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IDOM

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# IDOM





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Since 1957, when Rafael Escolá took the first steps to where we are today, our technical and geographical evolution has been constant. Today, more than 60 years since it was set up in Bilbao to manage a large steel project, IDOM is now an extraordinarily diversified company, with more than 45 offices around the world, and projects in more than 125 countries on five continents. Altogether, 4,000 professionals from 120 different professions.

Many things have changed in the world and many things have changed in IDOM, but the essential elements of our values and our personal comportment have remained unchanged. The commitment to the client, the importance of the person and the professional development of all those who make up this company are the foundations of the pillars which support our present and, without a doubt, our future trajectory.

I would like to reflect, for a moment, on the concept of “commitment”, because I think it is one of the features that sets us apart. At IDOM, each and every one of us is willing to take on our clients’ projects, problems and needs as our own, contributing with our professional knowledge and our personal effort to ensure success, both technologically and in terms of management. This is a basis characteristic of our company culture, one that we are very proud of, and it is largely the driving force that pushes us to continuously improve, to seek more effective and innovative solutions, to provide that extra effort that makes us stand out.

In this publication, we have included a selection of some of our most important projects that, for one reason or another, we feel will help to understand what we do. Of course, it would be impossible to include all those in which we have worked over the years; however, we are proud of them all, and were it not for them, we would not be the company we are today.

I would like to take the opportunity to thank, on one hand, all the people who, over the years, have put their trust in IDOM to develop their projects and, on the other, recognize the effort and dedication of all the people of IDOM who, with their commitment, have carried them out successfully.

**Luis Rodríguez Llopis**  
President

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Committed to sustainability  
Focusing on sustainable development

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# Our pillars

Our activity is governed by elements that allow **our professionals to grow and resolve the challenges of our clients.**



We believe in excellence.  
We strive for excellence in everything we do.



We believe in the power of human relationships as a motivating force to overcome difficulties.



We are passionate about resolving problems that no one has solved before.



Innovation is present in all our activities.





## What do we understand by commitment?

Assuming the needs and difficulties of our clients as our own.

Involving ourselves in projects, personally and professionally, striving for excellence.

Working closely with the client to achieve their objectives.

## The Client

**The centre of our activity.**

We provide the highest quality service, based on the highest technological standards. We resolve problems with solutions which are innovative and efficient.

## People

**The basis and foundation of IDOM.**

Since 1957, we have developed our own philosophy, a style of personal and professional action, committed to the success of our clients.

## Professional development

**Highly qualified expert professionals.**

The people at IDOM seek excellence in the level of their professionalism, while tackling the most ambitious challenges with enthusiasm.

# Our Soul

**We are a free association of professionals united in the ownership of the company, working together,** facilitating the professional and human development of our people, while providing the highest quality of service for our clients.



# Our Activity

We are working in the fields of Consulting, Architecture and Engineering, with **multidisciplinary teams, developing sustainable projects that contribute to a more liveable world.**



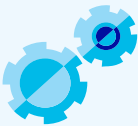
## CITIES

We transform cities into habitable, resilient territories, competitive, sustainable, social and economically viable.



## ELECTRONICS & TELECOMMUNICATIONS

We implement the latest technology, for the purpose of helping our clients achieve their business objectives.



## INDUSTRY

Our commitment is to help industry be more competitive and environmentally sustainable, by providing innovative solutions.



## HEALTH

We pay special attention to one of the important challenges of today's society: improving access to quality healthcare.



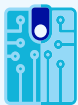
## ENERGY

We are participating in the most advanced energy projects in the world, providing innovative solutions for the energy of the future.



## TRANSPORTATION SYSTEMS

Transportation systems are the backbone of the economic and social activity of cities.



## DIGITAL

We use digital transformation to overcome challenges, creating innovative solutions and ensuring the transfer of ideas to the market.



## SCIENCE & ASTRONOMY

We participate in large scale astronomy and nuclear physics projects, and we provide high performance and precision instruments.



## PUBLIC SECTOR

We approach challenges with innovative and feasible solutions, of the highest level, capable of responding to local needs.



## WATER CYCLE

We contribute to extending the universal right to water and sanitation in many different countries.



## ARCHITECTURE

Faced with a perspective that architecture is reduced to a mere product, we want to show greater sensitivity towards the process as a whole.



## ENVIRONMENT

Sustainable development is the focus of our projects on climate change and the circular economy.



# Our corporate headquarter buildings



IDOM Bilbao



IDOM Madrid

Thanks to the combined effort of our architects and engineers, **the IDOM headquarter buildings in Bilbao and Madrid are now references in terms of energy efficiency and comfort.**

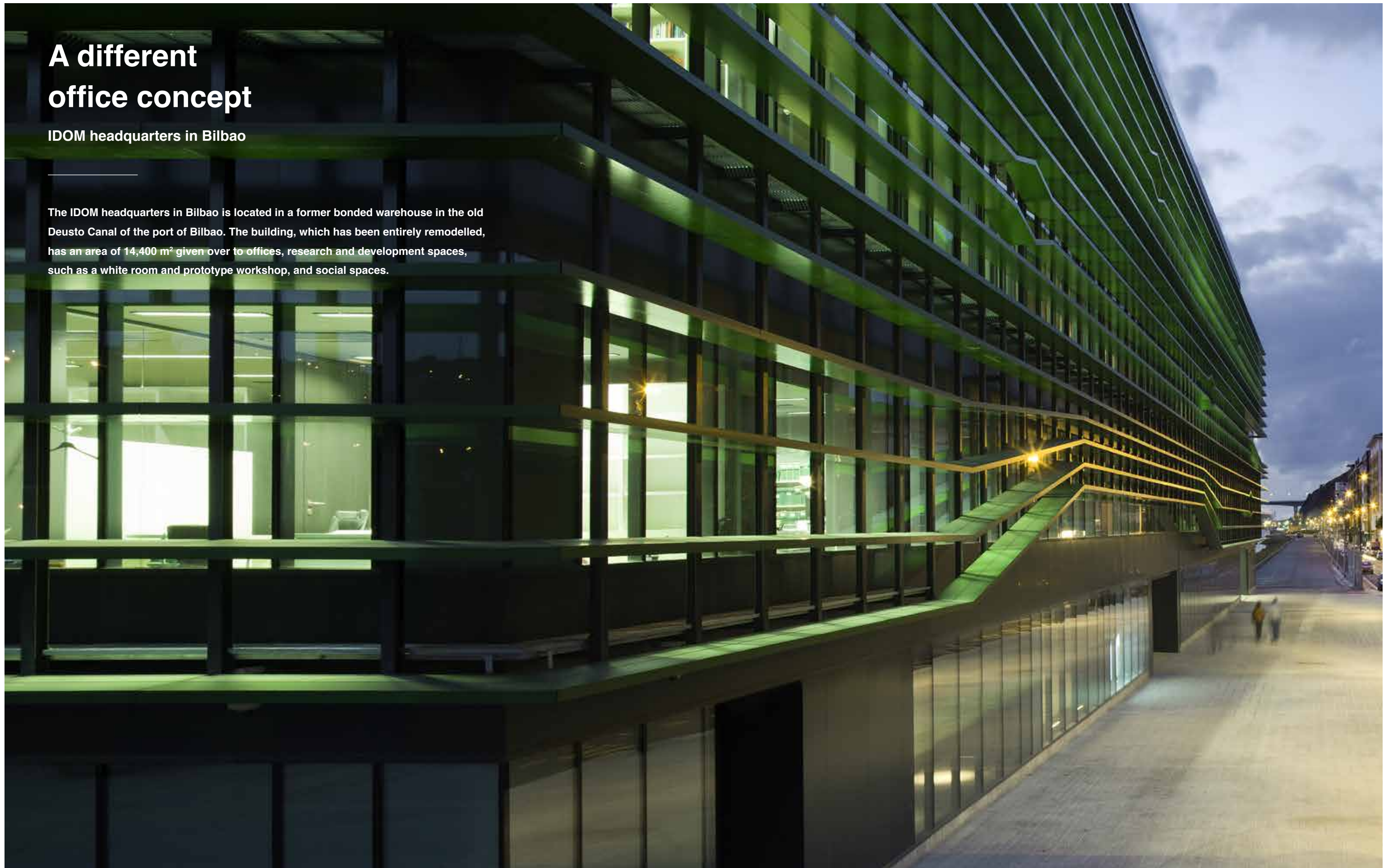
Our company takes energy saving and emission reduction objectives seriously, promoting efficient buildings, **promoting cogeneration and using renewable energy on a large scale.**



# A different office concept

## IDOM headquarters in Bilbao

The IDOM headquarters in Bilbao is located in a former bonded warehouse in the old Deusto Canal of the port of Bilbao. The building, which has been entirely remodelled, has an area of 14,400 m<sup>2</sup> given over to offices, research and development spaces, such as a white room and prototype workshop, and social spaces.







IDOM headquarters in Bilbao



A building at **the forefront of what is a new approach to sustainable architecture**

The approach to reducing the energy consumption of the building involves the use of thermal inertia provided by the large mass of reinforced concrete of the structure; solar protection in the design of facades; the building's form factor to guarantee natural luminosity; reduction of the energy demand and energy transfer between work areas...

Internally, the design combines pre-existing elements with new ones. The large beams of the original structure - a port warehouse - are seen on most of the floors.



An important objective of the project was to achieve an ample, open-plan work space, with great intra and inter departmental visual communication, without barriers between the different levels of function, in line with the thinking of IDOM.

Very few individual offices have been designed, although there are many meeting rooms for teamwork. To avoid generating psychological barriers between offices, meeting rooms and the open area, the cubicles have not been closed off using conventional methods.

Open workspaces and noise are usually synonymous and therefore special attention was paid to the surfaces for acoustic absorption: on the floor, next generation fibre carpeting, materials for desk separation, and the finishes on the ceiling.

The shafts that once housed the cargo lifts to carry loads to the roof are now occupied by the main staircase and glazed elevators that allow the office space to be seen on one side and the river on the other. On the top floor of the tower where the noisy machinery of cargo lifts was before, there is now a cutting-edge telepresence room.

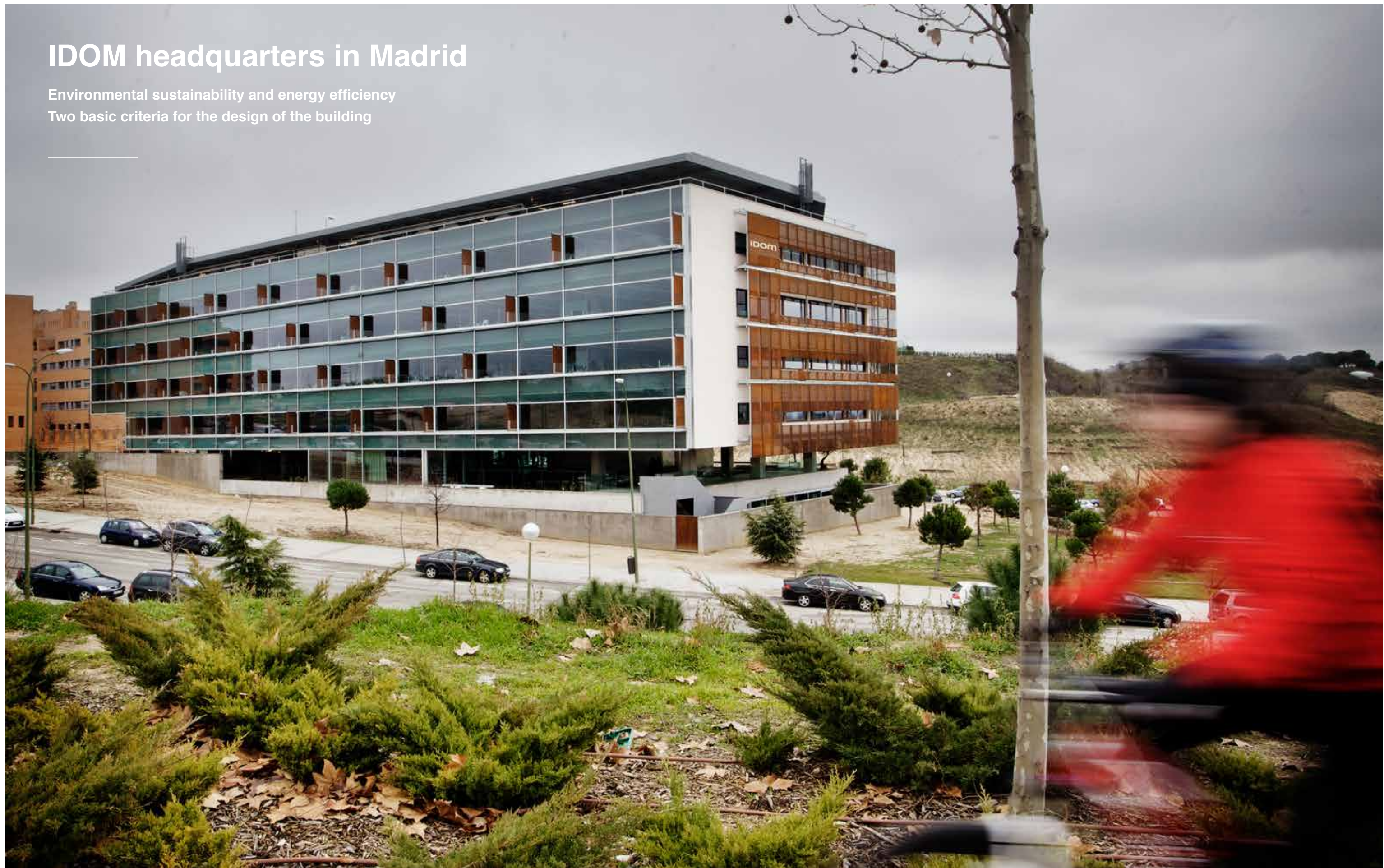




# IDOM headquarters in Madrid

Environmental sustainability and energy efficiency  
Two basic criteria for the design of the building

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With over sixty-three years of experience in developing projects of increasing complexity, IDOM has its own methodologies for organizing workflows and work teams. From the moment of its conception, the building was developed as a multidisciplinary entity in which architects and engineers share, in a symbiotic unit, the design of the architecture, installations, energy and communication systems.

Flexible and adaptable to the demands of each moment, the building opens spaces to give personalized attention to the client, the launch of a project, individual reflection, the development of a project, or simply a brainstorming exercise.

**Integration** is another of the basic criteria used in the design of the building. The horizontal and vertical dimensions of the building have been integrated into a diaphanous and unitary circulation space







## The Thermally Activated Building System (TABS), integrating the building structure for energy storage

### Environmental responsibility

**A step forward in energy efficiency, comfort and water savings in an office building.**

The building aims to break the axioms of traditional office design and is a more homely environment. A space without a suspended ceiling, without a raised floor, with wooden carpentry, fabric ducting systems, exposed factory walls, low-speed air flow and room temperature, opening windows, ultimately a non-office.

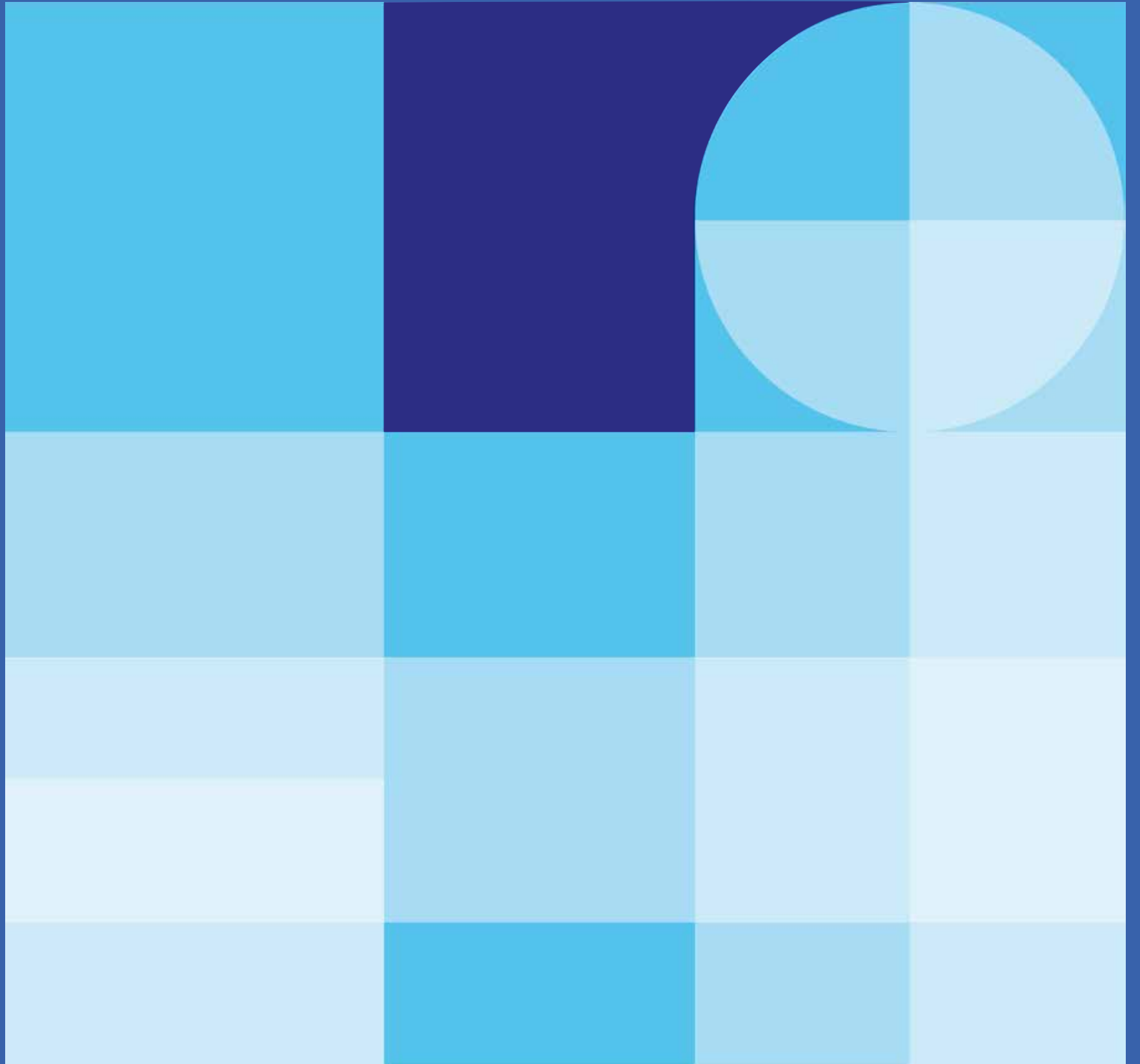
The facilities have been designed to maximize energy efficiency according to a sustainable strategy.

