# Ready Utilities Guide

Preparing your business for the future of utilities

**Vodafone**
Power to you

# Contents

# Executive Summary

The global utilities industry is experiencing an era of unprecedented change, driven by a tide of technological innovation and a fundamental shift in consumer attitudes. For electricity, water and gas companies, it's time to embrace this change or risk getting left behind, for good.

We've identified six key industry trends that are reshaping the utilities market today. The first, **Beating the cost squeeze**, looks at the challenges utilities face not just from changing consumer usage patterns but from critical infrastructure investments, stringent new regulation, climate change concerns, emission reduction obligations and the rise of more agile and greener competitors. **Rising customer expectations** then explores how consumers have become more discerning and more sceptical about price, and how they now expect the kind of omni-channel service they receive from other suppliers.

The next trend is **Disrupting supply**. We explain the challenges and opportunities from the rise of renewable energy as part of the generation mix and the move to smarter, more efficient distribution models. Then we turn to **Safer working, stronger business**: how new technology is helping to better protect workers when they're on site or visiting remote locations, as well providing the high levels of security necessary to safeguard a business's physical and virtual assets.

**Tapping into talent** acknowledges the rise of flexible, mobile working and how the latest technology can help to recruit and retain the best new talent. Finally, we see how **Becoming data designed** will help utilities providers to leverage big data and analytics to create a better customer experience, drive down inefficiencies, explore new opportunities and become more profitable.

This guide explores each of these trends and how the utilities industry can embrace the changes it's facing. By adopting and championing the latest and greatest innovation and technology around, you'll find it easier to thrive in tomorrow's ever-changing utilities landscape.

If you want to know more about how Vodafone is helping utilities providers prepare for the future, download our **Why Vodafone for Utilities Guide** at Vodafone.co.uk/utilities

# What is a Ready Utilities business?

We define 'business readiness' as being able to cope with both the foreseeable and unforeseeable in today's rapid social, technological and economic changes.

Businesses that are able to react quickly to change can prosper and survive. Those that cannot take advantage of the opportunities that constant change brings, risk failure.

A Ready Utility is at the forefront of innovation, using ideas and technology to improve services, cut costs, modernize the workforce, engage customers, increase revenue and drive competitive advantage.

# State of the industry snapshot

**Gas and electricity**
There is considerable disruption in the power sector globally, driven by policy, technology and changing customer expectations. This is on top of continuing challenges of energy security, affordability and sustainability.

Global regulation is also pushing towards combatting the effect of emissions on the environment. In 2015 at the Paris Climate Conference, 195 countries adopted the first global, legally binding climate change agreement, due to come into force in 2020.

So the industry as a whole is expecting significant change to business and operating models by 2030, though much of the market is saying it's required sooner. In fact, 97% of those in the power sector expect medium to high levels of disruption in the near future.[1]

For many industry leaders, this translates into concerns about rising risks – most notably regulatory uncertainty and difficulty attracting investment. These are amplified by the threat of increased competition from other industries, most notably engineering, tech, IT and telecoms.

These threats and challenges are driving a global push towards innovation throughout the power sector. And although the future is uncertain, there are many reasons to be positive.

**Water**
Water is our most valuable resource, pressure on water supply and treatment is constant. The key challenges of water scarcity, changing demographics and operational efficiency are all amplified by the threat posed by climate change.

The OECD expects global demand for water to have risen 55% by 2050,[2] largely driven by rapid population growth, increasing urbanisation, and diet and lifestyle changes. This means that competition between water users is becoming increasingly fierce – with a potential shortfall of up to 40% expected by 2030 if trends continue.[3]

The changing needs and expectations of the customer are another important factor, as globally, the sector is beginning to embrace innovation and respond to many of the disruptive forces at work.

But water technology is working hard to meet these challenges – there is a clear global shift towards making existing technologies cheaper, more efficient and widely used. But there is much work to be done to meet the global demand for safe, clean and environmentally sustainable water.

