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Phygital Division

Overview of Phygital Solutions Portfolio



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Minsait & Phygital





Indra is organized in two main lines of activity

37%

Of total sales

Transport and Defense

Global provider of own solutions, a world leader in selected offering segments

63%

Of total sales

Information Technologies

Leading company in digital solutions in Spain & LatAm, in continuous growth in other geographies

Executive Summary

Key figures

3,1 B€

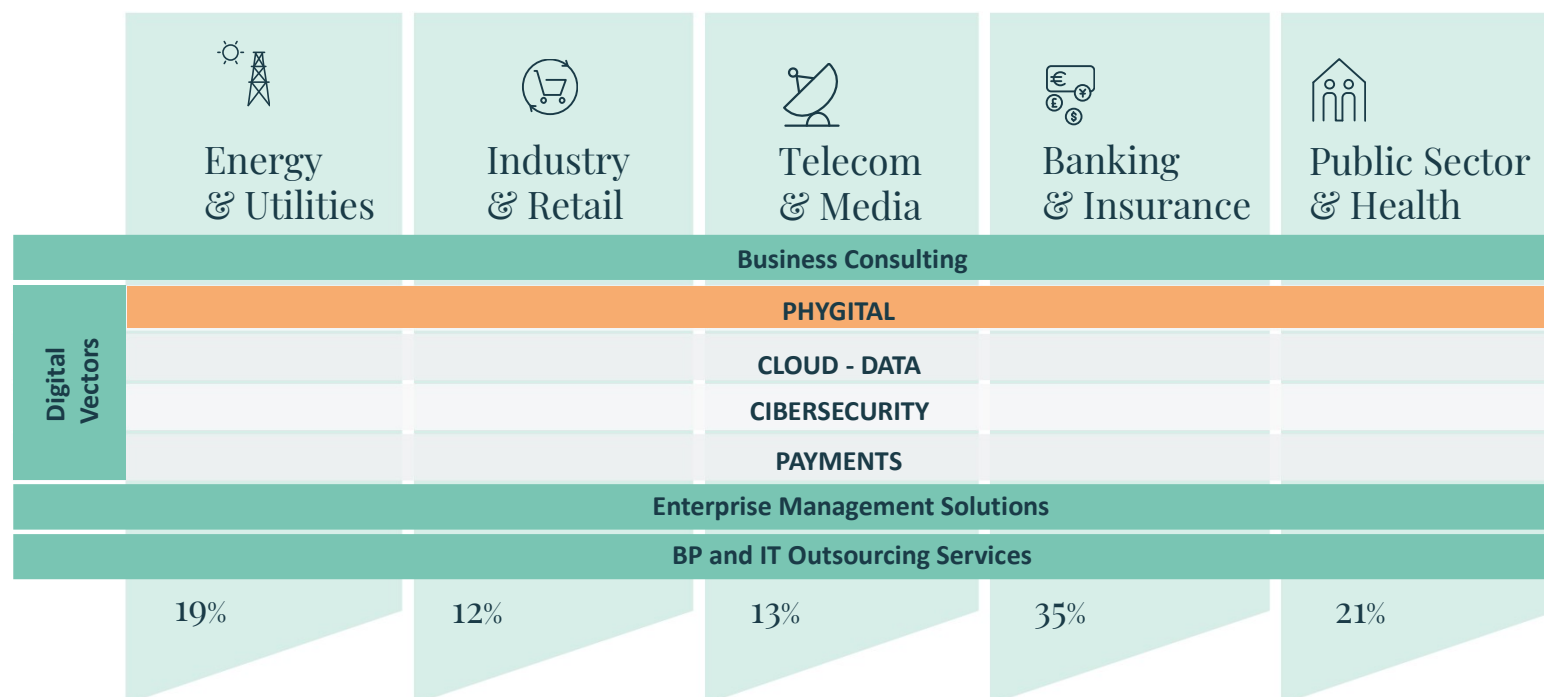
Sales (2020)

+48 k

Professionals (2020)

202 M€

in R+D+i
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Minsait combines the skills and experience necessary to address the challenge of Phygital transformation



Knowledge & experience in IT and OT

- **Mixed experience** in both **management systems** (IT) and **automation solutions** (Scadas, ...) and the connection with **physical elements** (remotes, sensors, ...), leveraging the design and engineering capabilities in the field of Transport and Defense.
- Pioneers in the development of **new 4.0 business models** and **combined cloud-edge solutions** with distributed intelligence



Strong solution portfolio & partners ecosystem

- **Onesait product portfolio**, combining transactional functionalities with IoT and AI capabilities (e.g.: utilities, industry, cities, hospitality)
- **Open source platform and technical and functional accelerators** available for the agile development of new use cases
- Wide ecosystem of **structural alliances** (e.g.: Intel, Google, GE, ESRI, Allegro, etc...) that complements a robust solution portfolio



End-to-end Management and Operation capabilities

- **Comprehensive capabilities**, from functional specialization (e.g.: smart grids, asset management) and sectorial (e.g.: energy, industry), through development and integration capabilities, and even field services executed directly or through partners (e.g.: installation, maintenance)
- Supported by strong **System Integration capabilities in all relevant technologies** and an ecosystem of start-ups and academic institutions
- In-depth knowledge of the challenges and technologies that will support the **energy transition** in all economic sectors



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Our ecosystem of digital solutions and partners enables the transformation of our clients globally

