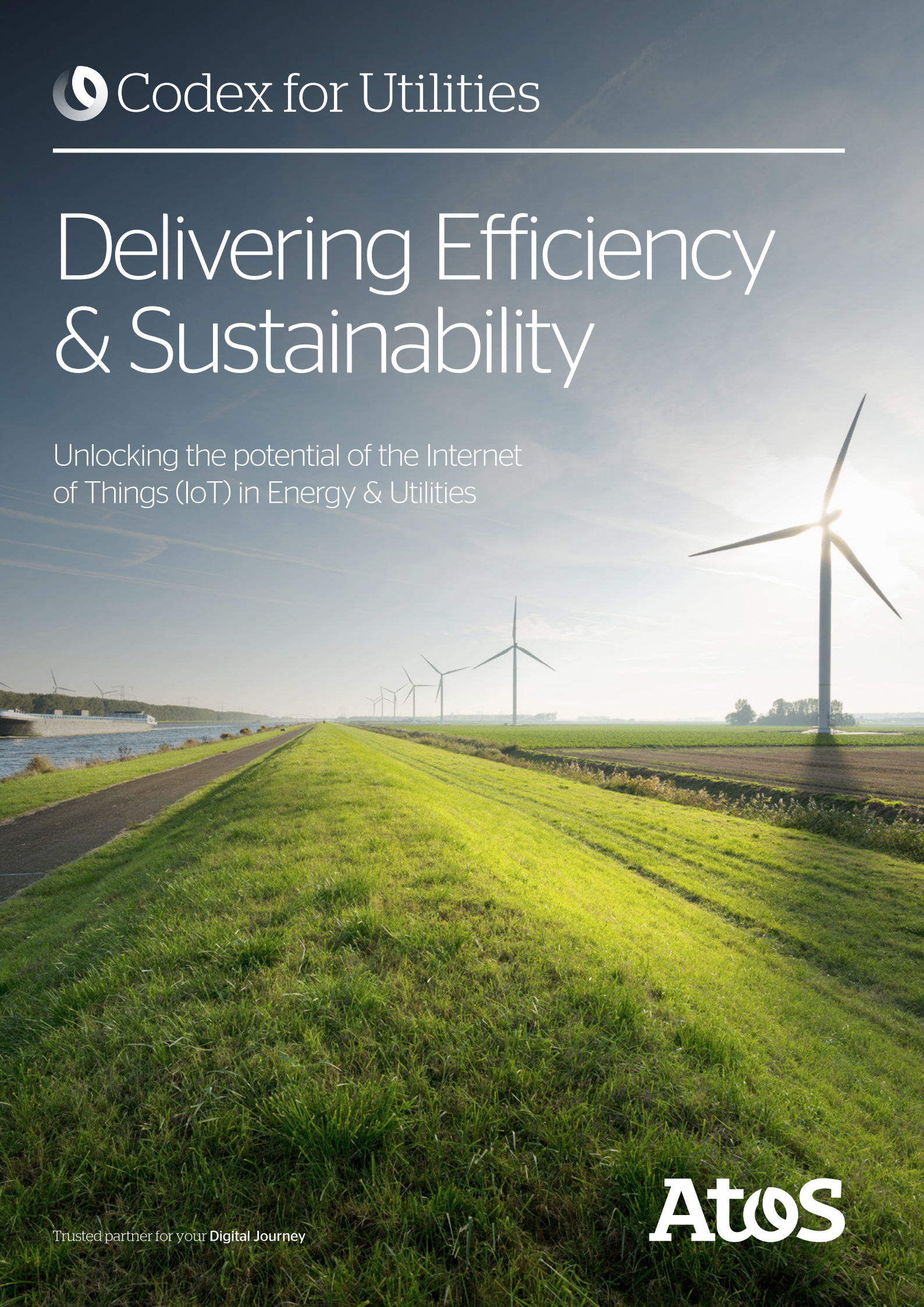
Codex for Utilities

Delivering Efficiency & Sustainability

Unlocking the potential of the Internet of Things (IoT) in Energy & Utilities



Trusted partner for your **Digital Journey**

Atos

Delivering Efficiency & Sustainability

Conflicting forces of greater consumer demand, stricter regulation and environmental responsibilities are shaping the Energy and Utilities (E&U) sectors today.

