

Look Out

Industry Trends
Utilities

From commodities to high-value service providers

Thought
Leadership

Atos

Megatrends in utilities: The rise of a decentralized energy world



“New energy sources, distributed value chains and empowered customers are disrupting the utility landscape. They may threaten existing processes; they will also bring extraordinary opportunities for growth.”

Paul Da Cruz
Global Head of Marketing & Consulting, Energy & Utilities, Atos

For decades, utilities' core business has centered on complex, yet straightforward, operations: provide water, electricity or gas, in a simple, mono directional way. This is changing at an accelerated pace.

It's not just that deregulation and privatizations have disrupted the landscape, leading to unbundled and fast-moving ecosystems of producers, distributors and retailers; new technologies and sustainable energy requirements have multiplied energy sources, production capabilities and storage possibilities. The need for flexibility has also grown, notably with the rise of renewables, smart grid and electric cars.

Facing digital shockwaves

Meanwhile, digital technologies have transformed customer behaviors. What was once a direct value chain is transforming into complex ecosystems. Within these, consumers are becoming prosumers, and supply and demand can be optimized in real time and at a very granular level.

These changed behaviors are opening the way to a whole new universe of smart services, targeting everything from connected appliances to smart factories, smart cities and smart mobility.

Moreover, new players from the manufacturing, telco and technology sectors are entering the field to develop value-added services in selected domains such as smart home, intelligent buildings and electric vehicles.

A new universe of smart services

Many utilities find themselves at a crossroads. Traditional players face a strategic choice: stay in commodities or develop value-added services for the digital era.

To succeed with digital, utilities will need to undergo a substantial transformation in all domains: customer relations, operations, business models and compliance. But they will benefit from extraordinary growth prospects.

Today's mutations bring major opportunities for utilities to place at the core of the data-driven, smart service ecosystems of tomorrow.



of utilities will drive at least 30% of their business via digital platforms based on cloud native technologies by 2025



of digitally determined utilities' revenues will come from new products and services by 2022



will be spent on smart grid data analytics by 2022



of utilities will integrate IT and OT security unifying data governance to mitigate physical and cyber breaches by 2026



should be spent on smart homes by 2023



of grid operators will have deployed AI to enable resilient and flexible management of the grid by 2023



will be invested by utilities in residential energy storage by 2025



of EU energy should come from renewables by 2030

Four transformation challenges and opportunities for the future of utilities

1



Provide a 360° prosumer experience

Utility customers are no longer the passive commodity users they used to be. With the rise of smart homes and smart buildings, they have become active **players** who want to optimize their consumption. They have **new usage patterns** thanks to smart appliances and electric cars.

Growing locally installed wind and solar generation means they can become energy producers, moving them **from 'consumers' to 'prosumers.'** They are even increasingly surrounded by intelligent connected devices that handle their **relationship with providers**, to some extent.

These evolutions nurture a growing competition with new players, notably start-ups specialized in consumption optimization and appliance makers.

To succeed when facing **better-informed, savvy and empowered customers**, incumbent providers must provide a better experience along the entire consumer journey. They must also **leverage the power of data** to offer the best plan prices alongside the best mix of value-added services.

> **The opportunity: not just avoiding being disintermediated but fostering loyalty and boosting cross-selling.**

2



Streamline operations further

As a scale-based business, utilities have always strived to **optimize operations**. Across the decades, they have constantly **enhanced their processes and organization** to improve quality and reduce cost and meter-to-cash times.

The digital revolution now brings in a supplementary demand for excellence. **Smart grid, renewables and virtual power plants** require complex multi-directional energy management across the value chain. Meanwhile, **new regulations and requirements for energy saving** are putting additional pressure on all activities.

All this makes the whole optimization and maintenance process more complex. To avoid being **outpaced by tech-savvy competitors**, incumbents must leverage the best of **real-time orchestration and new-generation analytics** technologies to detect and solve issues before they even happen.

> **What's at stake: get one step ahead in competitiveness, from power generation and trading to transmission, distribution, retail and services.**

3



Develop multi-sided business ecosystems

E-vehicles, smart homes, smart cities and more: the pace of change is accelerating for utilities.

What has long been a commodity business is now on the brink of innovation. From start-ups to mega providers, such as Google with Nest or Tesla with batteries and solar, **multiple new players** are entering the landscape.

To survive and thrive, incumbents should **reassess their position in the value chain**. They can launch new services around renewables, smart energy management or electric vehicle charging. They may monetize customer data by providing it to partners. They can even move into advanced domains such as smart homes, smart buildings or smart city management.