[1] PwC, [2] OECD, [3] Deloitte

# UK snapshot

**Gas and electricity**
Providers are currently bound to the Regulation of Wholesale Energy Integrity and Transparency (REMIT), which helps to define market abuse and reduce illegal activities while protecting customers against unfair price increases.

This regulation is set against a backdrop of ageing assets and demand for network maintenance and repair. Future growth will require investment in innovation to deliver smarter services more profitably – but the industry is failing to do this. This is because regulation, and the time and effort it takes to comply, means there are often large gaps between investment periods. There's also a knowledge gap appearing as an older generation begins to retire without a younger one taking its place.

There is increasing pressure for power companies to manufacture their energy from renewable sources. New power generation models and market competitors – unburdened by slow legacy systems – have unsettled the established players.

**Water**
The water industry is currently midway through its sixth asset management period, known as AMP6. It's an expensive period of investment for water companies, with many having to stetch existing budgets thinly while planning for after 2020 when AMP7 begins.

While infrastructure investment is essential to modernising water generation and distribution, it's also costly and time consuming. The water industry Service Incentive Mechanism (SIM) from 2010 encourages water and sewerage sectors in England to improve the quality of services they provide – something the consumer has long been demanding.

A huge upgrade to communications infrastructure is required.
Water companies have to monitor their aging assets, replace obsolete ones and implement smart technology. These requirements stretch across security, power autonomy, coverage and support for legacy interfaces. And it's not optional – the investment is essential to keep vital services running.

# 1 Beating the cost squeeze

It's a tough time to be a utilities provider. In 2015 12 of Europe's biggest energy companies had to reduce the value of their assets – many of them power stations – by just over €30 billion.[4] Whilst, six of the biggest providers in the UK lost more than £400 million from conventional generation.[5]

One key reason: there's a great shift in the way consumers are using energy and water. They're more clued up on how to save money by reducing bills and are turning to new technology in the home to help them do this. Devices like smart meters and more efficient appliances are making it easier for people to monitor and reduce energy consumption.

In addition, the utilities industry is heavily regulated, meaning government and policy setters often have strict targets for energy emissions and renewable energy generation. This has forced utilities businesses to explore new ways of assessing operating economics, find new revenue streams and make their workforce more efficient. This is essential, given that earnings growth at European utilities companies is unlikely to exceed 1% through 2016.[6]

People are also more environmentally conscious and feel a greater responsibility to preserve the planet's resources. We want to know where our energy comes from and that it's sustainable. And the rise of electric and hybrid cars and greener transport demonstrate a more holistic approach to renewable energy that goes beyond electricity, heating and gas to the wider economy and travel.

But there are environmental and economic factors at play that can affect clean energy production. For example, droughts are causing problems in Brazil where hydro turbines generate the vast majority of electricity. This is being made worse by a growth in individual wealth and therefore a rise in demand for electricity production. Meanwhile in South Africa, for instance, political mismanagement is hindering the development of alternative energy sources, despite the country's ideal environment for renewable generation. Meaning it will take considerable effort to ensure alternative energy sources overcome environmental, social and political factors to reach their full potential and effectiveness.

One of the major challenges for the electricity sector is infrastructure capacity at transmission and distribution operator levels. In many regions, existing infrastructure is insufficient or in the wrong place to cater for vastly greater numbers of new generation or export entrants. But building new conventional infrastructure is expensive, so operators are left with two options: develop and introduce new power transportation technology or utilise what they have more efficiently, reliably and dynamically using smart technology.

In order to beat the cost squeeze, businesses need to make long-term investments. This will make it easier to meet strict energy and environmental legislation and compete with low-cost digital competitors and green energy challengers. By embracing new IT services and capabilities, like big data, IoT and flexible working, providers will have the agility to meet new market opportunities.

This isn't just a financial decision either. Stakeholders and boards of trustees have got to take the plunge too and make a difficult decision: continue to invest in traditional power generation plants, which provide high returns in the long term, or invest in renewable plants, which require lower capital but have shorter periods of return. Both options are risky. Commodities like oil will increase in price as resources become scarcer, and installing smart meters in homes and businesses is a huge logistical task, as well as being expensive.

