

INNOVATION

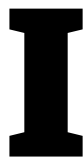
SUSTAINABLE COMPETITIVE ADVANTAGES

Innovation, the strategic pillar of Ferrovial's Horizon 24 Plan, aims to develop and accelerate competitive advantages for the business while generating new opportunities in the medium and long term for a world on the move.

R&D INVESTMENT

52

Million euros



its business units.

In 2020, Ferrovial has continued to further pursue its vision of innovation as a systematic process of exploring and developing solutions aimed at generating value for the company and

PROJECTS IN DEVELOPMENT IN 2020

+120

PROJECTS WITH STARTUPS

38

NEW TECHNOLOGIES EXPLORED

15



Dimitris Bountolos, CIO at Ferrovial, explains what Foresight is

LEADING THE FUTURE OF MOBILITY AND TRANSPORT

The Strategic Innovation Plan is structured and deployed through cross-functional programmes and project portfolios that give concrete form to this innovative vision and translate it into initiatives with real impact. By 2020, this portfolio of innovation initiatives included more than 120 projects that involved an investment of approximately 52 million euros in R&D. Furthermore, in a complex year, the company's various innovation areas have given determined support to the COVID-19 crisis through 13 projects for developing digital solutions and new products, such as the COVID-19 app or the permanent disinfectant Long Clean Surface.

PORTFOLIO INTELLIGENT MANAGEMENT

To extract maximum value from the innovation portfolio, governance and management are two essential tools. Ferrovial's innovation development is led by the Innovation Committee, made up of members of the Company's Management Committee. At a more operational level, the activities are coordinated by the Global Innovation Steering Council, with innovation representatives from the corporate and business areas, with working groups and communities of experts on specific topics (e.g. data and artificial intelligence). Both management bodies have information available through the company's project's portfolio platform, which optimizes resource allocation and knowledge mapping in the organisation while encouraging focus, rapid delivery and validation of hypotheses and continuous learning. In this regard, new KPIs have been launched in 2020 to ensure the value of innovation projects.

VERTIPOINTS: REIMAGINING THE FUTURE OF URBAN AIR MOBILITY

Ferrovial has signed an agreement with the German aeronautical company Lilium to develop, build and operate a network of ten airports for eVTOL (electric Vertical Take-Off and Landing) aircraft in the US state of Florida. The agreement represents a revolution in regional air mobility as these aircraft produce no emissions, reduce noise levels and their helicopter-like vertical take-off and landing capability enables them to be better integrated with the urban environment.

A balanced portfolio

Innovation projects are categorized as incremental, strategic or disruptive depending on the time horizon, degree of uncertainty and transformative capacity of the opportunity pursued. In this way, Ferrovial develops initiatives aimed not only at strengthening and consolidating the competitive advantages of its current business models, but also at creating new competitive advantages and additional sources of value through the systematic exploration of new businesses and technologies.

The aim of **disruptive projects** is to enable Ferrovial to lead the future of mobility and the new generation of transport infrastructures. In this regard, and in order to navigate a constantly evolving strategic and technological context and to adapt dynamically to change, Ferrovial undertakes technology watch and future exploration programmes, the most relevant results and publications of which are compiled on the Foresight portal. These activities include the What if? programme, scenario planning, with which future scenarios in specific areas (autonomous vehicles, urban logistics, hyperloop, urban air mobility) are deployed

and studied in detail to identify opportunities and implications and guide action in the short term.

With the **strategic innovation** projects, Ferrovial seeks to increase the value of its assets through innovation in a cross-cutting way and exploring new technologies. In the first group, the aim is to maximize value by facilitating integrated management of all stages of the infrastructure life cycle, while also undertaking projects in the area of sustainability or occupational safety (through the Safety Lab programme). In the second group, projects are being undertaken to implement autonomous and connected car technologies, 5G, new means of payment, virtual reality and artificial intelligence.

In addition to the above, Ferrovial deploys **incremental innovation** projects, with a short-term value generation horizon in each of the existing businesses. These projects are aimed at achieving improvements in profitability, operational efficiency or user and passenger experience, among others, and are guided by the challenges of the corresponding business units. Ferrovial offers an “Innovation as a Service” (IaaS) model to its business units, undertaking research and dissemination projects on specific technologies, through the Digital Hub, its network of centres of excellence in mobility and asset management, or free experimentation spaces or “sandboxes” in Ferrovial’s reference projects.

