Maximizing the Value of Technology.

Avvir's Reality Analysis Platform works across all verticals

AVVIR®

BIM-focused reality analysis for the built world.

Glossary

In This eBook

Introduction

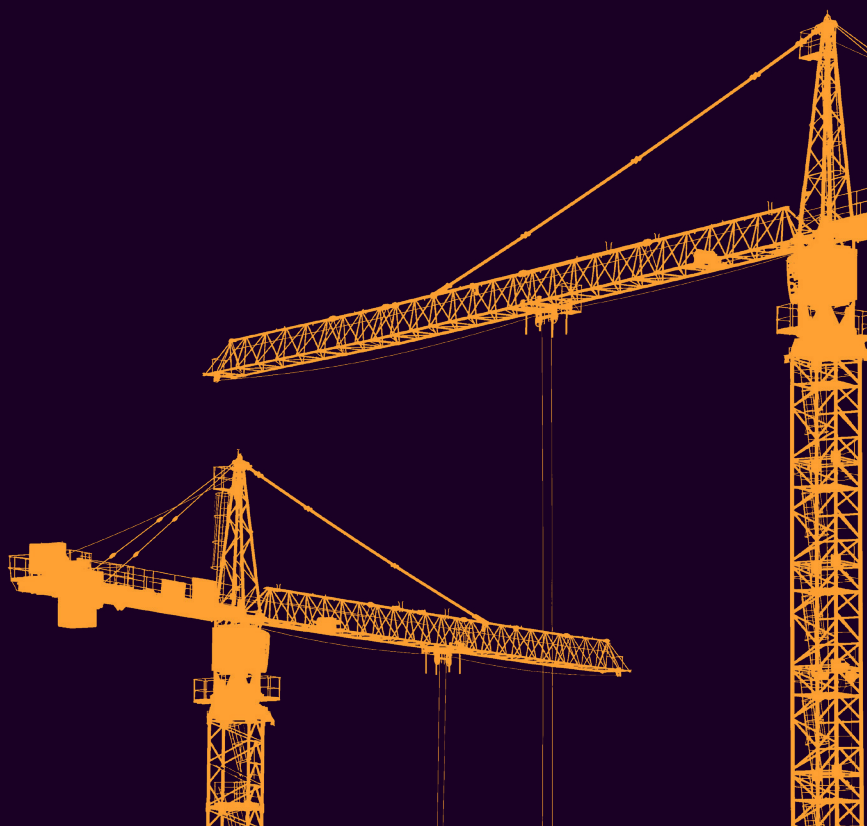
According to McKinsey, venture capitalists began pouring massive amounts of money into construction technology in the mid-2010s, and the construction tech industry continued to grow through the decade. The pandemic and resulting shutdowns were a jolt to the construction industry, inspiring further technology immersion. Moving forward, McKinsey projects more and more investments to continue in construction technology and digitization.

The investment in technology was done, in part, to catch up with other industries. Investment also serves as recognition that the industry needed to innovate to realize greater projects and grow.

McKinsey also says the construction industry's receptiveness to and investment in technology over the past eight years or so was in response to poor productivity. They report that global "...labor-productivity growth in construction has averaged only 1 percent a year over the past two decades, compared with growth of 2.8 percent for the total world economy and 3.6 percent in the case of manufacturing." If the construction sector productivity reached that of the total world economy, the sector's value would add approximately $1.6 trillion.

The industry's challenges don't end with productivity. Construction projects regularly run over budget and past deadlines; it's notable when a project is on time and within budget. According to a survey, 75 percent of projects go over budget, and 77 percent take longer than estimated.

The challenges related to productivity, scheduling, and budget are not relegated to a specific vertical market (i.e., specific building type). Regardless of the vertical market (healthcare, education, retail, multifamily, commercial, data centers, etc.), construction is underperforming. To overcome the general inefficiency throughout the construction world, the industry is turning to technology in all phases of the building process and in all vertical markets.



Vertical Agnostic and Hardware Agnostic

Among the challenges of integrating new technology is its impact on the work process. As companies adopt various technologies, their full value can be realized only if the technologies are compatible. When technologies are incompatible, information and data are siloed.

