Telefónica

Smart industry

TRANSFORMATION HANDBOOK

2022

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.
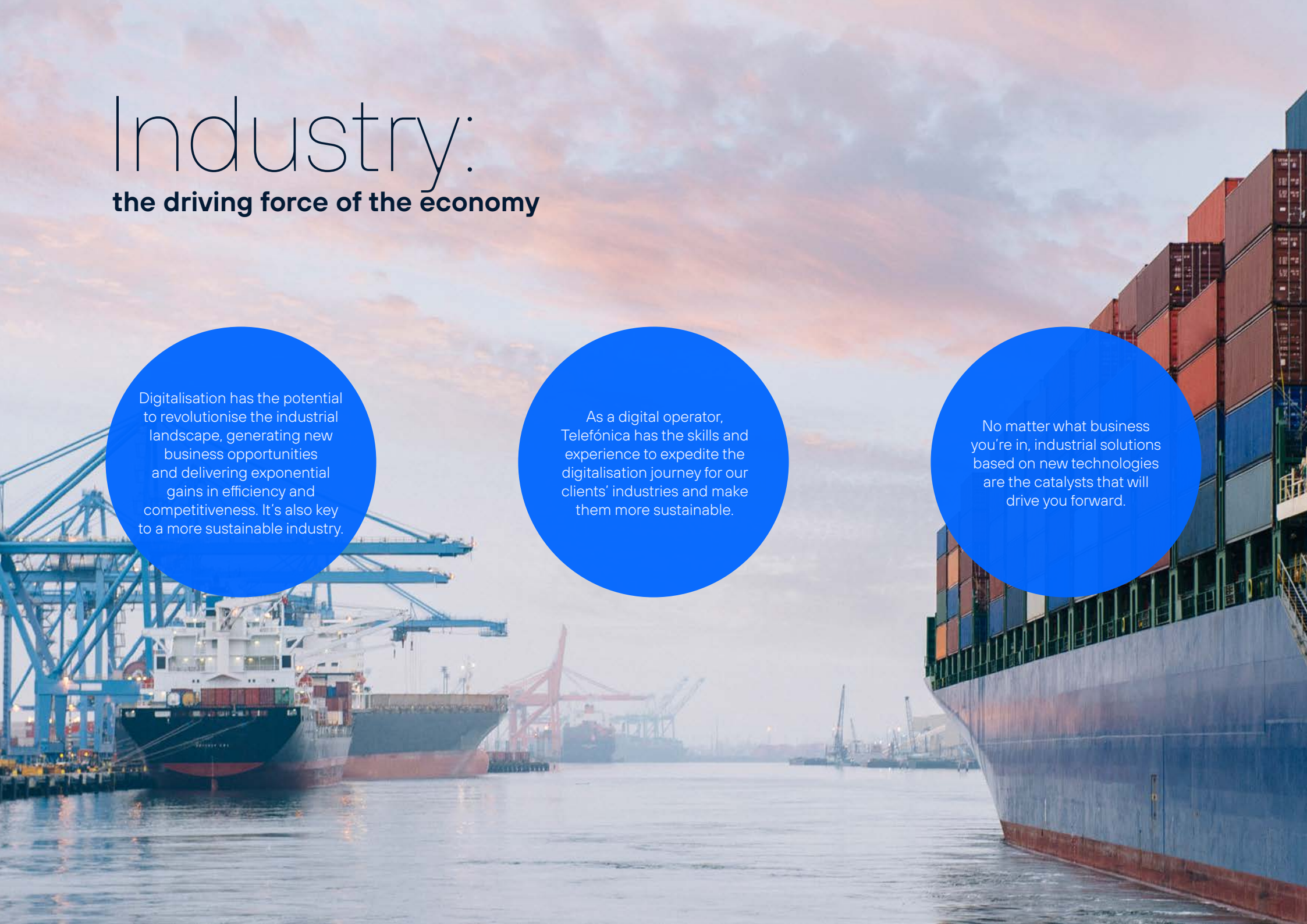
Industry:

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's 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' industries and make them more sustainable.

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

How we're revolutionising industry

NAVANTIA

ON-BOARD CYBER DEFENCE SYSTEM FOR S-80 SUBMARINES

We have started working in collaboration with Navantia, to develop a reinforced cybersecurity system for S-80 class submarines, incorporating the requirements set out by the Ministry of Defence. In response to the new possibilities of digitalisation and the technological challenges they entail, the S-80's cyber defence system will protect the submarine's main systems against cyberattacks and intrusion attempts.

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.

APM TERMINALS

HARNESSING 5G TECHNOLOGY TO MAKE INDUSTRIAL AND PORT TRAFFIC SAFER

We teamed up with APM Terminals and World Mobile 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.

How we're
revolutionising
industry

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.