The envelope incorporates a series of design elements to minimize the energy demand of the building. Its orientation, optimization of openings, high thermal insulation, high performance glass, exceptional solar protection and double vegetal skin both on the facade and on the roof, are just some of the measures used.

The Thermally Activated Building System (TABS) is combined with a night evaporative cooling system and has important advantages over conventional air conditioning systems, significantly reducing consumption and increasing the comfort for the occupants of the building.

# Advanced Design

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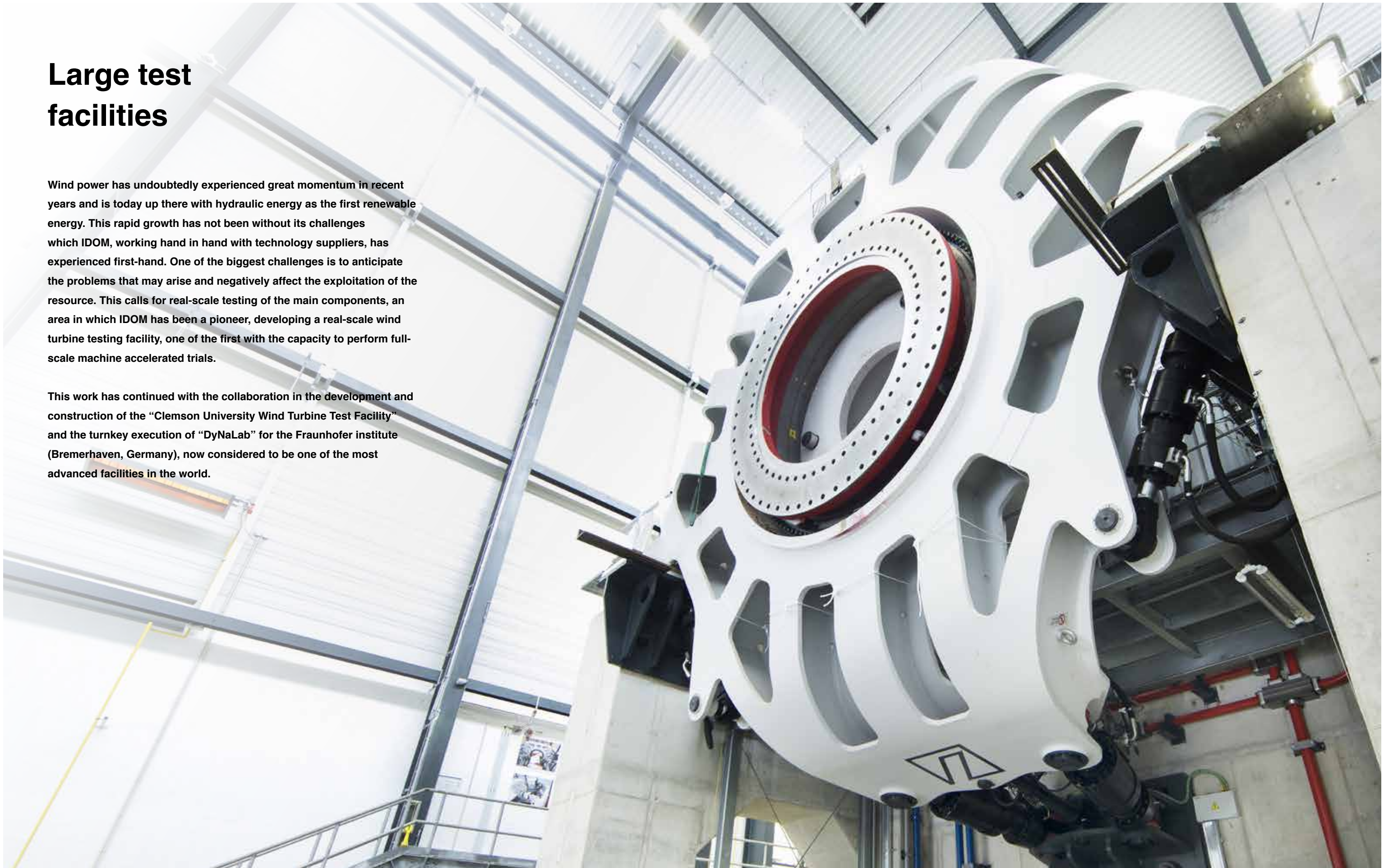




# Large test facilities

Wind power has undoubtedly experienced great momentum in recent years and is today up there with hydraulic energy as the first renewable energy. This rapid growth has not been without its challenges which IDOM, working hand in hand with technology suppliers, has experienced first-hand. One of the biggest challenges is to anticipate the problems that may arise and negatively affect the exploitation of the resource. This calls for real-scale testing of the main components, an area in which IDOM has been a pioneer, developing a real-scale wind turbine testing facility, one of the first with the capacity to perform full-scale machine accelerated trials.

This work has continued with the collaboration in the development and construction of the “Clemson University Wind Turbine Test Facility” and the turnkey execution of “DyNaLab” for the Fraunhofer institute (Bremerhaven, Germany), now considered to be one of the most advanced facilities in the world.







DyNaLab, stands out for its most advanced test capabilities with high dynamic performance. The facility can offer a wide range of possible tests given that it can simulate different wind conditions and electrical networks.

DyNaLab is the first test stand in Germany capable of testing entire multi-megawatt wind turbine drivetrains - 2.5 MW to 8MW - on a real scale. The design developed by IDOM has a rotary drive (a tandem

motor) with a test capacity of up to 10 MW of power, as well as an innovative load application system formed by a Stewart platform with six servo-hydraulic cylinders of 3,000 kN, which allow cyclic loads (not torque) of thrust force of up to 1,900 kN to be applied, up to 20,000 kNm, at frequencies up to 2 Hz. Likewise, the system is equipped with a pioneering system of its own, artificial feeding and Hardware-in-the-loop (HIL) simulator.







After an international competition, the Fraunhofer IWES Institute entrusted IDOM with the design, construction and turnkey supply of the test bench, and also commissioned the architectural, engineering and construction management of the building that houses this test laboratory. Operating since October 2015, the installation is being used for validations / testing of the latest technological developments of the world's leading wind turbine manufacturers.

Test infrastructures in general, and also for various fields, are one of the business areas of the firm. IDOM has been working in the wind industry for many years, designing parts of wind turbines, although nowadays, work is centered more on design, manufacturing and commissioning of plants and test facilities.



**Wave power - generating electricity  
from ocean waves, an inexhaustible  
source of energy**







# The emerging ocean energy sector

In 2050, 10% of European energy consumption could be supplied by our oceans

The fall in costs of photovoltaic and wind energy has opened the prospect of an energy transition based on profitable renewable energy which at the same time creates employment. However, due to low winter sunshine and limited space on land, to achieve an energy mix based on renewable energy in Europe, a massive deployment of offshore renewable sources will be necessary.

The offshore renewable energy sector comprises both offshore wind energy and that contained in the oceans themselves, ocean energy.

Ocean energy is abundant, geographically distributed, renewable, predictable and decoupled from other renewable energy sources. The main resources of these energies are waves, currents, thermal gradient and saline gradient. According to Ocean Energy Europe, by 2050, it would be possible for 10% of European energy consumption to come from these sources, matching the current global contribution of wind energy.

However, the offshore renewable energy sector in general, and the use of ocean energy in particular, is still a developing sector whose main challenge is to reduce costs, both in terms of investment and operation. In this context, IDOM is actively involved in the development of wave energy converter technologies that can be commercialized.

Wave energy is abundant, distributed, renewable, predictable and decoupled from other energy sources





# Wave Energy in IDOM

## MARMOK A-5

MARMOK A-5 has successfully weathered three winters in the open waters of the Bay of Biscay

The MARMOK A-5 is a prototype of a low power wave energy converter (WEC). It is a floating device, based on Oscillating Water Column technology, with two 15-kW turbines. The prototype – the result of public pre-commercial procurement by the EVE (Basque Energy Agency) – has a length of 42m (36m draft and 6m freeboard), is 5m in diameter, with a displacement of 162Tm. It was installed on the BiMEP marine energy platform, the first WEC connected to the Spanish state electricity grid, and one of the first devices connected in the world.

With this prototype, IDOM has successfully achieved all the planned objectives. Firstly, demonstrate that it could withstand three winters, operating in open waters of the Atlantic (2016-2019), on occasions overcoming waves of up to 14m. Secondly, it has provided an enormous amount of data and valuable experience to IDOM during all the phases of its life cycle: modelling, design, certification, manufacturing, installation, operation, maintenance and removal.

In addition, innovations of several European companies and institutions have been tested on the MARMOK-A-5: turbines, control algorithms, mooring systems, which could reduce the cost of generating energy by more than 50%.

Building on this experience, IDOM will continue with its technological development, working towards a commercial-sized WEC that will produce electricity at a competitive price.

The MARMOK A-5 has served as a test platform for several European R&D projects: OPERA, DTOceanPlus, WESE

# Architecture

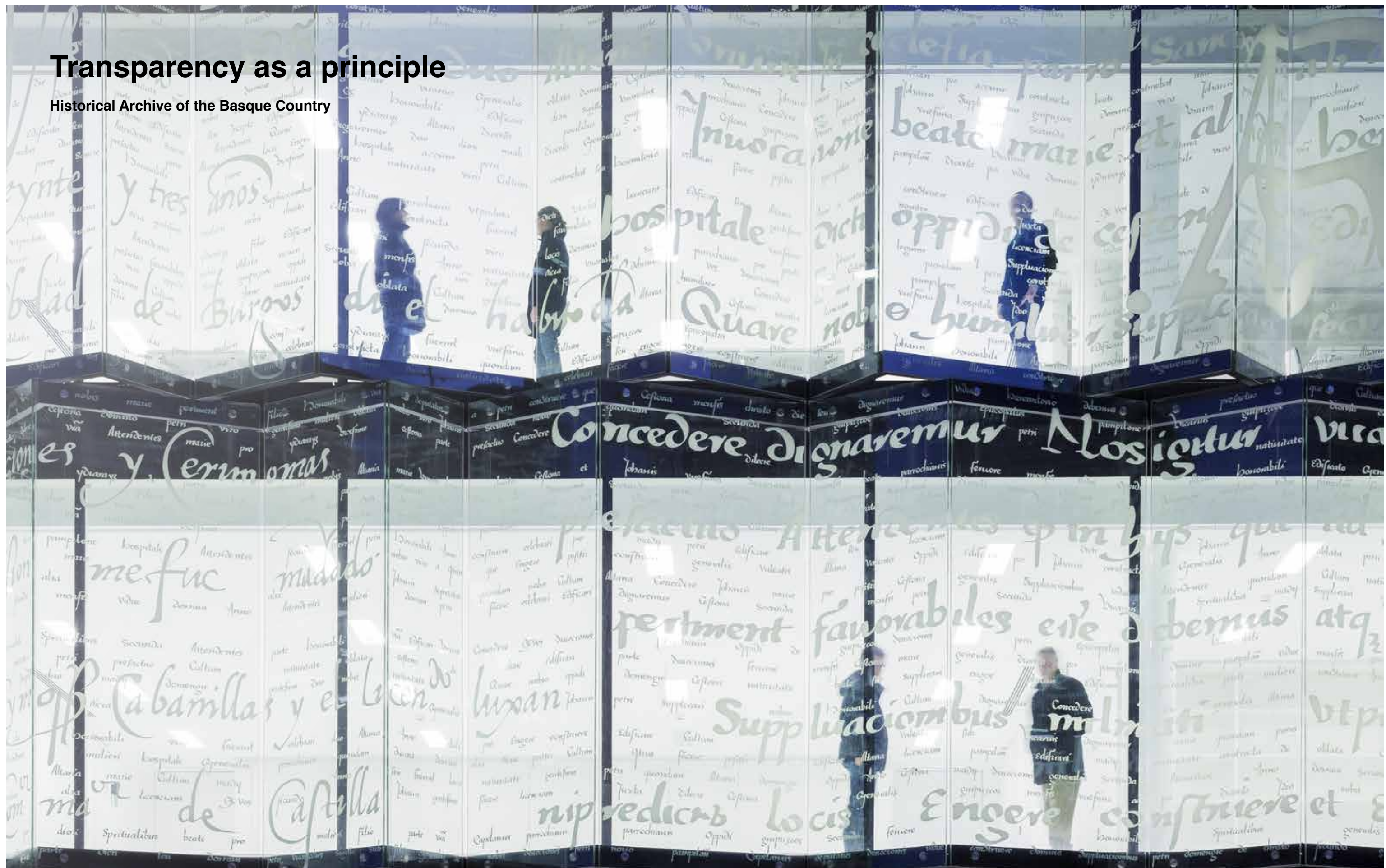
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# Transparency as a principle

Historical Archive of the Basque Country







The Architectural Program of the archive arranges the floors according to the degree of access control of the different uses

Well-being, leisure and culture are concepts that are closely linked in our society. Architecture being a cultural fact in itself, every architectural achievement that seeks well-being and leisure should also serve reflection, questioning and inner growth, typical of the cultural dimension. Consistent with this approach, IDOM architects respond to leisure and culture needs by creating spaces that favour individual and social growth.

All this while continuing to achieve the commitments made with the client and the excellence of the final product.

Located in the centre of Bilbao, the Euskadi Historical Archive has a glass facade that transmits the transparency of what is happening behind its doors and invites you to enter. The archive organizes its program by floors according to the degree of access control to the different uses.

Inside, it has opted for the design of double heights and visual crossings that enrich the relationships between the different existing uses, while allowing light to enter.







# Winemaking and sustainable design

## Beronia Rueda Winery

The new bodega or winery, in addition to meeting the production needs for high quality white wines by incorporating the latest advances and technologies in field of enology, also adapts to a wine tourism program, creating an attractive image in line with the character of the wines that are being produced.

One of the key aspects of the project is the integration of the winery with the landscape and the vineyard itself. The production area is conceived as a unitary space

that revolves around a central nucleus, presided by a sculptural staircase and around which the laboratory, the cask room and the tasting room are located, with concrete tanks on one side and stainless-steel ones on the other.

A limited range of materials have be used for construction, the same finishes that are found in the winemaking and bottling elements; concrete, steel, wood and glass.



The design has taken into account sustainable aspects such as the generation of heat using a biomass boiler

The design has taken into account sustainable aspects such as the generation of heat using a biomass boiler, the reuse of rainwater for water tanks and irrigation of gardens, and the use of the hygrothermal properties of the ground...

