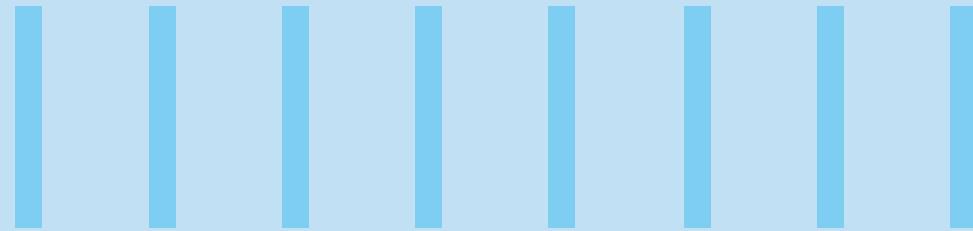




# MODELING A COLLABORATIVE, DIGITAL FUTURE FOR CONSTRUCTION

What the Architecture, Engineering and Construction (AEC) industry needs for greater agility, efficiency and sustainability



## Abstract

As the AEC industry moves forward on the road to digitization, data and platform connectivity is an essential but complex component. Done right, connected, integrated systems help realize the full benefits of digitization – dramatically improved efficiencies across the project lifecycle.

## The forces shaping the future of AEC

The architecture, engineering, and construction (AEC) industry is at the cusp of digital transformation driven by the need to find safer and smarter ways of construction, an outcome of COVID-19 and a rise in demand. With market size projected to exceed a staggering US\$2,010 billion in 2031, the diverse, fragmented, and risk-averse

AEC and related services industry is turning to digital technologies to meet new demands quickly. Not surprisingly, according to Markets and Markets Research, the market size for software in the industry is projected to reach US\$5.5 billion and services are projected to reach US\$3.5 billion in 2025.



### Challenges

- A **diverse** industry with wide-ranging professions, skills, and interests including architects, engineers, construction companies, materials suppliers, and more.
- A **highly fragmented and regulated** industry with many small businesses makes standardization of systems and processes difficult.
- **Disparate business systems including custom purpose-built tools and processes** make it difficult to meet the rising demand quickly and easily.
- **Rising costs** of materials and significant cost impact due to quality issues and project delays are major concerns for the industry.



### Opportunities

- Demands for **green buildings and infrastructure** mean AEC companies must adopt a sustainable, energy-efficient, and cost-effective design, engineering, and construction approach.
- No longer limited to freelancers, **hybrid working** has broken through many barriers to gain traction across sectors and the AEC industry is no exception.
- **Data** is the new gold enabling smart construction and buildings.
- One of the fastest-growing areas, **prefabricated construction** makes the installation process simpler with the need for fewer workers onsite to complete a task.

## Technology lights the path ahead

These challenges and opportunities have set the stage for digitalization in the industry. Digital technologies are a key enabler of innovation and efficiencies and offer:

#### Value for money:

Digitizing the build can drive more revenue and savings throughout the project lifecycle with more efficient processes for estimation, pricing, and delivery

#### Collaboration:

Collaborative platforms help break down silos to engage and leverage the talent and skills of cross-functional teams anytime, anywhere

#### Data-driven decision-making:

Data and analytics empower all stakeholders with data for informed decision-making to effectively manage a project from start to finish

#### Proactive strategy and design:

Digital tools such as building information modeling (BIM) virtualize construction to increase situational awareness and enable proactive identification and mitigation of issues and risks

#### Sustainability:

BIM and digital platforms also allow teams to rethink and integrate sustainability throughout the lifecycle of a project

#### Reuse:

Digital technologies and workflows enable the reuse of design practices for improved efficiency and effectiveness

## Building information modeling (BIM): The digital core

As demand rises for quick, affordable, and risk-free construction, operation and maintenance of standardized buildings and infrastructure, so does the need for integrated systems, processes and collaboration.

BIM enables this collaboration on virtual platforms with digital twins of buildings and infrastructure by aggregating data from all teams and stakeholders across the project lifecycle.

BIM simulates a construction project virtually, enabling AEC professionals to manage projects from start to finish. It defines, creates, and manages critical project information, ranging from design and procurement to fabrication and construction, accurately creating a digital footprint of a project from construction to delivery. Because data is centrally saved, all stakeholders involved can view the complete project and timeline in real time.

## BIM enables AEC companies to

- Easily produce 3D renderings of the building and assets for better design clarity
- Generate drawings and assist in design decisions by comparing various design possibilities.
- Estimate cost and establish strong alignment between cost and design.
- Coordinate procurement, fabrication, and delivery schedules to reduce time and material waste.
- Detect conflict, interference, and collision instantly and automatically.
- Graphically illustrate potential failures, leaks, and more.
- Enable facilities management.
- Central documentation, reducing the danger of data breaches or missing documentation.
- Enable real-time data sharing and collaboration between remote, dispersed teams.

## Unleashing the full potential of BIM

For BIM to be effective, data integration between your BIM platform, existing information management systems and a common data format is essential. This level of integration creates an effective environment for collaboration and accurate, reliable, and repeatable exchange of design information and knowledge among all components. Up-to-date information not only enables better design and planning, but reduces conflicts and risks, injecting greater efficiency across the project.

## How the Infosys EPC Solution delivers the difference

For AEC companies that have invested in technologies, applications, and custom tools over the years, data integration is a real challenge and costly end-to-end solutions with long implementation cycles are not an option.







To mitigate this, the Infosys EPC Solution integrates design and engineering data from existing systems with open APIs that are capable of integrating with all major commercial off-the-shelf products, legacy systems, and custom tools. This API-first approach provides a common data environment, collaboration, reporting, visualization, access control, and ease-of-use. The result is a BIM solution that delivers virtualization and collaboration while protecting legacy investments and existing systems.

For instance, for a tunnel and bridge project, the Infosys EPC solution automated the input process so information from Civil 3D was directly transferred to Revit. The solution also provides BIM 360 for live interaction and an interface between various functions such as piping, electrical, and topography. The result – increased efficiency, productivity, and speed.



## Solution benefits

The Infosys EPC Solution helps digitize your complete EPC processes from design to procurement, logistics, construction, and operation while being adaptable to your needs. Some of the key services delivered include:

|   |  |   |
|---|--|---|
|  <b>Project management</b>                               |  <b>Engineering design</b>                              |  <b>Procurement and logistics</b>                                  |
| With smart, comprehensive, and real-time visibility into project data to track, monitor, and analyze schedules, finance, and performance. | An integrated digital cloud engineering data platform to conceptualize, analyze, and visualize the design models.                        | An integrated platform to monitor, manage, and report procurement and storage of material and equipment, for both internal and external stakeholders. |
|  <b>Construction and commissioning</b>                   |  <b>Corporate systems</b>                               |  <b>Sustainability and safety</b>                                  |
| A holistic approach to building a safe, secure, sustainable, and connected worksite to streamline human-machine collaboration.            | A cross-team collaboration platform with standard operating procedures (SOPs) for all the units involved, to optimize project execution. | Instilled in the entire value chain, from design to construction operations.  |

## Digitization that enhances your future while protecting your legacy

Ultimately, connected platforms and systems lay the foundation for a digital business. As the AEC industry becomes increasingly digital, businesses that prioritize digitization and integration will reap its benefits – increased productivity, reduced costs, and safeguards against hazards – today and beyond.

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1. [Global Architectural, Engineering Consultants \(AEC\) and \(globenewswire.com\)](#)

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