+ 800

Specialized professionals
In the Phygital domain

+ 18

Gartner mentions of Onesait
solutions in Phygital portfolio

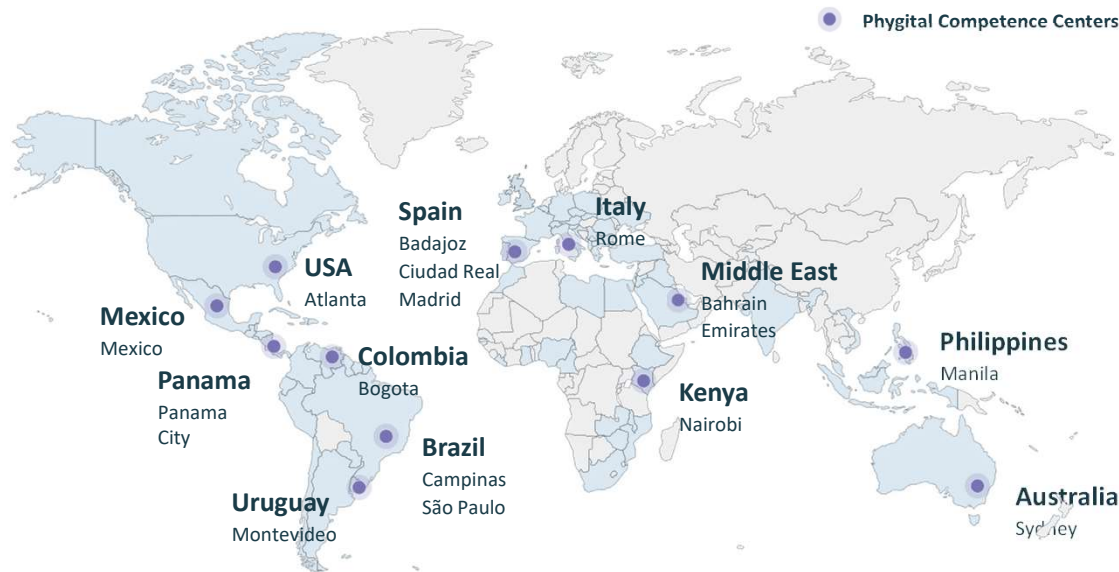
+ 45

Countries with active
customers

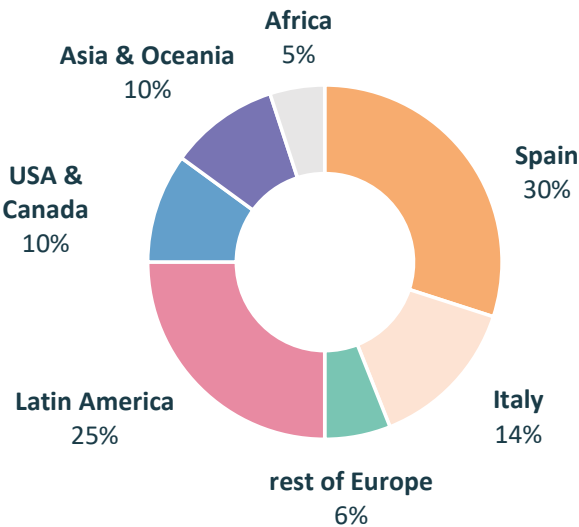
+ 100.000

Organizations connected to
our vertical ecosystems and multiple
industry 4.0 innovation initiatives

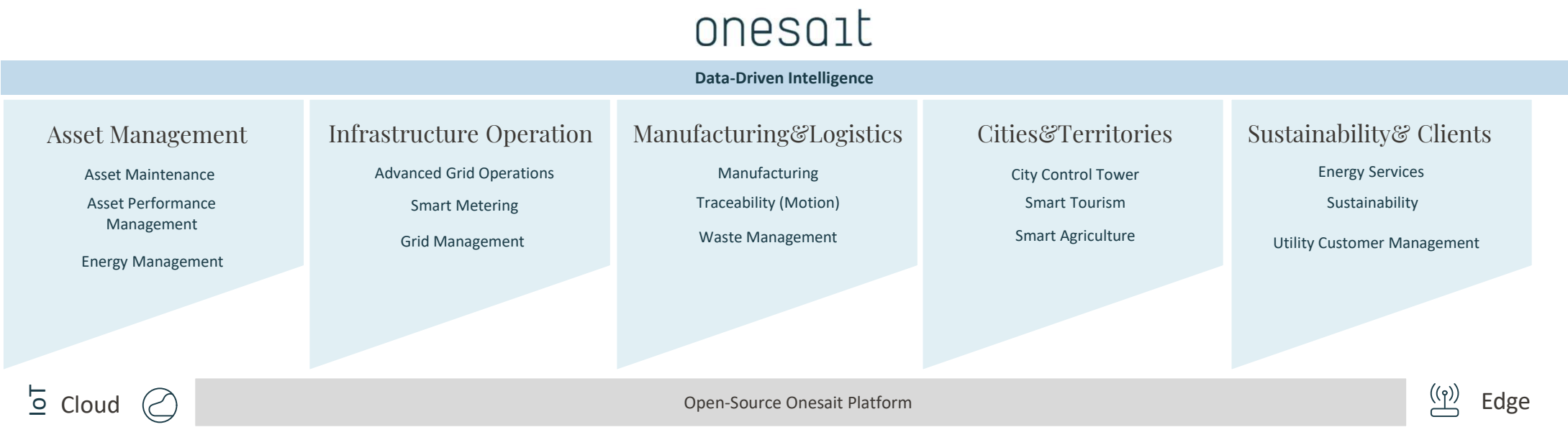
Our competence centers around the world



Revenues by geography



Phygital specialization materializes in a suite of solutions (Onesait) that represents c.60% of our revenues and are key to our strategic plan



+300

Utilities use our ADMS to operate their power grids

+900

Plants with our asset management asset management solution

+100K

Companies connected to our ecosystems

+120

References in Smart Cities

Our Partner Ecosystem complements our solution portfolio and supports our growth strategy globally



We partner with consulting & services companies that allow us to **increase our geographic reach** and **complement our services**



Solution partners allow us to expand our offering and be able to execute end-to-end projects in all Phygital domains



Telecommunication, Platform and Cloud Providers (Hyper-Scalers) are key partners in our strategy to reach customers globally .

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		Asset Management	Infrastructures Operation	Manufacturing & Logistics	Cities & Territories	Sustainability & Clients
Consulting & Services		IoT WoRKS	UNIVERSIDAD DE GRANADA	dive	ecoembes	globaldit the overview effect energycloud
	Software y Solutions	Allegro IBM maximo	PSI GE Digital	osisoft esri	Sisteplant SAP	REPSOL Genetec JogoTech beabloo
	Hyper-Scalers	aws		Google Cloud	Microsoft Azure	
Telecommunications		Telefónica		etisalat	kt	
IoT Stack	Communication Devices & Software	Telefónica	MULTITECH	axion	anatronix	
	Edge Software	Red Hat		NVIDIA	Coral	
	Edge devices & servers	ADVANTECH	intel	Hewlett Packard Enterprise	AAEON	AXIOMTEK Quuppa
Hardware: Sensors, actuators & industrial equipment		Schneider Electric	amper	IOTSENS	Oblysis	

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Phygital's Value Proposal



The management of the physical world is being rapidly transformed by digitalization

Barriers between IT/OT are disappearing, digitalization applies to everything

- **Convergence of OT towards general purpose IT** (as has already happened in the telecommunications sector and currently in the energy sector)
- **Adoption of digital technologies** (AI, IoT, AR / VR, 5G, robotisation, etc.) in industrial operations

Exponential growth of connectivity and processing, exponential price reduction

- 30% annual growth of **data generated** on devices
- Reduced **latency times** from 50ms in 4G to 1ms in 5G
- 65% reduction in **IoT sensor costs** in the last decade

Transformation of value chains and growing weight of sustainability

- **Energy transition** based on increasingly distributed facilities
- **Connected infrastructures and assets**, with optimized data-driven management
- **Transformation of territories** and urban environments and their relationship with citizens

Structural transformation of operating models in the management of the physical world.