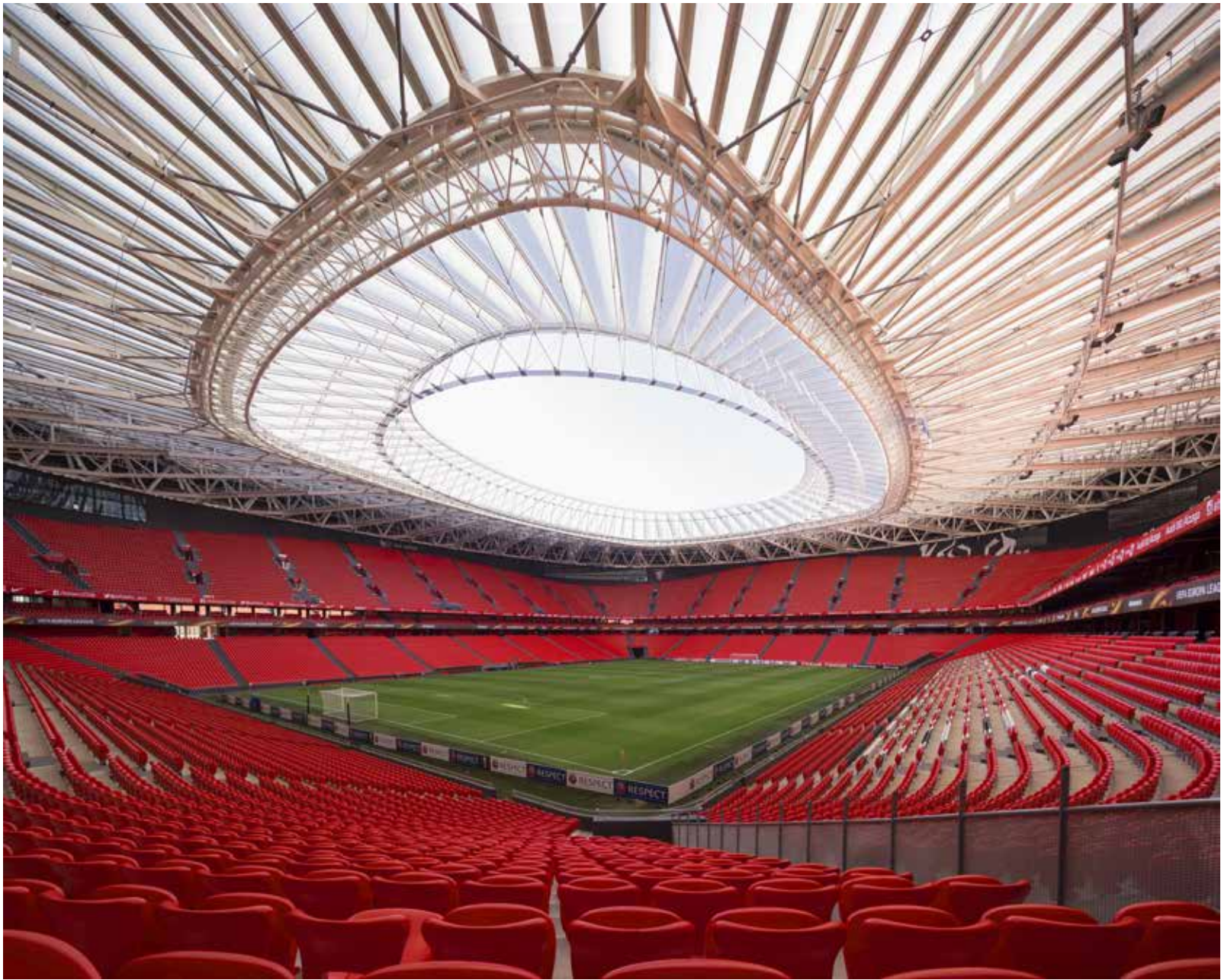


# The cathedral of football

San Mamés Stadium







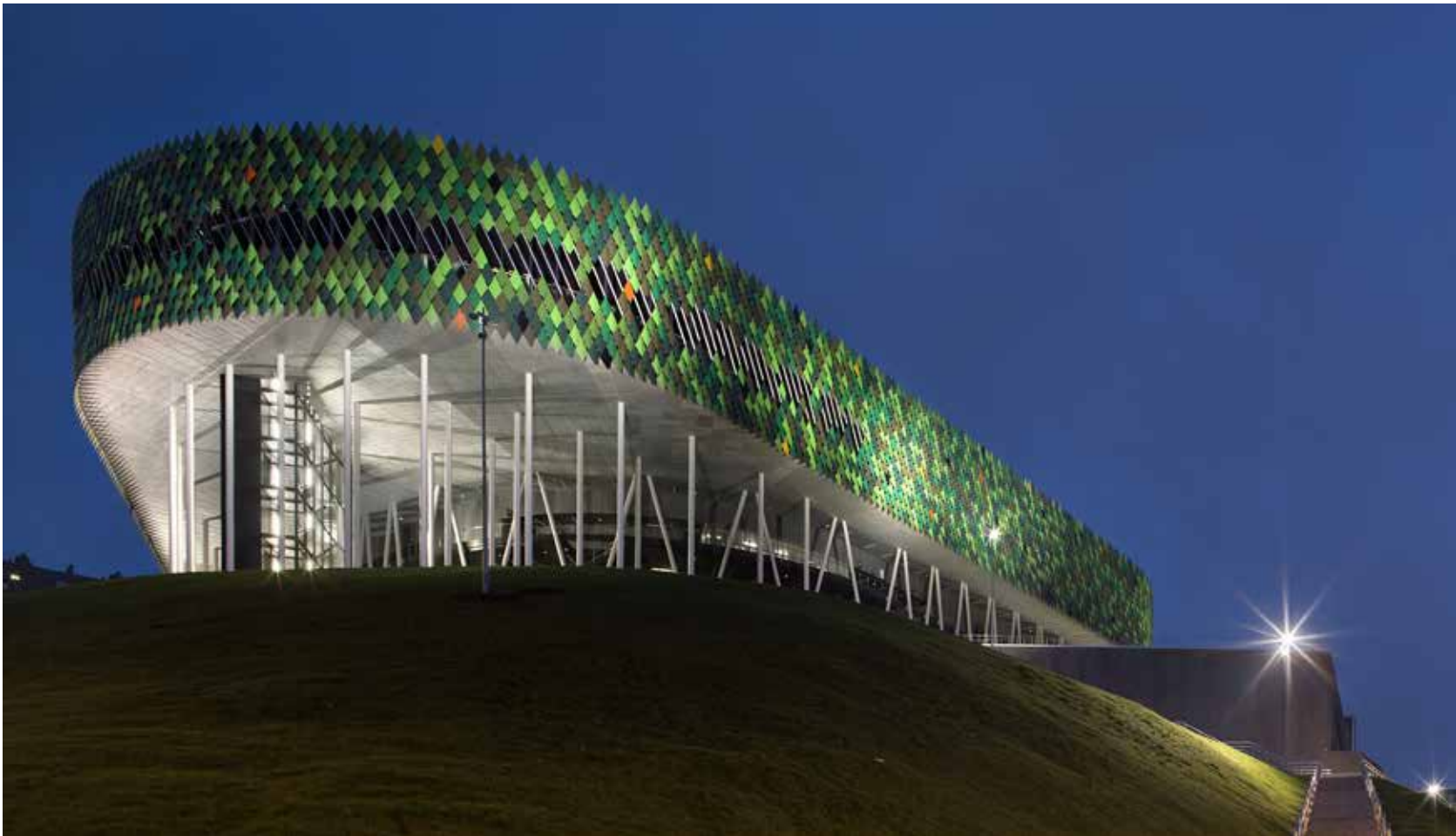
Sport has become a driving force of modern society. The passion for following a team and the inspiration produced by sports achievements have taken on a global dimension thanks to the power of media diffusion. This is reflected in society, as people adopt healthier lifestyles, encouraged by team values and competitiveness. These concepts are at the forefront in the approach of IDOM to sports projects, a methodology that combines cutting-edge design with technological development, ensuring that the deadline and financial objectives are met, while offering the highest standards of quality.

### Spanish Host Venue for UEFA Euro 2020

The San Mamés stadium is a flagship stadium. Located practically in the same place as the pre-existing stadium, it was built in two phases, so that at no time was play interrupted by construction. Recognized with many awards, the building has managed to maintain the magical and intense atmosphere of its predecessor and is now landmark in the city of Bilbao, with its unique façade incorporating one of the most advanced dynamic lighting systems in the world.







# A space for sports competitions and shows

Bilbao Arena

Inaugurated in 2010, the complex, located in the neighbourhood of Miribilla in Bilbao, has a basketball court with seating for 8,500 spectators and sports centre.

Taking its inspiration from organic and natural elements, the sports pavilion is like a grove of trees while the sports centre is the mass of rock which supports it.

The complex incorporates sustainability elements such as the reuse of pool water for cleaning the streets of Bilbao. The

green roof of the sports centre has a water tank which eliminates the need to irrigate the lawn. A cogeneration system generates electricity and produces, without cost, hot water for the swimming pool and showers.

The Sports Centre has a large skylight that introduces natural light into the pool area - seven lanes and 25 metres long - as well as the 520 m² multifunctional gym. The building also houses the administrative offices.

A wide range of measures to increase energy efficiency by 50%





# East & West

## CEIBS University Campus in Beijing

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Headquarters of a business school in China, the building received the First Prize in the 6th edition of the Architecture Awards of the Society of Architects of China, the First Prize in the 15th edition of Beijing excellent design, and was awarded in the IX International Biennial of Architecture of São Paulo.







# Senegal committed to education

Extension of the Universities of Bambey and Saint Louis

With the wealth of knowledge gathered during the development of numerous educational and technological projects, we help our clients improve their work processes, providing them with high-level design, to achieve excellence and efficiency in all aspects: functional, logistics, financial, energy and comfort. Our experience in the educational, technological and research sectors includes strategic and feasibility studies, functional programs, architectural and engineering design, management and consulting services.

In the case of the extension of the universities of Bambey and Saint Louis, we helped the government of Senegal to develop sustainable, affordable buildings, easy to build, using local labour and techniques, and with almost zero maintenance.

Four buildings were built in Bambey, incorporating classrooms, an amphitheatre, laboratories, computer rooms and offices. In Saint Louis, three buildings house an indoor gym, a swimming pool, a laboratory, a documentation centre, classrooms and offices.

Sustainable, affordable buildings, easy to build, using local labour and techniques, and with almost zero maintenance







# Innovation & technology

## Ultra-High Voltage Laboratory

The Ultra-High Voltage Laboratory is a facility of the Artech Group for the testing of electric current transformers. It is a Faraday Cage, a diaphanous volume of open space, 57 m in length, 30 m in width and 27 m high, necessary to carry out precision electrical measurements. One of the few existing worldwide.

The main building can be divided into three spaces, suitable for carrying out shock tests, resonance and precision measurements.

Adjacent to the main space, is a block overlooking the test space, which has two control/reception rooms, a meeting room and a space for presentations with capacity for 60 people.

This laboratory represents the commitment of the Artech Group to innovation, reflected in a polished metal facade that vibrates and breaks along its perimeter, integrating the volume into its environment.

The main building can be divided into three spaces, suitable for carrying out shock tests, resonance and precision measurements





# An icon for the new India

## India International Convention and Expo Center

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Located 11 km from Indira Gandhi Airport in New Delhi, this will be the largest convention centre in India and South Asia. Conceived as an anchor project for the future development of the country and strategically located between New Delhi and Gurgaon, the development covers 90 hectares.







# A cultural and economic driving force

## Lima Convention Center

In architecture, the Mixed-Use Ecosystem is understood as the space that integrates parts of a very diverse nature in permanent interaction. It is a perspective from which large-scale and complex projects must be understood, structured around the optimization of mobility and characterized by diversification, integration and intensification of uses, scale control and urban landscape empowerment, as the backbone of coexistence and social

wellbeing. On this conceptual basis, IDOM has incorporated the latest advances in the fields of ecology, information and communication technologies, psychology and process design.

The Lima Convention Center (LCC) is a good example of an ecosystem designed for the social, economic and cultural regeneration of a city. Strategically located in the Cultural Center of the Nation, the

design of the LCC fulfils three main objectives: to be a cultural and economic driving force, a meeting place rooted in the Peruvian collective culture, and a unique, flexible and technologically advanced architectural landmark.







# Commercial strategy & passenger experience

Reforming the T1 shopping area of Barcelona Airport



Nowadays, the concept of experience is key in the design of spaces and processes: In the complex area of air transport, it takes on a special relevance in a sector experiencing constant growth.

In this context, the commercial areas of the airports are not just strategic business units, sources of airport revenues, they also address the specific needs of passengers by providing recreational spaces and a unique experience, thereby

opening possibilities to become tourist destinations themselves.

IDOM, together with the Emirati company ODG, a specialist in Airport Retail, is developing a study and remodelling proposal of the commercial areas of Terminal 1 of the Barcelona Airport, in order to maximize the level of expenditure per passenger and enrich the passenger experience at the airport.

The scope of work is to study a new architectural reconfiguration as well as the commercial offer, to design the optimal distribution to maximize the surface area and maximize commercial income.



# A humanized hospital

Feeling at home

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Designing hospitals involves understanding the unique typology of these buildings. Like complex living beings, they grow, change and must possess the intrinsic capacity for adaptation.







## A highly specialized hospital

New headquarters of the University of Navarra Clinic in Madrid

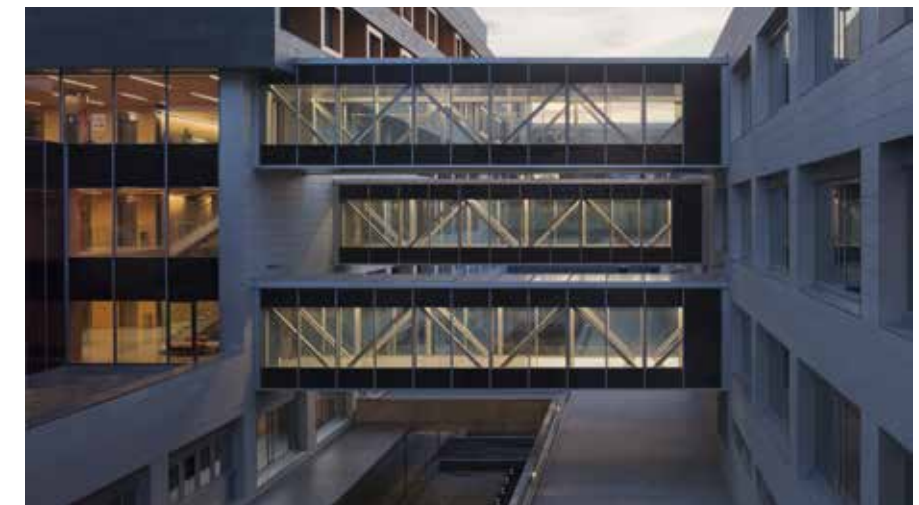
Architects, engineers and consultants, highly specialized in hospital projects, share synergies to meet the challenges of great functional and technological complexity.

One of the most outstanding recent cases is that of the Madrid headquarters of the University of Navarra Clinic. IDOM has developed the architecture and structures projects of this center, which will offer 46 medical specialties, will have

an oncological institute, and five other multidisciplinary areas in 26,500 m2 of hospital use.

The architecture of the Clinic responds to the specific nature of a university hospital, where professionals work to quickly and effectively resolve patient problems. To fulfil this objective, a compact space has been created, where the routes are minimized.

Mundo ZEN and Adecco Award for the most creative and innovative space of 2019







# A simple idea with excellent results

## Joaquín Sorolla High-Speed Station

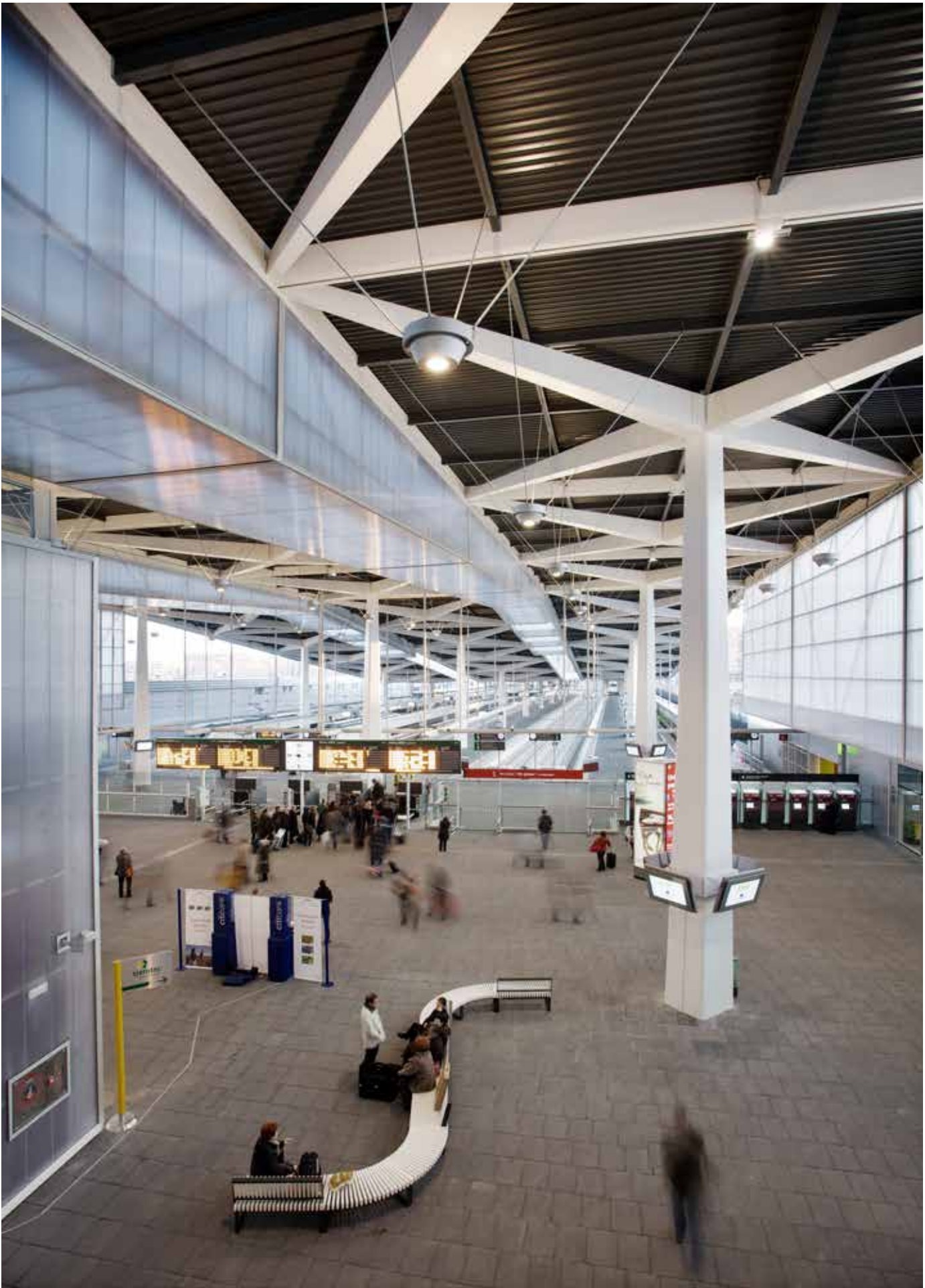
The objective of the Joaquín Sorolla station was to prepare for the arrival of high-speed rail while undertaking several underground rail works: South node, access channel, North station and tunnel passing through Valencia. However, it has become, for the moment, the high-speed station in the city.

Its design is very simple: a platform roof extends and rises to cover the lobby. The result is practical: a terminal station with a building at the head. The architecture is legible: folded longitudinal bands, a bright and ventilated interior, without the need for air conditioning, a neutral exterior, which is illuminated at night, and two scales: the

platform, a place of exchange between traveller and train; and the lobby, space of relationship between traveller and city.

The modular conception resolves its constructive function to become a representative image of the station: repetitive and systematic in its constructive essence; with personality and character in its structural proposal.

The modular conception resolves its constructive function to become a representative image of the station





# Territory Management

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# Developing urban resilience

Balance the territory and revitalize the economy

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The economic growth and social stability occurring in some African countries is leading to investment in cities such as Luanda (Angola) and Saint Louis (Senegal), following the recommendations of the United Nations on urban sustainability.







# Urban reference models in Africa

Improving quality of life

In Luanda, the urban transformation of 10 neighbourhoods has benefited more than 650,000 inhabitants, substantially improving quality of life. The project has strengthened the socioeconomic structure of proximity, integrating new housing and amenities with mixed uses that generate employment, improve sustainable mobility and provide more urban infrastructure and services. A program of future emblematic actions is included to boost and strengthen competitiveness. There is also a management scheme focused on the

reinvestment of the capital gains generated, guaranteeing that urban improvement will be continuous and sustainable.

In Saint Louis, the Sustainable Development Strategy establishes how to achieve a balanced growth of the metropolitan territory in which almost 340,000 inhabitants live, while the Urban Plan and the Pilot Projects propose the redefinition of the existing city (effective urban densification, identification of new spaces of opportunity, rehabilitation

of informal areas ...), as well as the adaptation of the metropolis to new climatic challenges (relocation of residents in risk areas, preservation of ecosystems...), in order to create a polycentric and cohesive agglomeration model.







# Studying the urban footprint of the region of Bogotá

Enhancing local resources to reinforce regional integration

Bogotá Región, an urban agglomeration with more than 10 million inhabitants, has proposed to study the growth and evolution of the urban footprint, with the purpose of generating multisectoral recommendations that improve the quality of life of the population. The Region includes the Capital District along with 20 neighbouring municipalities and is Colombia's main economic engine, contributing around 30% of the national GDP, and aims to position itself among the most attractive destinations in Latin America to live, work and attract investment.

