December 2022. Technological snapshot

Analysis of the deep tech startup ecosystem in Catalonia, 2022

ACCIÓ Catalonia Trade & Investment

Generalitat de Catalunya
Government of Catalonia

CataloniaConnects

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Prepared by
ACCIÓ's Strategy and Competitive Intelligence Unit

Barcelona, December 2022

Contents

Objective

Objective

The aim of this report is to agree on the definition of deep tech and determine its scope and the technologies and companies that can be considered deep tech.

The report also studies global trends and impact, and maps the ecosystem of deep tech startups in Catalonia.

In the report preparation process, searches were carried out of a bibliography, published articles and reference organizations. The information was analysed and checked with experts to adapt it to the reality of the business, entrepreneurial and research communities of Catalonia.

A startup is a newly created innovative company (founded in the previous 10 years) set up by entrepreneurs with the will and ambition to make it grow and a finished product to be sold on the global market.

Spinoffs are companies promoted by members of university and research communities. Their activity is based on using new processes, products and services developed from the knowledge and results obtained at universities and research centres.

Executive Summary

Executive Summary: deep tech in Catalonia (I)

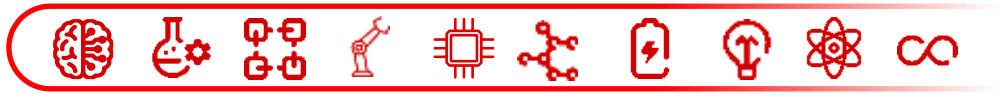
Deep tech companies have a strong technological and scientific foundation, create impact and seek to make the world a better place.

Characteristics of deep tech companies

- Their roots are in science, technology and engineering.
- They offer transformative solutions to global challenges.
- They exploit new scientific and technological knowledge, and have mechanisms to protect information.
- They tend to make physical products (rather than services) that change established paradigms and generate new business models.
- Slow scalability and the need for intensive long-term financing.
- Many founders emerge from university and research systems.
- Need for talent in STEM disciplines, business and R&D.

Technologies considered deep tech*

- Artificial intelligence
- Biotech
- DLT / blockchain
- Robotics
- Semiconductors
- Frontier materials
- Batteries and energy storage
- Photonics
- Quantum applications
- Supercomputing



Global market

Investments in deep tech startups quadrupled from 2016 to 2020 to $62 B and could exceed $200 B by 2025.

2021 was a bumper year for European deep tech firms, with close to $19 B raised by September, twice the 2020 figure.

European strategy

The European Innovation Agenda indicates that there is a new wave of innovation driven by deep tech startups. It outlines five measures to support them and ensure that the European Union can keep pace with global technological development.

*For the purposes of this report.

Executive Summary: deep tech in Catalonia (II)

Catalonia has 291 deep tech startups, which account for 15.3% of the Catalan entrepreneurial ecosystem.

291 deep tech startups

They account for 15.3% of all startups listed by Barcelona & Catalonia Startup Hub.

They have turnover of **€124 M** and employ 1,729 workers.

The main technologies are biotech (39.7%), artificial intelligence (23.4%) and frontier materials (11.0%).

42.6% of deep tech startups are spinoffs.

50% of startups have a patent or information protection system.

More than one in three Catalan deep tech startups have women in management or were founded by women (36%).

Funding raised

Barcelona is ranked 7th among European hubs in terms of venture capital funding raised by deep tech startups (2017-2021).

In 2022, the most investment ever has been raised by Catalan deep tech startups (**€170 M**).

Three out of four Catalan deep tech startups have raised funding. 33% have raised over €1 M in investment rounds (series A+B+C).

Active public policies

Agreements in Catalonia:

- Agreement for Industry
- Agreement for the Knowledge Society

Investment funds:

- Deep tech co-investment fund
- Startup Capital
- Advanced Technology Investment Funds
- Barcelona Deep Tech Fund

Actors in the ecosystem

- 42 Centres and institutions generating deep tech spin-offs
- 9 Incubators and accelerators
- 31 Venture capital funds
- 8 Institutions
- 4 Clusters

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1. Definition of deep tech

Characteristics of deep tech companies

Deep tech companies are based on scientific knowledge and cutting-edge technological advances. They include innovations at the frontiers of knowledge in basic disciplines such as biology, chemistry, physics, mathematics and engineering (STEM disciplines).

- They develop pioneering knowledge and technology, and provide clearly identifiable, impact-generating improvement.
- They are oriented towards providing solutions to unsolved social problems and global challenges and focusing on the Sustainable Development Goals. Deep tech companies help change the way we look at reality.
- They make use of mechanisms to protect intellectual property, patents, etc.
- They tend to be projects of high technological and market risk and require considerable funding before they can enter the market.
- Time to market, from the conception of the product/service until it is available for sale, usually takes longer than in conventional companies.
- Many founders of these companies have acquired their knowledge and training in the university system or have passed through the research system. They also have extensive knowledge of their field and apply it at the company. The founders do not necessarily work in a single field of knowledge.
- Deep tech companies tend to take a multidisciplinary approach and make use of hybridized technologies and knowledge.
- The goods and services offered by many deep tech companies are either tangible in some way or have an impact on society.
- Companies that use mature, developed technologies or assimilate the technologies of others are not considered deep tech firms.

Source: ACCIÓ, based on interviews with experts.

Seven differences: deep tech vs not deep tech

	Deep tech	*Not deep tech*
1	They have roots in cutting-edge science, technology and engineering, and the combination of physical, biological and digital advances.	They have roots in mature technology and innovations already existing in the market.
2	They have the potential to offer transformative solutions to global challenges and help achieve the UN SDGs.	They offer solutions with a limited degree of impact on the industries and markets they target.
3	They tend to have their own patents and trademarks, take a multidisciplinary approach, and make use of hybridized technologies and knowledge.	They rarely hold their own patents or trademarks. They usually work in a single discipline without hybridized technologies.
4	Their products, which tend to be physical rather than services, change established paradigms and generate new business models.	Their products tend to be digital services rather than physical products and offer improvements to an established paradigm.
5	Slow scalability, high time to market and the need for long-term financing that tends to be a sunk cost.	Scalability and time to market tend to be fast, and financing is needed when the business first starts operating.
6	Founders come from the university and research systems and apply their expertise at the company.	Founders can have any background, regardless of whether they went through the university and research systems.
7	They need talent with advanced knowledge of STEM disciplines and business, as well as skills associated with R&D principles.	They need workers with basic knowledge of STEM disciplines.