New opportunities for differentiation and innovation in business models



Phyigital bridges the physical and digital world through the application of digital technologies

Geospatial Technology and Digital Twin

Hybridization of the physical and digital world through **geospatial technology** and the **digital twin**, allowing the representation and simulation of the physical world in digital environments

Location & Traceability

Technologies for **localization and traceability** of people, products (logistic chains) and assets in motion (inc, Blockchain, OCR, ...)

Analytics and Artificial Intelligence

Data management technologies and **intelligent algorithms** capable of exploiting value and intelligence from massive data generation (satellites, cameras, sensors, ...)

IoT - IT-OT Integration

Digital technology stack, capable of hybridizing IT and OT features in a new **IoT-BigData paradigm**, enabling the connection between sensors and business processes for industrial and commercial environments

Automation and Distributed Intelligence

Management of **sensors and actuators** capable of generating information and acting in real time, integrating capabilities of **Edge Computing, Robotization and Communications (5G, NBIoT, ...)**

Phyigital Platforms and User Experiences

Development of **solutions based on Platforms** (micro-services architectures, ..), proprietary products and accelerators (Onesait) and Phyigital user interfaces, inc immersive technologies (AR, VR, ...)

Phyigital pursues three main objectives



Improve the **efficiency, cost-effectiveness and flexibility** of operations on all types of assets, products or physical infrastructures



Transforming **people's interaction** with the physical world, merging real and virtual information



Contribute to **sustainability** objectives in its multiple facets of carbon footprint reduction, circular economy and social impact.

Our value proposition for Phygital incorporates end-to-end solutions in 5 domains



Asset Management

- Management of assets and infrastructures of multiple types: **large plants** (e.g.: energy and industry), **linear infrastructures** (e.g.: utilities, fiber optics) and **distributed assets** (e.g.: 5G, urban assets, renewables)
- Impact on the **efficiency, quality and safety of the operation and maintenance processes**, as well as on the creation of new business models for "**prosumption**" of energy or "**servitization**" of assets



Infrastructures Operation

- **Operation of critical infrastructures**, integrating traditional solutions (SCADA, industrial automation) and new technologies (IoT, Edge, IA, ...), with hardware integration capabilities, sensors, etc.
- **Security and efficiency in the operation and monitoring processes in real time**, integrating communication technologies (esp. 5G) and cybersecurity.



Manufacturing & Logistics

- **E2E traceability solutions for supply chains and manufacturing digitization**, under an extended and integrated management approach in vertical ecosystems
- Impact on **productivity and quality** of supply chains, reduction of theft and **fraud** in the logistics process and enabling of **sustainable circular economy models**



Cities & Territories

- Solutions to **transform cities and territories** and their interaction with people, allowing an integrated and intelligent management
- With a focus on **environmental sustainability** (e.g.: biodiversity, circular economy, air quality, energy and water management), **economic development** (e.g.: tourism, agriculture) and **social** (e.g.: health, education, aging and care, housing, employment)



Sustainability & Clients

- **Energy management solutions, support for the water cycle, environmental management and others** that allow reducing the impact of operations on the environment, managing the consequences of climate change and achieving the sustainable development goals (SDG)
- Creation of new business models, incorporating **Phygital technology to transform the relationship with clients**

Supported by key technical practices:
Data & AI, User Experience, Architectures & Platforms, Edge Computing, Geo & Mobility



Approach

We implement solutions that support E2E **asset management processes**, based on **data and advanced analytics**, as well as the operation in **commodity** markets.

Impact

Improve the **efficiency, quality and safety of the operation and maintenance** processes, allowing for the generation of new asset exploitation models

Credentials

Extensive experience in the asset management world, mainly concentrated in the energy vertical (+900 plants), one of the pioneers in digitization of operations



Asset Management

Domain Practices



Asset Management

Asset management and monitoring solutions, integrating sensor information and incorporating **data analytics and AI** to optimize operation and maintenance



Asset Performance & Efficiency

Technology for **predictive monitoring and asset health** and **efficiency** tracking, incorporating advanced analytics and artificial intelligence



Digital Twin

Technology for **digital representation of asset and process information**, enabling multiple use cases for asset management and operation



Asset Surveillance & Security

Digital solutions for **advanced physical asset security management**, including threat monitoring and response (drones, AV, etc.)



Commodity Management

Commodity wholesale market management solutions, managing the risk of product purchase/sale operations

Key Clients



Solutions

- Asset inventory
- Asset Intelligence
- Enterprise Asset Maintenance (EAM)
- Facility Management
- Asset Performance
- Asset Efficiency
- Asset Health
- Intelligent Asset Surveillance
- Secure Communications
- Digital Twin
- Virtual Environments (AR/VR/MR)
- Wholesale Markets
- Contract Management
- ETRM



Infrastructures Operation

Domain Practices



Control & RT Operations

Solutions for infrastructure **control and active management of operation processes**, based on data intelligence and interaction with sensors and actuators



IoT & Automation

Industrial **IoT technologies to connect assets, customers, and workers** to critical business processes, improving their efficiency and supporting new business models



Grid Assets

Technology for **advanced linear asset management**, including design, development and operation based on automation and a holistic view of the grid



Geospatial & Mobility

Geospatial information solutions and mobility of brigades and workers, integrating digital information into field operations and vice versa



Smart Metering

Smart metering solutions (energy, gas, water, etc.) integrating this remote information into business processes and extracting intelligence from the data



Energy Transition

Specific solutions for the energy transition, enabling **new models of transactive energy and energy services**

Key Clients



Approach

We integrate technologies that allow us to **connect business processes with the physical world in real time** and optimize operations in an increasingly connected world.

Impact

Improved **safety and efficiency** in the **operation and monitoring of real-time** processes, integrating communication technologies (e.g. 5G), sensorization, IoT and advanced analytics.

