

A digital edge for the new energy world



It's transformation time

The utility sector is undergoing massive and permanent change from every perspective. More has happened to redefine the way utilities operate and the way they engage with their customers in the last five years than in the last fifty.

We are witnessing the accelerated emergence of renewables as a viable and essential alternative to fossil fuels. No longer a token of respect for sustainability, renewables are a growing and economically essential component in meeting society's current and long-term energy requirements.

Closely tied to renewables, we see the rise of the decentralized grid, in which local generation can be managed to offset central production. This has major implications not just for operations but also for the utilities' commercial models. IDC forecast, for example, that 20% of Fortune 500 companies will be selling surplus power by 2020.

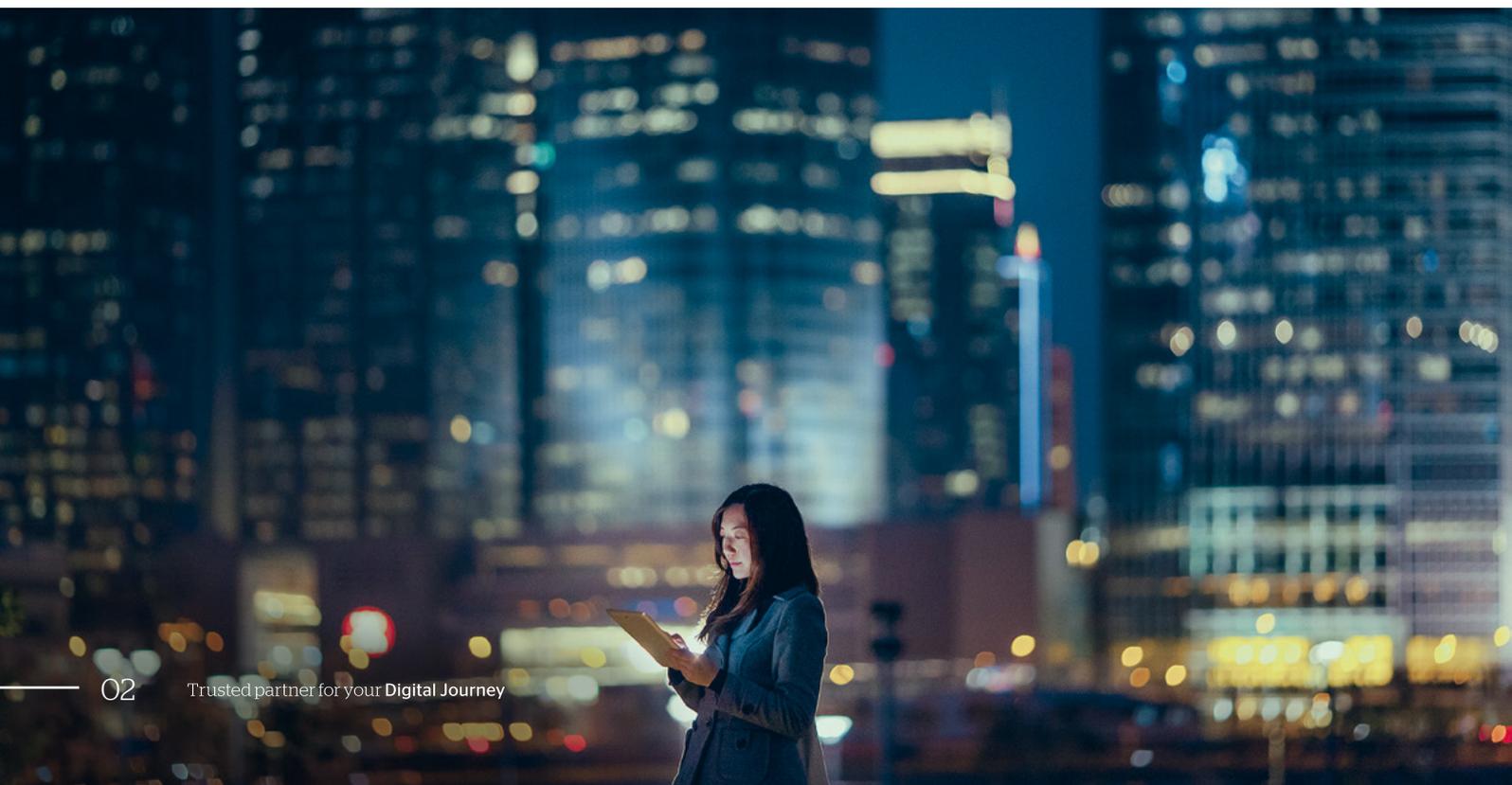
And with the rise of renewables and decentralization, we are witnessing a major shake-up in the relationships between utilities and their customers. From now on, no utility will be able to survive and prosper simply by selling commodity services. Every utility must ask how value-added and increasingly personalized products and services can help attract and retain a new generation of domestic and commercial customers.