Examples of deep tech: laser and quantum computing technology

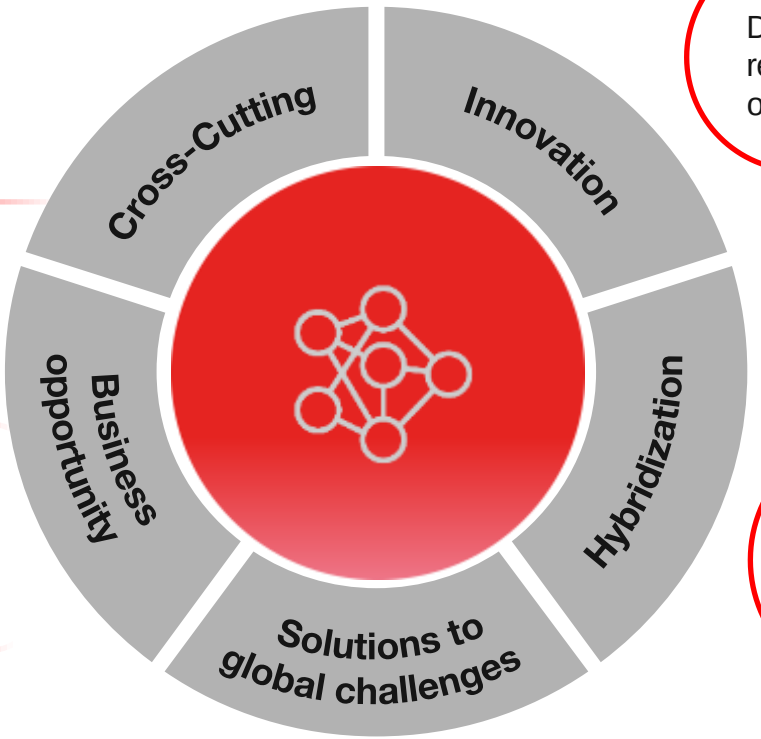
Not examples of deep tech: development of apps and marketplaces

Source: ACCIÓ

Importance of deep tech companies

Deep tech companies can have an impact in many areas, including health and the life sciences, food, energy, materials and production processes.

Deep tech startups are created based on research and provide a source of innovation for other emerging applications.



New business models may emerge based on the applications of pioneering technical and emerging scientific solutions.

Challenges are becoming increasingly complex, so the search for solutions cannot be approached from a single field of knowledge, which makes it necessary to use hybridized technologies and possess a well of knowledge in order to come up with innovative, sustainable solutions.

Deep tech firms have a clear focus on providing solutions to global challenges such as climate change, health, the scarcity of resources and demographic changes.

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Source: ACCIÓ

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2. Deep tech technologies

10 deep tech technologies

It's difficult to make a list of specific technologies, since deep tech startups are characterized by their approach and strategy. For this reason, any technology in a certain context could be deep tech.

Emerging technologies and hybridized knowledge also promise a wide range of new opportunities.

However, the technologies considered to be deep tech for the purposes of this report are the following:

- Artificial intelligence
- Biotech
- DLT / blockchain
- Robotics
- Semiconductors
- Frontier materials
- Batteries and energy storage
- Photonics
- Quantum applications
- Supercomputing

Note: for the purposes of this report, the universe of startups was analysed in terms of global technology studies and trends and with respect to the situation in Catalonia.

10 deep tech technologies: scope

The 10 selected deep tech technologies are used in different technological fields.

1. **Artificial intelligence** — Deep learning, machine learning, image analysis, natural language processing, computer vision, biometrics, minibots, facial recognition.

2. **Biotech** — Genomics and omic sciences, vaccines and medicines, regenerative therapies, green biotech applied to agriculture and food production, ecosystem bioremediation, industrial applications.

3. **DLT / blockchain** — Cryptocurrencies, smart contracts, traceability, fraud control.

4. **Robotics** — Industrial robotics, space robotics, drones, robotics applied to medicine, care and educational robotics.

5. **Semiconductors** — Design, manufacture and assembly of chips; micro- and nano-electronics.

6. **Frontier materials** — Biomimetic materials; self-healing materials; metamaterials; nanomaterials.

7. **Batteries** — Energy storage, batteries for vehicles, electronic and stationary devices. Manufacture of cells, modules and systems.

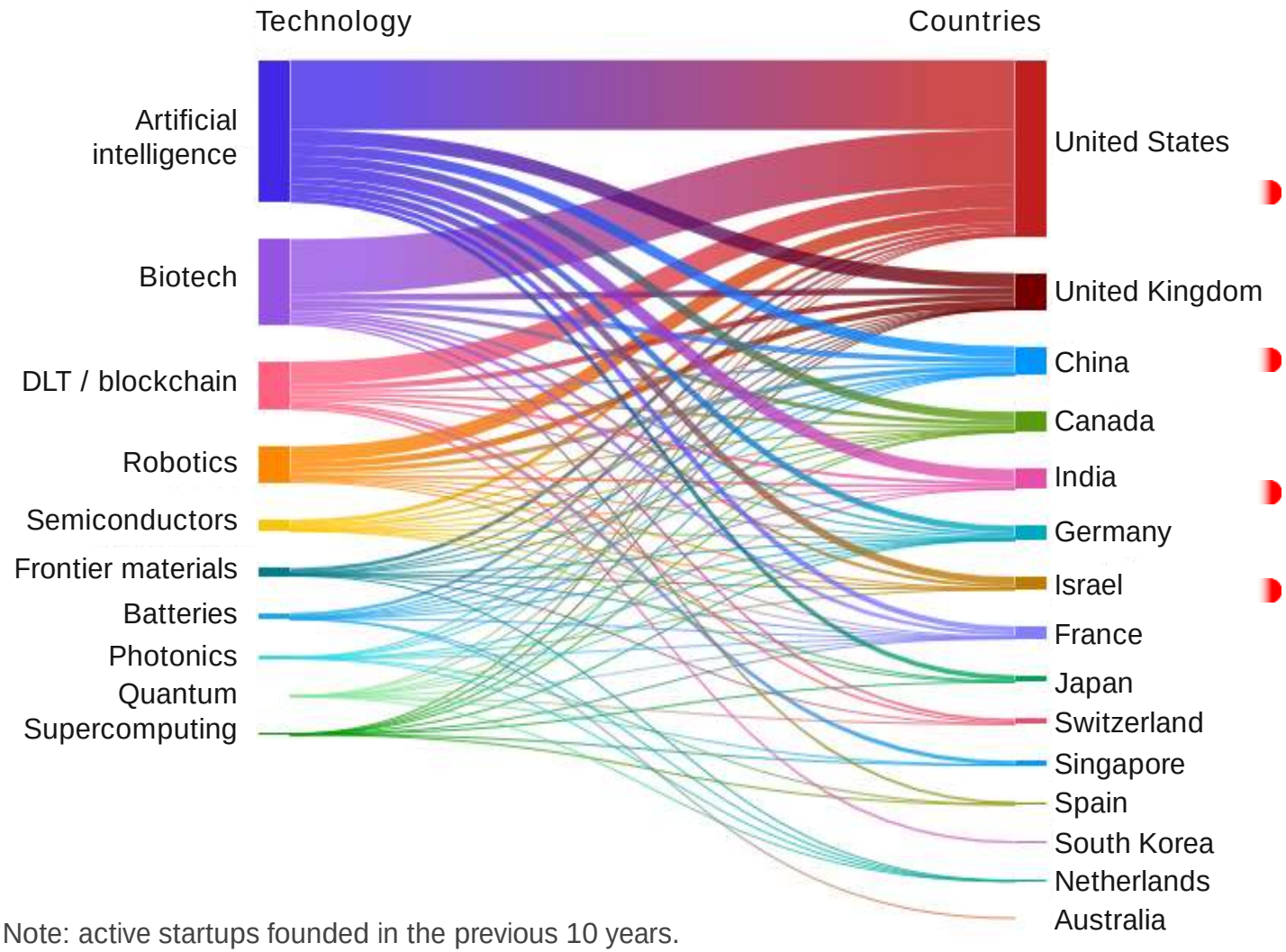
8. **Photonics** — Sensors, light detection systems, intelligent lighting, optical fibre, Internet, industrial and medical lasers, screens, displays, photovoltaic systems.