Credentials

Extensive experience in linear asset management, energy transition support and asset monitoring and operation, with **more than 300 utilities using our SCADA** to operate their grid.

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Solutions

- SCADA
- ADMS
- DERMS
- Meter Data Capture
- Meter Data Management
- Meter Data Analytics
- Smart Engineering Center
- Geographic Information Systems
- Work Force Management
- Grid Intelligence
- Edge Device Management
- Industrial IoT Platform
- VPP Management
- Energy Communities

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Manufacturing & Logistics

Domain Practices



Smart
Manufacturing

Hyper-connected factories with Industrial IoT and 5G, supporting real-time analytics and optimization of manufacturing operations with AI



Traceability

Traceability of products, people and assets in real time, integrating different technologies (Tags, Wearables, Artificial Vision...) and enabling security and supply chain optimization use cases



Ecosystems
Editran

Technology for business-to-business connectivity, guaranteeing **secure, automatic and scalable environments**.



Ecosystems
B2B

Conversion of fragmented value chains into **integrated digital ecosystems** that drive digital business collaboration.



Waste
Collection &
Recycling

Value chain management and 360° vision of the circular supply chain for efficient waste logistics management and increased waste valorization

Key Clients



Approach

We develop technologies to **manage and optimize manufacturing, logistics and product traceability**, supporting the creation of **industrial ecosystems** and new business models.

Impact

Improved productivity and quality of supply chains, reduction of theft and fraud in the logistics process and enabling circular economy models.

Credentials

More than 100k companies and organizations connected to our vertical ecosystem (e.g. automotive, circular economy) and various **innovative solutions in Industry 4.0** (e.g. Scheduler, people traceability, etc.).

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Solutions

- Production Scheduling
- Manufacturing Intelligence
- People Traceability
- Elements Traceability
- Editran
- Ecosystems B2B
- Smart Waste
- Recycles

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Cities & Territories

Domain Practices



Smart Territories

Integrated and intelligent management of services through new data-driven energy, environmental, mobility and safety models



Smart Tourism

Digital and sustainable transformation of tourism activity, through innovation in tourism offerings, improved visitor experience and heritage conservation



Smart Agriculture

End-to-end transformation of the agricultural activity to make it more productive, profitable, safe, fair and sustainable, through IoT technology and data analytics

Approach

We implement solutions to **manage connected public services**, developing intelligent **territories** that improve the relationship with the citizen and the community.

Impact

Emphasis on the **sustainable, economic and social development of cities through the digitalization and application of IoT technologies** to different city verticals, processes and infrastructure.

Credentials

More than 120 references in Smart Cities, covering multiple vertical markets, building and integrating solutions on our Onesait Platform.

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Solutions

- Smart Territory Platform
- City Intelligence
- Smart Spaces
- Intelligent Building
- Tourism Management
- Tourism Intelligence
- Agro Territory Management
- Agriculture Intelligence

Key Clients





Sustainability & Clients

Domain Practices



Energy Efficiency

Technology to **make energy, gas and water consumption more efficient** through metering, advanced analytics and disruptive technologies



Sustainability

Digital solutions for **managing natural capital, corporate sustainability and the environment**, and developing sustainability and building **certifications**



Hydro Resources

Technology to optimize the water cycle, from catchment and/or production, including consumption in irrigation and highlighting the solution for efficiency in wastewater plants



Connected Retail

Solutions to **transform retail experience for customers** and increasing margins y through a "Phygital" experience



Customer Management

Commercial management solutions for utility companies, improving customer relations, reducing losses and increasing business profitability

Key Clients



Approach

We integrate technology and implement solutions that make progress in the **sustainability goals (SDGs)** and transform customer interaction.

Impact

Improved **energy efficiency**, support to our customers in the **sustainable transformation** of their business processes and models, and improved commercial processes through customer intelligence.

Credentials

Extensive experience in B2C companies and the public sector, with a deep understanding of the potential of digitization as a lever for improving sustainability.

Solutions

- Energy Efficiency
- Energy Quality
- Sustainable Buildings
- Natural Capital
- Corporate Sustainability
- River Basin Management
- Wastewater treatment Efficiency
- Smart Irrigation
- Oil-Spill Detection
- Phygital Retail
- Next Generation Branches
- Utility Customer Management
- Customer Intelligence

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Main Practices



Control & Real Time Operation



Infrastructure
Operations



What is the challenge?

Distribution network operators are facing increasing operational challenges due to integration of distributed energy resources and storage, increasing regulatory and customer pressure to provide reliability and an aging infrastructure.



What is Minsait's solution?

Minsait's ADMS system goes beyond the traditional approach, providing a single platform and integrated user interface for SCADA, Distribution Network Application (DNS) and Outage Management System (OMS), incorporating predictive and autonomous operations that enable optimized distribution network operation.



What is our proposal?

- Advanced Distribution Management System - Integrated SCADA, DNS and OMS solution with a common user interface for DSOs.
- Reduce network loading at peak times and increase asset utilization, network efficiency and reliability.
- Improve Quality of Service through the integration of OMS and advanced Fault Location, Isolation and Service Restoration (FLISR) functionalities.



What are the benefits?

- 18-25% reduction in field work costs in 5 years.
- 5-10 % improvement in operation planning, troubleshooting, availability of real-time information.
- 5-7 % improvement in service quality.



What makes us different?

- Minsait has an extensive solution set with its IT platform, tailored to the enterprise needs of energy and utility companies around the world.
- Minsait offers a combined IT/OT (Information Technologies/ Operation Technologies) value proposition.



Who trust us?

- Over 400 utilities worldwide use Minsait SCADA/ADMS solution, mostly concentrated in the U.S. and Canada.
- Our solution delivers reliability, productivity and efficiency through a modular architecture, adaptive algorithms, predictive analytics and an advanced user interface.



What is the challenge?

- Exploit **Edge Computing and Industrial IoT** technology to **connect assets, people and businesses** in a networked digital world.
- Drive **new business models** through the generation of distributed **computing use cases and hybrid IoT platforms**.



What is Minsait's solution?

- Providing a **hybrid Edge Computing and IoT platform** solution that brings together multiple **capabilities, accelerators and frameworks** for flexible generation of new use cases.
- With a fully **scalable microservices architecture**, with the ability to act remotely, making **O&M and management of distributed devices/assets efficient**.



What is our proposal?

