

## WHITE PAPER

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# Accelerate your manufacturing transformation by enhancing your HMI/SCADA

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### Executive summary:

Inflation, supply-chain disruptions, and an impending shortage of skilled labor are just a few of the many challenges manufacturers face. To overcome them, the single greatest tool manufacturers have at their disposal is a connected workforce. McKinsey estimates that digital collaboration has the potential to unlock more than \$100 billion in value—thanks in part to productivity boosts of 20-30%.<sup>1</sup> HMI/SCADA systems are a data-capture and control foundation for improving productivity and collaboration. Because HMI/SCADA systems are so crucial to their connected workforce, manufacturing organizations must rethink how they deploy and manage them. By taking a holistic approach to operations control, implementing digital infrastructure for improved data management and adopting hybrid cloud and on-premises solutions, they can build workforce connectivity and empower workers with higher-level capabilities, like AI-derived insights. A connected workforce with access to context-specific information regardless of location can help to plug value leaks and build operational efficiency, productivity and agility.

# Introduction

While labor markets have largely stabilized after the disarray introduced by the COVID-19 pandemic, pandemic-driven upheavals further compounded longstanding concerns. From small operations to multinationals, manufacturers worldwide face increasing pressure to plug value leaks, empower their workforces, and maximize efficiency. As aging workers leave the workforce-and take their experience with them-manufacturers face the real possibility of a widespread shortage of skilled labor.

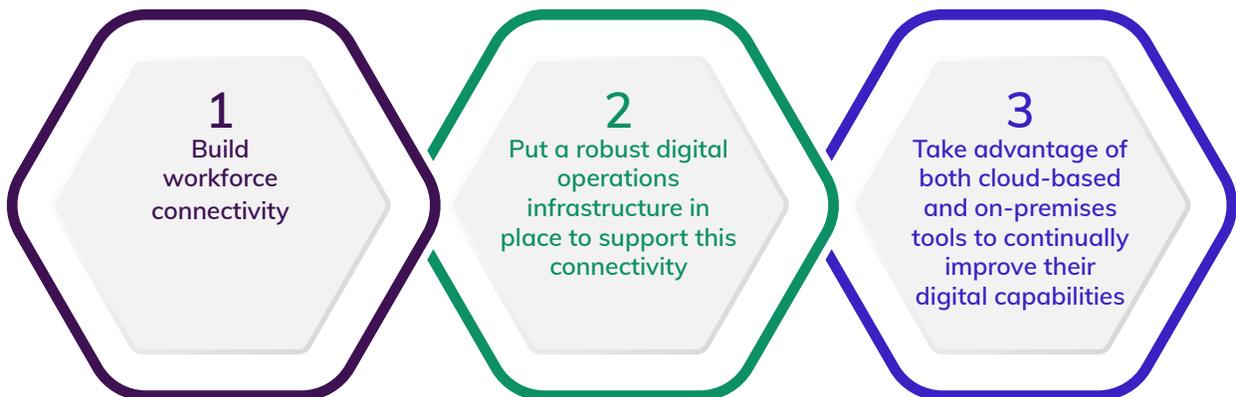
As a hedge against this knowledge loss, operators need easy access to contextualized information. Isolated, stale information hinders efforts to promote greater organizational efficiency and agility. Without effective information usage, organizations risk missing improvement opportunities. Often, legacy systems place an unnecessary burden on operators, which makes organizations unable to respond to market adjustments nimbly.

For decades, HMI/SCADA systems have played a crucial role in ensuring efficient, effective operations. However, many companies still rely on outdated HMI/SCADA systems that are unable to keep up with the rapidly changing industrial landscape. Non-intuitive designs, isolated context, and poor feature options, lacking access to reporting, mobility, and broader information, put operators at a severe disadvantage. Not only that, but in some cases, the operation of key systems depends on a few employees who are nearing retirement-and equipment uptime depends on old hardware that can only be maintained by cannibalizing other systems.

Organizations must not only update legacy systems but also rethink their approach to deploying and managing HMI/SCADA systems. Today, a plant's ability to meet its performance objectives is influenced as much by what is happening externally as internally. Being efficient whenever possible-and responsive when necessary-enables a company to move forward. Manufacturers need to deploy HMI/SCADA systems in ways that make them agile as well as efficient.

