Machine-to-Machine (M2M) Utilities Insights

Vodafone
Power to you

Welcome

From utility to really useful

Conversations

" For utilities the Machine-to-Machine technology revolution has to support a vision of a new future: it's about integrating more things, gathering and sharing more data, achieving greater operational efficiency, and, most importantly, creating exciting new services for consumers. **"**

Welcome

At Vodafone, we thrive on conversations with our partners and customers because that's how we understand and tailor our solutions to the real needs of businesses now and into the future. The electricity, gas and water companies which make up the utilities sector are facing immense challenges all over the world and we wanted to examine the role that M2M technology plays in enabling them to drive the change.

We spoke to Rich Hampshire and John Hicklin from IT and business services provider, CGI; Steve McNally of Bluefish Professional Services; Philip Westbroek of Dutch utility, Enexis; and Vodafone's Global Head of Smart Metering, Wayne Flanagan, to understand the rapidly changing technological landscape within the utilities sector, especially across Europe.

You will find their thoughts illuminating, challenging and sometimes controversial, but they will enable you to think about your own business and how it can harness the power of the M2M revolution.

Introduction

Abstract

The Industrial Revolution changed the meaning of the word 'utility' – it went from being a thing or an idea that was useful to becoming a catchall word that represented vital services like water, gas and electricity. According to the Oxford English Dictionary first use of the concept of a 'public utility' occurred in 1895.[1]

A book called *The Coming Revolution*[2] discussed the rapid development of transport networks, water and sewerage provision and the first electrical grid. Its writer marvelled at how quickly the use of electricity had spread and was being taken for granted by millions of people. It had swiftly become a 'public utility' rather than just another product.

The centrality of water, gas and electricity in our everyday lives means that utilities, whether publically or privately owned, have huge responsibilities to their consumers, both ordinary citizens and businesses they work for, which support them each and every day. Utilities are heavily regulated and very few dispute the need for close scrutiny of every aspect of a utility's operations, policies and plans. According to a recent YouGov poll conducted in the UK, 61% of people think that utilities do not always focus on the best interests of their customers.[3]
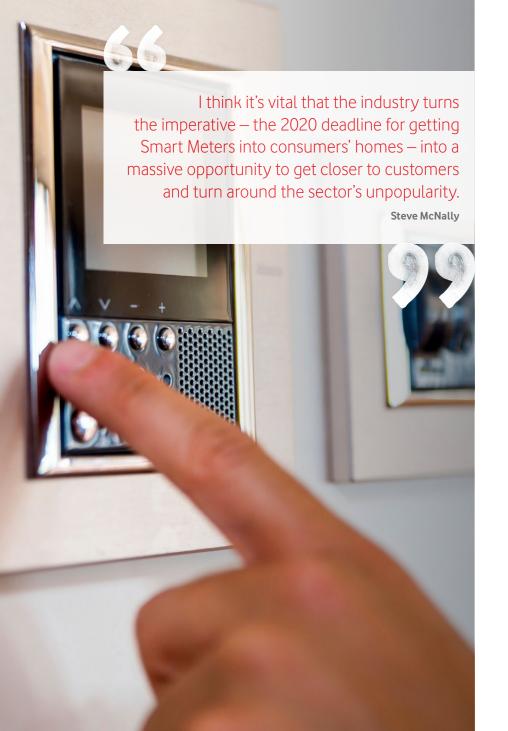
Despite fluctuating commodity prices, utilities are still seen as focused on squeezing as much money out of their consumers rather than helping them manage consumption more sustainably.

That's bad news for utilities because governments across the world have given regulators the power to scrutinise their business plans, pricing and strategic decisions and, in many cases, the ability to achieve good NPS scores. Simply, the more unpopular a utility gets, the more scrutiny and interference it will receive.

M2M technology, it turns out, not only enables utility companies in all sectors to achieve greater transparency, higher levels of operational efficiency, and generate data that can help them do more, it can also get them closer to their customers and respond to their obvious concerns. Simply, M2M can help reverse the unpopularity of utility companies and open up new opportunities for revenues whilst helping consumers save on their bills.

> According to the Oxford English Dictionary first use of the concept of a 'public utility' occurred in 1895.

