The intelligent enterprise: AI's transformational role in EAM

Ultimo
an IFS company

The intelligent enterprise: AI's transformational role in EAM

How embedding AI in EAM workflows leads to smarter decisions, enhanced reliability, and reduced downtime across industrial organizations.

Across any mid-to-large-sized industrial plant, there can be tens of thousands of mechanical and electrical assets. From sensors to pumps, motors to filters, these systems and components are like the organs of a living body – each one critical to maintaining healthy and productive operations.

Without the right systems in place, managing this asset complexity becomes overwhelming: Maintenance schedules are scattered across whiteboards, completed tasks are jotted down on notepads, and spare parts inventories are tracked in siloed spreadsheets. This approach increases the likelihood of unforeseen failure, unplanned downtime, and unexpected costs.

Enterprise Asset Management (EAM) can resolve such problems, enabling industrial organizations to manage assets throughout their entire lifecycle, thereby gaining visibility and control. A flexible EAM software platform can identify which parts of a conveyor belt are due for maintenance next week, detect unusual vibration patterns in a compressor that suggest bearing wear, and indicate when hydraulic filters need to be reordered before stock runs out. Suddenly, instead of reactive firefighting, preventive maintenance is being conducted, keeping lines running, costs predictable, and production targets met.

> "Without the right systems in place, managing this asset complexity becomes overwhelming."

EAM, then, can be a critical tool for organizations looking to extract insights and make more impactful decisions that increase uptime and reliability. However, EAM platforms only provide value if they are accessible, intuitive, and easy to use. Key operatives such as operations, warehouse, logistics, and maintenance managers are busy people who perform multiple tasks every day. If software platforms are clunky and difficult to navigate, they are less likely to engage with them. Therefore, EAM developers carefully consider ways to maximize usability and drive advantage across businesses.

> “AI functionality within EAM can help users work faster, smarter, and more collaboratively. "

That's where artificial intelligence (AI) comes in. In several situations, AI functionality within EAM can help users work faster, smarter, and more collaboratively. It is a significant enabler for solving problems better than traditional techniques, boosting employee productivity, and maximizing asset availability.

Therefore, now is the critical time for companies to implement AI functionality into their maintenance and asset management operations. This whitepaper will explain how different AI types are integrated into Ultimo’s EAM software. It will focus on three specific use cases and show how this functionality can deliver productivity and knowledge enhancements across multiple verticals. It will also provide an overview of where AI in EAM will go next.

How AI is being applied across multiple industries

Undoubtedly, AI is having a transformative impact across industrial sectors. In manufacturing, for example, it has undergone rapid adoption on the factory floor, accelerating the shift toward smarter, more efficient operations. From predictive maintenance to quality control, AI-powered systems optimize production lines, drive cost savings, and reduce emissions. A recent report from KPMG shows that 93% of manufacturers believe that organizations in their industry, which embrace AI, will develop a competitive edge over those that do not. Meanwhile, 77% said they intended to use AI to drive growth, while 72% said it would be deployed to improve efficiency.

This enthusiasm for AI adoption is reflected in other sectors, too. Leading logistics and distribution providers also see the adoption of AI as a means of improving choice, maintaining higher availability, and delivering a better service experience. Research by McKinsey indicates that embedding AI in distributor operations can provide reductions of 20%-30% in inventory, 5%-20% in logistics costs, and 5%-15% in procurement spend. The report suggests AI can transform planning, inventory, and warehousing, while providing frontline workers access to advanced analytics to increase job satisfaction.

> “93% of manufacturers believe that organizations in their industry that embrace AI will develop a competitive edge over those that do not. 77% said they intended to use AI to drive growth, while 72% said it would be deployed to improve efficiency."
> (source: KPMG)

In short, AI appears to have overcome any initial skepticism and cultural resistance that new technologies inevitably face. Industrial organizations now see it as a critical enabler of future advances and a primary means of gaining a competitive edge.

