Best Practices for Guiding Process Industry Clients Through a Digital Transformation Journey

Investment in digital transformation, or DX, has skyrocketed in nearly every industry as a response to a complex, volatile, and competitive business market, as it empowers people, optimizes processes, and automates systems. For the process industries in particular, DX is an important and ongoing process.

Yokogawa, a company on the leading edge of DX, has championed the concept of "smart manufacturing," in which digital enabling technologies are applied to production and manufacturing in collaboration with industrial autonomy known as IA2IA to allow self-learning and self-adapting capabilities.

On a global scale, companies who achieve DX will be a leading part of what Yokogawa describes as the global trend toward a system of systems. Ultimately, system of systems occurs when all industries are interconnected in ways that allow them to operate individually while working to achieve a purpose that any one system cannot achieve. Yokogawa's IA2IA and smart manufacturing approaches articulate a path towards system of systems while providing immediate benefits.

Tips for All Digital Transformations

1 Understand that digital transformation and the smart manufacturing journey requires significant time, knowledge, and intentional planning.

- Digital transformation and the journey towards smart manufacturing is just that, a *transformation*. It will require complex, large scale changes that will span significant periods of time.
- As a guiding company, you should work to identify and share quick wins in the beginning of the DX journey.
  - Per Yokogawa, "Quick wins are identified to accelerate acceptance and business value realization."
- A thorough understanding of business strategy and corporate goals as well as the current state of technology and systems is essential.
  - Every company is unique and will require a digital transformation roadmap that fits their unique needs and goals.
  - SIRI (The Smart Industry Readiness Index) is a global standard assessment tool used to fully understand customer's current capabilities, challenges, complexities, and goals. With this tool, you will have the information you need to create a roadmap that best fits a company's needs.
  - A DX strategy that works in partnership with corporate vision will allow people, technologies, and systems to all work cohesively together.

2 Foster company-wide communication and collaboration through change management and change leadership.

- A common reason for DX failure is the lack of a supportive, enthusiastic, and trusting employee culture.
- When employees are an active part of the digital transformation journey, they are more likely to trust the process and take an active role in upholding it.
- Corporate restructuring is an important part of dismantling communication breakdowns and disconnects within the company. Ask, are there any leadership or management structures at play which hinder collaboration?
- Change management/change leadership at all company levels is key.

3 Understand the intersections between information technology and operational technology.

- A lack of IT/OT collaboration is often a major contributor to DX failure.
- Integration of IT and OT throughout operations is key. When operations are isolated and difficult to understand from the outside, communication breakdowns and procedural disconnects are far more likely.
- A system which links on-premise devices and cloud-based systems enables a more cohesive and better managed digital platform.
- Utilizing IT/OT cohesively is also useful in creating a DX which centers a company's customer experience.

Yokogawa's Approach to Smart Manufacturing Involves Five Key Solution Areas

1

Operations Management: Unify industrial knowledge and the latest digital technology.

▸ Make industry knowledge seamlessly accessible through technologies like plant big data and cloud computing. This will allow for optimized collaborative performance, agile decision-making processes, profit driven operation training, and will put manufacturers on the road towards unattended operations.

▸ Enforce profit-driven operation training using technology like virtual reality and digital twin for safe and optimal operation.

2

Production Optimization: Move from visualization and stabilization on a per unit basis to total plant optimization.

▸ Process optimization over the entire production lifecycle is the path to greater efficiency. Real-time collected data should be used as much as possible to inform the process.

▸ Work to create an all-in-one application for process control and management compared to the manual control of various variables which hinder effective quality control.

▸ Use technology like a digital twin to achieve data integration for real-time total-plant optimization.

3

Supply Chain Management: Work to integrate workplaces, sites, and companies.

▸ Many manufacturers are held back by hard-to-manage independent OT systems operated through silos and stitched together.

▸ The move towards an automated business process from sales order to invoice and from planning to production will optimize decision-making processes across the supply chain.

▸ Use production accounting to calculate site-wide daily mass/volume/energy balances which will ensure the right solution is always available and in use to deliver and sustain operational excellence.

▸ Make schedule creation available to all versus limited experts only.

4

Plant Asset Management: Make the shift from experienced-based management to data-driven, risk-based asset management.

▶ Managing assets holistically across their lifecycle maximizes return on investment.
▶ Utilize predictive analytics to identify potential errors before they occur.
▶ Data-driven, risk-based asset management allows manufacturers who experience difficulty in identifying potential failures to enjoy proactive maintenance, proactive dashboard, and valuable asset data in real time.
▶ Use technology which will allow for the integration of historical and real-time data.
▶ Utilize a centralized management system through cloud computing to support execution, reporting, and improvements.
▶ Increase profitability and productivity by balancing acceptable risks, costs, and desired asset performance.

5

SDGs, Energy Management & Optimization: Investigate ways in which energy consumption can be increasingly sustainable.

▶ Develop mechanisms for the continuous collection of data used to help companies visualize future energy forecasts and current and future emissions, as well as predict changes in energy demand.
▶ Incorporate a community perspective: smart manufacturing can be used to help achieve community-wide net-zero emissions and work towards a society that optimizes energy production, storage, and use.

For more information on how smart manufacturing can play an active role in solving manufacturing and production challenges, visit:
www.yokogawa.com/solutions/solutions/digital-transformation/smart-manufacturing