

An aerial photograph of Barcelona, Spain, showing the city skyline, a harbor filled with boats, and a large circular building. The image is partially covered by a semi-transparent orange overlay on the left side, which contains three parallel white diagonal lines. The text 'Catalonia the newest tech hub' is overlaid in white on the right side of the image.

Catalonia the newest tech hub

Contents

- 1. Catalonia Trade & Investment**
- 2. Catalonia: the newest Tech Hub**
- 3. The ICT industry in Catalonia**
- 4. Opportunities in the ICT industry**

1. Catalonia Trade & Investment



What is Catalonia Trade & Investment?

Catalonia Trade & Investment

is the Catalan Government's agency for foreign investment and business competitiveness.

It promotes **innovation**, **internationalization**, **trade**, and the funding of Catalan companies and start-ups.



INNOVATION



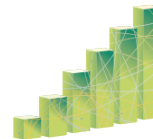
INTERNATIONALIZATION



FOREIGN INVESTMENT



START-UPS



FUNDING



CLUSTERS

2. Catalonia: the newest tech Hub



Catalonia's industrial, tech based and digital economy, makes it the world's newest tech hub

 <p>Growing industrial economy</p>	 <p>Unparalleled logistics capacity</p>
 <p>Class-leading technological hub</p>	 <p>Open economy</p>
 <p>Barcelona, the driving force of Catalonia's entrepreneurial engine</p>	 <p>On the global radar for tech investment</p>
 <p>European scientific and technological powerhouse</p>	 <p>Major pool of local and international talent</p>

Growing industrial economy

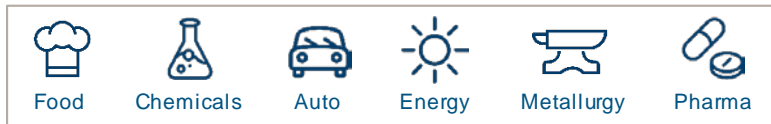
Strong, sustained economic growth (2017)

- Catalonia's 2018 **growth rate** was **higher** than the average in **Spain (2.5%)** and in the **EU (1.9%)**.

Industrial ecosystem (2017)

- **Industry** represents 21.4% of Catalan GDP.
- **Manufacturing** and **industry related services** represent 50% of the GDP.

Catalan industry's top 5 sectors (2016)



International Catalan companies



Catalonia is home to many of the world's leading high-performance companies



Note: The use of these trademarks is for informative purposes only. Trademarks mentioned in this document are the registered trademarks of the companies to which they belong and are not owned by ACCIÓ. This is a partial and illustrative representation of companies that form part of the ecosystem in Catalonia; however, there may exist other companies that have not been included in this study.

Source: EIC (DGI – ACCIÓ) based on IDESCAT



Class-leading technological hub

Barcelona is the world's 4th most prepared city for the technological future

PwC, 2017

Barcelona is the 4th tech city in the world

Nesta, 2017

4.0 INDUSTRY

Critical mass of technologies for the industry 4.0

 3D Printing	 Big Data	 Cybersecurity	 Internet of things	 Robotics
  	  	  	  	  

STRATEGIC TECHNOLOGIES

Significant company presence in high-tech industry

 5G	 Artificial Intelligence	 Blockchain	 Quantum sciences	 Smart Cities
  	  	  	  	  

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Source: EIC (DGI – ACCIÓ)



Southern Europe's top startup hub

1st startup hub in Southern Europe

EU-Startups, 2017



- 1 London
- 2 Berlin
- 3 Paris
- 4 Amsterdam
- 5 Barcelona**
- 6 Madrid
- 7 Stockholm
- 8 Dublin
- 9 Copenhagen
- 10 Milan