In the digital age, the frontier between verticals is blurring. For traditional utilities to succeed, it is crucial they also build the capacity to **attract and federate the largest range of partners**.

> **The prize of the game: move, scale and take the lead in tomorrow's data-driven ecosystems.**

4



Guarantee complete trust & compliance

In the digital age, utilities are at the **heart of the vital networks** that power nations and business.

But what would happen if electric networks let manufacturing, defense and finance systems down? Imagine the impact of rogue companies or states compromising water systems in megacities? Of hackers attacking a nuclear plant?

Fraud and customer privacy risks only add to the challenge. With non-technical losses, worldwide fraud in utilities represents more than \$ 100 billion each year. And with **fines up to 4% of revenue** if a breach occurs, new privacy regulations such as GDPR create additional constraints.

This makes **security one of the biggest utility challenges** at a time when billions of connected Internet of Things (IoT) systems could now be the open door for attack. And when hostile hacktivists and cyber-squads from rogue states clearly make utilities one of their key targets.

> **All this makes security much more than a hot topic for utilities, and a vital opportunity as well: a way to turn trust into a source of business growth.**

Building next-generation data platforms to succeed in next-generation utilities ecosystems



“With their experience in IoT, utilities have immense assets for leveraging the potential of digital. To succeed, they need to put next-generation, real-time analytic data platform at the heart of their business and technology strategies.”

Caroline Barret
Head of Energy & Utilities Marketing and Portfolio, Atos

From intelligent production plants to massive distribution networks, utilities have **pioneered the most innovative technologies** for decades, leading the way in high-performance network management and the IoT.

Bringing legacy tech into the digital era

But today's **smart utilities challenges** are having an enormous impact on these technology foundations.

New players are arriving, bringing in disruptive innovations and business models to try to disintermediate them. To catch up, utilities must not just **exploit their constant flows of real-time data** better to optimize their own operations; they must also leverage them to develop new customer-driven, value-added services.

Preparing for a paradigm shift

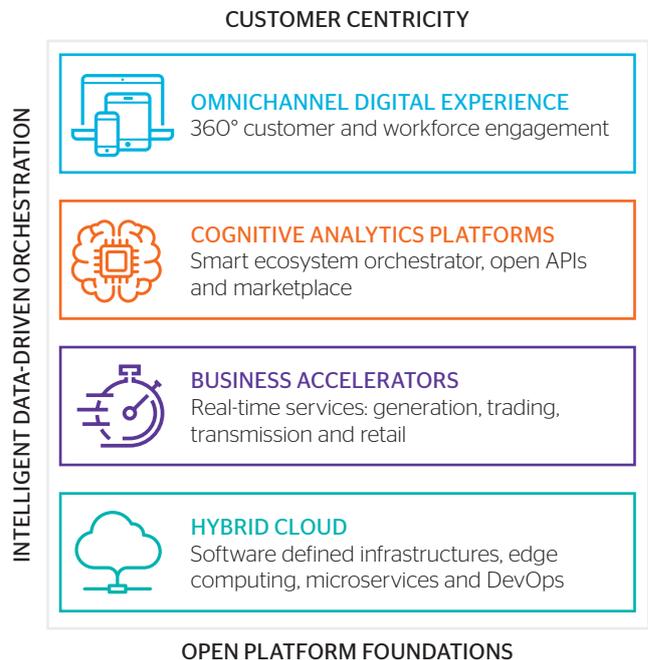
Preparing for the future requires a quantum leap. To embrace the challenges of a digital world and take a winning position within it, three core principles will be essential for utilities:

- Become wholly **prosumer-centric**, delivering 360° personalized services to their customers and, in the future, smart things.
- Provide **intelligent data-driven orchestration**, enabling adaptation to market changes and evolving customer demands in a real-time, prescriptive way.
- Adopt **open platform foundations** and real-time process automation to provide the best utility services at the lowest cost all while being ready to adapt or launch offerings.

