

# Gaining the digital edge



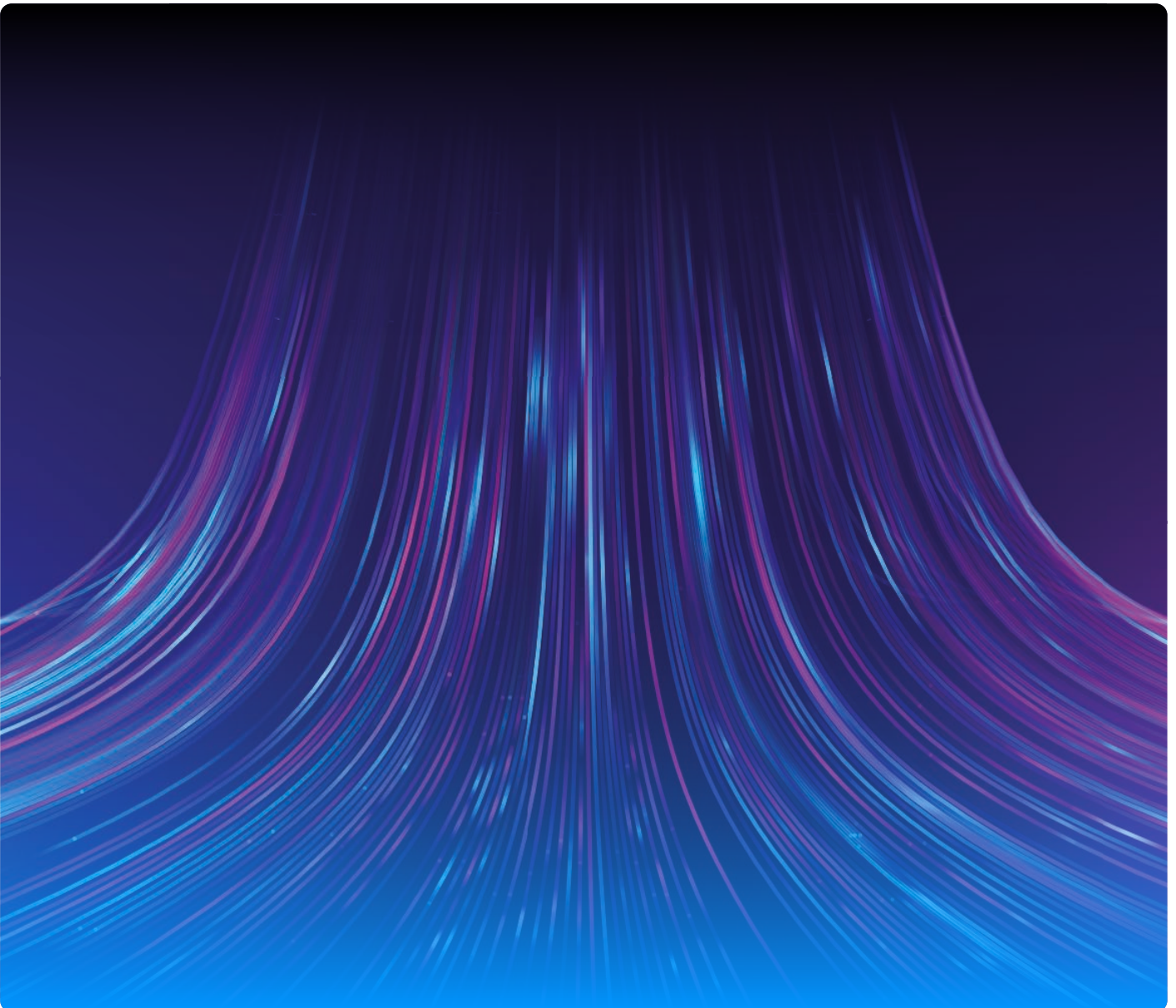
**Atos**



## What is edge computing?

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Edge computing is an important element of the post-cloud era, extending rather than replacing the cloud. It allows data to be processed rapidly at the edge, close to where devices are generating it. The decentralized and distributed nature of edge computing avoids unnecessary network transmission to the cloud and enables the near real-time actuation of connected things. Simply put, edge computing makes large-scale AI at the edge not only possible but also cost-effective. In doing so, it opens the door to unprecedented innovation.