Many organizations have already begun transforming their HMI/SCADA approach. A recent survey suggests that 84% of companies are increasing or maintaining their investment in industrial transformation. This survey data demonstrates that organizations from a broad array of sectors are realizing a return on investment (ROI) in industrial transformation, as over 80% of respondents reduced their COGS, improved operating margins, or grew revenues by at least 3% as a result of their industrial transformation program.<sup>2</sup>

To keep pace with the speed of the market, manufacturers must embrace a holistic approach to operations control. They must strive to improve collaboration and decision-making, and they must increase operational visibility while maximizing the information already at their disposal. It is more important than ever that manufacturing organizations:





To meet the coming challenges they face, manufacturing organizations must find new ways to increase their operational resilience and agility—starting with improving their information flow.

**91%**

of employees say that improving their digital dexterity improves their work effectiveness.<sup>6</sup>

**-Gartner**

**84%**

of companies surveyed are increasing or maintaining their digital transformation investment despite the labor crisis, supply chain disruptions, and economic uncertainty.<sup>2</sup>

**-LNS**

**20-30%**

in part to productivity boosts, McKinsey estimates that digital collaboration has the potential to unlock more than \$100 billion in value.<sup>1</sup>

**-McKinsey & Co.**

# Five key HMI/SCADA market trends<sup>4</sup>

## Open and integrated

Increases in the flexibility of industrial processes, driven by Industry 4.0 and Industrial IoT technologies, will result in software needing to provide visualization and connectivity to greater sources of information, thus enabling the new connected workforce.

## Analytics

Process analytics and the cloud make possible a new category of HMI software that will be more intelligent and meet the needs of the larger industrial enterprise.



## Cloud computing

Future HMI software needs to have connectivity and access to cloud-stored data, resulting in critically effective cybersecurity architecture.

## Big data

Users are collecting more information from manufacturing and analyzing big data to optimize processes.

## Multiple devices

Many more workers are using their own commercial smart devices in plants and factories, requiring HMI software to be capable of deployment to any device using HTML5 technology.

# 1. Getting the most out of your information with a connected workforce

Manufacturing organizations should not just connect their workers to ensure they use information effectively – they should consider every worker a connected worker. Mobile devices are no longer cumbersome, expensive, and unreliable, but easy to use. When workers can get connected from any location – regardless of where it is relative to a physical asset or plant – their access to contextualized, role-specific information keeps them empowered.

As formats of information continue to proliferate, it is more important than ever that organizations align with a greater variety of information types. Organizations increasingly need to digitize and integrate additional types of information to support inexperienced personnel and reduce the risk of limited information availability. Unstructured knowledge, video, and various forms of communication, including one-to-one and many-to-many interactions, have become vital to the efficient flow of operations. Manufacturers need to consider how to make these diverse types of information accessible alongside process-derived information found in HMI/SCADA.

An empowered workforce stands as one of the single most impactful drivers of operational efficiency, productivity, and agility. As a recent survey from Gartner suggests, “91% of employees say that improving their digital dexterity improves their work effectiveness.”<sup>6</sup> Any strategy for connecting an organization’s workforce should focus on the workers themselves, rather than merely on the technology that facilitates connectivity.

When organizations provide users with the right information, they encourage effective responses, teamwork and better decision-making. Organizations should ensure that any technology they adopt sets their workers up for success. If an organization has embraced tools that allow for a hybrid deployment, it can also leverage subscription-based tools that deliver a greater degree of capability and scalability, while ensuring workers are connected and have access to critical information when they need it – even if they don’t know they need it.



“Connected workers leverage various digital tools and data management techniques to improve and integrate their interactions with both physical and virtual surroundings while improving decision accuracy, proliferating knowledge, and lessening variability.”<sup>5</sup>