9. **Quantum technologies** — Quantum computing, simulation, quantum chips, encryption.

10. **Super computing** — Computational chemistry, meteorology and climatology, macromolecules, modelling, simulations.

Source: ACCIÓ.

Deep tech technologies: distribution of startups by country and technology



- By number, startups based on artificial intelligence stand out with 17,561, followed by 9,315 biotech startups, 6,966 DLT / blockchain startups and 4,333 robotics startups.
- The countries with the most startups are the United States, in the lead with a total of 14,537 startups, the United Kingdom, with 3,020, and China, with 2,380.
- Spain boasts startups in biotech, photonics and supercomputing.
- Most of the deep tech startups in Spain are located in Catalonia. The three deep tech technologies that stand out most are biotech, photonics and supercomputing.

Note: active startups founded in the previous 10 years.

Source: ACCIÓ based on Crunchbase.

Deep tech technologies: key world data

Top technologies by value of closed venture capital rounds

Biotech	$142.63 B
Artificial intelligence	$123.68 B
Robotics	$33.49 B

Startups by technology that have closed venture capital rounds

Quantum technologies	52.7 %
Biotech	51.5 %
Frontier materials	49.1 %

Subsidized startups by technology (%)

Frontier materials	22.8 %
Biotech	13.3 %
Batteries	11.6 %

Startups by technology that have been acquired or gone public (%)

Biotech	9.9 %
Semiconductors	6.3 %
Batteries	5.5 %

Startups by technology that have patents or trademarks (%)

Biotech	35.3 %
Frontier materials	35.1 %
Quantum technologies	28.4 %

Main technologies by annual future growth forecast (%)

DLT / blockchain	82.8 %
Quantum technologies	43.8 %
Artificial intelligence	19.0 %

Note: active startups founded in the previous 10 years.

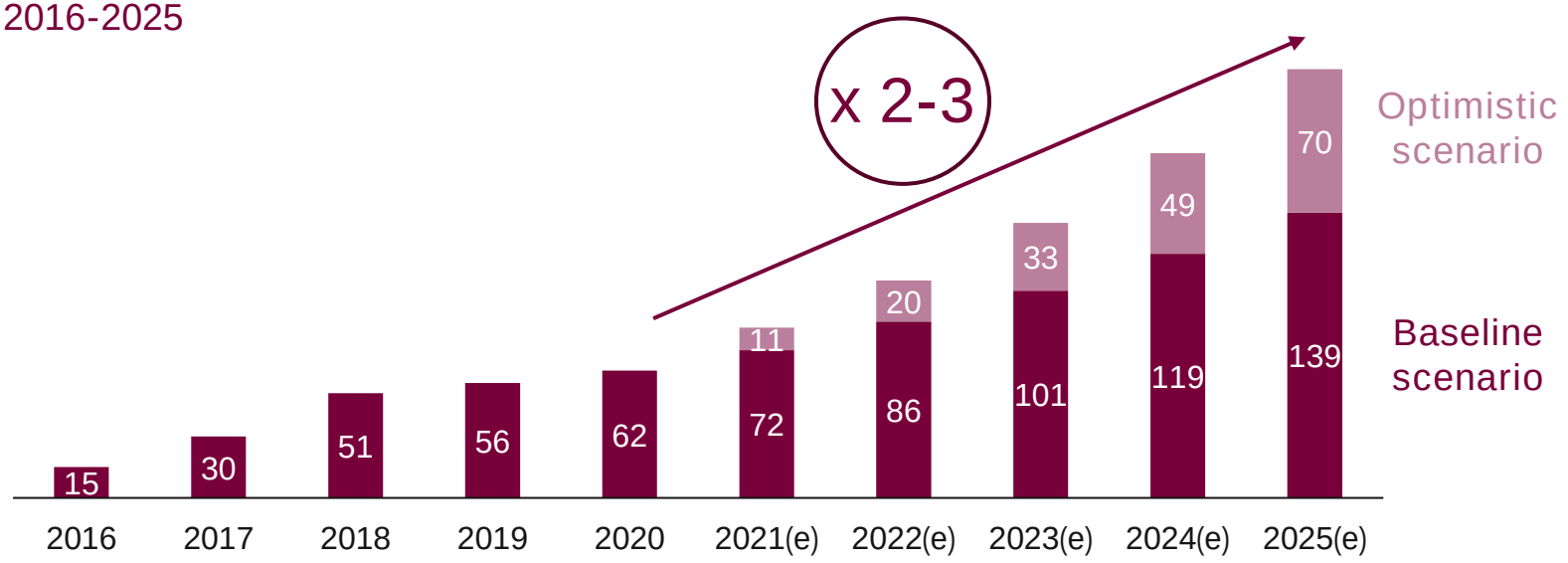
Source: ACCIÓ based on Crunchbase.

3. Deep tech around the world

Worldwide investment in deep tech startups

World investments in deep tech startups quadrupled to $62 B from 2016 to 2020. By 2025, they could exceed $200 B, three times the 2020 amount.

Investments in deep tech startup ($B)
2016-2025



Note: includes private investments, minority stakes, initial public offerings, and mergers and acquisitions.

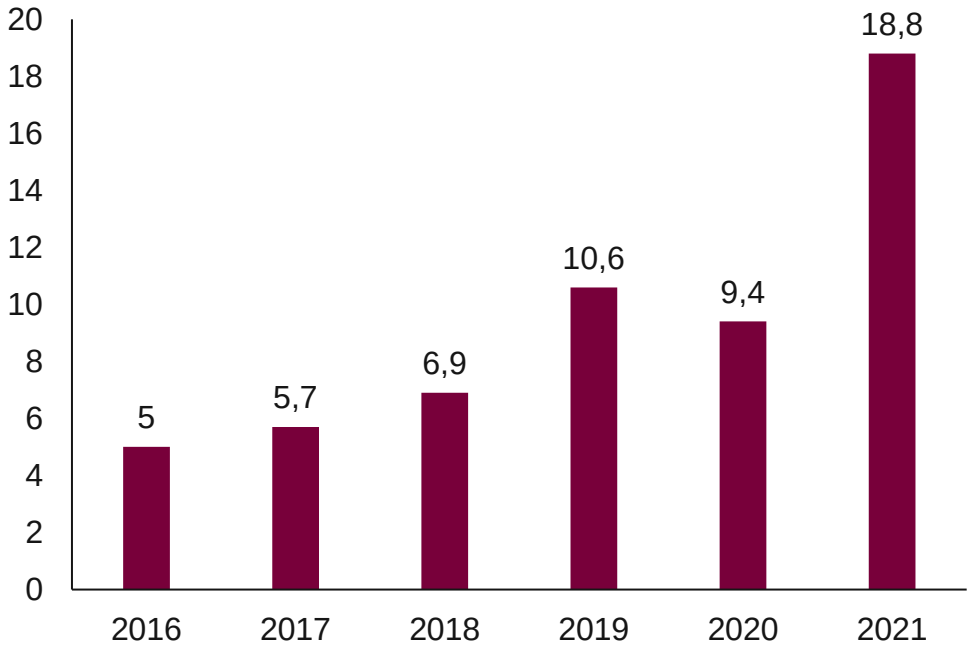
Deep tech investments are very profitable because their entry amounts are affordable in relation to the potential for growth

Source: Hello Tomorrow and BCG.

