

Building the Smart Utility through IT OT integration

Abstract

Utility companies need to institutionalize a data-driven value chain that enables them to integrate their information technology (IT) and operational technology (OT) systems, and convert real-time data into actionable intelligence. Leveraging Asset Information Management (AIM) frameworks can achieve this goal, and boost efficiency, trim expenses, and enable customer engagement.

Disruptive changes are impacting the entire utilities sector. The growing penetration of customer centric technologies such as distributed generation and storage, electric vehicles, and growing end use efficiency is rapidly blurring the lines between IT and OT. Regulatory compulsions are on the rise, and the need for enhanced safety and sustainable practices makes it imperative to revamp business processes.

Technology and Business Drivers for IT-OT Integration

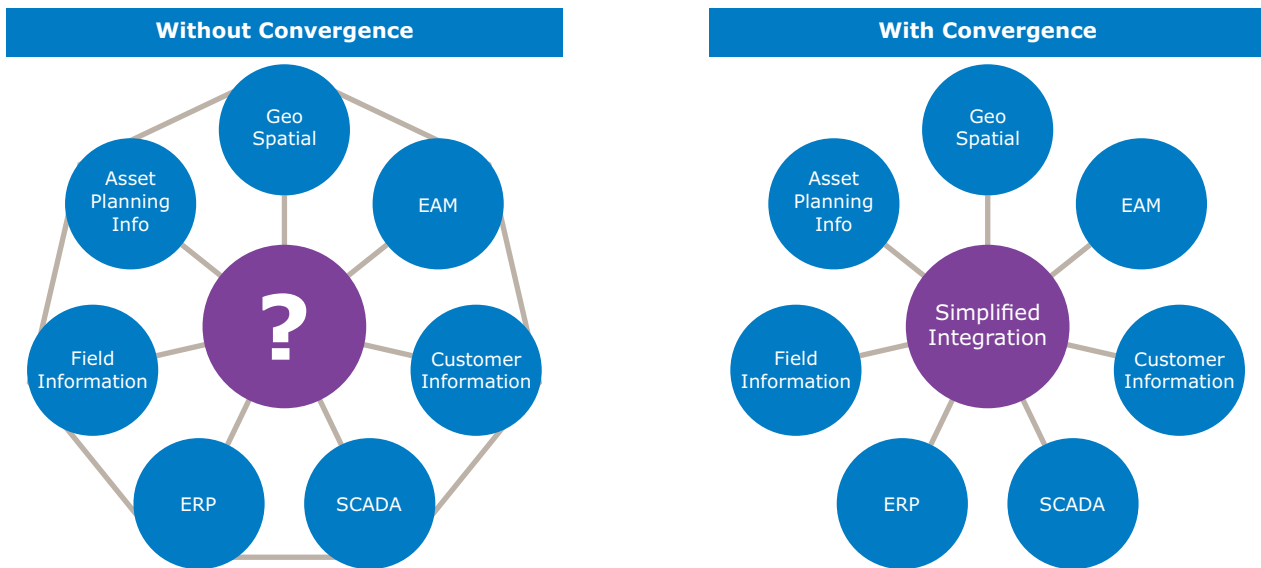
According to a poll¹ of 68 senior decision makers at 39 North American utilities, IT-OT integration is considered a higher priority than planning for future smart utility initiatives. Yet only 50% of utility companies have concrete plans for convergence.

Smart devices are increasingly becoming the norm in utilities' operational environment, generating volumes of data and requiring significant device configuration, communications management, and maintenance activities. As a result, the underlying technology of OT systems, spanning platforms, software, security, and communications, now resembles IT systems a lot more than in the past. Shared standards and platforms across IT and OT can simplify asset management and offer a holistic view of operations. This enables utilities to reduce costs across the software management landscape, including enterprise architecture, support and security models, software configuration practices, and information and process integration.

Fusion of enterprise wide data coupled with intuitive dashboards will enable holistic performance monitoring, planning, and analysis facilitating "on the fly" monitoring and decision-making.

CORPORATE IT NETWORK		CORPORATE IT NETWORK	
USUALLY MANAGED BY CIO		USUALLY LACKS UNIFIED MANAGEMENT	
Enterprise software	Vertical application software	Centralized systems	Distributed systems
Enterprise Resource Planning	Geographic Information Systems	Supervisory Control And Data Acquisition	Programmable Logic Controllers
Finance	Enterprise Asset Management	Energy Management Systems	Advanced protection relays
Accounts Payable	Customer Information Systems	Automatic Generation Control	Sensors, monitors, and fault indicators
Human Resources	Energy Trading and Risk Management	Distribution Asset Analysis	Meters

Historically, OT and IT for distribution operations have been developed, maintained, and used in silos in utilities. Despite technical and organizational challenges, there are compelling business imperatives and strong technology drivers for merging IT-OT boundaries, and converting real-time data into actionable intelligence.



IT-OT integration frameworks are generally based on proprietary products and solutions and deploy a point-to-point transactional Enterprise Application Integration approach with asset data residing at multiple locations. It is far more effective to implement a platform-, product- and technology-agnostic AIM framework based on Service Oriented Architecture (SOA) that entails no change to existing systems, and leverages asset data models and specific business processes.

Implementing a Future-Proof Asset Information Management Framework

A holistic IT-OT integration architecture needs to encompass three critical areas:

1. Asset modeling using meta tags with "Single Source of Truth" approach to correlate them across systems
2. Business process modeling of operational and enterprise applications for a synchronized view of assets
3. Process monitoring and visualization via rich dashboards with industry-specific functionalities, Key Performance Indicators, and reports.

AIM increases Return on Investment (ROI) and Reduces Total Cost of Ownership (TCO)

AIM optimizes utilities' operational performance, financial results, and risk management. They gain better visibility into critical asset attributes such as run hours, energy, and residual value, which enables accurate forecasting, and effective outage management. Companies can allocate resources more efficiently, improving asset utilization, minimizing downtime, and increasing returns on assets,

Automation of business processes streamlines maintenance, construction, and renewal, reducing costs and improving effectiveness.

AIM enables utilities to maximize the value of assets across the asset lifecycle, and enhance the level of customer engagement.

IT-OT integration enables harmonization of enterprise level application landscape reducing future capex and operation expenditure on IT as well improving ROI.

Conclusion

Integration between utilities' enterprise information and operational systems is the key to agility and performance. It enables utilities to meet growing consumer expectations, empowers actionable insights, and reorients them to succeed in the digital economy of the near future.

References

[1] Poll conducted by McDonnell Group, on behalf of Ventyx.

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The utilities industry value chain is changing: generation is becoming distributed, grids are becoming bi-directional, and energy retail is becoming more focused on customer experience and new services. We partner with utilities to help them reimagine their businesses for a new paradigm that uses digital technologies.

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