**3rd preferred hub
by startups founders**

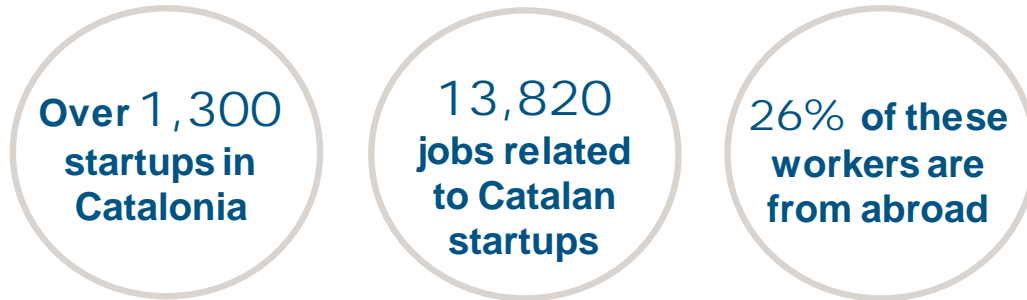
Startup Heatmap Europe 2018

**4th European city in volume of
investment received by startups.**

Atomico, 2017

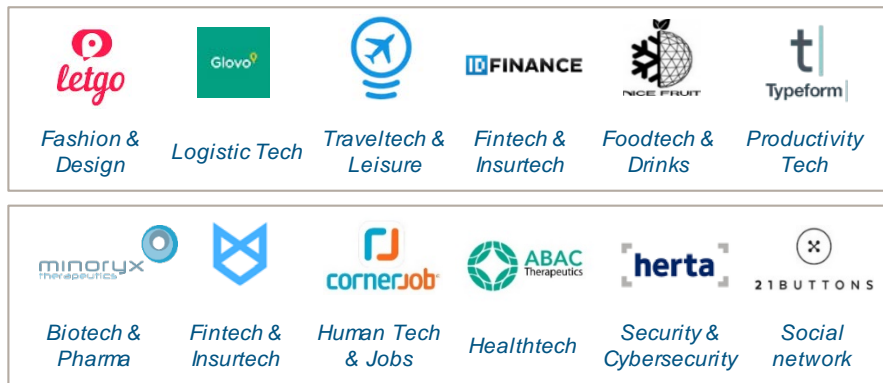


Barcelona, the driving force of Catalonia's entrepreneurial engine



- 3 out of every 4 **Catalan startups** have obtained **financial backing**.
- **Industry 4.0 technology** startups are the most numerous followed by **Life sciences** and by **Mobile & Software** startups.
- 13% of startups are **Deep Tech**.

Startups with most investment* (2017-2018)




Pier01 is a Barcelona Tech City's project **devoted to match innovation and collaboration**. It is a huge facility that provides a locus for the daily activities of approximately 1,000 employees working for over 100 companies and start-ups.

*In order of capital investment.

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Source: startupshub.catalonia.com (Barcelona & Catalonia Startup Hub)



Catalan R&D in figures

Catalonia dedicates **1.47%** of its **GDP to R&D**.

Catalonia, with **0.1%** of the world's population, accounts for **1%** of **worldwide scientific production** and **3.7%** of **EU-28 scientific production**.

Catalonia ranks **12th** among **EU countries** in terms of **R&D personnel** over total employment.

	2017 (CAT/SPAIN)
Total R&D expenditure (M€)	3,273.4 (23.3%)
Business expenditure (M€)	1,916.1 (24.8%)
Number of technology companies (2014-2016)	4,024 (21.8%)
R&D personnel (FTE*)	48,551 (22.5%)
Patent applications to EPO	633 (37.6%)
Number of innovative companies (2014-2016)	9,282 (22.2%)

*FTE: full-time equivalent. **Source:** ACCIÓ based on INE (Spanish Statistics Institute), EPO (European Patent Office) and Web of Science i Eurostat.

World class scientific infrastructures

Renown applied and basic research groups **supporting technological transfer** and a complete network of scientific and tech centres represent the base for Catalonia's research and innovation programme.



ALBA Synchrotron,
The largest particle
accelerator of Southern
Europe



Biomedical Research Park,
Southern Europe leader in
Biomedical investigation



BSC Mare Nostrum,
3rd Southern
European
Supercomputer



**ICFO (Institute of Photonic
Sciences)** one of the finest
research institutions in the world



**ICIQ (Institute of Chemical
Research of Catalonia),**
ICIQ performs ground-breaking
research into catalysis and
renewable energy.



IDIADA
automotive
testing facility

💡 European scientific and technological powerhouse (I)

Scientific facilities & technological centres with TECNIO accreditation*



EURECAT, a leader in industrial research, offers R&D services for businesses that cover the entire value chain. It promotes technological transfer and multi-disciplinary development.

LEITAT is a technological institute working in collaboration with companies and other entities to create economic, social and sustainable value through R&D projects and technological processes, via innovation and creativity.