Venture capital investments in deep tech in Europe

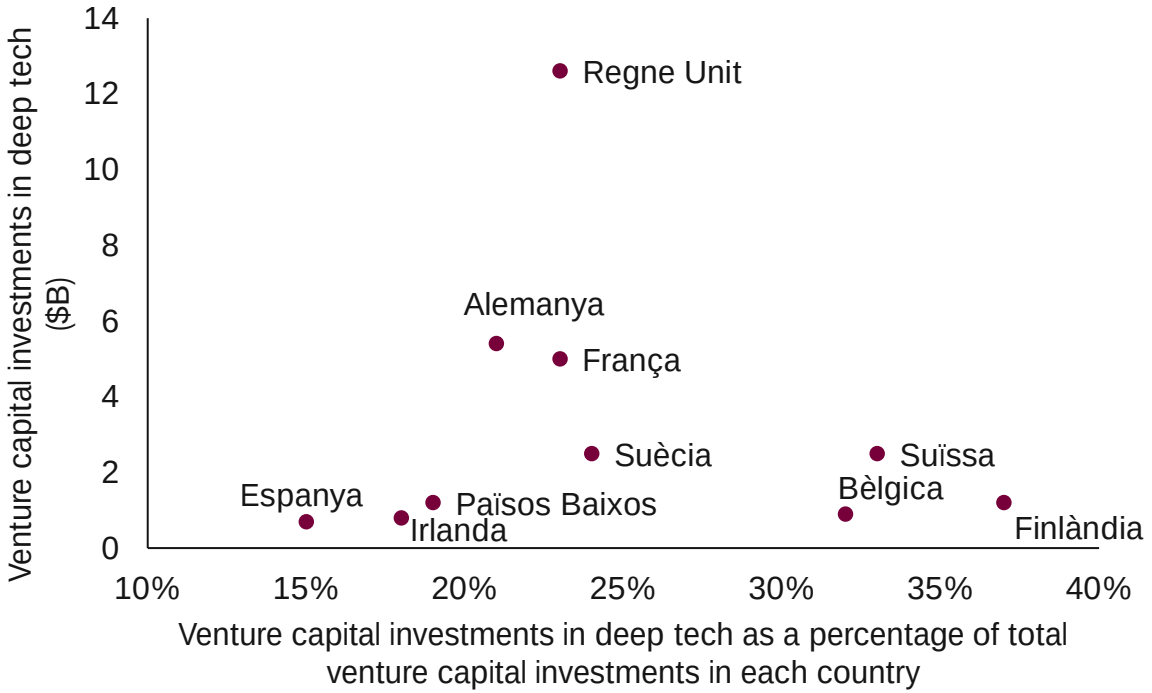
2021 was a bumper year for European deep tech firms, with close to $19 B raised by September, twice the 2020 figure. The United Kingdom led in terms of venture capital raised.

Venture capital investments in deep tech startups in Europe ($B). 2016-2021



Note: 2021 data as of September.

Venture capital investments in deep tech and % of the total by European country (top 10). 2015-2020



Source: Atomico & Slush, State of European Tech 2021 and Dealroom & Sifted, 2021: The year of Deep Tech.

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Countries with policies to create incentives for deep tech firms

The United States approved the CHIPS Act in August 2022, which will not only give a $52 B boost to semiconductor manufacturing, but will also earmark $170 B for R&D in 10 technologies: artificial intelligence, supercomputing, quantum computing, robotics, natural disaster mitigation, 6G communications, biotechnology, data storage, energy and advanced materials.

China's 14th Five-Year Plan (2021-2025) is committed to technological self-sufficiency and increasing R&D spending by more than 7% annually until 2025 in the pursuit of major technological advances. The seven frontier technologies prioritized by the Chinese Government are: semiconductors, genomics and biotechnology, deep space, medicine and health, artificial intelligence, quantum computing and brain science.

Germany launched the Deep Tech Future fund in 2021. It will invest up to €1 B until 2031. It aims to subsidize high-tech companies to become world leaders and create new hidden champions. The prioritized technologies are: Industry 4.0 / IoT, robotics, artificial intelligence, quantum technology, blockchain, digital health, new energy and biotech.

France's Deep Tech Plan, launched in 2019 with a budget of €2.5 B, aims to create 500 deep tech startups a year. In early 2022, the budget was increased by an additional €2.3 B to speed up its industrialization and create new financing vehicles. Priority technologies include food tech, hydrogen, quantum computing, batteries and digital health.

The United Kingdom has created the Office for Science and Technology Strategy, which is responsible for promoting deep tech. In mid-2021, the launch of Future Fund: Breakthrough was announced, an investment fund endowed with £375 million. Grants are awarded to companies that develop technologies in fields such as the life sciences, quantum computing and clean technologies, as well as companies that aim to provide answers to society's major challenges.

Israel, known for its innovation support and development policies, maps its deep tech startups, whose main technological fields are semiconductors, artificial intelligence, space, quantum computing, advanced vision, advanced materials, robotics, communication, sensors, biotech, medical technologies, IoT and 3D printing.

Source: CNBC, Deep Tech & Climate Fonds, Deloitte, French Government, GOV.UK, Elcano Royal Institute, White & Case.

European policies: the European Innovation Agenda

According to the new European innovation strategy, the new wave of innovation is driven by deep tech. The strategy defines five missions to encourage this innovation and ensure that the European Union can keep pace with global technological development.

Access to financing for scaleups

€45 B could be mobilized until 2025 for the creation of companies from private capital sources, and the European Investment Bank will deploy **€5.5 B** until 2027 to support revolutionary innovations.

Providing spaces for experimentation and public procurement

The Commission will publish a document in 2023 to clarify relevant use cases of regulatory sandboxes, test beds and living labs, and will support the creation of an advisory service specializing in innovation procurement.

Addressing the EU innovation gap

Creation of connected regional innovation valleys to take advantage of regional specialization. To be launched in 2023, it will identify up to 100 regions that carry out priority deep tech projects for the European Union (e.g. hydrogen, batteries and chips).

Promoting, attracting and retaining deep tech talent

Guaranteeing the development and flow of technological talent in the EU, especially women, through various initiatives such as the creation of a Talent Pool in 2023 that will help European companies access talent from outside the EU.

Improving public policy instruments

Ensuring that policies keep pace with innovation. In 2023, the Commission will release a common taxonomy that provides the basis for policies at all levels of the European Union, as well as support for member states.

Source: European Commission (2022): A New European Innovation Agenda.

Initiatives in Spain for deep tech startups

Spain does not have a specific initiative for promoting deep tech startups. This is handled through different cross-cutting policies.

