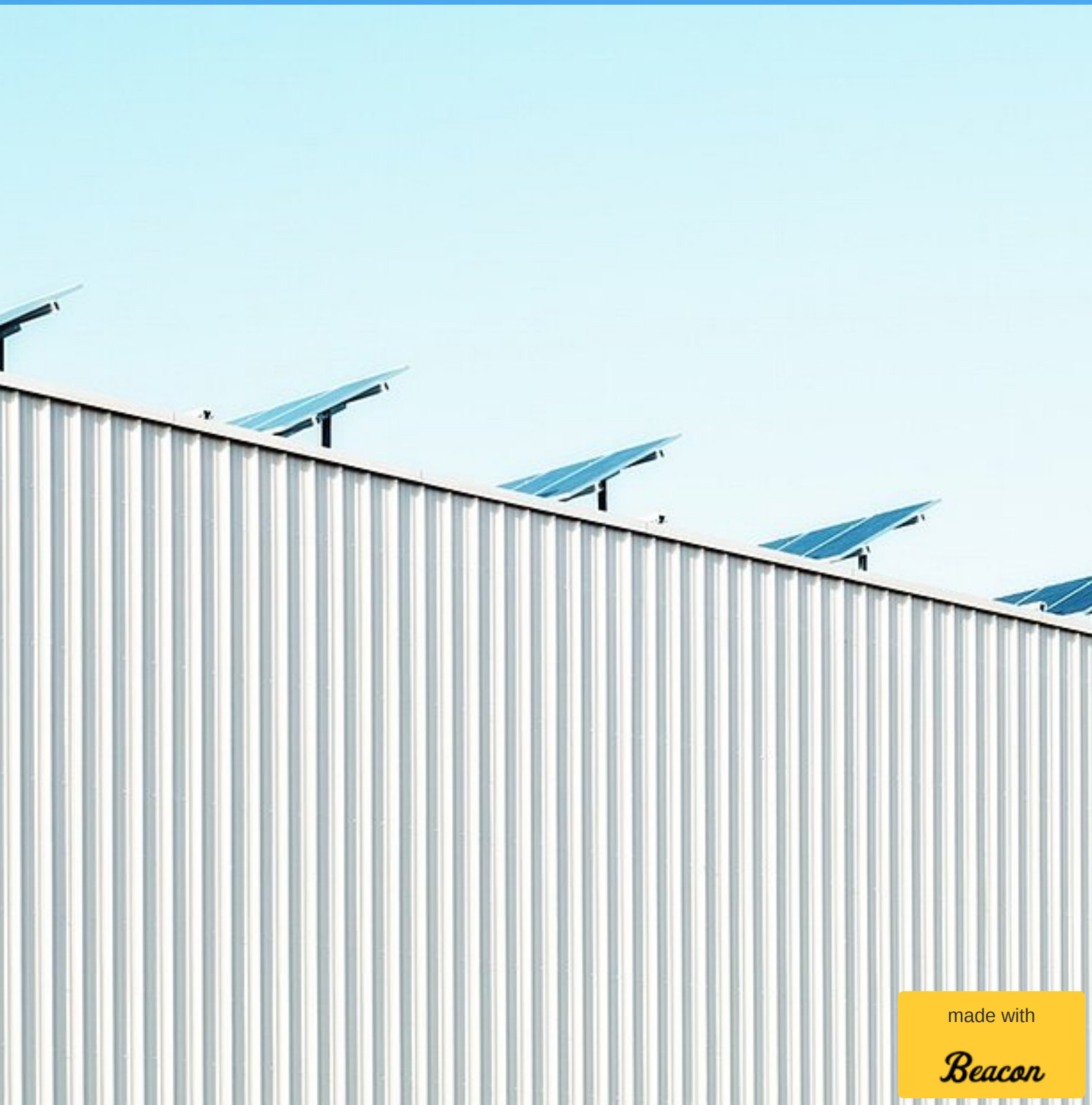# The Future-Proof Utility

Advancing Digital Transformation in Energy Retail, Supply and Distribution

Contents

A Brave New Energy World

Thanks for downloading this eBook! Read on to discover what kind of strategies, technologies and business models utilities are exploring as the traditional energy value chain undergoes some serious disruption.

Energy supply and distribution is becoming more decentralised as renewable sources become cheaper, new actors enter the energy value chain and end users start becoming their own power producers.

Incumbent actors, from fossil fuel power plants to TSOs, DSOs to energy services retailers, must make way for new independent operators, energy brokers, renewable energy companies, ESCOs and storage operators.