Connected and data-driven

The changes occurring in the utility sector are massively connected and data-driven. The ability, for example, to manage decentralized distribution with local renewables alongside centrally generated power, is possible only because data flows: there is a digital mirror of what is happening in every home, factory, sub-station and power plant.

This massive connectivity goes much further. As e-vehicles and power storage, for example, go mainstream, utilities move beyond their traditional operational rhythm of predict, generate and bill.

Just as society comes to expect continuous access to knowledge and services, so it is for the utility. And it is timely access to these vast volumes of data that underpins transformation, allowing forward-thinking utility companies to anticipate and shape new services and operational models.



Four challenges and opportunities

Against this background of transformation, what are the key challenges and opportunities faced by utility companies? In strategic discussions with our clients, often with a strong focus on digital transformation, we have identified four areas in which new thinking and innovation are essential.



From customer to prosumer

Utility customers now have choices. This goes far beyond the ability to switch to the lowest-cost supplier or select a preferred payment method. Utilities must now establish active engagement with their customers, offering services which are both personalized and high-value.

Domestic and commercial customers live and work in environments with digital smarts. Local renewable capacity means they may not simply be consuming power - they become prosumers.

With e-vehicles and smart homes, utility customers are already expecting to be offered individually-tuned contracts, packages and rewards.



Operational advantage

The degree of operational agility demanded in today's utility market is remarkable. The companies that respond best to the new demands for decentralization and sustainability will be the winners.

This is not just about meeting the challenges of managing smart grids and virtual power plants. It is also about ensuring that all aspects of customer engagement are streamlined and agile, minimizing or reinventing meter-to-bill cycles.

This need to act smart spans every stage of the utility value chain, from generation and trading, through transmission, distribution and retail operations.



Extended ecosystems

In the past, utilities were generally state monopolies. That's gone forever. The market landscape is now volatile and continually shifting. New and often highly-specialized competitors can come from nowhere - just think Google or Tesla.

The more broadly a utility can build its ecosystem of partnerships, the less vulnerable it is to attack. So when, for example, most domestic consumption is made by white goods and heating, how can utility companies forge effective relationships with those who manufacture the devices? Advantage is not static, and agility is essential. An industry which traditionally has been slow to move, now needs to be ready to identify and develop new opportunities overnight.



Trust & Compliance

Although transformed by deregulation, the utilities sector is still subject to demanding and rigorous compliance. As companies seek new business partners and examine new digitally-driven opportunities, they need to be even more rigorous.

A simple data breach can not only cost millions in fines: even more damaging, it can undermine customer confidence and loyalty.

The vulnerabilities posed by more connected operations make utility companies clear targets for malicious cyber-attack. Energy and water are the most critical of all society's resources, and every utility company must be confident in the quality of their protection strategy and practice.

Value creation is data-driven

As you look at all four perspectives of your digital transformation—one common theme stands out. For a utility company to move beyond commodity supply, it needs to add value—and to become value-driven, it must become data-driven.

