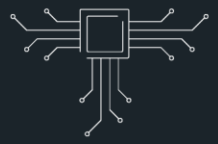
Innovation & IP Strategy in Leonardo

Emanuela Barbi

Le nuove sfide tecnologiche per l’industria aerospaziale piemontese e la proprietà industriale

Unione Industriali - Torino

16 aprile 2024



Electronics

Helicopters

Aircraft

Cyber &
Security

Space

Aerostructures

PROFILE

Leonardo is a global industrial group that builds technological capabilities in Aerospace, Defence & Security. The company plays a leading role in major international strategic programmes and is a trusted technological partner of governments, defence agencies, institutions and businesses.

PEOPLE WORLDWIDE

53,566 Total Workforce

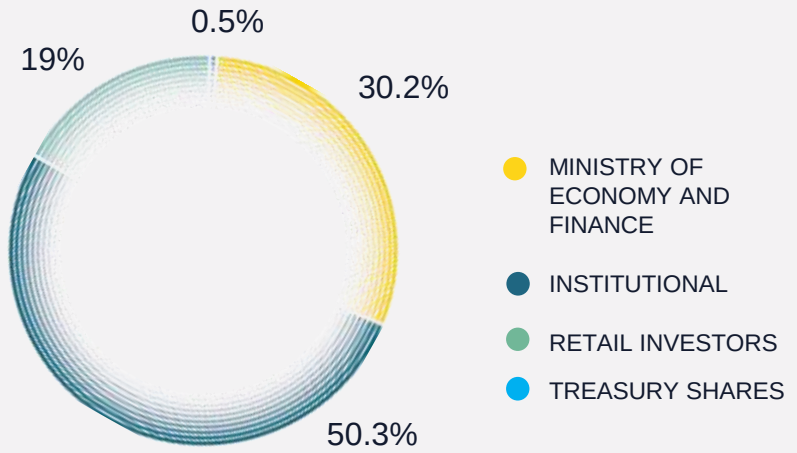
62%	15%	14%	5%	4%
33,306	8,106	7,329	2,913	1,912
Italy	United Kingdom	United States	Poland	Rest of the world

4 Domestic markets

111 sites worldwide

150 countries commercial presence

SHAREHOLDER COMPOSITION



32% of investors are signatories of the Principle for Responsible Investments (PRI)

Chairman
Stefano Pontecorvo

Chief Executive Officer and General Manager
Roberto Cingolani

Co-General Manager
Lorenzo Mariani

MAIN SHAREHOLDINGS AND JOINT VENTURES INTERNATIONAL

Leonardo UK 100%	Kopter 100%	PZL-Świdnik 100%	Leonardo DRS 72.3%	Telespazio 67%	ATR 50%
Elettronica 31.33%	Thales Alenia Space 33%	Avio 29.63%	Hensoldt 22.8%	MBDA 25%	Telespazio 67%