To strengthen this position, IDOM collaborated with Findeter, the Government of Cundinamarca and Bogotá Capital District in the study of a Model

of Metropolitan Governance of Bogotá Region, to determine how the territory can be developed until 2050. The study was presented by IDOM in the Congress of the Republic, the Plenary Chamber of the Government of Cundinamarca, the Council of Bogotá, in seminars of the Inter-American Development Bank, as well as in various national and international academic papers. Its value is transcendental for the region, as it allows informed territorial and governance decision-making, in accordance with the collaborative scheme that is intended to be established between the Colombian capital and neighbouring municipalities to enhance the environmental, social and economic sustainability of the region.

Bogotá Region aims to be one of the most attractive destinations in Latin America to live, work and attract investment







# Prioritize people and the environment

Working towards improving environmental, urban and fiscal sustainability

Regions and their cities need to assess their vulnerability to the effects of climate change and identify the options that can turn them into resilient territories, capable of building socio-economic and environmentally sustainable growth.

IDOM designs models of sustainable and resilient cities, considering scenarios of compact and liveable urban growth that favour eco-mobility, the local economy and job creation.

We collaborate with the Inter-American Development Bank, the Global Environment Fund and the World Bank, in the development and implementation of sustainable growth programs in around 40 cities in 14 countries, and we provide the various public entities with a set of tools for structuring projects working towards the improvement of their environmental, urban and fiscal sustainability.

IDOM is a leading consultant in urban resilience projects in Latin America and the Caribbean, having worked for large metropolises such as Panama, Asunción or Tegucigalpa



# Airports: an economic environment with access to the rest of the world

Competitive advantages for the most innovative companies

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The main airports in the world are evolving from simple transport infrastructure to privileged centres, attracting economic activity, logistics bases and new centralities of urban activity.







# Airport city

Gateway to connectivity and the economy of the future

Aena, the world's largest airport operator, contracted IDOM to prepare the Master Plan for the Adolfo Suárez Madrid-Barajas Airport, the fifth most important in Europe by number of passengers. The proposal involves over 3,500 hectares and seeks to consolidate the airport as a driving force for the regional economy, while being a large employer, asset manager and

promoter of opportunities for the economy of the future, covering metropolitan demands for logistics and large-scale uses, with specific areas for technology industry, industry 4.0 and e-commerce. In turn, King Fahd International Airport (KFIA), the third largest airport in Saudi Arabia in passenger transport and the

largest in the world in gross area (76,000 ha), is currently developing an expansion strategy to attract logistics companies, technological, hotel, and corporate headquarters. Our firm has designed the Master Plan to be developed in an area of 5,725 ha.





# Consulting

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# National Logistics Observatory

Web platform for the integration, analysis and dissemination of logistics sector information

In recent years, investment in the Colombian public and private sector has focused on the development of new transport infrastructure. The time has come to reinforce the services of this sector.

The high cost of freight and passenger logistics due to the difficult geography and the dispersion of logistics information, has made it necessary to create the National Logistics Observatory (ONL), a strategic tool to capture, analyse and disseminate information of national logistics, generating the indicators, and creating a quantitative model that facilitates decision-making in terms of public policies and the prioritization of public and private investments, in order to improve the country's competitiveness.

The platform offers the user 48 indicators, classified in 6 families, that represent the thematic axes of the logistics sector, integrated by three elements: Web portal, business intelligence (BI) and Big Data, and geographic information (GIS).

Big Data solutions for a competitive country







# EmprendamosGuate Program

Guatemala, working towards the knowledge economy

The EmprendamosGuate Program seeks to create the appropriate social, educational and financial conditions for entrepreneurship. By 2030, Guatemala wants to be a reference country in the creation of technological start-ups, with a high specialization of knowledge, that stimulate innovation and creativity and generate qualified employment and new opportunities.

The Ministry of Economy of Guatemala, through the National Competitiveness Program, has made a clear commitment to transform the country's economy into a knowledge-based economy. IDOM has been leading the process, training and certifying more than 60 consultants, who in turn will provide training and support to 1,500 entrepreneurs in a network of 25 training and innovation centres throughout the country.

Government support for growth and consolidation of the business ecosystem



# Low Carbon: Global commitment

Driving force of intense economic, social, technological and political change

The world needs to breathe cleaner air and the main objective is, by 2050, to reduce the net carbon dioxide emissions to zero. The challenge will require a profound economic, social, technological and, of course, political change.

To achieve this goal, progress will have to be made gradually and steadily towards a society with low carbon dioxide emissions, where clean technologies will play a fundamental role.

Countries like Brazil and Mexico are committed to becoming low carbon economies and societies, promoting the adoption of low carbon technologies in the business fabric.

Other countries such as Colombia, Chile or Peru are also taking up this challenge, and IDOM is working at institutional and business level to achieve this challenge.

Moving towards a prosperous, competitive and climate neutral society







# Integral vision of the national infrastructure

IDOM is collaborating in defining the Mexican infrastructures of the future

The National Bank of Public Works and Services of Mexico (BANOBRAS) led an effort aimed at strengthening long-term planning for infrastructure and continuing investment in the short term. To address this unprecedented challenge and with the aim of increasing country's competitiveness, the institution has counted on the collaboration of IDOM.

Mexico has different planning exercises, but there are areas of opportunity such as the long-term and intersectoral vision, the establishment of a homogeneous prioritization methodology and criteria, the development of short, medium and long-term portfolios, maintaining transparency and the participation of public, academic and private sectors.

In this context, an exercise was carried out to build a Comprehensive Vision of the National Infrastructure (VIIN) to generate new development opportunities, transversal to all sectors such as water, environment, communications and transport, energy, social and tourism , and that collect contributions from public, private and academic fields. Likewise, a standard and consistent methodology was defined to carry out the National Infrastructure Strategy (ENI) in the future.

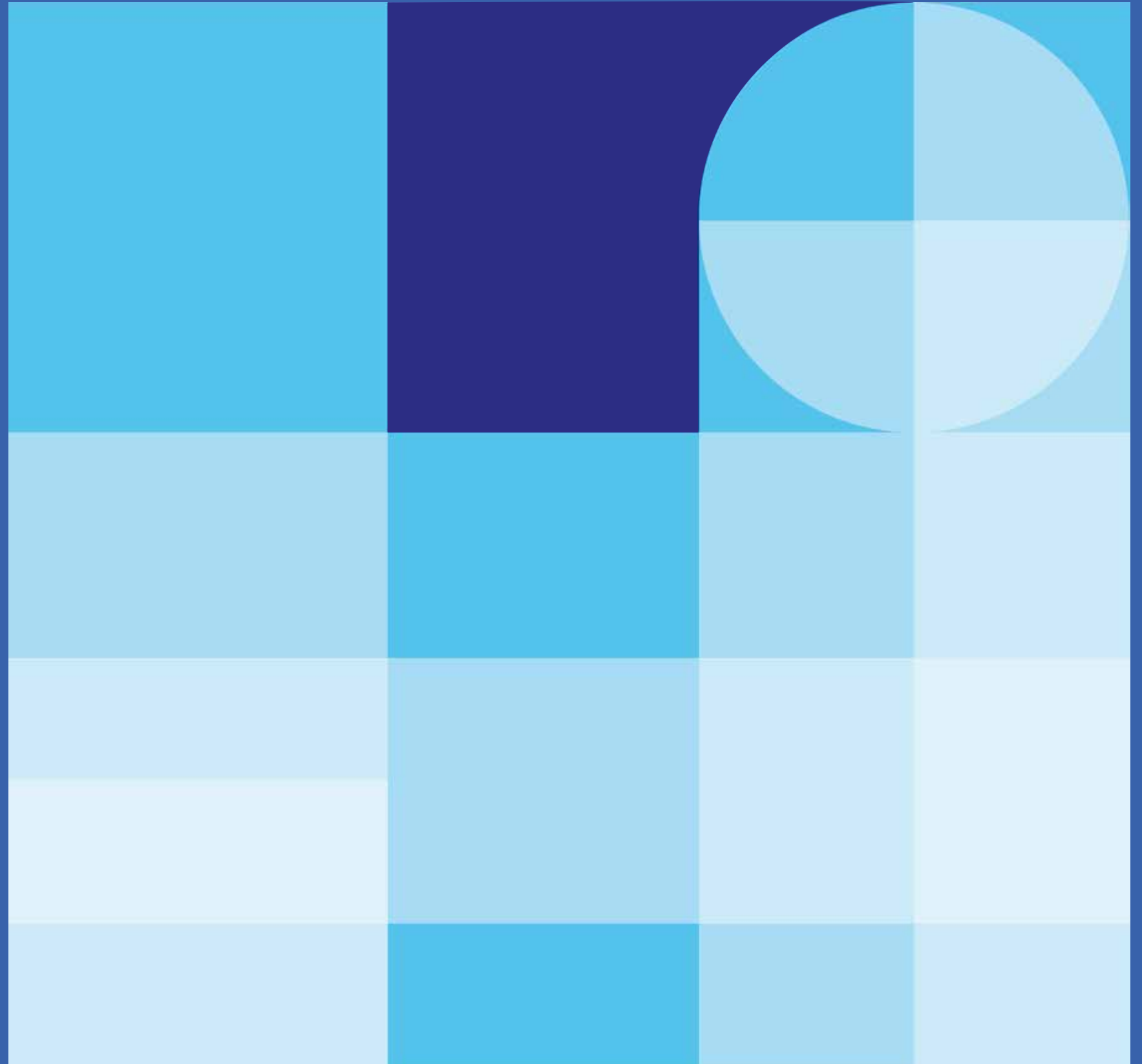
The work includes contributions from the private, public sectors and academic fields





# Digitalization

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# Smart cities

The technological revolution colonizes urban life

The National Plan of Smart Cities of Spain aims to improve the quality of life and well-being of citizens and visitors, making cities and islands more inclusive and participatory. To achieve this purpose, it is intended to increase the effectiveness and efficiency of local entities in the provision of public services through information and communication technologies (ICT). The Plan is promoted by the Ministry of Economy and Business and co-financed with FEDER Funds.

Red.es, which depends on the Secretary of State for Digital Advance, has entrusted IDOM with the development of several innovative projects: Granada Human Smart City, Smart Costa del Sol which includes 13 municipalities, VLCi Impulse Project in the city of Valencia, Smart Digital Segovia and El Hierro en Red.

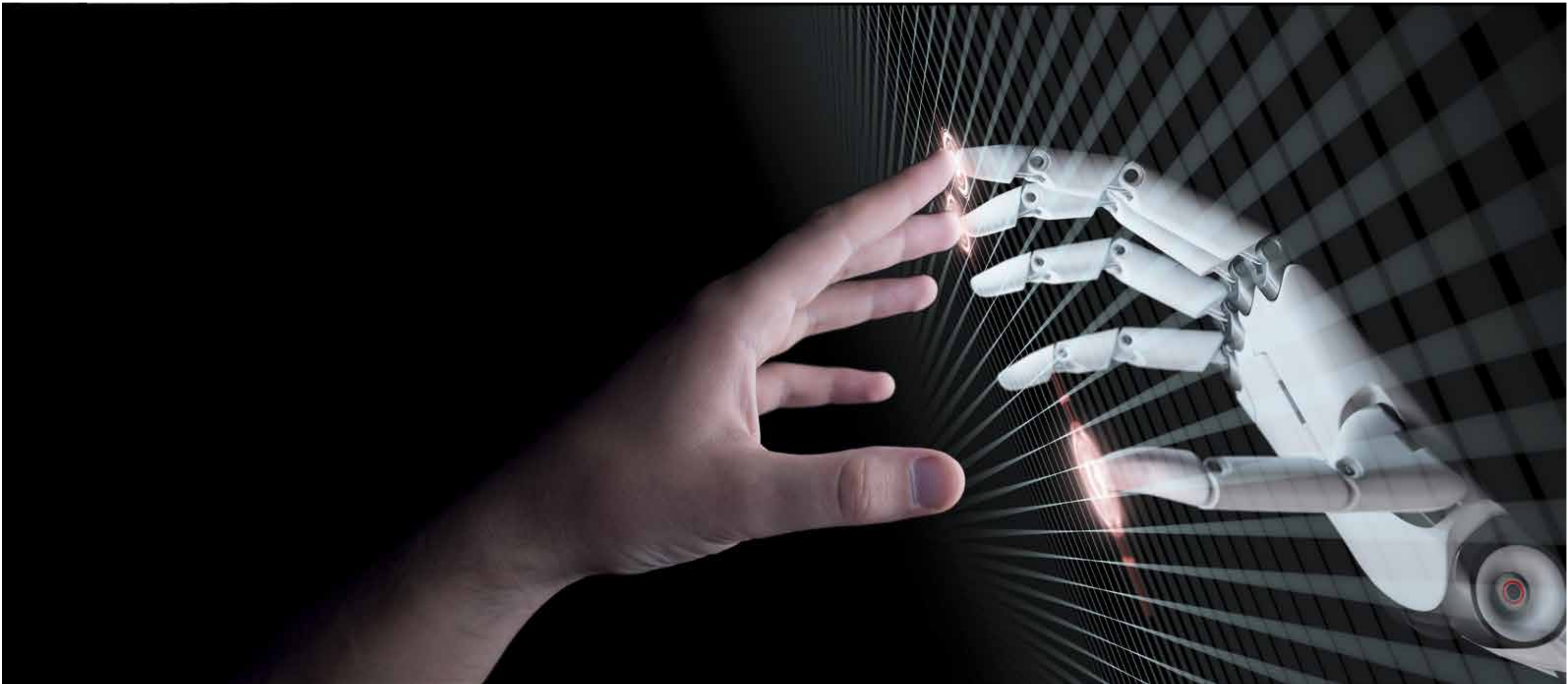


Efficient public services to improve the key elements of the city, with direct impact on citizens



IDOM is developing a wide range of technological tools that will guarantee, for example, the promotion and universal accessibility to cultural heritage; optimization of irrigation services, regulated parking, street lighting; identification of households at risk of water exclusion; notification and management of incidents and events; or management of natural disasters.





# Robotic Process Automation

Robot technology applied to business

Robotic Process Automation (RPA) is the latest evolution of robot technology applied to business that allows scaling the digital transformation. These are “software robots” that act as a virtual workforce to support business areas. An ideal tool to support advances in information technology (IT).

In this area, a multinational telecommunications firm contracted IDOM to manage the construction of robots in certain areas with the objective

of optimizing tasks and reducing the dedication of hours spent on repetitive and uncreative activities.

Together with the design of proposals for new optimized process models, the configuration of robot processes and objects was carried out, as well as the technical tests of components and systems. The robots thus configured allowed the work team greater dedication to analysis activities and improving the service.

The technological evolution allows us to concentrate on creative tasks and human problems



# The digital factory

## Manufacturing Management Systems

The increasing digitalization of the production processes has given rise to so-called “intelligent factories”: industries in which a high degree of automation occurs, interconnection of all the processes and protagonists, flexibility and adaptability to the needs of the client.

In this sense, a multinational firm in the steel sector has entrusted IDOM with the implementation of the Siemens Manufacturing Execution System (SIMATIC IT) in one of its plants. The system has been implemented in the “blanking” press line and is entirely connected with the signals of the press using OPC DA technology. In addition, a master plan has been developed to propose the strategy for deploying the chosen solution to the rest of the plant of the firm.

Improve productivity, optimize resources and offer quality





# Plan and manage resources

## SAP business information system

One of the leading companies in the Oil & Gas sector in Latin America took on the challenge of increasing its international competitiveness while reinforcing its commitment to the generation of economic resources for development and social investment, through a commitment to efficiency in the planning and management of its resources.

To achieve this, and thus continue contributing to the socioeconomic development of the regions in which they operates, IDOM has been contracted to carry out the corporate design (in all

the companies of the group) and the implementation (in some companies of the hydrocarbon transport sector) of a SAP business information system in its latest version S/4HANA 1610.

The development of this technology, designed to maximize success in business decisions, was one of the first to be implemented in the Oil & Gas sector in the world.

One of the first occasions this technology has been implemented in the Oil & Gas sector







# Algeciras Smart Port

Strategy to anticipate the future and enhance the competitive advantages of the port

Positioning the Port of Algeciras as one of the leading infrastructures in the field of Smart Ports worldwide is one of the axes of the Strategic Plan 2015-2020 of the Port Authority of the Bay of Algeciras (APBA).

Innovation was the key element to increase the competitiveness of the port as an intercontinental logistics platform and international node of reference, to strengthen it as the South European gateway for commercial traffic and to

establish it as a center of excellence in maritime and port services for passengers, shipping and freight.

The Strategic Plan, prepared by IDOM, allowed the evaluation, selection and design of new port, logistics and road and rail accessibility infrastructures, necessary for the Port to handle, with full guarantees, the significant traffic growth expected in the period under study.

Technology and knowledge to optimize the port logistics node





# Health

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# The patient is the nucleus

And also the destination of all investment and innovation in the health system

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We help to always ensure that the patient is the center of attention for all the activities of organizations, institutions and health systems.





# Health comes first

A universal healthcare system must guarantee access to quality health services

The Mexican Social Security Institute (IMSS), the largest health institution in Mexico and one of the largest in Latin America, has called on IDOM to develop a new unit that will be responsible for planning and coordinating investments. The aim of this unit is to make the entire development cycle of project investment and contracting of services more efficient.

In the field of health innovation, noteworthy are the Hospital 2050 and Innova Saúde projects, the most important public procurement initiative (PPI) at European level. These have been awarded several national and European awards. These initiatives, managed by the Galician Health Service have counted on the collaboration of IDOM to provide a technical office (TO) and focus on the development of technologies capable of giving life to the hospital of the future and the development of advanced solutions for current care needs and the future of the patient.

Development of technologies capable of giving life to the hospital of the future





# Biocruces

Quality Translational Research







# The future of research

## Biocruces Institute

Biocruces is the Health Research Institute of the Cruces University Hospital, a healthcare centre of reference in the Basque Country, with a solid background in teaching and research. Its mission is to promote, unite and support the research groups of the Institute to develop quality translational research and enhance effective innovation and collaboration with other entities.

Until the construction of the new headquarters, the institute developed its activity in the general services building of the hospital of Cruces, also designed by IDOM, where it will continue to develop part of its activity, outside the new building with complementary uses to the main activity.