The road ahead

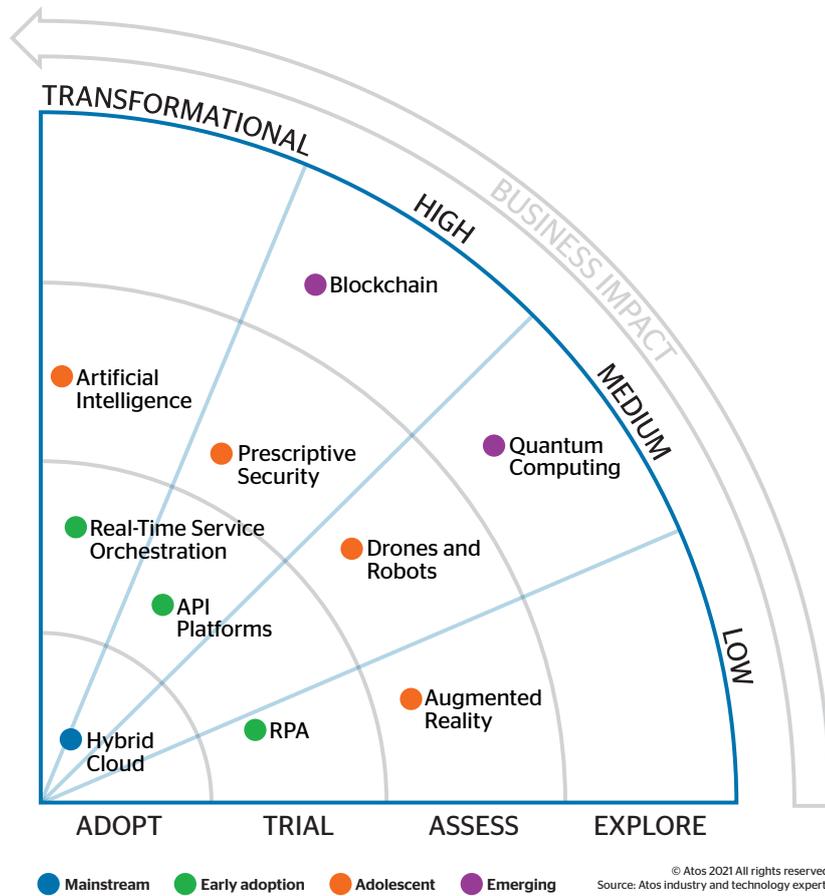
To thrive, utilities will need to create the right partnerships and convene the largest ecosystem to enrich their offering, monetize their data and turn it into profit. Utilities should begin building the new supporting architecture today. Modernizing legacy and fully embracing the latest Cloud, automation, Big Data and mobile technologies is only the start of the journey.

Next-generation architecture for future-ready utilities



More disruptive technologies will emerge. While some may only appear as dots on the horizon today, they will turn out to be transformational in the years to come.

10 disruptive technologies that will shape the future of utilities



Utilities Look Out Radar: 10 key technologies set to impact utilities over the next 5 years.



Want to know more? Examine the Look Out Global Technology Radar to get deeper insights into these 10 strategic technologies and many more: atos.net/lookout

Hybrid Cloud and Edge Computing are reviving Cloud initiatives by enabling seamless integration of private and public Cloud platforms. With this model, organizations can exploit the benefits of public Cloud: pay-per-use, 'infinite' bursting resources, agility and innovation. Utility players must adapt their IT processes and prepare for related security implications.

Real-Time Service Orchestration enables firms to constantly adapt back or front office services to market demand or supply conditions, across the whole utility value chain. While ecosystems of producers, distributors and retailers are complexifying, utilities should leverage real-time technologies (such as SAP HANA or others) to increase data-driven agility.

API Platforms allow data and services to be distributed across third parties. Utility players should put API platforms at the heart of their digital strategy to attract ecosystems partners and create multi-sided marketplaces.

Robotic Process Automation will bring virtual workforces for managing repetitive tasks, reducing the cost of administrative and regulatory processes by at least 50% while improving quality and speed. Utilities need to standardize processes to facilitate automation and engage in ambitious change management programs.

Artificial Intelligence promises to second human cognitive capabilities with virtual assistants, chatbots, knowledge engineering, smart machines and autonomous vehicles. It will impact customer experience, business models and operations along the entire value chain. Utility players must prepare for the business, human and legal impacts.

Prescriptive Security uses real-time dark web monitoring, AI and automation to detect potential threats and stop them before they strike. Applications range from cyber-protection to fraud management and compliance. Utility players should explore integrating it into their IT/OT Security Operation Centers.

Drones and Robots are promising to significantly reduce costs in transmission and distribution of assets and line inspection. By 2020, they may achieve savings of 5% and 30% respectively, making starting to assess the technology today worthwhile for utilities.

Augmented and Virtual Reality are blurring real and virtual worlds, allowing customers, partners and employees to engage with digital services within the context of their current environment. Utility players should explore use cases in field work optimization, maintenance and safety management.

Blockchain is a potential game-changer for conducting business with parties without prior trust relationships. In utilities, hyperledger technologies can help implement decentralized energy businesses, leveraging automated contracting and the microservice economy. Utility ecosystems should explore applications today.