[4] Financial Times, August 2016, [5] Financial Times, May 2016, [6] Bloomberg, December 2015

## Increasing competition

Where does all this industry upheaval leave traditional utilities providers? They're facing stiff competition from all sides, with energy and water companies in particular being challenged by low-cost digital operators, blue-chip vendors with energy management solutions and alternative green energy providers. These new competitors are moving traditional utilities companies out of their normal markets and forcing them to look for more efficient ways of working.

Prosumers – people who both consume and produce a resource – are radically restructuring the sector's business model. For the last century or so, the industry has remained fairly similar: utilities companies make their products and then sell them to the consumer. But now, with the help of smarter technology, people have access to more information about their energy use – and can become energy producers and storers too. These prosumers are 'self-directed' and have access to more information. They're upsetting the older balance of power, closing the knowledge gap between buyer and supplier – and paving the way for all consumers to have more say in how they buy and consume their energy.

Financial Technology – or FinTech – firms are also helping to redistribute power to the consumer. For example, HITbills in Poland is an app that helps people to save money on their bills. When someone takes a photo of an energy bill on their phone, the app takes the information and enters it into an auction where different providers are compared by price. The business that offers the cheapest deal wins. Often, new market entrants aren't subject to the same constraints or regulatory burdens as established firms. They're almost certainly digital and have lower operating costs. They're more agile, more responsive and therefore able to deliver a better customer experience. Plus, they're seeing what's going on in other industries and discovering what's truly possible. Uber, for example, is the world's most popular taxi service – yet it doesn't own a single car. By heavily investing in a digital platform and an app-led infrastructure, it was able to design the business around customer needs and behaviours and scale very quickly – without the burden of capital costs of acquiring physical assets like cars. It's an enviable business model and one that's being replicated around the world.

# 2 Rising customer expectations

Customer expectations have never been higher. People now demand more from their utilities provider, while the Internet and price comparison sites have made it easier to switch providers if they're not happy. There's also a growing segment of the population who want to buy services from businesses that share their values, such as clean energy generation and sound environmental policies.

In the UK, 62% of consumers think that utilities companies have a bad reputation. Only the banking industry scored worse at 73%.[7] Clearly the utilities industry has some work to do to boost its flagging reputation.

## Delivering more personalised services

One of the problems facing utilities providers is customer expectation convergence: consumers now have very high expectations of the products and services they receive, which have been set by other sectors. Mortgages, car insurance and broadband, to name just three, put the consumer at the heart of the decision-making process. This freedom means that when people come to interact with their utilities providers, the process feels alien to them. It's difficult to know how much each bill is going to be until it arrives in an email or through the front door. Lack of visibility means lack of trust, and consumers can remain uncertain as to whether they're receiving the best tariffs or deals. In a world when knowledge is at our fingertips, getting a firm grasp on utilities is tricky.

By differentiating itself from its competitors, a business can foster greater customer loyalty and generate repeat sales. Direct Energy in the United States has created a loyalty programme named Plenti in an attempt to reduce churn. It wants customers to view Direct Energy positively, rather than as an 'unnecessary evil' or another boring utilities company. To supplement its revenue from energy sales, Direct Energy offers many in-home repair and warranty services, as well as an omni-channel experience.

As consumers' values and preferences evolve, energy and water providers need to take advantage of the digital landscape and operate in a convenient and personalised way to enable ease of access and greater self-sufficiency.

## Creating an omni-channel service

Consumers now expect to interact with an organisation on their terms, through the channels of their choice. 92% of UK consumers use a variety of different channels to interact with their utilities providers, including landline, online, mobile, live chat, face-to-face and social media.[8] And 20% of people now expect their utilities companies to know what they want based on their previous mode of contact.

