



DELL'
NUMERI INNOVAZIONE
INNOVATION BY NUMBERS

 **LEONARDO**

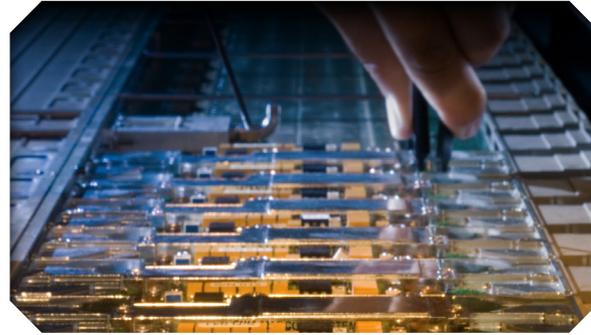
LEONARDO: FOSTERING INNOVATION AND TECHNOLOGY



Exploring new ideas to transform them into new technologies that not only improve our world, but also help design our future one: to feel more secure, to make networks more resilient and to safeguard our environment.

Investing in Research and Development to provide sustainable and competitive products and services.

Partnering with our customers, with a global approach, to better tailor our solutions to their specific needs and sustain their growth strategies.



OUR SUSTAINABLE APPROACH



To deliver technological innovation, we have to draw **innovative pathways** by adopting a more **customer-based approach**. Ideas and creativity must meet market requirements, and find concrete uses and applications in a competitive and sustainable manner.

We are focused on **sustainable innovation**: investing towards the future to contribute to a more stable and stronger economic and social development over time, creating long-term value for all stakeholders.



OUR TECHNOLOGY ROADMAPS

As part of Leonardo's **technology roadmaps**, we have identified approximately **80 innovative technological themes** related to **15 different areas**. The management of these themes will result in technological solutions or enablers for future product development, as well as technological applications that can already be applied to existing products.

Our priorities across Leonardo's numerous product areas are **advanced materials, new manufacturing processes, digitalisation, big data, cybersecurity and autonomous platforms**.

Advanced materials range from electronics to aerostructures, from advanced semiconductors for digital and RF microcircuits to multifunctional composites for future aerostructures, through materials for the management of electromagnetic radiation as metamaterials and solutions for platform stealthness.

System digitalisation and the ability to leverage the Big Data environment are key enabling factors for the evolution of products and their life cycle management, including manufacturing processes and predictive maintenance, as well as the development of cognitive systems.

The capability to learn from experience and to evolve perceptual and executive mechanisms are in synthesis the pillars of **cognitive processes**, which will characterise future systems, from the sensors to the platforms, enabling the development of their autonomy for missions of remote-controlled platforms and to support human operators in complex systems.



OPEN INNOVATION

We cultivate **the value of innovation**, not only inside our boundaries, but also in the industrial, economic and social environments in which we operate, to foster competitiveness and sustainable development.

We are part of an **extended network** that comprises universities, research centres, customers, suppliers and start-ups across the globe.

In 2017, there are **ca. 210 collaborations with universities and research centres**, 70% of which within Italian and European research projects. In Italy, our main partners are the National Research Council (CNR), the Polytechnic of Milan, the Polytechnic of Turin, the Sapienza University of Rome and the University of Naples Federico II. Meanwhile abroad, amongst others, we collaborate in the UK with the University of Glasgow, the University of Edinburgh, and Heriot-Watt University, and in Singapore with Nanyang Technological University.

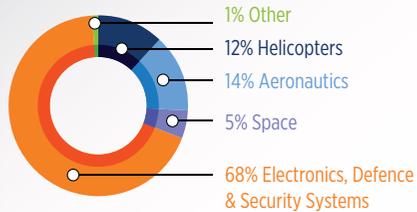
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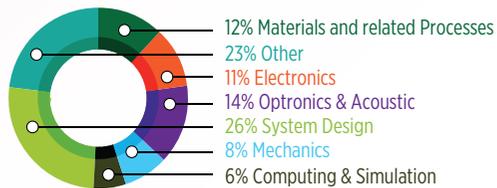
Intellectual Property Value Management

A diversified patent portfolio with a **Compound Annual Growth Rate (CAGR) of 6.4%** since 2006

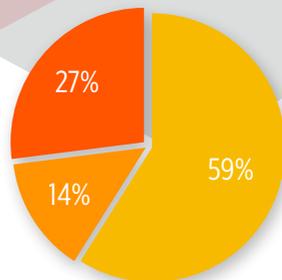
BREAKDOWN OF PATENTS BY SECTOR



BREAKDOWN OF PATENTS BY KEY TECHNOLOGY



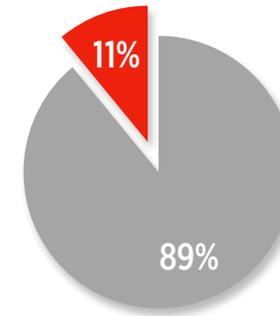
Patent Portfolio in the World



- Italy, the U.S., the UK, France, Germany, Canada, Japan and India
- Russia, Spain, China, the Netherlands, Sweden, Australia, Israel, South Korea, Turkey and Brazil
- Other countries

R&D Investments

11% of revenues are invested in R&D every year (ca. 1.4 billion euro in 2016)



Leonardo is ranked **fifth** in the world and **second** in Europe in terms of R&D investment in the AS&D sector (*EU Scoreboard 2016*)

Working Towards Innovation



10,000 engineers (aeronautics/aerospace, electronics, mechanics, computers and telecommunications)

12,000 highly specialised technicians

10,000 support specialists dedicated to R&D



At Leonardo, innovating also means the ability to enhance and **apply technologies to both military and civil domains**. Leveraging the know-how developed overtime in the defence sector, we can make the best use of R&D to deliver solutions for a wide range of everyday life applications. Thus guaranteeing a much higher market potential, at a lower cost, for an increased number of customers.

