# The Changing Role of the Operator

ENGAGING AND SUPPORTING THE OPERATOR OF TODAY INTO THE FUTURE WITH ADVANCED SOFTWARE CAPABILITIES
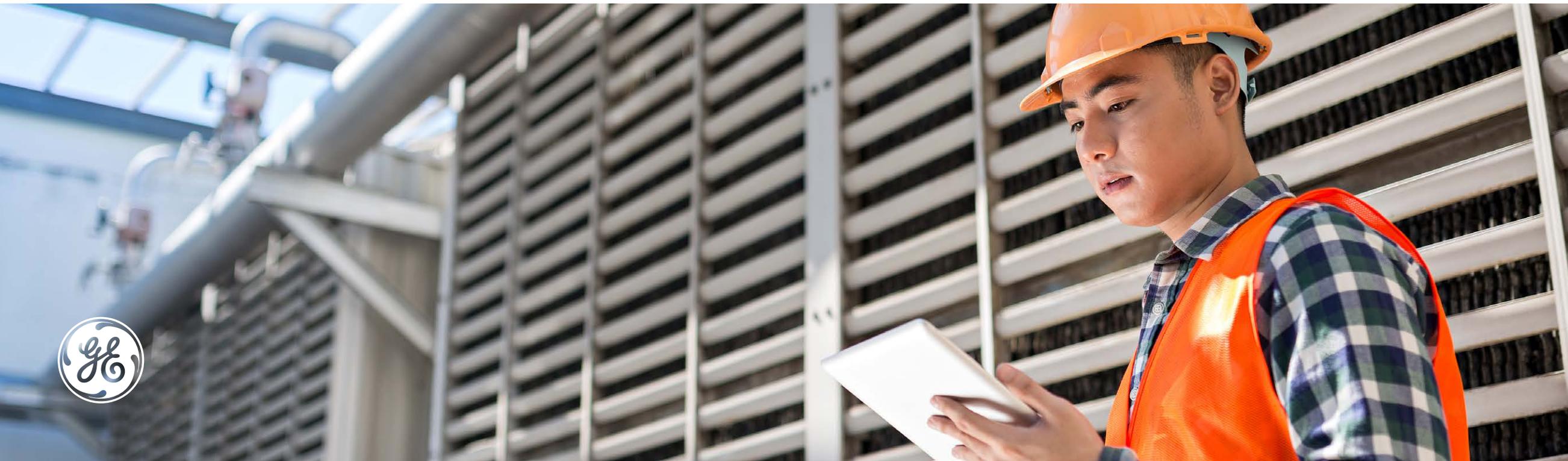
INTRODUCTION

As businesses strive to gain a competitive advantage from their operations, the way operators perform their work has evolved. Shifting from being purely functional to highly analytical, operators have become an increasingly critical part of today's business processes—significantly changing the way businesses operate and adding more value than ever before.

While operators of the past were trained to function in their roles with in-depth linear knowledge and to continually follow the process within established guidelines, the operator's role has evolved significantly with advancements in technology. Operators are increasingly required to engage beyond their traditional functional boundaries and to collaborate within a cross-functional role for increased business agility.

To advance operator effectiveness, the latest software solutions enable operators to better leverage information in both routine and critical conditions for optimal decision making. There is a growing need for tools that enable them to collect, connect, analyze, and act upon vast amounts of real-time operations data, supporting a more engaged and intelligent workforce.

The Operator of the Past

The manual demands of yesterday's operator required an in-depth knowledge of process and machine operations, as well as of the systems that enable the process. These operators often learned from previous operators, sometimes through trial and error, and worked within a predefined set of parameters. They made decisions based on the way they were trained and strived to comply with established guidelines and procedures to maintain status quo. There was a great deal of linear knowledge within these operators' specific functions, where the boundary of much of their work would occur.

In many cases, the more operators an employer hired, the better a system ran because each operator would focus on a specific machine and/or part of the process that made him/her an expert. One of the benefits to this approach is that the operator's deep understanding of the process and system leads to quick problem resolution with a level of intelligent understanding of the issues at hand.

As the role of the operator has evolved, advanced software solutions can help operators efficiently leverage analyzed data from many sources, make objective decisions based on complex, real-time information, and collaborate within a cross-functional role—enabling intelligent problem solving.

However, this approach of having operators with only in-depth linear knowledge is not sustainable in the competitive global marketplace and inevitably, the number of operators will diminish over time because employing a large number of specific experts is too expensive to develop and maintain.