These sectors are characterized by a large number of sites and plants, complex and expensive equipment, high cost of failure, national regulation, pervasive development of renewables and increasing public expectations around environmental responsibilities.

The Internet of Things (IoT) is bringing transformational opportunities like never before. By connecting physical assets to the digital world, E&U organizations are reinventing business models, optimizing their operations, transforming customer engagement and creating safer and greener services for consumers.

Through the Codex portfolio of business-driven analytics, IoT and AI solutions, Atos provides E&U organizations the skills, capabilities and technologies necessary to build new data-driven services and drive innovation, while meeting stringent security and regulatory requirements. Atos offers an end-to-end solution, coupled with strong industry vertical knowledge, enabling organizations to continuously generate value from the IoT in a secure, scalable and managed way.

Improving asset availability and operational efficiency

Faced with ageing infrastructure and heavy capital investments to build and maintain equipment, organizations must focus on safety and risk management. There can be no compromises. But high and rising costs, coupled with changing market conditions are putting additional pressure on the E&U operators.

Atos improves asset reliability through prescriptive maintenance and condition-based monitoring. Atos also enables reduction in operating costs and downtime through process and cost optimization.

Case Study

Power Generation

Prescriptive maintenance & condition-based monitoring for critical equipment

Large infrastructures, often difficult to access, make maintenance and repair through traditional sensors and human intervention expensive, unsafe or even impossible.

A secure IoT landscape driving a predictive analytics solution, ensures anticipation of equipment faults in real-time and enables prescriptive maintenance. Yet, given the sensitivity of power generation infrastructures, in particular, in the nuclear industry, data in many cases must be held on-premises for security and safety.

Atos creates a secure, on-premise IoT environment - Codex Private IoT Platform, powered by MindSphere. Supported by an intelligent edge solution, data is collected, processed and stored to power transformative use cases.

Surveillance and predictive maintenance eco-systems enable real-time fault detection and trend predictions, providing early warning of future faults and greater ability to plan routine maintenance, optimizing costs and improving safety.

"We provide real-time fault detection and predictions that reduce costs and increase safety for a nuclear power plant."

Improving asset availability and operational efficiency

Case Study
Renewable Energies

Improving asset reliability and wind farm performance

There is no room for faults and failures that impact energy yields. In addition, costly failures can have a tremendous impact on safety and performance.

Codex IoT solutions collect data from IT or OT sensors using smart edge capabilities. The data is then used to develop advanced algorithms based on machine learning. Assets can now be monitored in real-time; maintenance can be anticipated and complex scenarios modelized.

"We deliver a 20% improvement in mean time to response, ensuring minimal disruption to the farm and 10% reduced operating costs."

Improving asset availability and operational efficiency

Case Study

Waste Water Management

Process and cost optimization for major plant infrastructure

The nature of the waste water treatment business means that costs of chemicals and power are extremely high. The step-by-step process of the water cleaning process leaves plenty of opportunities for optimization and savings -starting with chemical use and energy consumption- as long as you can collect, aggregate and process huge volumes of data in real-time.

By using advanced analytics and a big data platform, the biggest pain points and optimization areas can be identified. Thanks to machine learning, AI algorithms are developed, that run on site using Codex Smart Edge. This leads to real-time process optimization and reduced costs for better profit management.

"We optimize processes in real-time and cut operational costs by 20% for a waste water treatment plant."

Improving asset availability and operational efficiency

Case Study
Oil & Gas Refineries

Reducing operating costs and downtime

Production risks, failures, fouling or anything else that reduces throughput leads to substantial losses. Assets may degenerate and fail for various reasons, often caused by events or build-up effects happening upstream. Data provides insights to deal with these problems quickly and pro-actively.

Atos delivers on-premise connectivity, data security and privacy solutions within highly sensitive and secure environments. Data-driven analytics using sensor data combined with other data sensors are used to diagnose causes of failure. Data is also used to develop models using continual machine learning for early detection and prediction of future failures. This means an increased asset uptime, greater efficiency, faster reaction times and lower operating costs.