1. OED – Utility entry
2. The Coming Revolution by H.L Call, 1895
3. YouGov poll, April 2014

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>
> **Steve McNally**

Useful and Smart

Soon there will be 50 billion machines talking to each other. That's the prediction of an expert panel of scientists, researchers and digital innovators brought together by the Pew Research Centre.[4] By 2025, they say, 'The Internet of Things' will be thriving. "Most of our devices will be communicating on our behalf. They will be interacting with the physical and virtual worlds more than interacting with us!"[5]

Across industry and commerce the rise of M2M technology is enabling organisations of all kinds to get closer to customers and to understand and respond to their needs in faster and more granular ways. The utilities sector has arrived at critical moment in its short history. It's easy to forget that around 120 years ago it did not exist. Electricity was a radical new technology, gas was the main source of lighting (and little else), whilst basic running water and indoor plumbing was still a luxury. Rapid developments and huge public investment over the course of the 20th century radically transformed the lives of people all over the world, but much of the technology that was introduced during that time is still in place. An aging infrastructure and growing demands, not just for supply, but also its sustainable use, means that the need to act intelligently to secure both present and future needs is urgent.

"Most of the people running our big utilities understand that history. They know the legacy that they have inherited, and they know action is required. Some see the fact the move toward Smart Metering has been mandated by the UK government as a burden. But others see it as an opportunity. I think it's vital that the industry turns that imperative – the 2020 deadline for getting Smart Meters into consumers' homes – into the massive opportunity that it is to get closer to customers and turn around the sector's unpopularity," says Steve McNally.

4. Pew Research Centre: The Internet of Things will Thrive by 2025 Report May 2014
5. Paul Saffo, MD of Design Analytics, quoted in Pew Research Centre report May 2014
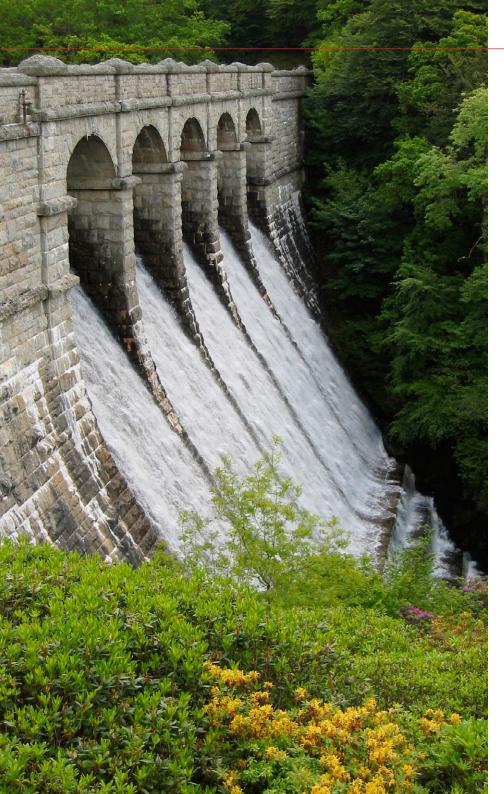
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"Smart Metering empowers the consumer so they can take control of not just how much but more importantly, in a world where we are meeting our energy needs more sustainably, when they use energy by giving them real-time feedback," says Rich Hampshire, "It gives utilities the ability to help customers cut waste and address the affordability issue directly. Just as importantly, M2M used right across water, gas and electricity infrastructures helps utilities address energy security, sustainability and cost reduction issues too."

"What you need to remember is that the concept of devices talking to other devices isn't new to the utility sectors. In fact, utilities have been using supervisory control and data acquisition techniques, usually called SCADA, for years. Technologies enabling the Internet of Things takes that concept to a new level," stresses John Hicklin, "This is a chance to combine their telemetry and SCADA capabilities to achieve more value and share data better. They can now roll out connectivity more effectively and so make monitoring, access and control even more viable."

"What M2M makes far more possible is the branding of data," adds Rich Hampshire, "By that I mean you can get data, share it and then use it to offer more services to consumers, new services that help you cross-sell and up-sell whilst helping them cut their actual bills. But critically it is the consumer that has control over access to that data and purposes for which it is being used. So it's up to the utilities to win over consumers with these new propositions that are being built on the use of that data."

"This is one of the few sectors where companies have been told to sell less of their basic raw material – water, gas or electricity," says Wayne Flanagan, "It's a strange position, but it's one that won't go away. Every utility is made up of an array of 'things' that are widely dispersed, and so enabling those 'things' to talk to each other consistently can only be good. And each meter, for instance, can become a portal through which, with the consumer's consent, a utility can sell them more services."

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Utilities at an Historic Crossroads:
Can they learn from the communications sector?

"Smart Metering is what everyone is focusing on right now, and that's because it's been mandated by governments. But the whole utilities sector faces historic challenges which need to be addressed in smart ways right now," says Steve McNally. Wayne Flanagan agrees, "The journey utilities have been on has brought them to a position that the big communications companies, were in 10 to 15 years ago. Many utilities are now looking at how communications companies turned around large organisations, refreshed their technology, and got closer to consumers by being far more responsive to their needs."

