

CONSTRUCTION TIMES

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SMART CONSTRUCTION

SOFT SOLUTIONS FOR CONSTRUCTION EFFICIENCY



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SMART CONSTRUCTION



With construction activities are growing leaps and bounds in the country, it is imperative to adopt latest and new-age construction software and technologies for a smarter way of construction. **Construction Times** explores the trend in the absorption and implementation of latest construction technologies and the way forward.

Technology plays a crucial role in the construction of buildings and infrastructure projects. Right from the conceptualization to the execution, the construction process passes through various stages. Use of technology makes the overall process simple and precise. Over the years, construction technologies have become smarter with the evolution of digital and IoT-based solutions. These solutions have made the overall construction efficient, economical and smarter. The construction industry has come a long way from drafting manually on paper to using advanced design and construction management tools. Today, software solutions are being used in various stages of construction, viz. design, management, monitoring, etc.

THE SMART MOVES IN CONSTRUCTION

Construction technologies have evolved over the years to become more advanced. The adoption of digital solutions and technologies in construction and building projects has become increasingly common

in recent years, as the industry has recognized the significant benefits of these technologies in improving efficiency, productivity, and safety. To accelerate fast-paced urban and rural infrastructure development, government bodies are increasingly turning to digital and software solutions to optimize their processes and improve their productivity.

Some of the common technologies used in construction are Building Information Modelling (BIM), Enterprise Resource Planning (ERP), and Client Relationship Management (CRM) tools. These solutions assist companies in streamlining their operations, enhancing communication between teams, and improving project delivery. There are also digital solutions such as IoT and 3D printing.

BIM is a digital representation of the physical and functional characteristics of a building, which is used to create a 3D model of the building. BIM software allows architects, engineers, and construction professionals to collaborate and work together on a single platform. This leads to improved coordination,



reduced errors, and increased efficiency in the construction process.

Project Management Software is designed to help construction companies manage their projects efficiently, from the planning and design stages to the actual construction and completion of the project. These software solutions allow construction companies to track and manage resources, monitor project timelines, and communicate with stakeholders in real-time. This leads to increased productivity, reduced project delays, and improved communication between all parties involved in the project.

IoT technologies are being used in construction and building projects to connect devices and equipment on the job site. This can lead to improved resource utilization, reduced waste, and increased safety. IoT devices can also provide real-time data and analytics, which can be used to optimize processes and decision-making.

Drones and unmanned aerial vehicles (UAVs) are increasingly being used in construction and building

projects for surveying, monitoring construction progress, and inspecting hard-to-reach areas. Drones can provide real-time data and imagery, which can be used to improve decision-making and project management.

Virtual Reality and Augmented Reality technologies are being used in construction and building projects to create immersive and interactive experiences for stakeholders. VR and AR can be used to simulate different design scenarios, visualise construction progress, and train workers on safety procedures.

TECHNOLOGY PLAYERS AND SOLUTIONS

In recent years, the adoption of digital technologies in the infrastructure sector has gained significant momentum, leading to increased efficiency, cost savings, and improved project delivery. Leading technology players have come up with solutions that enhance efficiency and productivity in construction projects. SoftTech Engineers has built PWIMS® that

SOFTECH SOLUTION HELPS MCGM IMPROVE EODB RANKING

SoftTech's flagship software product BIMDCR® has helped MCGM (Municipal Corporation of Greater Mumbai) to boost the Ease of Doing Business Ranking (EoDB by World Bank) in manifolds. MCGM has been harnessing the power of BIM (Building Information Modelling), AI (Artificial Intelligence) and ML (Machine Learning) through SoftTech's innovative software products BIMDCR® and AutoDCR® by introducing permits on the BIM model. This is the second breakthrough initiative in the world only after Singapore. BIMDCR® is helping MCGM dynamically simplify and automate the construction permit processes.

