Telefónica

Smart Industry

TRANSFORMATION HANDBOOK

Transformation is in
our DNA

The public health and economic crisis triggered by COVID-19 has focused our minds on the need for **a swifter economic and social transformation** – the only way we can count on a full recovery and get back on track for growth.

We believe that **digitalisation is key** to making this transformation possible. Technologies such as 5G, cloud storage, cybersecurity, AI, big data and IoT will be game-changing — as demonstrated by our extensive catalogue of solutions, applications and use cases. Our capacities and experience make us the perfect partner for businesses and local authorities as they take on the digital challenge.

We stand for a **fair, inclusive and sustainable digital transformation**. Our mission is to harness technology for people and planet, lightening the environmental load and offering our clients solutions that get them working more efficiently and sustainably.

Industry:
the driving force of the economy

Digitalisation has the potential to revolutionise the industrial landscape, generating new business opportunities and delivering exponential gains in efficiency and competitiveness. It is also key to a more sustainable industry.

As a digital operator, Telefónica has the skills and experience to expedite the digitalisation journey for our clients and their industries.

No matter what business you are in, industrial solutions based on new technologies are the catalysts that will drive you forward.

How we are
revolutionising
industry

NAVANTIA

SHIPBUILDING 4.0: AUGMENTED REALITY, EDGE COMPUTING AND 5G

We worked with Navantia to develop three use cases exploring how 5G and edge computing can benefit shipbuilding and repairing. In tandem with Ericsson, we installed 5G NSA and SA networks to achieve download speeds of up to 10 gigabytes per second. Thanks to edge computing, Navantia can run low-latency services and scale new heights of flexibility and efficiency.

APM TERMINALS

HARNESSING 5G TECHNOLOGY TO MAKE INDUSTRIAL AND PORT TRAFFIC SAFER

We teamed up with APM Terminals and Mobile World Capital on a project to improve port traffic safety by linking up cranes, vehicles and staff. Key to our success was a fusion of advanced communication and localization technologies, all powered by 5G technology and edge computing.

GESTAMP

5G AND EDGE COMPUTING: A CRUCIAL NEXT STEP TOWARDS THE SMART FACTORY

Thanks to Telefónica's advanced connectivity and computation capacities, underpinned by 5G and edge computing, Gestamp has hit a new milestone in its digital transformation: creating Spain's very first 5G-digitised factory and raising the bar for industrial process management.

PORT OF BILBAO

EDGE COMPUTING AND DEEP LEARNING: DIGITALISING PORT FREIGHT ACCESS

By integrating edge computing and deep learning, we helped the Port of Bilbao join the digital transformation and shrink its carbon footprint. The port has now rolled out a new system for real-time identification and analysis of all vehicles and containers entering its perimeter. This system has paid dividends in the form of more secure and efficient goods transport within the port.

TESTIMONIALS

What our clients say...

René González | **Gestamp**
Director of Advanced Manufacturing

'5G offers an opportunity for industry to respond in a much more targeted way to the demands of today's society.'

Carlos Arias | **APM Terminals**
Managing Director

'This kind of project is par for the course at APM Terminals in our bid for continuous improvement and innovation. It is one of the ways in which we are constantly working to make our terminals safer, more sustainable and more competitive.'

Juan Porto | **Navantia**
Head of Maintenance and Services

'5G has ramped up our connectivity, which will allow us to optimise our production processes within our digital platform.'

Íñigo Imaz | **Bilbao Port Authority**
Director of Telecommunications

'As part of our digital transformation strategy, the Port of Bilbao is embracing new technologies based on artificial intelligence and machine learning. Provided by AllRead and Telefónica, these solutions give us the power to optimise entry and exit processes for road and rail freight at our various port terminals.'