Quantum Computing promises to break traditional combinatorial analysis limitations, bringing advances in High-Performance Computing for simulation and Big Data analysis. It will also elevate risk by potentially breaking current cryptographic standards. Utility players must start preparing for both Quantum computing and quantum-safe cryptography.

A glimpse into the future of utilities: Expert views on best practice for digital transformation



Franck Freycenon
Member of Atos Scientific Community
Global Head of Renewable Solutions
Energy & Utilities, Atos



Celestino Guñemes
Member of Atos Scientific and Expert Communities
Head of Technology & Innovation
Worldgrid Spain, Atos

What could Utilities look like in five years?

The industry is entering a new era. Traditional utilities are no longer as secure as they once were having lost visibility, predictability and face profitability challenge.

The trends are blunt: in five years, utility ecosystems will have evolved significantly with the **continuous rise of start-ups and initiatives from the Big Techs**. These will develop **smart home, smart transport and smart city services** and could even become significant players or influencers in new energy value chains. Adjacent industries may also enter the market, with M&A ultimately multiplying.

New-generation analytics technologies are accelerating this change, **with Artificial Intelligence (AI), automation and robotics, and blockchain**, poised to disrupt it further. Incumbent utilities need to prepare now if they don't want to be left behind.

Which driving forces will help them succeed?

Utilities know they must make a very strategic transformation from yesterday's simple, mono-directional, centralized and predictable model to a new decentralized, network-based model.

To succeed, a first step is to **rationalize their cost base, streamline processes, develop Lean** and cut legacy application costs to free up investments in new systems. All utilities are doing this today. But we think that the **real revolution will come from the revenue side of the equation**: leveraging data not just to optimize operations but also to transform business models and establish multi-sided synergies within the networked ecosystem.

This transformation will change the role of information technologies. In the past, IT was merely considered as a cost. Today, it is at the **heart of the business**.

In many companies, however, IT transformation activities are often disjointed: IT teams are in charge of legacy transformation while business lines take over digital innovation projects. Our experience is that **the best results are obtained when both work jointly, under a common C-level governance**. Innovation can then be applied consistently everywhere.

In five years, we think the leaders will be those who have succeeded in building new business models and cutting costs at the same time.

What should utilities do today?

We believe that data management will be the cornerstone of transformation. For years, trillions of bytes of data have sat in utilities' operations. Smart meters and Industrial IoT are beginning to become mainstream, allowing substantial progress in process optimization. However, only a small part of this data is currently truly leveraged to provide business insights and enable monetization.

“
Utility companies need to reinvent themselves on a massive basis. For that, they will have to challenge their taboos and decades of traditional best practices.”

The deployment of next-generation Big Data platforms marks the beginning of the shift. More and more, differentiation in utilities will be based on the way they leverage their data, make sense of it and develop algorithms to transform it into business insights.

We are helping many of our utility clients to leverage digital, data-driven strategies to:

- **Support distributed energy generation and trading** with next generation command & control, virtual power plants... In nuclear power generation, for example, a major provider has obtained with us an exceptional increase in operations performance by leveraging AI to automatize procedures.
- **Develop intelligent transmission and distribution networks** with smart grid, SCADA and predictive maintenance. In Europe, one of the largest European operators now ensures real-time, multi-energy monitoring for smart cities, leveraging our Codex analytics platform to provide 24x7 dashboards to millions of consumers.
- **Provide 360° experience in retail and services** with omnichannel CRM and billing, fraud and risk management, smart services. For example, we have helped many utilities leverage next-generation real-time analytics technologies, such as those based on SAP-HANA, to streamline processes - all that in a very secure way across IT and OT.
- **Invent the energies of the future** with advanced R&D, HPC, PLM, 3D printing...

We are also convinced that leveraging partnerships with start-ups providing promising technologies in domains such as blockchain and others is essential. This is what we do with our partners and clients, within several **strategic co-innovation initiatives**.