*An accreditation, provided by ACCIÓ, that certifies the most qualified suppliers, public or private, for both developing and providing innovative and differential technology to businesses.

Note: The use of these trademarks is for informative purposes only. Trademarks mentioned in this document are the registered trademarks of the companies and organizations to which they belong and are not owned by ACCIÓ. Source: EIC (DGI – ACCIÓ) based on TECNIO, Technological centres websites

European scientific and technological powerhouse (II)

40 CERCA Research Centres

10 own centers + consortia

Hospital Institutions

CSIC centres

Universities

European scientific and technological powerhouse (III)

Some of the world's most cutting edge companies have chosen Catalonia for R&D investment



Volkswagen opened a global innovation centre in Barcelona to offer **disruptive solutions concerning mobility and smart cities.**

Roche uses Catalonia to centralize the **development of information systems** for labs and software platforms for Roche Diagnostics.

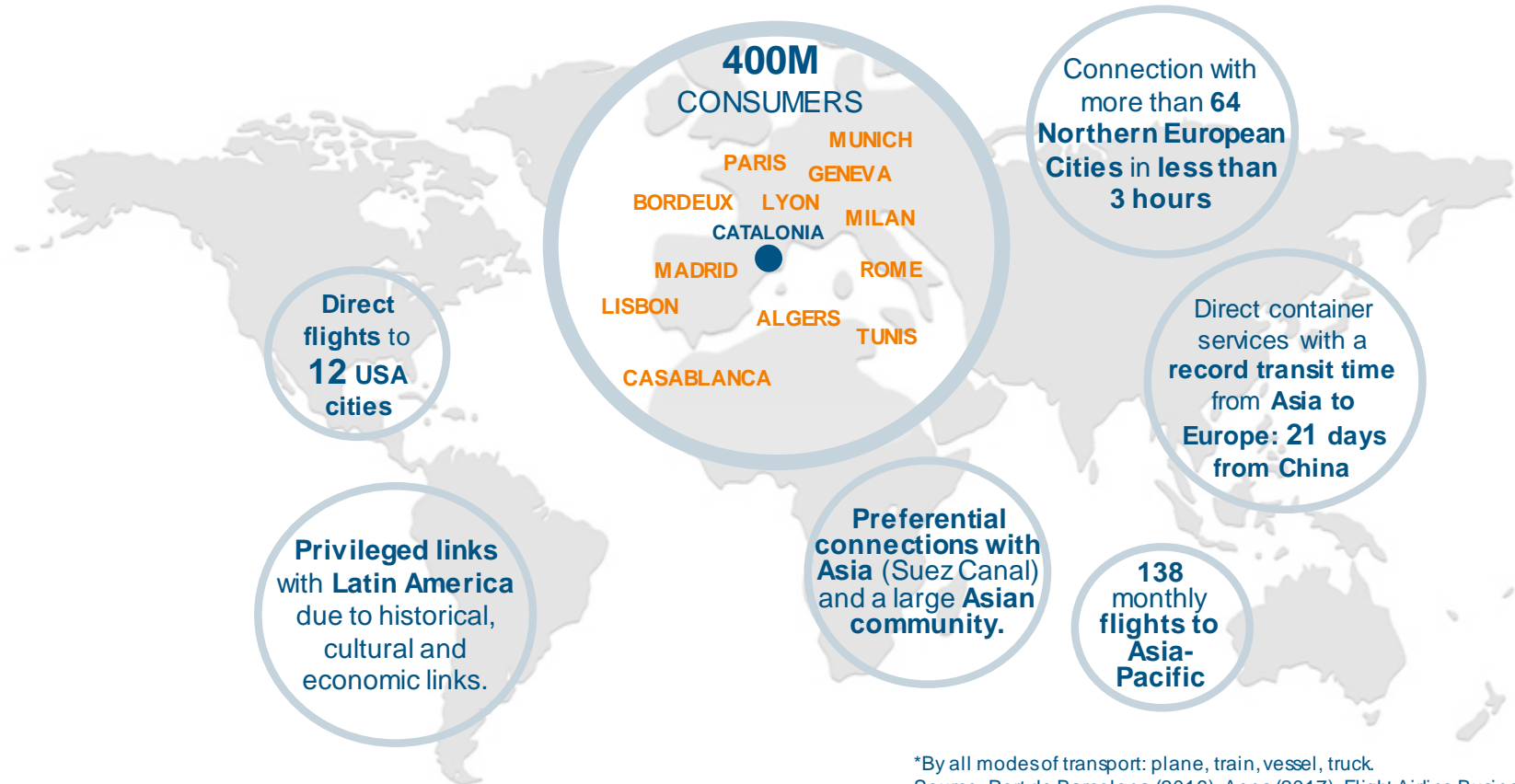
HP has a significant presence in Catalonia, location of its **worldwide 3D headquarters.**