So what does the role of the utility look like in this transformed energy value chain? And how do **technology**, **customer experience** and **innovation** factor into each new utility business model?

From our perspective as an experienced energy tech firm, utilities have so much potential to excel at and benefit from digital transformation - and some are already realising it.

For those willing and able but unsure where to begin, I hope the following pages will be useful to you. Together we will navigate and conquer this brave new energy world!

Good luck out there,

Joan Pinyol

Co-Founder and CEO, DEXMA

The Future-Proof Utility is Innovative

What does innovation in utilities actually look like?

Obviously, blaming external factors and throwing in the towel is not an option. But some utilities are starting to realise the need to consider more advanced solutions and first movers are already starting to diversify their offerings beyond power supply and distribution.

Now Trending: #Acquisitions

Several large utilities have already employed an inorganic, M&A-based strategy, identifying and acquiring companies that have an existing brand and market position in energy service management.

The past five years alone have seen several major acquisitions of energy management solutions by some of the world's largest utility companies, summarised here by Verdantix research:

What conclusions can be drawn from this flurry of M&A activity? Utilities are seeing little to no growth potential from traditional energy supply and power generation into the near future. At the same time, they are beginning to realise the value of behind-the-meter energy management innovations in future-proofing themselves against the forces of disruption.

But instead of trying to build them internally, first mover utilities are snapping up ready-made companies and to expand and enhance their own energy

management portfolios. Some utilities, such as Eniig, have their own energy services (ESCO) divisions where these data-driven technologies are essential to providing innovative, value-added services to help grow and retain their customer base.

The Seeding-the-Startup Approach

Startup competitions, accelerators or open innovation challenges are another way utilities have been trying to source innovation externally. Take the case of **Free Electrons**, a global startup accelerator program backed by utilities from Dublin to Dubai, namely AusNet Services, DEWA, EBS, EDP, innogy, Origin Energy, Singapore Power Group, and TEPCO. Collectively, these 8 utilities serve over 70 million customers in 40 countries, with an excess of $148 billion in sales.

Another example is the **Rockstart Smart Energy Accelerator**, which counts Czech utility CEZ and Engie among its investors and partners – both among the top 10 largest utilities in Europe.

These are just some of the innovation efforts we've seen from first mover utilities seeking to retain a competitive advantage in the face of disruption. The question now is – what is your utility doing to future-proof itself?

The Partnership Pathway

At DEXMA it's one of our favourite sayings: "If you want to go fast, go alone. If you want to go far, go together." The industry experts at PwC seem to agree:

> *Utilities crafting new business models and customer programs should both leverage industry best practices and seek effective stakeholder collaboration with experienced and agile technology partners.*

How? By adopting a **wide-net**, **open innovation** approach. Startup accelerators and acquisitions are two ways to go about this, but both of these approaches can take a lot of time – from nurturing a startup to scale to absorbing an entirely new business unit.

A potentially faster and more cost-effective innovation pathway involves leveraging the existing market expertise of experienced market players, whether it means joining forces with other power utilities or partnering with key suppliers to innovate in parallel.

This partnership approach can be a first step in future-proofing: a new go-to-market model that positions the utility as an integral yet innovative part of the broader, rapidly transitioning energy ecosystem.

How 3 Utilities Upped Their Customer Experience Game

Customer behaviour and choices are becoming the most important drivers in shaping the transition to a new energy system.

Yet innovating in a commodity market like energy is tough given that all your potential customers are essentially already penetrated – **either they are with you, or with a competitor.** Since 100% of your prospective clients in developed markets are already connected to the grid, the only way to gain traction and grow is to convince them to switch.

What does this mean for utilities? The ones that approach customers via multiple touchpoints have a much greater chance at success, meaning **higher acquisition and retention rates.**

Utilities Must Brace for the Retailisation Effect

Not only does technology underpin most of utilities' business processes, it has also fundamentally shaped the way they interact with their customers — not least by increasing their expectations.

At the same time, focus has now turned from pushing products and services

to creating value for customers. One way to do this is by elevating the entire customer experience through **personalisation**. So in addition to creating an organisational culture that promotes and invests in **innovation**, getting closer to customers to **find out who they are and what they really want** is more important now than ever for utilities that want to future-proof themselves.

PwC describes this phenomenon as the "**retailisation**" concept. **Retailisation is the nurturing of a more direct relationship between utilities and consumers,** similar to what is happening in online shopping, music streaming or mobility. This change can also already be observed in the telecom industry: where once we paid for long distance and local calls, now we pay for data streaming speed and capacity.