Earth Observation

The **COSMO-SkyMed** constellation “watches” the planet day and night and, with its dual function, meets civil (e.g. environment, civil protection, Oil&Gas) and defence objectives (surveillance).



Cybersecurity

The evolution of cyber threats shortens the distance between homeland security and defence. Our solutions leverage the expertise gained in the defence sector to provide **broadband cybersecurity**, available in any civil scenario.



Aeronautical platforms

Most of our platforms are dual use, for both civil uses (e.g. SAR, firefighting, EMS) and for military missions. For example, the **C-27J Spartan** is a versatile aircraft perfectly suited for tactical transport, as well as for humanitarian assistance.



Critical Communications

We are a world leader in the supply of communication systems for the protection of communities and infrastructures. Our **secure and reliable telecommunication solutions** are developed for military, civil and governmental customers, with lower costs and increased capabilities.



COMMITMENT TO SUSTAINABLE DEVELOPMENT



Horizon 2020, the EU Framework Programme for Research and Innovation, is the key initiative for achieving the objectives defined in the **Europe 2020 Strategy**. It shows how the European Union can create a smart, sustainable and inclusive economy, based on knowledge and innovation, delivering high levels of employment, productivity and social cohesion. Leonardo actively participates in Horizon 2020 in line with its own technological priorities, contributing to each initiative with the unique innovative technologies developed in its specific sectors of activity.

Furthermore, in the **European Defence Action Plan (EDAP)**, Leonardo plays a key role in the **Preparatory Action** of the new **European Defence Research Programme (EDRP)** for the development of defence systems.



Clean Sky 2 is an ambitious European aeronautical research programme with the objective of developing breakthrough technologies that will significantly reduce the environmental impact of airplanes and helicopters. The aim is to develop **fuel efficient solutions**, with reduced noise levels and pollutant emissions.



SESAR 2020 aims at modernising and harmonising the European **Air Traffic Management** systems through the definition, development, validation and deployment of innovative technological and operational solutions, for the creation of a **Single European Sky**. SESAR 2020 reduces by 10% the environmental impact per flight (fuel consumption, noise and emissions).



Galileo is one of the greatest and most ambitious European projects for a **global navigation satellite system** for a highly accurate and reliable global positioning service, interoperable with both U.S. GPS and Russian GLONASS systems.



Copernicus is designed to provide Europe with its **own Earth Observation capacity**, complementary to Member States' assets. It aims at monitoring the environment to manage humanitarian emergencies, natural disasters, climate change and civil security.



The **Sustainable Development Goals** in the **United Nations' 2030 Agenda** call companies, governments and society to contribute to sustainable development and global prosperity. In this framework, Leonardo is committed to **improving the quality of education**, to favor employment and entrepreneurship, and **fostering innovation**, to promote an inclusive and sustainable industrial development.



Technological innovation does not exist without **people**. Our employees provide **invaluable contributions** to our Company's growth. And we, in turn, invest in their growth. A commitment that goes beyond our Company, reaching the social environment in which we operate, as we strive to be a **scientific culture generator**, promoting research and technology, and preparing the next generations of innovators.

STEM programmes

In all the communities in which we are active, we work to bring young generations closer to science, technology, engineering and mathematics (**STEM**) topics and studies. Our most recent initiative is a **partnership with the Milan Science & Technology Museum**, with the establishment of the **Mathematics i.lab**, an interactive laboratory that provides young generations with an innovative and friendly approach to mathematics.

Our UK Innovation Hubs

The **Luton Maker Space** and the **Edinburgh Innovation Hub** are areas where employees can explore innovative ideas, with access to information, tools and resources, such as 3D printers and scanners, to work on rapid prototyping.

The Leonardo Innovation Award: A Snapshot



The Innovation Award fosters ideas within our Group and is an important tool for promoting **cutting-edge proposals** within Leonardo, contributing to the development of our Company's technological skills and competencies.

23% of patents within the portfolio come from Innovation Award proposals

97% of these patents were applied to our systems, products and services

In **13 years**, over **9,000** projects were submitted, with the involvement of **25,000** employees

The Innovation Award has reached a **strong international dimension**. In **2017**, **over a third** of the projects came from outside of Italy.

The Leonardo Innovation Award for Young People

Since 2015, a special section of the Innovation Award is dedicated to young people, specifically **students, recent graduates and Ph.D. students coming from Italian universities' scientific faculties**.

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