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The ICT industry in Catalonia

June 2021

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Sector Snapshot

The ICT industry in Catalonia: Sector Snapshot

ACCIÓ Government of Catalonia



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Author ACCIÓ Strategy and Competitive Intelligence Unit

Collaboration Secretariat of Digital Policies

Barcelona, June 2021







1. Global ICT industry overview



- 1. Sector definition
- 2. World



ICT sector definition

The Information and Communication Technologies (ICT) sector is a diverse set of technological tools and resources used to transmit, store, create, share or exchange information.

• These technological tools and resources include computers, the Internet (websites, blogs and emails), live broadcasting technologies (radio, television and webcasting), recorded broadcasting technologies (podcasting, audio and video players and storage devices) and telephony (fixed or mobile, satellite, visio/video-conferencing, etc.).



Source: UNESCO

The global ICT industry



Source: Statista (2021), Orbis and Dealroom.



2. The ICT industry in Catalonia





Catalonia's industrial, tech based & digital economy makes it a top global tech hub

1. AN ECOSYSTEM SUPPORTING THE ICT INDUSTRY



- As one of Europe's leading ICT hubs Catalonia offers everything the modern ICT firm could possibly need.
- Catalonia hosts many renowned international tech events like MWC, 4YFN, Smart city world congress, IOT Solutions,
- O Barcelona has become the Mobile World Capital



3. ON THE GLOBAL RADAR FOR TECH INVESTMENT



Leading location for technological FDI in Western Europe, being:

- 5th in terms of job creation.
- 7th region in number of projects.

The Financial Times has recognized Catalonia as the best region to invest in southern Europe for the third consecutive time.

5. A MAJOR POOL OF LOCAL AND INTERNATIONAL TALENT



 Barcelona is one of the best cities in availability of scientific and engineering talent.



Barcelona is the 5th preferred city to work for foreigners in the world (Decoding Global Talent, Boston Consulting Group, 2019)

 UPF, UAB and UB among the top 250 best universities in the world





2. A WORLD-LEADING DIGITAL ECOSYSTEM



- **1st best tech city** in the world that is not a capital *(Tech Cities, Savills Index, 2019).*
- O More than +1,700 startups and 22% work on ICT.
- International and local companies investing in R&D in Catalonia.



4. CONNECTED TO WHAT MATTERS



- Barcelona-El Prat, 2nd Best airport in the world (50/60 Millions of passengers) (Skytrax World Airport Awards, 2019).
- Barcelona is the 5th city in the world with the best mobility connections
- 256 routes connect Barcelona with more than 145 European Cities.

2. The ICT industry in Catalonia



- 1. An ecosystem supporting the ICT industry
- 2. A world-leading digital ecosystem
- 3. On the global radar for technological investment
- 4. Connected to what matters
- 5. A major pool of local and international talent



ICT in Catalonia: key figures

16,711 COMPANIES (2020)

 The number of ICT companies has grown constantly in Catalonia: 2.3% in 2020 and showing a 17.0% growth rate since 2016.

 Catalonia holds a leading position within Spain (22.1%).

 The number of ICT jobs represents
 3.9% of total workers in Catalonia, higher than the Spanish average (2.8%).

129,000

quarter, 2020)

EMPLOYEES (4th



 The ICT sector turnover has grown 5.5% over the last year.



Source: ACCIÓ and Secretariat of Digital Policies based on data from Idescat and INE



Catalonia plays a leading role in industry 4.0

- A flexible and digitally connected manufacturing industry is strengthening Catalan economic powers opening a world of possibilities for companies and building a better future.
- 1,111 companies, organizations, research centres, important trade fairs and professional associations actively promote and provide products and services for Industry 4.0 in Catalonia.



Souce: ACCIÓ. More info



Leading ICT industry in Catalonia



Note: This is a partial representation of companies working in the ICT technology field.

Source: ACCIÓ

ACCIÓ

Catalonia o Trade & Investment Generalitat de Catalunya Government of Catalonia

Renowned tech fairs turn Barcelona into the meeting point for the global digital revolution



4YFN | Connecting Startups











Source: ACCIÓ

Mobile World Congress: the worldwide hub for the ICT industry sector

Barcelona has held the Mobile World Congress every year since 2006 and will continue to host the **world's main event of the mobile phone-related industries** until at least 2024.