Navantia: shipbuilders look to the future

5G **EDGE COMPUTING** **AR**

We worked with Navantia as their digitalisation partner, tasked with developing three use cases: offering remote technical assistance to maintenance professionals through AR headsets, supporting shipbuilding and processing 3D scanned images in real time. Through the power of 5G and edge computing, we can achieve low latency and high download speeds of 10 Gb/s capable of running high-quality, immersive AR applications. This makes it possible to superimpose the various modular components onto a real-life scene at each stage in the process, picking up on any design flaws before construction begins. Ships are built by assembling prefabricated sections, and the first step is to use 3D scanning to check that everything fits together. With 5G, this can be done in moments, rather than days.

KEY BACKGROUND

Navantia is in the process of implementing its Digital Transformation Plan, rolling out technological solutions to boost its agility when it comes to identifying, developing and launching new trends and business models.

OBJECTIVES

To enhance shipbuilding and repair processes through technology. To identify the necessary infrastructure, secure environments and communication capacities to support an innovative digital platform.

BENEFITS

The new technology helps Navantia detect potential design flaws before construction starts. Thanks to 5G, a process that can take days can now be completed in moments. AR facilitates more efficient and agile maintenance.

OUTCOMES

5G and edge computing are transformative for industry, empowering companies to develop more flexible, mobile and efficient processes. What is more, they open the door to more immersive, all-encompassing and high-quality AR applications.
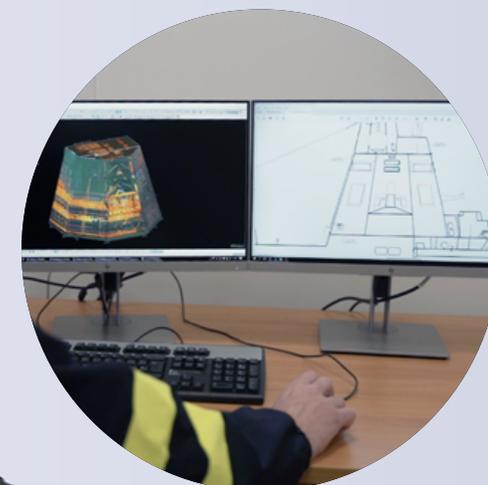
FURTHER INFORMATION

Video: Navantia case.

Gestamp:
connecting industry

5G

EDGE COMPUTING

Gestamp's smart factory is modelled on the digital twin concept: the plant has a virtual replica that can be used to optimise production processes and provide invaluable input for decision-making. We achieved this by connecting its physical components using 5G, so that data from its various systems could be captured and processed in real time. Using Multi-Access Edge Computing (MEC), we were able to bring data processing closer to our client. This means that the data gathered from industrial equipment can be leveraged to produce a smarter model that provides the most accurate possible picture of the company's operations, so it can evaluate situations and make more informed decisions.

KEY BACKGROUND

Integrating 5G technology is part of a process unfolding at a time of immense disruption in the automotive sector, with new breakthroughs in networked electric cars.

OBJECTIVES

To oversee the company's digital transformation, developing the prototype for a smart, connected factory that allows it to respond more flexibly to specific client needs.

BENEFITS

By coupling 5G with edge computing, we can pair each of the factory's physical components with a virtual model stored in the network.
This technology offers a key advantage when it comes to agile and targeted decision-making.

OUTCOMES

Our solutions allowed the factory to attain lightning-fast 5G speeds. As a result, it was able to benefit from digital twin technology, hosted in a completely secure and optimised environment on our edge computing network.

FURTHER INFORMATION

Video: 5G: The technology behind Industry 4.0.

APM Terminals:
Safety solutions for industrial and port traffic

5G   **EDGE COMPUTING**   **C-V2X**   **HIGH-PRECISION LOCALISATION**

APM Terminals is working with Telefónica and Mobile World Capital Barcelona on a pilot project aimed at making ports safer, using 5G to link up cranes, vehicles and employees through a fusion of various advanced communication and localisation technologies. The goal is to minimise the risk of collisions between mobile equipment and fixed objects, vehicles and people within the terminal. In this use case, we took advantage of C-V2X networked vehicle technology and the low latency offered by 5G and edge computing to make APM Terminals Barcelona safer for employees. It proposes a system for coordinating port traffic and using innovative algorithms to prevent accidents.

