

The Human Side of the Digital Twin





Our Approach

Our experts are committed to eliminating information caused incidents by deploying digital-first solutions to support the connected worker and the modern learner in high-reliability organizations. Our team sees the connected worker in the most challenging environments possible, with the expectation of flawless performance and all of the critical operational knowledge required to help them do the right thing every day. We take on the toughest information challenges by applying knowledge management fundamentals and leading edge digital tools, to build a strategic line of defense against information-caused incidents in the workplace.

Summary

Implementation of a digital content management system will help to ensure that operational safety and reliability practices are under continual measurement and improvement. This validation of process by leadership is necessary to enter the automation phase of plant operations. The human side of the Digital Twin will support better and safer operations now, and speed the realization of the automated plant of the future.

Background

Since 2006, the severity of abnormal events has steadily increased (Source: AIChE Abnormal Events). During this time plants have increased monitoring, improved control systems, and improved the digital representation of the plant.

People, Process and Equipment are the three key elements of plant operation. The current focus on digitization has largely ignored the single biggest cause of failure. Most Experts will agree that more than half of the abnormal events can be traced back to people and processes, with only 36% blamed on the equipment (Source: Oil and Gas Producers Report).



A New Approach

Since the beginning of the Digital Age, we have been improving the way in which information is managed and stored. These improvements have been able to use technology to create and manage information in much the same way as we did before. We have used keyboards and computers to create and assemble books. This has resulted in quicker and easier content creation and update, and a better mechanism for distribution. This content is stored in a digital system, and the ease of creation has resulted in much larger volumes stored in multiple formats and systems.

Valuable information, which is often a section of these larger documents, is not indexed or searchable rendering it unusable and unfindable in a digital system. This results in large volumes of critical operating information “Locked” from access by operational staff. Furthermore, this content cannot be reused, indexed, or linked to other critical information.

The Need for Change: The Human Side of the Digital Twin

When we leave work, we have access to all sorts of knowledge due to large volumes of content which is created and tagged in context (digitized) on the web. For example, if an oven is broken, we could search for possible causes and find an article describing the troubleshooting method for determining the problem with the stove. Then we could search for “how to fix the thermostat,” and find a video on a thermostat repair. Next we could press a link to purchase a v2202 Inglis thermostat. Our home device has our credentials which stores our preferences, payment information and location. All of this is possible because the information is created as components with searchable contextual metadata.

Truly Digitized content contains links and metadata that directs users to knowledge that supports efforts to perform work at the highest level. We want every operator to function as our best operator on his/her best day.



The Factors of Production

Better Decisions | Greater Transparency | Higher Reliability

Big Data | Advanced Analytics | Machine Learning | Data Visualization | Optimization

The Plant and Equipment



IIOT

Equipment Performance

- Plant Condition Monitoring
- Predictive and Preventive Maintenance
- Trend Analysis



Automation

Automated Processes

- Advanced Process Control
- Realtime Optimization



Engineering & Design

Work as Imagined

- Simulations
- Defines Operations of the plant
- First principle methods

People Running the Plant



Digital Procedures

Standardized Practice

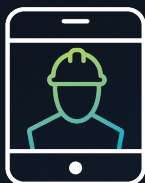
- Work as perceived vs. work as executed
- Collaborative Execution



Modern Learner

Learn in the flow of work

- Integrated Knowledge Checks
- Self Paced
- Interactive Learning



Connected Worker

Monitor Operations

- Information at point of need
- Real-time tracking
- Planning and Scheduling

AcceleratorKMS will Support the Digital Twin by

Eliminate Information-caused Incidents through standardization of content and by creating a rich digital platform

Reduce Time to Competency by allowing workers to “learn in the flow of work” while performing tasks

Add Human Data to the APM by exposing new information on how human interaction impacts plant performance

Bring Two-way Accountability to your operation by providing collaboration and in-field updates in real-time

Enable Workers to View Information Any time, Anywhere, on Any Device with full equipment and location context

Bring Continuous Improvement as human interaction is tracked, measured, and related to impact on the plant

Drive Scenario-specific Simulations with Digital Content and be equipped to drive equipment sensitive scenarios

Empower Automation & Robotics by providing digital content in a human and machine readable format



About Hexagon

Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Hexagon's Asset Lifecycle Intelligence division helps clients design, construct, and operate more profitable, safe, and sustainable industrial facilities. We empower customers to unlock data, accelerate industrial project modernization and digital maturity, increase productivity, and move the sustainability needle.

Our technologies help produce actionable insights that enable better decision-making and intelligence across the asset lifecycle of industrial projects, leading to improvements in safety, quality, efficiency, and productivity, which contribute to Economic and Environmental Sustainability.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 24,000 employees in 50 countries and net sales of approximately 5.5bn USD. Learn more at [hexagon.com](https://www.hexagon.com) and follow us @HexagonAB.