Driving Operational Excellence™

The Connected Workforce

www.DrivingOE.com

REV 021821

Introduction

Comprehensive workforce strategies within the process and asset intensive industries must focus on more than training and safety. While some organizations are embracing those ideas, pandemics such as COVID-19 are pushing other companies to develop comprehensive workforce strategies. For the foreseeable future, executives and plant managers will need a contingency plan in the event that remote work via a distributed workforce becomes necessary. A major factor here is the potential for travel disruptions where normal routes (e.g., air) may be blocked, difficult or ill-advised for extended periods.

Even after the coronavirus is under control, companies must face the reality of enabling remote work because it will become a competitive advantage. Employees who now know how to work remotely in an effective manner will want that option, and smart businesses who want to keep talented employees will adapt. The right technology and systems make a huge difference in an effective and efficient move to remote working.

Companies have been evaluating how they will approach Industry 4.0. To enable a mature Connected Workforce, companies will need to invest in foundational elements such as a wireless mesh, web meeting services, and hardware. They will also need to consider their software and applications. Connections to data won't drive full benefits to the organization without integration that can transform data into actionable information. Unfortunately, the current IT landscape for many organizations is a confusing combination of spreadsheets, homegrown applications and siloed, disparate systems. Most of these systems are focused on tactical compartmentalized information – they simply cannot offer integrated, aggregated insight.

Companies who were already heading down a path of interoperable data-driven operations have had an easier time with this transition than companies who weren't. Business leaders tend to view change as difficult and challenging and often use those perceived difficulties to resist necessary changes. However, the current situation has proven companies can move as fast as they have to when the outcome is important enough. Understanding the underpinnings of, and integrations possible with, a data-driven system is a critical step in implementing one as painlessly as possible.

Overview

What is the Connected Workforce?

First, what is a Connected Workforce? In short, a Connected Workforce is one that, through the power of mobile and/or wearable devices, is able to send and receive critical information at the point of work. This approach breaks down traditional views in a number of ways. For instance, traditional training approaches require lots of classroom time. Only recently, the industry started shifting toward Computer-Based Training as it reduces the need to pay trainers overtime and enables 24/7 access to knowledge resources. While training is important, reliable access to procedures exactly when needed is critical for complex operations and maintenance tasks.

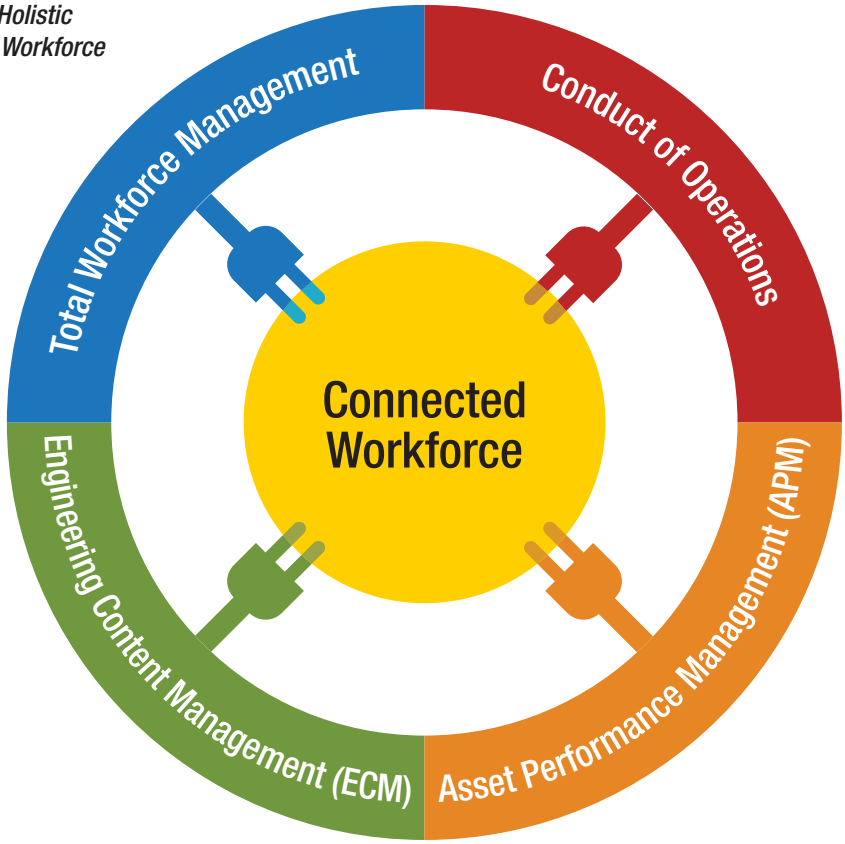
Mobility, or using approved mobile devices in prescribed ways to access point of work content, enables organizations to execute more efficiently, and unifies the board operator with the field operator.