MWC is the largest mobile event in the world, bringing together the latest innovations and leading-edge technology alongside today's most influential visionaries.

The MWC has converted Barcelona into the **permanent global centre for mobile technologies** and involves the development of a business environment focused on this type of industry on an international level.



Sources: Mobile World Congress. ACCIÓ. Data for 2019-2020.



MWC

Barcelona

2. The ICT industry in Catalonia



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Research and innovation, a mark of Catalan business culture

With **0.1% of the world's population**, Catalonia accounts for **1% of worldwide scientific production** and 4.1% of EU-28 scientific production

Catalonia has the highest number of innovative companies in Spain (22.2%) (2019)

2.4% R&D expenditure (2019)

1.52% of GDP dedicated to R&D (2019)

58% of Catalan exports show high and medium high technological levels (2020)

Catalonia leads European patent applications in Spain (31.2%) (2020)

ACCIÓ, Winning agency for Best R&D Support

> fDi Strategy Awards 2017

Barcelona is the 4th most innovative European city

> Innovation Cities Index 2019

Barcelona ranks 5th in the ranking of Europe leading in terms of scientific academic production

UPC, 2020

SME INSTRUMENT

supporting close to market activities

Catalonia benefited from 2.86% of the total budget of the EU's Horizon 2020 programme, and received more than €1.3B for the first time (2014-2019) Catalonia is the top region in Europe attracting innovation resources for SMEs, representing the 4.1% of the entire program.

(2014-2019)

Source: ACCIÓ based on data from Idescat, INE, EPO, Eurostat, FECYT-Icono and Eurostat from Web of Science , CDTI and SME Instrument Data Hub





A European scientific and technological powerhouse

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



Source: ACCIÓ based on TECNIO. Technological centres websites.



Barcelona, the newest tech hub

- **1st best Tech city** in the world that is not a capital *Tech Cities, Savills Index 2019*
- O Catalonia becomes the **1st open 5G laboratory** in Europe *5G Barcelona alliance, 2019*
- O Catalonia and Barcelona have the **2nd best strategy in all** of Europe to attract technological investments.
 - Financial Times, 2020.
- O Barcelona is the most technological city in southern Europe.
 - fDi Intelligence and The Next Web, 2020.
- Barcelona is the **5th most attractive city in the world for digital experts**.

Decoding Digital Talent 2019. The network. Boston Consulting Group.







The Catalan Government promotes national strategies in Advanced digital tecnologies

As part of the digital strategy to make Catalonia a global digital point of reference, the government has made a commitment to deploy specific national strategies in disruptive technologies such as 5G, Blockchain, Artificial Intelligence and NewSpace to turn Catalonia into an international technological hub.



Source: Secretariat of Digital Policies



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Catalonia o Trade & Investment

Southern Europe's top startup hub



Generalitat de Catalunya Government of Catalonia

374 ICT & Telecom startups identified



Note: This is a partial representation of the startups working in the ICT technology field.

Source: ACCIÓ based on Barcelona&Catalonia Startup Hub, 2020

2. The ICT industry in Catalonia



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Tech investments account for 34% of total foreign investment projects in Catalonia



Top 20 companies investing in Catalonia during the period 2016-2020 Z N26 amazon Cocado criteol. SIEMENS orange™ Hewlett Packard ZURICH FICOSA Enterprise ELEMENTS adesso QUODAGIS itk eventscase MERCAUX Rentalcars.com UBISOFT



Note: The investments made in the ICT sector (Software and IT Services, Communications, Business machines and equipment) and in technological activities in other sectors (ICT & Internet Infrastructure, R&D and Technical Support centre) have been considered technological investments. Source: ACCIÓ based on fDi Markets. 2016 - 2020

262 Technological projects

Serie1 echnologica **ICT** sectors investment of other

Top non-technological sectors with tech investments in Catalonia



Catalonia, a leading destination for technological FDI

O Catalonia is the 7th region in Western Europe in number of technological projects and ranks the 5th in terms of job creation and 8th in capital investment.

