



Solutions for the Construction Industry



SAP and LARSEN & TOUBRO INFOTECH Here to Help

Helping the Construction Industry Use Digital Technology to Emerge Stronger from the COVID-19 Crisis

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Our Point of View

The construction industry has played a critical role during the COVID-19 crisis, and technology has been instrumental in ensuring business continuity during lockdown. The industry needs to **accelerate the digital transformation process** it started before COVID-19 and adopt best practices from other industries, such as manufacturing, to improve productivity, attract new talent, and manage its data.

Throughout the COVID-19 crisis, the construction industry has played a vital role, responding to urgent requests such as building hospitals in a few days or donating lifesaving equipment. But the industry has also been badly affected: many construction sites have shut down and supply chains have been disrupted. ¹

Like many other sectors, construction had to adapt quickly by taking care of employees and enabling remote ways of working, rebalancing supply chains, and managing cash even more carefully. Projects have been disrupted. Customers have asked for new schedules and, in some cases, different commercial terms.

Technology has been instrumental in improving firms' resilience. It also confirmed our belief since before COVID-19 that construction had reached an inflection point with digital technology adoption that could potentially revolutionize the industry.



“For all of us at SAP, our vision to help the world run better and improve people’s lives has never been more important than in this current moment. **We remain focused** on our people, our customers, and our communities. Together, we will persevere.”

Christian Klein, CEO, SAP SE

Until the end of 2019, construction was an industry with impressive growth opportunities: 75% of the infrastructure expected to be needed in 2050 had yet to be built. ²

It also had its own challenges: it is, for example, one of the least digitalized sectors in the world, only slightly ahead of agriculture. ³ The construction sector has seen flat or even declining productivity over the last 50 years, ⁴ while the manufacturing sector during the same period of time increased productivity 1.7 times.

Projects have become riskier due in part to their greater complexity: The assets being built are taller and bigger. Activities have been internationalized. More stringent health, safety, and sustainability regulations must be met. And there is a lack of skilled resources.

The industry is also struggling to replace skilled craftsmen and engineers with technology-savvy but inexperienced millennials.



“LTI has proven innovation capabilities and deep technical knowledge and expertise with SAP S/4HANA®. We use this expertise to design, build, and implement SAP solutions creatively, offering customers ways to increase value from their investments.”

Sanjay Jalona, CEO, Larsen & Toubro Infotech

At the same time, construction accounts for 36% of worldwide energy usage and 40% of CO2 emissions, ^{5 6} putting increased pressure on firms to reduce their environmental impact.

Digital technology is starting to make a real difference. It is significantly increasing productivity, alleviating the need for experienced workers and attracting millennials, and enabling risk-sharing through integrated project delivery and connected supply chains.

Manufacturing best practices, such as cost and quality controls, modular construction, and prefabrication, have started to make their way into the construction sector, with some construction sites becoming “open sky assembly lines.”



OUR POINT OF VIEW

Digital twins are being used to consolidate the massive amounts of structured data, including engineering data and schedules. This also includes unstructured data, such as contracts, submittals, meeting minutes, and project documentation generated in commercial, design, and build phases. This data is used both to streamline the commissioning process and, when combined with real-time operational data from the asset, to support the maintenance and operation process.⁷

SAP and Larsen & Toubro Infotech Limited (LTI) have worked in partnership since 2018. Together, they offer technology innovations and industry expertise to take construction companies through their modernization journey.

The lockdown has highlighted the need for digital technology to make your business more resilient to an ever-changing environment. But we understand that your immediate priorities have changed, and you need our help and support today to emerge stronger from the crisis.

For that reason, we are reaching out to inform you of free services we are offering to help you take care of your customers, employees, and supply chain during the COVID-19 crisis.

We also want to hear about your needs and priorities in these unprecedented circumstances. Your contribution to our **market research** is essential and we thank you in advance for it. Our aim is to generate innovative ideas to help the sector prepare for recovery and emerge stronger after the crisis. We will keep you updated with the results of our market research along with an update of our proposals for the sector based on your input.