- Gartner

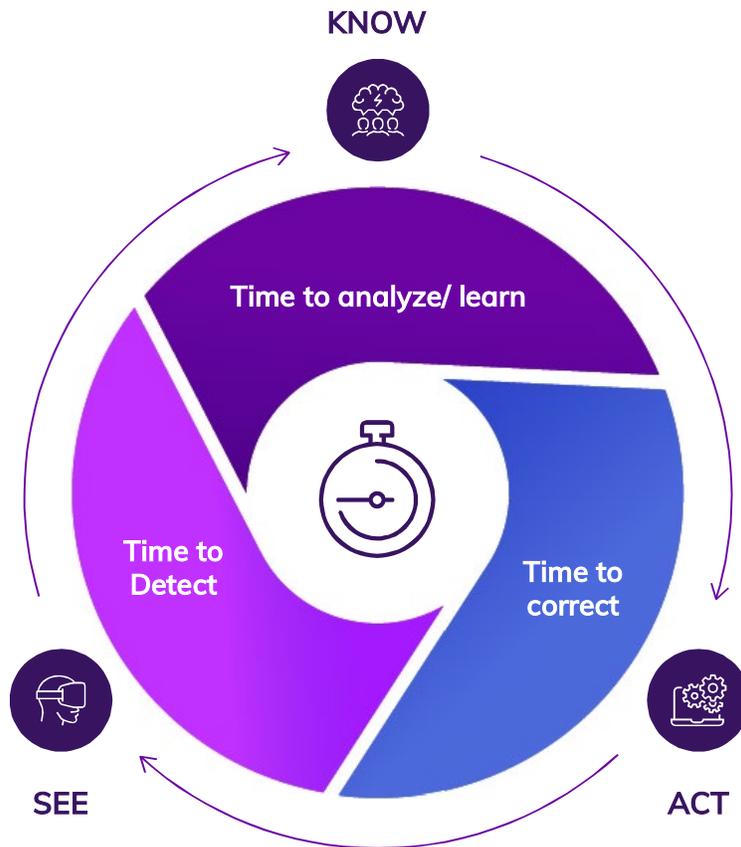
## 2. The need for a digital infrastructure

To build workforce connectivity, manufacturers need a robust data infrastructure that can handle ever-increasing amounts of data – and ensure that useful information does not end up locked in data silos. As data has become easier and cheaper to collect, organizations have begun replacing paper-based systems with digital information. However, even though digital data has proliferated, having that data available does not always translate into having actionable information. Much of the information organizations collect goes unused or underutilized. That's often because organizations are deploying solutions that can't structure data into a consumable format, aren't designed to visualize the types of data they're collecting, and can't empower teams with simplified ways of accessing information.

The ongoing search for new measures of operational agility, efficiency, and resilience lies at the heart of the recent push toward improved digital data management.

The last decade has seen a dramatic change in technologies that help organizations drill down through information layers and visualize data. But before they can take advantage of that technology, manufacturers must first digitalize all workflows, from start to finish. Without adequate visibility, it is impossible to address problems and plug value leaks. Manufacturing organizations should design a closed-loop work process. By enabling sense-and-response actions, organizations can minimize or even eliminate value leaks from production processes writ large.

As recent research from IDC suggests, “data, its effective management, and its increasingly central role in operational decision-making is what is driving the transformation of operation. The foundational elements are agility, resilience, and predictability. The enablers/technologies are connectivity, cloud, and contextualization. And the business outcomes are continuous innovation, value optimization, and risk mitigation.”<sup>3</sup>



When they have a good digital infrastructure in place, manufacturing organizations can begin to improve their operational data management immediately. To maximize agility and efficiency, operations teams need tools that simplify common and repetitive tasks, freeing them up to use their time and skills for higher-level activities. With smarter systems that encapsulate best practices into the software, operators no longer need to be experts to drive sustainable value.

As organizations search for tools that can help them capitalize on all of the operational data at their disposal, they should look for digital solutions that are integrated, streamlined for purposeful objectives, and bring their legacy HMI/SCADA systems into line with today's technology. Any digital tools they select should be built with ease of use in mind and empower operators to access and share information.



## Customer story

### Starbucks

Starbucks operates more than 30,000 stores in over 80 countries worldwide. With such a large global presence, situational awareness and visibility at every level of the enterprise are business imperatives for the coffeehouse company. Starbucks needed to gain complete visibility into its production and operations across multiple sites and empower operators with real-time data to achieve its business goals, plug value leaks, and further improve efficiency.

Using advanced HMI/SCADA solutions from AVEVA, Starbucks built a customized operations management interface, allowing for the real-time integration of the control and business layers of its operational footprint. This integrated HMI/SCADA platform serves as a foundation for superior industrial process control, giving Starbucks “shop floor to top floor” visibility and mobile access to data. With these added capabilities, Starbucks’s operators can make real-time, actionable decisions from anywhere.