- We structure our **IoT & Edge** practice around two main lines of offerings, which allow us to **respond to our customers' needs** in terms of **Edge Computing and IoT** solutions:
 - **Phygital Edge** which enables the implementation of a wide variety of **distributed Edge computing** use cases and hybrid **IoT** platforms in different **industries or vertical lines of business**.
 - **Grid Edge**: as a platform for **automation and distributed management** of the T&D network



What are the benefits?

(-) 80%	(-) 30%	(+) 20%
Agility	Costs	Service
Reduced roll-out time of new functions on the Edge	Reduced maintenance costs of distributed resources	Speed, Flexibility, Efficiency and Safety



What makes us different?

- **Technology.** Innovative architecture and technology stack that provides flexibility, efficiency and security to implemented solutions.
- **Use Case.** Wide variety of use cases available out-of-the-box in SaaS model
- **Partnerships:** Receiving strategic support from major technology partners :



Red Hat

JUNIPER
NETWORKS

- **Collaboration:** Members of various working groups for the development of standards and norms in the field of IoT and Edge Computing (E4S, AOITI, Futured, etc).



Who trust us?



Naturgy

aspo



endesa



REFRIVAL



Smart Metering



Infrastructure
Operations



What is the challenge?

- Monetize and exploit the information provided by Smart Meters to **reduce consumption peaks, move towards decarbonization and manage demand in a flexible way.**
- Drive **new business models** through the generation of analytical use cases.



What is Minsait's solution?

- Providing a platform solution with 4 complete functional modules (capture, management, exploitation and analytics) that brings together multiple capabilities, accelerators and frameworks for the flexible generation and execution of new use cases.
- With a fully scalable microservices architecture, with the ability to act remotely, achieving monetization and getting value from this information.



What is our proposal?

- We structure the Smart Metering practice around the three axes that make up the End 2 End solutions for end customers, based on field equipment through agreements with manufacturers, Communications through agreements with Telcos and implementation and configuration of AMI Systems, with our own product.
- Onesait MDC/MDM:** Acquisition, processing and management of field equipment and its information.
 - Onesait Intelligence:** Exploitation of information retrieved from smart meters deployed in the field.



What are the benefits?

 100%	 50%	 50%
Remote control	Costs	Exploitation
Total remote control of the equipment, power reduction, connections, disconnections, etc...	Reduced maintenance costs of distributed resources	Detection of anomalous consumption, fraud, definition of tariff structures



What makes us different?

- Technology.** Architecture based on open source standards and innovative technology stack that provides scalability, efficiency and security to the products.
- Use Case.** Wide variety of use cases implemented and available out of the box in our products.
- Strategic agreements with leading equipment manufacturers:



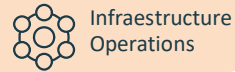
- Strategic agreements with telecommunications providers:



Who trust us?



Energy Transition



What is the challenge?

- Integration of Distributed Energy Resources in the grid operation, giving global response to the new emerging regulations around the distribution of the electricity value chain, as a consequence of the Energy Transition.



What is Minsait's solution?

- We maximize the manageability of Distributed Energy Resources in favor of 2 Objectives :
 - Reducing costs for the system (Network & Markets): **Global Optimization**
 - Obtaining new revenues for your owners: **Local Optimization**

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What is our proposal?

- 3 Value Propositions, combinable with each other according to the regulations of each geography
 - DERMS for Distributors:** Management of Flexibility Events as an alternative to network investments, by managing DERs directly or through markets.
 - VPP Management for Aggregators:** Aggregate Management of DERs under Virtual Programming Units for their participation in System Services or Portfolio Optimizations, prior Local Optimization.
 - Energy Communities for Territories:** Management of shared Energy Assets under community schemes for Local Optimization and/or participation in System Services.



What are the benefits?

- Increased system resilience and security
- Savings derived from avoiding the development of new grid infrastructure, which can be passed on to the tariff
- Favor the penetration of renewables according to national, European and global plans
- Integration and participation of demand in the grid, with a more active consumer role
- Energy savings and new revenues from participation in the system



What makes us different?

- Value Propositions based on own product
- Configurable any local Optimization process or Flexibility Service/Product that responds to the needs coming from third party systems or markets, for adaptation to any regulation.
- Scalable and adaptable SW architecture
- Cloud / On Premise
- IaaS/PaaS Vendor Agnostic



Who trust us?

- Distribution: **Enel Distribución, Iberdrola Distribución, UfD/Grupo Naturgy**



- Aggregators: **ACE**



- Territories: **Cabildo de Canarias, Universidad de Monash**



Where are we?



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Asset Management



What is the challenge?

Asset management organizations must adapt to new market trends

- **New business models**, with greater commercial pressure
- Implement sustainability processes, clean energy consumption...
- Greater knowledge of the market, with the demand for personalization and customer self-service
- The connection of sensors to assets has decreased in cost and communication is increasingly ubiquitous. A large amount of data must be analyzed



What is Minsait's solution?

- Technology plays a fundamental enabler role, We use techniques such as EDGE and Cloud Computing, IoT, Artificial Intelligence and Machine Learning, Digital Twin, 5G...
- Our **knowledge of the processes** required by each sector and our experience in infrastructures allow us to reduce the gap between the physical world and the digital world.
- Thanks to a **wide channel of partners** and a large network of clients, we carry out a continuous review of improvements in market solutions.

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What is our proposal?

Enterprise Asset Management (EAM)

Efficient management solutions for the maintenance of industrial assets, ensuring their optimal availability, reliability and safety throughout their useful life.



Facility Management (FM)

Innovative management solutions for the use, associated services and asset management of properties, buildings and facilities



What are the benefits?

- Improved profitability and efficiency
- Reduced O&M costs and risks
- Increase in asset availability and useful life
- Traceability of operations without additional efforts
- Regulatory compliance and standards ISO 55,000, OSHAS 55,000 etc.
- Operational excellence



What makes us different?

- **Own adaptable solutions**: both in Onesait products and on third party platforms
- **Maximo Extended**: additional modules to the Maximo 7.6 / 8.5 standard
- **Multi-client / multi-project platform** available in SaaS mode
- We manage the **complete life cycle** of assets from their need, to their removal, optimizing them with the support of our O&M Consulting.



Who trust us?



Where are we?



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Asset Performance & Efficiency



What is the challenge?

- Obtain maximum value from the physical assets of any type of operational asset-intensive organization. Thus, the objective is to maximize operating results, maximizing asset reliability and availability, while minimizing production, operation and maintenance costs.



What is Minsait's solution?