MAIN PERFORMANCE AND FINANCIAL RESULTS 2023

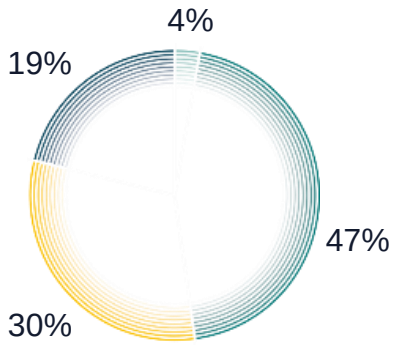
ECONOMIC-FINANCIAL

REVENUES
€ 15.3 BN

ORDERS
€ 17.9 BN

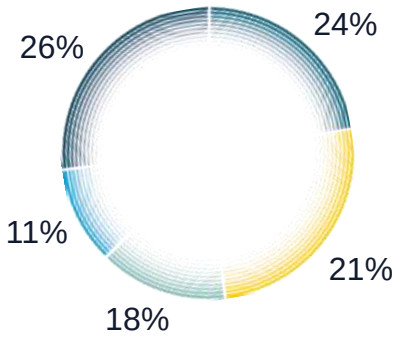
ORDER BACKLOG
€ 39.5 BN

Revenues by business sector



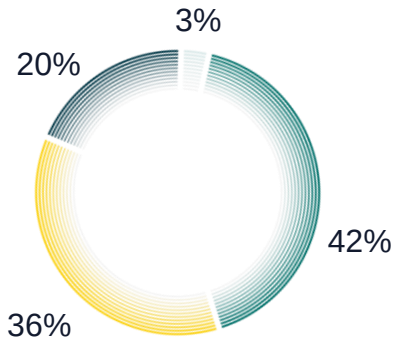
- Defence Electronics & Security
- Helicopters
- Aircraft
- Aerostructures

Revenues by geography



- Italy
- United Kingdom
- United States
- Rest of Europe
- Rest of the world

Backlog by business



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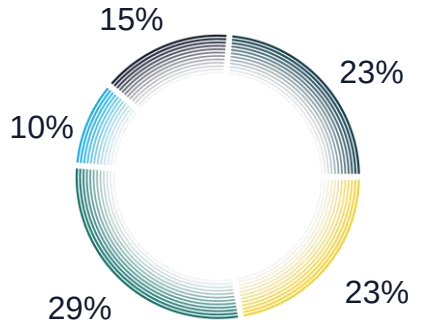
Backlog by geography



- Italy
- United Kingdom
- United States
- Rest of Europe
- Rest of the world

SUSTAINABILITY

50% of investments in 2023 – 2025 to achieving SDGs

€ 2.2 BN of revenues invested in research, development & product engineering

55% Sources of funding ESG-linked

TECHNOLOGICAL INNOVATION FOR A SUSTAINABLE FUTURE

DIGITAL CONTINUUM

LABS

"Our digital continuum is an overwhelming wave that conveys Leonardo Labs' most disruptive technologies throughout the entire company's organization and value chain, enhancing our industrial heritage and delivering the best solutions to our customers."

MARKET

1st place
in Italy

and 2nd among European A&D companies for R&D investment

13,000
people

involved in R&D and engineering

Collaborations with
90 + universities
and research centres

144 PhDs
in Italy and the UK with
46 universities in both countries

60%
of employees with STEM qualification

6.6
petaflops

of computing power

31.9
petabytes

of storage capacitiy

THE DAVINCI-1 SUPERCOMPUTER

One of the most powerful HPCs in the AD&S sector globally, davinci-1 is an integrated supercomputing and cloud computing platform that combines flexibility and computing power, enabling the use of algorithms (from deep learning to artificial intelligence), customisation by technology platform and the calculation of the countless interactions between the data generated (data analysis and big data).

- It is an integrated **supercomputing** and **cloud computing** platform which combines flexibility and computing power
- It is **transversal** to the activity of all business areas and the Leonardo Labs network
- It supports the Group's **digital transformation** process

DIGITAL TWIN

davinci-1 can process data from multiple sources and elaborate them through the use of algorithms (from deep learning to artificial intelligence), thus creating predictive models for any type of platform or process

Advantages

- Lower design and development costs
- Reduced enviromental impact (lower emissions)
- Higher levels of efficiency and safety
- Predictive maintenance without downtimes
- Lower use of materials and energy

Among the most powerful HPCs in the AD&S industry worldwide

20 MLN gb
memory capacity

100 gb
per second reading and writing speed

5 MLN BN
floating point operations per second

PARTNER IN THE MAJOR INTERNATIONAL COOPERATION PROGRAMMES

GCAP (Global Combat Air Programme)

The Global Combat Air Programme is an international collaborative programme that involves the UK, Italy and Japan, with the shared ambition of developing a nextgeneration air system by 2035. The ‘system of systems’ will operate in five domains, where the next-generation fighter will be the ‘core platform’ connected with other peripheral ‘systems’, both crewed and uncrewed.