PRTR – Next Generation EU

Impact of the Spanish Plan for Recovery, Transformation and Resilience (PRTR) on innovation policy:

- Increased digitalization in sectors with pull effect
- Modernization of production chains
- Promotion of science
- Training in digital skills

ECIT 2021-2027

The chief goals of the Spanish Science, Technology and Innovation Strategy (ECIT) 2021-2027 are:

- To strengthen public-private collaboration
- To promote knowledge transfer
- To improve the situation of research staff
- To foster talent attraction and retention

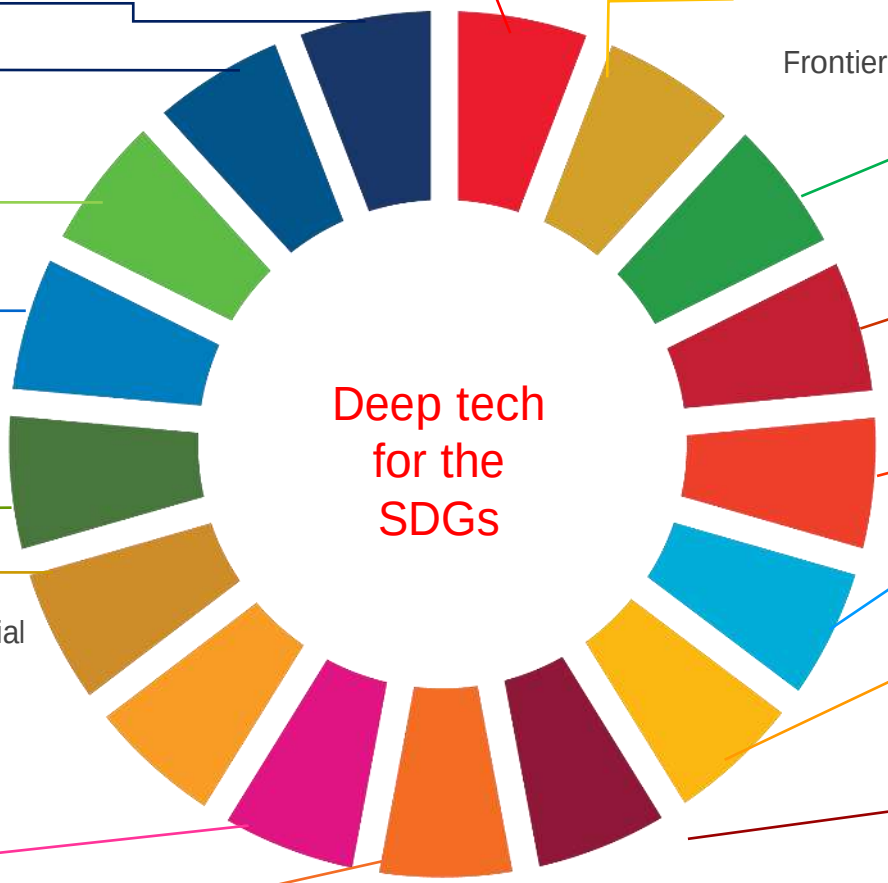
INNVIERTE Technology Transfer Programme

Within the framework of the INNVIERTE venture capital fund, CDTI has committed **€120 M** to be channelled to three private venture capital funds specializing in technology transfer

Source: Spanish Ministry of Science and Innovation and Elcano Royal Institute.

4. Deep tech for the SDGs

Contribution of deep tech technologies to the SDGs



1. No poverty.
Frontier materials; artificial intelligence; DLT.

2. Zero hunger.
Frontier materials; artificial intelligence; DLT; robotics; biotech.

3. Good health and well-being.
Frontier materials; robotics; semiconductors; artificial intelligence; photonics; supercomputing; biotech, batteries; quantum computing.

4. Quality education.
Robotics, artificial intelligence; DLT; quantum computing.

5. Gender equality.
Artificial intelligence; DLT.

6. Clean water and sanitation.
Frontier materials; artificial intelligence; robotics; DLT; photonics; biotech.

7. Affordable and clean energy.
Frontier materials; robotics; semiconductors; artificial intelligence; DLT; photonics; quantum computing; biotech; batteries.

8. Decent work and economic growth.
Frontier materials; robotics; semiconductors; artificial intelligence; DLT; photonics; biotech; batteries.

9. Industry, innovation and infrastructure.
Frontier materials; robotics; semiconductors; artificial intelligence; DLT; photonics; quantum computing; biotech; batteries.

10. Reduced inequality.
Artificial intelligence; robotics.

11. Sustainable cities and communities.
Frontier materials; semiconductors; quantum computing; robotics; artificial intelligence; photonics; batteries.

12. Responsible consumption and production.
Frontier materials; semiconductors; robotics; artificial intelligence; DLT; photonics; quantum computing; batteries.

13. Climate action.
Frontier materials; robotics; artificial intelligence; DLT; photonics; quantum computing; biotech; batteries.

14. Life below water.
Artificial intelligence; DLT; biotech.

15. Life on land.
Frontier materials; artificial intelligence; DLT; biotech.

16. Peace, justice and strong institutions.

17. Partnership for the goals.
Artificial intelligence; DLT.

Source: ACCIÓ.

5. Deep tech in Catalonia

Map of the deep tech ecosystem in Catalonia

291 deep tech startups

15.3% of all startups listed by Barcelona & Catalonia Startup Hub

€124 M in turnover

1,729 workers

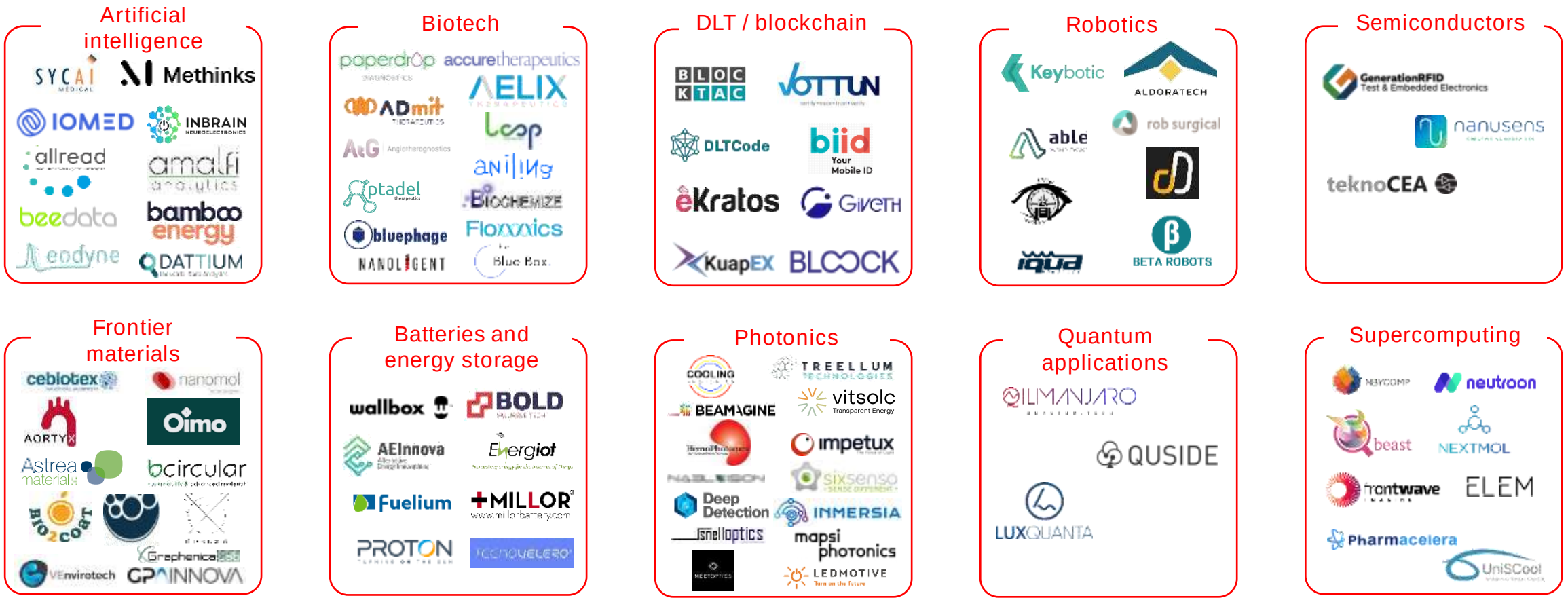
By technology, deep tech startups in Catalonia work in:

- 39.7% in biotech
- 23.4% in artificial intelligence
- 11.0% in frontier materials
- 8.6% in robotics
- 5.9% in photonics
- 4.8% in batteries and energy storage
- 3.4% in supercomputing
- 1.7% in DLT / blockchain
- 0.7% in semiconductors
- 0.7% in quantum applications

Note: the main technology of each startup was used for the purposes of this map. The Barcelona & Catalonia Startup Hub is made up of 1,902 startups (2021).

