The Always-Connected Supply Chain

Looking beyond IoT to build an integrated supply chain

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Overview

Aimed at asset-intensive industries, this guide describes how the use of Internet of Things (IoT) and digital enablement is driving the always-connected supply chain. It's letting organisations rethink the flow of equipment, so they can focus their attention on service delivery and customer outcomes, rather than problem solving.

"With millions of devices getting interconnected on a daily basis and establishment of new communication channels, digital enablement has become a crucial area of focus for asset intensive utilities."

– Energy Central
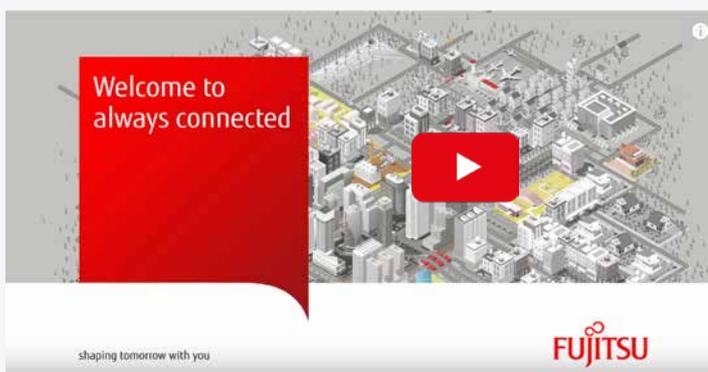
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Connected Asset Identification – delivering the Digital Workplace

The Internet of Things – more of the same?

For those who've earned their stripes at the industrial end of asset-intensive business, the sudden interest in 'Internet of Things' might be surprising. This is because remote sensing, proactive maintenance and management of essential elements is nothing new; systems like SCADA (Supervisory Control and Data Acquisition) and protocols like MQTT (Message Queuing Telemetry Transport) have (already) been used for decades. It's hard to imagine the industry without them.

The Energy and Utility sectors were instrumental in the first wave of what we now call the Internet of Things.

The term M2M (Machine to Machine Communications) was used by asset-intensive industries before most others. M2M started IoT and is now driving the Industrial Internet, but this hasn't been without cost, both financially and in terms of mistakes made along the way. Still, for an industry not usually at the forefront of innovation, this is where it's been leading progress.

While other sectors may have missed IoT 1.0, today sectors such as retail and logistics are benefiting from the lower cost of sensors, lower power requirements to the network and more availability with printable sensors. A new wave of IoT has begun.

In this new IoT 2.0 wave, less power and smaller, more abundant sensors mean we are moving towards a 'deploy and forget'

model. Sensors can be left to end of life and then replaced, printed on demand, without a need to recover the old device.

Technology that enables business to 'print' electronics at scale, such as tags, could become a game changer, enabling assets to embed sensors or beacons instantly and on demand. This will have a fundamental effect on current operating models and value chains.

With more data, we know how things are operating. It is time for the Energy and Utility sector to drive the third IoT wave. Opportunity presents itself to drive out failures and costs in the business. In this guide, we consider how asset-intensive companies can benefit from supply chain advances to become a more efficient, more effective organisation.

We also see a bigger opportunity – to rethink how services can be part of a directly traceable, always-connected organisation.

New business models

The advantages of an always-connected supply chain are pushing a new way of thinking about how services are delivered in terms of cost saving and optimisation. A more transparent supply-chain means faults can be identified and responded to in advance. It also means knowing when to create new assets and the possibility of increasing capacity in existing ones. Meaning a possibility of new business models that benefit both customer and supplier.

New technologies are the key to agile business models. Take Rolls Royce as an example, it uses a 'disruptive' technology to it's advantage with a connected, 'as-a-service' based approach, adapting its business model from selling engines to charging airlines per 'flight hour' of usage. Now utilities companies need to embrace digital transformation in order to stay relevant to the digitally-enabled consumer.

End to end supply chain orchestration

At this point in time, a lot of business models only make basic use of the capabilities offered by IoT and cloud systems. Big data analytics and machine learning have huge potential for revolutionising how services are orchestrated – like moving assets or rerouting resources to meet increased demand. A connected supply chain, partnered with digital technology, allows an organisation to deliver new capabilities and combine them to form alternative business models. It also identifies previously unknown consumer habits and preferences.

The next disruptor of the utilities industry will use processing and storage on an 'as-a-service' basis, which avoids wasting resources and allows room for innovation. When good ideas are recognised and nurtured, they can become tangible business opportunities – take a water company, a power company and an appliance manufacturer. With complete traceability through manufacture, service delivery and customer outcome, they could partner to provide household appliances to customers, charging for maintenance and usage instead of a large, up front payment and separate utility bills.

An emerging, digitally connected society means utilities companies have potential for better interactions with their customers. The next step is for these companies to use these opportunities, creating innovative products and making customer communications more effective.

The always-connected supply chain
drives the always-connected organisation

IoT gives everything the ability to communicate its working state. With more information on how key components are operating, it becomes easier to manage the entire process.

Over five years of operation in an enterprise, a lot of information is lost as systems get modified to meet requirements of the time. At a certain point, it's easier to 'start again', using new information to consider how the site should operate.