EUROFIGHTER

The Eurofighter GmbH consortium is responsible for the development of Europe’s largest aircraft programme. It includes the defence industries of Italy, the UK, Germany and Spain. Leonardo has a 36% share in the programme, playing a key role in production of aeronautical and electronic components.

ATR Turboprop aircraft

The ATR consortium, a joint venture owned equally by Leonardo and Airbus, is the world’s leading manufacturer of turboprop aircraft for regional transport. The ATR 42 and 72 are the bestselling aircraft in the market segment for 90+ seats.
For all aircraft Leonardo produces the entire fuselage, and the vertical and horizontal tail stabilisers, which are made of composite material.

EURODRONE

Eurodrone is the first uncrewed aircraft system designed for flight in unsegregated airspace. Developed by France, Italy, Spain and Germany.

NH90

The NHIndustries consortium develops Europe’s most important helicopter programme, in which Leonardo has 32% of programme value. Leonardo’s Tessera (Venice) site is the Italian assembly and maintenance hub of the NFH variant (Naval Frigate helicopter).

FREMM

The European Multi-Mission Frigrate is a military naval programme resulting from a partnership between the Italian and French defence industries. Leonardo is responsible for combat system integration and the supply of advanced equipment.

MGCS Armoured vehicle

The Main Ground Combat System (MGCS) is a project aimed at developing the future generation of platforms for armoured vehicles. Leonardo and the Franco-German KNDS consortium have signed a strategic alliance to define and develop a closer collaboration for the creation of a European Defence Group and strengthen cooperation in the field of ground electronics

NEXT GENERATION CIVIL TILTROTOR

Next Generation Civil Tiltrotor is a research project promoted under the EU’s Clean Sky 2 programme to develop a new generation tiltrotor with an architecture and technological systems capable of cutting CO2 emissions and noise footprint, while maximising speed and efficiency.

JOINT STRIKE FIGHTER

The Joint Strike Fighter industrial programme is the result of international cooperation between the US, Italy and seven other nations (UK, Netherlands, Norway, Denmark, Australia, Turkey and Canada). Italy, as a second-level partner, is responsible for the production of the wing assemblies, specific avionic systems, and final assembly and testing of the F-35A and F-35B variants for the Italian and Dutch fleets.

SESAR

Single European Sky Advanced Research is a research programme for the modernisation of air traffic management and air navigation services in Europe. SESAR is led by the public-private partnership SESAR Joint Undertaking, which includes the European Union, Eurocontrol and Leonardo along with more than 50 organisations.