Integration doesn't address user intuitiveness. While disparate applications can be integrated, the look, feel, and navigation of different point solutions make the final system harder to manage and understand. To simplify the process and accelerate the implementation, organizations can leverage an integrated platform with a single pane of glass approach to simplify training and reduce or eliminate the need for after-the-fact point solution integration.

Plenty of technology is available today for enabling a Connected Workforce. The challenge is breaking down departmental barriers and driving a consensus on the value of a "single pane of glass" as an outcome.

When integrated with Conduct of Operations (CoO), Asset Performance Management (APM), Engineering Content Management, and a Competency-Centered Workforce through Total Workforce Management, a Connected Workforce results in an agile, resilient operation. Resilient, because you are no longer dependent on experiential knowledge or ability of any one person. Agile, because data and information are available in context whenever and wherever it is needed. Smarter decisions can be made faster, and work can proceed without the lag time of going to find someone more knowledgeable or locating the right notebook or checklist. Achieving this outcome requires the right data at the right time be available to the right field person within the right context.

Figure 1 – Holistic Connected Workforce



The purpose of creating a Connected Workforce is to maximize efficiency and profitability, while minimizing operational risk.

www.DrivingOE.com | www.OESuite.com | 713.355.2900

Decisions can be made based upon visibility into the entire pile of data and can be communicated much faster. The outcome is a reliable, profitable, and safe plant.

The core elements in this integrated data set include:

- Management of Change (MOC)
- Procedural Automation and Engineering Content Management
- Competency-Based Culture / Human Factors (situational risk and awareness)
- Operational Human-Machine Interface / Decision Support
- Conduct of Operations / Human factor issues (situational awareness/responsiveness)
- Team Collaboration
- Safety Lifecycle Management / Safe Operating Limits
- Process Safety Management
- Mechanical Integrity / Asset Health
- Production Loss Management
- Enterprise Asset Management

To attract the talent you need today, you will need digitalization combined with the access via mobile devices to bring about a centralized information system with a user-friendly, cohesive, intuitive, and interoperable solution. Workers younger than thirty-five (35) expect information to be readily available at the touch of an app on their devices. That expectation is not going to change, and the work world in the process industries has been slower to adapt than many other verticals. Attracting talent, keeping them engaged, and creating a work environment where organizations can reap the full benefit of the talent they hire is a critical component for long-term success in industry.

The foundational elements of a Connected Workforce include:

- A mobile-enabled strategy and platform
- Procedural automation
- Competency-Based Culture (based on Job Role Maps, Competency Assessment, Learning Management)
- A robust Operations Management System (starting with rounds, logs, and shift handover)
- An asset registry
- A regulatory compliance strategy and supporting systems to manage operational risks, including MOC

What is the Connected Worker?

Companies are under increasing pressure to improve worker productivity. The pace of regulatory change coupled with the velocity of human capital and the aging workforce is forcing companies to rethink how they will enable their workforce.

A **Connected Worker** is any person whose working life is informed by and enhanced due to technology. Devices like smart phones, wearables, and tablets are key to enablement. It's the complete relationship that a worker has with the information they need to do their job as safely,

efficiently, and effectively as possible. Key areas of focus include compliance, asset integrity, maintenance, operations, and capital projects. A connected worker could access work orders and tag functions for equipment to enable augmented reality (e.g., 3-D Bill of Materials in the field, history of work orders, history of MOCs, work permits tied to work packs). APM is a critical component of the Connected Workforce because assets are one of the key building blocks of Intelligent Operations, and an Asset Registry is a solid foundation to build an APM structure. In fact, one of the strategic outcomes of the APM foundation within the Connected Workforce is enabling Maintenance and Operations to work together more effectively.

How to Begin Building a Connected Workforce

As companies mature, they will begin to see more effective decisions being made in the field. Each interoperability point will drive more visibility and operating efficiency. At the final maturity level, a resilient plant emerges where visualization and analytics create sustainable excellence.

Plenty of technology is available today for enabling a Connected Workforce. It's a topic with deep implications for the workforce post-coronavirus since managing information from remote sources and the general flow of data are going to become even more important over time.