Leveraging the BIMDCR®-based permit system, MCGM has significantly improved the Ease of Doing Business Ranking. The number of procedures has been reduced from 20 to 8., the time taken for the process has been reduced from 99 to 45 days, the cost has reduced from 6.6% to 2.21% value of Warehouse, the quality parameter is achieved 100% as per World Bank norms., transparency ensured by randomization of scrutiny officials and remarks being in the public domain, has been maximized and information dissemination by dynamic dashboard has been accomplished.

SoftTech has been at forefront of bringing about the most impactful technology-led innovations around the world in the AEC Industry (Architecture, Engineering & Construction). Our diversified software product offerings are paving new ways for the industry to leverage automation and insights to maximize efficacy & value generated.

is designed for core functional processes of works planning, procurement and maintenance in public works organizations. **Vijay Gupta, CEO and Founder, SoftTech Engineers**, elaborates on the technology,



VIJAY GUPTA
CEO and Founder,
SoftTech Engineers

"The Public Works Information Management System (PWIMS®) is a web-based commercial-off-the-shelf (COTS) application for managing all the core functional processes across the project lifecycle including budgeting, cost estimations, financial & technical approvals, e-tendering, contract management, project monitoring and contractor billing."

According to him, PWIMS® aims to replace the existing manual system of paper-based working and facilitate the public works organizations to function in a transparent and efficient manner coupled with effective monitoring and control over the projects. It automates the Works Management functions ranging from budgeting to final completion. This in-turn improves the business processes and resolves the bottlenecks in the existing system.

"The dedicated solutions offered by the SoftTech are beneficial for government bodies in a number of ways. Firstly, these solutions can help improve project efficiency and reduce costs, which are need of the hour for smart cities and rural development. Secondly, these solutions enable real-time monitoring of project progress, which helps ensure that projects are completed on time and within budget. Thirdly, the solutions help to improve communication and collaboration between project stakeholders, which can help prevent misunderstandings and mistakes," claims Gupta.

RIPL is a leading digital transformation partner for the AEC industry. "We, working with our partners in India and abroad, transform our clients' workflow, design process etc. to make them more efficient and competitive in the market, says **Prajwal Misra, Director, Rudrabhishek Infosystem Pvt Ltd (RIPL)**.

RIPL provides multiple software based solutions



PRAJWAL MISRA
Director, Rudrabhishek
Infosystem Pvt Ltd (RIPL)

and services that hugely improve the design and implementation efficiency of projects in infrastructure and construction. One of the solutions offered by the company is BricsCAD, which is the computer aided design software that is used in AEC Industry. It offers 2D drafting, 3D modeling, and BIM capabilities. Another solution offered is ArchiCAD, which has significant implications for the construction industry. Its features include enhanced collaboration, BIM capabilities, sustainability analysis. RIPL also offers CGS Labs that specializes in distributing advanced specialized software for the fields of Roads, Railways, and River Engineering. These software solutions are designed to address various aspects of planning, construction, management, and maintenance of buildings, as well as advanced weather information systems that support the upkeep of transport infrastructure. FusionHub Cloud ERP brings advance capabilities in AI to automate manual processes involved in many legacy ERPs, and real-time analytics to give current updates that keep one ahead of the curve, according to Misra. "With this one can easily manage general contracts, Sub contracts, financial managements, construction accounting, payroll and service operation at one central database. As well as anyone can generate most insightful reports with a few clicks," he adds.

Powerplay is a SaaS-based application designed for construction businesses that aims to facilitate the tracking and management of labour, materials, and work. It is available in multiple Indian languages,

making it accessible to a wider audience. This software helps construction businesses avoid the tedious task of manually tracking daily details, which are traditionally done using pen and paper, WhatsApp, or Excel spreadsheets.

Iesh Dixit, Founder & CEO, Powerplay, says,



“By adopting Powerplay, construction companies can improve their operational efficiency, reduce costs, and save time. The platform enables better collaboration between on-site stakeholders and provides real-time visibility into the construction project's progress. Powerplay's analytics and reporting features also allow construction businesses to gain insights into their operations, which can help them make data-driven decisions.”