Nestlé installed its **Global Digital Hub in Barcelona** to develop **e-commerce technologies.**

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Source: EIC (DGI – ACCIÓ)

Unparalleled distribution capacity

Catalonia's excellent geostrategic position allows for efficient intercontinental connections to Asia and the Americas and easy fast distribution to Southern Europe and North Africa. The logistics network can reach **400M consumers** in Europe and the Mediterranean/Africa in less than **48 hours***.



*By all modes of transport: plane, train, vessel, truck.
Source: Port de Barcelona (2016), Aena (2017), Flight Airline Business (2017)

Southern Europe's largest intermodal logistics hub

Catalonia is home to **two** of the main ports in the Mediterranean, a high-speed train station, an awarded international airport and highways seamlessly connected to the rest of the European road system.



Top international ports of Barcelona and Tarragona

- **4M passengers** and **95MT in goods traffic**
- Connection with **more than 825 ports**.
- **100 regular lines** connecting directly with **200 overseas ports**.
- **Short maritime transit times** and **high frequency** of ships reduce stock costs.



Barcelona-El Prat, world class airport

- **100 airlines flying to 200 destinations in 57 countries** around the world.
- **47.3 million passengers** (Δ **7.1%** vs 2016)
- In 2018, Air Cargo in Barcelona achieved its higher traffic volume with **172,940 tonnes**, (Δ **11%** vs 2017)



An extensive rail network and road infrastructure

- Catalonia is the **main European region** in terms of **provision of road infrastructure**.
- An **extensive rail network** with almost 1,800 km **connecting** the main cities in Catalonia with the rest of **Spain and France**.

Logistics specialization

Companies from other sectors with logistics hub in Catalonia



Presence of top logistic operators

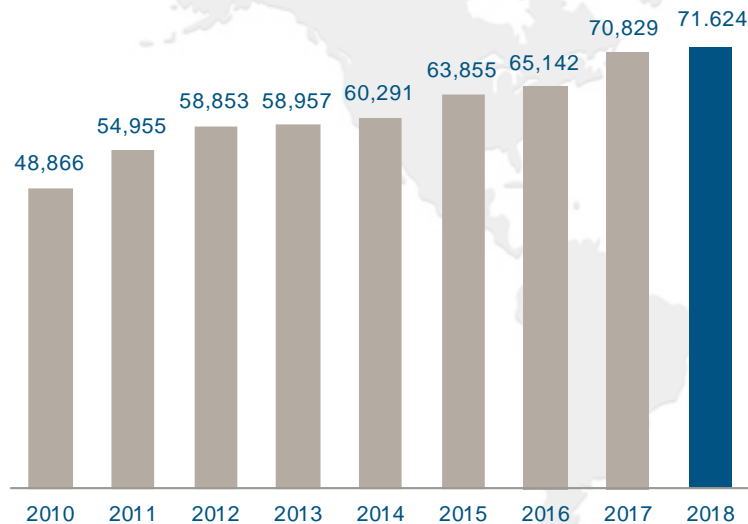


Source: EIC (DGI – ACCIÓ) based on CIMALSA, Flight Airline Business (2018), Port de Barcelona (2016)

Experts in exporting



Catalan exports set a new record in 2018 for the 8th consecutive year, reaching **€71,624 million**, 25.1% of total state exports.



Catalan exporting companies

Catalan **regular exporting companies** (17,239) set a new record for the 6th consecutive year.

Catalonia contains the highest number of **regular exporting companies** in Spain, with **33.3%** of the total.

Sectors leading growth

In 2018 Chemicals, Pharmaceuticals and Machinery and equipment **set new historic record** in export's volume.



Chemicals 12.102,2€



Pharmaceutics 5.107,0 M€



Machinery and equipment 4.473,8 M€

Source: ICEX, intereg.

