



IT and OT: In Tune and On Time

How IT and Operational Technology in Utilities can be orchestrated to deliver superior performance

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While the adage that you can't manage what you can't measure holds true in most instances, it doesn't tell half the story. Accurate data is crucial but there are many ways a datum has to be right to be useful. It has to be precise – the right data - but then it has to be with the right person at the right time and in the right format.

Clearly, getting the numbers right is of little use to a business if the numbers are not communicated or intelligible to the people who need them. So where the numbers from a utility's operational technology (OT) and enterprise information technology (IT) are coming from disparate corners of the business, in incoherent formats and with limited accessibility to the enterprise, their full potential is unlikely to be realised.

One direction yet out of tune

The utilities have, over the past decade, upped the quantity and quality of IT systems with a swell of activity including developments in Enterprise Resources Planning (ERP), Geographic Information Systems (GIS), and Customer Relationship Management (CRM) systems. At the same time OT has grown in sophistication driven most recently by developments under the smart banner that are pushing elements of IT into OT.

It is a relationship that is growing closer yet needing guidance according to research vice president with market analyst Gartner, Kristian Steenstrup. He summarises the situation: "The relationship between the IT and OT groups needs to be managed better, but more importantly, the nature of the OT systems is changing, so that the underlying technology is becoming more like IT systems."

Yet despite the blurring of distinctions between IT and OT there remains a separation between IT and OT resources that is creating obstacles to utilities' full exploitation of opportunities. Each technology evolved for separate and distinct purposes and was initially relevant to different parts of the business. The goals shared by people managing IT systems are essentially business-oriented while OT leaders are chiefly production-oriented. Their terms of success also differ, with IT looking for performance indicators in data security and disaster recovery, while OT has been focused on incident management and plant availability.

How does it go?

Where they are not working in concert, IT and OT systems could fail to secure the best outcomes for the business. To illustrate: data from SCADA received in real-time may show a drop in mains

pressure in part of a water network. Separately a GIS interface might pinpoint where the lost pressure is happening and correlate it to a leakage in that area.

Meanwhile asset data from an ERP system may indicate areas of the network where older types of kit are being deployed and provide prompts that the period since the previous maintenance meant a new check was needed.

Should intervention be required, the closest available maintenance team could be dispatched through field force automation to the location.

Collectively the SCADA, GIS and ERP data in this scenario could form a basis for preventative action to avert a mains burst or any of a number of other faults and preserve service levels with no adverse impact on customers. But should the data come into the business unintegrated, their predictive value could be significantly eroded. The time taken to draw the data together is likely to be protracted to the point where the fault would be detected only after failure and the opportunity to avert disruption would be lost.

If an enterprise is to extract the full value from its data, the convergence of the fundamentals underlying IT and OT should be reflected in a similar union in its IT and OT systems and staff. Arguably, a more important need is for utilities' established perspectives on data to change to address the transformations in markets and regulation to which their businesses must adapt.

A change of pitch

Utilities are undergoing changes that are, in some instances, radical (see boxes *Electricity charged* and *Water pressure*). Some of these are being imposed by shifts in regulation and policy; some are coming from market forces while others are emerging from advances in technology.

What has been described as a "nexus of forces" of cloud computing, mobile devices, social media and the torrent of information from smart technology is disrupting traditional utility business processes to affect application portfolios and change how utilities source their information technology.

Smart technology is creating a data surge – Big Data – into utilities and it is as great in variety as it is in volume. With it comes a mix of substantive business opportunities as well as serious challenges. For example there is a growing capacity in modern systems to monitor the grid at ever-greater granularity. This advancing analytical capability is creating a huge opportunity to up a utility business's awareness of its operations and act on the information to the benefit of shareholders and customers. But the volume and complexity of network data create a challenge and one that is best met through IT and OT integration.

Furthermore the advent of Big Data means that there is a growing trend among utility players to complement structured data and insights with unstructured data. Arriving at pace from many sources, Big Data's emergence in the utility sector is the signal for water and power companies to address the challenge of IT/OT integration, while at the same time implementing a Big Data strategy.

During times of change such as these, the intensity of the need for clear, consistent, timely, and focused information is at its greatest. All the pieces – business objectives, operational strategy and tactics, and legacy systems need to be pulled together. Drawing together enterprise and operations data for the benefit of business decision-making through integration of IT and OT is now a matter of urgency in the energy and water industries.

Closer alignment of utility business and operations brings real-time insights. They enhance regulatory compliance, improve the management of risk, improve reductions in safety, loss and waste, and maximise profits to benefit the top floor and the shop floor as well as the consumer.

Electricity charged

The overriding feature of the future for the UK energy sector is uncertainty.

Networks must manage growing volumes of intermittent wind and solar plant and are looking to data-driven instruments such as demand-side participation and grid automation to do so. The prospect of increased electrification of heat and transport raises questions about the future of gas and adds new challenges for power grid operators.

Power and gas network regulation has been changed in a bid to address issues arising from moves to a low-carbon energy sector by incentivising investment and innovation. The RIIO regime – now in its early years – is characterised by greater emphasis on operational performance and a focus on outputs and service to customers. Inevitably it comes with its own contribution to the lack of certainty with uncharted territory in the customer interface and new regulatory compliance challenges.

