LTIMindtree

WHITEPAPER

Future-proof your business with knowledge management using **connected technologies**

Savvy business leaders know that their real differentiators aren't what they do—it's what they know. This institutional knowledge is the real secret sauce behind performance, efficiency, quality, etc. And it's not only incredibly valuable; it's highly precarious. The vast majority comprises tacit or tribal knowledge—not documented, not codified, and certainly not patented.

Organizations across every sector need to find smart solutions to capture and operationalize the tacit knowledge held by their best and most experienced people. This is not only a powerful operational management strategy, but also increasingly critical to future-proofing businesses in the face of the looming wave of baby boomer retirements and the wake of the Great Resignation.

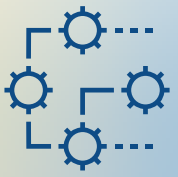
New Industry 4.0 technologies and intelligent workforce solutions like the LTIMindtree platform are turning what was traditionally a slow, difficult, and inexact process into an intelligently automated science. Connected technologies convert the shortcuts and skills honed through experience into hard data. Analytics and machine learning bring that data to life and identify the patterns that define high performance. Tech-enabled training effectively activates that shared knowledge to drive upskilling and onboarding.

The urgent challenge of undocumented institutional knowledge

A business' 'secret sauce' tends to evoke thoughts of source code behind new tech or IP behind a new drug. Across sectors, ranging from manufacturing and construction to energy and utilities, to logistics and supply chain, that secret sauce is largely held in the heads and hands of workers. This tacit institutional knowledge represents the subtle tweaks and veteran tricks of your best, highest-performing, most valuable people. It's the knowledge and expertise, earned the hard way—through years of experience, trial and error. However, much of this institutional knowledge isn't codified in official protocols and processes; it's organically developed and shared, passed down, and advanced over time.

Tacit institutional knowledge is quickly becoming one of the most pressing concerns in many businesses. The entire U.S. economy has been nervously eyeing the looming retirement of the baby boomers that's been ominously termed the 'silver tsunami.' This generational shift was accelerated and magnified by the pandemic: The U.S. Bureau of Labor Statistics reports that, since February 2020, the U.S. workforce has seen 2.6 million more retirements than expected. But it's not just retirement that's bringing institutional knowledge to the forefront. The Great Resignation, Big Quit—whatever the moniker may be—has workers continuing to leave jobs at record rates. Nearly every sector is witnessing huge labor shortages. For example, Deloitte estimates that the U.S. manufacturing sector will be dealing with more than two million unfilled jobs over the next decade. Among the many impacts is a growing skills gap in most organizations: Experienced people are leaving, and the shortage of available labor is forcing businesses to hire workers with less, or no experience.

The problem of confirmation bias



The traditional approach to capturing this institutional knowledge is tedious: manually identifying your best people and either observing them in real-time or sitting them down to try to extract their insights, expertise, and knowledge. This isn't just a slow and labor-intensive process; it's also inexact and incomplete. It depends on the management knowing who the best workers are and being able to observe and understand what makes them better.

There are myriad reasons that workers may be seen as the 'best,' with many not being performant. This often leads to focusing on the wrong employees. Moreover, humans are often not good at understanding what makes the best better. We're incredibly prone to confirmation bias: We may correctly identify high-performing workers but attribute their high performance to the wrong characteristics—or broadly assume that all their characteristics represent a platonic ideal. The end result is that organizations fail to capture the real 'secret sauce' of their most experienced and highest-performing workers. And perhaps worse, they end up activating 'best practices' that are far from optimal.

Connected technologies turn tribal knowledge into hard data

Among the broad potential of Industry 4.0, new connected technologies and integrated analytics platforms present a simpler, smarter path to capturing and operationalizing tacit institutional knowledge. This path starts by automatically collecting detailed information that gives businesses real-time visibility of their core operations and workflows—turning implicit knowledge into hard data. Today, intelligent workforce optimization platforms like LTIMindtree are enabling organizations to capture an unprecedented breadth and depth of institutional and operational data through three key types of innovative technologies:

Machine: IoT monitoring

As IoT technologies sweep every sector and facet of life, advanced, ruggedized sensors are now capable of delivering monitoring data in rigorous applications, from industrial manufacturing to construction, mining and more. The Asset NxT solution uses sophisticated IoT technologies to give you continuous, real-time visibility to material status, equipment, machine, and vehicle performance and connects that data with your workers to ensure greater productivity.

Man: Wearables & worker safety tech

In addition to seeing how workers operate equipment, wearables and worker safety tech deliver direct visibility to the actions, movement and conditions of workers themselves. This monitoring data delivers tremendous insight into how your workers are efficiently—or inefficiently—operating this equipment. Wearable tech has become practical, unobtrusive, and cost-effective. LTIMindtree's Smart Worker solution uses sensors embedded into clothing, headgear, goggles, gloves, and exoskeletons to monitor movements, physical conditions, and even exposure levels to harmful chemical and physical agents. Overlaid against performance and safety metrics, this data paints a detailed picture of the practices and behaviors of your best people.