The New Headquarters of the BioCruces Institute is a new building designed to accommodate research and laboratory animal areas. The program is divided into 8 floors, 3 of them below ground.



This is a laboratory building in constant change. New techniques and technologies constantly emerge; the building has been designed to be highly flexible and easily adapted to possible future changes. Except for common core areas, shafts and separation between fire sectors, the building has been designed with modular systems that allow easy compartmentalization and access to the installations both on the roof and on in the walls.

Designed using modular systems to adapt to possible future changes





# A revolution in hospital design

CUF Descobertas Hospital

IDOM has designed a new block to expand the hospital, originally designed in the late 1990s at the Parque das Nações in Lisbon. The new building features truly innovative aspects, radically changing the hospital concept of comfort, sustainability and energy efficiency.

The double façade, perforated sheet metal, has been designed using advanced thermal and light simulation

programs. The building has a passive and semi-passive air conditioning systems, which uses the thermal inertia of the building (the thermal activation of the structural slabs of the building - TABS) as a fundamental integral part and of the system. With all this, unconventional levels of comfort and minimum consumption are achieved, while maintaining an attractive architectural image.

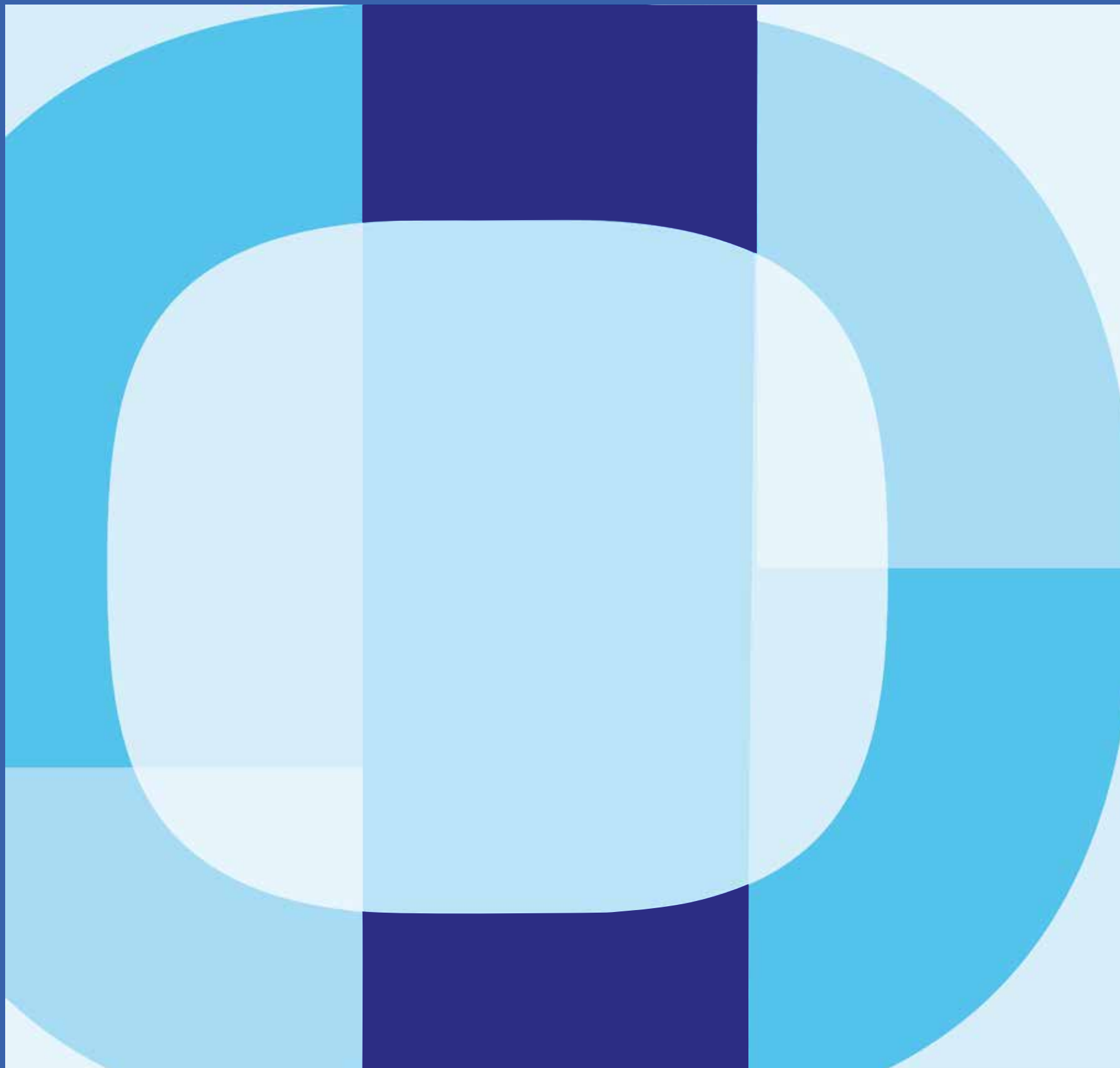


An example of comfort, sustainability and energy efficiency



# Metals & Minerals

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## Metals & Minerals

We use 3D to 7D BIM methodology to develop large mining and steel projects

IDOM is a benchmark firm in the steel and non-ferrous metal manufacturing sector and also a leading player in Mining.

Our commitment to Innovation has led us to extend the normal services offered (pre-feasibility to complete engineering, and EPCM or PMC engineering), incorporating new services such as digital transformation; plant shutdown management for maintenance, adjustments or extensions to the machinery; or searching for financing for new projects.

AQS, an investment of over \$2 billion in which IDOM has acted as Project Management Consultant (PMC)



Integrated steel complex in Bellara, Algeria. Algerian Qatari Steel (AQS).



# Iron and steel industry

IDOM has developed important Engineering Procurement and Construction Management (EPCM) projects such as the stainless-steel plant for Acerinox in Malaysia and the steelworks and rolling mill for Aceros Arequipa in Peru.

Another major project has been the Engineering and Construction Management (ECM) for the integral reline of the blast furnace and the Engineering Procurement and Construction Management (EPCM) for the new hot rolling lines, the skin-pass laminator and the continuous pickling line, for Arcelor Mittal in Lázaro Cárdenas, Mexico.

Blast furnace in Lázaro Cárdenas, Mexico. Arcelor Mittal



Stainless steel manufacturing plant in Malaysia. Acerinox



## Non-ferrous metals

One of IDOM's important projects carried out for the transformation of non-ferrous metals, is the engineering project for an aluminium rolling plant developed by Ma'aden and Alcoa in Ras Al-Khair, Saudi Arabia.

Aluminium rolling mill in Ras Al-Khair, Saudi Arabia. Ma'aden / Alcoa







Flotation Plant Model

# Mining

IDOM has grown its mining sector business considerably in recent years.

The services offered range from the development of feasibility studies for a new iron ore mine in Africa, to the complete engineering of the ore beneficiation plant in a mine in northern Spain, or the Engineering Procurement and Construction Management (EPCM) projects of various process plants such as the flotation plant shown on this page.

Feasibility study of an iron mine in Africa



Mine ore beneficiation plant



# Oil & Gas

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# Oil & Gas

Projects in the sectors of Refining, Petrochemical and Fertilizers, Terminals, Biofuels and Gas (gas processing plants at the foot of the well, LNG and distribution).

The engineering services offered by IDOM in Oil & Gas cover all the phases of the project: conceptual studies, basic engineering, Front End Engineering Design (FEED), Complete Engineering,

Engineering Procurement and Construction Management (EPCM), and Project Management Consultant (PMC) services for large projects.



Repsol Refinery in Tarragona



Naftan Refinery in Belarus

## Refining

Projects to improve operation (OPEX)

Basic and detailed engineering for the recovery of gases from the coker unit of the OJSC Naftan refinery in Novolopotsk, Belarus.

Engineering framework contracts for different refineries in the US and Spain, such as the contract with Repsol Tarragona.



# Project Management Consultant for the expansion of the Talara refinery in Peru

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IDOM has been managing an investment of over \$5 billion for Petroperú, adapting the refinery to new, less polluting fuels.







# Gas

Front End Engineering Design (FEED) of a gas treatment plant, being developed by Sound Energy Morocco for Enagas and Elecnor, in Morocco.

The project is located at the foot of the wells and has a gas treatment capacity of 2,000,000 Sm<sup>3</sup>/d.



# Fertilizers

Project Management Consultant (PMC) for the “revamping” of two ammonia plants (Kellogg and Chemico technology) for Fertial in Annaba, Algeria.

Fertilizer plant in Algeria



# Biofuels

Biodiesel is formed from vegetable oils and animal fats (triglycerides), subjecting them to a chemical reaction with an alcohol.

Biofuel plant of 250,000 tons per year for Bio-Oils in Huelva, Spain.

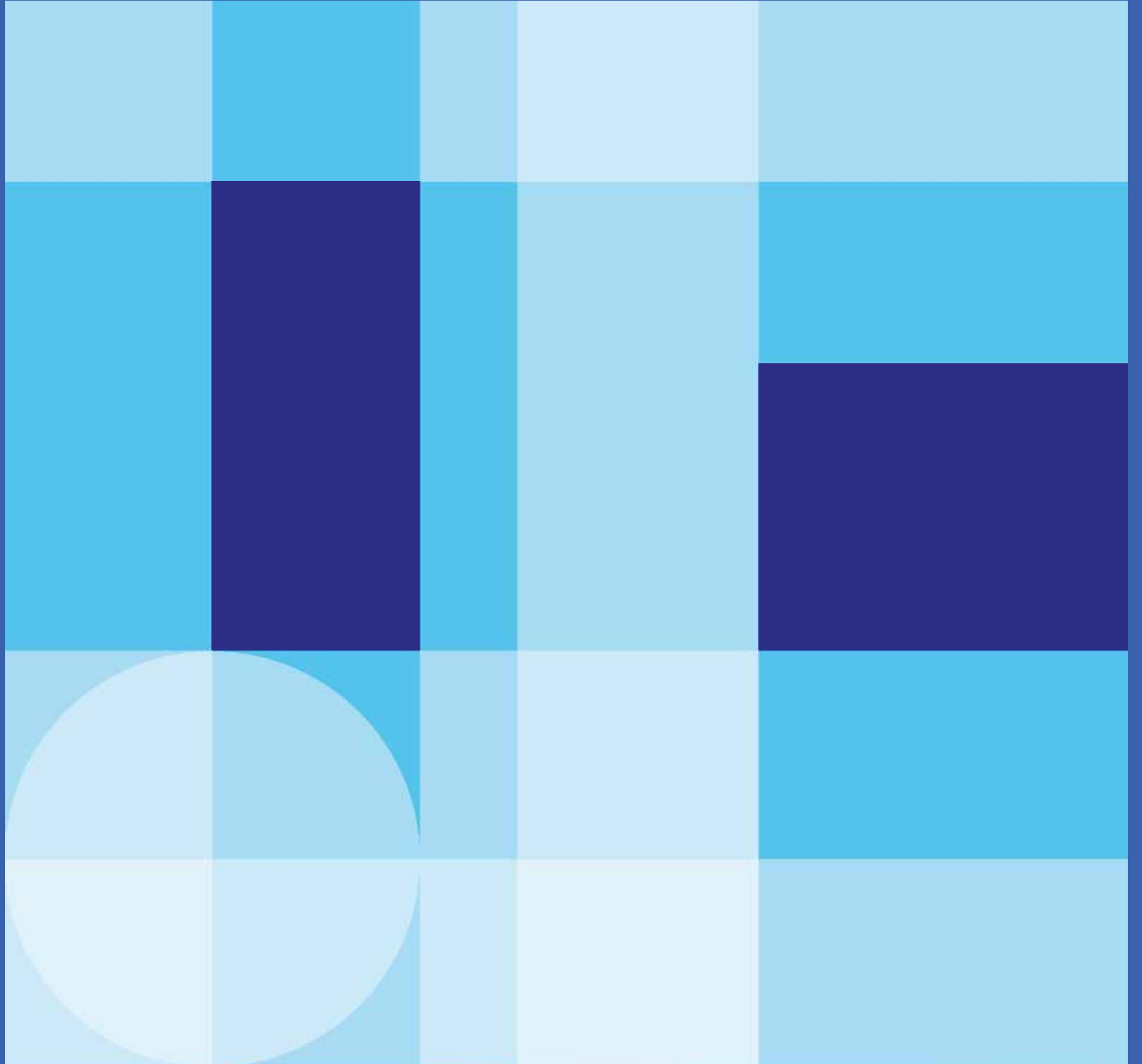


Biodiesel plant in Huelva



# Industrial Projects

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# Industry

Our commitment is to help industry be more competitive

The added value of IDOM comes from the capacities of the multidisciplinary teams of consultants, engineers and architects, integrating engineering solutions, requirements for the competitiveness of industry 4.0, logistics and sustainable architecture.

# Food & Beverages

Engineering Procurement and Construction Management (EPCM) for phase I and phase II of the Mahou-San Miguel brewing plant in Alovera, Spain.

The plant has reached a capacity of 15 million hectolitres/year.



Brewery in Alovera





# Automotive & Large Plants

IDOM has carried out numerous projects for Mercedes Benz, such as the van plants of the Vitoria-Gasteiz complex (Spain) and South Carolina (United States), as well as several battery plants for electric vehicles in Tuscaloosa (Alabama, United States) and in Jawor (Poland).

Working for another prestigious client, Airbus, IDOM has undertaken the extensions projects for the facilities producing the A-380 and A-350 in Puerto Real and Illescas.

Most of these projects have been carried out under Engineering Procurement and Construction Management (EPCM) agreements.





# Cement, wood, cellulose & paper

The Industrial Division of IDOM develops projects for process plants in the wood, cellulose and paper sectors, and cement.

IDOM has been working for important clients in these industrial sectors for decades.

Some of the firm's past projects include the paper plant for Saica in Manchester (United Kingdom), various works carried out at the Heilderberg Cement plant in Gipuzkoa or the MDF board plant for Masisa in Durango, Mexico.



Paper plant in the United Kingdom



Cement plant in Gipuzkoa



# Glass

In the glass sector, IDOM works for large multinationals.

One of the most emblematic projects has been the design and complete management of the large AGC Glass plant to produce flat glass for the building industry, and laminated and tempered glass for the automotive industry in Guaratingueta, Brazil.

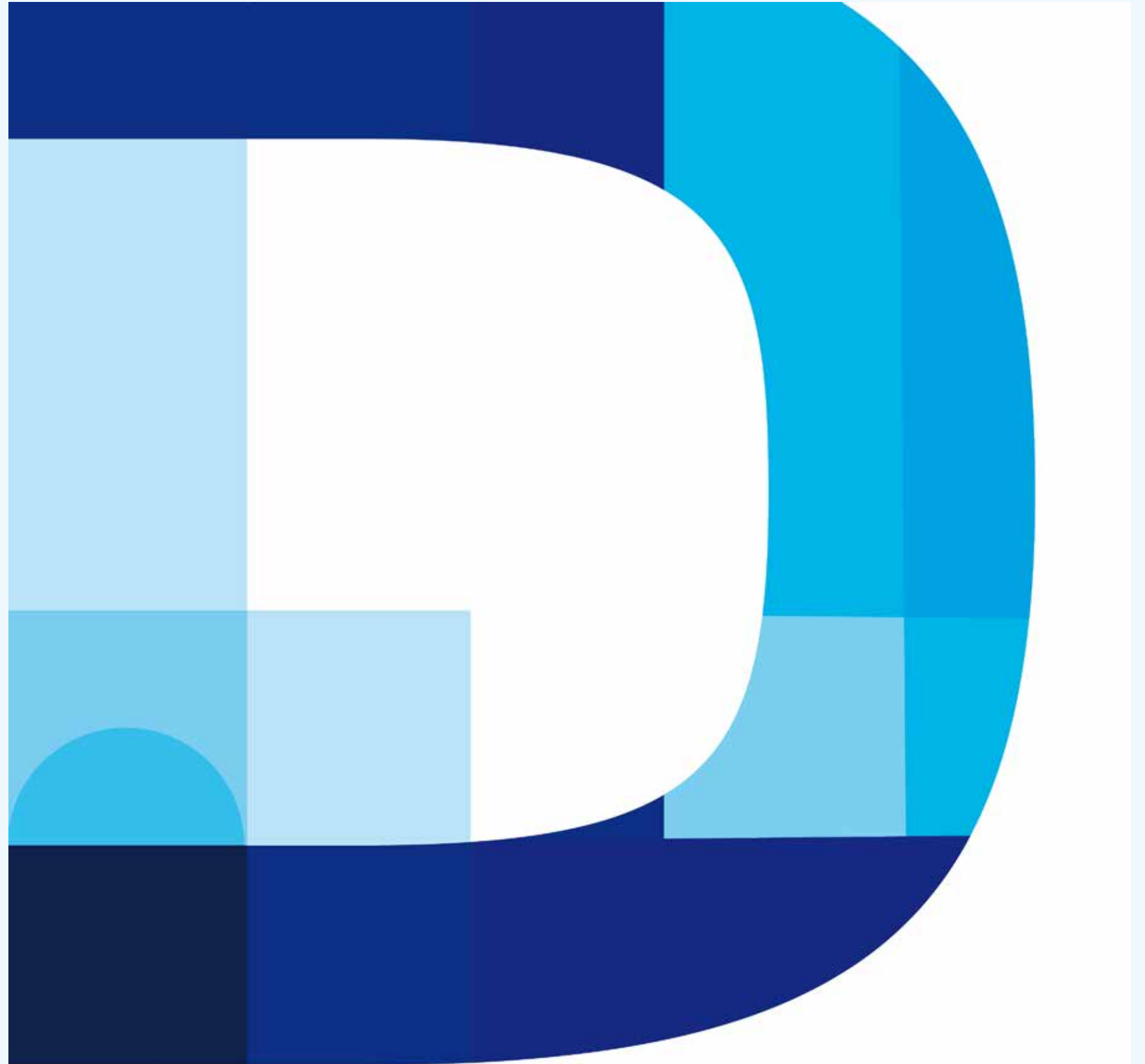
The project, designed and managed by IDOM, has two 600 t/day and 800 t/day furnaces, making the plant one of the largest production facilities in the world.