IP ISSUES IN THE INTERNATIONAL COOPERATION PROGRAMMES

Major international programmes

GCAP
Air defence system of systems

JOINT STRIKE FIGHTER
Multi-role fighter

EUROFIGHTER
Multi-role fighter

EURODRONE
Uncrewed system

NH90
Multi-role helicopter

ATR
Regional transport aircraft

SESAR
ATM system

NEXT GENERATION CIVIL TILTROTOR
Tiltrotor

FREMM
Multi-mission frigates

Security as a continental problem rather than national

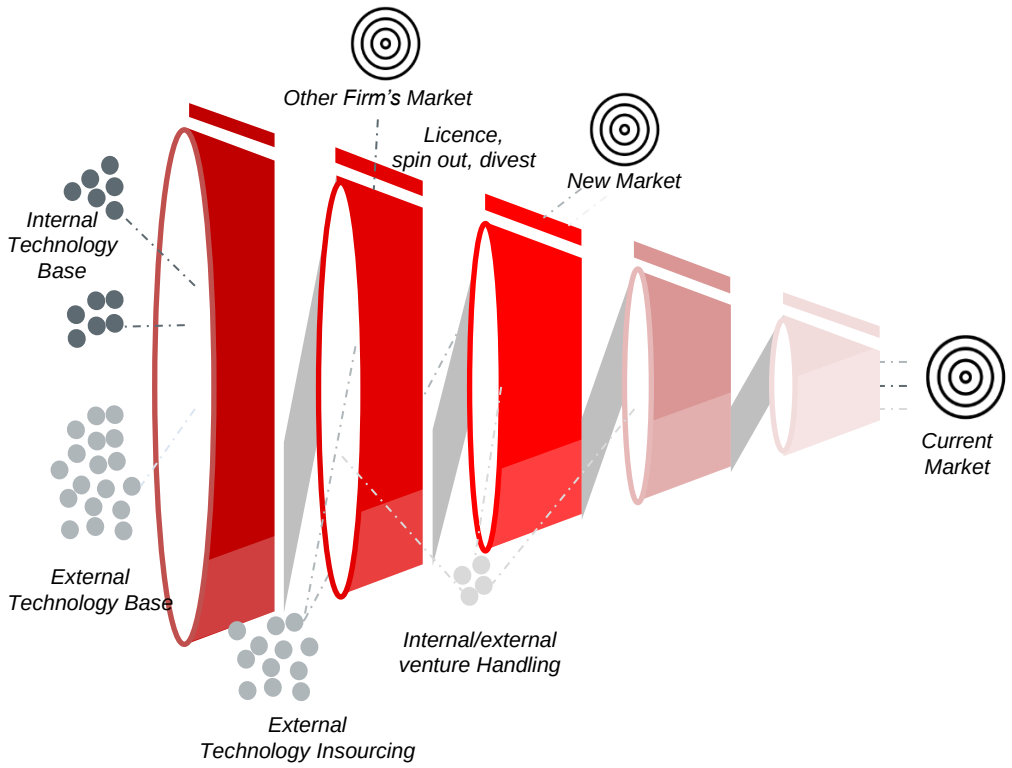
No single European Country can make it on its own and the fragmented expenditure on Defence makes Europe even weaker. The pace of tech advancement and sudden shifts in the global geopolitical balance call for increased and optimized investments and standardization / synergy

IP protection in JV, joint development, consortium, etc.

- *From a single Company approach (Patent/Trade Secret) to multi company/national common environment*
- *BG identification, validation & protection*
- *Licence Agreements on BG use*
- *FG ownership sharing*
- *Commercial agreements to exploit the common developed technologies*

