OCTAVE

WHITE PAPER

The human side of the digital twin

Our approach

Our experts are committed to eliminating information caused by 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 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

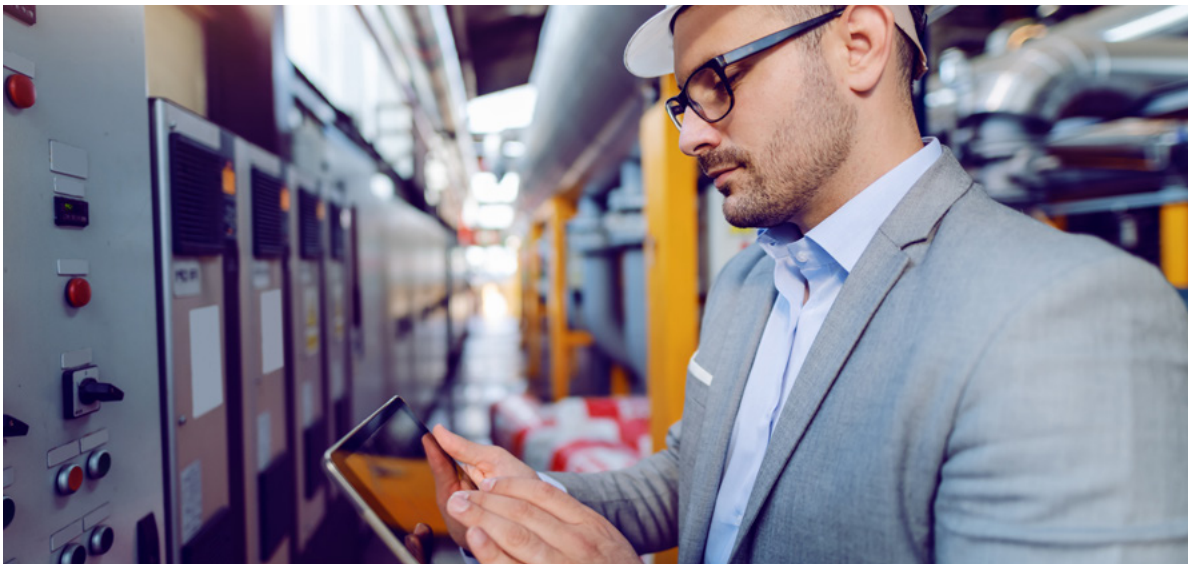
Since the beginning of the Digital Age, we have been improving the way in which information is managed and stored. These improvements have been able to use technology to create and manage information in much the same way as we did before. We have used keyboards and computers to create and assemble books. 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

Digital Procedures

Standardized practice

- Work as perceived vs. work as executed

Engineering and design

Work as imagined

- Defines operations of the plant
- First principle

People running the plant

Automation

Automated processes

- Advanced process control

Modern learner

Learn in the flow of work

- Intergrated knowledge checks

Connected Worker

Monitor operations

- Information at point of need
- Planning and scheduling

Octave Tempo Operating Procedures (formerly AcceleratorKMS) will support the Digital Twin by

Eliminating information-caused incidents through standardization of content and by creating a rich digital platform

Reducing time to competency by allowing workers to “learn in the flow of work” while performing tasks

Adding human data to the APM by exposing new information on how human interaction impacts plant performance

Bringing two-way accountability to your operation by providing collaboration and in-field updates in real-time

Enabling workers to view information any time, anywhere, on any device with full equipment and location context

Bringing continuous improvement as human interaction is tracked, measured, and related to impact on the plant

Driving scenario-specific simulations with digital content and be equipped to drive equipment sensitive scenarios

Empowering automation and robotics by providing digital content in a human and machine readable format

About Octave

Octave is a leader in enterprise software, turning data into decisive action and intelligence into your edge. Our software solves for and simplifies complexity, from the design and build to operations and protection of people, property, and assets– for any scope, at any scale. For decades, we've partnered with customers to sharpen performance, elevate efficiency, and amplify results. From factory floors to entire cities, our solutions are tuned to scale up what's possible from day one onward.