We care about the success of our customers. Our promise and commitment are to help your company to become an intelligent enterprise. We will leverage modern SAP® technology (and any other technology of your choice) as well as LTI knowledge of the construction sector to deliver on that promise. We look forward to helping the construction sector run better and improve construction workers' lives.



Help Your Workforce Cope with the Crisis

Workers on construction sites and in offices have been heavily affected by lockdown. Big changes are affecting their lives, and companies need to translate empathy for employees into tangible action to ensure optimal business outcomes.

In many construction companies, the crisis has split employees into two distinct groups. There are those who are needed on project sites and those in functions such as sales, planning, and administration whose tasks, to a greater or lesser extent, can be performed remotely.

Both groups are impacted. With many schools still closed and vulnerable people asked to “self-isolate,” many employees carry an extra responsibility of caring for others and need to balance this responsibility with their daily work. Those employees who continue to work on-site are concerned that safe working conditions be maintained. They can also be challenged by increased workloads in dealing with client changes and supply chain disruptions, less support from fewer colleagues present, or a requirement to perform new and often unfamiliar tasks.

Employees who need to balance work life and home life may feel isolated from their colleagues and be required to complete tasks remotely that would be more effectively performed in a face-to-face setting.



Many may be or feel underutilized. Employees may be anxious about the long-term impact of the crisis on their employer’s viability or their own job security.

Companies need to provide their employees with a scalable “work from home” (WFH) infrastructure across all business units and locations up and down the chain of command while maintaining optimal security and productivity.

With travel restrictions adding to the usual labor shortages, finding the right skills and expertise within and outside the company to work on construction sites has become even harder.





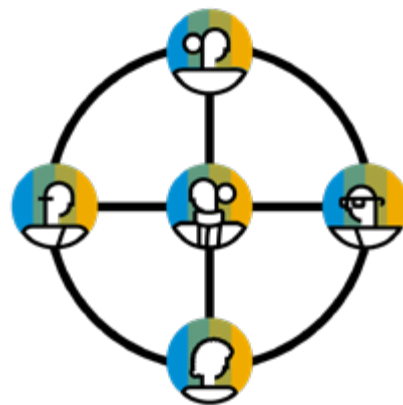
HOW COMPANIES CAN RESPOND

To maintain morale and effectiveness, it is important that employers actively engage with their workforces to encourage regular feedback on individual welfare and check how employees are adapting practically to working remotely. Companies can then tailor their communication and responses to the real concerns of their workforce rather than base them on hunches or limited visibility.

Employees with a little free time can be provided opportunities to upskill and reskill – an area that often gets too little attention in normal times. Not only will this help recoup part of the productivity loss, but it may imbue employees with a greater sense of purpose and lift morale.

Having ensured the continuity of their operations during the crisis, companies are realizing that the way work is performed will be different after COVID-19. They are getting ready to adapt and thrive under a fully distributed model to enable their workforce to stay engaged and productive while working from home and thus emerge as a stronger workforce.

To cope with demand spikes and absences through illness, companies are using new processes and systems to recruit and onboard contingent labor efficiently and identify workers with specific expertise that is in high demand.



HOW CAN SAP AND LTI HELP?

SAP and LTI provide solutions to help employers actively engage with their workforces to maintain morale.

Monitor Employee Well-Being

[Remote Work Pulse](#) is a free and automated feedback solution from Qualtrics, an SAP company, the leader in experience management. It gives you the insights you need to keep teams informed and focused.

Help Employees Cope

Access free, video-based courses from the content library of the [SAP Litmos® Training Content](#) solution. Available until the end of June 2020, the offer is to help teams and leaders find ways to cope with unexpected environmental changes and work effectively, no matter where they are.