The companies that will outperform their peers over time will enable a flexible workforce, will rely more on collaboration and remote support, and will pursue implementing Centers of Excellence (COE). A COE enables experienced remote personnel to collaborate with field personnel through the use of technology. Heads-up displays with cameras and tablets are required to enable a COE, for both remote collaborators and those at work on the shop floor or in the field. The interoperability of the data that feeds a Connected Workforce leads to data-driven decisions. When it can be combined with visibility through integrating data sources such as historians and control systems, field personnel are able to see threats as they emerge. Artificial Intelligence is additive as it helps enable anomaly detection and pattern recognition.

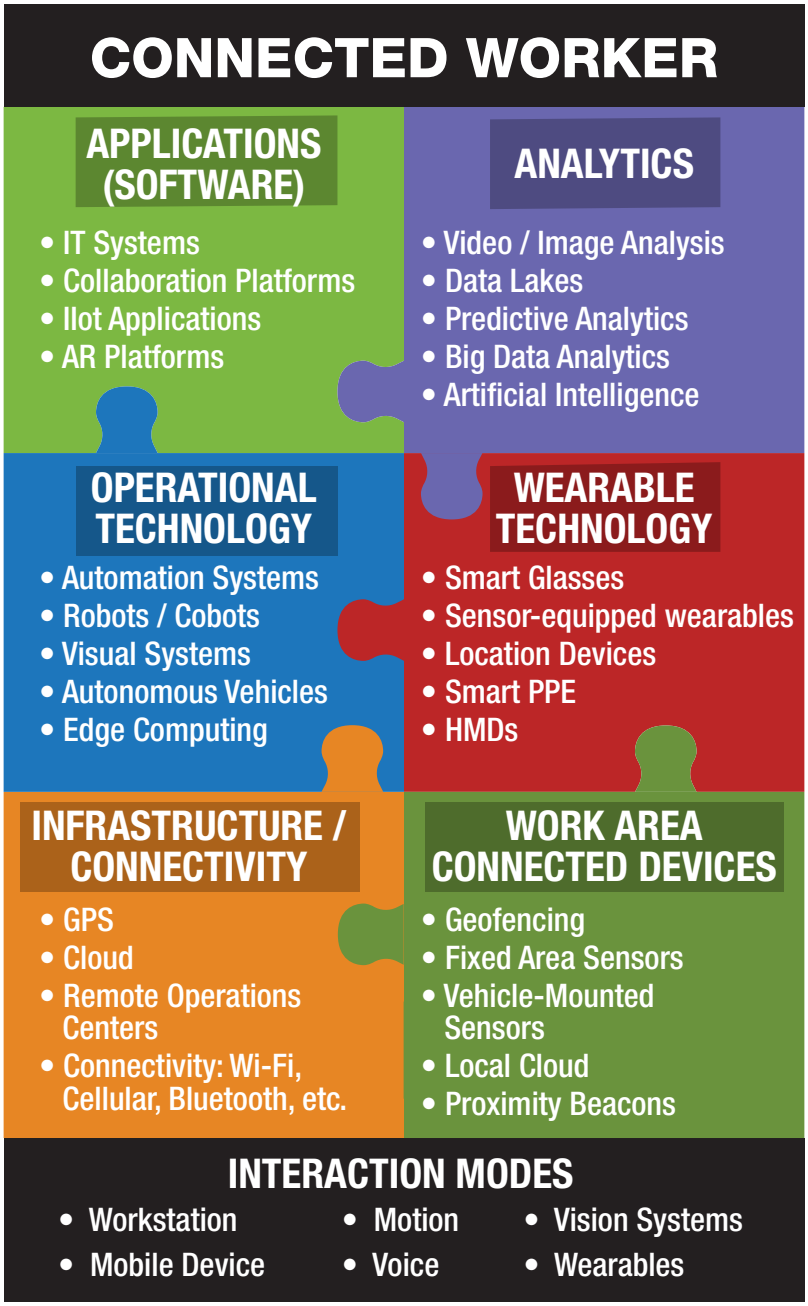


Figure 2 – The Connected Worker

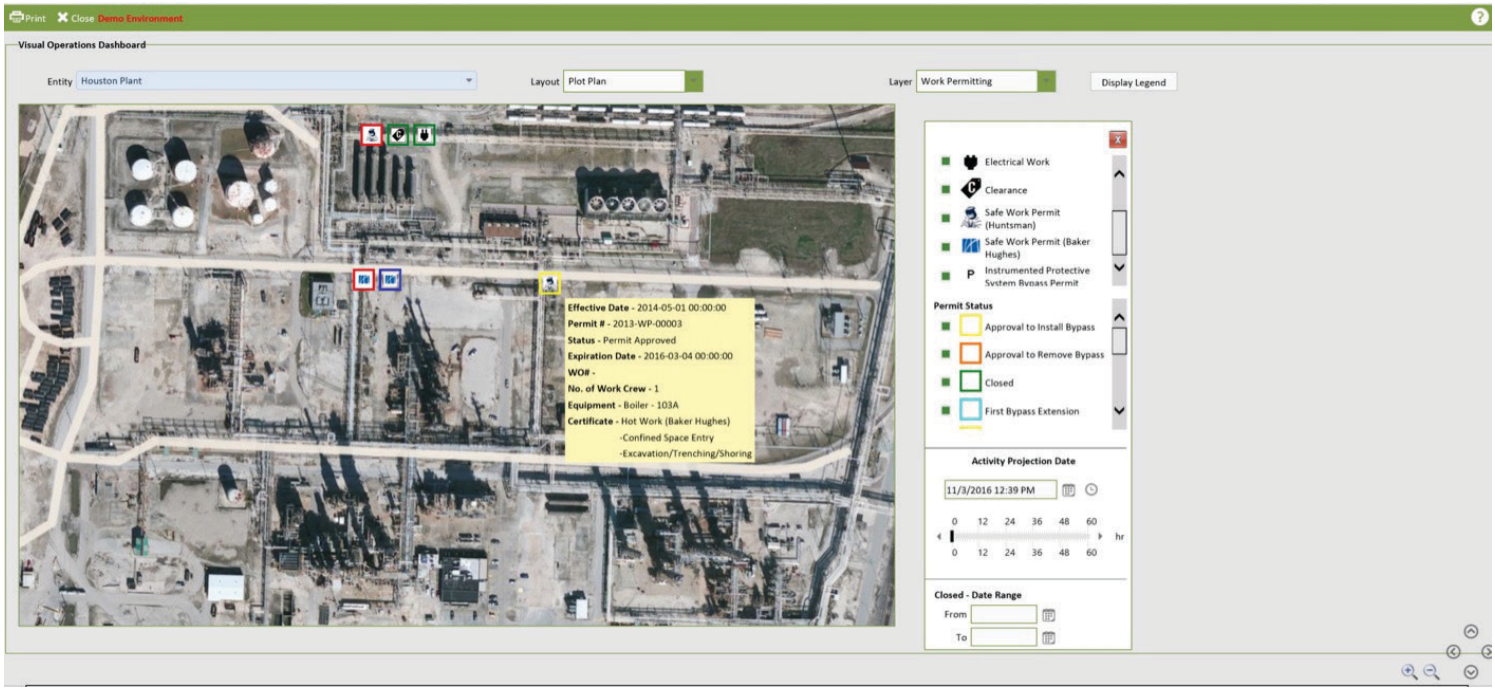


Figure 3 – Visual Operations Dashboard

Traditionally, there are hundreds, if not thousands, of procedures that are accessed via a binder on the shelf. Through Connected Workforce approaches, workers use a mobile device to access the task and procedure content they need, exactly when and where they need it. With a Connected Workforce, people are no longer having to execute a complex procedure based upon who remembers the most from training, which reduces the potential for human error.