Source: ACCIÓ.

Map of the deep tech startups in Catalonia



Note: partial illustrative image. The main technology of each startup was used for the purposes of this map.

Actors in the deep tech ecosystem in Catalonia

Centres and institutions that create deep tech spinoffs

Incubators and accelerators

Venture capital funds

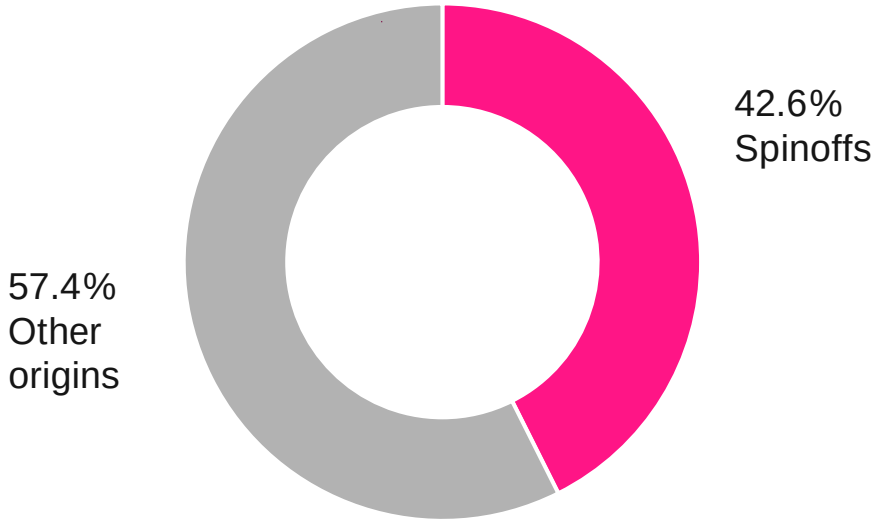
Institutions and public administration

Source: ACCIÓ.

Analysis of the deep tech ecosystem in Catalonia: spinoffs

Spinoffs are companies promoted by members of university and research communities. Their activity is based on using new processes, products and services developed from the knowledge and results obtained at universities and research centres.

124 deep tech startups are spinoffs (42.6% of the total).

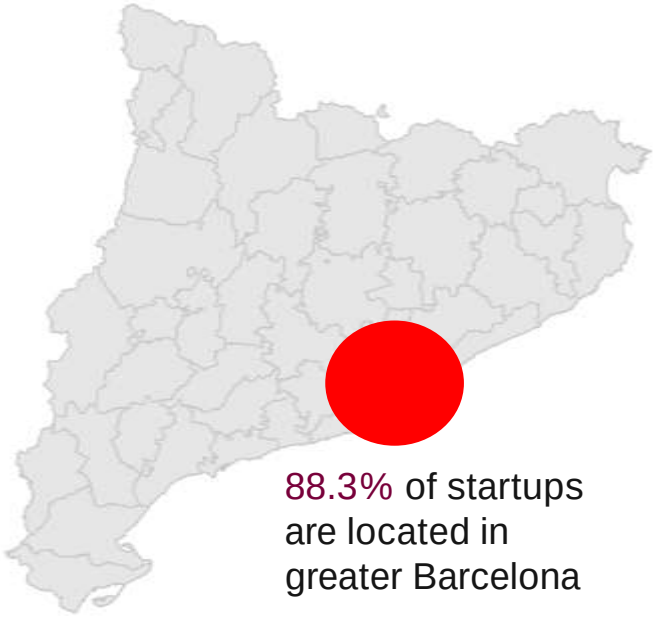


Note: the figure was prepared with the data of 124 spinoffs identified and surveyed by the Barcelona & Catalonia Startup Hub. Spinoffs can have more than one controlling centre.

Source: Barcelona & Catalonia Startup Hub, ACCIÓ.

Analysis of the deep tech ecosystem in Catalonia: location of startups

88.3% of startups operate in the metropolitan area of Barcelona (AMB). The county with the most deep tech startups is Barcelonès (60%), followed by Vallès Occidental (13.7%) and Baix Llobregat (11%).



88.3% of startups are located in greater Barcelona

Country	No. of deep tech startups	% deep tech startups
Barcelonès	174	59.8%
Vallès Occidental	40	13.7%
Baix Llobregat	32	11.0%
Maresme	11	3.8%
Tarragonès	6	2.1%
Baix Camp	4	1.4%
Gironès	4	1.4%
Segrià	4	1.4%
Anoia	3	1.0%
Osona	3	1.0%
Vallès Oriental	3	1.0%
Selva	2	0.7%
Alt Camp	1	0.3%
Alt Empordà	1	0.3%
Bages	1	0.3%
Garraf	1	0.3%
Garrotxa	1	0.3%
Total	291	100%

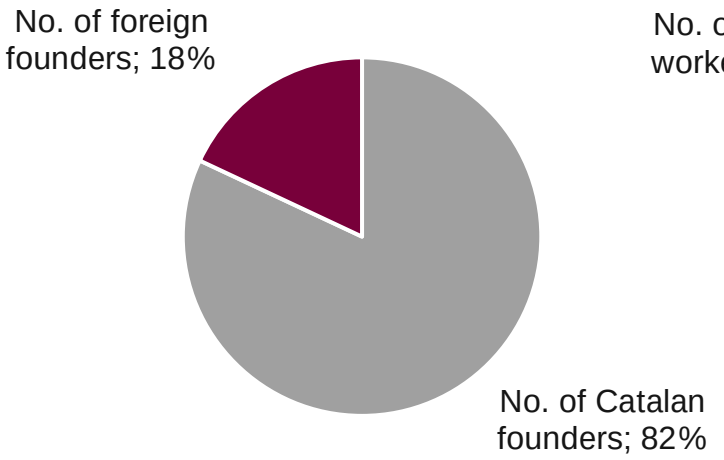
Note 1: this table was prepared with data from the 291 startups that provided location data.
Note 2: the Metropolitan Area of Barcelona includes 36 municipalities in Barcelonès, Baix Llobregat, Vallès Occidental and Maresme counties.

Source: Barcelona & Catalonia Startup Hub, ACCIÓ.