- With technology: the Onesait APM solution for continuous monitoring of asset health, condition and performance.
- And with a multidisciplinary team of process and reliability engineers and data scientists, which allows us to define the most appropriate strategy for each client.



What is our proposal?

- Consulting and technical assessments** to define the most appropriate strategy for each client.
- APM solution**, for the integral supervision of assets and facilities, in terms of predictive analytics, health and performance monitoring.
- Asset monitoring and diagnostics** services



What are the benefits?

- Improved asset reliability and availability
- Avoids catastrophic failures by anticipating risks
- Reduced downtime
- Improved productivity
- Reduced maintenance costs
- Increased safety
- Extending the useful life of assets
- Improved equipment productivity



What makes us different?

- Flexibility** to adapt our proposal to the needs and particularities of each client:
 - In-house product, custom developments and third-party product integrators
 - Cloud or on premise
 - Modedlo perpetual license or SaaS
- Multidisciplinary team** with business and technical knowledge of the assets.
- Monitoring and Diagnostic Center**, from which we monitor our clients' assets.



Who trust us?



Smart Manufacturing



Manufacturing & Logistics



What is the challenge?

- The industry is facing a **dizzying change** in **Supply, Demand and Business Models**
- New **digital technologies** make it possible to address **operational challenges** in a **more efficient, scalable and secure way**



What is Minsait's solution?

- We support our customers **end-to-end** by deploying **flexible, robust, secure solutions**
- We **transform operations** to maximize **impact** and accelerate **payback**



What is our proposal?

We deploy **proprietary/third party solutions** and customized developments impacting on:

Costs

- Reduce operation and maintenance costs, anticipating anomalies, minimizing shutdowns, making the response more flexible...
- Improve the **productivity** of workers and operations
- Reduce **energy consumption and environmental impact**

Agility

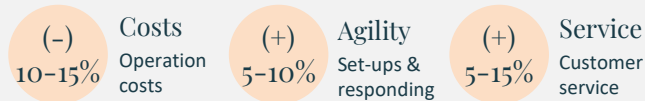
- Increasing **agility in responding** to changes in demand or manufacturing conditions

Service

- Improve **service level** (reliability, response time, flexibility) and **product quality** (automatic inspection, error prognosis, waste reduction)



What are the benefits?



What makes us different?

- **End To End. Strategy**, development, implementation, roll out and operation.
- **Mix of profiles.** Consultants, Engineers, Data Scientist, Programmers, Cyber experts, IoT Specialists, Operators...
- **Agnosticism.** Deployment of the best SW/language on the market to accelerate impact.



Who trust us?



Where are we?

- Patrons of the Chair of Connected Industry at Comillas Univ.

Smart Tourism



Cities &
Territories



What is the challenge?

- Recover tourism activity after the COVID-19 pandemic during 2020 by improving the resilience, safety, competitiveness and sustainability of destinations.
- Create jobs, develop the public and private sector, digitizing the entire tourism ecosystem.
- Accelerate the digital and ecological transition of tourism and transform it into a lever for smart, fair and green growth.



What is Minsait's solution?

- Data and algorithm-driven digital solutions that address key public issues and market failures at the digital and physical levels throughout the tourist customer journey in destinations.



What is our proposal?

- Consulting services: Governance and innovation.
- Platform and digital services for all destination agents (tourist, SME and destination) throughout the customer journey (before, during and after the trip).
- Smart management and operation of spaces, assets and tourist experiences.
- Contextualized interaction with the tourist through advanced tourism promotion-marketing channels.
- Competitive intelligence system for the sector based on data.



What are the benefits?

- With the capacity to scale at the sector level, in connected destinations and companies, accelerating the digitalization of key processes, reducing the carbon footprint, improving the competitiveness of companies and generating prosperity for people and territories.



What makes us different?

- **End-to-end** approach, from the initial **consulting** phase to the implementation of technological tools and evolutionary support.
- Platform model that integrates and articulates the entire tourism offer, open to all agents in the value chain through solutions that cover the entire cycle of the tourist's trip.
- Generation of a common space of sectorial data to detect market failures and improve the competitive position of the destination with direct access to the issuing markets.



Who trust us?

- Ministerio de Industria Comercio y Turismo.
- Icx, SEGITTUR, Red.es
- Gran Canaria, Galicia, Cáceres, Toledo, Palencia, A Coruña, Pontevedra.
- Südtirol, Trentino, Campania, Puglia, Lazio.
- Museos Vaticanos, Museo Reina Sofía, Bellas Artes A Coruña.
- World Tourism Organization, BID, World Bank, ITU UN-Habitat.

Energy Efficiency



Sustainability &
Clients



What is the challenge?

- Uncertainty in the current global energy markets with a high variation of conventional energy prices and inefficiency in production processes directly impact the operational performance of businesses in a wide range of sectors (industrial, retail, hospitality, etc...).



What is Minsait's solution?

- Minsait proposes a modular approach that unifies and orchestrates our know-how and cross-sector technological functionalities to optimize production processes, energy savings and avoid penalties from the local energy regulatory body, providing added value to the end customer with an integrative proposal and covering the complete end-to-end cycle.

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What is our proposal?

- The energy efficiency practice focuses on achieving energy savings targets through the use of advanced energy management systems for different sectors and technologies. Through energy efficiency, we help our clients optimize their energy transition. To achieve their sustainability goals, we develop and implement a customer journey tailored to each client:
1. Audit and evaluation of potential energy savings with specialized partner.
 2. Implementation of IoT devices
 3. Energy efficiency SaaS implementation
 4. Operation and maintenance



What are the benefits?

- Energy efficiency covers the demands of the energy market for a wide range of sectors, with common cross-cutting needs, ranging from monitoring and control to local energy regulation compliance. The application of Artificial Intelligence in our solution is a key feature to improve the behavior of customer assets, enabling their interaction with the current and future energy landscape and achieving very significant energy savings (10-15% based on our experience).



What makes us different?

- Our **know-how** and expertise in energy efficiency, with the collaboration of specialized partners.
- Unified data **storage** and customized reports in a single repository.
- **Automation** of functions to reduce user intervention
- **Scalability** towards future energy models, incorporating energy efficiency, demand response and distributed markets
- **Security** according to local and international regulations, protecting and guaranteeing customer security and confidentiality.



Who trust us?

- Servicio Nacional de Aprendizaje (SENA)
- Hoteles Sirenis
- Hoteles RCD
- Instalación industrial grupo Schettino



Where are we?