Astral Real Estate & Construction software is a tool that helps enterprise to organize, budget, and schedule the entire construction process. “The features of this software are to help to create successful construction projects include: Project planning, tracking; Cost estimation and budgeting; Real-time data integration; Request For Information (RFIs) and daily logs; Risk management, and Reporting,” says **Deepan Goratela, Founder & CEO, Astral Technologies**.



TECHNOLOGY ADOPTION NEEDS TO IMPROVE

Traditionally, Indian construction industry has been very slow in adopting digital and IoT-based solutions. However, the trend is gradually changing with more players in construction industry coming forward to embrace new age technologies. “The industry has adopted digital solutions with an open arm, but a lot more can be done. Globally the AEC industry has raced towards the adoption of BIM solutions in their projects, but the Indian market still has a long way to go. As a result, partners like RIPL can greatly benefit the industry by making them competitive, at par with other global players,” says Misra.

Dixit adds, “The construction industry in India has witnessed a significant shift in user behaviour in

the past few years, particularly due to the pandemic, which has forced companies to be more tech-savvy. However, the pace at which construction companies are adopting digitalization is still slow. According to a study conducted by IDC, over 70% of companies in India are still in stages 1 and 2 of the digital transformation process, with only 3% successfully completing the journey.”

“In recent years, the adoption of digital technologies in the infrastructure sector has gained significant momentum, leading to increased efficiency, cost savings, and improved project delivery. However, the preparedness of infrastructure players and developers in adopting digital technologies varies significantly,” points out Gupta.

According to him, many larger infrastructure players and developers have been quick to embrace digital technologies, recognizing the potential benefits and investing heavily in digital solutions. These companies have the resources to hire dedicated IT teams and collaborate with technology providers to develop and implement digital solutions. They have also been quick to adopt emerging technologies such as artificial intelligence, machine learning, and Internet of Things (IoT) to drive innovation in the sector.

However, smaller infrastructure players and developers may be less prepared to adopt digital technologies due to limited resources and a lack of awareness of the potential benefits. They may also be hesitant to invest in digital solutions due to concerns about the cost of implementation and the complexity of new technologies.

In spite of these challenges, there is growing recognition among infrastructure players and developers of the need to adopt digital technologies to remain competitive in the industry. “There are also government-led initiatives aimed at encouraging the adoption of digital technologies in the infrastructure sector. For example, in India, the National Infrastructure Pipeline (NIP) includes a focus on the adoption of digital technologies to enhance project delivery, with plans to set up a digital platform for the entire project life cycle,” says Gupta.

OUTLOOK POSITIVE

According to Dixit, the benefits of technology-enabled and data-driven construction are significant. “If used wisely, it can lead to up to 50% less rework, up to 30% cost savings due to waste reduction, and up to 30% machine productivity and fuel savings. Therefore, it is essential for infrastructure players and developers in India to prioritize digital transformation to enhance their operations, improve project delivery, and reduce costs,” he adds.

“Infrastructure players and developers who are prepared to invest in and embrace digital technologies are likely to benefit from increased efficiency, improved project delivery, and a competitive advantage in the industry,” concludes Gupta. **CT**



Integration of technologies in infrastructure and construction sector

PRAJJWAL MISRA

Director, Rudrabhishek Infosystem Pvt Ltd (RIPL)

Construction technologies have evolved over the years. How are construction software and other soft solutions playing a major role currently in India?

The construction industry has come a long way from drafting manually on paper to using advanced design and construction management tools like Computer Aided Design (CAD) and Building Information Modeling (BIM). Today, CAD is the default design tool for every firm in the Architecture, Engineering, and Construction (AEC) Industry. Advanced 3D modeling solutions like BIM are also being increasingly used in the infrastructure sector to mitigate design flaws before the construction starts, and accurately predict potential delays, material wastage during the construction process. In addition, the industry has widely adopted management tools like Enterprise Resource Planning (ERP) to optimize inter-department workflows, cost controls etc.