# Energy

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# Energy

In the energy sector, IDOM provides services during the entire project life cycle: planning, financing, Front-End Engineering Design (FEED), Complete Engineering, Engineering Procurement and Construction Management (EPCM) and/or Engineering and Construction Management (ECM), to commissioning, operation and dismantling.

We introduce solutions for thermal storage, batteries, marine platforms, microgrids and incorporate hybrid solutions for future digital systems.



Basic and complete detailed engineering for the closure of the combined cycle power plant "1-1-10, 67, 66 MW" in Riyadh, Saudi Arabia



## Thermal generation

IDOM has designed thermal power plants that, if added together, could generate a total of over 40 GW of power

Basic and complete detailed engineering for the Alba combined cycle power plant in the Kingdom of Bahrain, incorporating high efficiency class H gas turbines.







Combined cycle power plant of Bouchain, France

# Thermal generation

The combined cycle plant of Bahía de Bizkaia Electricidad was a milestone in the history of IDOM as a turnkey project. The combined cycle plant of Bouchain was yet another milestone, reaching 61% efficiency with the installation of the first-class H turbine.



Bizkaia Bay combined cycle Power Plant



# Thermal generation

Combined and solar thermal cycle hybridization

The Ain Beni Mathar project in Morocco is an example where IDOM overcame technological challenges.

This was the first project in the world in which a cycle combined power plant with a solar thermal field was hybridized.

In the Thermosolar Energy sector, IDOM is a global leader, with numerous “first of its kind” innovative projects under its belt.



Thermosolar hybrid Combined cycle Power Plant in Morocco



Crescent Dunes thermosolar, USA



Thermosolar Olivenza, Spain



Hassi R'Mel CC hybridized with thermosolar, Algeria



Intipampa Photovoltaic, Peru



Gansu Akasai thermosolar, China

## Solar energy

IDOM has developed the engineering of 25 thermosolar plants in the USA, India, Algeria, Morocco, China and Spain. All these plants together can generate over 1 GWe based exclusively on solar resources, using different technologies. IDOM is highly experienced in both power block technology, and solar field and thermal storage by salts.

IDOM has also developed 2 combined hybrid cycle plants in Africa, solar fields with technology based on parabolic trough collectors.

The photovoltaic plant projects total more than 500 MWe and are located on different continents.

The services of IDOM range from feasibility studies, basic and/or detailed engineering, procurement management and construction supervision, to Engineering Procurement and Construction Management (EPCM).



Villena thermosolar, Spain



# Waste to Energy

IDOM designs and project manages Waste to Energy projects such as the Poznan plant in Poland.







## Transportation & distribution of electricity

The 2,000 MW high-voltage direct current two-way link project between Ethiopia and Kenya is emblematic.

For Siemens, IDOM has developed the complete engineering of the facilities located at either ends of the electricity connection: bipolar

converter substations, valve and transformer buildings, control buildings, extensions of existing substations and interconnection lines.





# Marine - Offshore

Marine energy and offshore projects belong to a sector experiencing marked growth, with great technological challenges.

IDOM has participated in the offshore substation projects for Iberdrola in the marine parks of East Anglia One (United Kingdom) and Saint-Brieuc (France); carrying out the project management of the latter for Ailes Marines.



East Anglia One Marine Park Substation



# Santa María de Garoña Nuclear Power Plant

Support during decommissioning & dismantling





# Nuclear Services

Committed to offering safe, clean and sustainable energy across the World

IDOM’s experience in the nuclear industry has its origins in the early nuclear generation projects in Spain more than 40 years ago in the late 70s and 80s, participating in the construction of Ascó and Vandellós II Nuclear Power Plants (NPPs).

IDOM offers a complete portfolio of professional services throughout the entire life cycle of the facilities, providing safe, reliable and competitive operations.

Safety, sustainability and innovation are valued aspects of IDOM NS’ operations and allow us to deliver the most technically challenging construction projects. An example of this is our participation in the Energhia consortium, providing engineering services to Fusion for Energy (F4E) and the ITER organisation in the ITER fusion research project since its inception in 2009.

Our Nuclear Safety Culture is in close alignment with the world’s best performing plants and good nuclear industry practices.

The continuous participation of our independent and highly qualified nuclear quality assurance team will ensure the safety of the clients’ projects.

Alternative Emergency Refrigeration System in the Vandellos II NPP, the largest design modification undertaken in a European Nuclear Power Plant during operation





# Environment

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Corporate sustainability solutions for the EUIPO (European Union Intellectual Property Office)



Reference indicators of the state of the environment in Euskadi. Tool for the new Environmental Framework Program.

# Sustainability and environmental planning

Design and implementation of environmental sustainability and strategy processes, both for the public and private sectors

The services offered by IDOM in environmental planning include developing inventories and studies of the preoperational situation, formulation and analysis of alternatives for environmental planning, consultation and participatory process, Strategic Environmental Assessment (SEA), monitoring and control and monitoring indicators.

In terms of sustainability, the main services offered include:

- Management of technical assistance projects, especially those financed by multilateral entities, around the world, for all types of projects with an environmental component.
- Management of framework contracts (FWC), both in the usual products (waste, climate change, nature) and in agriculture, food security, marine environment.
- Development of studies and basic design on clean energy, sustainability, green economy, etc.



EIAs for integrated steel complex and two combined cycle plants in Algeria, for Algerian Qatari Steel (AQS)



# Waste & Circular Economy

Solutions for international projects

IDOM has extensive experience in developing management plans, feasibility studies, cost-benefit analysis, EIAs, basic and detailed designs and supervision works for waste infrastructure, including landfills, biological mechanical treatment plants, waste to energy plants and composting centres. All of these as part of a circular economy strategy.

The scope of the services provided is not only limited to solid waste, but also covers typologies such as construction and demolition waste, electronic electrical equipment waste, hospital waste, sludge, industrial waste and hazardous waste.



Environmental complexes of Gipuzkoa, phases 1 and 2, for the Provincial Council



Hospital waste management in Lima, Peru

## Designing the urban waste management infrastructure of Gipuzkoa

IDOM provided the technical assistance for the design and construction of the different urban waste management infrastructures contemplated in the Gipuzkoa territorial sector waste plan (also developed by IDOM), including two environmental complexes:

- CMG1 (Gipuzkoa Phase 1 Environmental Complex) composed of a biological mechanical treatment plant, and an energy recovery plant.
- CMG2, composed of an anaerobic bio-waste digestion plant, and a slag maturation plant.





National Climate Change Adaptation Plan of Peru

# Climate change

Important, urgent challenges

IDOM advises public and private clients in the design, execution and monitoring of their strategies and actions to face the challenges related to climate.

The specialists of IDOM are working in the areas of mitigation, adaptation and climate economics/finance, along with the rest of our staff from the classic disciplines of engineering and consulting. Together they offer a differentiated value proposition when delivering specific, realistic and sustainable solutions in terms of environment and cost.



"Coastal cities and climate change" project in Mozambique





# Natural Capital Biodiversity

Integrating the conservation and improvement of natural capital in our projects for the benefit of society

IDOM contributes to halting the loss of biodiversity through the integration of natural capital in decision making.

For this, IDOM develops projects where green infrastructure is part of the solutions, both for the conservation and restoration of biodiversity, as well as ecosystems.



# Monitoring, control & evaluation of projects

## LIFE Programme

This programme of the European Union aims to contribute to the development of efficiency in the use of resources, economies resilient to climate change and low carbon emissions: protecting and improving the environment, maintaining and improving biodiversity, ecosystems and in particular, the Natura 2000 network.







# Contaminated soils

IDOM is an accredited inspection body according to ISO 17020 and is part of the NICOLE Network managing industrially contaminated land

Our professionals respond to customer needs in the following fields:

- Soil quality research conducted with specialized methodology.
- Advice on intervention alternatives in contaminated soils and cost estimation under sustainability parameters.
- Review and verification of studies and projects carried out by third parties
- Integral projects for decontamination of contaminated soils and environmental liabilities.
- Environmental monitoring of decontamination works
- Comprehensive specialized assistance in the process of obtaining environmental licenses and declaration of soil quality.

The projects shown on these pages are:

- Phases I and II of the Environmental Due Diligence of the Construction Project of the Functional Rehabilitation Center - CFR-BASAN Health Battalion of the Colombian National Army, in Bogota D.C.
- Phases I and II of the Due Diligence of soil quality and associated groundwater in the districts of Al-Fasil (AFD), Al-Surouge (ASD) and Al-Gharbiyya (AGD) of the city of Jubail, Saudi Arabia.



Environmental Due Diligence of the Construction Project Site of the Functional Rehabilitation Center.

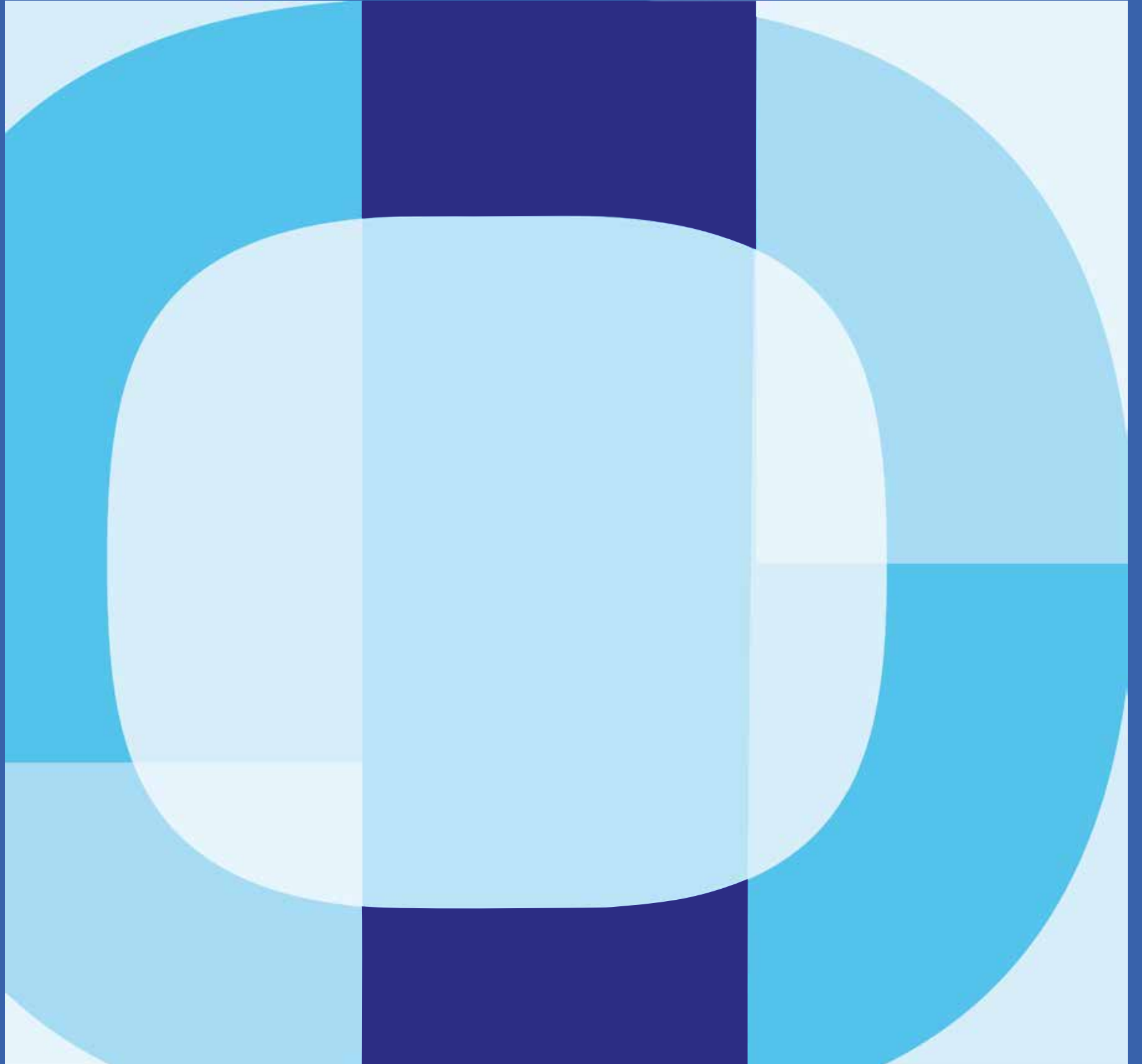


Due Diligence (Phases I and II) of soil quality and associated groundwater in Jubail, Saudi Arabia.



# Infrastructure

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# Using BIM methodology to deliver a truly collaborative project

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Fuerteventura Airport - Spain - AENA







London Heathrow Airport, Project Management T2A - United Kingdom - HETCO

Dublin Airport, Planning and Design in the Flight Field - Ireland - Dublin Airport Authority (daa)



# Aviation

## Project implementation without interrupting operations

We understand the nuts and bolts of airports and can provide services at any stage of the infrastructure lifecycle.

This has been essential during the projects developed at Dublin Airport, where the complex day to day activity continued as implementation progressed.

At the Tabuk Airport in Saudi Arabia, our planning and design reduced the carbon footprint of the project, resolving many questions of sustainability.

On the Terminal 2 project at Heathrow Airport, we demonstrated our project management capacity, coordinating the

designs. We used BIM to develop the project, managing the interfaces and delivering a truly collaborative result.

We have developed projects for different components of airport infrastructure such as flight fields, runways or luggage handling systems, applying our expertise and managing the implementation from a global perspective.

At the Airport of Morelia in Mexico, we worked on the extension and upgrade of the runway, taxiway and apron. For AENA, we implemented the ECAC Standard 3 Framework in the entire network.

Improving air transport, from airport operations through critical systems and asset management, applying sustainability criteria



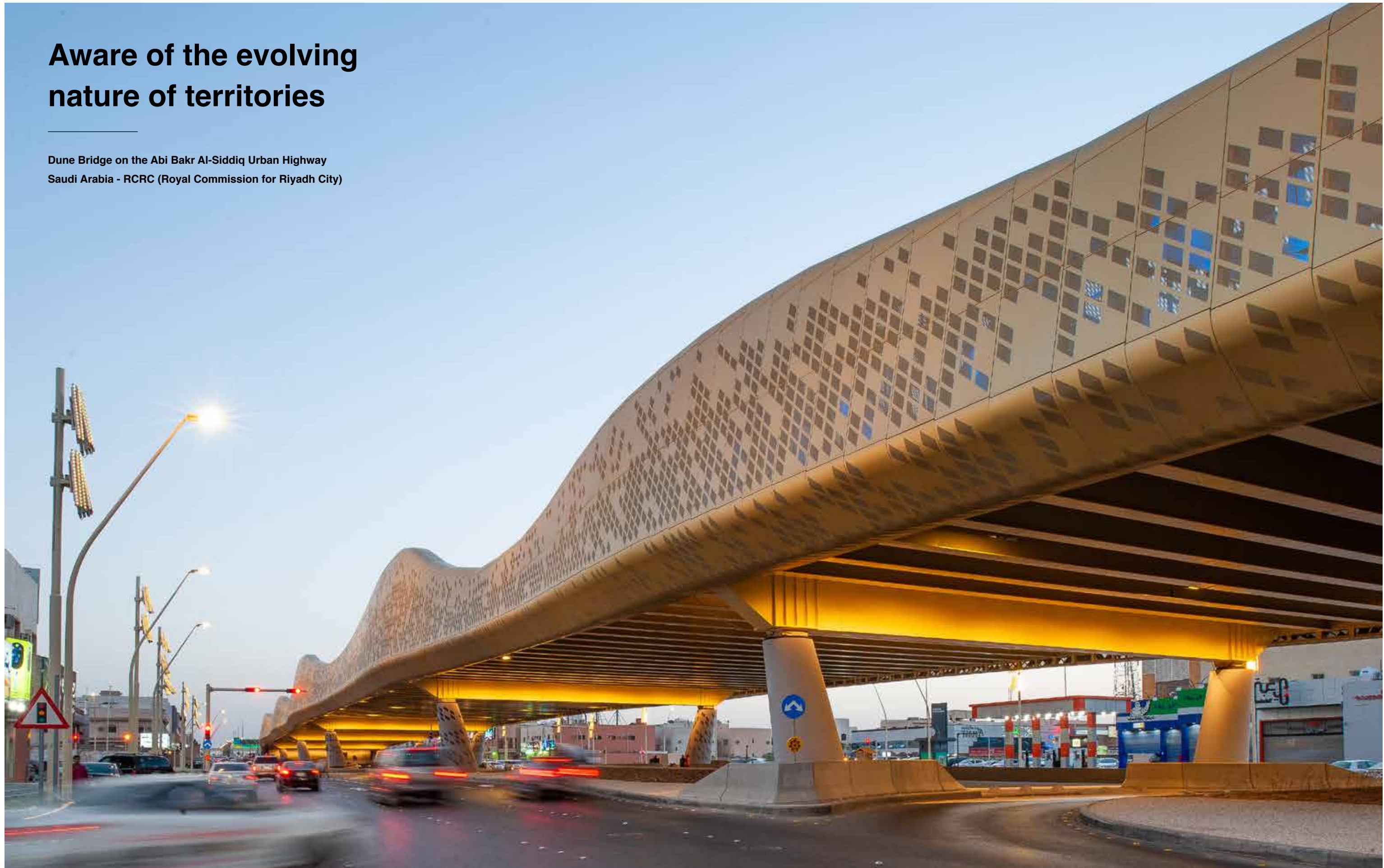
Tabuk Airport, Master plan and Design - Saudi Arabia - General Authority of Civil Aviation - GACA



# Aware of the evolving nature of territories

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Dune Bridge on the Abi Bakr Al-Siddiq Urban Highway  
Saudi Arabia - RCRC (Royal Commission for Riyadh City)







Jinvali Road - Larsi - Georgia - Ministry of Regional Development and Infrastructure of Georgia

# Road infrastructure

Resilient engineering - Urban Integration - Safe infrastructure

When designing a 200 km road infrastructure in Costa Rica, we applied resilience criteria while being particularly sensitive to the ecological importance of the location. With the Abi Bakr Al-Siddiq high capacity urban highway, we introduced the dune concept, integrating the infrastructure into the environment, improving accessibility and mobility. We used engineering to achieve a strategy of low consumption criteria.