By enabling remote collaboration and mobility coupled with a COE, companies can re-allocate their resource base at plants. Staffing studies are a key to rethinking the workforce. EEMUA-191 helps us understand how many operators are needed to action alarms each shift as an example of a staffing variable. In addition, Connected Workforce opens insight into Operator Driven Reliability (ODR) – a key business driver for CoO that takes lower value tasks from maintenance and gives those to operations to allow maintenance personnel to focus on higher value activities. This contributes to improved wrench time.

We recommend this maturity path to build a Connected Workforce:

Phase 1	**"Basic Connected Workforce"** **Document and Training Management / Operator Rounds and Logs / Inspection / Tasks**
Phase 2	**"Intermediate Connected Workforce"** **Procedures / Work Permitting / MOC / CAPA / Incidents / Work Orders**
Phase 3	**"Advanced Connected Workforce"** **Competency / Organizational Change / Alarms / SIS / IOWs**
Phase 4	**"Intelligent Connected Workforce"** **AI / Visualization / Asset Health / Analytics / Audit**

Figure 4 – The Connected Workforce Maturity Roadmap

The first three phases of maturity focus on core compliance activities supported by engineering information coupled with CoO. Toward the end of Phase 3, information from the control systems set the foundation for real-time decision support. Finally, Artificial Intelligence and APM help set organizations up for prescriptive analytics and asset health monitoring.