KEY BACKGROUND

C-V2X technology is emerging as a powerful element against accidents. It allows everyone involved to communicate their exact location in real time, so that traffic can be managed safely and efficiently. As data is processed on the edge of the network, latency is kept to a minimum.

BENEFITS

· Improved traffic safety inside the port, reducing he rate of collisions between vehicles and with fixed objects such as floodlights.
· APM Terminals can now monitor on-site traffic in real time, allowing staff to be more responsive and efficient in their decision-making.

OBJECTIVES

· To adapt networked vehicle technology to industrial settings.
· To integrate ambulatory staff, providing them with a smartphone app connected to the V2X ecosystem.
· To achieve localisation accuracy down to a few centimetres.

OUTCOMES

5G, C-V2X, edge computing and high-precision localisation are a potent combination for improving port safety, helping operators achieve 'vision 0' (0 accidents, 0 fatalities).
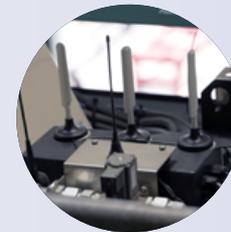
FURTHER INFORMATION

Video: APM Terminals.

Port of Bilbao: a digital transformation success story for the port industry

EDGE COMPUTING

DEEP LEARNING

For port operators, digital transformation means more automated processes that promise enhanced traceability and security for facilities and freight transport. What is more, it is a clear win for sustainability. At the Bilbao Port Authority, we linked CCTV cameras to an edge computing network that automatically tracks vehicles, containers and goods to monitor traffic entering the site. We mobilised the power of our edge computing network, set up to run computer-vision algorithms based on deep learning, to achieve more accurate, real-time identification of number plates and hazardous goods warnings using the port's existing CCTV network. This has resulted in shorter waiting times to pass through the security barrier on entering the port.

KEY BACKGROUND

Using deep learning on a high-speed, low-latency edge computing network allows cutting-edge video analysis services to function at their best, as demonstrated by our partnership with the Bilbao Port Authority.

BENEFITS

Substantial time savings at entrance points, less traffic congestion, improved tracking and storage of hazardous goods and compliance with EU environmental regulations.

OBJECTIVES

To streamline the port's entry and exit processes and optimise goods traceability through automated access points. To cut CO2 emissions by minimising vehicle waiting time.

OUTCOMES

Deep Learning refers to a new generation of algorithms capable of more accurate computer vision. By combining deep learning with our edge computing technology, access to the port can be controlled safely, reliably and in real time.

FURTHER INFORMATION

Video: Dashboard Deep Learning Port of Bilbao.

Other use cases
from this sector

Enabling technologies such as blockchain, IoT, big data, artificial intelligence and computer vision are the springboard for our customers' digital transformation, propelling them towards Industry 4.0. Below, you will find some example use cases illustrating how these technologies can help create more efficient, cost-effective environments that send productivity soaring and enhance product quality.

CREATE AN IMMUTABLE DATA TRAIL WITH BLOCKCHAIN

Blockchain technology guarantees that the data trail produced at every stage in the vehicle manufacturing supply chain is completely accurate, traceable and transparent. It ensures traceability in transportation, assembly and distribution and stores a record of everything that happens over the course of this process.

KEEP TRACK OF GOODS WITH COMPUTER VISION

Capture, store, catalogue and query information whenever goods are unloaded. Using neural networks and video analytics, the system detects when unloading is taking place. It then records and stores a video clip and accompanying metadata for later reference.

▶ See video

IMPROVE PRODUCT QUALITY WITH AI

Advanced analytics enable the quality of goods to be predicted in real time, as they are being manufactured. Our solution offers the user a predictive, automated system for managing plant parameters and maintaining consistency in product quality.

ACHIEVE LOW-LATENCY PRODUCTION MONITORING WITH PRIVATE LTE

A private LTE network can be used to monitor assembly lines capable of performing a high volume of complex operations with great precision. This technology ensures stable, high-quality connectivity, offering a standout combination of very low latency, simultaneous connections to multiple objects and 5G readiness.