On the Jinvali-Larsi road project, we designed unique structural engineering solutions to resolve geologically and environmentally complex terrain. We have worked on several tunnel projects applying our knowledge of safety, risk

management, ventilation, lighting, evacuation strategies, engineering for fire protection and behaviour. Our specialists use the most advanced computational calculation tools.

We have developed our own in-house software to complement our engineering design and achieve elevated levels of safety and energy efficiency in the projects we develop. We have developed applications to process road inventory and maintenance.





# Cutting-edge technology, guaranteeing the integration of all operations

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Electronic toll collection system, with free-flow and multi-lane technologies  
(MLFF) - Croatia - Ministry of Sea, Transport and Infrastructure







ITS systems in Madeira - Portugal - Vialitorial



Traffic Control Centre

# Intelligent transport systems (ITS)

## Digitalization of mobility

Using ITS permits the open and interoperable management of the road infrastructure. Big data and Artificial Intelligence are solutions for improved management.

We have been using our interdisciplinary knowledge and expertise to implement ITS technological solutions (urban and interurban) in Peru, Mexico, Algeria and Ethiopia; providing consulting for ITS planning and engineering design.

As an independent consultant, we develop toll systems (electronic toll collection & multi lane free flow). In Croatia we have been developing a project to transition to a new

barrier-free toll system (Multi-lane free-flow). In Sao Paulo and Bogotá, we have been providing consulting services for traffic light systems and control centre design.

We have also designed and implemented automated fare collection for transport systems using the most advanced technology. We work with next-generation cards such as NXP Mifare DESFire EV1 / EV2, SAM modules and HSM devices, open-loop systems, fraud control with symmetric AES and asymmetric cryptography, advanced clearing house design, and cloud-based online services, MaaS.

- ITS applications
- Traffic management
- Mobility mobile apps
- Transport on demand



Ticketing systems using mobile devices





# Incorporating the latest advances in safety & efficiency

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Viaduct over the Almonte river, high-speed line Madrid - Extremadura - Spain - ADIF (Railway Infrastructure Manager)  
Double world record breaker: largest concrete railway arch and largest high-speed rail span







Rail Baltica - Estonia, Latvia and Lithuania



Rail Workshops Santiago - Rancagua - Chile - Grupo EFE (Company of the State Railways)

# Railways

Large infrastructures,  
sustainable and  
environmentally friendly

In total, the number of kilometres of conventional rail, freight and high-speed rail projects we have developed around the world, run into the thousands. We are applying our extensive experience in high-speed to the Rail Baltica, an ambitious project to link the Baltic states to the European rail network.

This comprehensive knowledge of rail infrastructure allowed us to participate in the design of the Almonte river viaduct or implement control systems at Atocha, the largest train station in Spain.

As always, technology is a key factor in the implementation of these solutions. When demanded by the situation, we have used our own in-house software, such as an application to simulate the electrical energy consumed by trains. We also have software to be used in the design of security and communications systems using ERTMS standards. These are just some of the tools we used on the Madrid-Barcelona high-speed corridor.

In Colombia, Chile or Macedonia, we have been helping to improve existing rail lines, designing workshops and depots, solving challenges such as not interrupting the day to day functioning of tracks, stations, tunnels, electrification or signalling. We use BIM and digital modelling for Asset Management, ensuring progress and quality of all this development.

A global perspective  
of the design of railway  
systems, improving  
operating capacity and  
maintenance efficiency



# Urban connectivity in technologically demanding environments

Bahrain Metro - Kingdom of Bahrain - Ministry of Transportation and Telecommunications

ICE Award (Institution of Civil Engineers) - Best project of the year 2018







QR: Scan this code if you want to know more about the Riyadh Metro project



Riyadh Metro - Saudi Arabia - RCRC (Royal Commission for Riyadh City)

# Metro systems

## 5G travellers

Our perception of big cities is shaped by how we move in them. With increasing distances, people spend more time commuting each day.

We make important contributions to the design, implementation and integral operation of metro transport systems. Our holistic approach and the multidisciplinary teams we assembled have delivered underground infrastructure using state-of-the-art driverless technology, such as in Line 3 of Riyadh, Lines 3 and 6 of Santiago de Chile and Line 9 of Barcelona.

We use collaborative methodologies, to coordinate interfaces and efficiently design systems with ever more demanding complexities, such as in MetroLink in Dublin. In this project we have been pioneers in the use of BIM, incorporating Data Asset management for the traceability of the project throughout its useful life.

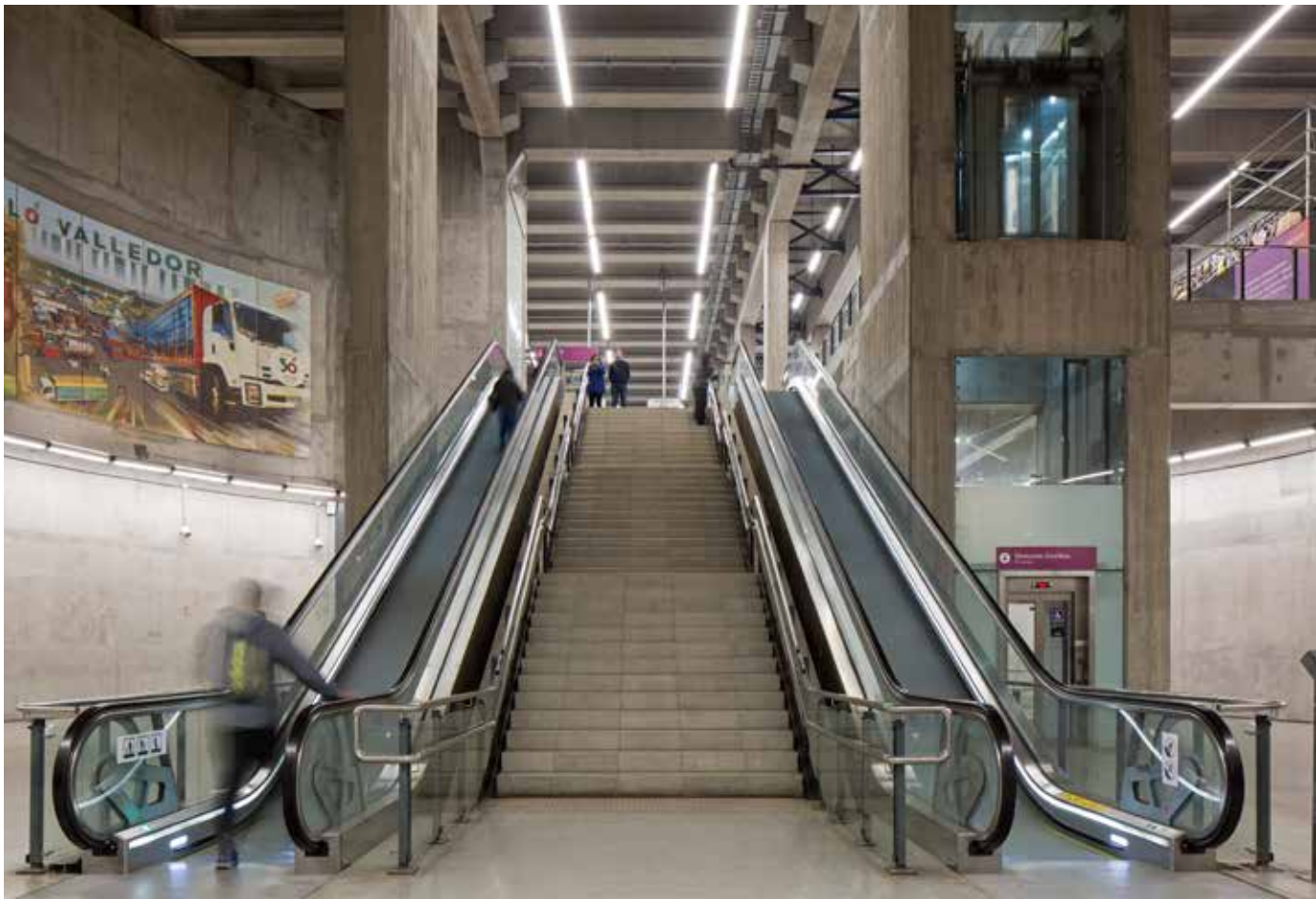
Our designs are robust and sustainable, and from the outset we include analysis and optimization, energy efficiency and adaptation to the environment. In the Bahrain Metro project, we successfully achieved Goal 11 of the UN, to make cities inclusive, safe, resilient and sustainable.

Multidisciplinary teams, aware of the importance of security and integration, engaging stakeholders with technology



Dublin Metro - Ireland - NTA (National Transportation Authority) and TII (Irish Transportation Infrastructure)





Line 3 of the Santiago Metro - Chile - Metro Passenger Transport Company

## Improving the quality of life

### Line 6 of the Santiago de Chile metro

IDOM has been helping many authorities and administrations to solve the challenges of sustainable mobility, by bringing our extensive experience and expertise in transport systems to the table.

In the Metro Line 6 project of Santiago de Chile, we designed a new transport solution over 15.3 km to link previously unconnected neighbourhoods to the Metro network. New access plazas have been built in the surroundings of the stations, a network connecting green areas. Spaces for social and cultural exchange (metro art, library, etc.) have been designed, bringing users closer to popular locations where services are concentrated.

The line connects the network with green spaces, bringing the community closer to existing urban parks





# Infrastructure that transforms the urban environment

Tramways in Copenhagen and Odense - Denmark







Constantine tram extension - Algeria - Metro of Algiers Company (EMA)



Medellin Tramway - Colombia

# Light Urban Transportation

Building sustainable and healthy cities

With the know-how from designing over 1,000 km of light transport networks (trams, Bus Rapid Transit, train-tram) in 25 countries, we are helping our clients to improve accessibility, reduce emissions and noise, and promote collective transport.

Projects such as the Ring 3 Light Rapid Transit (LRT) in Copenhagen combine urban safety and integration with pedestrians and bicycles, as well as efficiency in operation. In the train-tram project of Costa Rica or the Lund tram

in Sweden, we have been designing projects and solutions with intrinsic environmental value (noise mitigation, permeable slab systems, reduction of electromagnetic emissions).

Our expertise in automation and sensing technologies can be applied to improving safety (obstacle and pedestrian detection cameras, predictive algorithms) and reduce travel times (traffic light priority), impacting positively on energy consumption.

Electrification of public transport systems, transformation and integration of sustainable transport with Zero emissions (BRT electric buses)



100% electric BRT Vitoria - Spain - ETS (Euskal Trenbide Sarea)



# Management of sustainable transport with the help of Big data & Artificial Intelligence

Redevelopment of the Sheikh Zayed Road, Dubai - United Arab Emirates - RTA (Road and Transportation Authority)





# Mobility & connectivity

Improving mobility and the quality of life in cities

Efficient and accessible mobility requires promoting non-motorized travel. This has been the guiding thread of the strategic plans for active mobility in Dubai and non-motorized modes in Brasilia.

Different sustainable transport (electric buses, electric bicycles or trams) contribute to the transformation of cities. Metropolitan mobility planning (PDM) projects, such as in Barcelona, or Sheikh Zayed's traffic management, define the transformation lines.

The transport models of Jubail and Ras Al-Khair, in Dubai, use advanced technologies such as Big Data, Bluetooth BTM antennas, video traffic meters and radars. The GIS platform implemented by IDOM in Abu Dhabi, allows the population to be connected with updated geographical contents. Tools can be created for the management and maintenance of transport infrastructure. In the project of digital creative city of Guadalajara (Mexico), we have used intelligent applications to make the capital of Jalisco a connected city.



Metropolitan Mobility Planning (PDM) Barcelona - Spain



Active mobility in Dubai - United Arab Emirates - RTA (Road and Transport Authority)



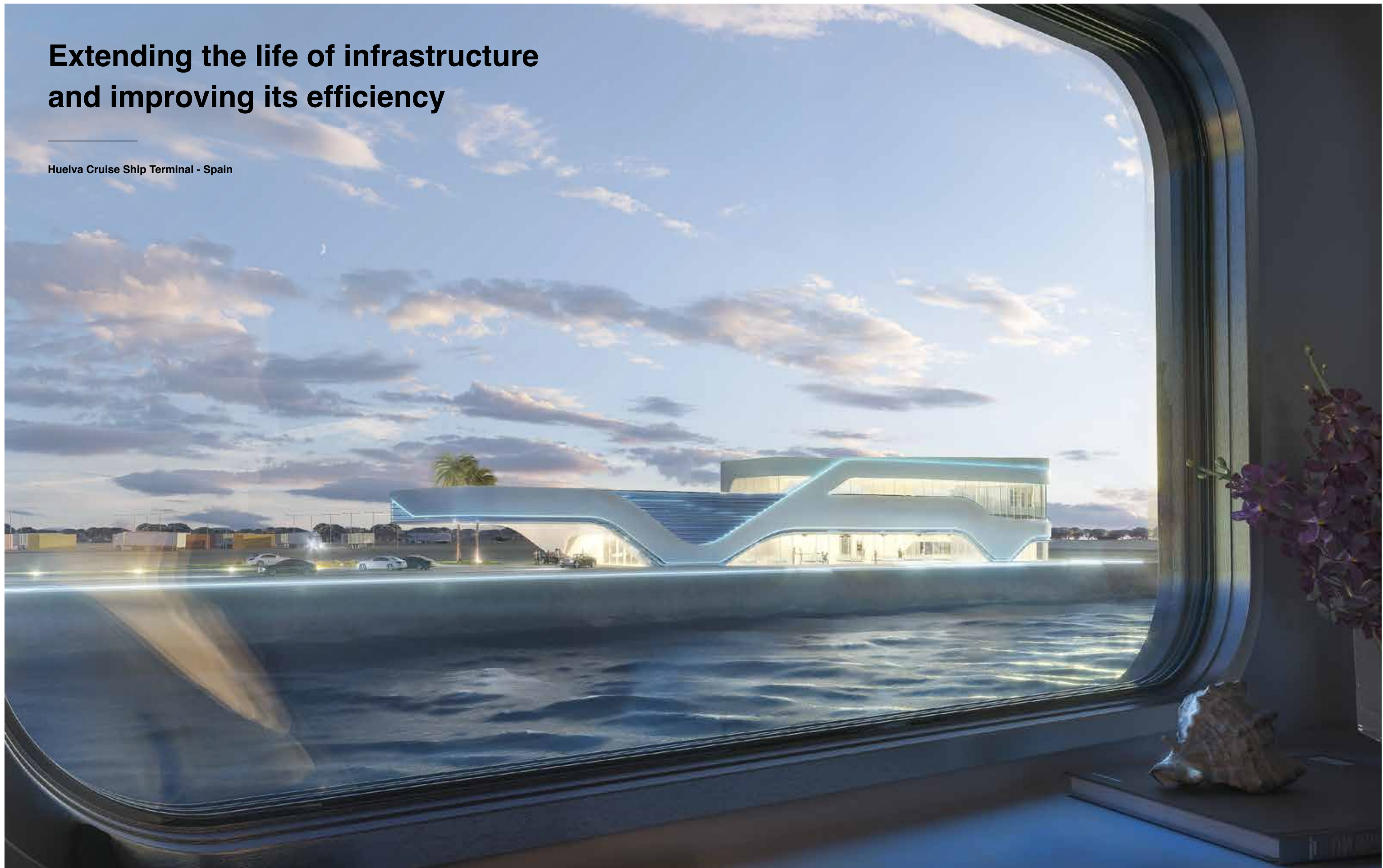
Smart Mobility in Jubail and Ras Al-Khair - Saudi Arabia - Royal Commission of Jubail and Yanbu

A deep understanding of the dynamics of mobility and the most advanced technologies has allowed us to develop new transport models



# Extending the life of infrastructure and improving its efficiency

Huelva Cruise Ship Terminal - Spain







Sevilla Lock - Spain - Port Authority of Seville

## Infrastructure & port logistics

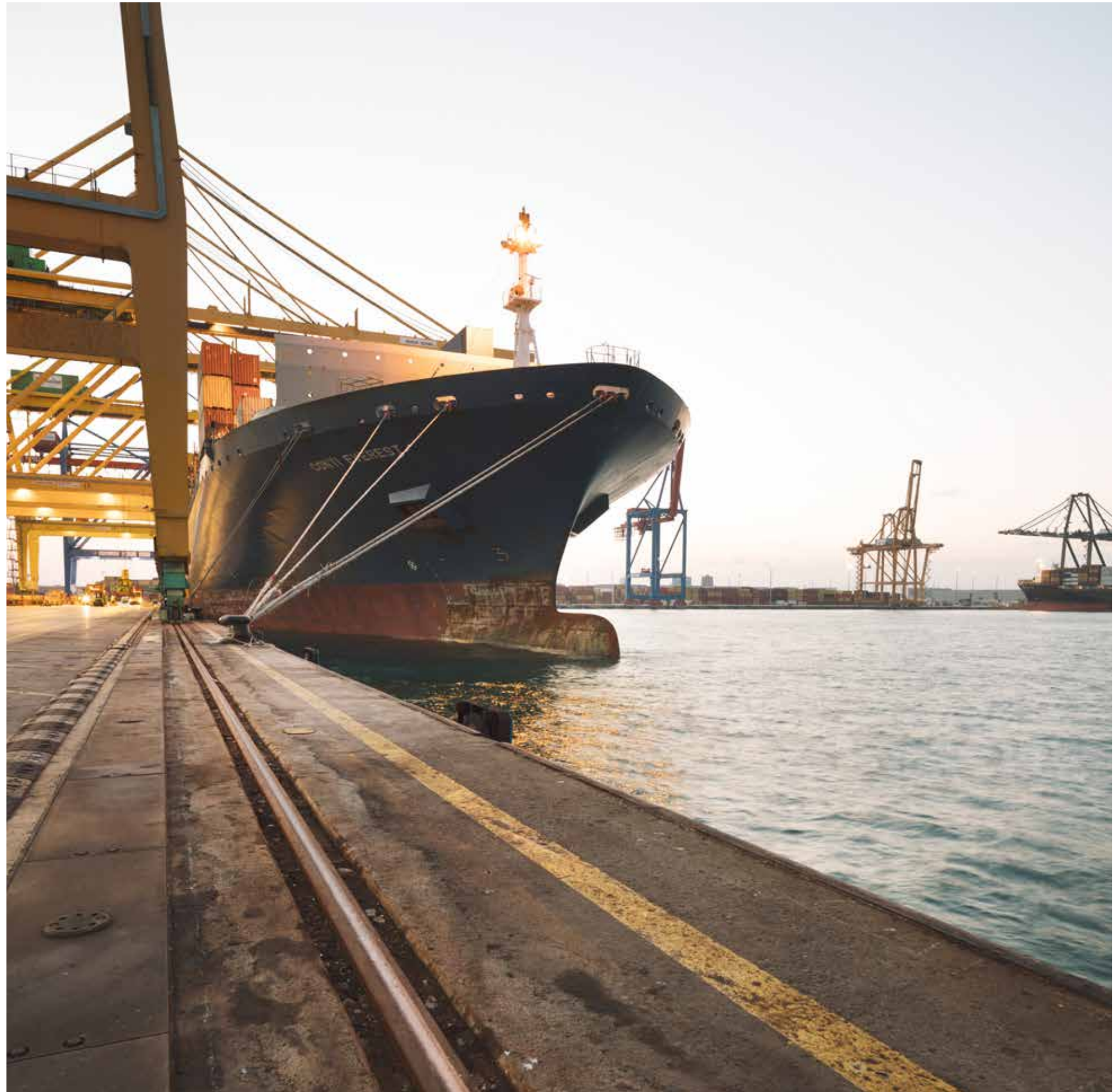
Maintenance and expansion of commercial and service capacity

Port infrastructures are important generators and facilitators of economic activity, serving as a point of entry or exit for the shipment of goods or movement of travellers. Key elements in the development of the territories, extending links and increasing competitiveness.