We are already seeing the early steps toward retalisation in the energy sector too: from real-time digital experiences to virtual audits, energy management solutions to time-of-use billing and mobile payments.

But there is a long way to go yet – for instance, PwC reports that less than half of customers received outage information directly from their utility in 2015. Considering that **the average utility customer only spends 8 minutes per year** interacting with their energy provider, there is some cause for concern. After all, digital native millennials, which are quickly becoming the prime segment across industries, expect a frictionless experience across all channels. The problem?

Most utilities are only just starting to chip away at this challenge.

An Elevated Utilities Customer Experience Pays Off

Research shows that utilities who build customer centricity into their energy services from day zero are seeing clear benefits. For instance ComEd, the largest utility in Illinois (USA), who have a clear customer focus in their smart grid plans, experienced a 2.8% rise in J.D. Power's 2016 survey over their 2015 score, according to an Indigo Advisory Group report.

Here are some more examples of "challenger" utilities in the US, UK and Europe that are using fresh customer experience strategies and to engage with their customers in new ways, and are bringing those insights back to help them refine and reinforce their business strategies.

3 Customer-Centric Utilities to Learn From

1. HolaLuz

According to a study by The Social Media Family consultancy, **HolaLuz** stands out as one of the most customer-centric utilities in Spain.

Appearing only a few years ago in 2011, HolaLuz has grown to amass **70,000 clients in just 6 years,** adding 3,000 new customers every month.

How did they manage to growth hack a saturated commodity market? By **digitalising their business model** and enabling a **fearless** and **frictionless** switching process – effectively creating **the first "future-proof utility" in Spain.**

According to HolaLuz co-founder and CMO Carlota Pi:

> *"To be customer-centric – period – is to say and do what you promise. It means simplifying things for customers and giving them the freedom to choose, with full transparency, including leaving if they so choose – with no strings attached."*

HolaLuz places the customer at the center by offering **personalised digital services** and eliminating barriers to change, not only by going digital-first, but by eliminating fears and giving customers as much control as possible over their energy in 4 important ways:

1. Guaranteeing that consumers will never find themselves without power if they decide to switch
2. Taking care of the end-to-end switching process in an agile way, free of charge
3. Resolving any fears, doubts, questions customers have through dedicated, in-house online support (chat) – no outsourced call centers, no passing through ten different departments to explain your issue for the nth time
4. Billing is simple, transparent and clearly explained. Customers also get a pre-invoice every month – just to make sure there are no surprises, ever.

HolaLuz co-founder Oriol Vila affirms the principal role played by Big Data in their customer engagement strategy:

> *"In the future we will be more a tech company than an energy company. We will be a tech company that provides energy services. We have a Big Data team and it's their job to get to know the customers in order to offer them services that fit their needs."*

2. Drift

It's no secret that GAFA (Google, Amazon Facebook and Apple) are muscling their way into the energy sector on all fronts, from buying their own power directly or developing their own plants, typically powered by renewables. Herein lies the beauty of **Drift**.

> *As CEO Greg Robinson puts it: "We're basically that energy buying team for everyone who can't afford an energy buying team."*

Drift has turned the traditional utilities business model on its head by offering customers incentives to reduce its costs and end-prices. Touting simplicity, it

makes money by signing up more customers, not by ratcheting up charges per customer. Although Drift could raise rates in the future, it probably won't before it has amassed a solid (and loyal) customer base.

Drift is also future-proofing by becoming a demand response enabler. During a heatwave or some other factor that causes energy consumption to spike, Drift offers an incentive to customers that can reduce consumption during these periods of market tightness.

Drift currently operates out of Seattle, but has officially launched in NYC – where electricity was first used in the United States. It will be interesting to see if their

model could be replicated here in Europe – in the meantime, the company has plans to roll out across the USA.

3. Pure Planet

Another challenger to highlight is **Pure Planet**, the brainchild of Virgin Mobile founders. One of the problems Pure Planet wanted to fix was the poor customer service often associated with traditional utilities. Long hold times, complicated processes, and a lack of empathy in communication are among the problems customers themselves cited when dealing with their providers. Moreover, it doesn't exactly instill a sense of confidence when you have been passed to yet another department to explain your problem all over again.

That's why Pure Planet checks how happy customers are with their service by tracking responses on social media. They also market themselves as another digital-first energy retailer that offers their services and billing almost exclusively through an AI-powered app and intuitively-designed website.