Within the supply chain: equipment being serviced, spares being held in store or being carried in transit, anything with a sensor attached gains the ability to communicate its position and state, providing valuable information to be interpreted and managed.
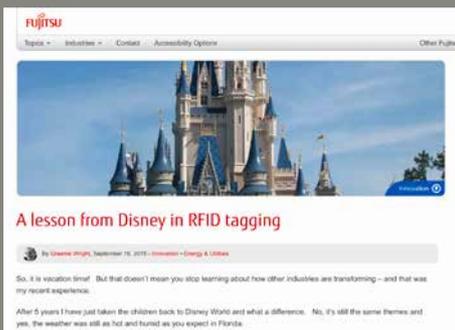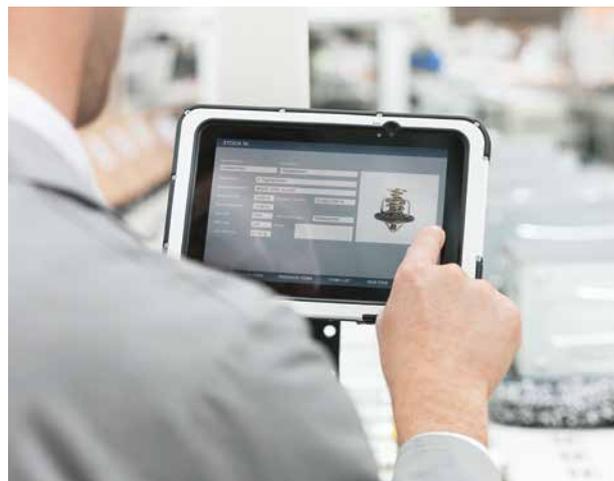
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A lesson from Disney in RFID tagging

Efficiency
benefits

The positive impact on spares efficiency is well known, allowing better control of principles like condition-based maintenance of parts or replacing them if that's the better option. Parts are less likely to be lost in transit and inventory control can be co-ordinated between sites, so a local part can be used rather than one shipped from afar.

As a result, focus starts to shift from traditional spares management and moves towards improving time to fix and reducing the effort required in logistics management.

Proactive condition-based maintenance

Because of this benefit, organisations are starting to look towards proactive management and maintenance of equipment. A 'run to fail' strategy usually isn't the best approach in terms of cost or customer service, so knowing the right time to replace parts will benefit both of these areas.

Currently, up to 90% of maintenance work is unplanned, which accounts for 33% of downtime losses. Additionally, unplanned maintenance is around 50% more expensive than planned. Coupling better supply chain controls with the existing benefits of M2M remote sensing and management saves time – parts can be ordered, delivered and fitted before equipment fails: reducing the down time to the immediate part replacement time.

The ultimate goal is to capitalise on these opportunities by building higher levels of pre-emptive resilience directly into business as usual. Just as cloud computing removes single points of failure from IT models, the same principle can work for utilities models as well.

The five pillars of the
always-connected supply chain

New suppliers and data-only organisations are able to develop new products and services without the encumbrance of infrastructure to manage. For traditional players, keeping up requires integration of new and older systems.

At the same time, a skills gap across the generations of a workforce (many of whom are approaching retirement age), coupled with processes designed for traditional business rather than the digital age, means that larger, longstanding organisations can't just change 'overnight'.

Resolving these dilemmas requires getting the basics right, which means focusing on supply chain efficiency and effectiveness. In our experience, we've identified five pillars for success when building the always-connected utility supply chain.

Read our blog
How digital connectivity is a driver for change

"Industry must embrace technological progress to meet the demands of a rapidly changing world. Innovations like Digital Engineering and Design for Manufacture and Assembly will be fundamental to delivering a higher quality, more sustainable built environment for future generations."

Anna Stewart, Group Chief Executive, Laing O'Rourke

1 Deliver on clear goals

The starting point is to respond to specific needs within the business, doing so in a way that benefits the organisation as a whole, not just the targeted issues. This requires commitment from top-level individuals to achieve the necessary scope for company-wide, interconnected opportunities.

2 Adopt a service-oriented mind-set

The best way to bridge the gap between infrastructure management and service delivery is to use approaches that focus on the results being delivered instead of just the equipment that delivers them. A change of view becomes a starting point for integrating external services.

3 Work with the platform

One advantage new companies have is that they're able to build on the breadth and depth of services offered by cloud-based platforms. Meaning they can scale globally and manage volumes of data without running into problems with capacity or resilience planning. Bigger companies can benefit from the cloud as well – it just means embracing the new technology.

4 Choose partners that can deliver end-to-end

No company has the complete range of skills required to thrive in the digital world. Knowledge management, big data analytics, software integration and other management skills required in a digital transformation aren't all going to be available in-house. A partner will need to be taken on to see the process through - ensuring that they have the necessary skills and a proven track record for success.

5 Experiment and find value early

The most successful organisations don't try to build definitive solutions, they test ideas and get feedback on what works. A service oriented mind-set enables more experimental, 'win fast, fail fast' approaches to customer engagement - for instance, a company could quickly develop an app to help consumers understand how much power they are using or test new tariff structures.

Towards an
always-connected future

We haven't seen the end of the digital revolution, it's more likely just beginning. Traditional models have always been about the facilities offered, but moving into the future, they're more likely to be defined by customer experiences and localised generation of power and water.

Even as asset-intensive companies maintain the services they deliver, the competitive landscape is now defined by how well customer needs are met and the quality of their experience.

Companies facing digital disruption need to leverage the power of cloud-based platforms to transform their business models. To do this though, they need to break away from more traditional models, towards partnering, integration and externalisation.

The always-connected, transparent and traceable supply chain works across multiple industries: the connected office, home, car - the list is endless.

The flipside however, is that challenges need to be covered as a whole, requiring a change of mind-set that filter down from the top of the organisation.

The future will always be connected, and there's no better place to start than with the supply chain. Get this right and a faster, more effective business can be built without compromising an organisation's core infrastructure. Creating better efficiency and offering a foundation for the future utility, with complete traceability between systems providing services and the outcomes they enable.

Let's talk

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Find out more

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