Maintain Business Continuity

The [SAP People Connect 365](#) mobile service enables essential connections to maintain efficiency and productivity during planned and unplanned business events and disruptions.

Find the Required Skills and Expertise

[SAP Fieldglass® solutions](#), a longstanding leader in external talent management and services procurement software, are used by organizations around the world to find, engage, and manage all types of flexible resources. The solutions help transform how work gets done, increase operational agility, and accelerate business outcomes in the digital economy.

Do Everything from Home

LTI has deployed a [five-layer strategy](#) for enabling its employees to do [everything from home](#), ranging from being operational to supporting the company's growth.

Manage Resources

[LTI Resource Kaleidoscope](#) is a comprehensive solution to manage project resources (staff, labor, and equipment) throughout the project lifecycle in accordance with budgets and timelines.



Help You Serve **Your Customers**

Providing an outstanding customer experience is top of mind for executives, from bidding on the right projects to meeting customer expectations, project timelines, and quality and budget objectives. Companies in every industry are leveraging standard enterprise software packages and advanced technologies, such as experience management and machine learning, to manage their customer relationships and deliver outstanding experiences.

Deciding which projects to bid for, providing quotes to customers in a timely manner, and evaluating the risks of a project are everyday tasks for construction companies. Accomplishing this in an efficient and effective way while providing an outstanding experience to your clients is often a challenge.

First, the information required to estimate project costs properly and evaluate project risk is scattered across different systems. Second, the work must be coordinated with many different stakeholders in real time. Third, it is vital to manage the relationship and communications with the customer.

Although it has been largely overlooked, the customer experience will also be a key success factor in the construction sector – and cannot be delivered without motivated employees. Our market research shows that employees and employers do care about customer experience.⁸ In fact, 54% of construction employees say they go out of their way to make sure customers have a good experience. It also shows that 59% of construction employees consider that their employer rewards them for helping deliver a good customer experience. The missing piece of the research puzzle is what their customers actually think of the experience they receive to ensure there is no gap.⁹



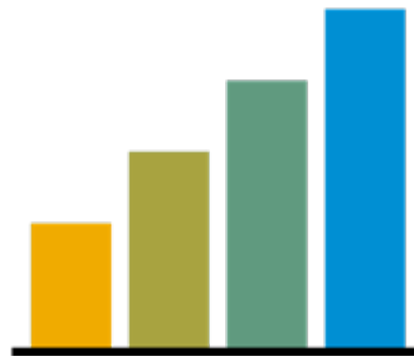


HOW COMPANIES CAN RESPOND

With the help of business analytics and machine learning, construction companies are improving win rates and becoming better at managing risks thanks to, among other things, a single view of historical data. A common data environment and mobile technology allow them to track project progress, cost, and margin with greater accuracy, in real time, on any device. Tendering processes can also be streamlined and lead opportunities increased by centralizing all project records and data and increasing visibility due to central insights.¹⁰

Construction leaders are connecting operational data from companies' business systems with the experience data coming from customers, employees, and suppliers to get actionable insights and deliver better experiences to both customers and employees.¹¹

Qualtrics® XM Platform allows organizations to gather customer, supplier, and employee feedback at all touch points. This allows them to understand their stakeholder's needs better and address the gaps in processes and the tools required to deliver an outstanding customer experience.



HOW CAN SAP AND LTI HELP?

Solutions from SAP and LTI deliver business analytics and machine learning to help construction companies manage risk better and improve win rates.

- [Qualtrics COVID-19 Customer Confidence Pulse](#) is a prebuilt solution that is available and free for all organizations. It helps companies monitor customer expectations and capture feedback in real time, so they can know what to stop, start, and continue to maintain strong relationships with customers and ensure business continuity.
- [Qualtrics Remote Work Pulse](#) is a free and automated feedback solution from Qualtrics, an SAP company, the leader in experience management. The solution gives you the insights you need to keep teams informed and focused.
- [Experience Management solutions from SAP](#) make up the system of action that turns customers into fans and employees into ambassadors.
- The [SAP Sales Cloud](#) solution is a mobile-first solution that focuses on the four key areas of your business: to act faster, become more relevant, have a strong presence, and sell more.
- The [SAP Commercial Project Management](#) application helps your teams plan, manage, and collaborate on projects, whether your people are in the same building or halfway around the world. LTI has templated the implementation of the solution to enable [quick adoption](#).