As Pure Planet co-founder Steven Day says,

"The world is becoming digital. You can get through to a person using Pure Planet if you want to, but most people don't feel the need to talk to people nowadays and are happy to use apps to deal with day to day billing and services – when was the last time you spoke to someone on the Apple app store, for example?"

In addition, their "membership model" is unique in the market, offering supply at wholesale prices and only charging a monthly £10 membership fee per fuel.

While it remains to be seen whether Pure Planet can compete with the **Big Six** — namely British Gas, EDF, E.ON, npower, Scottish Power, and SSE – it does promise to deliver enhanced customer service and lower prices through a transparent, lean and digital-first approach. By using data-driven technology and leveraging best practices from the telecom industry, Pure Planet can probably innovate faster than its incumbent competitors, who are often struggle with cumbersome legacy systems, mindsets and processes.

The Future-Proof Utility is a Customer-Centric Utility

Even though HolaLuz, Drift and Pure Planet are challenger utilities betting on the customer-centric approach, they have not and will likely never take over the actual infrastructure (powerlines and generating stations) that supply their customers' electricity. Their core business is to lease distribution and transmission capacity based on the actual amount of power their customers need and use (a further incentive for efficiency!).

So it's true that utilities are still essential in moving electrons from point A to point B, similar to how Amazon sees UPS or FedEx. But to stay on top of customer minds and wallets, nurturing a symbiotic, engaged customer relationship is key. Utilities that channel their efforts to embrace customer centricity rather than waste it fighting disruption are the ones that will come out ahead and prosper.

What's more, energy management is a totally new and complex competency for many of your business customers – especially SMEs, who lack time and resources to manage and reduce the operating costs they spend on electricity and gas – **up to 16% in the UK** according to BMG Research for Ofgem. They will stick to the provider that helps them save the most, which presents utilities with a golden opportunity to offer the personalised, customer-focused assistance they crave, tailored to each vertical.

If utilities act now to develop a **holistic**, **flexible**, and **scalable** digitalisation strategy underpinned by a **customer centric ethos**, they can power their own growth well into the future.

10 Business Models to Accelerate Utilities Digital Transformation

The way we produce and supply energy, also known as the energy value chain, is undergoing a major shift these days.

For utilities, what were once an easily predictable, low-risk and safe investments are quickly turning into liabilities. As one analyst recently told The Economist,

"Never in recent history has the deployment of capital been more difficult than it is right now within the energy industry."

As utilities adjust to operating in uncertainty, they must face the disruption of their traditional business model and take on new roles in the energy value chain.

A new report from the ENTRUST project has detected **10 emerging business models for utilities**, inspired by examples of finding new ways to add value in the face of disruption and digital transformation. In each one, the way utilities operate and innovate in the new energy paradigm looks a little bit different:

10 Innovative Utility Business Models

Advancing the Digital Transformation in Utilities

2017

#1 Partner of Partners

Opower (US)

In addition to standard power and gas products, utilities rely on partners to innovate. Partners offer an extensive range of additional energy services (net metering, EV battery life cycle management, etc.)

Close partnerships with high-visibility providers (e.g. Tesla), enables utilities to gain customer acceptance and leverage partners' agile processes, technology offerings, channels and brands.

#2 Pure Retailer

HolaLuz (ES), Pure Planet (UK)

Pure retailers only supply gas or electricity to the end consumer - but with a laser focus on an elevated customer experience and heightened (usually digital) engagement.

By optimising resources to deliver an elevated customer experience (e.g. digital-first) online channels and leveraging data analytics to know customers better, utilities can personalise energy services offerings and reduce overhead costs

#3

Energy Co-Operative

SomEnergía (ES),
Basin Electric (US)

A non-profit entity typically promoting a 100% renewable model. Co-ops only supply energy to members, who finance collective projects to produce their own energy.

The energy supplier is 100% user-owned and operates as a cooperative, not a company. Members benefit from a yearly discount on their bills.

#4

Product Innovator

Nautricity (UK)
Oscilla Power (US)

Creation of novel energy harvesting products with a focus on investing in materials such as PV solar cells or tidal/wave power

Utilities benefit from first-mover advantage of developing and leveraging new technologies for energy production and distribution

#5

Grid Manager

REE (ES)
RTE (FR)

Operates transmission and distribution assets and provides grid access to generators and retail service providers. In some cases, also responsible for ensuring continuous energy supply as well as grid planning, construction and maintenance.

Vertical integration of transmission and distribution roles. Control segments that are separated on the traditional value chain. Potential to optimise and balance electricity demand and supply in real time, and integrate power from DER.

