



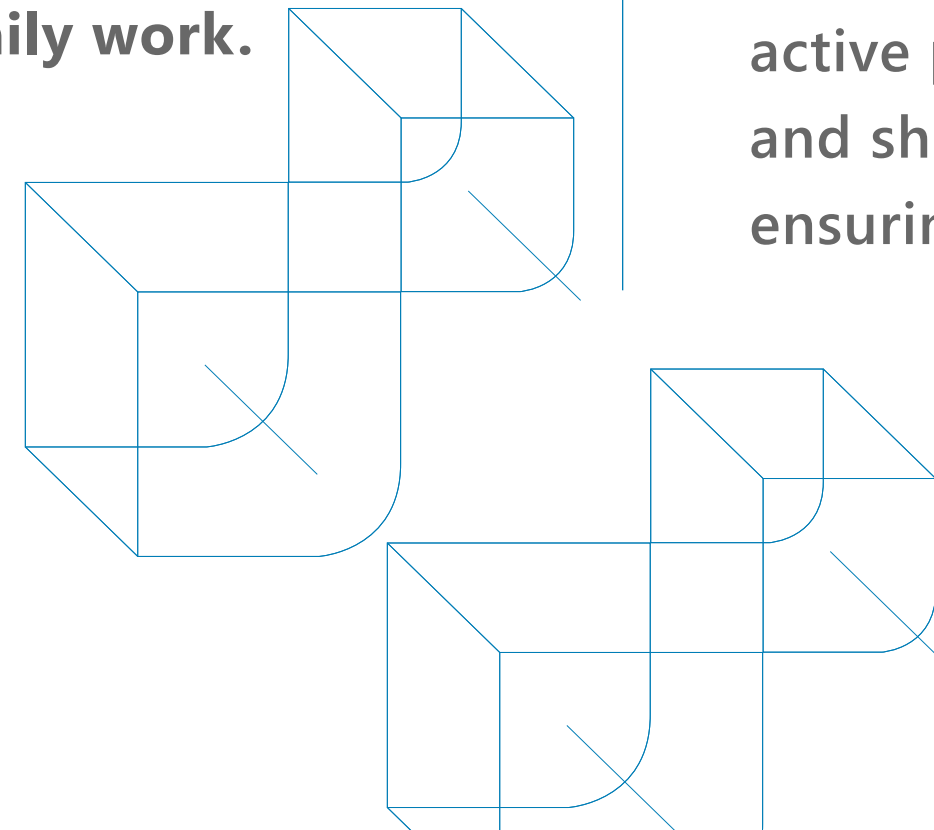
Top 20 AI tools every AEC specialist needs to handle

By Florencia Retamal | BIM coordinator



Foreword

Artificial Intelligence is transforming the AEC industry in ways that were initially unexpected. While many anticipated AI's role in automating repetitive tasks and enhancing precision, its influence is now extending into the creative realms of design and construction, from predictive analytics to automated design processes. This paper explores how AI is rapidly changing the industry, which is its major field of action, and includes a comprehensive list of tools that every architect, developer, and construction professional should be aware of in their daily work.



About the author

Florencia Retamal | BIM coordinator

As a BIM Coordinator, Florencia has a proven track record of success on national and international projects for diverse clients, from collaborating with industry giants like Google on ensuring the quality and best practices for over 250 models, to leading the implementation of diverse technologies to streamline workflow through new protocols and automation for a large-scale hospitality project in the Middle East.

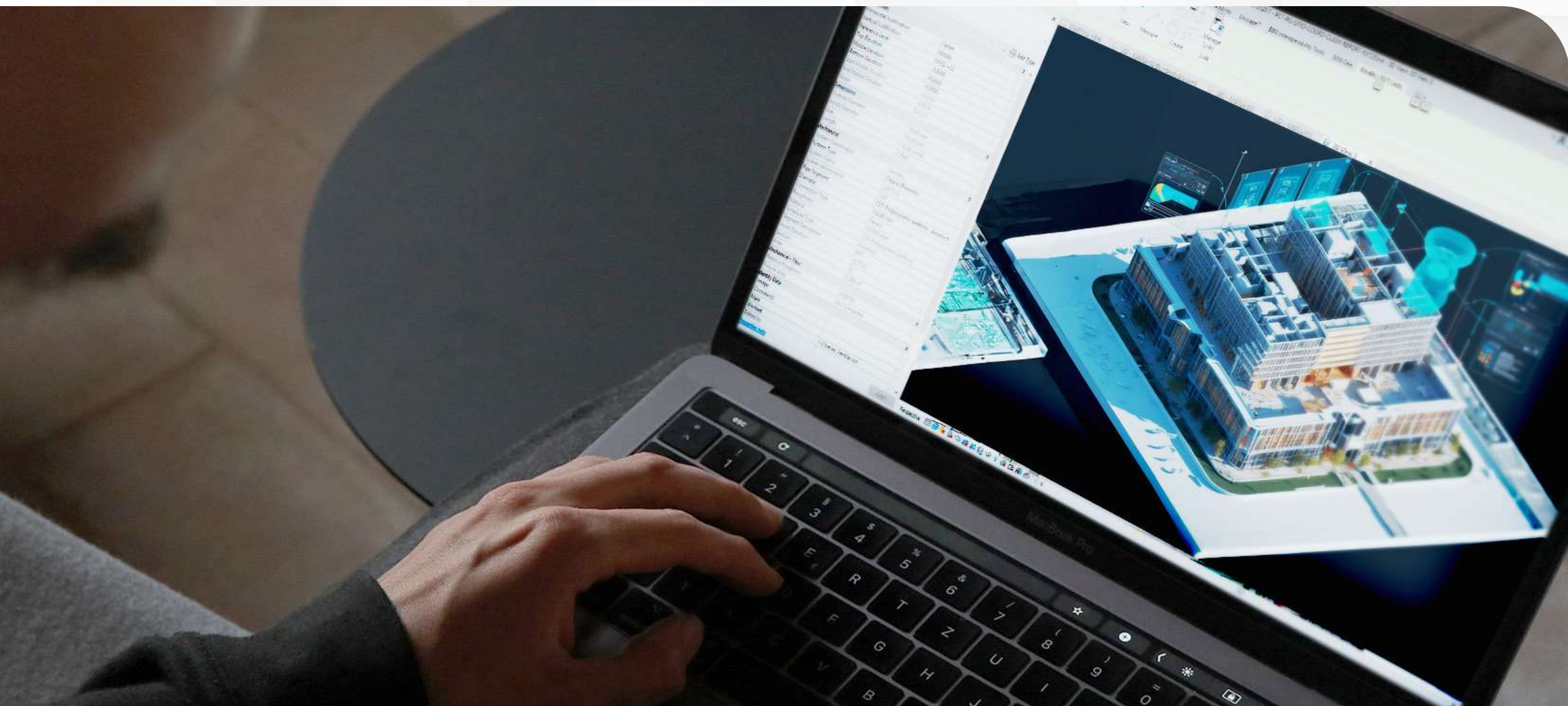
Besides offering a comprehensive skill set in BIM coordination, Florencia leverages her programming and automation knowledge with Python to optimize processes further. She also fosters collaboration through active participation in R&D, including AI research, and she is a vital trainer and speaker at Corbis House, ensuring the team stays ahead of the curve.



AI is a convenient solution for quickly developing floor plans, renders, and presentations for a client. It can help test solutions in specific sites—reviewing costs, revenue, climate conditions, and impact—or even retrieve quick models in Revit that are useful for testing first distribution attempts.