Impressive track record for foreign investment

According to the Financial Times' fDi Markets, **Catalonia was the 3rd region in Western Europe in job creation** between 2014 and 2018.

Region	Jobs	Projects	Investment Volume (€M)
South East (UK)	113,361	2,423	43,986
Ireland	77,174	960	29,356
Catalonia	62,201	663	16,206
Ile-de-France	42,549	1,205	16,148
Nordrhein-Westfalen	37,840	818	8,830
West-Nederland	36,517	763	27,942
West-Midlands (UK)	34,830	314	12,274
Scotland	31,214	529	20,345
East Midlands (UK)	29,394	201	16,325
North West (UK)	28,825	306	11,036
Other	654,294	11,974	255,481
Total	1,148,199	20,156	457,933

Catalonia, the best South European region for the Future in 2018 and 2019

FDI Int, 2018

Catalonia is the 1st FDI destination in Spain

fDi Markets, 2018

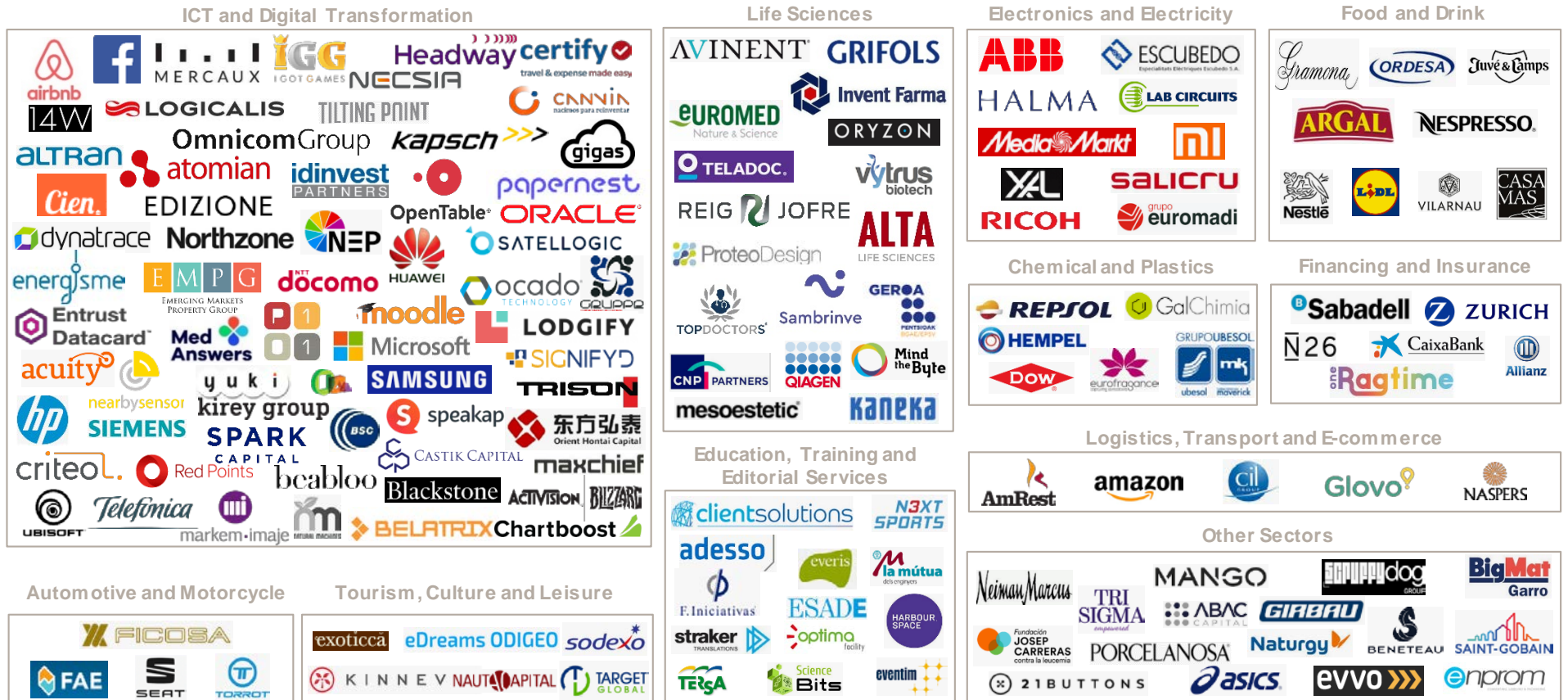
Barcelona is the 5th most attractive investment location in Europe.