As providers of continual and essential services, utility companies have always relied on hard data. From electricity providers needing to measure and forecast demand and consumption to the water companies where treatment and purification require constant measurement.

In the data-driven utility, three data characteristics have changed:



Volume

The volume of data available to today's utilities far exceeds anything they have known in the past.

Utilities are also continually looking beyond the data they own: it's not just meter-readings any more – it's open data exchange with smart devices, buildings, cities and the rest.

Whether considering advances in leak-detection in water networks, in the immediacy and accuracy of usage information from smart meters, or in work scheduling for field service teams – data is flowing like never before.

Utility data is becoming more complex too. Structured and unstructured data of every type now comes into play, from drones surveying power plants and reservoirs to customer social media conversations.



Timeliness

Data is increasingly real-time. Because data-driven utilities know what's happening in the moment, they can and must operate with ever-increasing agility. The need, for example, to balance nuclear and renewables means managing the switch in minutes not months.

Timeliness is also key to safety, compliance and asset protection. Anomalies in usage, for example, can point immediately to potentially fraudulent use, while realtime signals of asset performance are key to effective intervention by maintenance and engineering crews.

Finally, thanks to real time data, forecasting becomes more relevant than ever and contributes to better predict renewable production, consumption and grid balance.



Automation

The range, volume and immediacy of data cannot be managed without automation. At a domestic level, for example, a smart washing machine needs to communicate with the grid to decide on the optimal turn-on time – the householder does not want a text reminder to press "start" at three in the morning.

Taking the wider view from across the utilities field of operations, cognitive computing and robotics now become indispensable in creating actionable insight, and wherever possible, triggering the action itself.

Strategic partnerships for digital transformation

As business technologists with a special focus on utilities, Atos has led hundreds of projects, each requiring specialist industry and IT knowledge.

These are wide-ranging in scope and cover the entire value chain. They span areas as diverse as training simulators for nuclear control and power trading systems, to augmented-reality support for field workers and games-based energy dashboards for consumers.

Digital Transformation Factory

At the heart of its strategy, Atos has established the Digital Transformation Factory. This initiative helps forward-thinking organizations navigate and manage the rapidly changing digital landscape.

By industrializing digital innovation, the Factory seeks to maximize the benefits of best practice. It has a strong focus on the specific needs of the sectors we serve, but at the same time, seeks to help share ideas and learnings between sectors to everyone's benefit.

The Digital Transformation Factory is based on four core activities:

Atos Canopy Orchestrated Hybrid Cloud

Creates the foundations for digital business, transforming applications and infrastructure.

Atos Business Accelerators

Enabling real-time organization, accelerating innovation and optimizing IT costs.

Atos Digital Workplace

Enhancing communications, increasing collaboration and raising productivity.

Atos Codex

Applying cognitive analytics and artificial intelligence to transform data into actionable insights and business outcomes.

For our utility industry clients, the Digital Transformation Factory provides a structured and effective approach to the core transformation challenges in operational excellence, trust and compliance, and customer engagement.

With its practical "use case" approach, the Digital Transformation Factory actively promotes the benefits of shared best practice.

Engagements are consultancy-lead and will often start with analysis and review of the current maturity of digital practices. Compliance is also a key topic, and the Atos utility team will pay particular attention to governance of the digital estate.

Atos Codex - delivering business insight for utilities

Big Data and Analytics are closely linked to data-driven utilities and the search for new value. Atos Codex provides a complete portfolio of services including data collection, Industrial IOT management, scalable big data framework and embedded analytics supported by the latest technologies such as AI and Cognitive Computing.

Atos Codex not only provides a robust big data platform. It also offers use-cases as accelerators for utility digital transformation. These cover the management of distributed renewables; AI-driven infrastructure cyber-security; self-healing grids and digital twinning; predictive maintenance; and fraud detection.