"The whole energy value chain is changing," says Philip Westbroek, "M2M is vital because we're moving from a position where everything was, basically, central: electricity used to be only generated centrally on a large scale in power plants and transported to grid operators like Enexis who distributed the electricity to end-users. But now that's changing — society as a whole is trying to rely less on fossil fuels and more on renewable sources of energy, for example solar and wind energy. These energy sources don't come in a steady stream and in many cases, electricity from these energy sources is generated decentrally on a smaller scale by individual customers. This means that electricity no longer flows in just one direction towards our customers, but also the other way around. M2M delivers the data we need to balance supply and demand in our grid so that consumers get what they need when they need it."

An article in the McKinsey Quarterly based on a new book by Stefan Heck and Matt Roper put it succinctly. They show that the utility sector suffers from 'under utilisation and chronic inefficiency.' "Something fundamental is required. We see the challenges faced by the sector as an unprecedented opportunity to produce and use resources far more imaginatively and efficiently, revolutionising business and management in the process. Indeed, rather than facing a crisis of resource scarcity, the world economy will be revitalised by an array of business opportunities that will create trillions in profit!"[6]

Infrastructure is aging all over the developed world and it needs to be replaced and updated or its declining reliability will lead to increased risks to supply and costs further down the line. Often faults only become apparent when a consumer complains. It then takes time to find a fault and repair it. The consumer gets more and more frustrated. NPS scores decline fast and, regulators keep a close eye on them. It's a vicious circle.

"Communications providers had a lot of those problems a generation ago," Wayne Flanagan says, "And, in essence, what they were offering was similar to what utilities offer: communication pure and simple. Utilities can't market their water, gas or electricity as being better or more powerful than their rivals, so the only way to stand out from each other and get those NPS scores up, is to be more responsive and offer better customer service. That's what the communications industry focused on. It took time, but our industry has much higher levels of satisfaction and popularity than the utilities. M2M enables them to turn that around."

6. "Are You Ready for the Resource Revolution?" Stefan Heck & Matt Roper, McKinsey Quarterly March 2014

> " Smart Metering is therefore an opportunity which some utility companies are already using to improve their customer relations. They are seeing their NPS scores rise and churn rates fall because the Smart Meters are delivering control to the consumer and marketing and customer insights to the provider that can generate different revenue streams. "

In the Netherlands, Smart Meters are being rolled out very proactively across the country's regions. "We are obliged by law to give consumers more information so they can make informed decisions," says Philip Westbroek, "Smart Meters deliver the data they need in real-time. We're seeing more and more consumers use their Smart Meters to increase their insight in their energy usage. We're also seeing a desire to get information down to the appliance level so customers can use the appliances at times when the power doesn't cost so much. M2M is an enabler for this."

Smart Meters might seem like a burden, but they're turning out to be a bonus for consumers. "The evidence for their efficiency is clear," says Steve McNally, "There's no turning back, but waiting till end of 2016 when the official roll-out is scheduled to begin doesn't make sense. First, it'll be a logistical nightmare, even if the 2020 deadline is extended. Second, you lose almost two years of a prime opportunity to make the most of M2M technology. The appearance of many more smart appliances and the desire of consumers to cut their bills mean a utility can manage supply better and offer more services quicker than the competition."

The point is to act now!

Much more than Smart Meters

"There's a danger that everyone is getting too focused on Smart Meters. M2M is a far bigger opportunity than that," says Steve McNally. Rich Hampshire agrees, "You've got to think about controllable demand, sustainability, cutting costs, operational efficiency, and, of course, the rise of solar power on people's houses and the spread of electric vehicles. M2M helps utilities deal with those challenges too."

Heck and Roper paint an intriguing picture of the future of the utility sector. They point to the increasing number of Americans installing solar panels on their homes, and how this turns ordinary houses into 'millions of mini-power stations' – the challenge is how can utility companies manage the supply that they get from consumers as well as that which they provide to them. The rise of the electric vehicle will mean that demand will increase not only in the home where the car is plugged in, but also at charging stations all over cities and the countryside.

"The intelligent use of data about incoming energy – from wind, solar and wave as well as from consumers' own homes – will mean that utilities are in a much better position to match demand to available supply. That's where the Smart Grid comes in. Millions of devices all talking to each other provide the data needed to increase control, match demand, and increase public trust," says Rich Hampshire.