As employers realize this, many now utilize a streamlined team-based approach whereby workers are cycled through many jobs to not only enable knowledge sharing and continued professional growth, but to also cover the lack of company funding for expert operators for each step of the process. This has been effective for many companies, yet the adoption of advanced software is key to further evolve their teams with greater efficiency.

Today's Operator

The modern operator has evolved into a multi-faceted employee, which has drastically increased the role's responsibilities as a "generalist," solving problems in real time and not specifically being an expert in merely one section of the process. Today, the operator is one of the key members of the team, and enhancing the efficiency of this role through improved operator response provides a critical advantage.

Operators need the ability to reason, plan, and solve problems quickly, and to use a wide set of software tools to present data, collaborate, and automate advanced intelligent analysis. The right tools can provide quick, easy-to-use, and effective decision support needed to understand and troubleshoot both routine and upset conditions. Advanced features such as alarms, historical trending, and predictive analysis are helping operators drive higher value of events and process information, increasing productivity for businesses.

The adoption of software technology can drive operational excellence by enabling operators to:

- Leverage analyzed data from many sources
- Make objective decisions based on complex, real-time information
- Understand the system to solve problems quickly and effectively

Optimizing Decision Making

With the introduction of decision-making software, more tasks became automated, and the focus of operators shifted to performing tasks across different systems. Massive adoption of software tools such as HMI (human machine interface), SCADA (supervisory control and data acquisition), MES (manufacturing execution systems), and MI (manufacturing intelligence) has resulted in significant volumes of data, with more alarms and warnings being produced than ever before—making operators

YESTERDAY'S OPERATOR	TODAY'S OPERATOR
Follow the process based on predefined procedures	→ Make objective decisions based on real-time data
Work within a linear, functional role	→ Work within a cross-functional organization
Maintain compliance with set standards	→ Contribute to driving process changes
Make independent decisions based on training	→ Leverage institutionalized knowledge

increasingly critical to the team as they provide the first level of interpretation.

Software implementations that collect the right information are critical to enable focus on the areas that align with how a business wants to operate. The incredible volumes of data collected from various systems can often lead to data collection paralysis, whereby operators have too much to work with, without the ability to focus on what's critical or to leverage meaningful information for optimized decision making. They need to be able to understand and act on the information because in many cases, operators provide the management and engineering staffs with the reality of the plant floor based on real-time and historical knowledge.

Software systems have evolved to provide reliable visualization and control of devices, although there is a significant gap in software tools in terms of the level of intelligence added to the data. Solutions that provide informational and analytical tools offer a key advantage because they can reduce the need for operators to interpret raw data, enabling them to be more intelligent problem solvers.
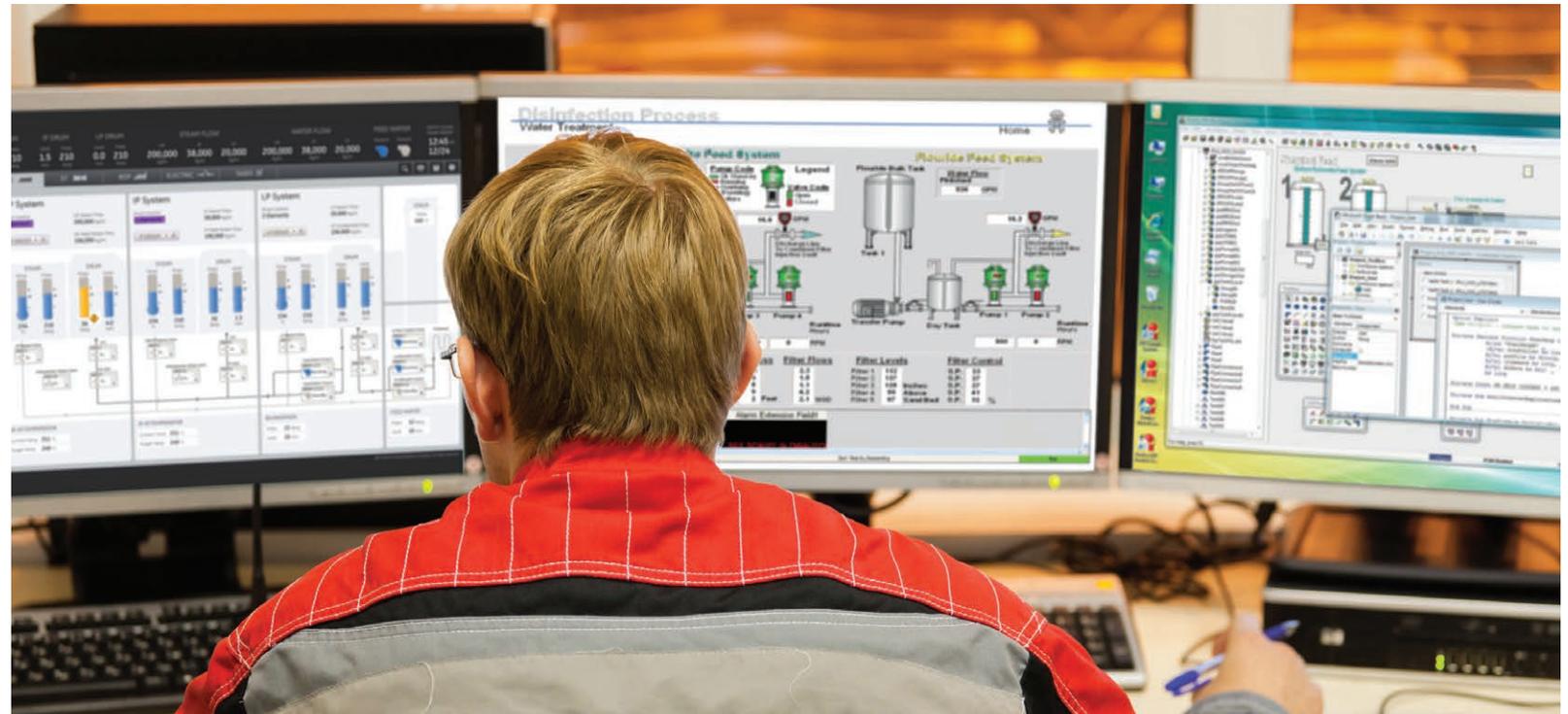
Driving Operator Effectiveness and Intelligence