However, it doesn't fulfill the job. For now, AI can only create what you want if you know how to ask it. It will give you a result from what you're requesting but is sometimes like a very highly proficient renderer who doesn't understand anything about architecture or almost anything about the logical relationship between elements.

The journey toward AI becoming an autonomous design thinker is ongoing, requiring continuous training and refinement. Well-trained professionals are critical in establishing, regulating, and guiding AI toward desired outcomes. Acknowledging and addressing the challenges posed by AI's inherent limitations allows AEC specialists to actively contribute to its evolution as a more sophisticated design tool, resulting in a symbiotic relationship that leverages both AI's computational capabilities and human architects' refined expertise.



4 Major fields of AI in the building industry

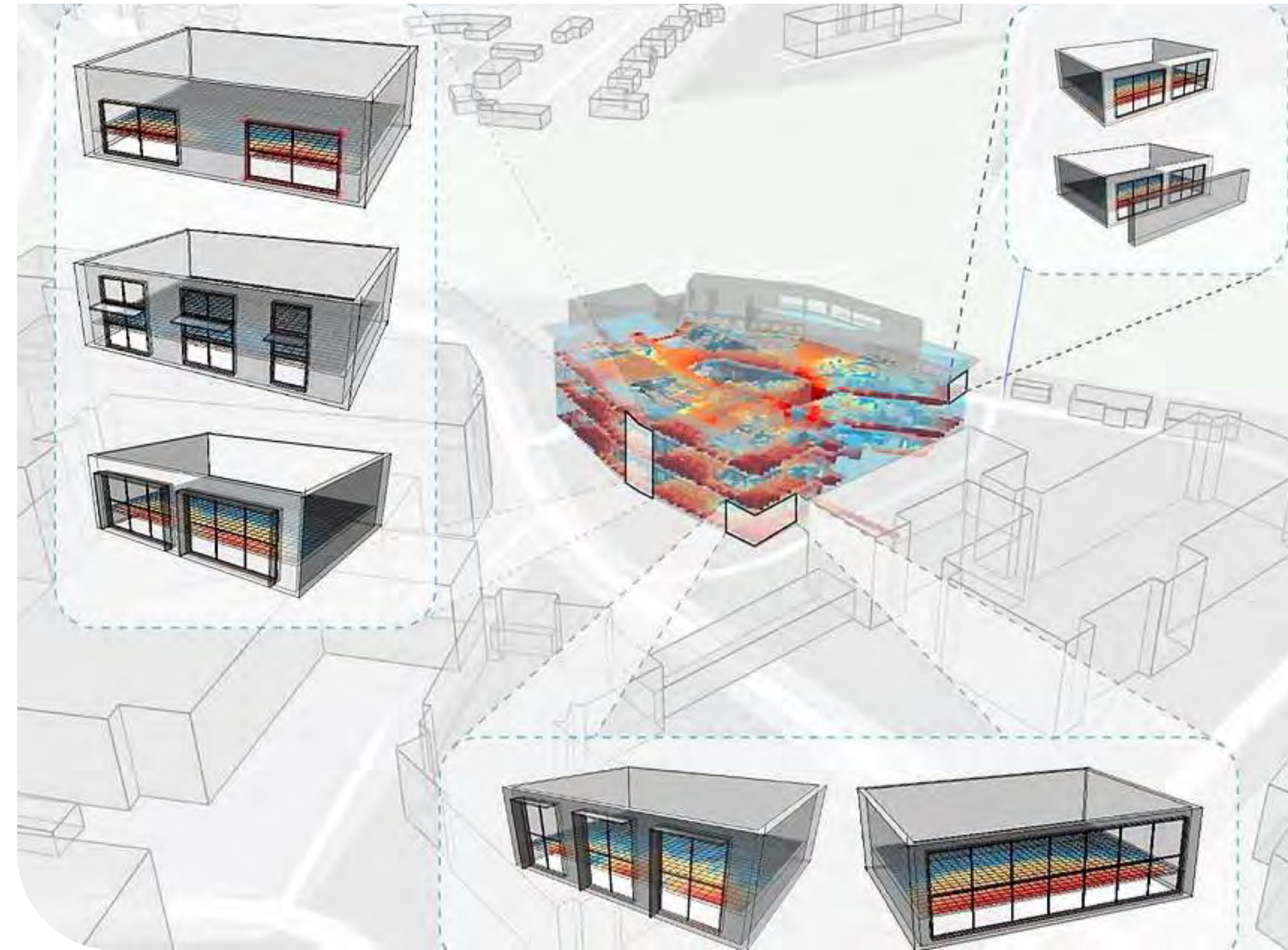
AI finds applications in various AEC domains, such as BIM, Structural analysis, construction optimization, materials research, and robotics. It contributes to identifying design issues, optimizing building performance, analyzing complex structures, detecting construction issues, and suggesting innovative materials. Let's explore four of the most common fields of application.

01

Smart Building Information Modeling (BIM)

AI can analyze BIM model data and identify potential design issues to optimize building performance. It helps monitor and optimize HVAC, lighting, and security systems with sensor data.

It also pinpoints energy-saving opportunities in the design and contributes by providing various design options and helping to visualize the most optimal one.