[Read the customer story](#)

### 3. The benefits of hybrid architecture

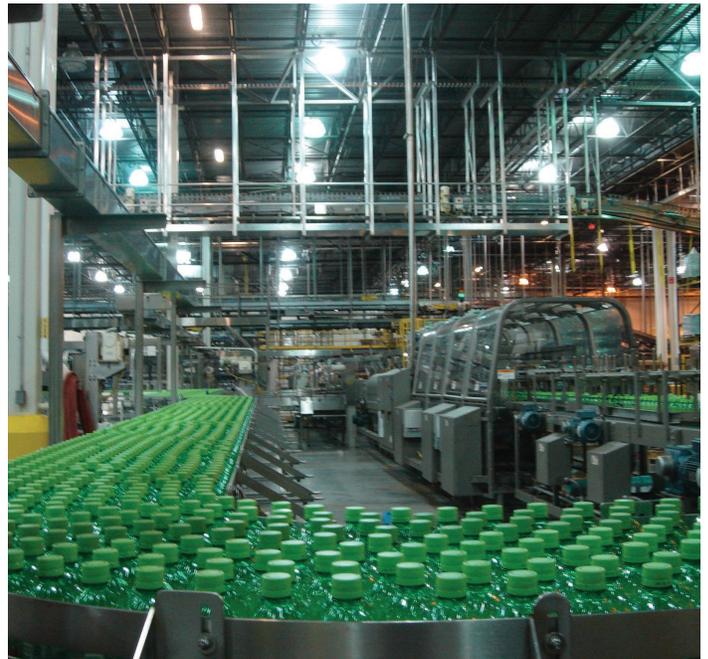
The digital tools that operations teams deploy to modernize their HMI/SCADA infrastructure should be easy to scale. Solutions that offer a hybrid deployment present the best option for manufacturing organizations looking to future-proof their operations.

An overwhelming number of organizations are investing in cloud-based technologies that can grow as they grow. While process-critical applications will require an on-premises presence for the foreseeable future, secure, cloud-based digital tools can reduce the burden of deploying and maintaining physical IT infrastructure, while delivering added benefits like scalability and improved connectivity and access.

According to recent research from ARC Advisory Group, organizations are collecting more information to optimize their processes, driving a greater need for centralized data storage and connectivity. Organizations are increasingly turning to solutions that enable centralized data storage – along with global data accessibility for all levels of the organization. That accessibility in turn enables the highest levels of collaboration and effectiveness.<sup>4</sup>

Solutions that allow for hybrid deployment ensure that remote or dispersed workforces can easily access information from anywhere, while still allowing localized access for operations teams on the front lines. Moreover, a hybrid model enables higher-level information management applications that can deliver and route AI-derived insights – among other capabilities – back to HMI/SCADA software.

Within the context of shifting workforce dynamics and an impending shortage of skilled labor, the need for organizations to embrace a hybrid architecture is particularly urgent, as hybrid deployment can deliver the safety and security of an on-premises solution alongside the accessibility organizations will need to maximize the efficiency and effectiveness of their evolving labor force.



#### Customer story

##### **Pepsi Bottling Ventures of Garner, North Carolina**

Based in Garner, North Carolina, Pepsi Bottling Ventures needed to develop a system to track performance and downtime, with an eye toward building an enterprise-wide platform that would allow it to scale up its operations in the future. But, without adequate operational visibility and reliable data, the beverage manufacturer faced a nearly insurmountable task. Manual reporting practices often created more questions than answers.

When it deployed next-gen HMI/SCADA solutions from AVEVA, Pepsi Bottling Ventures gained valuable insight into its operations. Advanced capabilities like process visualization delivered immediate visibility to its plant managers and staff at all levels. Equipped with these new digital tools, the Garner plant increased production and distribution to a staggering 30 million cases of Pepsi products annually, contributing to an impressive ROI in just 2.8 years.

[Read the customer story](#)

# Conclusion

Many organizations that continue to rely on outdated HMI/SCADA systems are missing opportunities to improve their operational efficiency and agility, which ultimately leads to value leaks throughout their production processes. As an impending shortage of skilled labor looms, and supply-chain and monetary dynamics remain volatile, companies simply can no longer ignore the cost of ineffective operations. Accordingly, a growing number of organizations continue to invest in industrial transformation initiatives. To avert the opportunity costs of relying on outdated HMI/SCADA systems and outmoded approaches to operations control, manufacturers must consider: Is our HMI/SCADA suited to our current and future operations?

## 5 ways to connect your manufacturing workforce using holistic HMI/SCADA

[Read the eBook](#)

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### About the authors

Jeremy Wilbert, previously a member of the AVEVA channel partner community, Jeremy's 15 years of experience across sales, marketing and business leadership enhances his keen interest in technology to support customers around the world. In his current role, Jeremy is responsible for managing global product marketing strategy and sales enablement activities as a member of the operations portfolio marketing team at AVEVA.

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