Help You Manage **Operations**

Projects have been delayed, but not stopped. Nevertheless, the long-term outlook for new projects might be negatively affected by global economic trends. The sector must overcome any limit on capabilities to interact at the construction site by sharing project data with all stakeholders to prevent rework, delays, and mistakes.

Depending on the region and regulations, some companies have shut down all project sites while others are running within guidelines for essential construction. However, to date, most projects are facing 30- to 90-day delays, but have not been cancelled. There are many root causes for the delays, but stricter health and safety regulations, clients' change requests, and the reduced mobility of workers are among the main reasons. Despite the short-term challenges, which require extra care to preserve cash, the outlook is positive. As soon as normal times return, spending on infrastructure projects will reinvigorate the industry. However, there will be a lingering and potentially heavy impact on private investment owing to the financial toll that has been incurred by businesses and investors across a wide range of sectors.¹²

The limited ability to interact at the construction site must be eased through better visibility into each supplier, vendor, and subcontractor. This is possible because information residing within each company's IT systems or e-mail correspondence can be made available to relevant parties. Rework, delays, and mistakes due to lack of communication or lack of real-time transparency during project execution will no longer be the norm.

Cash being king in both the short and long term, it is important to be able to bill clients based on milestones achieved and actual progress and pay suppliers on the same basis. Most advanced companies in the sector are adopting off-site manufacturing practices to limit the work done on-site, reduce project risks, and increase profitability.





HOW COMPANIES CAN RESPOND

Cloud-based networks enable collaboration with all project stakeholders, including owners, contractors, subcontractors, engineers, architects, facility management, and the relevant authorities. Different disciplines can be digitally represented in open business information modelling (BIM), including structural, architectural, electrical, and plumbing characteristics, as well as engineering, logistics, and project control and service.

Collaborative platforms are available to connect business partners across the value chain. They establish a single source of truth for project payments by providing visibility of contractual clauses and project progress as well as control over corresponding payment applications.

[Katerra](#) and [TopHat Corporate Limited](#) have adopted manufacturing best practices, such as cost and quality controls, modular construction, and prefabrication, and transformed their construction sites into “open sky assembly lines.” TopHat is now collaborating with industry leaders such as BoKlok AB (a joint venture of Ikea and Skanska AB) to manufacture two- and three-bedroom houses over a period of five years, leveraging its Modern Methods of Construction (MMC) platform.¹³



HOW CAN SAP AND LTI HELP?

Cloud solutions from SAP and LTI can help business partners connect across the value chain to gain visibility and collaborate more effectively.

- [Packaged options for the SAP Cash Management and SAP Treasury and Risk Management applications](#) help maintain liquidity with real-time cash flow visibility for critical decisions.
- The [SAP Project Intelligence Network for Construction](#) application helps you manage projects from design and planning coordination to execution, completion, and handover in a central system.

It supports project collaboration across multiple stakeholders, centered around a digital twin, enabling you to see project risks and proactively mitigate them before they become issues.

- [Project Pay Chain](#) from LTI helps improve cash flow in the short run by simplifying, automating, and thereby speeding up the payment application process between clients, general contractors, and subcontractors. It helps ensure payments are made for work done.
- LTI has built a [prepackaged solution](#) to help manage the end-to-end value chain of the modular housing ecosystem. It supports site development, planning, design, off-site manufacturing of housing modules, transportation to construction sites, and final assembly in situ.
- [Planning Synchronizer from LTI](#) enables seamless project execution by integrating planning data maintained in industry-standard estimation and planning tools with data from the SAP ERP application to deliver enhanced project management efficiency.
- [Execution Workbench & Mobility Application](#) from LTI support detailed project scheduling and capture actuals in terms of execution quantities, tasks, and resources (craft labor and equipment).