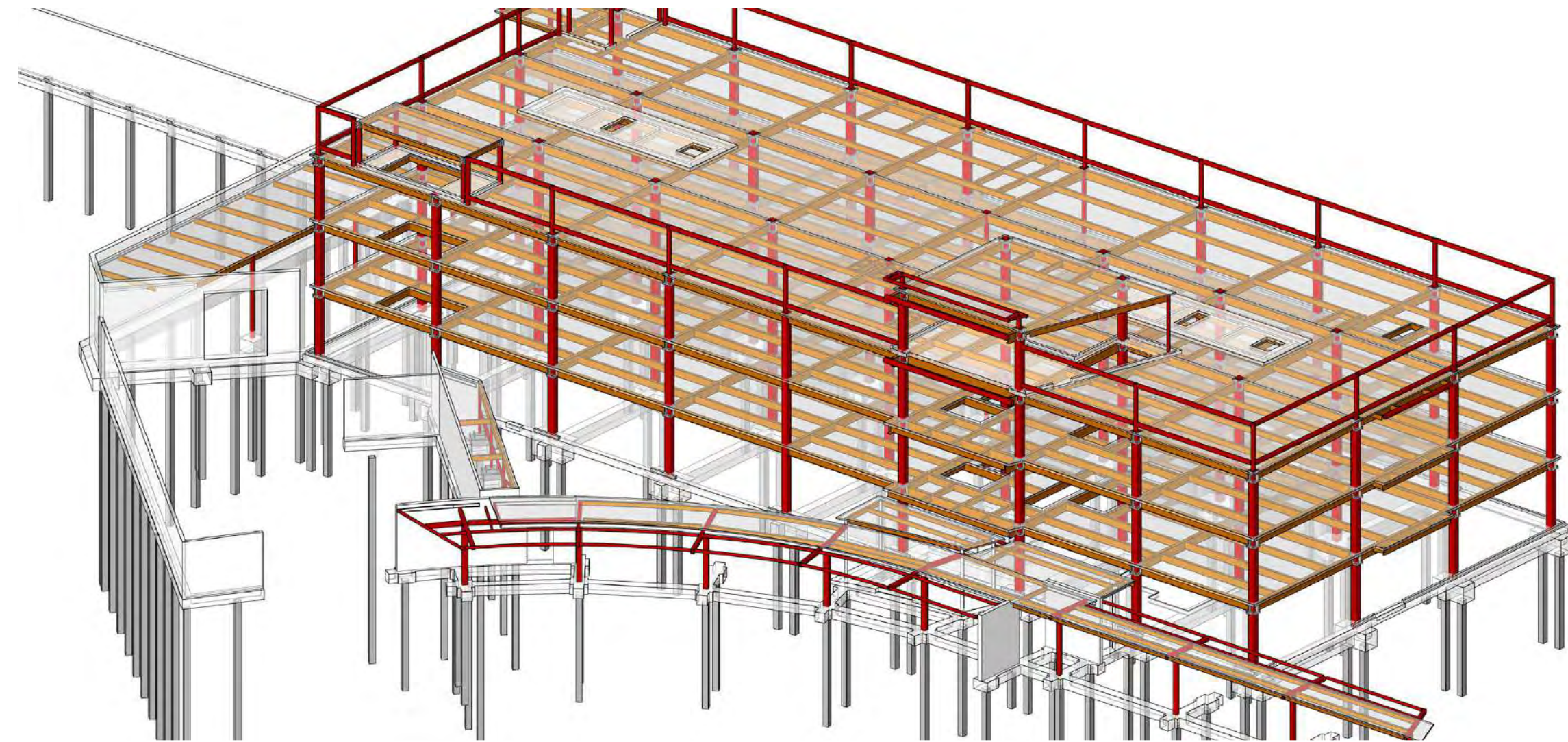
Cove.tool

(An automated design platform for intelligent building performance, 3D visualization, and parametric optimization.)

02

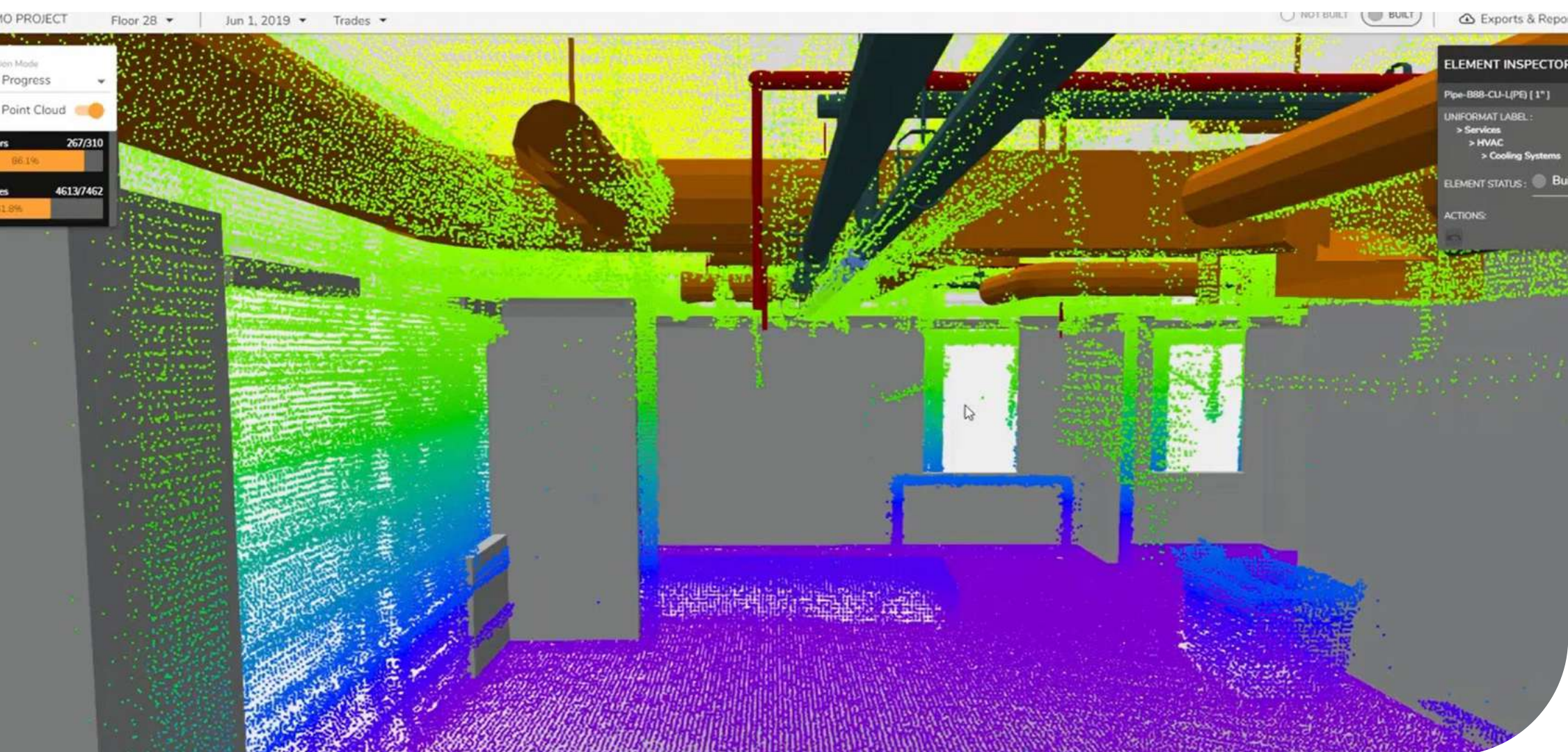
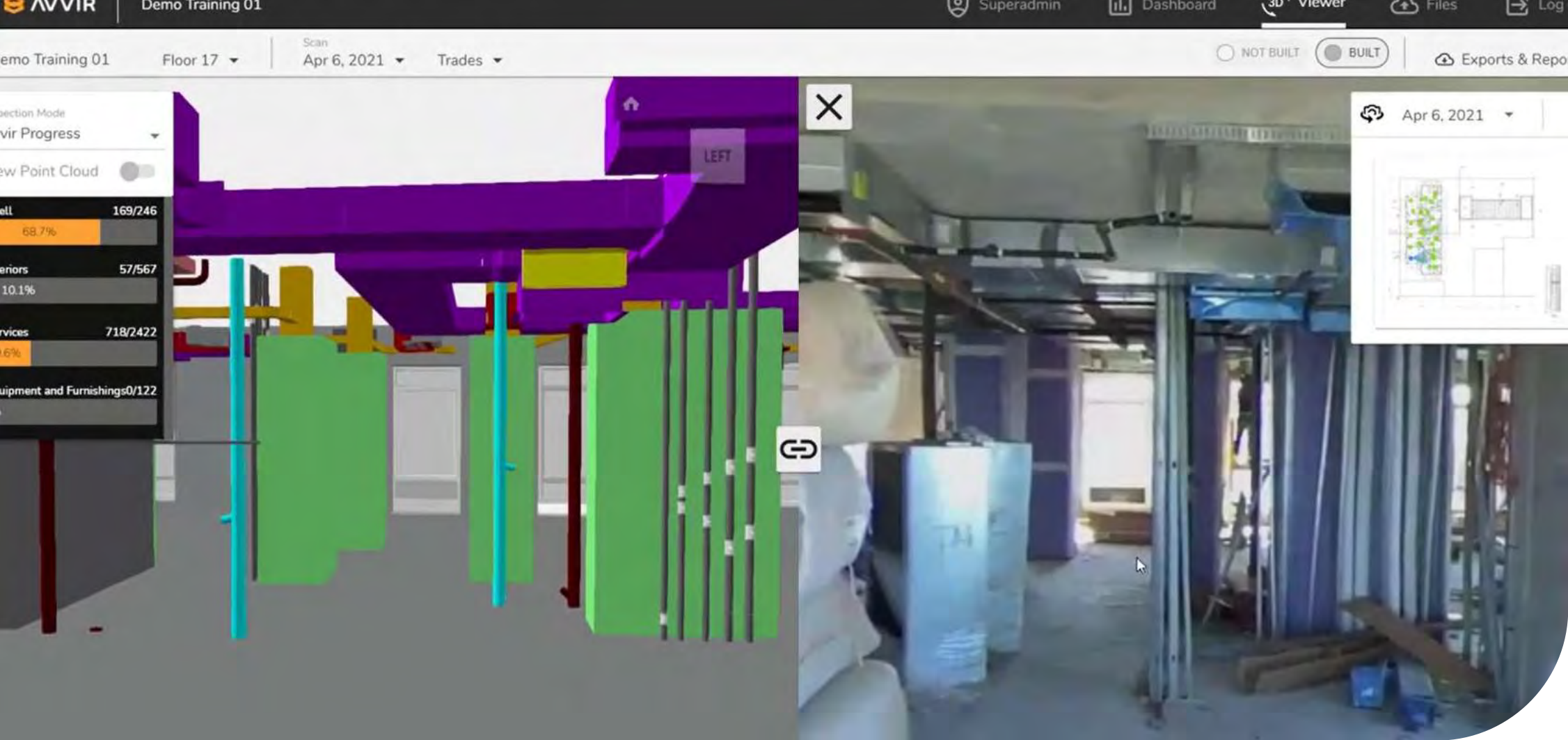
Structural Analysis