#6

Added Value Provider

Lucera (ES)

Goal is to enhance energy products or services before offering them to customers, thereby increasing the value of the energy supply offer, e.g. by analysing consumption of current and future customers to offer the most suitable tariff to reduce costs

Customer engagement and product-service system functionality. Providing added value and personalisation to existing services fosters customer engagement and elevates the overall experience.

#7

Virtual Utility / Aggregator

EnergyPool (FR)
DONG Powerhub (DK)

Aggregate energy from various DERs (micro CHP, wind, PV, batteries) to deliver reliable power supply and act as an energy market intermediary. Rely on software to remotely dispatch and optimise generation, demand-side management and storage in a single and secure platform

Virtual utilities can replace conventional power plants while providing higher efficiency and increased flexibility. Innovation comes from optimising resources and energy performance through software-as-a-service (SaaS).

#8

Specialised Provider

ONZO (UK)
Eniig (DK)

Energy retailers maximize service orientation and create added value for end consumers through dedicated partnerships, eg. by tailoring energy tariffs to offer current or future customers by analysing energy consumption, providing actionable insights previously inaccessible to the customer

Competitive advantage comes from enhanced services (data, software, energy efficiency products) through a collaborative environment - utilities can rely on external yet mature products or services

#9

Pure Play Merchant

Acciona (ES)

A PPM utility owns and operates generation assets and sells power to competitive wholesale markets at market-clearing prices, or through bilateral contracts with other generators or large industrial consumers. The focus is on reducing emissions and pollution, and using more efficient technologies.

Savings generated by optimisation, efficiency gains and DER integration allow these utilities to offer lower prices to their customers.

#10

Gentailer

Origin Energy (AUS)
AGL (AUS)

Gentailer utilities operate at both ends of the value chain by owning generation assets and selling retail energy to customers in a competitive market. The idea is to lower generation costs while increasing customer engagement. Gentailers also pay transmission and distribution system operators in order to deliver electricity as part of the regulated market.

The gentailer is capable of energy trading and hedging as it participates on both sides of the market; and also gains revenue from selling the energy it produces to the wholesale market, as well as the energy supplied to end customers.

About this infographic

This infographic summarises the findings of an ENTRUST project report on novel business models and main barriers in the EU energy system. ENTRUST is mapping Europe's energy system (key actors and their intersections, technologies, markets, policies, innovations) with the aim of achieving an in-depth understanding of how human behaviour around energy is being shaped by both technology and social factors.

5 Technologies to Extend Utility Energy Services

Utilities in deregulated markets are under more pressure than ever to extend their energy services offering.

Previous chapters in this e-book have discussed the driving forces behind utilities' push for innovation, and the importance of a customer-centric approach. While both of these concepts are of crucial strategic importance, **technology is the vehicle** that will ultimately bring the future-proof utility into being.

That's why this post will zero in on 5 technologies utilities are exploring and investing in, and what kind of capabilities they will need in order to meaningfully expand their energy services.

Technology that can help evolve the utility services offering from selling pure kWh to providing digital energy services is essential in meeting the demands of today's highly demanding, digital-first customer.

More and more utility customers are asking for products that give them more **visibility**, **flexibility** and **control** over their energy consumption. For instance, an Eon survey of 2,000 UK homeowners found that 55% cite energy efficiency as their main driver of installing smart technologies.

Even the world's biggest corporations are announcing bold energy productivity

targets – including H&M, as part of the EP100 initiative, or Walmart, who aims to reduce building energy intensity by 20% from 2010 levels.

And utilities are the ones customers to help them get there. This is evidenced by another survey of C&I and public-sector energy users in the UK, which found that **utilities are trusted to implement smart solutions over and above all over vendors,** including engineering and technology firms.

Yet, a significant demand gap exists between what utility customers want and what their energy providers are able to offer from a technological point of view.

Here are 5 technologies, from well-established to newly emerging, that will be best placed to fill that gap:

5 Technologies for Data-Driven Utilities

Real-Time Energy Analytics

Utility business customers are increasingly determined to manage their energy consumption patterns how they want, when they want – in real time.

That's why commercial building owners and facility managers are installing energy monitors to close their building energy performance gap by detecting peaks in consumption or forecasting future fuel requirements.

Industrial facilities and manufacturers are especially keen to use predictive analytics to monitor heat and cooling equipment performance that can automatically alert malfunctions, prevent errors or notify when it's time for maintenance. Even residential customers want on-demand, real-time access to manage and control their personal energy consumption. In all of these cases, utilities are well-placed to provide through mobile applications and real-time solutions.