Help You Address Supply Chain Volatility and Improve Resilience

The industry supply chain has been disrupted during this period. There are short-term and long-term measures you can take to improve the visibility and **get control of your supply chain.**



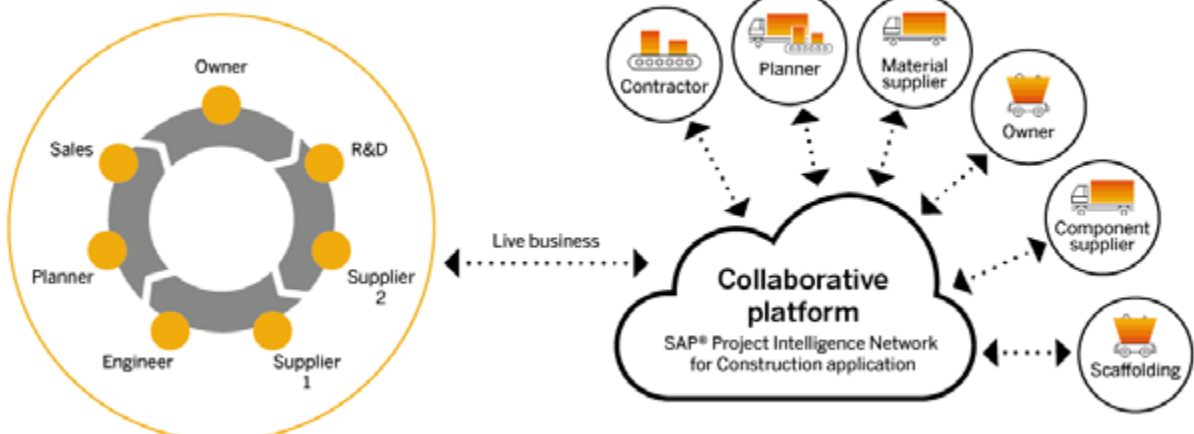
The European construction industry is urging European institutions and the European Member States to support the construction supply chain by putting in place measures to allow the EU internal market to function efficiently.¹⁴ This is to compensate for the uncertain supply of critical equipment and building materials – especially structural steel and glass – coming from Asia.

The inadequate supply of personal protective equipment (PPE) poses a challenge to the resumption of operations that must comply with COVID-19 regulations. Logistics bottlenecks are arising because of inbound and outbound supply chain challenges.

HOW COMPANIES CAN RESPOND

Even before the pandemic, best-in-class construction companies tracked supplier disruptions to gain the agility to react quickly. If you face an immediate disruption of your supply chain and are looking for alternative sources of supply, SAP is offering free access to Ariba® Network for a limited time – see below for details.

In order to emerge stronger, companies can take advantage of this time to introduce intelligent planning and advanced analytics to make their businesses and projects more resilient for the future. Connecting projects to all suppliers and synchronizing the delivery of materials and resources can improve schedule predictability, cost controls, and on-time completion and handover. Building the digital twin of your project using collaborative building information modeling (BIM) and reliable project data from the construction site is also highly recommended. In the future, construction companies will be able to use artificial intelligence, such as machine learning, to combine demand sensing and supply chain limitation information to optimize project planning and scheduling.



HOW CAN SAP AND LTI HELP?

Companies can take advantage of solutions from SAP and LTI to introduce intelligent planning and advanced analytics to make their businesses and projects more resilient for the future.

