The ICT Industry in Catalonia

February 18
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1. The ICT Industry
For manufacturing industries, an ICT product must fulfil the function of information processing and communication, including transmission and display; and they must use electronic processing to detect, measure and/or record physical phenomena or control a physical process.

For services industries, ICT products must enable information processing and communication by electronic means.

Source: OECD (Organisation for Economic Cooperation and Development).
The global ICT industry

Global ICT industry turnover, by regions (2016)

- United States 31.3%
- Europe 21.8%
- Asia-Pacific 6.5%
- Latin America 4.4%
- Canada 2.4%
- South Korea 1.6%
- Middle East and Africa 6.9%
- Japan 7.1%
- BRIC Countries 18.2%

The ICT industry in the world

- 2.3% growth Global ICT Industry CAGR between 2016 and 2020.
- Telecommunications services make up the leading ICT segment, with 40.5% of the total global turnover.
- Globally, North America ranks top in turnover, representing 31.3% of global turnover. Europe comes second place.

The ICT industry in Europe

- The ICT sector represents 4.8% of the European economy. It generates 25% of total business expenditure in Research and Development (R&D), and investments in ICT account for 50% of all European productivity growth.
- EU investments in ICTs are due to increase by about 25% under Horizon 2020.
- Spain is among the most advanced digital economies in the European Union, located among the Top 15 countries and ahead of countries like Germany or France.

2. The ICT Industry in Catalonia
ICT in Catalonia

The Catalan ICT Industry is highly developed thanks to the presence of a highly competitive software development sector and the fact that it is one of the biggest industrial clusters in Europe.

- **15,077** COMPANIES (2017)
- **115,600** EMPLOYEES (4th quarter, 2017)
- **€15,914 M** TURNOVER (2015)

- The number of ICT companies has grown constantly in Catalonia: 5.5% in 2017 and showing a **21.5% growth rate since 2013**.
- **96.8%** of ICT companies are services-oriented, while the rest are industrial-oriented.
- **92.1%** of companies have less than 10 employees.
- Catalonia holds a **leading position** within Spain (22%).

- There has been a **10.7% growth** compared to 2016.
- The number of ICT jobs represents **3.5% of total workers** in Catalonia.

- The ICT sector turnover has **grown 12.5%** over the last two years.

Source: Secretariat of Telecommunications, Cybersecurity and Digital Society.

Strategy and Competitive Intelligence Unit
Catalan ICT Industry Competitiveness
Attractive for foreign investors

From 2013 to 2017...

THE CATALAN ICT INDUSTRY REGISTERED...

- 105 FDI projects
- €354.2 M of capital investment
- 5,455 jobs created

CATALONIA HAS BEEN THE LEADING ICT FDI DESTINATION IN SPAIN, REPRESENTING...

- 42.5% of the FDI projects received
- 39.6% of the capital investment
- 46.8% of the jobs created

...within the ICT sector in Spain.

CATALONIA HAS ALSO BEEN THE...

- 5th region in terms of job creation
- 10th region in number of FDI projects attracted

...within the ICT sector in Western Europe.

Source: fDi Markets.
Catalan ICT Industry Competitiveness

International and open trade

Over the last decade...

Catalonia has been the principal ICT exporting region in Spain, and exports have represented...

- **34.9%** of Spanish ICT exports
- **3.2%** over total Catalan exports

The main exporting subsectors have been...

1. Manufacture of instruments & appliances for measuring, testing and navigation; watches and clocks (34.3%)
2. Manufacture of consumer electronics (31.8%)
3. Manufacture of electronics components and boards (13.7%)

Main commercial partners (2017)

- **France, Germany** and **Italy**, in terms of exports
- **China, Germany** and the **Netherlands**, in terms of imports

Source: ICEX.
Catalan ICT Industry Competitiveness
Innovative and entrepreneurial

Catalonia is at the forefront of innovation...

- **1.46%** of its GDP dedicated to R&D.
- **9,282** innovative companies, representing **22.2%** of the Spanish total.
- Outstanding academic system offering masters and degrees related to ICT as well as in many other fields.
- **Clusters and associations** of the ICT Industry and related sectors.

**BARCELONA**

- **1st**: European capital of innovation (*iCapital Prize 2014*).
- **2nd**: Smart City in the world (*Juniper Research 2016*).
- **5th**: City in Europe in terms of innovation (*Innovation Cities Index, 2016/2017*).
- **5th**: City in Europe in terms of scientific academic production (*Knowledge Cities Ranking, CPVS, UPC, 2017*).

*Source: INE.*
Catalonia, the ideal place for the ICT industry

**STRATEGIC LOCATION AND MARKET ACCESS**
Catalonia is well connected to the world and good for commuting.

With 200 international destinations in 57 countries, Barcelona Airport is only 15 km away from the city centre, has 100 operating airlines and is considered the Best Airport in Southern Europe.

**POOL OF LOCAL AND INTERNATIONAL TALENT**
Talent from all over the world and availability of qualified multi-lingual personnel thanks to its high quality of life, cosmopolitan atmosphere and trading history.

An outstanding academic support system with thousands of students in ICT and mobile-related studies at universities such as the UPC BarcelonaTech, ESADE or UPF.

Companies seeking to access European and LATAM markets will find Catalonia offers an array of competent multilingual talent with specialization in the ICT industry.

**BUSINESS MINDSET**
Catalonia is always open for business, with the government's business focused policies perfectly complementing and supporting a strong private sector.

**MOBILE WORLD CONGRESS & OTHER TRADE FAIRS**
Barcelona ranks 3rd in the world for International Congresses, only behind Berlin and Paris (ICCA, 2016).