- Smart International Projects **enerTIC Award**
- Energy Efficiency **Andesco Award**



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What is the challenge?

- Climate change is a fact and the fight against water scarcity is a reality, therefore, it is necessary to integrate disruptive technologies in its management, in order to promote new business models, more efficient processes and ensure environmental sustainability.



What is Minsait's solution?

- Digitalization is being a transforming axis of the water sector, in order to help meet this challenge, we have developed disruptive technological solutions aimed at operational efficiency while contributing to reduce the environmental impact.



What is our proposal?

- Operational efficiency of Wastewater Treatment Plants. Improving discharge quality and optimizing energy consumption, sludge production, additive consumption.
- Identification of drinking water and wastewater leaks.
- Automation and optimization of irrigation management.
- Advanced monitoring of river basins. Water quality control as well as contributing to prevent water-related events such as floods or droughts.



What are the benefits?

- Reduction of operating costs of waste treatment plants.
- Ensuring discharge quality reduction of environmental impact.
- Reduction of Operational Risk



What makes us different?

- We develop disruptive technology that enables comprehensive, responsible, competitive and forward-looking water management.



Who trust us?

- Operational Efficiency in the Treatment Plants, achieving reductions in energy consumption, sludge production, and consumption of additives in Gestagua's facilities together with the operator Emalsa.

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Selected References



Advanced real-time monitoring and analytics for wind farms

Axpo



The challenge

There are currently +350k wind turbines in the world, and the market is expected to grow at +10% CAGR.

Axpo is a reference in the renewable energy sector and is characterized by providing solutions tailored to customers' needs.

Axpo expects to double the managed power in less than two years by offering its customers the Minsait solution that maximizes profitability and has already been implemented in more than 130 wind farms.

The solution

Project developed on Onesait Platform, leverages big data, advanced analytics and massive sensorization for monitoring wind farms.

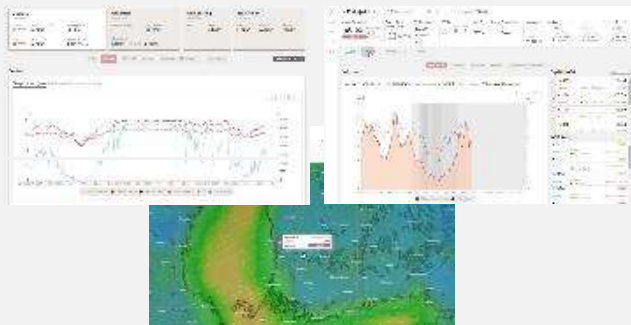
Real-time monitoring of signals from more than 1,500 sensorized and connected wind turbines in 130 wind farms in 9 countries.

- 250k measurements per hour on average

Integration of weather forecast from third party sources

- e.g. wind forecasts

Real-time **geolocalized visualization layer** of the different wind farms that integrates the different sources of information **to improve production forecasting by applying advanced analytics.**



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Main benefits



Profitability

Improved energy production forecasts, improving profitability



Monitoring

Effective support in the operation and maintenance of applications



Time

Facilitates decision making related to day-to-day operations



Efficiency

Improved turbine performance by leveraging historical data

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Digitization of the entire waste sector

Ecoembes
Waste



The challenge

Ecoembes is the extended product responsibility extension system for lightweight packaging and paper and cardboard in Spain. It seeks to increase efficiency in the execution of its mission and to be able to reduce the ticket to its associates through the digitalization of its value chain.

In addition, it needs to increase the efficiency of the service offered, reduce collection times, increase recycling rates through greater citizen collaboration.

The solution

Thanks to Onesait Sustainability Waste, Ecoembes is able to carry out predictive and real-time management of waste collection. The solution enables it to:

- Manage the different recycling plants, continuously monitoring inputs and outputs
- To have a comprehensive vision of the city and its waste management
- Manage the different assets involved in the recycling process: vehicles, containers, garbage cans, devices...
- Increase the efficiency of operations: route control, incident management, alarms...

+500.000
containers

Currently, we have +7,000 containers installed in the following areas

+8.250
municipalities

Presence in more than 30 municipalities in 7 regions.

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Main benefits



Intelligence

Predictive management and ability to generate insights that improve decision making



Monitoring

Transparency and real-time traceability of collection management



Time

Reduction of distances and time of recycling routes by 5-20%.



Efficiency

Improved operations management

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Real-time monitoring of vehicles and people to identify risks and provide intelligent recommendations for action

Ence



The challenge

Health and safety standards in the core of industrial companies (Industry, Consumer, O&G, Energy...) with more than 340 million work accidents per year.

In Ence's plants, workers, fixed and mobile equipment, trucks and large elements to be transported, loaded and unloaded coexist...

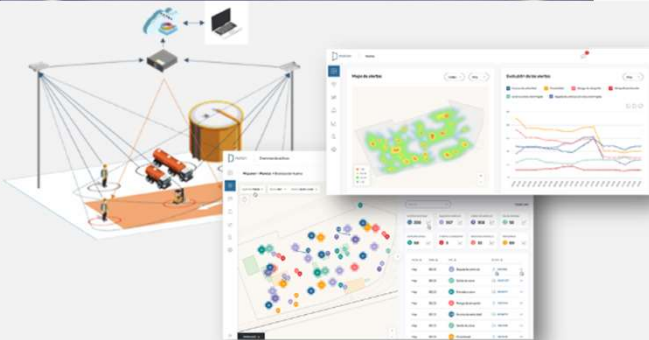
... which generates constant risks of accidents for the employees.

The solution

Onesait Worker product, in cloud, modular and built on standard architectures, capable of monitoring vehicles and workers in industrial environments for risk prevention in real time.

Connected workers and vehicles (bracelets, trackers), monitoring the position in real time and sending alert signals in case of risk.

SaaS software, accessible to plant and risk prevention managers, with intelligence capabilities for continuous improvement of operations and regulations.



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Main benefits



Security

Generates a safer workspace, reducing the number and severity of accidents in the plant: average warning of 0.28s before risk and 1.17 m before violating safety distance.



Efficiency

Gain a better understanding of risk by uncovering hidden risks and near-misses, analyzing the circumstances as they occur



Knowledge

Increases the effectiveness of security measures through the identification of events with high risk potential.