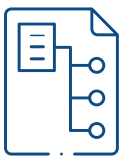
Material: Track and trace material visibility

Materials typically account for 60% of construction costs, which can also make them a leading cause for budget overruns and project delays. Our Material NxT platform gives you the visibility to know precisely where your materials are and when they will be delivered - for any project, from buildings and bridges to power grids and oil rigs. This full visibility of the entire supply chain, from factory to job site, enables you to take timely action to reduce the problems that often increase costs – including supply-chain and logistics issues.

Location: GeoSpatial monitoring

Comprehensive, connected monitoring must also focus on your facilities and physical endeavors. Tools like LTIMindtree's GeoSpatial NxT solution use advanced GeoSpatial monitoring technologies to collect indoor and outdoor data—from 3D scanning systems, enterprise systems, Global Navigation Satellite Systems, RADAR, LiDAR, SONAR, and more—to bring you rich, real-time location and spatial intelligence about day-to-day operations. You can connect the facility utilization or environment conditions with performance outcomes to build out specifications for optimized operations.

Simple, sophisticated analytics point to your best people and best practices



The connected technologies mentioned above unlock an enormous amount of information on your equipment, workers, and spaces. Modern workforce optimization platforms like LTIMindtree integrate advanced analytics engines to convert that raw data into meaningful, usable, predictive, and prescriptive insights. These insights provide a quick entry point to make decisions about new initiatives, pointing the way to all kinds of untapped potential for your organization. They also enable your team to visualize, share, and act upon institutional knowledge at every step.

The Insight NxT solution uses analytics to directly reveal cultural knowledge around ideal temperature, time, pace, or process. It can identify the patterns in how your best and most experienced people do their work, operate equipment and move around your facilities. It can also highlight what your highest-performing production line or project team does differently.

Insight NxT can also deliver broader insights across facilities or sites. You can benchmark and compare location-specific performance and identify facility or environmental conditions, equipment usage patterns, or other site-level characteristics that correlate with higher performance.

AI & ML sees the hidden secrets to success

We've already mentioned the problems of human error and confirmation bias in manually gathering institutional knowledge. Insight NxT uses AI-powered machine learning technologies to solve these problems. Machine learning algorithms comb through operational information gathered from IoT, wearables, and GeoSpatial data, delivering far greater detail than what a manager could observe, or a worker could describe on their own. More importantly, machine learning can go well beyond what even the most skilled worker could learn in decades—in real-time. The major uses of machine learning algorithms include predictive capabilities, pattern recognition, and complex modeling of assets and processes through digital twinning. Because your 'best' workers aren't the best at everything, machine learning algorithms can analyze the subtle patterns and trends that reveal a best practice, and pull together characteristics from multiple workers to formulate optimized protocols and processes. Machine learning continually grows smarter over time, finding new opportunities to optimize your operations.

Disseminating and operationalizing institutional knowledge

Industry 4.0 technologies solve the huge challenge of capturing and understanding tacit institutional knowledge. Smart, connected technologies are also enhancing and accelerating the activation of that knowledge across an organization's operations and workforce. LTIMindtree's Worker NxT solution, part of the LTIMindtree platform, uses augmented reality and mixed reality tools that can deliver digital work instructions, enhanced visual aids, and contextual information to guide workers step-by-step through complex tasks and newly optimized protocols. Virtual reality tools even allow workers and trainees to learn and practice in simulated environments, expanding and sharpening their skills without the safety risks, operational downtime, and potential equipment, facility, or business damage of mistakes in the learning process. This technology-enabled training holds incredible promise in high-stakes, high-pressure work environments—from factories and construction sites to mines and oil rigs.