Therefore, when selecting technology to add to the mix, companies benefit by choosing agnostic systems.

At Avvir, we appreciate the need to be as flexible as possible. Siloed data disrupts workflows, and that's never helpful to GC's and owners. That's why Avvir was designed to be software, hardware, and vertical agnostic.

Because our platform is vertical agnostic, we can help keep projects of all types on schedule and budget. And because we're software and hardware agnostic, we require no specific authoring tools or capturing technologies. So long as the inputs include a BIM and Reality Capture we can provide our analysis. BIM modeling can be done in Revit, Tekla, Bricsys, AutoCAD, etc., and reality capture can be provided via 360 photo/video, mobile LiDAR, terrestrial LiDAR, drone, or even robot. We're here to help you focus on solving issues, not by making it harder to understand the base issues of your site.

The Avvir Solutions

Two of Avvir's solutions focus on tracking production. Progress 4D keeps a team on the critical path by objectively quantifying a project's progress compared with the schedule. Our algorithm defines the status of every BIM element as "Not Built" or "Built" based on comparison of the point cloud data or 360° photos with BIM models.

Progress 4D also quantifies progress by trade or area against the project schedule. It alerts teams whether they are on track to meet milestones and turnover dates and offers benchmark trade partner performance.

Progress 5D tracks installed value against scheduled progress for each line item in a team's work breakdown structure or schedule of values. This insight can be used to validate the budget and cash flow within the Avvir platform.

Some of the benefits of Avvir Progress 5D include enabling fast and confident pay apps, effectively managing cash flow, thereby reducing the risk of project delivery and handover, tracking progress in the context of cost, and enabling for viewing schedules of value with earned value calculation.

A third solution, Avvir Inspect, focuses on access quality. To uncover potential issues in the field, Avvir Inspect identifies discrepancies between design intent as defined by the BIM and reality as seen in the point cloud. With such inspection, teams can proactively discover issues and coordinate fixing them, automate the production of as-built models, identify critical risk areas, and automate QA/QC for any project or trade.

Avvir's solutions offer unique understandings and actionable solutions to the issues construction projects face. Companies gain financial visibility and confidence in their actual earned value, find critical issues that prevent the need for costly rework, and keep their BIM up to date with as-built conditions.

Examples of how Avvir works in all industries

The time and money required to produce a Model T were reduced because Henry Ford perfected assembly line production. This type of production also introduced an age of specialization. “Each man on the line became a specialist,” explains Hagerty, a media company focused on driving. “He did one thing, and he did it perfectly, and passed the work along to the next man.”

In many ways, our current technological era is repeating the specialization that Ford focused on. Software companies produce hyper-specialized products, making them useful for their designed intent but useless for anything else.

Avvir takes the opposite approach. Our software provides complete knowledge of the build and helpful insights across the construction spectrum, no matter the vertical market. So, owners and general contractors working on all types of buildings can turn to Avvir for analysis for all their projects.

Let’s look at how Avvir technology has served multiple industries.

Commercial

Commercial construction covers a wide variety of building types. The amount of commercial building floor space is projected to reach 124.6 billion square feet by 2050, which marks a 35 percent increase over the 2021 total.

AECOM Tishman, a fully owned subsidiary of AECOM, is a giant within the commercial construction industry. The company has built millions of square feet of commercial space and manages some of the largest and most complex mixed-use and mega-development projects in the U.S.

While working on one of these massive projects, Manhattan West, which has seven mechanical floors and 236,966 square feet, they turned to Avvir to manage reality capture data sets. The VDC project manager said, “We needed a solution to do the heavy lifting of processing and visualizing data in objective ways.”

The Avvir platform allowed AECOM Tishman to track construction on a granular level. The platform identified 112 critical forward-looking clashes within two months. Avvir also enabled the team to move faster and enhanced productivity by providing timely updates to the team so they could respond accordingly. Click here to learn more about Avvir’s work with AECOM Tishman.

Click here to read more about how AECOM Tishman utilized the Avvir Platform.

Multifamily Housing

The multifamily housing sector in the U.S., which includes apartments, condominiums, student housing, age restricted housing, etc., is underbuilt. This is true even though apartment deliveries in the past two years have neared 50-year highs. Studies have shown a need for 560,000 multifamily units by 2030 in New York City alone.