Operators need tools that help them engage so they can leverage powerful analytics and intelligence for critical decision making; automated analytics are equivalent to encapsulating the knowledge of a process engineer into the software to enhance the ability of operators to respond to real-time data. They also need the ability to respond to real-time data made available through mobile computing, instant connectivity, and knowledge sharing software for faster, more focused reactions.

With operators increasingly becoming generalists, the digitization of work processes to encapsulate specific knowledge, as well as to ensure safe and repeatable operations, is key to driving effectiveness. Highly advanced software solutions can help businesses leverage their operators, collectively share vital information, and automatically transform data into information.

Advanced software solutions and platforms contain the features and functionality to drive operator effectiveness and are specifically developed with a focus on how operators interact with the system, enabling more informed decision making. Example features include:

- **Added Attention and Focus** – Replacing screens with hundreds of data points, operators can leverage runtime screens with contextualized help, automatic focusing scripts, and enhanced process visualizations.

- **Easy Sharing and Replay Functionality** – Operators can share data by email, capture moments in time, and record data and screen activity for easy team collaboration.

- **Web Interfaces** – Operators can view, control, and troubleshoot their system with full functionality from anywhere, providing mobility that is vital for increased productivity and collaboration.

- **Historical Trending** – Dynamic control of objects on the screens enables operators to analyze issues, identify root causes, and take actions to avoid future problems.

- **Automatic Analytics** – Analytic tools enable operators to reduce their time to action via constant analysis into real-time alarm information and comparisons against historical models to direct the operator to what is wrong and why.

- **Predictive Analytics** – With intelligent preemptive alarm and failure events, operators can proactively avoid process issues and downtime.

- **Alarm Response Management** – With systems automatically pushing standard operating procedures based on live alarms to operators, companies can drive consistency and quicker responses.