Emst&Young, 2016

Source: EIC (DGI – ACCIÓ) based on fDi Markets, 2014-2018. Sorted by job creation

Catalonia's performance as a tech investment hub is unrivalled

Barcelona dominates the European tech investment landscape, behind London, Berlin, Paris and Stockholm*

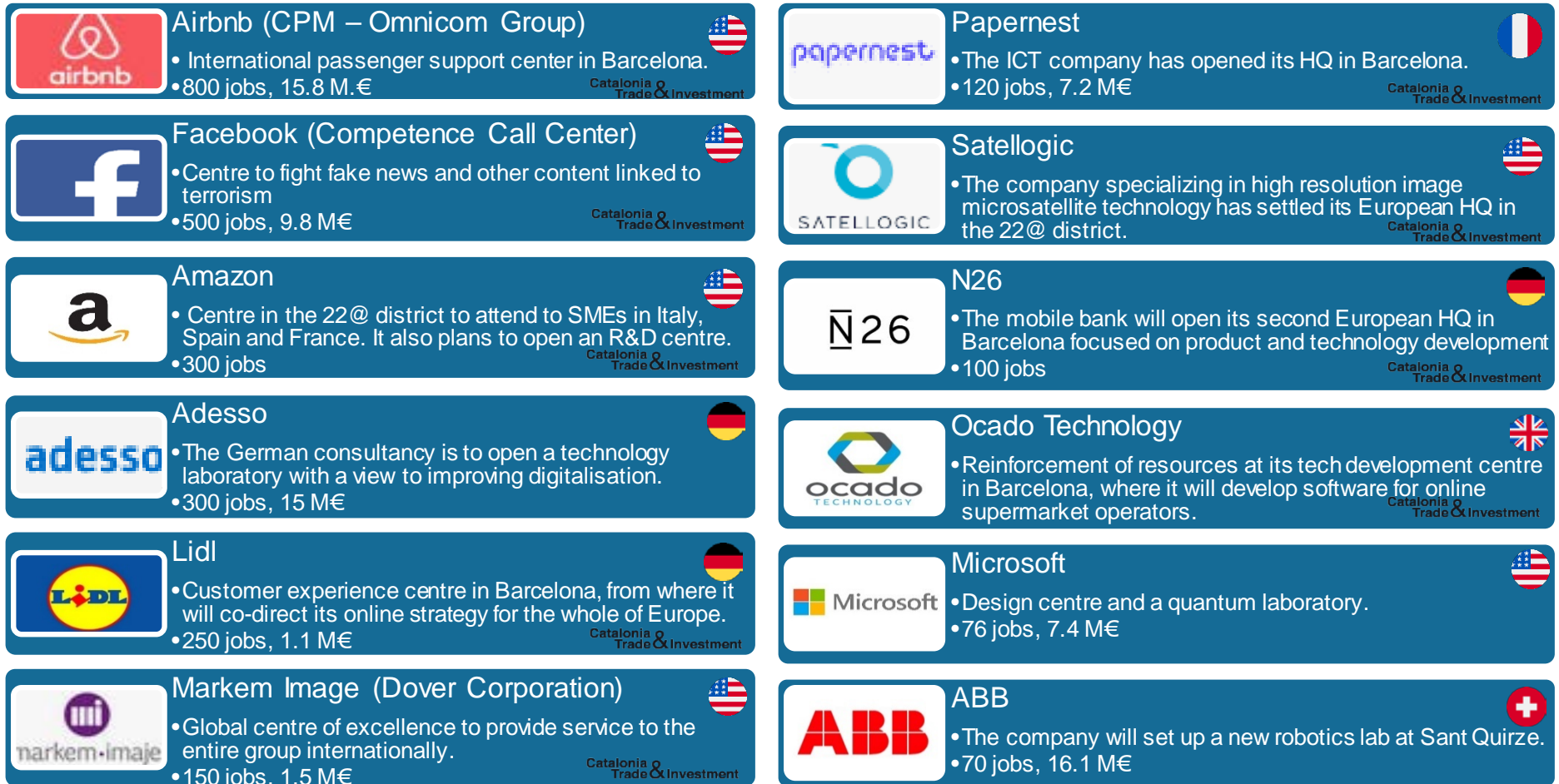


*Source: London & Partners and PitchBook

Source: "Investment projects, mergers and acquisitions, and strategic alliances announced into Catalonia, 2018", by EIC (DGI - ACCIÓ)

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€ Main technological investments in Catalonia, 2018





Major pool of local and international talent

Barcelona, 4th preferred city in the world to work.