Desired AI capabilities for EAM users

Within EAM, more specifically, there are tangible indicators that end users are keen to embrace AI in the platforms they use to monitor, maintain, and optimize assets for better uptime and performance. Existing Ultimo users, for instance, have shown enthusiasm for AI as a means of delivering benefits in several areas, including:

- Increasing personnel productivity
- Maximizing uptime
- Leveraging employee experience
- Facilitating knowledge transfer to new staff
- Optimizing inventory and spare parts management
- Enhancing safety across the organization

Meanwhile, new adopters of EAM platforms are also increasingly requesting AI functionality in Requests for Proposals. A closer assessment of this desire shows that organizations have grown comfortable using AI in other business activities and expect it in their EAM platforms. They want to adopt innovative and future-proof products, processes, and systems, giving them scope for further AI enhancement and development over time.

However, despite this positive sentiment, conversations with EAM users provide some standard caveats regarding AI. First and foremost, they want a collaborative and ethical implementation of AI that sees the technology deployed as a supportive tool for decision-making, not as a replacement for human judgment. Organizations want their workers in the loop at all times, benefiting from AI, but not beholden to it.

Ultimo, an IFS company, fully understands and respects this guiding principle and deploys AI in close collaboration with end users. In the field of EAM, end users are dealing with critical processes where the impact of decisions can be far-reaching. For this reason, Ultimo fully embraces the principles of the European Union (EU) AI Act and is currently focusing on the bottom two layers of the AI Adoption Pyramid (Figure 1), 'Minimal Risk' and 'Limited Risk'. By following this approach, AI assists and supports end-user activities while remaining transparent and always keeping the human in the loop.

Transparency is also key to ensuring proper adoption. AI needs to earn its place in users' workflows by proving its value, clearly and understandably. Ultimo has established a comprehensive framework for development teams, including a detailed list of potential risks, corresponding mitigation measures, and ethical guidelines to which each AI use case must adhere.

The result is a virtuous cycle of continuous improvement. Users enhance asset operation and health while developing their skills. They capture information more effectively, increase uptime, and reduce labor costs. AI is not just another tool; it optimizes the entire EAM system, constantly improving operations across the board.

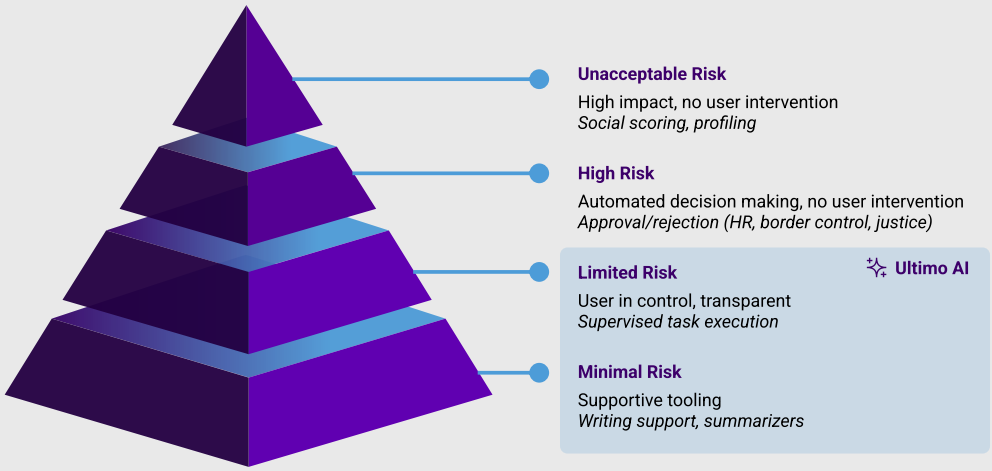


Figure 1: Ultimo ensures users stay in complete control of AI technologies by focusing on the bottom two layers of the AI Adoption Pyramid, 'Minimal Risk' and 'Limited Risk'.

AI in action

EAM users want to deploy AI to solve their business problems and improve operations, not just to have AI. Yet, AI is not a panacea; it is a toolset that can potentially deliver tremendous business advantages.

To date, Ultimo's AI development strategy has been to independently explore and create proof of concepts, while rigorously testing any new functionality before implementation. The intention has been to implement AI that delivers genuine benefits and supports the work of operations, maintenance, and safety professionals. This has to be achieved intuitively, significantly reducing friction in adoption. The aim, therefore, has been to democratize AI and to present it as part of the user experience.