In one example, Google AI company DeepMind was able to reduce its total data center power consumption by 15% which will translate to hundreds of millions of dollars in savings over the next several years. Google also claims that they have already achieved a savings rate of 40% on power consumed for cooling purposes alone by using artificial intelligence to optimise energy efficiency.

According to Google Data Center Engineer Jim Gao, "actual testing on Google data centers (DCs) indicate that machine learning is an effective method of using existing sensor data to model DC energy efficiency, and can yield significant cost savings."

Similar Big Data and machine learning methods could be applied to utility buildings, to evaluate new plant configurations, assess energy efficiency performance, and identify optimisation opportunities. Energy analytics can also help utilities improve grid management by enabling network balancing with production and consumption forecasting, predictive maintenance of grid infrastructure, and the creation and management of demand response programs.

Virtual Audits

Utilities continue to explore innovations based on load disaggregation and behavioural change programmes that use gamification techniques. Virtual audits are one such example. They use Big Data algorithms to disaggregate utility usage into end uses, such as lighting, pumping, and HVAC. Virtual audits can also identify energy-saving measures by detecting wastage points, peak loads and building automation problems.
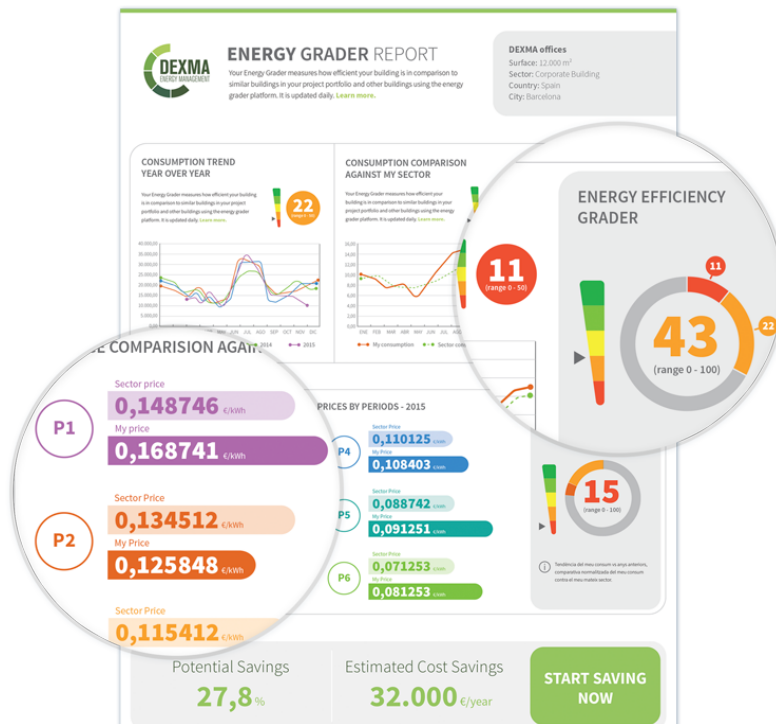
Virtual audits can help boost engagement by helping utility customers clearly visualise two important cost-reduction factors: their energy use patterns and behaviour, and their energy savings potential from retrofits or upgrades to more energy efficient equipment. They also do it quickly enough to meet the expectations of today's digital native, always-connected customer – and at a fraction of the cost.

Utilities are especially well-placed to "nudge" their business customers toward data-driven energy efficiency. Many of these C&I customers are responsible for a large portfolio of buildings, which requires a great deal of time to track and review for energy efficiency projects. When hundreds of virtual audit reports can be combined into a single, powerful interface hosted by the utility, business customers will spend more time engaging with their providers to prioritise sites, track projects and evaluate the results.

Demand-Side Management and Demand Response

Data-driven energy analytics can be applied to demand management to benefit utilities in several use cases, including demand response enablement. Significant advances in smart metering, dynamic market-based prices, time-of-use rates, and energy management systems have the potential to make electricity loads more responsive to economic and operational signals than ever.

So what kind of specific capabilities do utilities need to roll out successful demand response programs?

On the customer experience side, utilities will need to think about program design and delivery – which customers are more likely to participate? What will be their end-to-end journey, from enrolment to rewards?