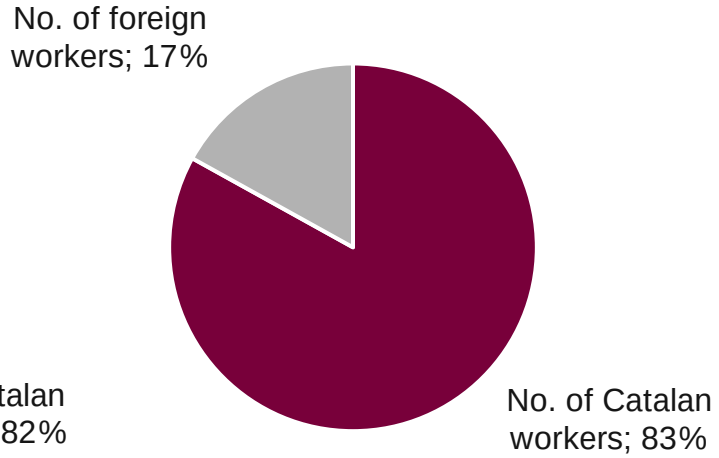
Analysis of the deep tech ecosystem in Catalonia: nationality of startup founders and workers

18% of founders and 17% of workers in deep tech startups in Catalonia are foreigners.

Nationality of founders of deep tech startups



Nationality of workers in deep tech startups



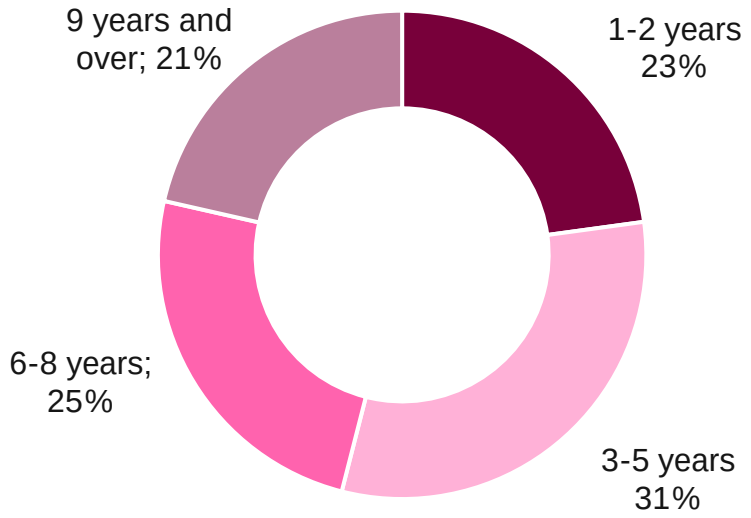
Note: these figures were prepared using data from 130 startups that reported employee data and 197 startups that provided founder data.

Source: Barcelona & Catalonia Startup Hub, ACCIÓ.

Analysis of the deep tech ecosystem in Catalonia: startup age

54% of deep tech startups were created in the previous five years, which demonstrates the dynamic activity of the ecosystem in Catalonia.

Age of deep tech startups



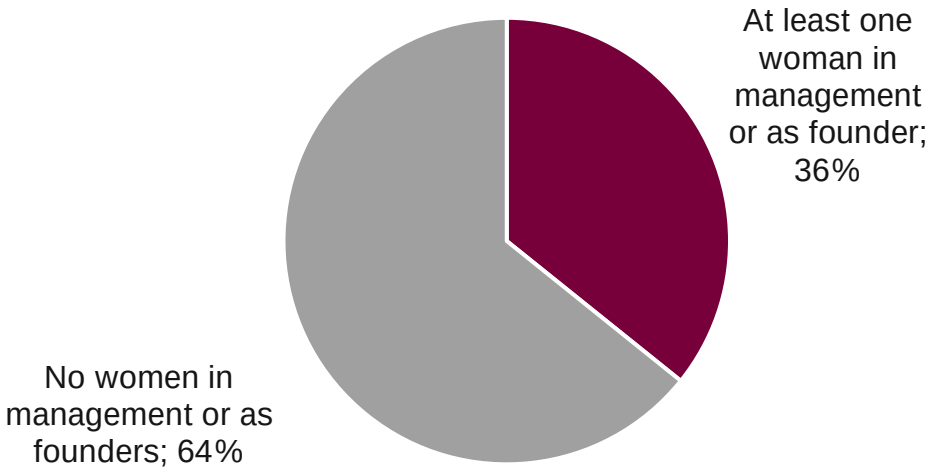
Note: This figure was prepared using data from the 289 startups that reported the company founding date.

Source: Barcelona & Catalonia Startup Hub, ACCIÓ.

Analysis of the deep tech ecosystem in Catalonia: women in management or as founders

The percentage of women in management or as founders of Catalan deep tech startups is 36%, whereas in Catalan startups as a whole*, women are founders in barely 20% of firms.

Women in management or as founders of deep tech firms



Note: this figure was prepared with data on 274 companies for which information is available.

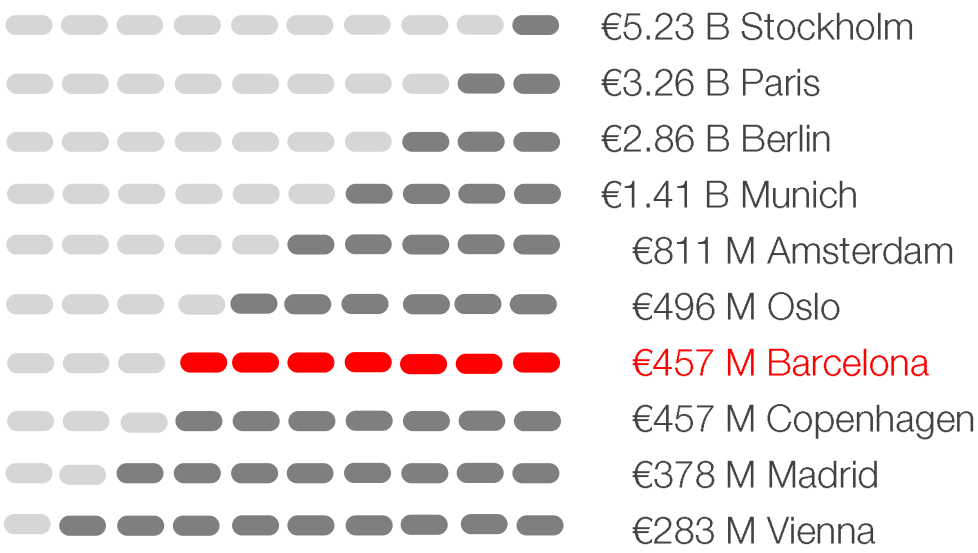
*The sample consists of 1,386 companies with information broken down by gender.

Source: Barcelona & Catalonia Startup Hub, ACCIÓ.

Funding raised by deep tech startups: ranking of European cities

Barcelona is ranked 7th among European hubs in terms of venture capital funding raised by deep tech startups in the 2017-2021 period.