"Finding faults or problems and fixing them quickly builds trust amongst all customers, from domestic consumers to commercial customers. M2M enables that to happen proactively. We do that in the communications industry to minimise drop-outs on the network so people can keep talking. In the utilities sector swift fault resolution saves money and keeps the water flowing and the lights on," Wayne Flanagan says.

In the water industry the protection of supply and the need to reduce waste through leakage is particularly important. "The water industry's issues are a little different to gas and electricity, but they are similar when it comes to the maintenance of supply and the conservation of resources," says Steve McNally, "The integrity of the infrastructure is vital. M2M is already making a big difference."

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> ❝ The integrity of the infrastructure is vital. M2M is already making a big difference. ❞

The New Scientist recently focused on how M2M technology in the form of thousands of sensors embedded in Singapore's water grid has been helping to radically reduce leakage across the system.

The story showed how a major leak which had occurred below a huge entertainment and retail complex was detected swiftly. The water was threatening the foundations and the owners of the complex hadn't realised it was there. Engineers noticed a drop in water pressure, pinpointed its source and proactively investigated its cause. The leak was fixed and millions of litres saved.[7]

"M2M, as has been shown in examples like Singapore, can make a big difference to the integrity of supply," says Steve McNally. Singapore has managed to reduce leakage of treated water down to 5%, which compares to 24% in the UK, and 13% in the USA. M2M enables water companies to assure their customers that their water supply is both safe and secure.

It's clear that M2M goes far beyond Smart Meters. "Smart Meters are important because they're the vanguard of a big change and a big opportunity," says Wayne Flanagan. "Don't get hung-up on the issue of compulsion when it comes to Smart Meters, see it as an opportunity and learn from those utilities that are embracing the M2M revolution. Consumers who feel that they have some control of their water, gas and electricity have higher levels of trust and loyalty than those who don't."

Trust is the point. The unpopularity of utilities comes down to the issue of trust. M2M ensures that you can run more efficiently, balance supply to demand, and get closer to customers so they feel in control of the energy and water that they depend on.

It's time to put the utility into Utility and be even more useful members of society.

7. "Super-Smart Grid Spies out Leaks" New Scientist 8 November 2014

What you should be asking for from your M2M Supplier

Do they have deep experience in using M2M technology to transform businesses?

At Vodafone we have more than 20 years of experience in the field – we've been there since the start of the M2M revolution. In fact, we've been driving it. We have over 400 dedicated experts ready to put their experience to work for you and your organisation. That means we can plan deployments at local, national and global levels and provide connectivity insights that no other operator can match.

Do they have global networks that you can rely on?

We operate in 27 countries, work in partnership with mobile networks in 48 more, and have fixed broadband operations in 17 markets too. As of March 2014 Vodafone served 434 million mobile customers and 9 million broadband customers. That kind of scale gives our enterprise customers confidence – we have the scope, reach and pricing power to deliver solutions that really make a difference to your business and its bottom-line.

Can they support you and make M2M a simple as possible?

Complexity is the enemy of agility. In the utility sector you need to be able to leverage the power of M2M to become faster, smarter and more responsive to both market conditions and customer needs. This is vital in the area of developing new services and solutions – so we give you a single point of contact that delivers the power of hardware, software and service providers working seamlessly together to help you achieve your goals. You also get the benefit of our dedicated Innovation Park team, based in Dusseldorf, to ensure your solution is tailored to your specific needs. The team will work with you to test ideas from conception to proof of concept and delivery in a real-world, multi-vendor environment. The team's focus is on innovation and they employ tried-and-test methodologies to reduce error rates, and speed your time to market, ensuring your offering has the best chance to succeed.

Why Vodafone M2M?

Vodafone has connected M2M customers globally for more than 20 years and powers some of the world's most prominent and successful M2M deployments including major operations at BMW and Amazon. Now Vodafone has been named as a leader in the first ever Magic Quadrant for Managed Machine-to-Machine (M2M) Services, placing it highest in both ability to execute and completeness of vision.

Contact details

So come and talk to Vodafone M2M about your ideas. The earlier you talk to us, the easier it is to find the right solution to fit your needs.

Vodafone is one of the world's leaders in M2M service delivery. We've been working in M2M for over 20 years, and today we provide full support for M2M security solutions, including alarms, CCTV and asset tracking. Our capabilities include: global M2M platform; global M2M-specific SIM cards; a broad portfolio of M2M terminals, application and service enablement development, testing and deployment; network connectivity; and system integration – all from a single supplier, with a single contract.
To find out more about how we support M2M security solutions globally, or how our portfolio of wireless communications solutions can support your business, please contact your Vodafone account manager, email **m2m@vodafone.com**, or visit **m2m.vodafone.com**