Internally, utilities will need to be technically capable of forecasting load drops, grouping the customers into virtual power plants (VPPs) based on their distributed energy resource (DER) generating capabilities (think electric vehicles, rooftop solar, smart meters, and self-contained microgrids). Then the utility would need to coordinate dispatch events, bill and settle events, offer rewards for changed customer behaviour and have those changes reflected clearly on each bill.

Similar to virtual audits, demand response programs are complex and require inputs from many different data sources. Managing them through a cloud-based "mission control" dashboard would facilitate interfacing with billions of interconnected device loads connected through the energy Internet of Things. As we mention here, new data management and control system partnerships with new market actors will be essential in coordinating DERs and their associated energy services, including demand response.

Blockchain

Blockchain is likely to become the backbone of the decentralised energy system in

which both utilities and consumers will produce and sell electricity. Utilities therefore need to be ready for a blockchain-enabled future where peer-to-peer (P2P) wholesale trading, flexibility trading on regional grids and synchronised grid management processes between TSOs, DSOs and end users are the norm. A decentralised market could also shore up revenue for European utilities through

efficiency gains, while making pricing data available for anyone to see, thereby opening the market to smaller players.

Here in Europe, several utilities are already starting to experiment with this technology. In May, 26 energy trading firms converged to conduct P2P trading in the wholesale energy market using the Enerchain framework – an application that was used to execute the first European energy trade over the blockchain last year. The goal of Enerchain is to create a blockchain-driven exchange that provides energy wholesalers with a way to list and sell expected future energy generation.

The largest utility conglomerate in Austria, Wien Energie, is also conducting a blockchain trial with two other utilities, while Innogy in Germany is running a pilot to test if blockchain can authenticate and manage the billing process for EV charging stations. In Britain, a startup called Electron is developing a blockchain-based platform that will enable customers to switch utilities within 24 hours.

Artificial Intelligence

Utility providers have a less than savoury reputation among consumers when it comes to customer experience. Long hold times, complicated processes, and a lack of empathy in communication are among the problems facing customers when dealing with their energy providers.

Chatbots are one way utilities can offer an always-on connection their customers, providing peace-of-mind and eliminating fears of unresponsiveness. With a chatbot, utilities can **automate the most repetitive customer service requests** and offer the **transparent**, **direct** and **solution-driven communication** that customers have come to expect.

Mobile messaging and automated chatbots have additional uses, such as providing customers with relevant and updated information in real time, during emergencies or outages for example. When customers feel **connected**, **safe** and **informed**, the quality of the relationship is elevated – churn is reduced and retention rates start to go up.