Boston Consulting Group, 2018

The Catalan University System ranks 3rd in Europe.

The Times

Barcelona is the 2nd European City in number of ICT graduates.

Cultural and Creatives Cities Monitor 2017

IESE & ESADE:
Top 10 European Business Schools.
Financial Times, 2017

Catalan university system

12 universities	481 degrees
570 master's degrees	236,000 university students
14,000 professors in 33 research centres	Over 50 design schools

Specialized public and private institutions



Barcelona, the driving force of Catalan excellence

- Barcelona, a magnet for multilingual and skilled professionals in a huge variety of fields.
- Barcelona, a key city in the availability of scientists and engineers.

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Source: EIC (DGI – ACCIÓ) based on UPC – BarcelonaTech and Secretaria d'Universitats – Catalan University Department

3. The ICT industry in Catalonia



ICT in Catalonia: key figures



15,757

COMPANIES
(2018)

- The number of **ICT companies has grown** constantly in Catalonia: **4.5% in 2018** and showing a **27% growth rate since 2013**.
- **96.8% of ICT companies are services-oriented**, while the rest are industrial-oriented.
- **91.8%** of companies have **less than 10 employees**.
- **Catalonia** holds a **leading position** within Spain (**22.3%**).



106,400

EMPLOYEES
(4th quarter, 2018)

- The number of ICT jobs represents **3.1%** of **total workers in Catalonia**, higher than the Spanish average (2.7%).



€16,667 M

TURNOVER
(2016)

- The ICT sector turnover **has grown 14%** over the last two years.

Source: Secretariat of Telecommunications, Cybersecurity and Digital Society

Leading ICT industry in Catalonia

Software Vendors



Hardware Vendors



E-commerce



Startups



Telecom Equipment



Technological Hubs



Videogames



Services Providers



Services & Consulting



Source: EIC (DGI – ACCIÓ)

An ecosystem supporting the ICT industry in Catalonia

Scientific Facilities & Technological Centers



Fairs & Congresses



ICT Clusters & associations



Universities



ACCIÓ ICT Clusters

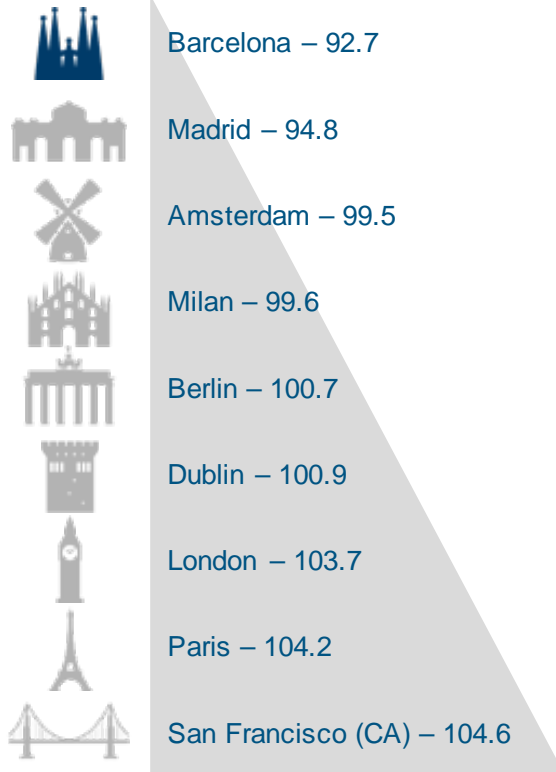


Source: EIC (DGI – ACCIÓ)

Quality at competitive costs

Cost of living

The **overall cost of living** in Barcelona is **more favourable than many of the major cities in Europe**, and **ranks 1st** when compared to similar locations.