- SAP is providing free access to the [SAP Ariba Discovery](#) solution so you can post your sourcing needs and get quick responses from the suppliers worldwide who can deliver. This will help to minimize shipment delays and accelerate your response to customer demand.
- Try a free, lightweight version of the SAP Ariba Sourcing solution called the [SAP Ariba Start Sourcing](#) solution. Improve resiliency through dual sourcing, flex-dedicated capacity, vendor managed inventory (VMI), and other strategies.
- [Ariba Network](#) helps speed up the sourcing process by engaging with millions of global suppliers to build a more resilient buyer-seller network.
- The [SAP Ariba Supplier Risk](#) solution helps improve visibility into operational, reputational, and regulatory risks to mitigate risks in volatile business.
- The [Qualtrics Supply Continuity Pulse](#) solution is a free, prebuilt survey to help companies assess the risk level of supplier networks, validate business continuity and recovery plans, and follow up with high-risk suppliers.
- [SAP Project Intelligence Network for Construction](#) helps you manage projects – from design and planning coordination to execution, completion, and handover in a central system. It supports project collaboration across multiple stakeholders, centered around a digital twin, enabling you to see project risks and proactively mitigate them before they become issues.



Help the Industry Build **Long-Term Sustainability**

Now more than ever, the construction sector must reduce the environmental impact of the assets it builds. SAP is developing a new solution to accompany the sector on its journey to a low-carbon economy.

The climate change challenge for the construction industry won't go away anytime soon. The sector is the leading global consumer of raw materials and responsible for a large proportion of **worldwide energy usage** and generation of **CO2 emissions**. The volume of natural resources used will be under even closer scrutiny after COVID-19, and the industry cannot afford to compromise the environment for the sake of growth. The industry needs to act now to reduce the CO2 emissions it generates and to shepherd the construction sector through applicable regulations to ensure a positive tradeoff between stringent compliance and beneficial impact.

Yet companies still need to be able to perform work right now and ensure the safety of employees who are performing operational tasks at the construction site or away from their home office.

HOW COMPANIES CAN RESPOND

Today's heightened greenhouse gas (GHG) emissions are the result of many distributed business decisions at all levels within the enterprise. Businesses that want to minimize their CO2 emissions need tools to analyze the impact of their production, transportation, and logistics across the whole asset lifecycle and make decisions based on masses of structured,

unstructured, and operational data. Dynamic, transparent, real-time insight lays the foundation for minimizing GHG emissions in day-to-day operations. This insight enables companies to analyze business performance, negotiate with suppliers, communicate with authorities and clients, and inspire their employees with a sense of purpose.

Best-in-class companies are applying the ISO 45001 standard to develop a systematic approach to managing the health and safety of operational workers who must perform tasks away from home. They apply the standard as well to safeguard the welfare of those impacted by their operations.





HOW CAN SAP AND LTI HELP?

SAP has launched the Climate 21 program to build analytical and transactional capabilities into its enterprise applications that can help our customers understand and minimize the GHG footprint of their products and operations along their value chains. Our motivation is to support them in pursuing their climate-related objectives of the 21st century. We are looking for business leaders across industries to define their needs and the capabilities you require on your journey to a low-carbon economy and to ensure healthier and safer conditions for construction.



Thoughts from Davos



SAP Joins CEO Carbon Neutral Challenge



Climate 21



Adopting ISO 45001 to mitigate risk with integrated environment, health, and safety management