## Edge computing: facing the data explosion

Cloud computing is now the predominant mechanism for IT service delivery. Enterprises appreciate the benefits it brings – the agility, scalability, cost efficiency and more. The current approach, however, needs to evolve in the long run. The rapid advance in technologies such as the Internet of Things (IoT), big data analytics, machine learning and artificial intelligence (AI) requires an alternative.

Why? Because ingesting massive data sets from geographically distributed edge devices and processing it in the cloud generates critical issues. Today's networks are not yet ready for the incredible growth expected in data to be transferred. Potential risks include low latency, bandwidth congestion, poor scalability, not to mention privacy, sovereignty, and security issues. With crucial production environments needing real-time (or near real-time) reactions in closed-loop environments, there is a pressing need to transfer real-time data processing and analysis nearer to the source of data. Compute capability needs to be provided inside an environment where connectivity and response times can be tightly controlled. Edge computing provides a perfect response to these high-stakes challenges.

### A huge data explosion

The IoT is fast becoming an essential source of data; its volumes limitless. Unlimited AI, social networks, applications, sensors and captors, among other things, are only adding to the soaring data and content. By 2030, the total volume produced could reach 1 yottabyte – that's a trillion terabytes or a million trillion megabytes.

### Data shifts to the edge

Around 75% of data is expected to be produced at the edge by 2025, with only 25% still produced within the data center.

### A growing complexity of the data

More and more complex and unstructured data is produced at the edge. Data is produced from many various sources in different formats including text, voices, images, video streams, sounds and sensors. The exponential growth of intelligent sensors and devices is generating an unprecedented amount of data. This is reshaping IT architectures, as increasingly powerful processing and machine learning inference capabilities are required at the edge of the

networks to enable next generation, transformative AI and IoT applications. However, edge computing keeps a bridge to datacenters and cloud. It offers processed data to be sent for further analytics in cloud and on-premise applications. As well, an cloud-to-edge infrastructure, allows to run cloud native application at the edge to deliver analytics in real time in case of critical needs. Atos Edge computing offering is designed to meet these challenges from Edge Datacenter/Cloud to far Edge, delivering powerful AI inference, streaming and training capabilities for computer vision & predictive analytics purposes, while ensuring that the data at the edge remains safe and secure.





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## 7 Edge computing core strengths



### Real-time

Addresses IoT latency issues, enabling a near real-time response by bringing computation close to data sources.



### High performance

Capacity to analyze massive (1GIGA bits data per second) and complex video data in real time. Local compute = latency reduction = higher performance for Real Time Edge Apps



### Security and privacy

Data in motion and data at rest as well as the physical server are protected by an advanced chain of security measures. Keep data local = keep data safe  
No need to encrypt data move



### Cost reduction

Massive and complex data induct high satellite and cloud provider costs. BullSequana Edge can be completely used independently.



### Local autonomy

It can communicate through 4G, 5G, radio, private LTE or Wi-Fi networks. Can be mounted in a 2U form factor rack. Reduced dependence on cloud and data center availability and connectivity.



### Energy efficiency

No data transport = lower carbon footprint



### Sovereignty

No data transport = easier to comply with local regulations

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## Edge computing & 5G

5G will be faced with extreme challenges, such as the backhauling massive amounts of data from endpoints such as mobiles, cameras and IoT sensors to the cloud. Every new application requires resource-intensive AI analysis in real-time at the edge.

The distributed architecture enabled by edge computing will enable enterprises to take advantage of these new 5G connected data sources in an effective and cost-efficient manner. 5G will further open-up the use cases for edge computing in the enterprise, allowing enterprises to analyze large amounts of data on-site (or on devices) in very near real-time. Large industrial manufacturers, for example, can leverage edge to significantly improve their quality control processes and improve employee safety.

[Learn More](#)





## Atos Edge Computing offering

Powerful, flexible, and ultra-scalable range for computer vision, NLP & predictive analytics from edge datacenter & cloud to far edge infrastructure. Atos offering is highly modular, fits any size of business, is optimized to run in any environment and responds to all types, volume & complexity of data.