What are the kind of digital solutions and technologies adopted in construction and building projects?

On the design side:

Computer Aided Design Software: Many world-renowned CAD software like BricsCAD are used across the industry to accurately model anything from buildings to highways.

Building Information Modeling Software: BIM software, like ArchiCAD etc, has widely been adopted by the industry as an upgrade from CAD software. BIM adds to the functionality of CAD by enriching the 3D model with additional information related to material quantity, scheduling etc. This automated the laborious task of estimation and scheduling in a construction project.

Automated Infra-Design Solutions: Solutions like Ferrovia and Aquaterra by CGS

Labs, automates rail and water channel design reducing design project timelines drastically.

On Management side:

Enterprise Resource Planning (ERP): ERP were a concept originally perfected by the manufacturing industry but has since then been widely adopted by the AEC industry too. Managing multiple projects with many different stakeholders and with a very complex supply chain is a daunting task even for a large team of construction managers. ERP acts as a central hub to manage all project related tasks in an enterprise, making construction management more efficient.

Customer Relationship Management (CRM): CRM software are heavily used by the real estate industry for managing the entire lifecycle of the customer starting from lead generation and marketing to deal closures.

What are the services and solutions offered by the company in construction projects?

RIPL is a leading digital transformation partner for the AEC industry. Construction industry is full of legacy design and management processes that need to be updated for the digital age. We, working with our partners in India and abroad, transform our clients' workflow, design process etc. to make them more efficient and competitive in the market.

RIPL provides multiple software based solutions and services that hugely improve the design and implementation efficiency of projects in infrastructure and construction. These include:

BricsCAD: BricsCAD is the computer aided design software that is used in AEC Industry. It offers 2D drafting, 3D modeling, and BIM capabilities. BricsCAD helps in the creation of accurate and detailed drawings & models,

Advanced 3D modeling solutions like BIM are also being increasingly used in the infrastructure sector.

which improves the efficiency and accuracy of construction projects. Additionally, BricsCAD has the ability to integrate with other construction software, which can further enhance its usefulness in the industry.

ArchiCAD: ArchiCAD has significant implications for the construction industry. Its features include enhanced collaboration, BIM capabilities, sustainability analysis. These features help reduce errors and costs associated with rework and change orders, design environmentally-friendly buildings, improve project efficiency, and ultimately result in cost savings for construction firms and clients. ArchiCAD's streamlined design and construction process also allows for improved collaboration between architects, engineers, and construction professionals, reducing the risk of errors and delays.

CGS Labs: CGS Labs specializes in distributing advanced specialized software for the fields of Roads, Railways, and River Engineering. These software solutions are designed to address various aspects of planning, construction, management, and maintenance of buildings, as well as advanced weather information systems that support the upkeep of transport infrastructure.

FusionHub Cloud ERP: FusionHub Cloud ERP brings advance capabilities in AI to automate manual processes involved in many legacy ERPs, and real-time analytics to give current updates that keep you ahead of the curve. With this one can easily manage general contracts, Sub


contracts, financial managements, construction accounting, payroll and service operation at one central database. As well as anyone can generate most insightful reports with a few click.

How prepared are infrastructure players and developers in adopting the latest construction software and solutions?

The industry has adopted digital solutions with an open arm, but a lot more can be done. Globally the AEC industry has raced towards the adoption of BIM solutions in their projects, but the Indian market still has a long way to go. As a result, partners like RIPL can greatly benefit the industry by making them competitive, at par with other global players.

Educating senior management about the benefits of such technologies is also required, at present. Many senior engineers graduated college in an era before computer aided designing were still in its infancy. Thus, many fail to see the impact of such technologies in their businesses. This makes corporate training crucial for the adoption of many digital solutions.

What is your outlook on the soft technologies and digital solutions market in India?

Software solution in the AEC industry is a fast-growing market. BIM adoption will lead the way followed by other emerging technologies like LiDAR sensors, etc. 

Partners like RIPL can greatly benefit the industry by making them competitive, at par with other global players.

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