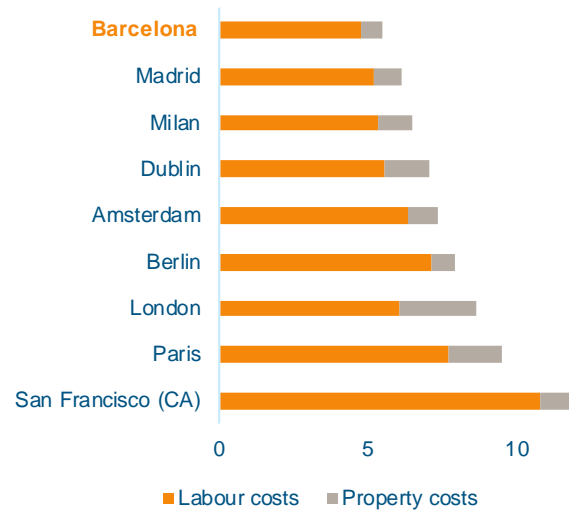
Cost of living index comparison: Rating 0-10 (0=lowest cost of living; 10=highest cost of living); City cost of living index: Index based on New York City (where NYC = 100). Data for 2016.

ICT business operating costs

Barcelona has the **most competitive operating costs** of all the 9 similar cities compared, at €5.49 M per annum, therefore being 30% lower than the study average of €7.86 M per annum.

Barcelona also has **among the most competitive labour costs**, with top-notch professionals from all over the world.

Annual operating costs of a software development centre by cities



Offices rental

With the **most competitive costs for office space** of all the 9 similar cities compared, Barcelona accounts with an **important number of headquarters and sales offices** thanks to its privileged location.



Offices rental comparison: The total cost of office space based on rental fees plus any taxes and/or service charges, Q2 2017. Unit type: square metres

4. Opportunities in the ICT industry



Technological and business opportunities in Catalonia



INDUSTRY 4.0

Catalonia has the perfect mix: industrial ecosystem (21% of GVA) + Technology + Industry Labs.



3D printing

Catalonia, the HP 3D Printing World Headquarters.



IoT

Almost 20 centres focused on R&D in IoT and 103 IoT related companies.



Big data & Data Analytics

Talent, internationally recognized R&D centres and an innovative ecosystem full of startups and first class companies.



Robotics

Top robotics producers and research centres are located in Catalonia making the place a global benchmark.



Cybersecurity

The government of Catalonia is ensuring digital security by creating public funded institutions.

SMART MOBILITY & SMART CITIES



Connected vehicle & Autonomous Driving

Massive Industrial & Engineering Ecosystem in the Automotive Industry. Blooming IT ecosystem. Optimal infrastructure and legal framework for vehicle testing, including automated driving tests in real environment.



Drones

Catalonia hosts 1 of the only 10 drone airports in the world and an accelerator specialized in drone startups. We are becoming a worldwide reference in the field.



E-commerce

Connectivity, efficient logistics and talent have made Catalonia a magnet for international companies targeting the South of Europe.



Smart Cities

Barcelona, 2nd Smart City in the world, after Singapore. (Juniper Research, 2016)

STRATEGIC TECHNOLOGICAL OPPORTUNITIES



Artificial Intelligence & Machine Learning

Leading AI companies have productive sites and research centres in Catalonia.



Videogames

Important startups acquisitions, specialized videogames engineers, graphic designers and a creative environment.



Blockchain

Thanks to our universities and engineers Catalonia is becoming a landing spot for Blockchain Tech.



Smart Materials & Breakthrough Technologies

Catalonia hosts an advanced material cluster with more than 30 members, and 700 nanotechnology and materials researchers making our economy rank highly in terms of pioneering thinking.



Quantum sciences

ICFO, a world reference for quantum, is working on many quantum technologies fields.



5G

5GBarcelona is turning Barcelona and Catalonia into a 5G European hub.

Source: EIC (DGI – ACCIÓ)



THANK YOU VERY MUCH!

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Support Services for Technological Cooperation Projects through EEN and ACCIÓ networks of international nodes/offices (40):

- ACCIÓ Funding Programs to facilitate technological cooperation projects:
International Nuclis Program and Tecniospring Talent Program
- Project's support:
 - ✓ Partner search
 - ✓ Identification of technology providers
 - ✓ Commercialization of technology
- Technological Missions and Brokerage Events
- Identification of opportunities:
 - ✓ Technology trends
 - ✓ Sector and technology gaps and niches
 - ✓ Innovation tenders
 - ✓ Open innovation challenges
 - ✓ Corporates & startups