A recent study in the United States demonstrates that mobile is the primary area of focus for utilities companies over the next 18 months. When asked what channels they were investing in, 59% said mobile applications, website and self-service, while 35% said mobile live chats and texts. This is compared to only 24% who said social media.[9]

It certainly pays dividends for utilities providers to engage customers using digital media:

- 73% of digital users are more likely to sign up for home energy generation products, compared to 53% of non-digital users[10]
- 70% of digital users are more likely to sign up to automated home energy management devices or services, compared to 48% of non-digital users[11]
- 68% of digital users are more satisfied with their energy provider, compared to 55% of non-digital users[12]

By engaging with customers using the channels of their choice, utilities providers can stand out among their competition, deliver a better customer experience and increase revenues.

[7] YouGov.co.uk, [8] 24-7inc.com
[9] Interactive Intelligence, 6 Undeniable Reasons Why Utilities Must Think Digital For Customer Engagement
[10] Accenture, [11] Accenture, [12] Accenture

## Buildings are getting smarter

Home automation is growing rapidly. It allows people to remotely control energy settings when they're away from home, such as turning the heating up or enabling lights to switch on at certain times. Currently, less than 5% of Europe and the United States are using home automation, but its global market value is expected to reach over $58 billion by 2020.[13] This presents an opportunity for utilities companies to position themselves as the go-to provider for home automation software. 34% of consumers said they would rely on an energy firm to help install smart home technology.[14]

Gartner estimates that by the end of 2016, smart commercial property worldwide will have over 500 million connected things in use, while utilities companies will have 464 million in total by 2018.[15] So far, the wide variety of devices that have emerged from many different manufacturers has made it hard to introduce a joined-up, standardised smart home solution. But this will change as the market matures.

Smart meters and home IoT technology give consumers access to more information about their energy usage, so they can improve energy management and lower their bills. At the same time, more consumers are starting to question their traditional energy supply methods. In turn, this is creating an opportunity for providers to change their pricing models. Scottish Power, for example, is putting in place a new model that allows customers to buy gas and electricity in bundles of days rather than signing up for standard fixed price deals.[16]

Between 2016 and 2018, the UK is expected to install 20 million smart meters in homes around the country.[17] Such is the speed of smart adoption, it's estimated that by 2020 a typical family home could contain more than 500 smart devices. Samsung certainly hopes so: 90% of its products will be able to connect to the internet by 2017. [18]

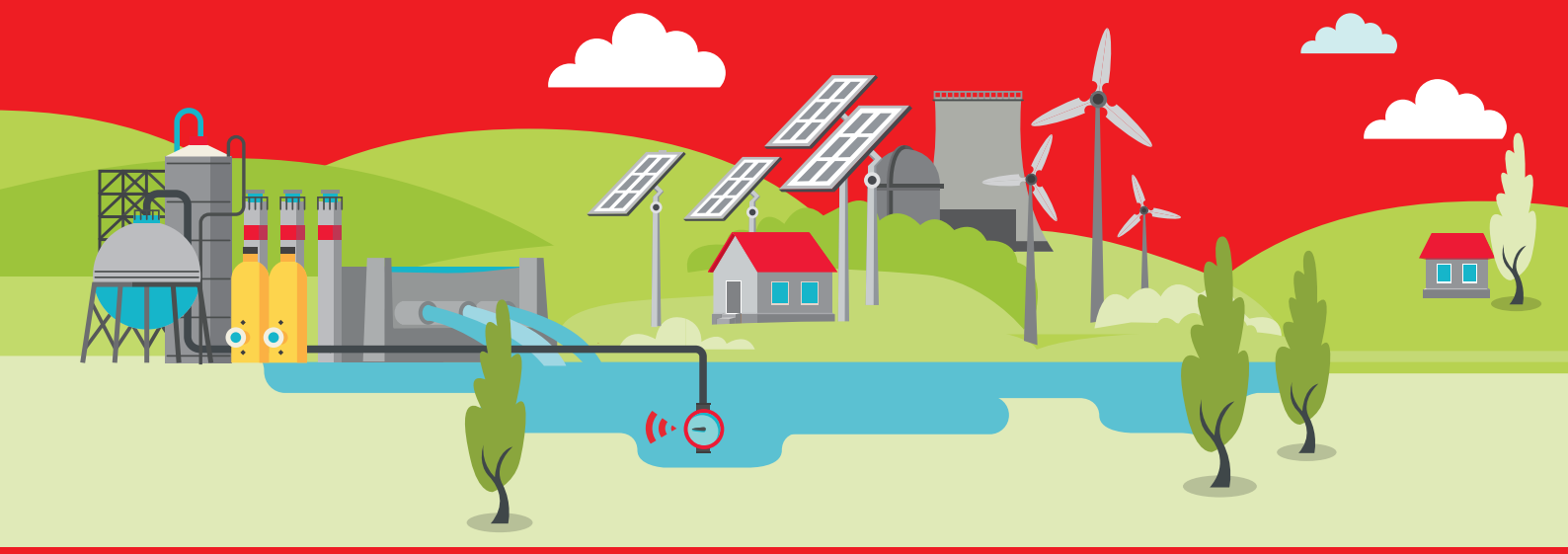
[13] PwC, [14] PwC via City AM, [15] Gartner, [16] BBC news, [17] Smartenergygb.org, [18] Forbes