### Edge computing server range



BullSequana Edge nano

Plug & play analytics in a compact & ruggedized server  
This is a plug & play server for computer vision & predictive analytic purposes. It can be **deployed anywhere** in a few minutes thanks to its direct camera **plug option & ruggedized design** and can support up to 2 cameras. It delivers real time inference thanks to its **Nvidia Jetson Xavier NX GPU**.

Ideal for computer vision applications with its Nvidia Jetson Xavier NX GPU.

- **Extremely silent** – ideal for AI inference in public areas
- Rugged for extreme conditions – automatically manages its temperature with its passive cooling system
- Fast deployment **without datacenter infrastructure**
- Remote international server & solution deployment including managed services



BullSequana Edge

#### AI inference and training outside the datacenter

BullSequana Edge has been designed to provide leading AI acceleration capabilities. For complex and massive video streaming analytics. The server can host up to two powerful Nvidia Tesla T4 GPUs. This enables the inference of complex AI models right at the edge with lowest possible latency. Together with its powerful 16 core Intel® Xeon® processor, BullSequana Edge provides an outstanding compute power-pack for the implementation of up to 512 GB RAM and 28 TB storage in a compact server. It offers very flexible deployment choices such as desktop, wall or rack mount options and offers high performance outdoor or indoor.



BullSequana SA20G

#### AI inference and training in the datacenter at the edge

BullSequana SA20G rack servers powered by 2nd and 3rd Gen™ AMD EPYC™ processors bring a cost-effective balance of performance and storage capacity. By offering up to 100TB in a 2U form factor, up to three Nvidia GPUs, best-in class SAS/SATA and ultra-fast NVMe drives, they provide optimal performance for computer vision and predictive analytics solutions. BullSequana SA20G provide maximized storage density and unbeatable cost per TB to meet growing capacity challenges.

**High performance computing for AI inference, training, simulation in the datacenter**

BullSequana X

## Atos Computer Vision Platform

### What is computer vision?

Computer vision is a field of computer science that enables computer to process images and videos, to interpret what it sees, and then perform appropriate analysis or act accordingly. If AI allows computers to think, computing vision enable them to see and understand. It combines cameras, cloud to edge high performance server infrastructure based on GPU to provide acceleration, software solutions, and artificial intelligence (AI) to enable systems to "see" and identify objects.

### Atos Computer Vision Platform

It's a unique end-to-end computer vision platform providing pre-trained & customizable AI models powered by BullSequana server range and enriched by Atos computer vision experts through worldwide experts labs.

It enables to identify events and behaviours, to reduce error rates, to guarantee people and asset safety, to deliver highest quality, to offer frictionless and personalized customer experiences. Business and organisations keep up the pace of events and demand, by analyzing videos in real time at the edge to drive the best decisions.

### The software stacks



analytics for live response and forensic investigations. It has been successfully deployed in mission critical solutions globally, across multiple verticals. VISuite is at the forefront of the Artificial Intelligence revolution backed by strong global patents. VISuite has a wide set of pre-trained models for use cases such as: crowd management, intrusion detection, perimeter protection, number plate recognition, traffic management, non-facial recognition etc...

A core element of the software stack is Ipsotek, newly acquired by Atos. Ipsotek is a pioneer in the field of artificial intelligence video analytics solutions for mission critical applications. Ipsotek's easily configurable solutions make video searchable, actionable and quantifiable, providing crucial operational insights resulting in reduced operator response times and the ability to define behaviors as they unfold in real-time in dynamic and complex environments.

VISuite empowers automation in CCTV applications through premium high-end video

### Shelf Inspector



Shelf Inspector is a mobile app & a powerful tool for merchandisers, sales reps and managers. It analyses positioning, out-of-stock, pricing and more from a photo. Works with all kinds of packaging and placement.

We enable brands to take control of how both their and competitive products are displayed and promoted in stores

[Discover all our AI model capabilities](#)

Learn more on use cases:

- Manufacturing
- Smart cities
- Retail
- Airports
- Warehouses
- Petrol filling stations
- Railways

[Learn More](#)



### Outcome-driven AI Platform

The real data potential is still largely untapped. Data dashboards at enterprises are rarely put into motion to improve business day to day task across organizations. Only 24% of business decision makers are confident in their ability to use data.