GOLD FIELDS

DIGITALISING THE MINING INDUSTRY

Our client Gold Fields is one of the top 10 gold mining companies in the world, with operations in South Africa, Australia, Peru and Chile. We worked with them on a project that involved outsourcing their entire Information and Communications Technology (ICT) infrastructure, while maintaining the same standard of management and operational excellence. An important part of these services were the security solutions managed through CyberSOC, both for IT and OT.

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's one of the ways in which we are constantly working to make our terminals safer, more sustainable and more competitive."

Donato Martínez | **Navantia**
Head of Technology and Digital Transformation

"Navantia is the leading company for the development and integration of complex systems, such as ships for the Spanish Navy and other marinas. The cybersecurity requirements for this type of system have increased exponentially, so Navantia has been looking for a global partner in this area."

José Ishikawa | **Gold Fields Perú**
IT Manager for The Americas

"As a company we were able to embark on the process of digital transformation, while also gaining new technological capabilities, such as hyper broadband connectivity in the mine and infrastructure optimisation via Data Centres. We also created a secure and reliable digital workspace, thanks to the use of collaborative technologies."

Íñigo Imaz | **Bilbao Port Authority**
Head of Telecommunications Unit

"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:
cyber defence system

CYBER SECURITY — IIOT — OT — IT
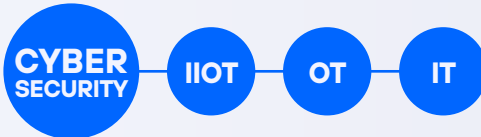
At a time when cybersecurity is taking on a growing role in strategic defence, Navantia and the Ministry of Defence have been working together to design an advanced system, which will be incorporated into submarines in the final phase of construction, as well as the new F-110 frigates, which are due to be constructed in the near future. This cyber defence solution has been created to the highest standards in this area, with a clear mission: "To ensure maximum commonality between each different naval platform". To this end, Navantia has partnered with Telefónica Tech in its Cybersecurity division and drawn up a very demanding plan, starting with the work on the S-80 programme. Navantia, a leader in the design and construction of high-tech ships, and Telefónica Tech, a leader in digital transformation and with a wide range of cybersecurity, cloud, IoT, big data and blockchain solutions, continue to lead the way in advanced solutions in cybersecurity engineering, guaranteeing data security.

KEY BACKGROUND

Cyber defence systems based on cybersecurity technology are a vital part of today's operational defence environments. The agreement between Navantia and Telefonica Tech will fill this space with world-leading technological and innovative systems.

OBJECTIVES

This project will provide the S-80 class submarines with on-board cyber defence capacity. This cyber defence solution will be extended to a variety of platforms. This is a great opportunity to work with Navantia on strategic projects, where technology and innovation combine to create a comprehensive security system, which will allow us to stand at the forefront of strategic areas.

BENEFITS

This technology will enable real-time protection of all IT/OT/IoT systems on the submarine against possible attacks, as well as enabling forensic analysis.

OUTCOMES

The project will facilitate the creation of innovative and certified cybersecurity products, to be incorporated natively into the defence industry.

FURTHER INFORMATION

Press release: Navantia and Telefónica Tech will install a reinforced cybersecurity system in the S-80 class submarines.

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.

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.

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.

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

Press release: Telefónica and Gestamp promote the digitalization of the industry with a 5G connected factory use case.

Video: 5G: The technology behind Industry 4.0.

APM Terminals:
Safety solutions for industrial and port traffic

5G

EDGE COMPUTING

C-V2X

PRECISE LOCATION

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

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.

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

Nota de prensa: Telefónica applies 5G, edge computing and deep learning technologies to digitise industry.

Video: An alert system to improve port security.

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 CO_2 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.

Gold Fields:
digitalising the mining industry

CYBER SECURITY

DATA CENTER

Gold Fields is one of the top 10 gold mining companies in the world, with operations in South Africa, Australia, Peru and Chile. In 2018, they hired us to outsource their entire Information and Communications Technology (ICT) infrastructure, while maintaining the same standard of management and operational excellence. An important part of these services were the Security solutions managed through CyberSOC, both for IT and OT, with a significant rollout of Cisco technology.

BACKGROUND

In a bid to bring in new technology, Gold Fields Peru made clear that it was looking to develop new infrastructure capabilities, in order to provide the fullest support to its mining operations.

BENEFITS

· Broadband network design, scalability and a high level of availability.
· Optimisation of Disaster Recovery and Business Continuity plans.
· Advanced cybersecurity.

OBJECTIVES

To develop new capabilities, while staying ahead of the latest trends and technological advances across various aspects of IT management.

OUTCOMES

The project has not only enabled us to meet our objectives, but has also made the IT department more agile, providing it with more resources to address the changing needs of its internal clients, as well as helping to keep the mine's production plan on track.