AI can analyze complex structures and identify potential design flaws. By analyzing sensor data, AI monitors the performance of structures such as bridges and buildings in real-time. In addition, it plays a critical role in detecting potential problems like corrosion, deformation, and cracking. Early detection of these issues allows experts to take corrective action on time, preventing failures and improving overall structural integrity.



Conxtech

(A construction technology company that offers ConX®, a Chassis Based Modular™ structural steel building system.)



Avvir

(Automated risk analysis platform for precise schedule tracking, cost analysis, and installation issue detection.)

03

Construction optimization

AI tools provide analysis and detection of potential construction delays or problems. It can also detect differences between BIM information and point clouds or images taken from the site to detect incongruencies and reduce risk.

Host AI

(AI powered solution for remote property assessment)



04

Material research

AI helps to analyze data and identify new, stronger, more durable and sustainable materials that can be used in construction. AI also enables the analysis of material usage data and suggests alternatives to reduce costs and improve efficiency.

Our AI picks

From early stages to construction, the market has lots of AI tools to automatize tasks, improve design, or anticipate possible delays or cost overruns. Don't be overwhelmed, we select the ones you can't miss.

AI in early-stages

For the first steps, tools like TestFit, Parafine, Skyline, Deble, Giraffe, Chaos, and Archistar provide data-driven model planning, generative design, analytics, and financial feasibility insights for real estate stakeholders. Our top picks are:

01 TESTFIT

This Real Estate Feasibility platform evaluates the best building solution for a building according to the building type and the location.

Test Fit can test multifamily, mixed-use, and industrial project types. It includes automated design solutions and a "manual mode" to edit the results and adapt them according to the user's design. It can export to Sketchup, AutoCAD, and Revit (it has an Add-in). It requires a License. Some similar tools are Parafin and Delve.

02 **hosta a.i.** REMOTE PROPERTY ASSESSMENTS

Host A.I. uses AI spatial and Material analytics to automate onsite property assessment with just a few 2D images. The main goal is to convert simple images into floor plans and Revit models using image recognition.

03 **Giraffe**

Giraffe is a cloud-based 3D modeling platform. It allows you to sketch basic shapes and instantly translate them into 3D structures with realistic textures and proportions. It also has the actual data on land use, transportation networks, and even demographics that are seamlessly integrated into the designs so you can see how they interact with the existing urban fabric. Giraffe gives you real-time information on factors such as building density, land area, and sun exposure.

Because it is cloud-based, you can share models and work with other team members in real time, regardless of their location. Finally, it has a built-in rendering engine that produces photorealistic 3D models and animations.

AI during design and documentation

The market offers a wide range of tools that architects and designers can use during the concept design phase of a project, for example, analyzing and contrasting the elements with parameters to speed up the model and streamline the decision-making process. Our top selections are:

04 **AUTODESK** Forma

Designed for urban development, Autodesk Forma offers cloud-based artificial intelligence and generative design software that helps planning and design teams make better-informed decisions faster, enabling better sustainability opportunities from the start.

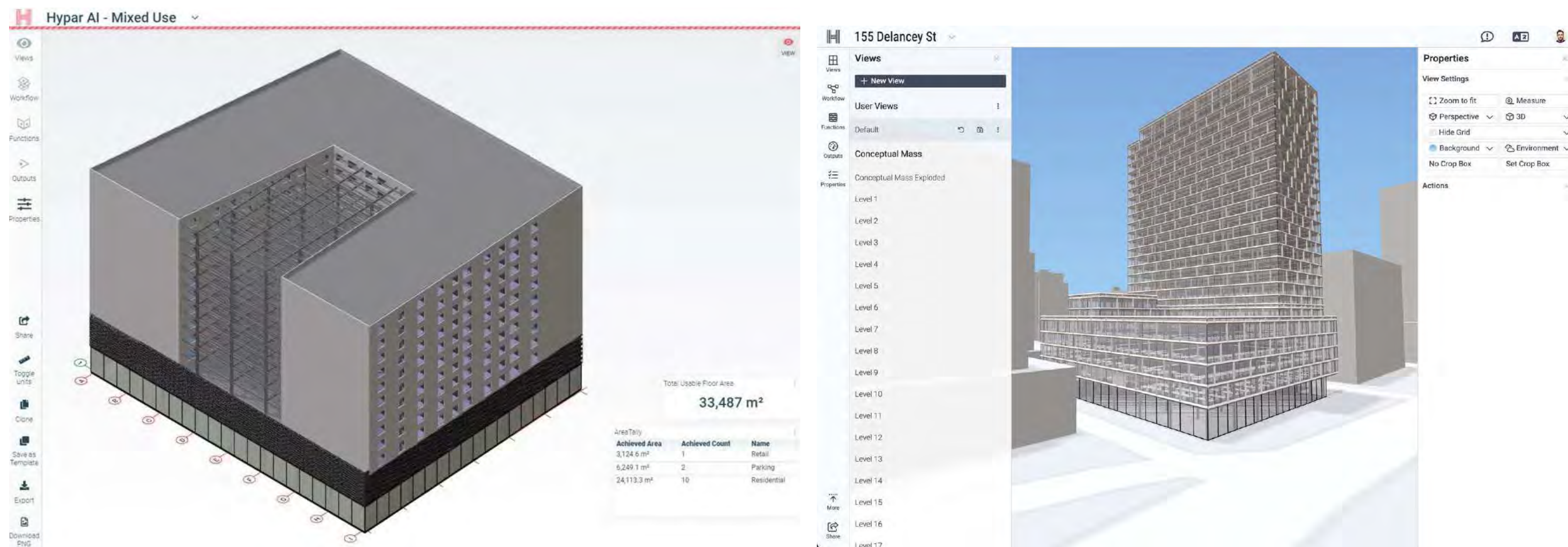
Used in the early stages of real estate development, Forma can analyze up to 100 criteria on city blocks: zoning, views, daylight, noise, wind, roads, traffic, heat islands, parking, and more.

This tool lets you experiment with various urban setups.