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Onesait Utilities Customers

Electricity & Water Authority
Kingdom of Bahrain



The challenge

Provide reliable and quality supply of electricity and water for sustainable development of Bahrain

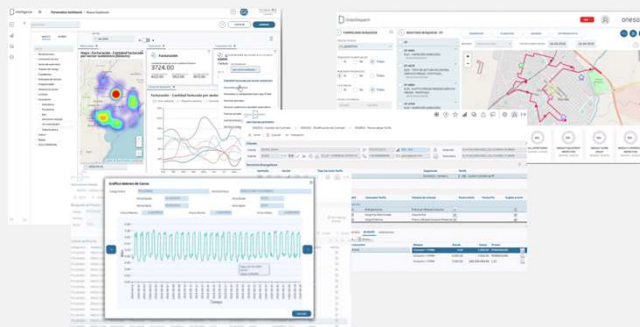
Raise the level of the Government's role and services to achieve the vision of Bahrain, and accelerate sustainable development to make Bahrain one of the 20 best countries in the world by 2022 aligned with EWA Strategic Themes

The solution

Implementation of the latest Onesait Utilities Customers on AWS for 480.000 customers billing electricity, water services and taxes.

The ongoing project (starting at Nov. 2020) includes:

- Migration of customers base and solution configuration to manage the full Commercial Cycle for post/ and prepayment services, including the workforce mobility solution
- Enterprise Assets Management solution
- Integration with 3rd parties' solutions existing in the EWA ecosystem



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Main benefits



Capacity

Onesait Utilities solutions helps achieving increased and sustainable capacity



Efficiency

Effective financial management based on assets traceability and smooth accounting integration



Service Quality

Responsive and consistent service empowered by automatization and new channels



Cloud Solution

Best-in-class solution over the cloud brings more flexibility and new business opportunities

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European Smart Cities Platform

Antwerp



The challenge

Minsait was selected amongst 28 consortia from 13 European countries to design, develop and implement an open, standardized, data-driven, service-oriented and user-centric Smart City platform that enables large-scale co-creation, testing and validation of urban IoT applications and services for European cities to become models of digital and sustainable urban growth. The Smart platform has been deployed in Helsinki, Antwerp, Casablanca and other cities to manage several urban projects in security, mobility, air quality and citizen services.

The solution

Implementation of a city platform conceived as an "integrating brain" that combines internet of things (IoT) technologies, big data and artificial intelligence to process and analyze the information of different urban services in order to develop the following cross domain use cases in the case of Antwerp:

- **Urban Resilience:** geospatial analysis of the maritime transit of goods providing a real time alert system to officials. Availability for generating KPI's and reports.
- **Social Welfare:** citizen comfort index algorithm that compares citizen feedback with the impact of connectivity, mobility, weather, air quality, noise levels and security within districts.
- **Air Quality:** monitoring system based on real time data that serves citizens as a recommendation tool and officials to improve environmental policies through historical analysis of sources of pollution
- **Urban Mobility:** real time traffic monitoring that allows the identification of road incidents through an automatic alert system. KPI's and reports engine available for decision making.

Four main urban projects



Urban
Resilience



Social
welfare



Air
Quality



Urban
Mobility

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Main benefits



Improving Emergency Operations

Anticipation of spills disaster
Reduction of emergency response time



Better Air Quality

Targeting sources of emissions.
Reducing negative health effects by informing citizens through applications to take protective measures



Enhancing Social Welfare

Knowing which elements improve the well-being of citizens.
Improvement sense of belonging and Antwerp city brand.



More Efficient Commutes

Real monitoring of traffic incidents and causes.
Analysis of traffic jams and the delay magnitude.

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Production scheduler

Acerinox



The challenge

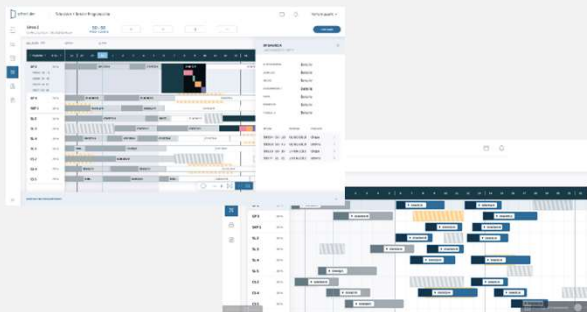
Acerinox is a Steel Manufacturer, one of the top companies in Spain (IBEX35) deployed globally. Steel manufacturing is a tight process: the raw material prices are indexed globally and the environment is highly competitive. Therefore production cost cost and maximizing the utilization is a must.

In addition to capital investments in the latest manufacturing equipment, the sequence of operations in the shop floor define the final cost. Each batch requires changes in the configuration of the production equipment, the changes mean lost time, a production loss.

The solution

The key ifsto find the optimal sequence of operations to minimize the lost time. Finding this optimal sequence requires to explore a staggering number of alternatives and perform complex calculations.

Our solution, a llows to model all type of production operations using a modern user interface for the shop floor personnel. It receives data from the ERP and other systems, recognises batch, machines, operations, shifts, production orders and allows to treat them with easy drag and drop techniques and uses a m ix of more classical optimization algorithms (simulated annealing) and artificial intelligence (genetic algorithms) to produce the optimal sequence in reasonable time



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Main benefits



Profitability

Improves OEE that translates in 3-5% reduction in total production cost



Reliability

Improves visibility and service levels related to customer orders

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Advanced real-time predictive analytics for Wind Turbines

Iberdrola



The challenge

Iberdrola renewable is a world leader in renewable energies and on the cutting edge of the energy transition towards a low-emissions economy. One of the group's main growth vectors is offshore wind. The company now has 1.3 GW installed, which will triple with the construction of another 2.6 GW by 2025. Due to those growth plans in offshore wind, the company needs to get the most value from this technology, by maximizing business outcomes through an online advanced monitoring of the wind turbines to perform an efficient maintenance program.

The solution

ASPA is an Advanced System of Predictive Analysis, developed by Indra to provide early warning of impending failures in the wind turbines. ASPA is based on empirical models trained with historical data by using Machine Learning algorithms. The solution is deployed on cloud. It allows to train customized models per wind turbine and also generic models trained with data from different turbines. This solution initially deployed in 210 onshore wind turbines (Spain, UK and USA) is finally focused in offshore farms, such as Wikingen (350MW) and East Anglia 1 (714MW). Beyond the software, Indra is providing monitoring services from Minsait Monitoring Center.



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Main benefits



Generation

Improved availability and reliability, maximizing power generation



Safety

Avoiding unexpected and catastrophic failures



Decision making

Facilitates decision making related to maintenance actions



Savings

Reduces O&M costs

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Mark Making the way forward

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