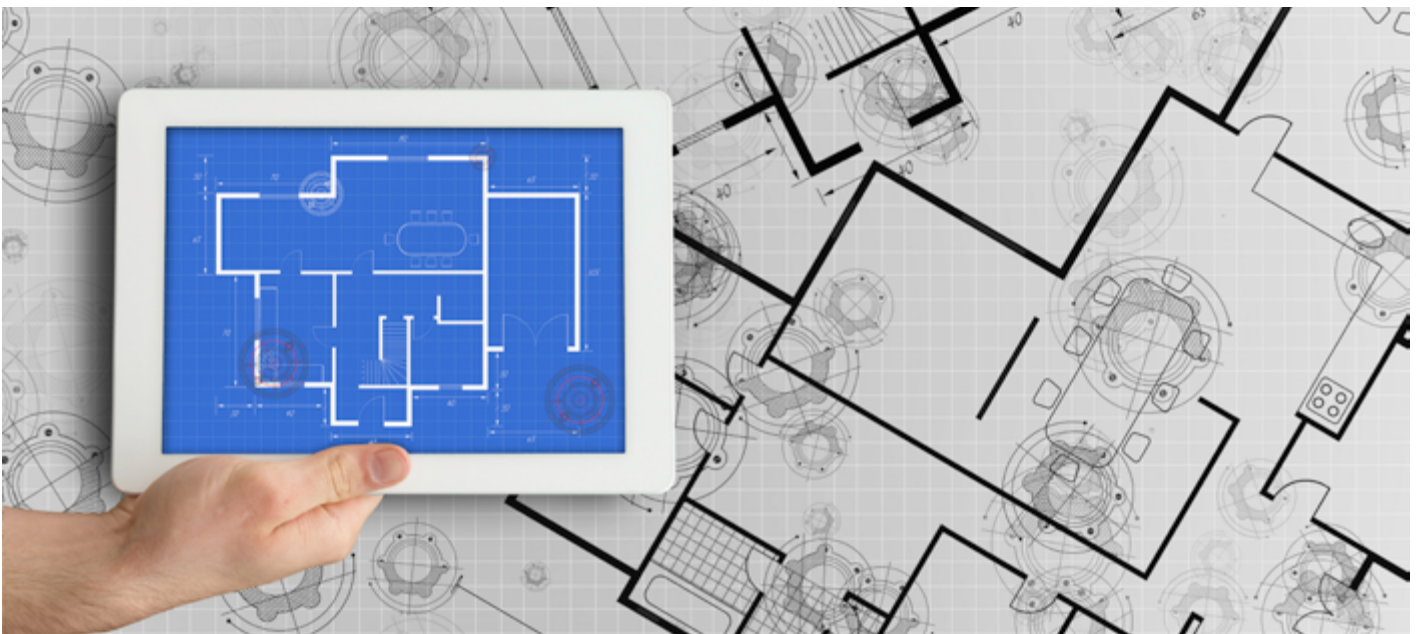
Optimizing Occupational Health and Safety with an Integrated Approach

Help You Minimize Digital Transformation Risks

LTI is the technology arm and fully owned subsidiary of Larsen & Toubro Group (L&T Group), an 80-year-old, US\$19 billion engineering and construction conglomerate. For over 20 years, LTI has implemented SAP software and integrated solutions for various global corporations, including its parent company, L&T Group. L&T Group has a long-standing history of leading digitalization initiatives in the construction sector and **building a data-driven culture** from the ground up, as articulated by the CEOs of L&T Group and LTI in 2020.

Based on this rich industry heritage, LTI developed its Intelligent Construction Enterprise (ICE) industry template, leveraging the intelligent suite and Business Technology Platform from SAP. LTI can tailor ICE to meet the unique business requirements of breakaway construction enterprises.

LTI has put skin in the game and reduced the inherent risks associated with business transformation programs by offering time-bound, fixed-price implementation proposals based on leading-edge industry best practices advanced by SAP and LTI. Together, they have developed real-time analytics for projects based on an integrated mix of SAP and non-SAP technologies. These include artificial intelligence (AI), the Internet of Things (IoT), virtual reality (VR), artificial reality (AR), robotic process automation (RPA), and geospatial and cybersecurity technologies. With these high-tech, real-time analytics for projects, SAP and LTI can help modern construction enterprise accelerate their digital transformations in a safe manner at minimal risk.





For more information on our EC & O solution

Visit us on www.lintinfotech.com/ec&o

or write to us on info@lintinfotech.com

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