05 HYPAR

The main premise of Hypar is to avoid starting a new project from a blank page, so it will use AI to create a first approach, saving a lot of time for designers who can then focus on the specific parts of the project. Hypar makes space planning fast, easy and intuitive. It quickly creates 3D test setups, complete with metrics and furniture. In addition, its cloud services can be accessed across multiple devices. It can be integrated with various applications such as Revit, Rhino, and Excel. It is open source, so many applications can be developed and added to the platform to perform specific tasks. The building can then be exported to BIM.



Hypar allows you to construct and share building systems based on open standards.



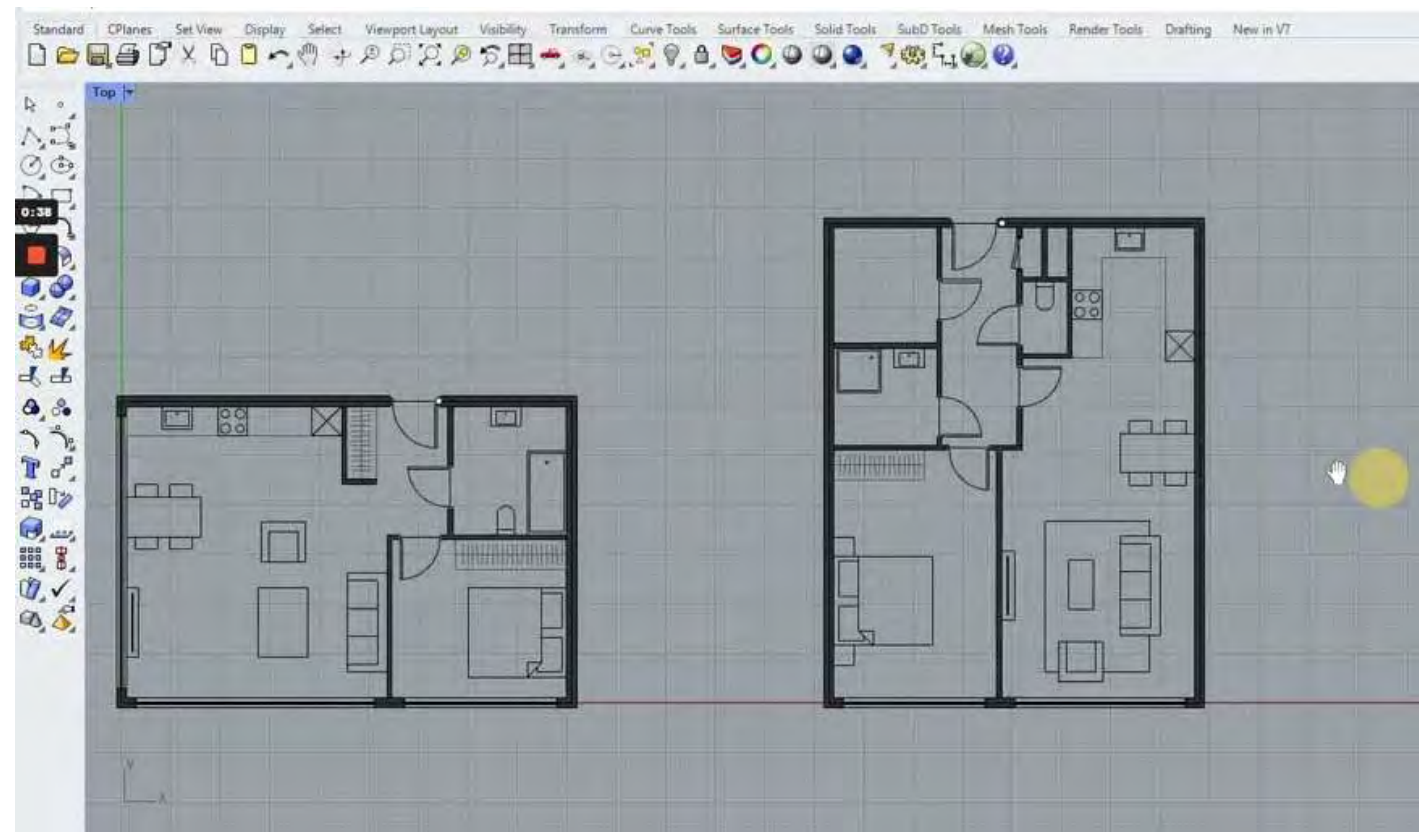
The design is monitored in real time, showing complete program information, surfaces and compliance with urban parameters by typology and solution.

06 ARCHITECTURES®

Architectures is a web-based AI building design tool for the residential sector. It allows the designer to test different design options in 3D and with real-time information on schedule and cost. The user can manage the constraints to be tested and use preset criteria. The platform generates a BIM model of the result, instant floor plans, area calculations and quantity takeoffs, and can be exported to Revit, Excel and AutoCAD.

07 PlanFinder

PlanFinder is a perfect tool for creating basic models. It is a paid add-on that can be installed in Revit. For now, it is a bit basic and limited, but it has potential to become much more useful. The trial version allows us to create a basic model from bounding walls created in Revit. It's a great tool for getting a super-fast idea of your floor plan with little to no effort. It also has the function of developing a furnished layout in a single room.



It can create floor plans by specifying the exterior boundary and desired rooms.

08 Stable Diffusion

Stable Diffusion is an artificial intelligence that generates images from text or other images or masks. Stable Diffusion is a deep learning, text-to-image model released in 2022. Recently the XL version was released. It is a free-to-use, open-source AI model. It can be helpful for architects to preview atmospheres and architectural styles, and create images based on client requirements.



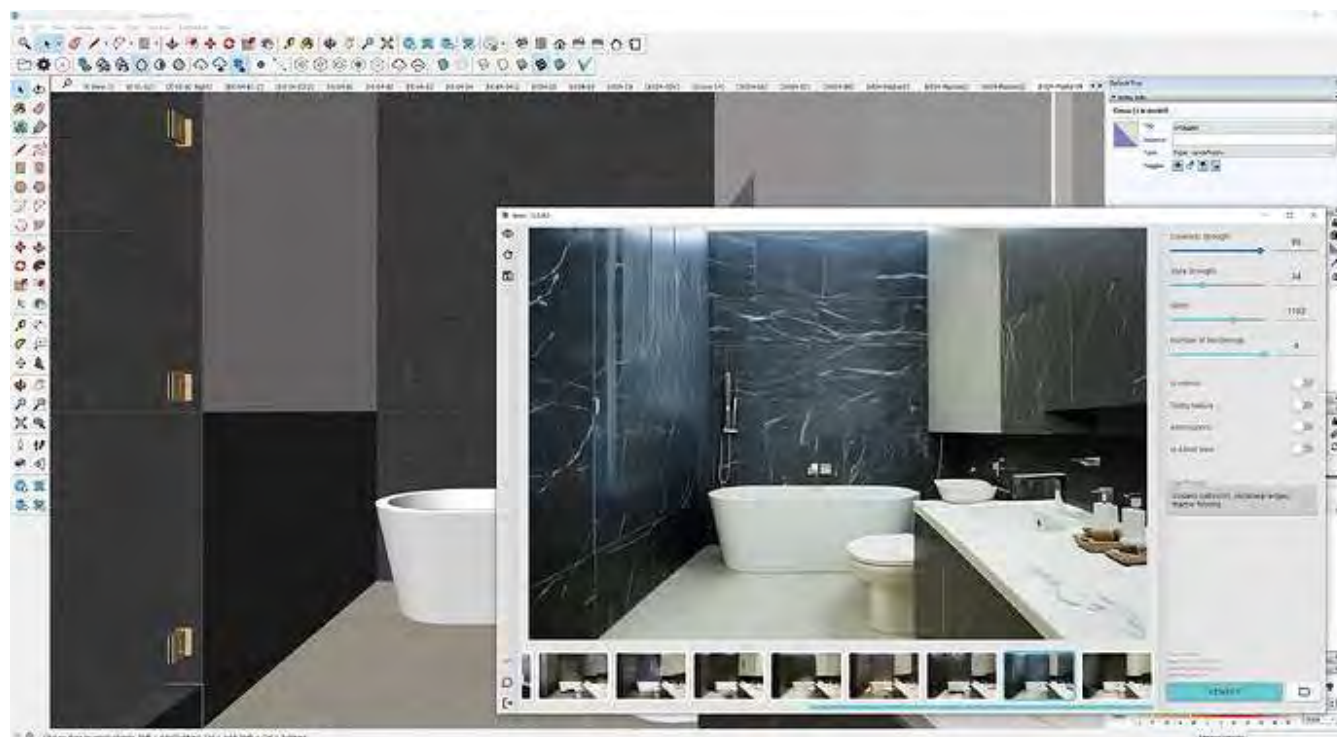
Create detailed images with prompts for the required project.

