and deliver projects faster.

Teams can now anticipate and mitigate the potential impact of changes earlier on and model sharing with fabricators and contractors ensures a more seamless handoff for construction.

In short, effective collaboration is key to success. According to the 2019 NBS National BIM Report, 87% agreed that firms that can effectively collaborate will be the most successful.

01

Seamless Collaboration

The Benefit:

Streamlined project delivery

“We used to have 30 site issues a week, and up to 300 things to fix at the end of the project. Recently, we had about 30 site issues on the entire project. That’s a huge reduction in the amount of work we have to do to fix problems.”

Dominick Paradis,
Design Engineer, Canam

“With robust, cloud-based BIM, everyone could see behind the curtain and understand what everyone else was doing. The construction manager could better understand why the architects did what they did, the architects understood exactly what the MEP engineers were contributing, and so on.

Everyone was on the same page, and there were no surprises.”

Paul McGilly,
Associate Principal | Digital Design,
Buro Happold

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02

Design Optioneering

The Benefit:

Optimized designs

Design optioneering involves using the latest engineering tools to rapidly explore design options to find the best engineering solution. Whether using scripts that integrate your calculation spreadsheets with CAD or using computational design that integrates your analysis tools with BIM, there are better ways to find the best design options for your clients.

By eliminating repetitive tasks and rework, engineers can fast-track load analysis and system design strategies to reach optimized design solutions faster.

This delivers designs that are more constructible to build and sustainable to operate.

Once your team can achieve this on every project, you'll be able to accelerate the design phase, **exceed client expectations and ultimately win more work.**

02

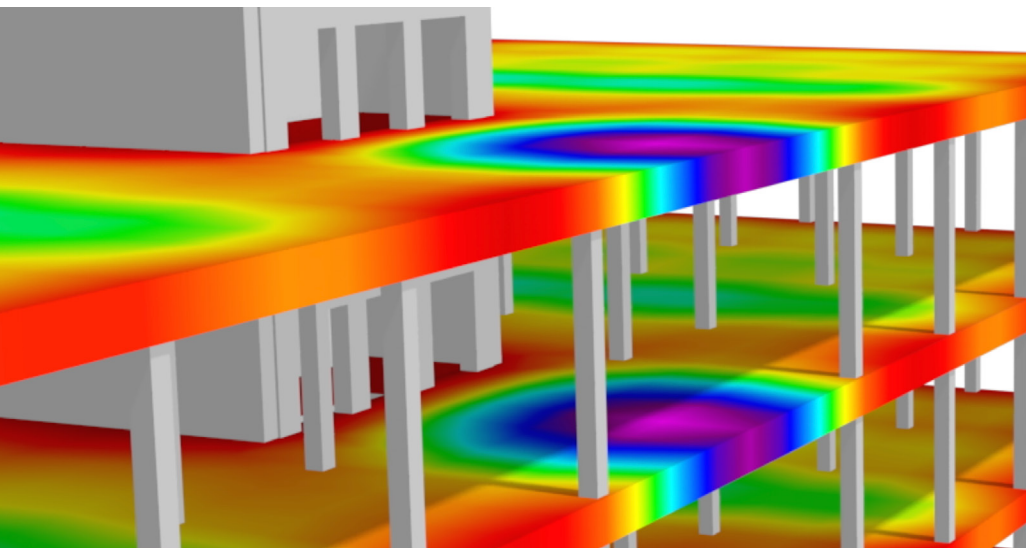
Design Optioneering

The Benefit:
Optimized designs

“We’re not just looking at one answer and then taking that forward, we are actually trying to optimize our design early on. Instead of just providing a solution, now we try to provide an optimal solution.”

Nidhi Sekhar,
Senior Computational Designer, LERA

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03

Integrated Analysis

The Benefit:

More efficient processes

With new features and functionality, Revit can now perform accurate MEP analysis calculations that are integrated with industry leading analysis tools, like EnergyPlus.

Structural engineers can centralize their decision making in Revit through its integration with Robot Structural Analysis, custom spreadsheets and other 3rd party analysis tools.

Engineering teams no longer need to manually manage design information in multiple applications or create separate

analytical models that need to be built and updated in parallel as designs change.

By integrating engineering workflows into your Revit model, with all engineering data calculated and stored in one centralized, data-rich model, the process is far more efficient, **cutting out redundant work, avoiding errors and automating downstream detailing.**

03

Integrated Analysis

The Benefit:
More efficient processes

“Using Revit, we can do better calculations. Having that interactive data solidified early on with the Revit model, means clients wouldn’t have changes down the road.”

Bimal Patwari,
Founder & CEO, Pinnacle Infotech

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04

Design Automation

The Benefit:

Accelerated productivity

Automated modeling and documentation is better than ever now with Revit. Using standardized BIM content increases the quality and speed of modeling. Drawing creation and annotating can also be sped up using discipline specific Revit project templates and libraries.

In addition, tools like Dynamo Player in Autodesk Revit make automation accessible to any engineer or designer – no coding is required. Hours of tedious work spent on documentation, code checking, and interoperability can be reduced to minutes.

Automation also allows contractors to automate estimating, detailing, and fabrication tasks leveraging the engineer's design model.

By leveraging these design automation tools, engineers can eliminate repetitive, time-consuming tasks to work smarter and accelerate their productivity. **The result is more time spent on engaging, high-value work.**

04

Design Automation

The Benefit:
Accelerated productivity

“Customers and owners are looking for their building to be built faster and everything to be seamless.”

Ken Luong,
Project Manager, TDIndustries

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“That task that was taking five hours, all of a sudden it takes a few seconds.”

Alfonso Oliva,
Director, LERA

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Conclusion

At Autodesk we're helping MEP and Structural Engineering firms like yours to streamline the way they work—and use technology in a more connected way.

By adopting an integrated approach, you can extract more value from the technology you already have, to reduce rework and automate low-value repetitive tasks.

This frees your teams to focus on engineering innovations. Solutions that will ultimately lead to shorter timeframes and more profitable projects.

Arrange a demonstration for you and your team to see how you can start making the most of integrated engineering.

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