Catalonia hosts some of the most important international tech events, including the Mobile World Congress. As the world’s main event of the mobile phone-related industries, it turns Barcelona into the permanent global centre for mobile technologies.

There are almost 1,000 Catalan Mobile Sector companies, most of them involved in App Development, ICT Services and Software Development and Distribution.

**INNOVATION AND ENTREPRENEURSHIP**
With the Eurecat Technology Centre or the Barcelona Supercomputing Centre, Catalonia is extremely well positioned to foster technology transfer and collaboration between academia, industry and public administration.

Catalonia is the leading Startup region in Europe. It concentrates more than 1,200 startups and is home to first class incubators and accelerators.

**BEST LOCATION & PERSONNEL AT COMPETITIVE COSTS**
Catalonia has an excellent range of office spaces.

With top-notch professionals from all over the world, Catalonia boasts qualified and talented workers at a cost level below other places, such as Madrid, London, Berlin or Paris.
Leading ICT ecosystem in Catalonia

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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 ICT ecosystem in Catalonia; however, there may exist other companies that have not been included in the study.

Source: ACCIÓ.
3. Opportunities in the ICT Industry
International market opportunities for Catalan companies

**AMERICA**
- **ARGENTINA**
  - Content creation
  - Digital advertising
  - Digital and cable television
  - E-Commerce
  - Entertainment
  - Gaming
  - Production of Applications and Mobile content
  - Programming
  - Social networks
- **CANADA**
  - 3D Printing
  - Artificial Intelligence
  - High-speed Internet
  - Industry 4.0
  - Real-time traffic information
  - Smart Cities
  - Smart energy storage
  - Smart housing
  - Smart traffic lights
  - Smart vehicles
- **UNITED STATES**
  - 3D printing
  - Artificial intelligence
  - Big Data
  - Cybersecurity
  - Industry 4.0
  - M2M solutions
  - Mobile and Gaming
  - Nanotechnologies
  - Robotics
  - Smart Cities
- **BELGIUM**
  - Smart Cities
  - Smart Mobility
- **DENMARK**
  - ICT and digital transformation
  - Smart Cities
- **IRELAND**
  - Smart Cities

**EUROPE**
- **BELGIUM**
  - Fintech
  - Industry 4.0
  - Software Solutions
- **DENMARK**
  - Big Data
  - E-Commerce
  - Fintech
  - Gaming
  - Industry 4.0
  - IoT
  - Mobile
  - Smart Cities
- **UNITED KINGDOM**
  - Big Data
  - E-Commerce
  - Fintech
  - Gaming
  - Industry 4.0
  - IoT
  - Mobile
  - Smart Cities
- **FRANCE**
  - 3D Printing
  - Artificial Intelligence
  - Cloud computing
  - E-Commerce
  - Equipment and facilities associated to 5G
  - Technology
  - Industry 4.0
  - Internet and cybersecurity
  - Internet of Things
- **GERMANY**
  - Fintech
  - Industry 4.0
  - Software Solutions
- **IRELAND**
  - Smart Cities
- **ITALY**
  - 3D Printing
  - Artificial Intelligence
  - Big Data
  - Cloud computing
  - E-Commerce
  - Fintech
  - Gaming
  - Industry 4.0
  - IoT
  - Mobile
  - Smart Cities
- **NORWAY**
  - Big Data
  - E-Commerce
  - Fintech
  - Gaming
  - Industry 4.0
  - IoT
  - Mobile
  - Smart Cities
- **SWEDEN**
  - Big Data
  - E-Commerce
  - Fintech
  - Gaming
  - Industry 4.0
  - IoT
  - Mobile
  - Smart Cities
- **SWITZERLAND**
  - 3D Printing
  - Artificial Intelligence
  - Big Data
  - Cloud computing
  - E-Commerce
  - Fintech
  - Gaming
  - Industry 4.0
  - IoT
  - Mobile
  - Smart Cities

**ASIA**
- **CHINA**
  - 3D Printing
  - Big Data Applications
  - Cloud computing
  - E-Commerce
  - Equipment and facilities associated to 5G
  - Technology
  - Industry 4.0
  - Internet and cybersecurity
  - Internet of Things
- **ISRAEL**
  - 3G/4G services
  - Biometric solutions
  - Broadband
  - Detection systems
  - ICT and digital transformation
  - Sensors
  - Video surveillance
  - X-ray systems
- **SOUTH KOREA**
  - 5G mobile telephony
  - Embedded software
  - Internet security
  - Mobile games
  - Virtual Reality
- **SINGAPORE**
  - Digital transformation
  - Smart Cities
  - Robotics
- **UNited Arab Emirates**
  - ICT and digital transformation
  - Smart Cities

Source: ACCIO’s Trade & Investment Offices.
Note: Technologies identified by ACCIO’s Trade & Investment Offices in the countries that they cover.
Technological and business opportunities in Catalonia

SMART INDUSTRY

3D printing
Catalonia, the HP 3D Printing World Headquarters.

Big data & Data Analytics
Talent, internationally recognized R&D centres, innovative ecosystem full of startups and first class companies.

IoT
Almost 20 centres focused on R&D in IoT.

Industry 4.0
Catalonia has the perfect mix: industrial ecosystem (21% of GVA) + Technology + Industry Labs.

Artificial Intelligence & Machine Learning
Leading AI companies have productive sites and research centres in Catalonia.

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

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

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.

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

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

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

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

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

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.

Other Opportunities

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

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

Source: ACCIÓ.