APM is further enabled in Phase 4 by integration to the process historian. This integration enables insight into questions such as whether Integrity Operating Windows are being exceeded or if new damage mechanisms are being introduced leading to accelerated equipment deterioration. As tablets become more commonplace in the heavy and process industries, APM and will become mobilized and procedures and equipment information will be much more readily accessible in the field.

What is the Strategy?

The goal is to maximize efficiency and profitability, not to manage compliance. Compliance should be a byproduct of an effective Connected Workforce. While many devices and technologies have benefits, not all of them have a high return on investment. We recommend starting with a tablet or a phone to enable core functions.

A well-designed strategy can help create a clear vision of a strategic interoperable outcome to avoid further proliferation of point solutions and complex systems integration. Start simple to earn some quick wins and tackle more complex work processes after that.

We suggest the following basic template as a starting point:

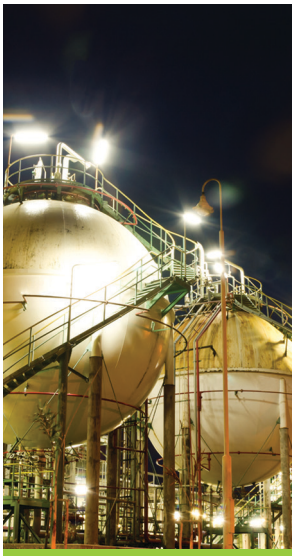
1. Assess and prioritize work processes across your fleet
2. Define benefits of automation for each work process
3. Look for interoperability points that drive efficiency
4. Create key performance indicators
5. Determine stakeholder impact and have an onboarding plan
6. Pilot concepts before planning a rollout

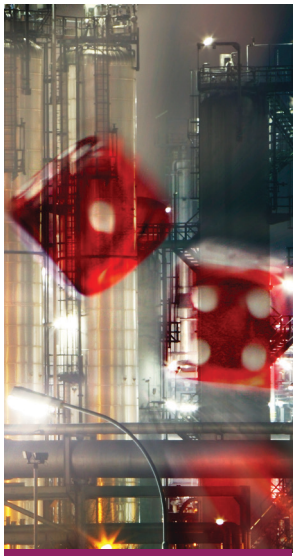
Summary

A Connected Workforce, done well, ultimately yields safe CoO and enhanced compliance outcomes. Pursuing a Connected Workforce can help attract, retain, and optimize talent within an organization in addition to delivering against bottom line goals. Since the main centers for profit in the process industries, barring reducing incidents, are gains in production efficiency and operational effectiveness, it only makes sense to focus on operations and maintenance as a way to capture value and be responsive to market and customer demands. In other words, enabling people to reach data-driven decisions faster, and with more point-of-work support, results in value capture through operations and maintenance. Achieving a Connected Workforce results in workforce continuity and a single unified data model on a single architecture that is intuitive, and easy to configure. Better decisions, made faster, enabled across a workforce that may not all be in the same facility – that is the bottom-line ROI of the Connected Workforce effort.

For more information email us at info@DrivingOE.com or call (713) 355-2900.

Driving Operational Excellence™





Operational Sustainability® makes operational excellence simple.

Succeeding in today's complex, highly-regulated industries depends on how well your company manages **operational risk** and enables **operational discipline**. Our world-class advisory services and our industry-leading cloud-based, highly configurable software work together to enable your company to achieve **operational excellence**, including OE 4.0 tenets, and sustained **operational integrity**. We identify and help you solve any issues to move to a real-time, mobilized risk-aware culture. With an average of more than 30 years of industry experience each, our advisors can design a solution tailored to your company's culture and needs.

Learn how Operational Sustainability can advise your workforce through our consulting services and support your journey to operational excellence through our OESuite® software platform. See our full slate of free webinars, white papers, detailed module information, and scheduled workshops online at **www.DrivingOE.com**.

Schedule your free consultation and demo today.

11490 Westheimer | Suite 280 | Houston, TX 77077 | **info@DrivingOE.com**

www.DrivingOE.com | www.OESuite.com | 713.355.2900

REV 021821