



WHITEPAPER

Modern Materials Tracking

how to choose an effective platform for your enterprise

Materials account for more than half of project costs in manufacturing, infrastructure, CPG, and other industries. This might lead you to believe that managing these materials would be a finely measured process. However, the murkiness of upstream supply chains has forced those who manage projects to develop tracking processes that are more art than science. While some data from the upstream process is commonly collected (and plugged into spreadsheets), the overall lack of data and visibility has made material tracking a guessing game for those in charge. Now, with supply chain uncertainty at an all-time high, experience isn't enough.

Seasoned project managers would agree that delays, errors, theft, and quality issues in the material tracking process have eroded profits for years. Just how much money is wasted is hard to define, because there simply is a lack of complete data. While this has been a costly problem for decades, recent trends make the pain more acute. For example, a worldwide shortage of skilled labor across a variety of trades and specialties is bearing down on organizations in just about every industry. Crews are expensive and hard to find. So, when a team is onsite and ready to work, it can be a financial tragedy if materials don't show up on time—or if the materials are incorrect or damaged.

This is why the statement that “all companies are software companies” rings true. The solution to material tracking problems from construction firms and other project-oriented organizations is centered on digital transformation. Gaining full visibility and control over materials—through every step of the supply chain—has become a necessity.

Many forward-thinking organizations predicted the need for digital transformation in their materials supply chains and tried to get there by piecing together individual automatic identification and data capture (AIDC) technologies. While these point solutions sometimes provided scattered benefits, some serious shortcomings—including integration issues, insufficient data, and a lack of real-time analytics—diminished their ability to solve the problem and provide value.

This has led to the development of solutions that provide construction companies with a ‘control tower’ view of the entire materials supply chain, as well as real-time analytics that enable fast, effective decisions.

A necessary transition: eliminating manual data management



Most organizations that manage multiple projects and diverse material supply chains rely on legacy workflows that are largely dependent on manual data aggregation and management. Many of these legacy tools or platforms are easy to use and have highly intuitive calculating functionalities. For years, their simplicity is what made them great. But tools that require manual entry and management are an anachronism when it comes to analytics in the digital age. Rapid digital acceleration in every market and in organizations of all sizes has exposed the obsolescence of these heavily manual tools. With a digital platform, all authorized users are accessing the same information at the same time, without the same risk of human entry errors.

In the digital age, your organization should be using automated tools for tracking access and accountability, and you should have access to automated alerts and reporting capabilities. Maybe most importantly, Industry 4.0-ready data tools automatically integrate with other systems in your connected infrastructure, ensuring data is never siloed or stale.

Elements of an effective digital platform



Recent years have shown that two approaches to material tracking don't fit well with modern project workflows. Spreadsheets are old, slow, and disconnected, and piecing together multiple-point solutions from different vendors presents serious trouble in terms of cost, integration, and scalability. Effective materials management requires an integrated digital platform that offers key capabilities, such as integration of real-time data from multiple sources, precise control over access and permission levels, specific dashboards and reports, customized alerts, automated security and feature updates, and the ability to scale up and down quickly when activity spikes or declines.

Key elements of a material tracking platform

Tracking technologies	<p>Choose from a multitude of AIDC technologies, including QR, barcode, RFID, and Bluetooth beacons, depending on the type and volume of material, as well as handling and storage requirements</p>
Integrated process flow	<p>Complete, real-time visibility of materials, from the factory to storage locations to job sites—configurable for reusable, perishable, and bulk materials</p>
Inventory management tools	<p>Must include material tracing within storage facilities, inventory level optimization, and tracking utilization by stakeholders</p>
Integration with other systems	<p>Seamless connectivity and data sharing with ERP systems and other key (internal and external) platforms</p>
Quality control dashboards	<p>Ability to determine quality and authenticity of materials at any point in the supply chain</p>
Mobile app and web portal	<p>Configurable real-time visibility and control for master, project manager, and user roles</p>
Configurable workflows	<p>End-to-end workflows that adapt to the realities of your organization, processes, and job types</p>
Role-based access	<p>Strong security that allows each user to access only the information they need—without causing unnecessary friction for each user</p>

Solving key issues that large enterprises face



What is causing more organizations than ever to look at Industry 4.0 solutions to solve longstanding blind spots? There are three key concerns:

- 1. Material visibility & location identification:** As materials costs rise unpredictably and volatile supply chains disrupt project timelines, businesses in heavy industries recognize that visibility can't lag days behind. They need real-time visibility to track and trace materials at every stage of their journey to a job site, so they can adjust and adapt as needed to minimize downtime and optimize project timelines and productivity.
- 2. User experience:** The accelerating deployment of digital productivity tools across every use case in the enterprise puts a spotlight on the tedious, manual workflows that underpin conventional material tracking. Business leaders are seeking out modern solutions that automate data aggregation and deliver intuitive, user-friendly interfaces to see and manage all that data. This includes the push toward the cloud, where SaaS platforms are enabling seamless anytime-anywhere connectivity and collaboration across teams and job sites.
- 3. Actionable insights:** Digitization of other key components of business operations has demonstrated the potential of integrated analytics technologies to harness the tremendous flow of automatically aggregated data to unlock powerful insights. The rising pressures around material costs and supply chain disruptions have business leaders looking to leverage digital platforms with embedded analytics engines to surface actionable insights on how they can drive productivity and resource utilization, avoid bottlenecks, and limit disruptions, and optimize timelines and overall efficiency.

When you know precisely when materials are going to arrive on a job site, you are better able to organize them. This makes tracing and picking materials faster and more accurate and ensures better quality control throughout. The result is efficiency gains achieved across the production process. The same benefits can be realized with outbound goods. An effective material tracking platform will accelerate and enhance the accuracy of dispatch to improve turnaround time (TAT) while protecting quality.

Smarter material tracking also enables project managers to be more efficient with their skilled workers. The hours workers spend simply waiting for the right materials to be delivered can be greatly reduced. In addition to labor efficiency, precision in material handling also results in less worker frustration. Skilled workers have lots of choices for employment, and many of them will choose to work for organizations that have the technology in place to run efficiently.

From a sustainability perspective, the right material tracking platform can greatly impact carbon emissions. The delivery of the wrong or damaged materials can be greatly reduced by providing control tower visibility into every step of the supply chain. The data collected by the platform can be used to satisfy reporting requirements and provide a clear picture of continuous improvement.

Turn industry 4.0 into a growth engine

Want to know more about how an integrated track and trace solution like Material NxT is part of a holistic approach to profitable Industry 4.0 transformations? Visit <https://www.ltimindtree.com/mindtree-nxt> to learn how LTIMindtree is enabling organizations to engage customers like never before, anticipate their needs, and respond with incredible speed and precision.



LTIMindtree is a global technology consulting and digital solutions company that enables enterprises across industries to reimagine business models, accelerate innovation, and maximize growth by harnessing digital technologies. As a digital transformation partner to more than 700 clients, LTIMindtree brings extensive domain and technology expertise to help drive superior competitive differentiation, customer experiences, and business outcomes in a converging world. Powered by 81,000+ talented and entrepreneurial professionals across more than 30 countries, LTIMindtree — a Larsen & Toubro Group company — solves the most complex business challenges and delivers transformation at scale. For more information, please visit www.ltimindtree.com.