- 3.4% of the technological projects in WE
- **4.6%** of the jobs created.
- 2.1% of the capital investment.
- O Between 2016 and 2020, Catalonia was the first technological FDI destination in Spain.
 - 40.3% of the FDI projects
 - \bigcirc **44.0%** of the jobs created.
 - **31.5%** of the capex.



Technological FDI into Western Europe regions by number of projects.



Note: The investments made in the ICT sector (Software and IT Services, Communications, Business machines and equipment) and in technological activities in other sectors (ICT & Internet Infrastructure, R&D and Technical Support centre) have been considered technological investments. **Source**: ACCIÓ based on fDi Markets, 2016 - 2020

Catalonia's performance as a tech investment hub is unrivalled





Generalitat de Catalunya Government of Catalonia **Source:** ACCIÓ based on investments made public in the press, fDi Markets and Zephyr. **Note:** The companies shown are some of the technology investments that have been made during 2020, whether productive investments or acquisitions of companies in a particular sector. The most relevant ones have been chosen in terms of investment volume and number of jobs generated.

Acquisitions

2. The ICT industry in Catalonia



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Centre of international connections

A strategic location plus its **comprehensive network of infrastructures** make Catalonia **Europe's southern** gateway and the centre for distribution in the Mediterranean.



Source: AENA 2019 (Spanish Airports and Air Navigation), Skytrax World Airport Awards 2019, ACCIÓ



2. The ICT industry in Catalonia



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The Catalan university system stands out for its ability to attract global talent

Wide offer in ICT studies for all type of specialized careers



Harbour.Space offers studies in computer science, data science, cybersecurity, digital marketing, interaction design, etc.



Ubiqum offers studies in Java Web & Mobile, Developer Data Analytics & Big or Native Android **ubiqum** Developer by adapting an innovative learning process.



Epitech is a high school of computer science that forms experts in the computing sector by a "Learning by projects" method.



IT Academy is a highly specialized ICT program that forms the most requested Cibernàrium Activa professional profiles by companies.



Code Works have a full-time courses addressed to software engineers that want to build complex apps with an advanced understanding of JavaScript.



Le Wagon Barcelona manages courses for Big Data, Data Science and Web Development that enable to code new tech products.

A glance at some of the ICT and mobile studies offered by **Catalan Universities**

Bachelor's Degrees in	Master's Degrees in	
Computer Engineering	Artificial Intelligence	
Computing Management Engineering	Computer Vision	
Computing Systems Engineering	Computer, Network and Systems Architecture	
ICT Systems Engineering	Computing and Distributed Computing	
Multimedia	Cybersecurity and Intelligent Systems	
Telecommunication Electronic Engineering	Information and Communication Technologies	
Telecommunication Sciences and Technologies	Innovation and Research in Informatics	
Telecommunication Systems Engineering	Mobile Applications and Games	
Telematics Engineering	Multimedia Creation	
Videogames Design and Development	Smart Cities	

Skylab offers coding courses for learning web and mobile applications development. In its courses they teach KYLAB CODERS programming with platforms like: Github, HTML, CSS, Javascript, TDD, ReactJS, NodeJS or MongoDB...