"We increase the use of key assets and contribute to a reduction in energy consumption for a global oil and gas company."

Inventing new ways to address sustainability challenges

Societal pressure and regulatory changes around the environment and climate change are driving the growth of sustainable transport and sustainable cities.

Atos enables organizations to achieve sustainable mobility, develop greener cities and improve energy consumption efficiency.

Case Study

Connecting Buildings

Improving efficiency of energy consumption

When it comes to managing tens of thousands of industrial units or buildings, operational efficiency along with excellent customer experience is key. IoT technology and the use of cheaper sensors, offers an innovative and cost-effective approach to monitoring, but in old units, this comes with challenges. A large number of units may be unconnected, or sites may be connected by legacy methods such as hard wiring.

The Atos solution deploys smart software nodes inside units using low consumption, cost effective LoRa (radio) sensors as an alternative to hard-wiring. Energy management efficiency is improved using rule-based smart alarms.

The wireless approach allows for dramatically reduced Capex (e.g. costs for beacons and other sensors) and Opex costs. All the data collected is analysed and AI algorithms are applied to identify further optimizations to operations.

"We provide a cost-effective solution able to monitor more than 50,000 sites and optimize operations for facilities managers."

Inventing new ways to address sustainability challenges

Case Study
Public Transport

Sustainable mobility and greener cities

New ways of mobility are greener and more sustainable, but they come with limitations, like the huge impact of electric vehicles on the energy grid. Smarter solutions are needed to enable vehicles to be charged on the go.

Atos collects real-time data by deploying sensors and algorithms at the 'edge', i.e. on the batteries of vehicles. The data collected is used to predict optimal time and place to charge vehicles, in a manner that has the lowest impact on the grid.

Environmental and regulatory commitments are met more cost effectively, operational efficiency increases, battery life is optimized and, for energy distributors, the impact on the grid is reduced.

"We help a sustainable mobility provider to meet regulatory commitments, reduce costs and optimize operations."

Our Solutions

Codex for Utilities

Transforms data into insights and business value. We deliver effective and differentiating analytics through a comprehensive methodology, a growing portfolio of business use-cases, advanced design labs, and a global network of data scientists.

Codex Smart Edge

A software suite for managing the intelligent edge, enabling business to extract and process valuable insight from data in real-time, on the edge, close to the data source to transform it into knowledge to support instantaneous decision-making while reducing costs.

BullSequana Edge Server

Market-leading hardware that delivers powerful AI inference and real-time analytics at the edge while keeping data safe and secure. Designed to be placed at the edge close to IoT devices, it reduces network latency and optimizes network bandwidth.

Codex Private IoT Platform powered by MindSphere

With the Private IoT Platform from Atos and Siemens, based on Microsoft Azure Stack, develop and deploy IoT-driven business applications in a secure, managed, on-premise infrastructure that meets data compliance, industry or regional regulation, and performance requirements.

Codex Datalake Engine

A fully-integrated solution that enables storing, managing, governing and analyzing complex data with ultimate security and control. It includes a comprehensive data management software, and leverages the BullSequana S server from Atos, the most scalable, agile and powerful server available on the market.

Cybersecurity services for IoT

Our security suite solution, Horus, ensures the security of IoT on every level. It includes security analytics, device identity lifecycle management, secure communication and embedded security components.

Why Atos?

- Strong track record and **domain expertise** in the E&U sectors with **40+ years'** experience through the Worldgrid business practice
- Unique combination of IT and OT expertise **bridging the gap** between real-time industrial and business systems
- Infrastructure-driven big data approach with **early leadership in edge solutions**
- **Ability to integrate** our solutions within specific customer environments
- **Hardware agnostic** software that can easily transition into new future systems
- Expertise to create **future-proofed solutions**
- Team of **expert data scientists** familiar with your business challenges

About Atos

Atos is a global leader in digital transformation with over 110,000 employees in 73 countries and annual revenue of over €11 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.