Ultimo's AI activity and strategy have been focused on two core areas:

1. **AI capabilities embedded in the User Interface (UI):** To date, Large Language Models (LLMs) have underpinned AI capabilities that are embedded in the user interface to support maintenance professionals in task execution. These trusted features, often driven by generative AI, offer intelligent suggestions, automation, and content creation. However, they rely on direct user initiation and oversight, ensuring the user remains in control and interprets AI output within the operational context.

2. **Agentic AI:** An autonomous, proactive technology that enhances asset management without removing human agency. It empowers people by embedding intelligent agents directly into workflows, enabling smarter, faster operations without adding complexity. These intelligent agents effectively become digital coworkers - a new class of intelligent resources purpose-built for asset management. Operating across interfaces and channels, they go beyond passive support to take initiative, make decisions, and execute tasks on behalf of users. Embedded within familiar workflows, they collaborate with human teams to streamline operations, improve safety, and reduce administrative burden, augmenting their skills and expertise without replacing them.

To date, AI adoption in EAM has been focused on embedded AI capabilities based on LLMs. However, agentic AI - which still leverages LLMs as core reasoning engines within more autonomous systems - is emerging at a rapid pace and is reshaping industrial asset management. Indeed, Ultimo recently announced its AI strategy, grounded in agentic AI, and debuted its first agentic use case focused on Environmental, Health, and Safety (EHS) incident reporting. This example deploys agentic AI for a specific task. However, in future use cases, it will be able to perform multiple tasks for more goal-driven outcomes.

With these trends in mind, let's look at how AI is deployed within Ultimo's EAM product. The following three use cases offer real-world, practical benefits now, while hinting at the exciting AI-inspired future that lies ahead.

Use case 1: Autonomous EHS Incident Reporting

Employees often forget to report incidents, near-misses, or unsafe situations. Therefore, EHS-related events are unknown to EHS officers, hindering their ability to take preventive measures and raise awareness.

Agentic AI is becoming more prevalent in EAM, primarily driving responses that will occur in reaction to a task or instruction carried out by the end user.

For instance, with agentic AI for EHS reporting, an Ultimo EHS AI agent scans all incoming work requests for EHS relevance. It automatically creates incident reports when risks are detected, extracting information on damage, injuries, and environmental impact for efficient follow-up.

This initial agentic AI capability addresses safety blind spots by autonomously identifying and logging EHS incidents – a task that would previously have required manual effort, consuming time and resources, and potentially could have been missed or forgotten. The system ensures that safety data is captured consistently, driving better risk management and regulatory compliance.

> “This initial agentic AI capability addresses safety blind spots by autonomously identifying and logging EHS incidents."

Use case 2: Assisted troubleshooting

A report from Reliable Plant estimates that 80% of the time in Mean Time To Repair (MTTR) is spent diagnosing a problem, and the biggest chunk of time wasted is due to a lack of communication and detail in failure reports. To speed up troubleshooting, the operative needs to provide the symptoms, the cause, and the solution so that the issue can be dealt with and lessons learned.

Troubleshooting in industrial settings often takes longer when experienced staff retire, and skilled staff are difficult to find. Ultimo experts have analyzed how to use AI to decrease troubleshooting time and reduce downtime. The company wanted to provide the planners and technicians with well-structured troubleshooting based on intelligent search in failure history and knowledge base, ensuring better knowledge retention.

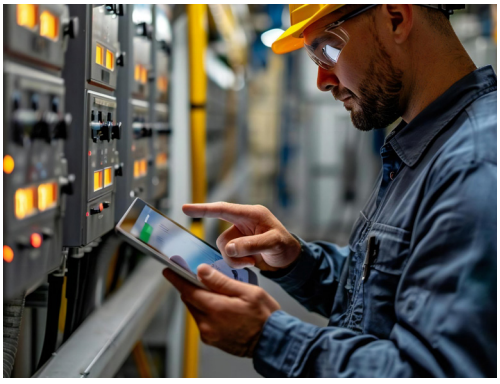
The first step towards assisted troubleshooting is ensuring that symptoms and observations are captured in the failure reports. Using an LLM, Ultimo detects the asset in question and provides a series of tailored suggestions that the reporter can easily add to the failure report without having to type. In doing so, all sensory observations are captured on the report accurately, providing maintenance teams with complete and accurate information to solve the issue and quickly increase asset availability and reliability. Assisted AI-inspired troubleshooting further supports the work planner or technician by suggesting the most likely causes and solutions based on the failure report and asset details, making diagnosing and fixing failures easier.