There are also processes to start with images created in Revit and create renders with them. This AI can be used from the web or run locally, turning it into something much more powerful.



09 EVOLVE·LAB

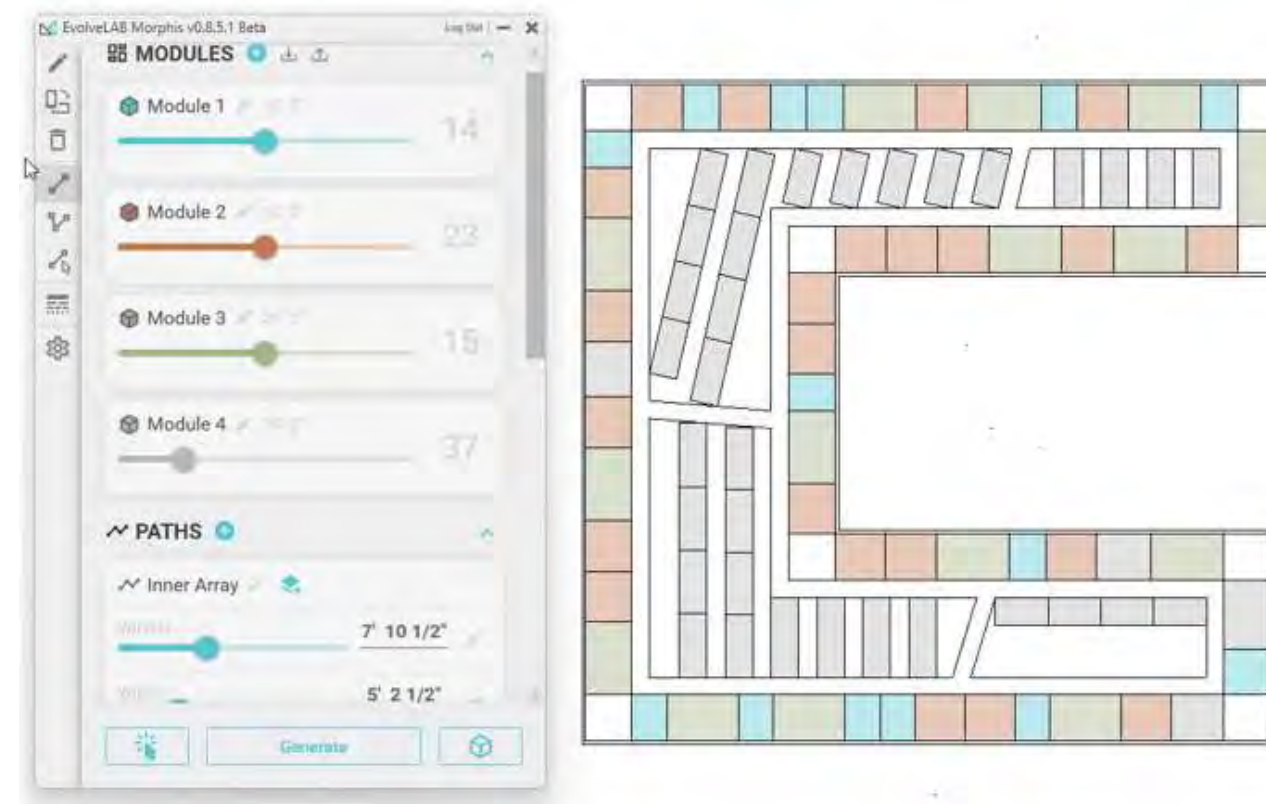
EvolveLab is a suite of AI-based automation tools and plug-ins, data-driven design tools, and generative design.



Convert SketchUp to native Revit models

10 morphistech

Morphis is a co-authoring and data-driven generative design app for Revit that gives you different design solutions using your Revit content.



Generate design in Revit in real-time and interactive.

11 Glyph

Glyph is a Revit plugin that automates and standardizes multiple documentation tasks like view and sheet creation, tagging, dimensioning, and sheet packing. Glyph also provides customizable bundles that combine multiple tasks and synchronize custom tasks among numerous projects.



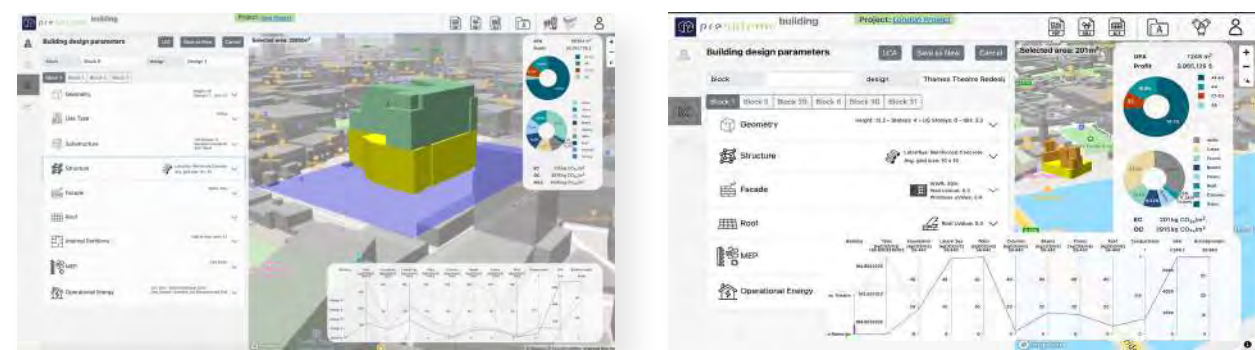
Automate and standardize multiple documentation.

12 Helix

Helix converts SketchUp into Revit native elements and vice versa, transforming 2D AutoCAD lines into Revit native elements.