Most of the ports are historical infrastructures located in strategic locations, from the perspective of maritime, river and land traffic and their interconnection. In order to maintain and enhance the commercial and service capacity of the ports, permanent adaptation of the infrastructure and its management is necessary.

IDOM participates in infrastructure expansion and rehabilitation projects, adapting them to new uses and new vessels, in addition to improving the infrastructure itself, access and flow management, through the implementation of automation systems. In the port of Valencia, we collaborated in the expansion and improvement of the container terminal, the adaptation to ships of greater capacity, ship-to-shore unloading systems, as well as in the implementation of an automatic door system.

Expansion, improvement and adaptation of terminal capacity with automation systems



Port of Valencia - Spain



# European CarEsmatic Project

Logistics Study of the Electric  
Vehicle in the Port of Barcelona

The Port of Barcelona has been promoting the logistics and shipping of electric vehicles through its participation in the EU CarEsmatic Project, an initiative with the aim of increasing the use of Short Sea Shipping (SSS) for the transportation of new vehicles between the main Mediterranean ports of Barcelona and Koper (Slovenia). Neptune Lines, the main maritime shipping company for vehicles in this area and

Autoterminal Barcelona, one of the main vehicle terminals of the Mediterranean are also participating.

CarEsmatic arises from the initiative to adapt maritime services to this type of traffic, as well as adapt and improve the existing infrastructure in both ports to be able to carry out the specific logistics required by the electric vehicle.



Aligned with these objectives, the CarEsmatic project aims to reduce the congestion of the main transport corridors of the European Union (EU) and promote a more sustainable logistics system in the medium and long term.

The objective is that the Port of Barcelona leads the change in the logistics strategy and operations of this market segment.

A project that will lead the change in the logistics of the electric vehicle market



**Water**

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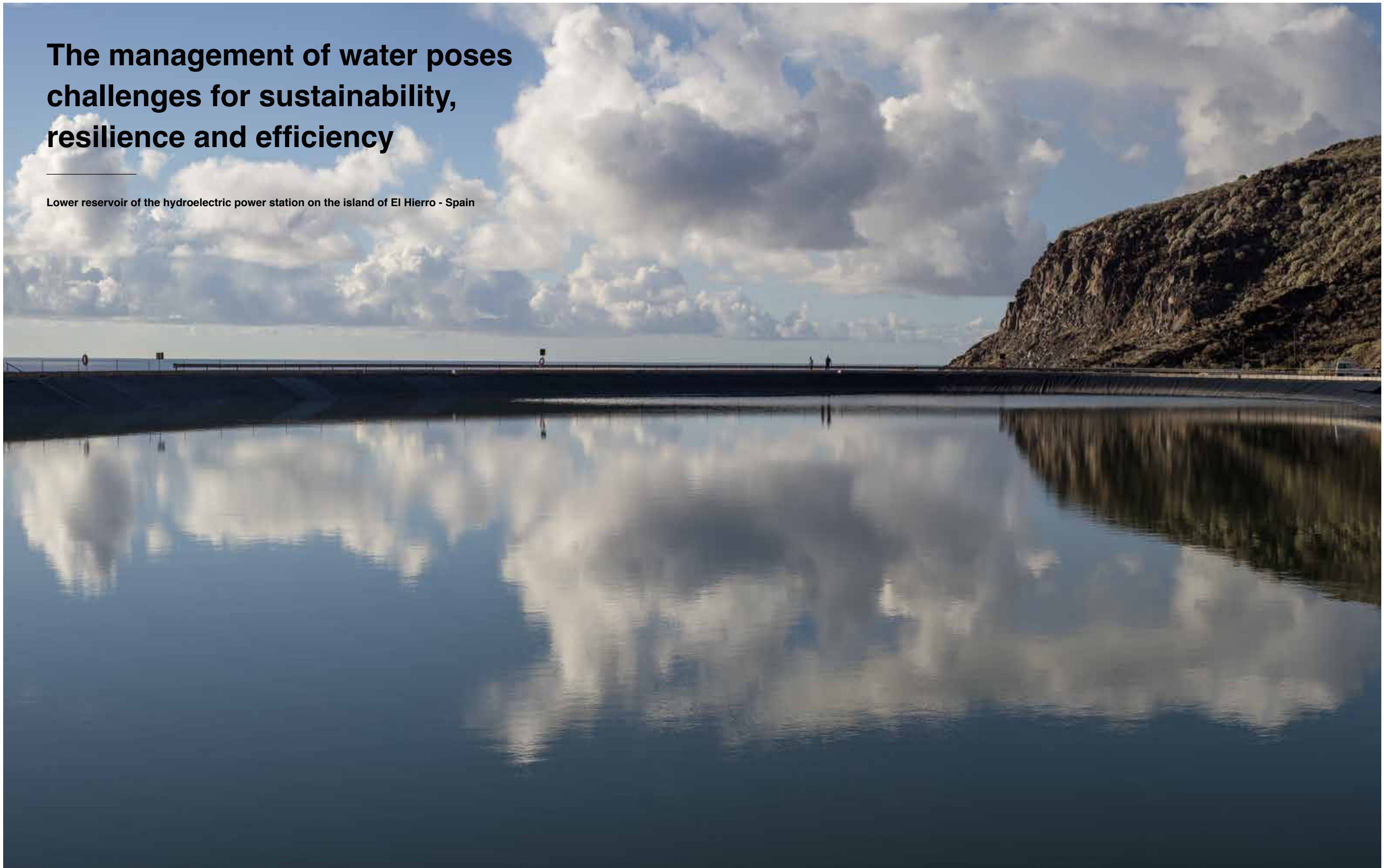




# The management of water poses challenges for sustainability, resilience and efficiency

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Lower reservoir of the hydroelectric power station on the island of El Hierro - Spain





# Water planning and management

Water is the element that  
sustains human activity

Essential for life, the need for water drives people to execute large storage, treatment and distribution works. IDOM continues this tradition, participating in water planning and management projects with the aim of achieving sustainability and resilience in large hydraulic actions.

In Tunisia, we have developed the supply master plan for the Grand Sousse region, in which the information was digitized, and the expansion and improvement of the supply network was planned.

In Laos, a comprehensive water planning project was developed, which included annual reports on the status of the Mekong River basin, as well as a study of recommendations regarding climate change, while also providing technical support to the client.



Hydroelectric use of Laos rivers



Supply to the Sousse region of Tunisia





Nicaragua hydropower master plan

# Dams and large hydraulic works

Reflecting the value of natural resources to reduce fossil energy dependence

Dams are considered one of the great infrastructures of hydraulic engineering with a natural capacity to provide energy which is sustainable, efficient and durable.

IDOM has knowledge and experience in the design and development of actions, such as the hydroelectric power station on the island of El Hierro, the objective is which is to achieve the energy self-sufficiency of the island. From the conception phase to the start-up, including the design, equipment procurement management and construction assistance.

In Nicaragua, we collaborated in developing the master plan of hydroelectric use with the objective of reducing the carbon footprint. After a complete analysis of two of the basins with the greatest capacity in the country, several sites were identified and studied for the potential construction of hydroelectric projects, two of which are already in the execution phase.

Hydraulic infrastructures contribute to increasing renewable energy generation

QR: Scan this code if you want to know how the hydropower plant system works

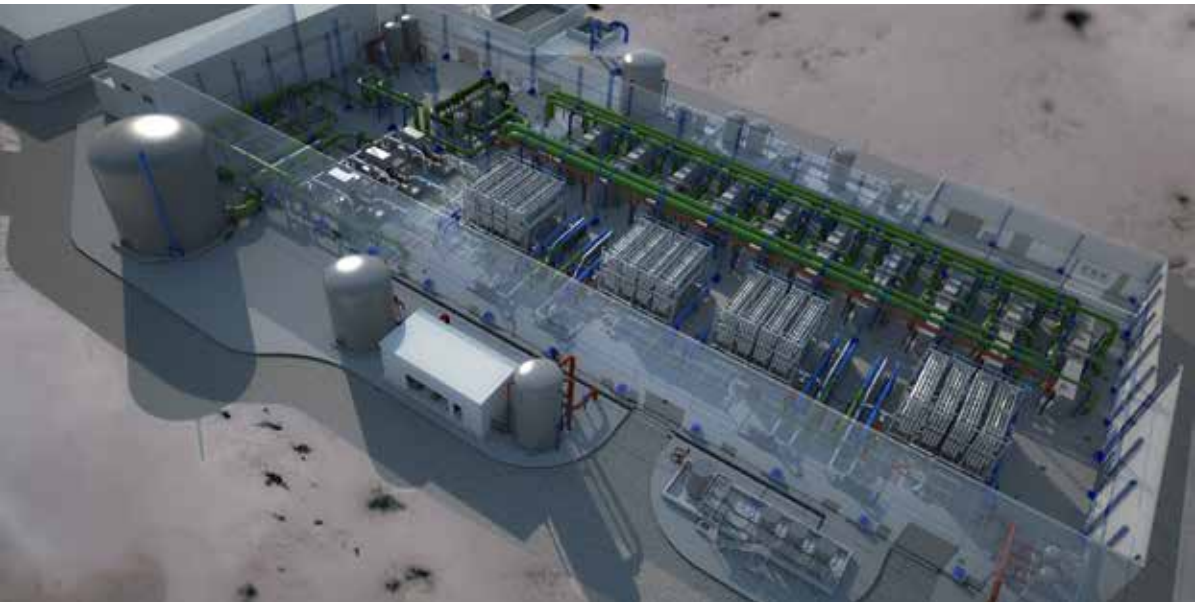


Upper reservoir of the hydroelectric power station on the island of El Hierro Spain





Optimization of drinking water treatment plants in Cali Colombia



Seawater desalination station in AccraGhana



Sanitation of Zonguldak Municipality - Turkey

Water 4.0: the revolution of the sector with the incorporation of the most avant-garde technologies

# Treatment & Conveyance

Covering the entire project life cycle

Proper water treatment is fundamental to ensure environmental sustainability. As supply and sanitation networks are the arteries that connect the water resource to the users, our designs place special emphasis on resilience, as basic guides in the development of water treatment infrastructures.

To guarantee the availability of a critical infrastructure such as water, we analyze physical and logical security from a holistic point of view, applying methodologies adapted to water management and others specifically developed for said sector.

All this requires the involvement of digitalization and implementation of the most innovative technologies. The use of digital models allows us to know and evaluate the operation of the existing infrastructure; and information management systems means networks can be operated safely and in real-time.

IDOM has the tools, knowledge and experience to make efficiency one of the basic pillars of water treatment and transport systems.

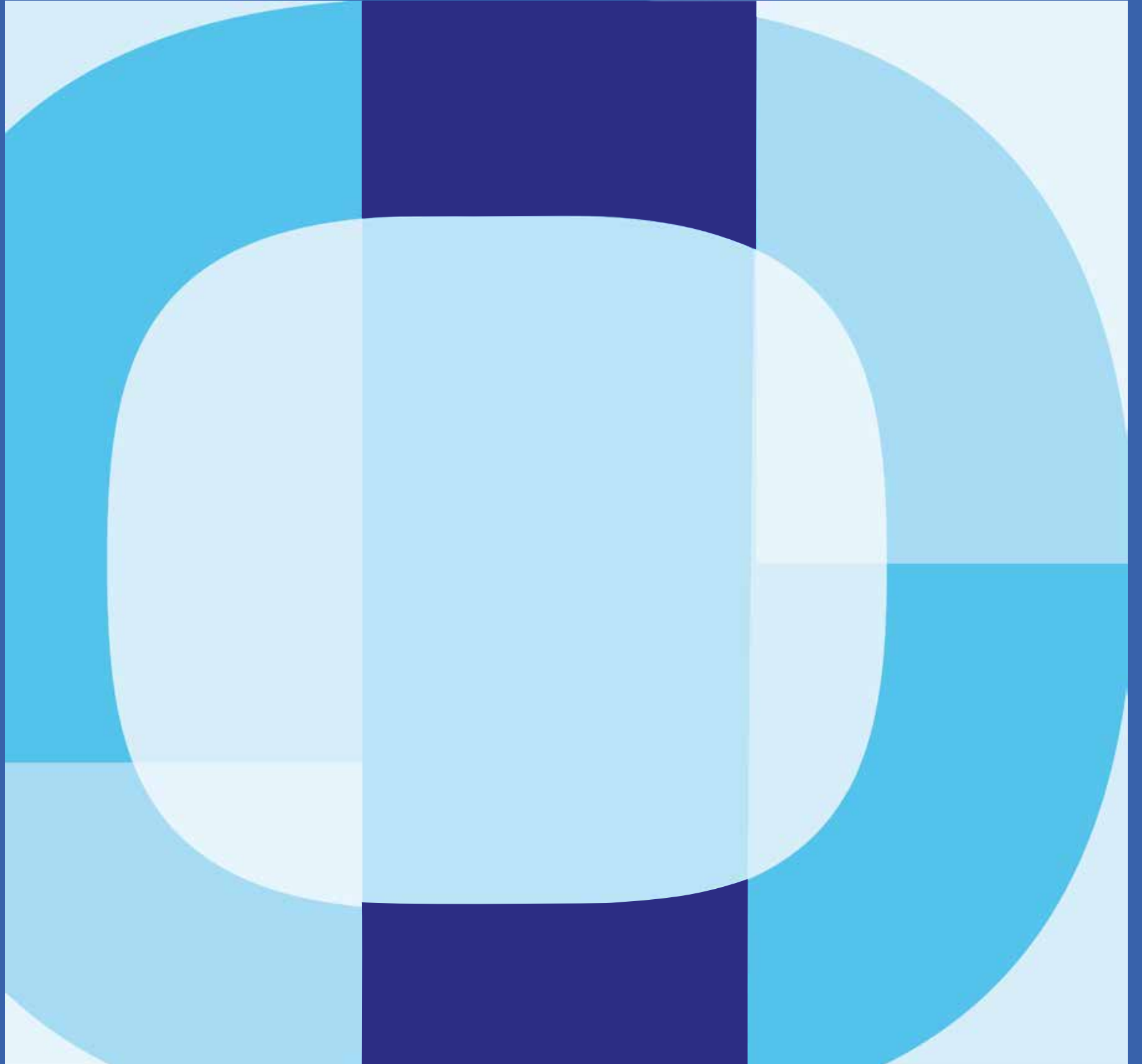


Supply and sanitation projects in Kosice - Slovakia



# Telecommunications & Security

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# Technological Consulting and Engineering Services tailored to the needs of the client

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Red Compartida - Altan Consortium - Mexico







# Networks & operators

Telecommunications networks are the backbone of the digital society

Telecommunications are one of the key factors for the digital development of countries. In this field the team from IDOM has more than 30 years' experience working in all technological areas.

We offer clients consulting and engineering services to implement studies and projects with the best and latest technology. From operator networks to private service networks, our teams work on deployment, support and technological updating, for fixed networks (fiber, cable, NGN...), wireless networks (mobile, TETRA, DMR, radio links...) and broadcast (DVB-T).

The new transport network project we developed for the broadcasting of radio (DAB-T) and digital television (DVB-T) has provided Algeria with a secure, fully IP Telecommunications platform, to boost the digitalization of this country. Another example of a telecommunications platform is the "Red Compartida" project in Mexico, where the first virtual mobile network in the country, now provides full national coverage in Mexico.

Deploying new networks & updating technologies



New Transport Network, TDA (Télédiffusion d'Algerie) -Algeria



# Security & cybersecurity

## Critical elements in a connected society

The security of goods and people and emergency management are critical services for any advanced society. IDOM offers consulting and engineering services in the fields of security and emergency systems in the main economic sectors: government, security, leisure, transportation, water, energy, etc.

Specialists from various fields of expertise work on projects, evaluating security requirements, detecting risks and defining the necessary conditions for each infrastructure, based on three axes: processes, people and technology.

A successful case study where security was implemented was the project of the archaeological sites of Egypt. The scope of the project involved security, management systems (3D platform) and control centres for the archaeological sites (Luxor, West Bank and Gizah). In addition to improving the visitor experience with the development of applications which augmented reality, the monumental illumination was designed, and the access capacity was increased with a new ticketing system.

## High level of integration of security technologies







Improving archaeological sites – Egypt

# Digital transformation

Key ingredient in increasing the sustainability and resilience of cities

A broad-spectrum of telecommunications consultancy ranging from master and strategic plans, to data centres, Smart Cities, business models for new operators, feasibility studies and technologies for ICT services and next-generation network (NGN).

We are collaborating with multiple clients in the processes of technological convergence, implementing the transformation of their networks and services to ensure the separation between information and operating technologies (IT/OT) and improving the level of efficiency and security (network cybersecurity).

In Amman (Jordan), to improve mobility, reduce emissions and increase the safety of pedestrians and drivers, a pilot project was defined that uses the smart city scheme to provide a better quality of life for its inhabitants. The solution is based on video analysis sensors connected by an Internet of Things (IoT) network, developing a Smart City platform.





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