OPEN INNOVATION ENVIRONMENT

Open Innovation Approach in Leonardo



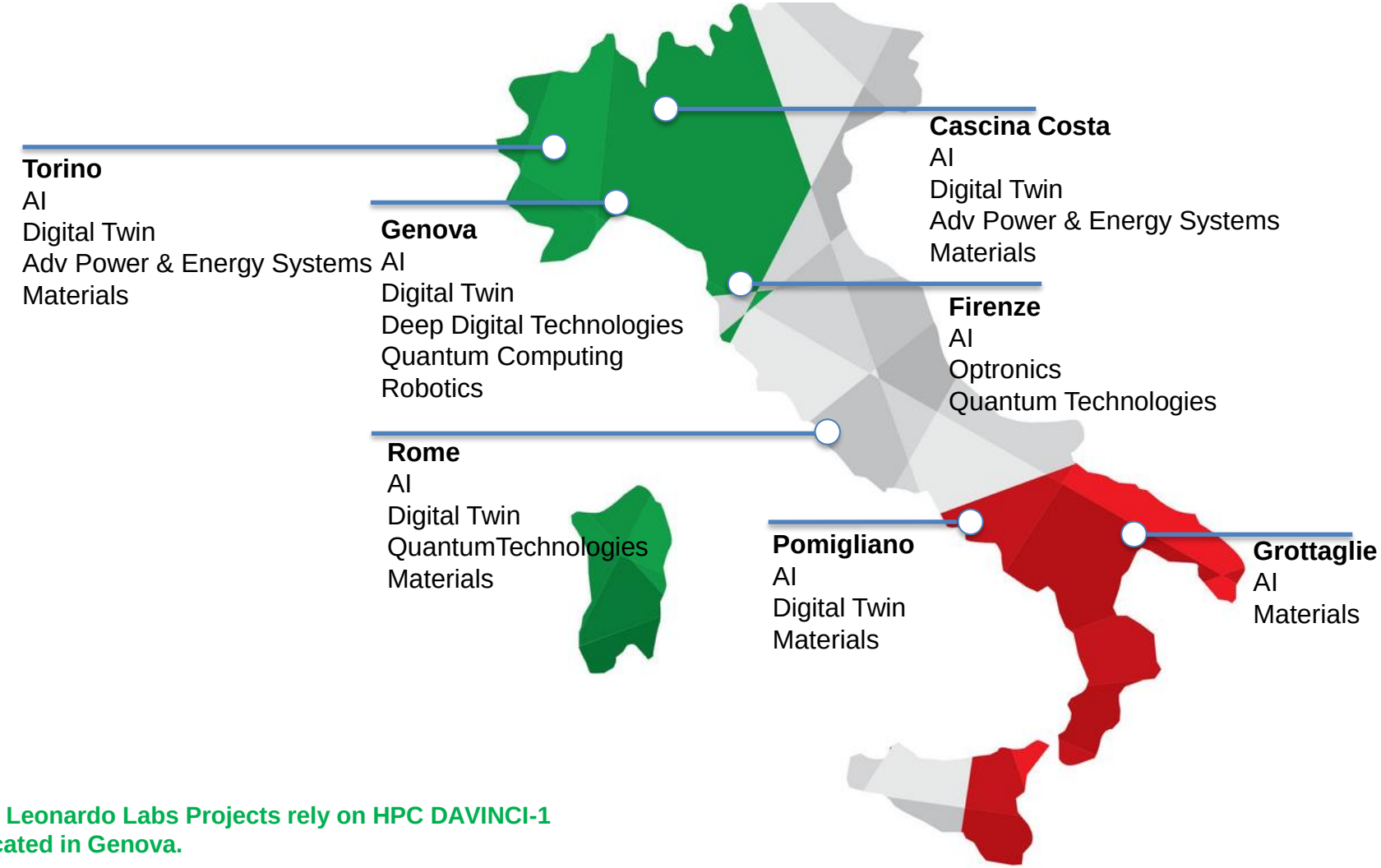
Following the Open Innovation approach, Leonardo actively engages with a diverse ecosystem comprising accelerators, research centers, startups, SMEs…

	R&T	Product Development
Research Center **Collaboration**/ PhD scholarships	Collaborazione su **argomenti di ricerca** con Divisioni / Labs, **con impatto** su tecnologie, prodotti e servizi LDO	
Challenges	SOLVERS WANTED · F2LINK · #T-TEC · DRONE CONTEST · AIRCRAFT FACTROY	
Startups **Collaboration** with **Startups**		
Participation in **external accelerators**	ROBOIT · ACN · CYBER XCELERATOR · ESA BIC · TAKEOFF	
Innovation Network **Scouting networks** for startups and sharing best practices	HEDI · DEEP BLUE VENTURE · OPEN ITALY · OSSERVATORI DIGITALI · INNOVATION ROUNDTABLE	

LEONARDO INNOVATION LABS

Leonardo Innovation Lab

- ARTIFICIAL INTELLIGENCE
- DEEP DIGITAL TECHNOLOGIES
- QUANTUM COMPUTING
- DIGITAL TWIN
- AUTONOMOUS SYSTEMS & ROBOTICS
- ADVANCED POWER & ENERGY SISTEMS
- QUANTUM TECH & OPTRONICS
- MATERIALS



Torino
AI
Digital Twin
Adv Power & Energy Systems
Materials

Genova
AI
Digital Twin
Deep Digital Technologies
Quantum Computing
Robotics

Cascina Costa
AI
Digital Twin
Adv Power & Energy Systems
Materials

Firenze
AI
Optronics
Quantum Technologies

Rome
AI
Digital Twin
QuantumTechnologies
Materials

Pomigliano
AI
Digital Twin
Materials

Grottaglie
AI
Materials

All Leonardo Labs Projects rely on HPC DAVINCI-1 located in Genova.