# 3 Disrupting supply

The rise in renewable energy generation and consumption is being driven by a combination of regulatory demands, climate change concerns and increased customer demand for green energy, as well as worries around energy security.

This has led to a large shift towards regulatory mandated increases in sustainable energy as part of the generation mix. Many countries, like Sweden, have already reached the level required to meet their national 2020 targets. Other countries are dragging their feet. France, the Netherlands, the UK and Ireland are between 7 and 9% away from their own targets.[19]

There have also been recent improvements in renewables technology, specifically around its monitoring and control processes, which have made it easier to adopt.[20] By 2035 worldwide total renewable energy capacity is going to represent 31.2% of the world's total power generation.[21] For utilities providers, this is a chance to widen their energy portfolio, decrease their dependency on fossil fuels and tap into an expanding market.



[19] Ec.europa.eu
[20] Deloitte
[21] Deloitte

## New generation models

As investment in renewables rises, so does investment in more efficient, regionalised distribution models. Micro-generation points are becoming more popular and creating faster, cheaper and more efficient ways to distribute energy: for example, installing small electricity generators near industrial parks. Power doesn't have to be generated in a centralised hub and pumped around the country, which is expensive and involves lots of manpower – it can be produced and consumed in the same area.

There are a growing number of well-established communal energy generation projects selling surplus energy back into the grid. They're giving people who have installed solar roof panels or small wind turbines the opportunity to sell any excess power. However, this energy isn't sold back to the national transmission network, but back to the provider itself. These shifts no longer make traditional power companies the default energy choice. Globally, it's anticipated that distributed generation will take a 10-20% share of total generation by 2020, rising to 20-30% by 2030.[22] While 78% of senior power and utility company executives from around the world anticipate greater competition in the power sector.[23] Smaller, more localised micro-generation models are growing in popularity, enabling consumers to have a closer relationship with their energy company and receive better deals. Traditional energy companies have to work out how to work with these new upstarts or risk losing market voice and relevance.

[22] Accenture, [23] PwC

## Smarter distribution

Not only is smart distribution more efficient, it also makes the process of finding and fixing problems in a network easier should they arise. With complete visibility over a generation and supply network – and with IoT technology connecting every device and asset – it's easier to locate an issue, understand what's wrong and then take appropriate action – either by fixing remotely or sending a field engineer.

Predictive intelligence and insights allow utilities providers to monitor the health of their infrastructure and network assets, notifying them in real time if anything needs upgrading or replacing before failing and interrupting supply.

Smart distribution gives energy providers the ability to integrate their supply effectively with renewable energy systems to ensure that sufficient energy is always available. With improvements to load balancing, power stations are better able to store excess electrical power in periods of low demand and release it when demand rises. For example, when energy usage spikes in a town or city during a big football match, or to manage periods when large numbers of people are watching events like the Olympics on TV.

## Open Water

From 2017 the English water market is changing to allow over 1.2 million businesses and non-household consumers to choose who supplies their water and wastewater retail services. Those who offer the best deals, higher levels of customer service and greater alignment to corporate social responsibility will inevitably come out on top.