Government reform of energy markets has created new openings as well as incentives for renewable power and gas and nuclear generation. But global gas and coal markets and greater interconnection with Europe and possibly beyond are creating other incentives for investment and deployment of existing assets. The need to tune production operation ever more finely creates a need for microscopic, real-time analysis of data.

For energy network operators there is a growing imperative to analyse outages, losses and customer complaints to uncover their root causes and their impact on revenue. This calls for interpretation of diverse data from IT, OT and geospatial sources. And deployment of diverse generation portfolios in markets for capacity, ancillary services, balancing, storage as well as baseload and mid-merit operations demands that power producers have the faculty for the closest analysis of their operations and business intelligence.

A good conductor

Even the finest musicians need someone with a baton to draw together their separately honed abilities. And without central oversight of its network, a utility's timing can be out so that predictive action becomes reactive and the show comes to a halt. So it is with a utility network business where many instruments are pitching in and the performance sails or sinks depending on their being true to the score.

Rolta has taken up the baton to lead real-time tracking, outage analytics, asset management, work orders, locational data and more on a global stage from its Rolta OneView platform. It provides the means to pull data flows together swiftly, to overlay the forecast consequences and recommend action – replacing remedial reaction with predictive maintenance. Rolta is well rehearsed in closing the data rifts that obstruct performance progress in modern utilities. From Rolta OneView a utility can not only integrate its OT and IT systems, but also draw together engineering and GIS systems in a mix that is fully compliant with the industry standard for OT/IT integration.

The platform is designed to integrate data from disparate systems. It has a universal connector framework that integrates multiple homegrown, standards-based and legacy systems, using asynchronous, synchronous and discrete messaging formats. So Rolta OneView fulfils a need shared by all utilities to maintain a return on investment from legacy IT and OT investments. It creates a pan-enterprise platform for business intelligence and analytics encompassing integration of existing IT and OT with geospatial and engineering systems while deploying also evolving technologies such as cloud computing and mobile enablement.

Through its global partnership with SAP, Rolta protects utilities' SAP investments. It handles big data analytics, exploits SAP HANA® features, provides real-time operational analytics; and interprets data predictive analytics for maintenance, reliability and risk management along with spatial analytics for asset management.

Rolta OneView includes a library of hundreds of ready-made key performance indicators (KPIs) that are applicable to utilities. They have been developed from the expertise of people with decades of power and water sector experience. And a pivotal virtue of the KPIs is that they draw upon IT and OT sources.

In collating information from across the spectrum of water, or energy utilities' businesses Rolta OneView adds strength to their strategic decision-making. And it accelerates tactical responses to opportunities and challenges. It provides an overview with meaningful detail in accessible structures to streamline analysis of cross-functional areas including operations, assets, health, safety and environment, and the supply chain to ultimately provide insight into capital and operating costs, marketing and overall financial performance.

A utility's data is more than ever its commercial lifeblood. The communications and interpretations of that data serve one purpose and that is to bring success to the business. So there is no longer a place for divisions and obstacles to the flow of intelligence throughout the enterprise because there are too many other challenges in the utilities' markets and regulation to be battling with operational and enterprise mismatches.

Indeed a utility's information teams have a lead part in the performance of the business. Gartner's Steenstrup summarises the nature of that part: "The intersection of IT and OT changes the relative importance of IT management disciplines for the IT organizations concerned. Chief information officers have a great opportunity to lead their enterprises in exploiting information flows from digital technologies. By playing this role, they can better enable decisions that optimize business processes and performance."

Water pressure

Like their electricity and gas counterparts the water sector is under greater regulatory pressure to align with customer expectations while curbing tariffs.

Challenges to water supply resources and quality are diverse and include agriculture, storm drainage and sewer flooding, leakage, wastewater treatment requirements and climate change.

The data integration challenge for the water industry encompasses complex vendor relationships, mobile workforce management. So the industry needs fewer and more meaningful key performance indicators that apply across more than one function.

Real time, predictive geospatial data and analytics are needed to co-ordinate crucial elements of the water utility's business including operations and maintenance, asset health and sewer flooding risk – which are all part of the customer satisfaction equation.

The advent of wholesale competition in the water sector has placed a requirement on industry leaders to scrutinise their businesses so they can review their strategy for the whole business. All stakeholders will expect decisions to be based on accurate analysis of operations and performance and sound forecasting.

Why Rolta?

Rolta enables its customers to realise their business objectives through its deep domain expertise in the Utilities, Transport and Oil & Gas sectors. Rolta's services and solutions cover the entire life-cycle for the process industries, from engineering design, through to operational excellence, and including enterprise asset management, business intelligence and analytics to enable effective decision-making. Data management and analytics is the lifeblood of Rolta, on which the business was founded – it's what we do, and what we do best.

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Gartner quotations are taken from a Gartner Press Release: "Gartner says the worlds of IT and Operational Technology are converging", dated 16 March 2011 and updated 2014.

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