LEONARDO AI LAB ROADMAP

Trustworthy AI

- Robustness
- Certified AI
- Interpretable AI
- Privacy AI

Computer Vision

- Hyperspectral
- SAR (Synthetic Aperture Radar)
- Super Resolution (Text, Scene)
- Generative Images
- Image Forecasting
- Defect Analysis

Natural Language Processing

- Large Language Models (LLM)
- Knowledge Graphs
- Question Answering
- Advanced Scraping
- Document/Web Understanding

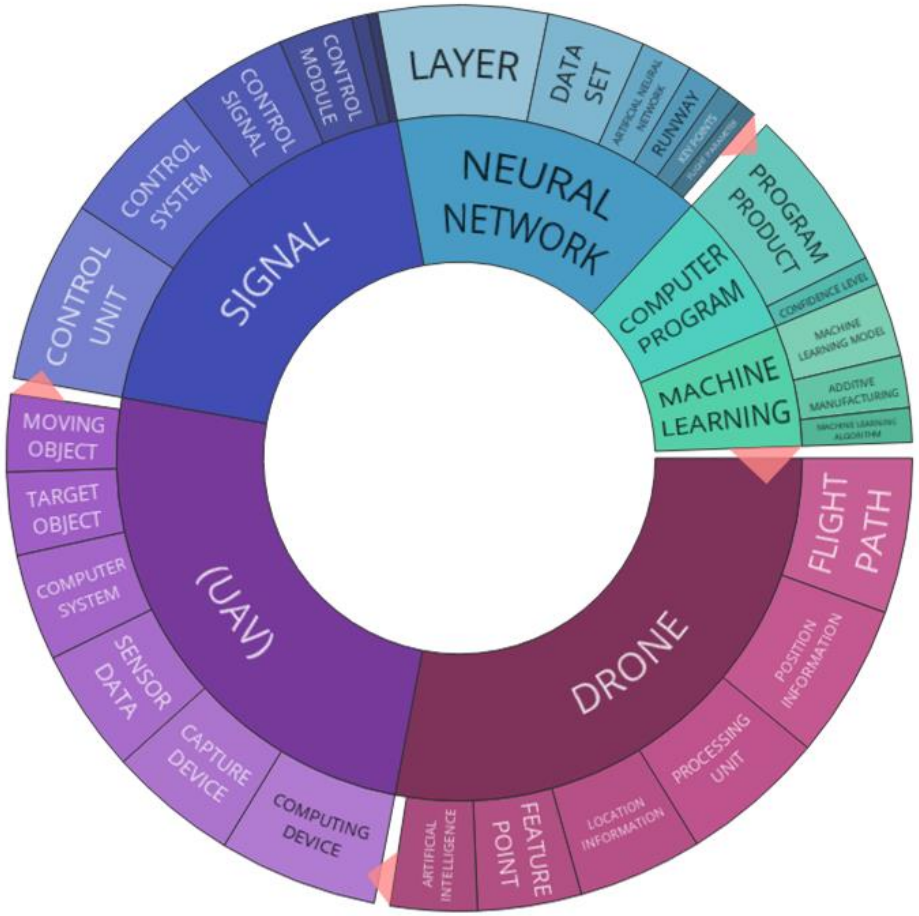