Multifamily units are often built via repeatable modules, so the design must follow construction to a tee. If not, the mistake will be repeated, and fixing it will be expensive.

Avvir can help developers and general contractors ensure construction and design are in sync. Avvir Progress is the perfect platform for managing large complex multifamily housing projects. It takes the embedded data from the BIM and accurately quantifies progress by comparing the BIM with the reality capture. In addition, developers and general contractors can determine if the systems are located where they were designed to be.

To learn more about how Avvir helps ensure final construction is equivalent to the design of multifamily housing, click here.

Healthcare

When the pandemic began impacting the U.S. in March 2020 there was a good deal of talk about the number of hospital beds per 100,000 people. As a result, the bigger question became, is the healthcare industry prepared to treat the expected onslaught of patients?

In response, spending on healthcare construction has been rising, including in 2022. Greater spending is occurring despite the higher costs of materials due to inflation. The PSMJ Resources Quarterly Market Forecast survey found the healthcare market to be second out of 12 sectors evaluated in terms of proposal activity.

Getting healthcare construction accurate is especially important since mistakes can impact patient care. This becomes more challenging since healthcare construction project schedules are typically tight due to the immediate need for facilities.

Recently Avvir was applied to a 400,000-square-foot healthcare facility in Southern California to help a team meet an aggressive schedule and quantify progress within the context of cost. With the help of Avvir the team was able to automate the process of mapping thousands of line items from their schedule of values to the corresponding geometry in the BIM. This was paired with automatic progress updates via reality capture, so Avvir acted as the third-party verification tool for signing off on payment applications. This was a timesaver. In addition, the information helped the team understand the value of what had been installed to date, which increased transparency.

Data Center

With data seemingly the answer to every question, new data centers that store IT-related computer systems and equipment are in great demand. The market is expected to have a compound annual growth rate of 9.6 percent between 2022 and 2029.

Temperature control and air circulation are essential when constructing a data center because sensitive and costly computer systems and equipment are best maintained under specific conditions. Another challenge for data center customers is getting to market as quickly as possible.

DPR Construction, one of the top general contractors in the U.S., turned to Avvir while developing a data center campus that included five separate data centers. They ran into a bottleneck while scanning construction progress due to a lack of skilled technical professionals.

DPR's client was focused on getting entire buildings scanned and building the facility per the coordinated model. Therefore, accurate scans were critical to ensure construction progress was correctly captured. Avvir's Reality Analysis platform imported DPR's scan data and analyzed deviations. This opened up bandwidth and enabled DPR's team to work more efficiently.

Click here to learn more about the DPR project.

Bio/Life Sciences

Life science buildings, which include labs, research and development facilities, and manufacturing plants, typically must meet the exacting protocols required by strict government regulations.

Meeting these stringencies requires that general contractors work with subcontractors who specialize in elements specific to life science buildings. It also requires significant coordination between the design team and the construction team.

In its work constructing life science buildings, Massachusetts-based Columbia deals with very sophisticated model-driven and detail-oriented subcontractors. Columbia turned to Avvir to help them maintain accountability for subcontractor productivity during installation.

Working with Avvir has helped Columbia save time (no more site walk-thru inspections, analyzing the data, and creating reports), identify deviations, increase visibility and confidence, and produce final as-built models.

Columbia's director of virtual planning and construction noted that the company previously used manual processes, which negatively impacted productivity, but with Avvir the company relies more on the BIM model.

Read more about how Avvir has helped Columbia here.

Education

K-12 school construction is primarily dependent on government funding. In the past, school systems have been underfunded, leading to many schools needing an update or new construction. The pandemic shutdowns underscored the meaningful role schools play in children's lives.

Managing a school construction project is challenging. First, a school has a variety of facilities (classrooms, computer labs, auditoriums, fields, cafeteria, etc.) as part of its envelope. A second challenge is communication. Because governments need to answer to the public, builders have to work closely with the government and be able to share required information clearly and regularly.

Both challenges lead to the importance of collaboration and communication.

Skanska, a world-leading project development and construction group, worked with Avvir on a massive education project in Washington State. During phase one, five buildings were constructed simultaneously but were in different stages.