Creating a continuous, intelligent workforce optimization cycle

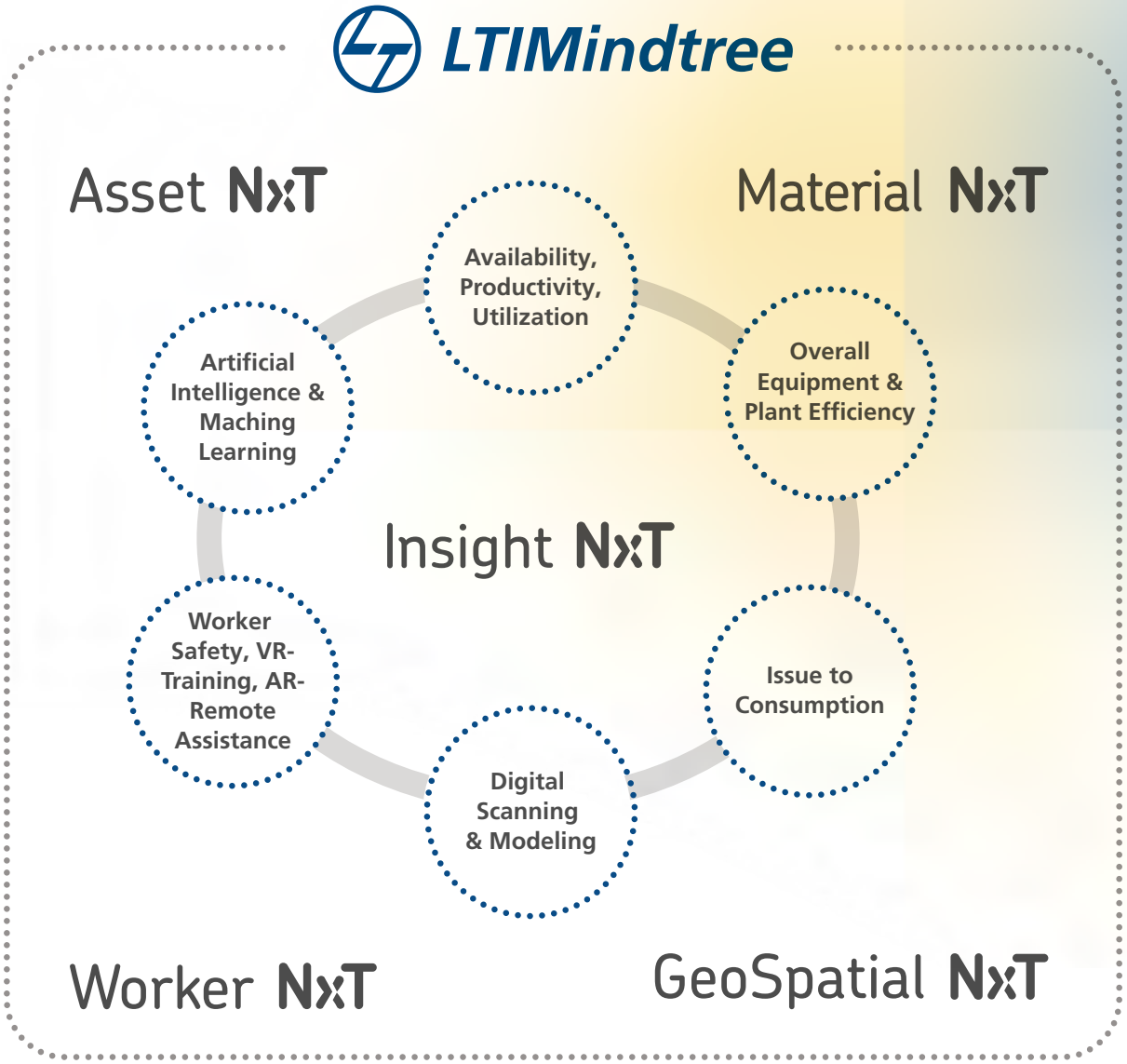
The looming wave of retirement and ongoing high turnover make it increasingly urgent for organizations to ensure that hard-earned knowledge doesn't walk out the door when workers leave. However, capturing and activating this type of institutional intelligence shouldn't be a one-time exercise. This tacit knowledge is organically evolving in real-time—naturally adapting to new requirements and situations, getting smarter and more efficient

Smart workforce technologies like the LTIMindtree NxT platform not only turn what was a difficult, heavy l ft into highly automated, data-driven process, they also enable businesses to adopt a continuous, intelligent approach to workforce optimization—a shift that has been defined as p oactive operational performance management, or PaOPM. Once these connected technologies are deployed across operations, they continuously feed that data into analytics engines that extract predictive and prescriptive insights in real-time. This means businesses can use these insights to continuously hone their protocols and processes, refine best practices, and activate this intelligence through onboarding, ongoing training, and upskilling. By harnessing the collective knowledge of workers, this continuous optimization cycle will increasingly become the new 'secret sauce' behind the highest-performing businesses across every sector.

LTIMindtree NxT: essential digital solutions for industry 4.0

LTIMindtree NxT is purpose-built to help organizations rise to evolving challenges and become future-ready through the thoughtful deployment of IoT, AI, and geospatial technologies. The comprehensive LTIMindtree NxT platform uses software-driven solutions to enable a human-centric approach to digital transformation—enhancing the safety, efficiency, profitability, and agility of businesses across critical sectors including manufacturing, engineering and construction, energy and utilities, and more.

LTIMindtree delivers next-generation IoT-enabled and AI-powered capabilities across four core solution sets: Smart Equipment Solutions (Asset NxT), GeoSpatial Technologies (GeoSpatial NxT), Workforce Wellbeing & Efficiency (Worker NxT), and Asset Insights & Intelligence (Insight NxT).



Learn more about how these technologies can work for your business here

https://www.ltimindtree.com/mindtree-nxt/

LTIMindtree

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 **https://www.ltimindtree.com/**