Other cases
from the sector

Enabling technologies such as artificial vision, AGVs, blockchain, IoT, big data and artificial intelligence are the springboard for our clients' 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.

AUTOMATING FORWARDING LOGISTICS WITH ARTIFICIAL VISION

Using artificial vision technology enables us to automate and optimise the forwarding logistics process. It allows us to measure the entire volume of a load in real time and without the need for any manual intervention, with the same degree of accuracy as a static measurement.

AUTOMATING INTRALOGISTICS PROCESSES WITH AGV

There is a need to automate certain intralogistics movements, by using AGVs to move between different warehouses and production halls. Embedded 5G technology ensures scalability in terms of AGV growth, as well as the necessary security.

PARCEL AND SORTING PROCESSES IN LOGISTICS USING 5G AND EDGE

The 5G private network enables greater flexibility when it comes to designing and setting up logistics warehouses, eliminating the need for critical communications cables, providing the highest latency, bandwidth and connected device density capabilities. This can be applied in cases of ultra-low latency, such as product sorting on conveyor belts, and for optimising the routing of logistics pallet carriers while on the move.

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.

See video

Other cases
from the sector

Telefónica

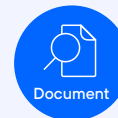### PREDICTIVE MAINTENANCE: IOT AND BUSINESS ANALYTICS

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.
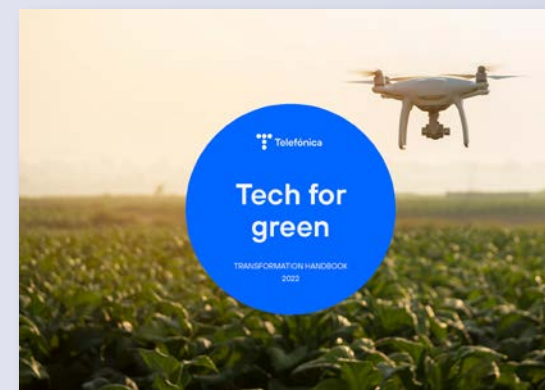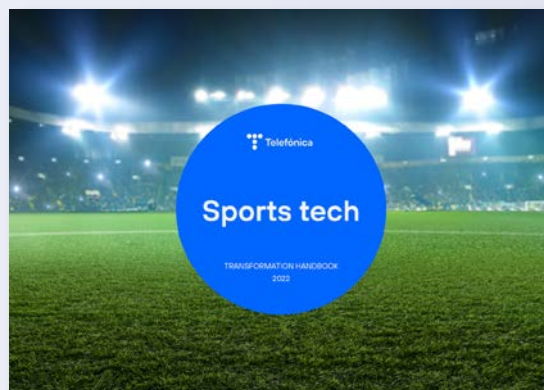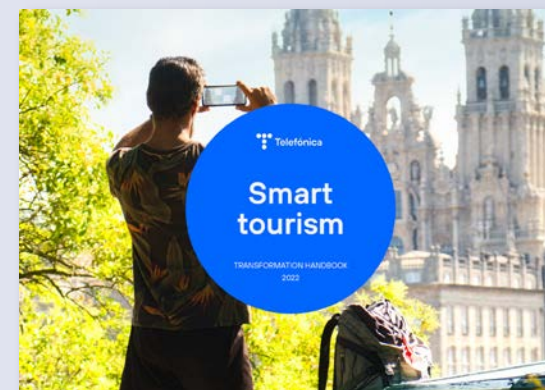
▶ See video   ▶ See video

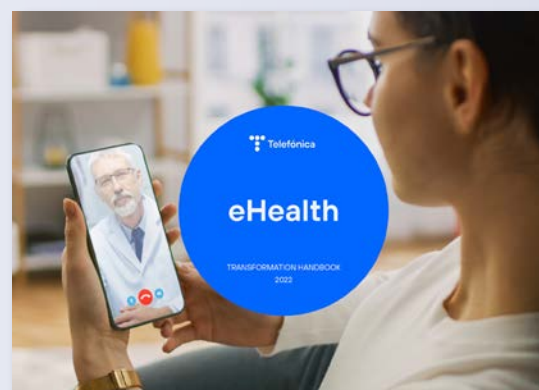### LEVERAGE REMOTE MONITORING AND SUPPORT WITH AR

AR offers the chance to combine monitoring services with remote control functionality. It's 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

Transformation handbook collection

Telefónica **Smart industry** TRANSFORMATION HANDBOOK 2022

Telefónica **Digital SME** TRANSFORMATION HANDBOOK 2022

Telefónica **Smart tourism** TRANSFORMATION HANDBOOK 2022

Telefónica **Digital home** TRANSFORMATION HANDBOOK 2022

Telefónica **Sports tech** TRANSFORMATION HANDBOOK 2022

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