13 Preoptima

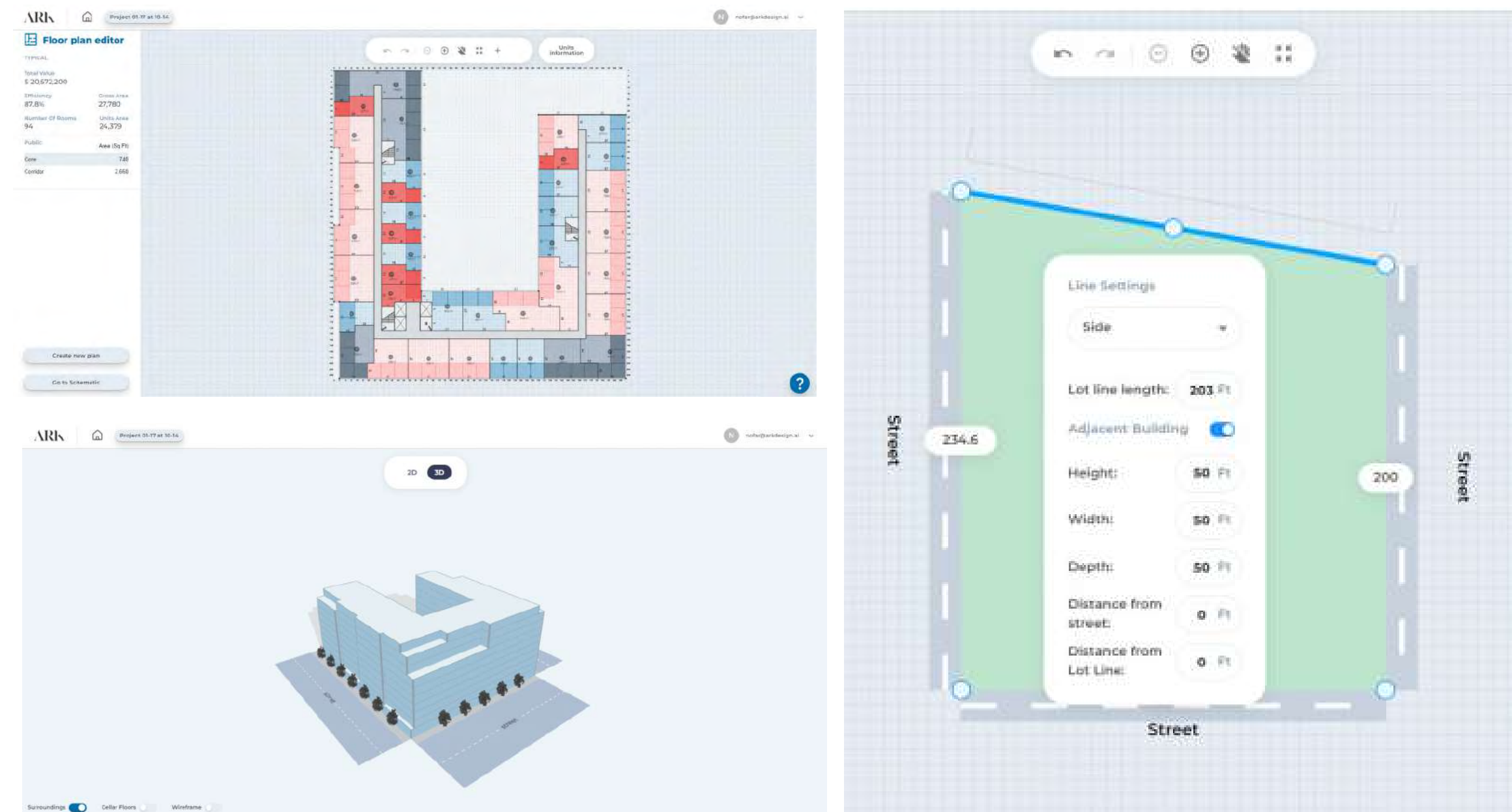
Preoptima offers real-time lifetime carbon footprint analysis. Like its Carbon Twin, it instantly evaluates design options, providing access to real-time carbon impact data, accurate bills of quantities and material/structural impact information through its web application and API. Using geolocation and real-time analytics, it enables early visualization and understanding of project WLC footprints, helping to avoid embodied carbon and achieve Net Zero effortlessly.



Preoptima offers precision carbon emission reduction at an early stage of design.

14 ARK Design AI

ARK Design AI is an online platform for residential building design and feasibility analysis. It optimizes layout design, profitability, density, and living standards while meeting all code regulations. The model can be exported to Autodesk software. The process will take the input of the lot, the main floor plan draws, section, and setbacks and will produce an estimated floor plan layout that meets the code.



Helps optimize profitability, density and standard of living while complying with U.S. code regulations.



A machine learning tool for performing QA/QC

By Martin Jean-Charles – Process and Platforms Director at Corbis

If there is one thing that is in Corbis' DNA, it is our commitment to using the most effective technology tools to add value to our processes and clients. Long before AI became a popular tool in 2023, there were attempts to advance its use. We were researching, learning about AI, and considering how to implement it.

We strongly believe AI will never replace the expertise, professionalism, and responsibility of a Corbister. AI must be an ally for getting things done more efficiently.

For AEC Services, we identified two areas of application:

- **QA/QC + BIM Optimization:** Perform QA/QC, analyze compliance to construction codes, automate repetitive tasks, and improve clash detection.
- **Project Management Support + Big Data:** to obtain insights and predictions based on data, determine delivery times based on historical data, and find inefficiencies in projects on the fly.

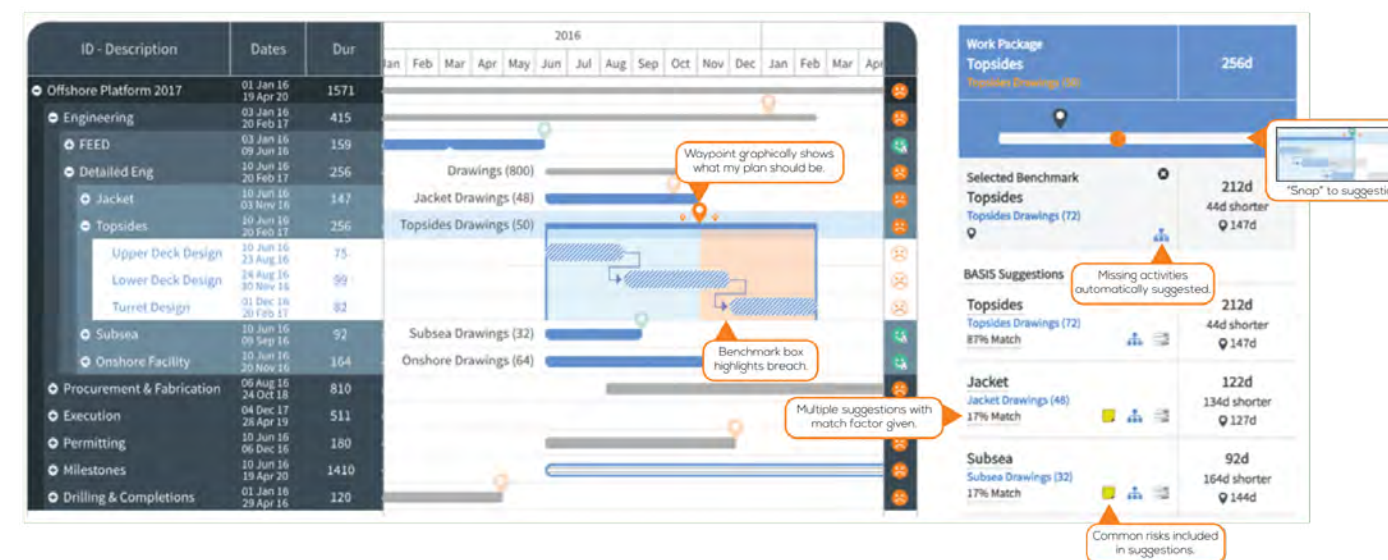
We already have developed a machine learning tool for performing QA/QC and analyzing code compliance. This tool will help our team improve our delivery speed and accuracy. But we did not stop there. We continue to investigate better ways to incorporate AI into our platforms and processes, always looking for practical solutions that offer value to our clients.