Time to hear about some real examples of real utilities putting chatbot technology into practice. Pure Planet has developed a chatbot called **WattBot**. Powered by AI algorithms, WattBot was built to answer the usual customer queries drawing on Pure Planet's team of energy experts. Here's what it looks like:
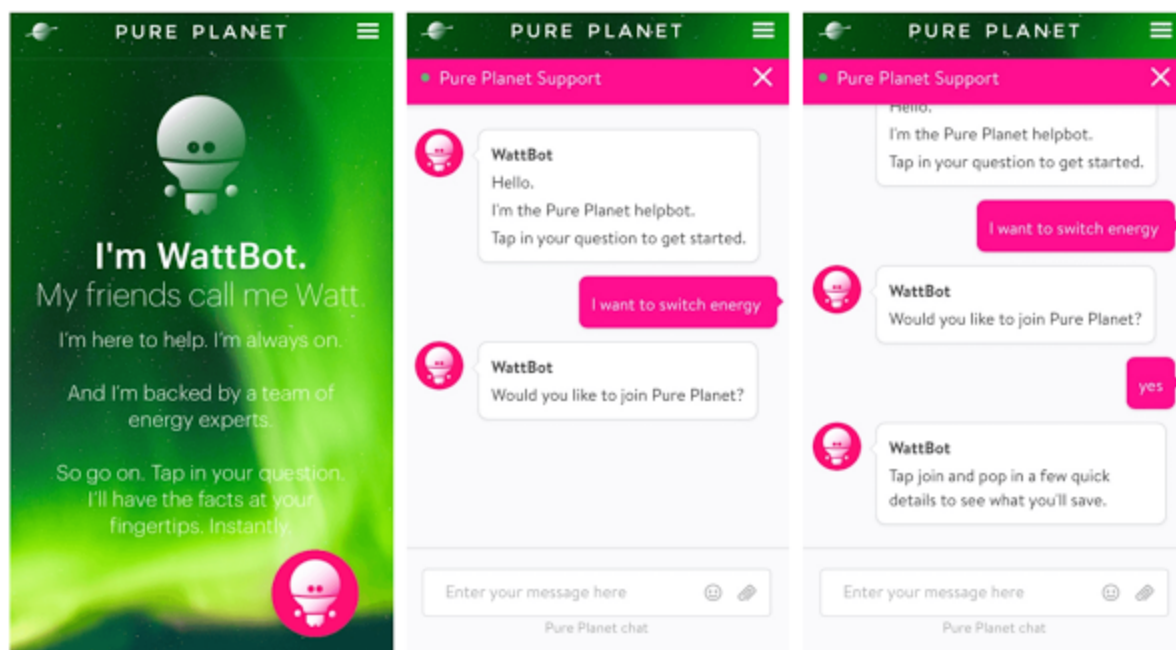
In April 2017, E.ON launched Sam, supposedly the energy industry's first ever virtual assistant specifically designed to offer customers a smarter solution to help them manage their energy accounts when they're moving home. Currently, Sam is only available online to E.ON customers when they've logged into their account. E.ON plans to enable customers to tell Sam about their meter readings at their new property, to choose their tariff and to raise any doubts with advisors, whether they have an online account or not.
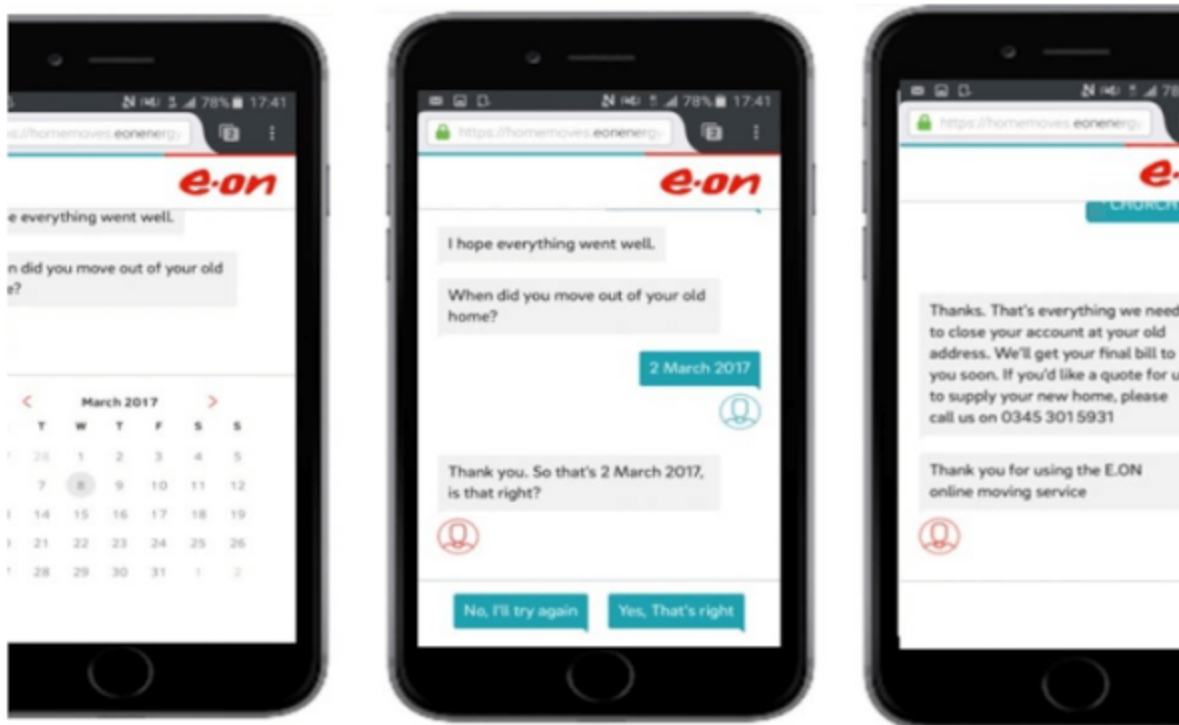
By no means an exhaustive list, each of these 5 technologies can be a potential vehicle to deliver the proactive energy management required by the utility of the future. Over time, we can say with confidence that a broad array of new technologies will find their way onto the "retailised" grid as utility offerings. These changes are already happening as OEMs, startups, new entrants and VC funds bring new data-driven technologies to revolutionise the power sector.

Now or Never

Utilities have no time to lose when it comes to integrating customer-centric, data-driven energy services into their business models.

Partnering with agile tech experts is one way to catalyse the process.

Get in touch to learn to bring digital transformation to your utility:

BOOK A CONSULTATION