Once the symptoms have been accurately captured, assisted AI-inspired troubleshooting also helps end-users capture important information when finishing jobs by suggesting performed activities using an LLM. This helps improve the data quality of the failure history and spend less time troubleshooting future occurrences of similar failures.

The assisted troubleshooting functionality plays a critical role in creating knowledge equity. The system captures the expertise of all employees, providing even less experienced planners and technicians with access to the same insights as their most seasoned colleagues. Essentially, it helps level the playing field inside an organization.

Use case 3: Photo-based meter reading

During an inspection, a technician must often enter meter values from multiple positions across a facility. Those meters are often positioned in inconvenient locations – high up, low down, or partially obscured by other assets. They also usually have a lot of digits. So, it is easy to make a mistake when entering them manually into an EAM platform, frequently leading to unnecessary maintenance expenditures.



> “The answer came with AI. An LLM was trained to provide image-to-text context for any type of meter, enabling it to extract the detected value with a far higher degree of accuracy."

Ultimo looked at how the development of a photo-based meter reading could alleviate this pain point. Some customers had pointed out that specific energy and water utility providers had introduced such technology, allowing customers to upload photos of their meter readings. However, the utilities benefited from having an installed base of the same or very similar meter types, making photo-based meter reading relatively straightforward. An industrial organization could have dozens of different kinds of meters within a single plant, and Ultimo found that this meter variability hindered the accuracy of optical character recognition systems.

The answer came with AI. An LLM was trained to provide image-to-text context for any type of meter, enabling it to extract the detected value with a far higher degree of accuracy. The operative takes a photo of the meter, enters it into the EAM platform, and quickly checks the AI-based reading before confirming it.

The future of AI in EAM

These three use cases are either fully integrated within Ultimo's product or, in the case of agentic AI, available to early-release clients. But where to next? AI is advancing rapidly, so there is exciting potential for further advancement that might not seem possible today.

Over the next 12-18 months, Ultimo anticipates that the AI landscape, particularly within the EAM space in the manufacturing industry, will be shaped by the rise of agentic AI, which will be capable of taking autonomous actions based on goals and context, and has the potential to revolutionize maintenance planning and execution.

However, the manufacturing sector is traditionally conservative and risk-averse, especially when it comes to critical processes. It is conflicted by an ageing workforce and skills shortages, with a mounting pressure for efficiency. This may cause a divergence between innovation and implementation, where the technology moves faster than organizations are ready or willing to adapt.

The challenge will be in bridging that gap with solutions that are not only powerful but also easy to implement, trustworthy, transparent, and tailored to the realities of the end users. Ultimo's mission is to develop AI functionality that is easy to deploy, eliminating the need for AI expertise, data scientists, hardware investments, or complex integrations. From day one, it delivers real-world value by seamlessly integrating into existing processes and communication tools, offering just-in-time insights at the point of need.

Looking further ahead, Ultimo sees a world where EAM is no longer just a system of record – it will be an intelligent network of digital coworkers that proactively supports operations.

Digital coworkers: Working alongside humans, amplifying their skills

What might this look like in action? Ultimo's Agentic AI solutions function as digital coworkers: Specialized experts that take action, not just surface insights. These agents will handle time-consuming tasks, freeing skilled workers to focus on what matters most.

For example, an agentic coworker could be used to create an organization's asset catalog by entering asset details during the onboarding phase and then structuring assets accordingly. Additionally, the digital coworker could be guided through a factory floor by a human who provides information by taking pictures or filming, combined with voice communication. All recorded assets would be logged in Ultimo, adhering to naming conventions and a structure that follows best practices.