AI tools in construction

The potential of AI to help construction companies build projects faster, cheaper, and better remotely is already well known. Ranging from AI models created to analyze information from reality-captured images to tools to track construction progress or perform a QC remotely. Or even AI models developed to optimize construction processes, schedule tasks, organize site data, or prevent issues. Here are our top choices for the construction field:

15 ALICE TECHNOLOGIES

ALICE Technologies is a platform that provides intelligent planning services that connect design, scheduling, and estimates to offer a comprehensive view of your construction project. It has various planning options to help with decision-making and can also aid in recovering from delays. It includes the possibility to add information about providers and materials that are available in that location and then the software analyzes and proposes the best option for planning.



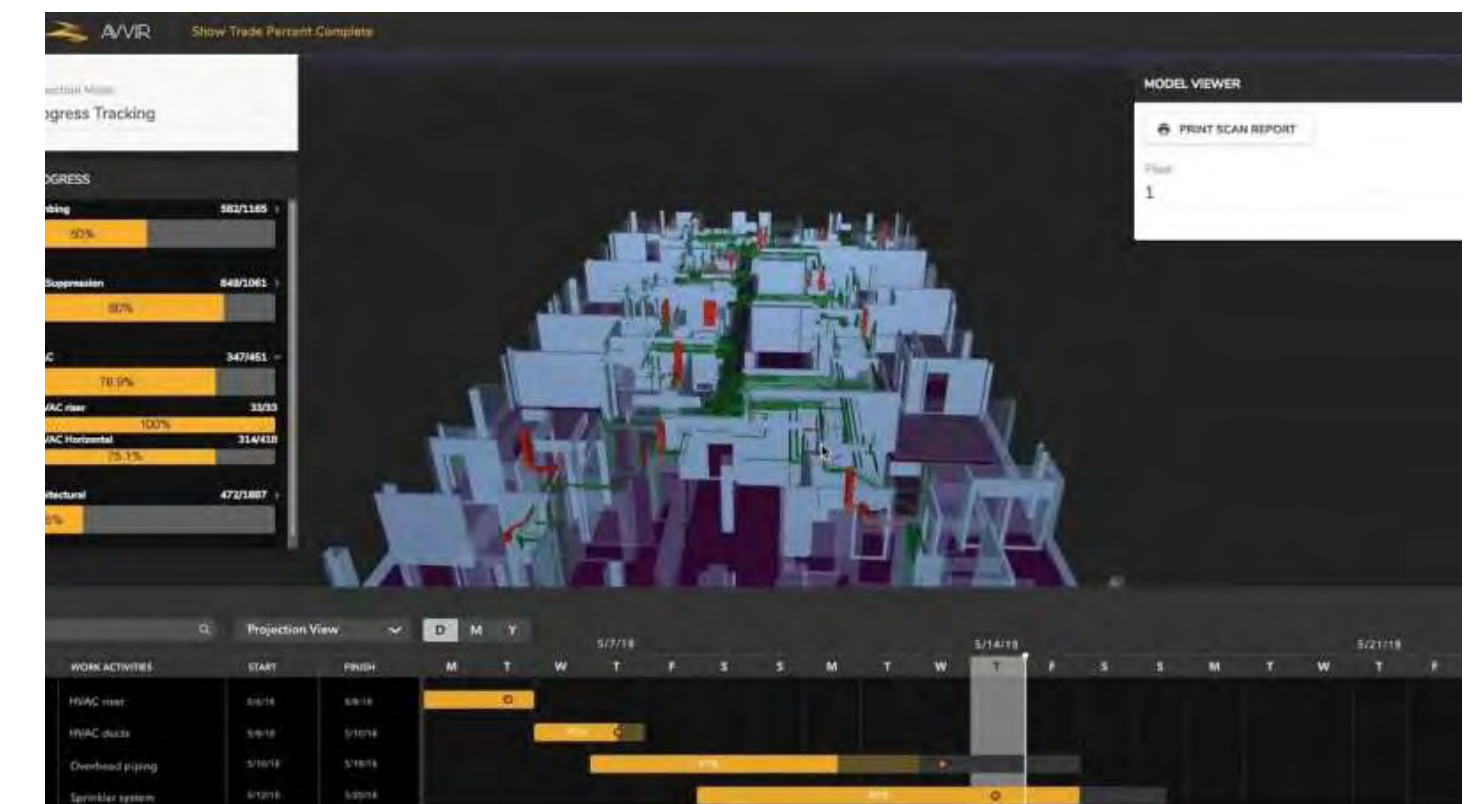
With real-time data updates, ensure team members always have a current CPM analysis and risk assessment

16 INEIGHT

InEight is a software built on an open, functionally rich, and modular technology platform that drives seamless integration with other systems. This ensures project stakeholders have the real-time information and insights needed to control costs, minimize risks, and improve operational efficiency.

17 AVVIR®

Avvir consists of creating digital twins that update the information they have side-by-side with the construction, providing an automated risk analysis solution. It takes the BIM model and scans it in the field to make a comparison and evaluate if the construction elements are on schedule. It also provides the ability to compare the as-built models to the scans and identify inconsistencies.



Track your process to meet deadlines

18 RECONSTRUCT®

Reconstruct mixes reality capture and construction drawings to navigate the site in 2D, checking progress in 3D. Flexible devices and works both indoors and outdoors. The main idea is to reduce the travel time of the owner or developer to different sites, to be aware of the overall progress and possible risks of delay, and to monitor the items that already happen on the site.

19 BUILDOTS

Buildots is a networked construction platform that offers to develop a detailed execution plan from any design and schedule. Then, to follow the progress, it combines the capture of reality by a 360° camera with the construction site, drawing information and sending it to the different actors involved in this construction. The platform allows the user to generate reports with the information obtained, and it also includes cash flow information related to the progress of the work.

20 CONXTECH®

Conxtech worked with Autodesk to create a prototype of a Model to use AI to gain control of one of the most unpredictable steps in construction, the bidding process. To shorten the bidding cycle and reduce the bidding costs, ConXtech developed a prototype bidding platform that uses AI to find the most cost-efficient structural steel design based on the costs of material procurement, fabrication, and construction. These costs are influenced by the vendors and subcontractors selected for the project and vary depending on the project's.-



Conclusion

To stay ahead of the game in this ever-evolving industry, embracing AI as a transformative tool, not a replacement, is essential. By investing in continuous learning and actively exploring AI's potential, professionals can become key players in shaping the future of the built environment, unlocking new creative possibilities, and driving greater efficiency throughout the design and construction process.

Along this white paper, we have reviewed some of the leading AI tools and software programs that can become allies in your work. These tools can replace specific

operational tasks and free up valuable time, allowing AEC pros to focus on more creative and strategic aspects, such as design, change management, or managing the teams in charge. Even giving the most accurate prompts to obtain the best results is part of the crucial role demanded by this technology.

Keep in mind that when choosing any specific software, it is vital to consider the needs of your project and to find the right software for your needs. Let's harness the power of AI to build a future where technology amplifies our creativity.

About Corbis

We are Project Delivery Specialists. Since 2002, our goal has been to remove barriers to smooth project delivery and streamline our clients' journey to ensure successful projects on time and within budget.

As our industry evolves, we strive to stay one step ahead, soothe concerns, and inspire optimism by providing speed, accuracy, and predictability throughout the project lifecycle.

Our company encourages research and development to deliver innovative solutions using AI to enhance talent and maximize results for our clients.

We bring to each project a clear and detailed vision with a plan forward and a backup plan in our pocket.



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