- **Pre-Packaged Solutions** – Software solutions that preemptively define the inputs required and produce known deliverables are key to driving quick value to operators.
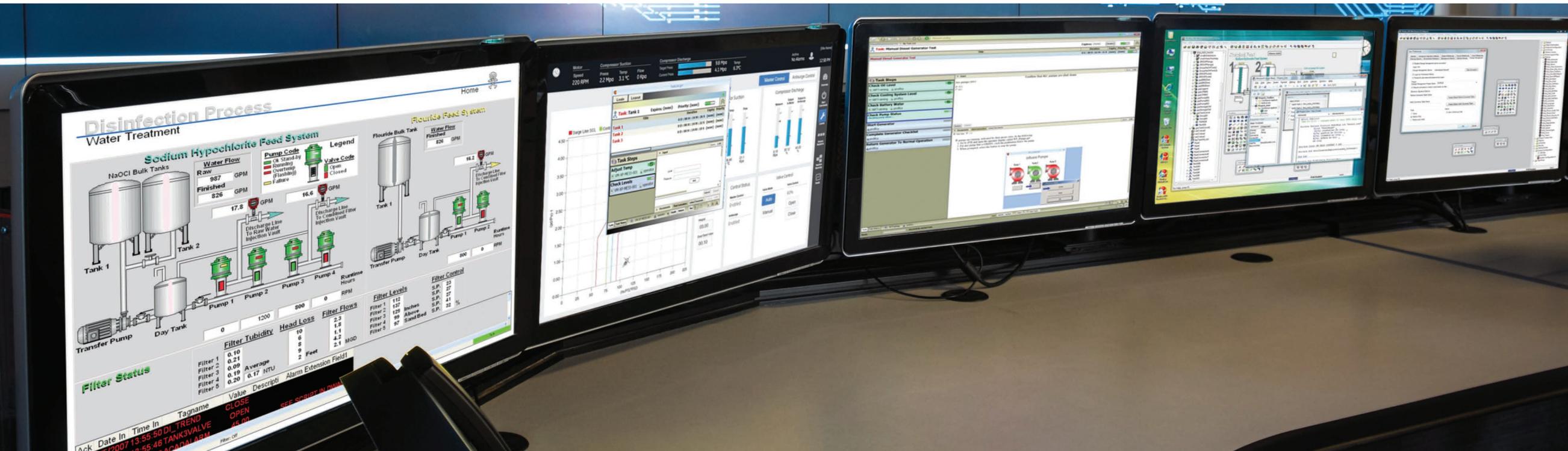
A Look into the Future

Systems are now being deployed with heavy input from the operator, moving away from being purely functional data solutions into intelligent, analytical systems. IT and engineering groups are increasingly looking for operator feedback on initiatives and software purchases, and how the system provides value-added information to users—not just data for visibility. There is also increasing importance on collaboration platforms and software that analyze and provide information based on real-life data.

The need to transform data into information is essential as many operators and technicians are nearing retirement age, and thus, resulting in companies losing "operator knowledge" as these retirees exit the workforce. Capturing this knowledge will help existing operators leverage institutionalized knowledge, decrease the need for training, and ease the learning curve for new operators who will have little to no guidance as they move into roles that require the ability to reason and solve problems through objective decision making.

Future capabilities could include real-time chat, which would enable operators to connect with remote engineering experts on demand and allow them to view what they see on their screens, much like a global social networking site within a corporation. By enabling operators to access experts directly through their consoles, they would be able to leverage the knowledge outside their local operations to quickly solve problems and understand data with ease.

It's also important to note that the gradual introduction of software tools is key to the adoption of software systems to enable knowledge sharing and increased operator effectiveness, as proven by many companies that have successfully taken a "layered" approach. The market has responded with layerable products that complement each other, allowing operators to adopt new systems gradually and ensuring quick wins for businesses, as well as long-term sustainable value.

Lastly, the implementation of interoperability standards within software suites is critical to achieving faster rollouts while providing companies with greater flexibility on module selection across vendors. Software vendors no longer require custom coding to play well with others, as standards are continuously being adopted to drive a point-and-click configuration that significantly increases time to value and flexibility for customers. As a result, companies can reduce rollout costs and have the ability to choose the best modules available, regardless of the vendor.

Conclusion

No longer are operators simply working within their traditional functional boundaries with established guidelines and procedures to maintain status quo. They are increasingly expected to leverage their knowledge to make objective real-time decisions, which means they need a deeper understanding of the various factors that impact their operations and the ability to use that knowledge to improve planning and problem solving with more proactive measures.

Holistic, scalable software solutions are garnering much attention by businesses because they can add true value to all levels of the organization with specific modules that can be implemented over time—delivering quick, easy-to-use, and effective decision support needed by operators to troubleshoot issues and routine conditions.

Forward-looking businesses that recognize the value of today's operator have begun adopting advanced software tools to support them as more intelligent problem solvers, significantly increasing productivity and efficiency to gain a competitive advantage.

VISUALIZE

- Present data for interpretation by operations
- View alarms and warnings from processes, assets or systems

UNDERSTAND

- Identify root causes and uncover data correlations
- Leverage statistical models for predictive analytics and causal relationships

EXECUTE

- Deploy real-time work orders based on system data and automatic intelligence
- Document actions taken and incorporate into intelligent analysis and share knowledge

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