Audio/Signal/Time Series

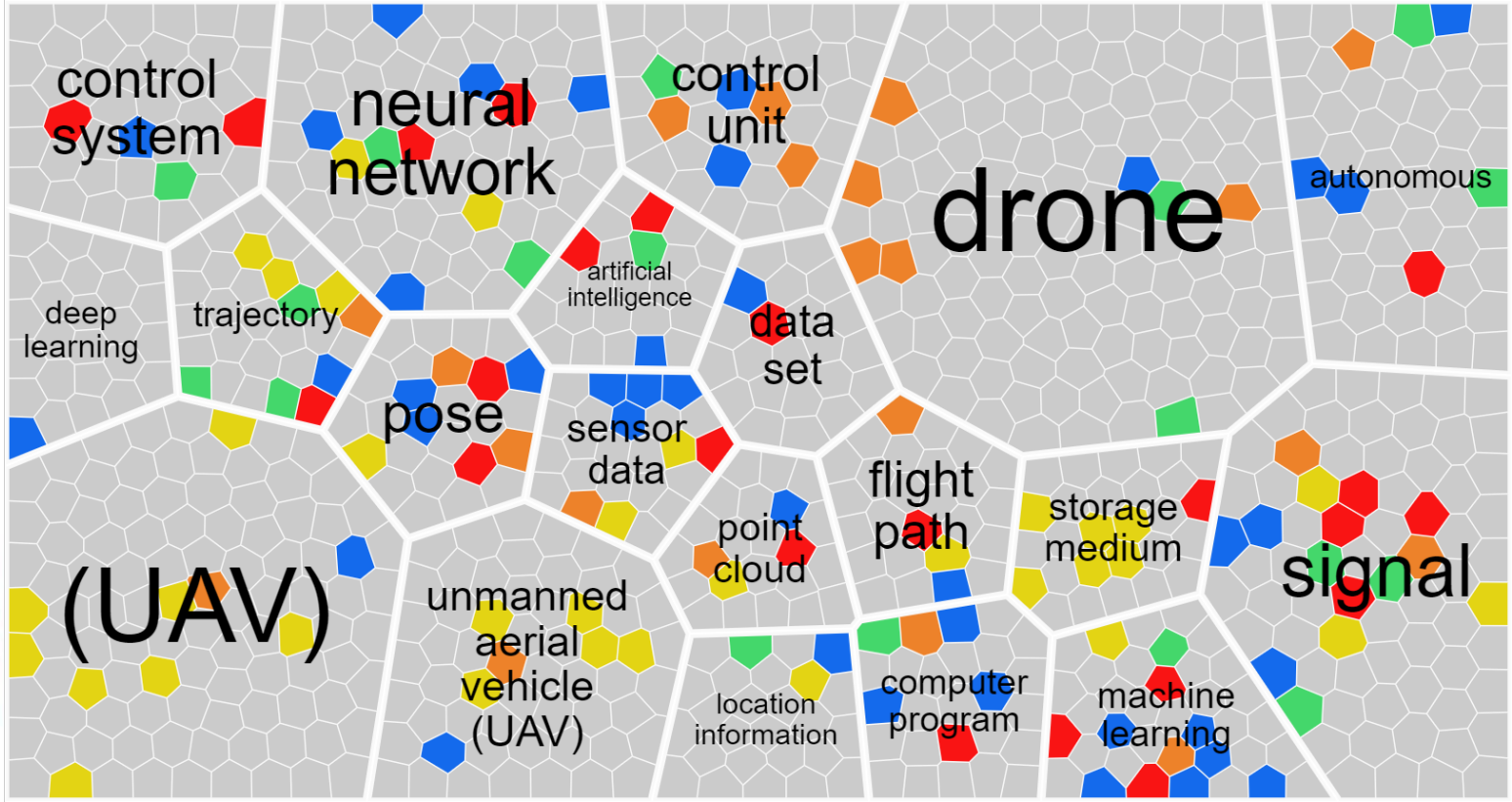
- AI applied to Radar
- Forecasting for Logistic
- Multi-sensor fusion and tracking
- Physics Informed Neural Networks
- Neural ODE

Core AI

- Large Scale AI
- Continual Learning
- Reinforcement Learning
- Green AI

IP ISSUES ON AI TECHNOLOGIES LEGAL PROTECTION





THANK **YOU**
FOR YOUR ATTENTION

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