Main EU cities by investment volume in deep tech startups. 2017-2021



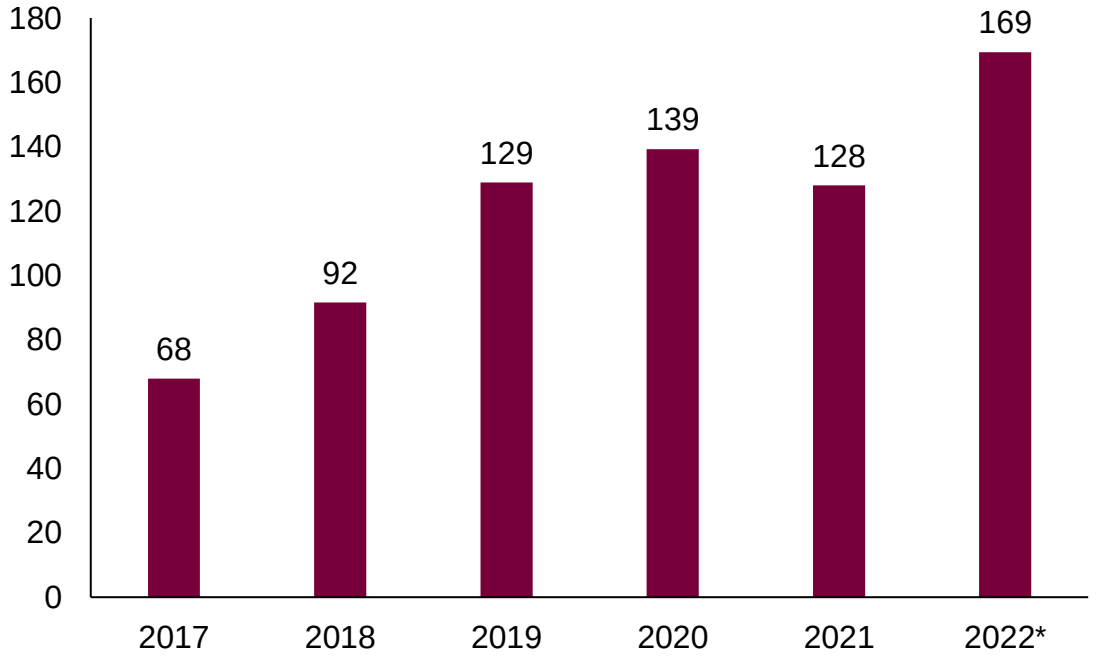
Note: search on Dealroom on 31/08/2022.

Source: Dealroom.

Funding raised by deep tech startups: volume invested in Catalonia

At **€169 M**, 2022 is the year with the greatest investment volume ever raised by Catalan deep tech startups (32% higher than 2021).

Investment volume in deep tech startups in Catalonia (€ M).
2017-2022



*2022 data are until 16/12 and provisional.
Note: search on Dealroom for Catalonia as the founding location or the startup's operational headquarters (search date: 16/12/2022).

Source: Dealroom.

Funding raised by deep tech startups: featured investments 2021-2022

Featured deep tech investments 2021-2022

Top 10 investments in deep tech startups in Catalonia (2021-2022)

SPLICEBIO	submer	PEPTOMYC	NE neuroelectrics	INBRAIN NEUROELECTRONICS
€50 M 2022	€30 M 2022	€26.09 M 2022	€15.91 M 2021	€14.35 M 2021
VEnvirotech	FREEVERSE	amelia virtual care	ADmit THERAPEUTICS	Createch 360°
€11 M 2021	€10 M 2022	€7 M 2022	€4.2 M 2022	€3.6 M 2022

Note: search on Dealroom (29/09/2022) for Catalonia as the founding location or headquarters.

Source: Dealroom 2022 and ACCIÓ.

Ecosystem of consolidated deep tech companies in Catalonia

Although this study analyses the ecosystem of deep tech startups in Catalonia, the region has long been a cradle of science and technology, a good example of which is the fact that Catalonia is home to renowned, consolidated companies that also base their activity on deep tech to make this ecosystem grow and evolve.

Artificial intelligence

Biotech

DLT / blockchain

Robotics

Semiconductors - microelectronics

Frontier materials

Batteries and energy storage

Photonics

Quantum applications

Supercomputing

Note: partial illustrative image.

Active public policies to support deep tech companies

Regional agreements

PACTE NACIONAL PER A LA INDÚSTRIA 2022-2025
PER UNA INDÚSTRIA GENERADORA DE VALOR COMPARTIT

Agreement for Industry (2022)

PACTE NACIONAL PER A LA SOCIETAT DEL CONEIXEMENT

Agreement for the Knowledge Society (2020)

Funding

NEW Deep tech co-investment fund

€ 2,5 M

Startup Capital

€2 M per year

Advanced Technology Investment Funds (FITA)

€60 M (2022-2026)

\+ Instruments of the ICF Institut Català de Finances

Opportunities and challenges to promote deep tech companies in Catalonia

OPPORTUNITIES

- European support framework for deep tech, such as the European Innovation Agenda, the Green Deal and Next Generation funds.
- Society's assessment of science and technology has improved.
- Key role of science and technology to help meet the Sustainable Development Goals.
- Availability of equity funds, which are shifting their large investments in unicorns (with promises of quick returns) to longer-term investments with a positive impact.
- Policies deployed to promote deep tech: Agreements in Catalonia, public funding and the Catalan Science Law, which has been recently passed.
- Ecosystem of startups and local actors active in the promotion of deep tech.
- Good positioning of Catalonia in relation to other European and Spanish regions.
- Promoting open science, which encourages cooperation and transfer between ecosystems, a key requirement for the development of deep tech.

CHALLENGES

- Fostering and improving conditions for local talent and attracting talent from other ecosystems.
- Providing more instruments and reducing red tape to transfer knowledge from universities and technology and research centres to the business world.
- Facilitating the creation of scientific and technological companies.
- Promoting the creation of industrial doctorate programmes.
- Promoting protection of company inventions through patents.
- Increasing the budget and time frame of financial instruments to invest in deep tech companies.
- Persuading the Spanish government to take measures to encourage the deployment of deep tech companies.
- The specialized deep tech private investment ecosystem is still in its infancy.

6. Relevant cases in Catalonia

Relevant cases in Catalonia

ABLE HUMAN MOTION designs and manufactures robotic exoskeletons.

ALLREAD. OCR software based on deep learning for Industry 4.0.

BEAMAGINE. Lidar imaging solutions for mobility and robotics apps.

DEEP DETECTION, advanced x-ray cameras for inspection of food, plastics, etc.

ÉKRATOS, an electronic voting platform using blockchain technology.

ELEM. Predictive modelling and simulation of virtual humans.

EXHEUS. Technical health reports on genome analysis using artificial intelligence.

FREGATA SPACE. Earth observation platform that detects pollutants in air and water.

GATE2BRAIN. Superior drug transport efficacy with reduced side effects.

INBRAIN designs smart neuronal systems made of high-density, high-resolution graphene.

INTEGRA THERAPEUTICS. Safer and more effective new-generation gene-writing tools.

NANOMOL. Advanced solutions using particle technologies and nanoformulation.

NOSTRUM BIODISCOVERY improves drug design and enzyme engineering processes.

NEXTMOL. A software-as-a-service platform for the design of materials and molecules for the chemical industry.

PEPTOMYC develops cell penetrating peptides (CPPs) for cancer treatment.

QILIMANJARO develops quantum computers, algorithms and quantum simulation platforms.

QUSIDE designs and manufactures quantum components for supercomputing and cybersecurity.

VENVIROTECH transforms organic waste into bioplastics (PHA) through the use of bacteria.

Interviews

Interviews at institutions

We would like to express our thanks to the following for their availability and for providing us with data and information to prepare this snapshot:

TECNIO Association

CERCA Centres

Ministry of Research and Universities – Government of Catalonia

Catalan Foundation for Research and Innovation

SECPHO

Universitat de Barcelona

Universitat Politècnica de Catalunya

Thank You!

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Consulteu l'informe aquí:
https://catalonia.com/key-industries-technologies

ACCIÓ Catalonia Trade & Investment

Generalitat de Catalunya
Government of Catalonia

CataloniaConnects