The Atos Codex team of data scientists will work with you to identify opportunities and will then develop the analytical algorithms you need to create actionable intelligence. All this is backed by access to high performance computing resources. The Atos Quantum Learning Machine, for example, the world's first commercialized machine capable of simulating up to 40 quantum bits (Qubits), enable engineers to develop and test the applications and quantum algorithms of the computer of tomorrow.

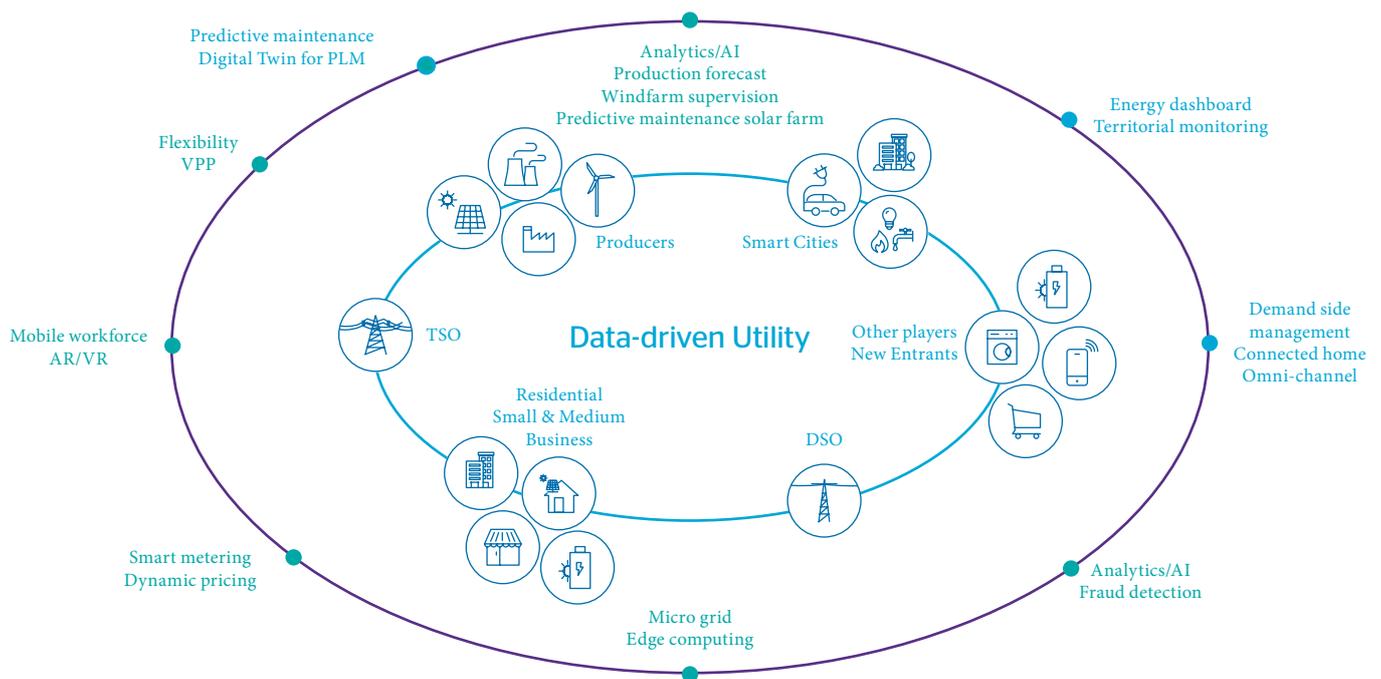
Atos end-to-end expertise and global understanding of the data value chain is a major differentiator to accelerate the delivery of business value.

Spanning the value chain

As your partner in digital transformation, Atos builds on experience that spans the utility value chain as it evolves from the static centralized model of the past to the dynamic and decentralized model that shapes the industry today.