For customers, the aim of Open Water is to create a more efficient and resilient water market that provides better, more bespoke services and lower bills. And for water companies, this rigorous shake-up gives them the opportunity to win more business. In the scramble to position and prove themselves as the best supplier of water for each business's particular needs; innovation, efficiencies and sustainability will become three of the biggest proof points.

# 4 Safer working, stronger business

## The responsibility of looking after the health and safety of employees rests squarely with a utilities business, not the individual.

Accident prevention programmes are designed not only to protect the physical and mental wellbeing of workers, but also the public from dangerous operations.

In addition to driving down costs and enabling better customer engagement, IoT and smart devices help utilities providers increase the security of their business. With total sight over their infrastructure, virtual property and their most important asset – their people – they can comply with increased regulation, data protection and site protection, as well as protecting their people, wherever they happen to be working.

## Protecting lone workers

At least one in three (31%) fatal crashes and one in four (26%) serious injury crashes in Britain involve someone driving for work.[24] This is probably a big underestimate as a driver's journey purpose isn't always recorded by the police at the scene of a crash, and unlike other work-related incidents, deaths and injuries from driving for work are not reported to the UK's Health and Safety Executive.[25]

Utilities workers often find themselves in environments that are dangerous, isolated or exposed. It's incredibly important to protect these people when they're out on location – but this can be hard. Greatly improved communications technology enables constant real-time contact with lone workers so their location and status is always known. If anything goes wrong, it's quick and easy to send a backup van or rescue team or to direct the emergency services. And if the situation is particularly hazardous, it's safer to send a robot or drone in. The most successful utilities organisations of the future will embrace the latest communications technology – to not only protect their staff but also to make their business more attractive in the eyes of prospective employees.

## Boosting process automation

Process automation – the collection, storage and analysis of great quantities of data – removes the need for people in many situations and so reduces human error. This means fewer potentially dangerous human-machine interactions or examinations, maintenance visits, check-ups, meter readings and call outs. Proactive predictive maintenance is also safer and less disruptive than reactive maintenance. It enables a business to plan ahead and prevent mission-critical infrastructure from breakdown and causing costly repair work and downtime.

Process automation also helps to equip remote workers with the right tools for every job. With a lack of information or data about breakdowns, diagnosis and repair is difficult, slow and costly. Time and money are wasted when a field engineer turns up with the wrong tools and has to return. With the right data and insight, utilities providers can make better informed decisions, and reduce costs. And customers receive a better experience as problems are fixed first time, with less disruption and impact to their lives.

[24] Brake, [25] Brake

## Security in the digital age

The rise of digital ways of working presents risks as well as rewards to utilities businesses. Cyber security is now essential to safeguard a business against online attacks, corporate espionage and hacks on business information and customer data.

The hacking of Western Ukraine power company Prykarpattyaoblenergo in 2015 is believed to be the first instance of a power outage caused by hackers.[26]

Of course, preventing physical break-ins is just as imperative, especially into places like nuclear power plants. By putting both physical and cyber security measures in place, utilities businesses will have a holistic barrier to unwanted physical and virtual data access and theft.

[26] The Guardian

# 5 Tapping into talent

Like other industries, utilities businesses face a battle to attract, recruit and retain the best employees.

But unlike other industries, they face an ageing workforce that they're struggling to replace with younger generations. Job security and a generous pension package aren't enough to attract them or digital experts into a traditional utilities organisation – and this is creating a digital skills gap.

## An ageing workforce

72% of energy employers are struggling to find good quality candidates to fill positions.[27] Which is a growing issue, because according to EY, 27% of the technical workforce will retire by 2024 – and 80% of these will be at higher skills levels.[28] This trend is resulting in a failure of the transference of vital knowledge to a younger generation. And lucrative pension schemes are providing an extra incentive for much of the remaining mature workforce to retire in the next five years.