Other agentic assets would be deployed across various workflows, including corrective maintenance, work planning, and warehousing. For example, an agent might report a failure through a conversational channel, such as messaging or voice, resulting in an automatic assignment of a technician when it's urgent. An agent might also help oversee spares management, actively proposing alternative parts when originals aren't available. Another agent could also help evaluate preventive maintenance schedules (PMs) for completeness and effectiveness.

> "Other agentic assets would be deployed across various workflows, including corrective maintenance, work planning, and warehousing."

The result: A seamlessly integrated system that becomes truly mission critical. Essentially, customers choose Ultimo not as a traditional tool but as a team of digital coworkers that work on their behalf.

Supporting growth: AI and the EAM Maturity Model

AI functionality is already helping end users move along the EAM Maturity Model (Figure 2) – a roadmap developed by Ultimo that identifies a company's current asset management positioning and highlights the pathway toward potential growth. Ultimo's strategic roadmap includes AI-driven preventive maintenance, automated scheduling, and intelligent asset cataloging. These capabilities, designed with enterprise-grade data protection and minimal external transmission, will ensure secure, scalable deployment in industrial environments.

Figure 2: Increasing adoption of AI can help end users progress from left to right across the EAM Maturity Model

As organizations embrace AI in EAM, they transform from reactive maintenance management to a more proactive asset management structure. Agentic AI and digital coworkers will help organizations move beyond maturity Stage 2 (In control) by significantly improving data quality and actively collaborating with humans to drive continuous improvements across operations.

> "Digital coworkers provide insights based on all available data."

Previously, team members, such as maintenance managers, engineers, and planners, often found themselves stuck in day-to-day survival mode - reacting to disruptions and performing repetitive tasks with little time to analyze and improve processes. In these latter stages of maturity, agentic AI transforms this dynamic: Digital coworkers proactively provide insights based on all available data and knowledge, delivering information just in time at the point of need. This enables individuals to work smarter and faster while increasing job satisfaction.

Ultimately, as companies move across the Maturity Model, AI will act as an absolute driver of success.

Preparing for an AI-inspired future

AI is proving to be a highly transformative technology for EAM in many positive ways. At Ultimo, the strategy for AI has been to focus on real-world use cases. When considering how to embed AI into the Ultimo product, only features that will add significant value to customers and improve their user experience are integrated.

Looking forward, Ultimo has a strategic ambition to be a category leader in AI-augmented EAM, where humans and agents collaborate seamlessly. This means preparing for the next phase of AI development by focusing on a combination of technical skills, mindset shifts, and architectural readiness. Ultimo is committed to continued investment in learning and experimenting with new AI technologies, including LLMs, vector databases, and agentic frameworks. At the same time, it means encouraging a different way of thinking: Moving beyond incremental improvements to exploring how AI can fundamentally reshape processes and user interactions.

Importantly, any advancement in industrial maintenance experience must be developed with customers and delivered frictionlessly at the point of impact. Ultimo is committed to delivering tailor-made AI functionality that augments the skills of asset heroes. It must be a human-centered experience – where digital coworkers operate collaboratively alongside human engineers. It needs to be impact-first technology, embedded directly into EAM workflows to address workforce challenges, safety imperatives, and compliance demands. And it needs to be trustworthy at scale, being hosted in a secure, private cloud environment that provides ultimate peace of mind.

Through this combination of real-world use cases and a keen eye on the longer-term vision, Ultimo is determined to stay at the forefront of AI adoption in EAM – both now and in the future.

About Ultimo

Ultimo, an IFS company, energizes the financial resilience, regulatory compliance and operational excellence for manufacturing, logistics, energy and healthcare organizations through its innovative software-as-a-service (SaaS) enterprise asset management (EAM) solutions. Since 1988, Ultimo has focused on maintenance, uptime, safety, cost control, and efficiency. Known for rapid deployment, ease of use and an unparalleled time to value, Ultimo is proud to support over 120,000 technicians who manage more than 15 million assets for 2400+ customers worldwide. For further information see ultimo.com

www.ultimo.com