Communicating progress, design/constructability challenges, crew needs, requisitions, and general updates to stakeholders took a great deal of time. Skanska turned to Avvir and their analysis to enhance communication.

VDC teams, project managers, and superintendents could compare existing conditions to the BIM and communicate large datasets effectively to their teams, trades, and clients.

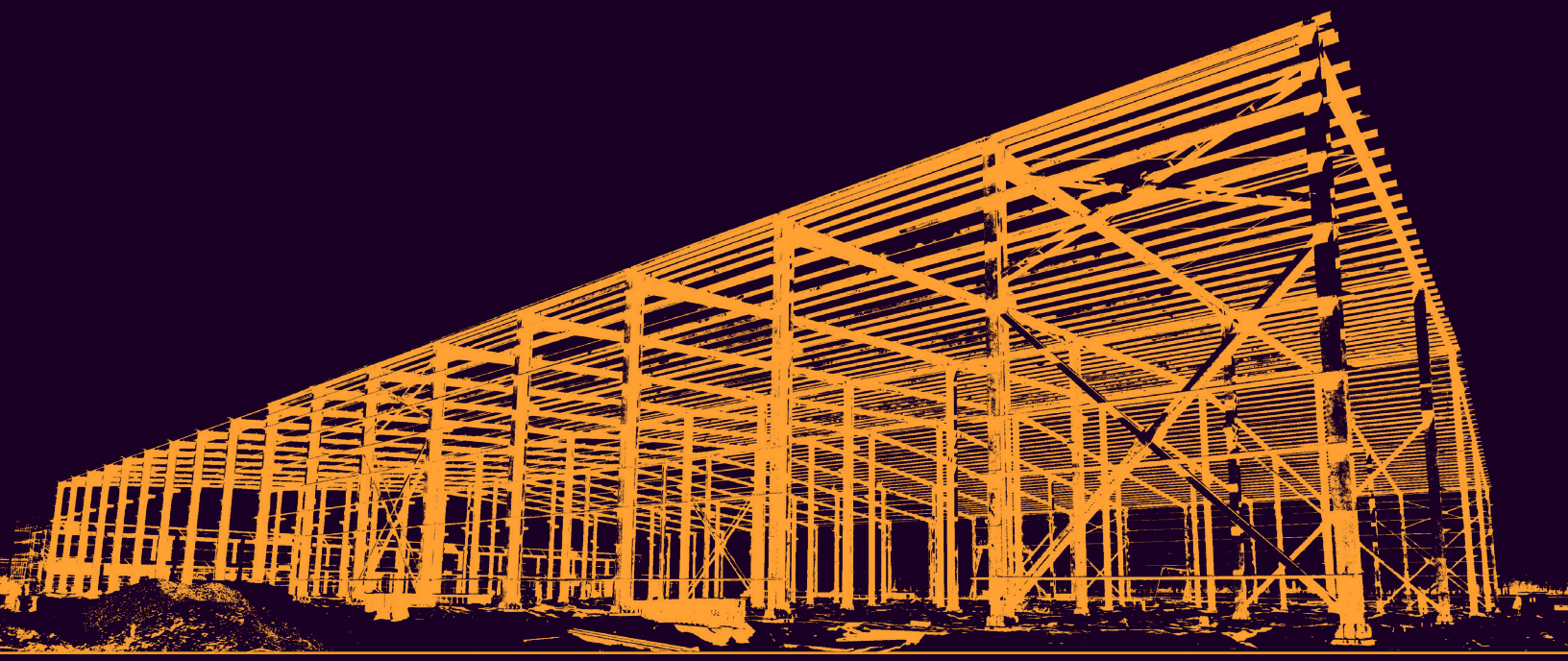
Read more about the project here.

Conclusion

Avvir's BIM-focused reality analysis platform finds issues and helps teams fix mistakes, reduce costly rework, prevent critical path delays, and gain accurate, transparent financial visibility into project progress.

Because Avvir is vertical agnostic and hardware agnostic, it can be used on nearly any project. We've worked with major companies in multiple verticals. And the results are the same: We find issues and help solve them.

Save money, save time, and easily communicate with your team. **Click here** to learn more about Avvir and how we can help you complete your construction project.



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