So who will replace them when they retire? In the longer term, technological innovation points to a future where IoT, artificial intelligence and bots play a greater role in the workforce, automating certain tasks and driving down costs. Maybe the question should be: what will replace them? For now, though, the human workforce remains as crucial as ever.

## Attracting and retaining talent

63% of global CEOs in the utilities sector say that they will invest more in creating and fostering a skilled workforce over the next three years.[29] Businesses will need to adapt to millennials' expectations of working life, providing new career structures based on goal completion and rewards that chime with their values. Traditionally, a business could incentivise its staff by offering more money and holiday allowance. But millennials want more than good pay and benefits – they also want support to develop skills and the flexibility to work their way, not necessarily 9-5. And they're attracted to businesses that have good ethics.

The most successful organisations will recruit staff with the talent and appetite to transform the business across all areas: operations, customer experience, leadership and more. In particular, there will be a scramble to attract people who can help the business to automate key processes and generate greater efficiencies and cost savings.

[27] ELP, [28] EY, [29] PwC

## Flexible, mobile working

Utilities companies have got to persuade young people that they're tech-savvy and embrace flexible working. 'Digital natives' have grown up with the cloud, mobile apps and the Internet – and expect to use them at work along with their personal smart devices. But when they start work, they find themselves hampered by old systems and out-of-date hardware that's totally alien to them. Businesses that enable staff to work in the ways that suit them can offer a more attractive place to work – and will be able to recruit the brightest and best.

Utilities businesses need to learn from other industries, like the technology sector, which has succeeded in recruiting skilled millennials from diverse backgrounds by offering them direction, purpose and rewards to match their expectations.

Today's businesses are also looking to borderless working and virtual workspaces to bring disparate working groups together. Augmented reality software like Meta 2 enables users to ditch physical screens or hardware in favour of holographic collaborative technology. Research suggests that mobilised teams working together from anywhere could be nearly 20% more productive.[30]

[30] Aruba via Computer Weekly

# 6 Becoming data designed

A data designed business is one that's driven by gathering and analysing information across its operations, including customer interactions, employee productivity and back office processes.

By turning data into insight, an organisation can make smarter decisions in real time, define overall strategy, gain insight to validate decisions and stay ahead of competitors through new products, services and business models.

Smart grids, meters and devices have already led to a dramatic increase in the amount of data produced. It's now up to utilities providers to work out how best to interpret and use that data to better engage their customers, as well as to design more efficient and robust supply networks and more profitable ways to do business.

In the water industry, for example, data analytics can be combined with design and digital leadership to predict spikes in water demand, create better mechanics to cope with this higher usage, and generate more effective sewer escape areas in the event of flooding.

## Insight-driven workforce

Previously, a business would send staff out to check and read household and business meters, which was inefficient and expensive. In the UK and Western Europe, meters can be read automatically and the data fed back instantly to staff using IoT technology.

Data also enables fieldworkers to better understand a job at hand, ensuring they're fully prepared and have the right equipment with them to complete the task successfully first time.

## Challenging the status quo

By moving to data-driven decision-making processes, utilities providers can make use of all the available information they have at their disposal, while reducing the possibility of human error. It means the end of relying on expertise and experience alone.

It also means faster, more reactive and proactive decision-making. In the event of a power failure or gas leak, time is money. So being able to predict when and where these occur would save businesses serious amounts of money and increase customer satisfaction.

By updating their legacy systems, utilities businesses can seize the opportunity to help future-proof themselves. They'll become agile and responsive, and quicker to adapt to new regulations or changes. And they'll be able to deliver a standout customer experience that goes above and beyond expectations – and their competitors. It all adds up to happier customers, more advocates and greater revenues.

# What next?

At Vodafone, we're spending a lot of time working on ways new technology can help future-proof the utilities sector – and help businesses like yours to grow.

If you'd like to know more about how Vodafone can help you take advantage of the future of utilities, read our **Why Vodafone for Utilities Guide** now.

Want to talk? We'd love to hear from you.

Contact your account manager or call **0845 084 0157**.

Or visit **www.vodafone.co.uk/utilities**

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