CONNECTED TO THE ECOSYSTEM

The company’s innovation ecosystem is strengthened by a dense network of alliances and collaborations in major global innovation hubs such as Israel, the US, Finland and Singapore. In particular, in 2020 Ferrovial had 12 collaboration agreements with universities and research centres, and carried out 38 projects with startups. The former includes the alliance with the Massachusetts Institute of Tech-

FORESIGHT OPEN INNOVATION PLATFORM

In 2020, Ferrovial’s communication and innovation teams launched the open innovation platform Foresight (ferrovial.com/en/foresight/) with the objective of exploring and building the future of transport infrastructure and mobility together with its customers, investors, startups, public agencies and other players in the innovation ecosystem. This digital space allows experts and partners to connect and share trends, knowledge or use cases of new technologies and to outline new joint initiatives and high-impact partnerships. Ferrovial also shares its vision of the potential future of the Hyperloop, urban logistics and urban air mobility on this portal and offers its library of articles and reports on trends, technologies and disciplines with high transformative potential. The various collaboration mechanisms shown on the platform are collaborations with universities and research centres such as MIT (with whom Ferrovial has renewed its commitment and collaboration agreement for the next five years), its collaborations with startups such as Moovit and Zenrobotics, its holding in funds such as ATOMIC and its calls for proposals to startups, such as BuildUp!, or the one launched together with other industry leaders such as Madrid in Motion and Construction Startup Competition 2020.

nology (MIT), a leading global research centre with which Ferrovial has extended its partnership for the next five years. The institutions the company collaborates with on a recurring basis include public agencies that provide funding for innovation, such as the European Commission, European Innovation Council, Innovate UK and the Climate-KIC and Digital-KIC communities, of the European Institute of Innovation and Technology.



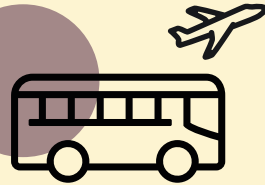
INNOVATION PROJECTS

MOBILITY



URBAN MOBILITY PRICING (UMP)

Comprehensive solution for sustainable mobility management in cities based on payment for infrastructure use



AV BUS SOUTHAMPTON AIRPORT

Autonomous retrofitted bus equipped with advanced 3D navigation and artificial intelligence technologies

DATA EARTHWORKS

Control system for earthworks that captures real-time sensor and geolocation data, calculates key indicators and displays them in a web-based dashboard



SAFETY

CDCLEAN LONG CLEAN SURFACE

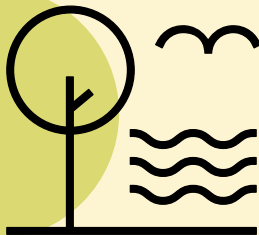
Long-lasting disinfectant agent for surfaces to increase the resiliency against COVID-19 of public spaces and infrastructures such as buses, subways or stations



SUSTAINABILITY

INTEGRATED NATURAL CAPITAL ASSESSMENT (INCA)

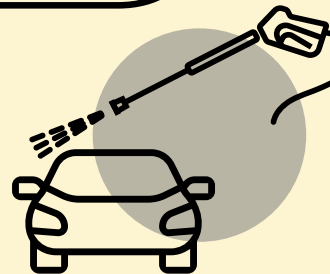
New methodology to assess the impact of industrial activities and infrastructure projects on natural capital and biodiversity



AUTOMATION

SMART ROBOT FOR CAR SHARING (SAROCA)

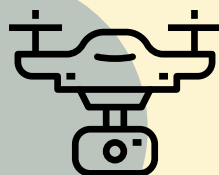
Automatizing the cleaning and disinfection process of Zity carsharing fleet vehicles' interiors through a robotic arm in order to provide greater resiliency against COVID-19



ENGINEERING

IAI - FLY

Marketplace in which Unmanned Aerial Vehicles (UAVs), IT infra or any other auxiliar services that has been validated to inspect electricity transmission infrastructures



DIGITIZATION

F-COVID

Internal app to ensure a safe workplace after the COVID-19 pandemic that allows employees to report close office contacts