Other use cases
from this sector

INTELLIGENT FARM MANAGEMENT: BIG DATA

Installing sensors allows farmers to monitor their premises, in real time, against some 110 different KPIs. With big data, information from around 100 farms can be pooled and analysed, enabling business intelligence to be updated more frequently and improving client/supplier management.

See website

PREDICTIVE MAINTENANCE: IoT AND BUSINESS ANALYTICS

By running regular health checks, businesses can anticipate potential faults in core assets and prolong their useful life. Integrating IoT technology with business analytics means they know exactly what to do to cut maintenance costs and downtime for optimum productivity.

See video   **See video**

### LEVERAGE REMOTE MONITORING AND SUPPORT WITH AR

AR offers the chance to combine monitoring services with remote control functionality. It is an extremely efficient way to operate terminals from a distance, making everyday operations faster and more cost-efficient. Any problems with machinery and equipment can be dealt with as they arise.

Document
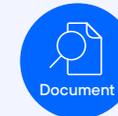
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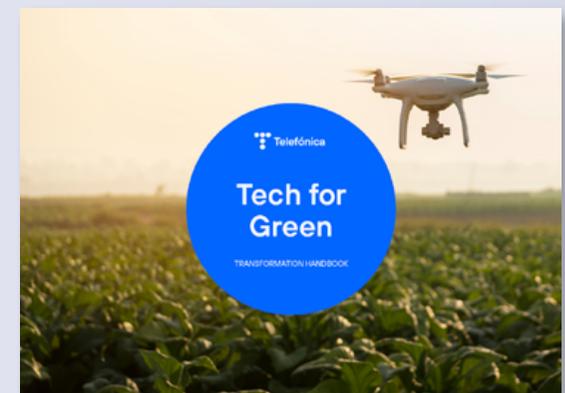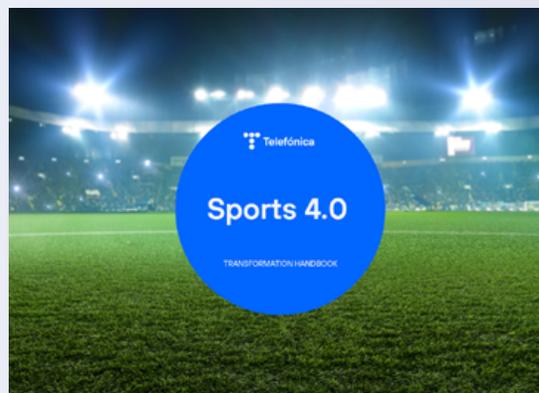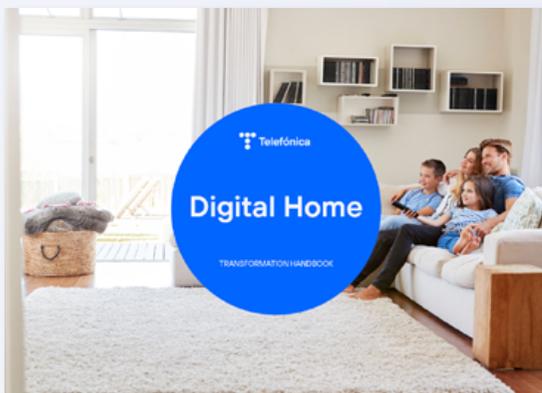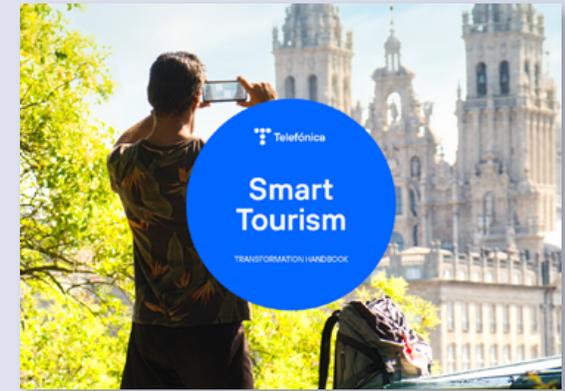
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