In this newly extended and decentralized value chain, utilities and their customers develop increasingly personalized relationships as the role of the energy prosumer emerges.

At an enterprise level, we also see relationships becoming more involved, more proactive and more focused on reciprocal benefit. This is true across all enterprise relationships, in manufacturing and retail, in transport and in civil contracts. In short, utilities now become active contributors in a world in which everything is connected. The specialist Atos utility team is engaged in contracts and initiatives which span this newly extended value chain. Here are just a few examples of recent Atos digital transformation initiatives with forward-thinking, data-driven utilities...



Innovation and continuity

Atos has a clear focus on the digital transformation needed to create the data-driven utility. But that does not mean we ignore more traditional IT solution and service requirements.

We continue to support our utility clients around the world as business technologists, ensuring network and datacenter performance, and managing and maintaining generic business and industry-specific applications.

In these more traditional IT areas, however, we continually consider the impact of digital innovation and development. The adoption of cloud models, for example, has radically altered the approach taken by forward-thinking utility companies to essential infrastructure,

and Atos undertakes the design and transitioning initiatives needed to switch to these new models.

Established utilities continue to rely on systems with a lengthy heritage, especially in their operational technologies. Here too Atos, has an established track record as a specialist partner. We are, for example, particularly experienced in SCADA for power generation and in realtime monitoring of power networks.

Atos is frequently engaged by utility companies to refine and transform heritage solutions using contemporary digital technologies. By integrating data analytics and Augmented Reality, for example, we take asset management to a new level.

Why Atos? —

Atos is a global leader in digital transformation supporting our clients in their digital ambitions. In this fast-changing world, driven increasingly by data, we bring together people, business and technology to accelerate progress.

With many years' experience in serving the world's energy and utilities companies, our sector specialists are working to ensure that our skills remain focused and relevant to the specific operational and commercial demands of our utility clients. Our industry experts from Atos Worldgrid design and implement real-time solutions and smart energy projects serving our clients across the whole utility value chain.

We have an ecosystem of strong partnerships with leading technology and engineering companies, bridging the gap between OT and IT. These include Google Cloud, DellEMC, Microsoft, Oracle, SAP and VMware on the technology side and, most notably, Siemens, Suez, ABB, GE on the engineering side.

In research and development, the Atos Scientific Community has a dedicated team of utility specialists, with a special focus on analytics and grid management.

Looking forwards

Every electricity, gas and water company must now become data-driven. Only by taking advantage of new analytics, AI and realtime intelligence can utilities create the high-value services and streamlined operations they need to achieve sustained success.

Atos is eager to work with you as an expert partner in the digital transformation that mirrors these operational, commercial, political and social changes.

We are particularly keen to explore and facilitate new partnerships. We believe that these are key to changing roles and responsibilities in the utility sectors. We are already working, for example, on smart city initiatives with teams composed of experts from utilities, civic authorities and technology companies.

We are not academics. We enjoy doing things rather than just talking about them, and we emphasize the value of working through proofs-of-concept and prototype.

Innovation workshops and concept development sessions in one of our Business Technology Innovation Centers are a great place to start.

It's time to set new digital horizons for data-driven utilities.

Make us the Trusted partner for your **Digital Journey**



About Atos

Atos is a global leader in digital transformation with over 110,000 employees in 73 countries and annual revenue of over € 12 billion.

European number one in Cloud, Cybersecurity and High-Performance Computing, the Group provides end-to-end Orchestrated Hybrid Cloud, Big Data, Business Applications and Digital Workplace solutions. The group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and operates under the brands Atos, Atos Syntel, and Unify. 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 technology space. Its expertise and services support the development of knowledge, education as well as multicultural and pluralistic approaches to research that contribute to scientific and technological excellence. Across the world, the group enables its customers, employees and collaborators, and members of societies at large to live, work and develop sustainably and confidently in the information technology space.

Find out more about us

atos.net

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Let's start a discussion together