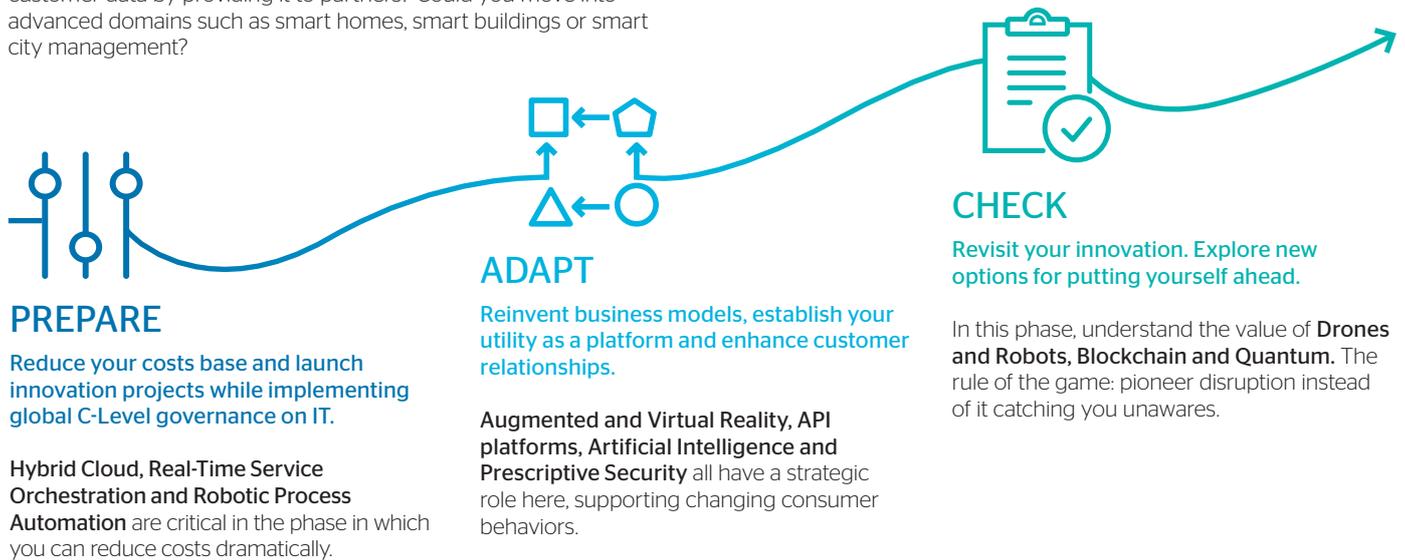
The years to come will be very exciting for utilities if they take the digital fast-track.

Creating your own utilities transformation journey

With all these changes converging at once, you must steer your utility forward. Faced with a rapidly changing model, the questions you will be asking is not 'Why change?' but 'Which direction?' and 'How?'.

The first step is **figuring out your position in the value chain**. Do you want to launch new services around renewables, smart energy management or electric vehicle charging? Should you monetize customer data by providing it to partners? Could you move into advanced domains such as smart homes, smart buildings or smart city management?

Having made that strategic choice, you must next **embark on a journey of progressive and continuous transformation**, combining people, organizational and technology streams. Your journey requires a roadmap. We have drawn up a three-step approach, with steps that can be undertaken simultaneously.



Throughout these phases, an open approach to innovation, such as the **Digital Business Continuum** approach developed by Atos, will be paramount to success. In an ecosystem world where start-ups appear and spread at internet speed, openness is the best way to capture collective intelligence. As utilities strive to transform, **open innovation labs** will provide an ideal environment for bringing new ideas and new concepts to life - and creating the utility of tomorrow.

Where should you begin?

As the Trusted Partner for your Digital Journey, Atos can help. Meet our experts and stay one step ahead by getting hands-on experience of new disruptive technologies.



ENGAGE in a co-innovation workshop at one of our **Business Technology & Innovation Centers**.

Get off to a quick start with a personalized workshop. Ask for a meeting:
> atos.net/btic



EXPLORE how the latest technologies can boost your own practice.

Leverage our experts and labs to build POCs tailored to your own business:
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Atos Look Out Industry Trends offer an in-depth analysis of the emerging trends, opportunities and digital breakthroughs specific to your industry.

Explore all the Look Out industry views and the Tech Trends Radar at atos.net/lookout



About Atos

Atos is a global leader in digital transformation with 110,000 employees and annual revenue of € 12 billion. European number one in cybersecurity, cloud and high performance computing, the group provides tailored end-to-end solutions for all industries in 73 countries. A pioneer in decarbonization services and products, Atos is committed to a secure and decarbonized digital for its clients. Atos operates under the brands Atos and AtosSyntel. Atos is a SE (Societas Europaea), listed on the CAC40 Paris stock index.

The purpose of Atos is to help design the future of the information space. Its expertise and services support the development of knowledge, education and research in a multicultural approach and contribute to the development of scientific and technological excellence. Across the world, the group enables its customers and employees, and members of societies at large to live, work and develop sustainably, in a safe and secure information space.

Find out more about us

atos.net

atos.net/utilities

Let's start a discussion together



For more information: dialogue@atos.net

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