What is the Outcome-Driven AI Platform?

Outcome-driven AI platform' (ODAP) is the first highly scalable and end-to-end AI/ML data science offering, delivering ready-to-use and customizable AI models, dedicated to deliver clear business outcomes to customers.

### Our capabilities

- NLP
- Measuring & analysis
- Text mining
- Recommendation engine

Get your results fast. Is your goal to increase your conversions by a 360° personalised marketing? To improve your customer experience? Or to optimize and automate your business processes? The Outcome-Driven AI Platform offers many ready-to-use use cases and AI products

### ODAP products

#### Persona360

Increase conversion rates and customer satisfaction. Personalisation and AI-driven segmentation for FSI.

#### Adpicker

Enable publishers to use customisable machine learning models to understand their users, target ads, and more.

#### Betterfy

Boost online conversions by offering product recommendations based on price-performance ratio

[Learn More](#)



## Cloud to edge

Atos enables you to drive the business value you want from your edge. We simplify application management and deployment, manage edge-to-core-to-cloud infrastructure as one, enforce your security policy everywhere, and run the whole environment for you as a managed service.

- BullSequana Edge & BullSequana S series are Google Anthos Bare Metal certified.

How Cloud to Edge infrastructure can solve your connectivity, simplify application management, enhance security from end to end, while allowing your human resources to focus on the core business of your enterprise?

### How cloud to edge infrastructure solves your challenges

#### Connectivity



Sidestep bandwidth and latency issues

#### Application management



Multi-cloud and edge can increase application complexity

#### Ensure security as you embrace edge



The proliferation of devices at the edge can increase security risk

#### Focus your resources on adding value



Moving to the edge can increase your IT operations & management burden



## Industry use cases



Manufacturing

- Physical security, perimeter protection, fire / smoke detection, parking management, contactless access control
- Shop floor management, worker support, mask and security equipment control, restricted area
- Industrial optimization, quality controls, robots, inventory optimization, predictive maintenance

[Learn more on manufacturing](#)



Smart cities

- Connected traffic control, air, and water quality monitoring
- Smart city infrastructure with smart buildings, surveillance, crowd management, and safety systems
- Real-time experiences and services for citizens, businesses, visitors and investors, bringing them more choice, security, livability and accessibility

[Learn more on smart cities](#)



Retail

- Personalized pricing, offers, promotions and immersive shopping apps, virtual reality for product or brand information, passing trade conversion
- Touchless and contactless checkouts, queue and crowd management, entrance / exit, customer flow management
- Connected inventory and store operations, intrusion detection

[Learn more on retail](#)



Transports

- Real-time processing of manifests, luggage, and container processing automation
- Connected passenger security, safety monitoring, temperature screening and social distancing
- Predictive maintenance, augmented reality-enabled connected workers, autonomous guided vehicle control

[Learn more on Maritime transports](#)



Entertainment

- Augmented and virtual reality visitor experiences, live information overlays, multi-camera, multiple angle views and personalized instant replays
- Real-time people counting, crowd control, security, perimeter and access systems
- Paperless staff security, face recognition, watchlist alerts and reports

[Learn more on Entertainment](#)



Healthcare

- Fall detection & "non-movement" detection, remote emergency rescue and surgery
- Early and AI-driven diagnosis, detection of health anomalies, tumors
- New models of remote care with virtual high-definition consultations, remote patient monitoring

[Learn more on Healthcare](#)



# About Atos

Atos is a global leader in digital transformation with 107,000 employees and annual revenue of over € 11 billion. European number one in cybersecurity, cloud and high performance computing, the Group provides tailored end-to-end solutions for all industries in 71 countries. A pioneer in decarbonization services and products, Atos is committed to a secure and decarbonized digital for its clients. Atos is a SE (Societas Europaea), listed on Euronext Paris and included in the CAC 40 ESG and Next 20 Paris Stock Indexes.

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](#)

Let's start a discussion together



For more information: <https://atos.net/en/solutions/edge-computing>

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