Leveraging past investments and adopting technologies developed under the banner of the Industrial Internet can help Water Wholesalers drive the next generation of improvements in AMP7

Deploying emerging technologies that have already been tried and tested can only help water wholesalers get the most out of their previous investments.

We have seen change in the water sector during the past decade and it appears that this trend is set to continue with Ofwat’s publication of its PR19 draft methodology in July. The regulator is raising the bar for the quality of the business plans it expects the companies to produce: ‘We want companies to produce high-quality, ambitious and innovative business plans, pushing forward the performance of the sector as a whole and stretching the boundaries for delivery and efficiency.’ Our detailed analysis of the draft methodology pointed to four areas where we thought companies needed to focus. In the world of wholesale asset management, operations and construction we were drawn to two of these:

1. Work hard to identify and emulate best practice outside the industry.
2. Be ready to implement plans with speed

A significant wave of investment was made in the 90's in telemetry and SCADA as part of the steep acceleration in service and efficiency in the water sector post-privatisation. Since then operational technology improvements have been largely incremental in each AMP. Steady improvements have been made in control room information, alarm policies, improvements in processes from alarms through to inspection and work. A lot of strategy work and thinking has gone into the ‘control room of the future’ and improved use of data and analytics/control. Companies have made significant investments in a second round of improvements in enterprise asset management and work management solutions over the past two to three AMP periods.

However, outside of the sector we have seen a step change in technology available just in the last AMP period and it continues to evolve quickly. The emergence of cloud computing, machine learning, predictive analytics and smart sensors is bringing about a new paradigm in thinking around how you might manage and operate production lines, networked assets, logistics and interactions with customers. This capability can be built on the technology investments made in the past. The opportunity areas are underpinned by an increasing scale of data and the need to undertake more sophisticated predictive and prescriptive analytics, with three converging themes emerging in the next 5-10 years.
We believe that these new technologies give Water Wholesalers two overarching capabilities to transform operating models:

1. The ability to monitor, analyse, and identify issues with assets and automate work routines and demands, to the extent that has not been possible before. Machine learning over network and asset data can accelerate the identification and prevention of downtime. This can be combined with automated alerts to operatives, and issuing work instructions to remove many manual steps in existing processes and improve intelligence about assets. There is significant opportunity to improve customer responsiveness.

2. Optimisation of a group of assets such as a group of treatment works has, despite SCADA and telemetry systems, been largely manual. The systemisation of this process using digital twins of your asset base, combined with external data such as weather data, now becomes a reality. Production can be focused on the works with the lowest unit cost and most robust resilience in differing environmental conditions to improve ODI’s. Evolving your command centre can improve your foresight and ability to respond to conditions as they emerge. The opportunity to align your broader operational strategy to customer expectations can be accelerated.

PwC in the last 12 months has conducted two global surveys examining how enterprises are adopting digital technologies and using data and analytics to drive performance. Some key insights are that 72% of organisations believe that emerging digital technology e.g. Industrial IoT, smart sensors, location detection, 3D printing, mobile devices will be a core part of their operations in five years. 83% believe data and analytics will be the foundation of this change but this requires significant improvement as only 14% of organisations at present have a cross functional data and analytics capability. The survey also identified an expectation that this technology could reduce costs on average by 3.6% per annum and increase revenue by 3% per annum. We are aware of a number of companies that have started this journey and are taking action now, whether this be accelerating the installation of sensors across the network or piloting and implementing increased analytics on asset and operational data at treatment works.
Both of these capabilities will undoubtedly lead to lower overall totex, improvements in outcomes to the customer and improved resilience. The water sector is uniquely placed to take advantage of the opportunity as the geographically fixed asset base with existing sensor data provides a head start – it has and can use a significant amount of data already. The sorts of benefits we have seen in other sectors are:

1. Predictive maintenance analytics reduced unplanned work for an Oil and Gas major and saved US$670m per annum, thanks to the connectivity of all the asset systems and powered analytics, which can predict a failure before it happens.

2. A renewable energy supplier saved £2.3m per annum through advanced analytics and controls on its asset data.

3. Reduction of technical failures through improved operational control and predictive analytics on two electricity generating units saved £3m per annum.

We are helping companies in many other sectors to deal with the disruption associated with these new technologies and for that reason have formed an Alliance with GE Digital, who help organisations meet this challenge every day. GE have a rich history and legacy as a thought leader in the Industrial Internet. Not only have they built a business developing Industrial IoT solutions for customers across industries, they have explicitly supported other utilities through similar step changes and have the industrial experience to meet the water industry’s need. This is coupled with our sector expertise in strategy, regulation and operational improvement, which we have brought to bear working across the sector since privatisation.

**So what do we jointly think are the actions that companies should be taking?**

1. **Assess your wholesale operating model, understand the impact that these new technologies and how you will respond to them.** Develop a benefit case across your engineering, asset management and operational processes.

2. **Highlight areas to pilot and prototype new technologies – testing the outcomes of these with customers and looking at how you might instigate cross company programmes in AMP7.**

3. **Integrate the above thinking into your IT roadmap and cloud computing strategy for the next AMP and beyond.**

4. **Instigate control points in your wholesale investment planning processes to consider the alternatives that these new technologies bring so you avoid defaulting to an older paradigm of engineering and construction.**

**A robust business case for your investment plans in these areas in AMP7 can benefit your customers, your employees and your investors. One thing is for sure, it is an interesting and pivotal time in the sector.**

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1. **Offsite raises the bar with its draft methodology – Energy spotlight:** Stuart Cook, Hettie Farrell and Nick Forrest

2. **Big Decision survey 2016 and Industry 4.0 2016**

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171924-111110-540-GB