A magnet to attract and retain qualified talent

Barcelona talent attraction	Business friendly	Quality of life
One of the world's top spots to live and work in. A magnet for young professionals and researchers from all over Europe.	Catalonia is always open for business , with the government's business focused policies perfectly complementing and supporting the private sector:	Barcelona is the 6th city in the world in terms of livability
2nd South European region for the Future in 2020-2021 FDI strategy awards, Financial Times, 2020	 An environment favorable to business and growth, open to foreign investment and combined with quality of life and a unique cultural and artistic offering. 	excellent career prospects attractive leisure opportunities
2 nd European City in number of ICT graduates. Cultural and creatives cities monitor, 2018	 Lower tax rate than neighboring countries (25% since 2016). 	outstanding academic system
4 th European region in number of qualified employees in technological and scientific field. HRST by category and	 One of the most attractive R&D deduction systems in Europe (Patent Box, up to 42% in R&D, 12% in innovation). 	architecture and design
NUTS 2 regions, Eurostat, 2019 5th world's city in terms of livability. <i>Global Power City Index</i> , 2018	 Expatriates who come to work in Catalonia pay a fixed rate of 24% up to €600,000 during the period in which they acquire residence in Spain and the 5 following years. 	culture and gastronomy worldwide skilled professionals
7 th city of the world preferred to work for the millennial generation. <i>Millennial Cities Ranking, Nestpick, 2018</i>	 Catalonia is a location for holding companies (ETVEs – international holding companies) thanks to its regime for foreign securities holding entities and its large network of 	safe and sustainable multilingual talent
9 th preferred city in the world to work. Boston Consulting Group, 2019	agreements to avoid double taxation with EU and Latin America. • Qualified and competitive staff	international schools cost of living
Barcelona T Digital Talent	 Employment incentives programmes Express procedure for visas and residence permits (10 to 20 hubinges days) 	Cost of hving
	20 business days).	Sources: ACCIÓ.



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3. Opportunities in the ICT industry



- 1. International market opportunities for Catalan companies
- 2. Business and technological opportunities for foreign companies



International opportunities for Catalan companies



Source: Global trade mapping, 2020 by ACCIÓ



Technological and business opportunities in Catalonia

1. INDUSTRY DIGITALIZATION

Ϋ́Π

Additive manufacturing

Catalonia claims its space among the world's leading 3D printing hub. The international centre of large printing R&D of HP is situated in Barcelona.

IoT

In Catalonia there are 251 Internet of Things companies opening the door to the 4th industrial revolution.

Big data & Data Analytics

Catalonia has 25% of the data centre in Spain and wants to attract more with the construction of the undersea cable port.

AI & Machine Learning

Powerful research environment with infrastructures such as the Barcelona Supercomputing Centre.

Quantum sciences

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

DLT

A growing technological ecosystem in Catalonia, doubling its size in one vear

Advanced Robotics

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



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Cvbersecurity

In Catalonia there are 356 companies with 6,000 workers and turnover of €810 M.

Simulators

Top global suppliers for simulation software companies have headquarters in Catalonia.

Augmented Reality

Catalan companies develop VR applications with high impact for development, health and social fields.

Cloud

Catalonia is a pioneer in the use of digital imaging in the cloud for the management of medical information.

Connectivity

(Catalonia becomes the first open 5G laboratory in Europe.

2. MOBILITY OF THE FUTURE



Optimal infrastructure for vehicle testing, automated driving tests in real environment.

Drones

Catalonia hosts 1 of the only 10 drone airports in the world. Catalonia is becoming a worldwide reference.

New Space

Companies located in Catalonia such as Celestia Aerospace, Satellogic and Aistech have a worldwide presence in this sector.

Mobility as a Service

Barcelona leads the European initiative 'Mobility for Liveable Urban Spaces' in Spain.

32

Electric Vehicle

A robust automotive industry, specialized research centers and public initiatives make Catalonia the best location for electric mobility.

SECTORS WITH HIGH TECHNOLOGICAL INTENSITY

E-commerce

Connectivity, efficient logistics and talent become one in Catalonia.

Silver economy

The silver economy in Catalonia can benefit from new technological advances.

Logistics

Catalonia is the southern Europe's largest intermodal loaistics hub

Greentech Catalonia is committed to the SDG enhancing

agriculture 4.0

areen technologies. Agrotech Catalonia leads the opportunity of

and

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Life sciences

5 out of 5 top Spanish pharma companies are Catalan.

Videogames

Specialized engineers, graphic designers and creative environment.

Souce: ACCIÓ. More info



Catalonia o Trade O Investment



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Further information about the sector and opportunities:

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http://catalonia.com/industries-in-catalonia/sectors/industrialsystems-smart-industry-and-3d-printing/



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driver MMM21 /// done /// code process /// fixing /// password XXXX XXX XXXX XXXXX

access 89 MMPSR 900003 /// done

TIVE 00900XXXX009 pass done /// final pass /// password denied



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