

A photograph of an industrial robotic arm in a factory setting. The arm is white and is positioned over a metal worktable. On the table, there are several small, cylindrical metal components. The background shows a control panel with a grid of lights. The image has a pinkish-purple tint and a diagonal line running across it.

# Industry 4.0 in Catalonia

March 2019

Sector Snapshot

## Industry 4.0 in Catalonia: Sector Snapshot

**ACCIÓ**  
Government of Catalonia



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**Prepared by**  
IDOM and ACCIÓ's Strategy and Competitive Intelligence Unit

Barcelona, March 2019

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# 1. Industry 4.0



# Definition of Industry 4.0 (I)

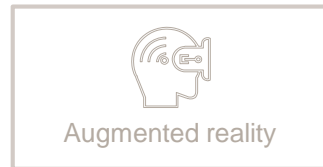
- **The Fourth Industrial Revolution**, i.e. Industry 4.0, is an **industrial transformation process** based on the combination of **production methods** and **advanced information technologies** to make **manufacturing more adaptive and flexible**. The concept of Industry 4.0 is not applicable only in factories, but all along the value chain.
- **It is based on the availability of complete information in real time** through the **integration of all the parties** making up the value chain. The interaction of people, machines and systems creates dynamic value networks of self-organized agents that can be optimized based on different criteria in real time.
- The **digital transformation** represented by industry 4.0 is based on a **series of technological tools**, including:

## Main technological tools

### Production resources



### Intelligence

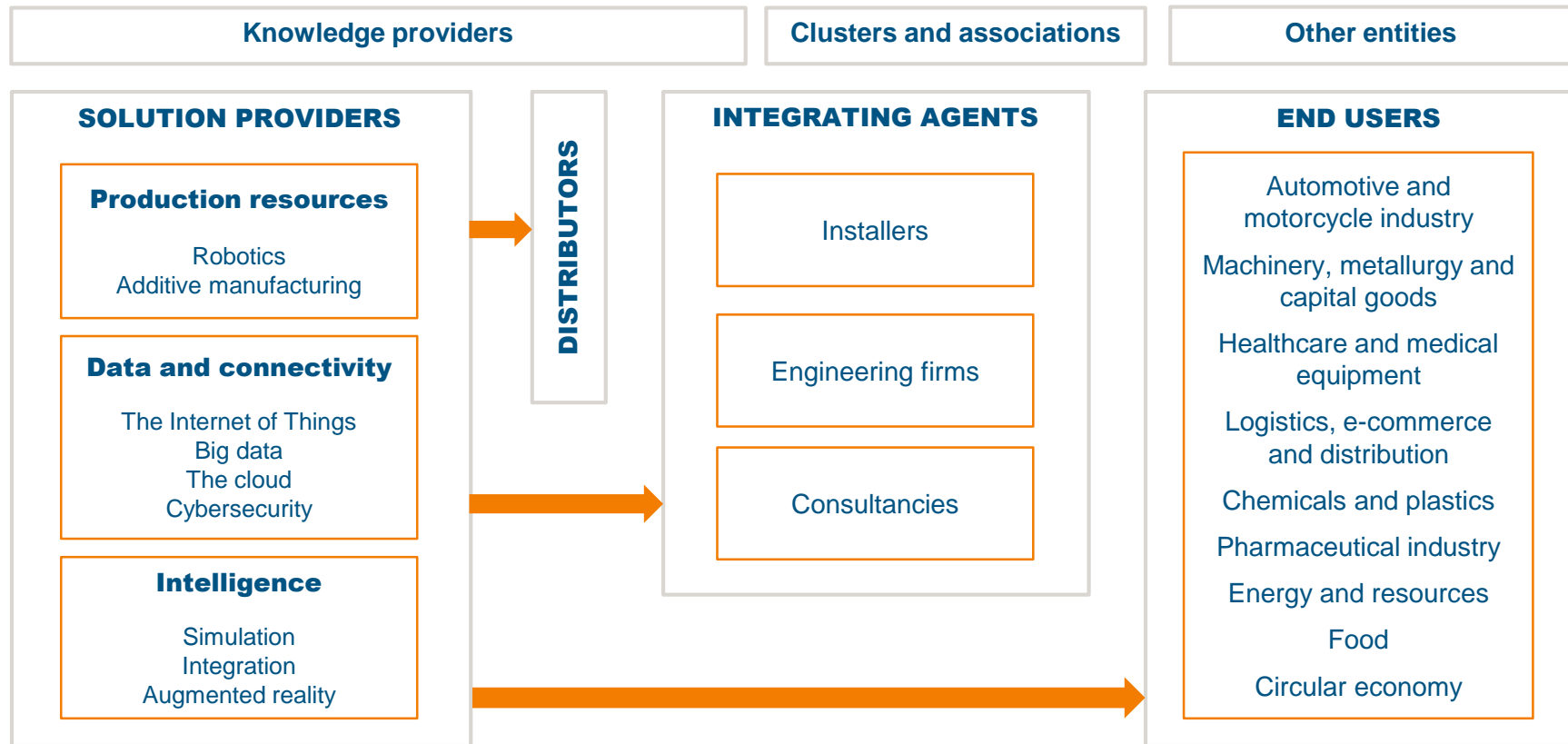


### Data and connectivity



# Definition of Industry 4.0 (II)

## Map of Industry 4.0 agents



# World data on Industry 4.0

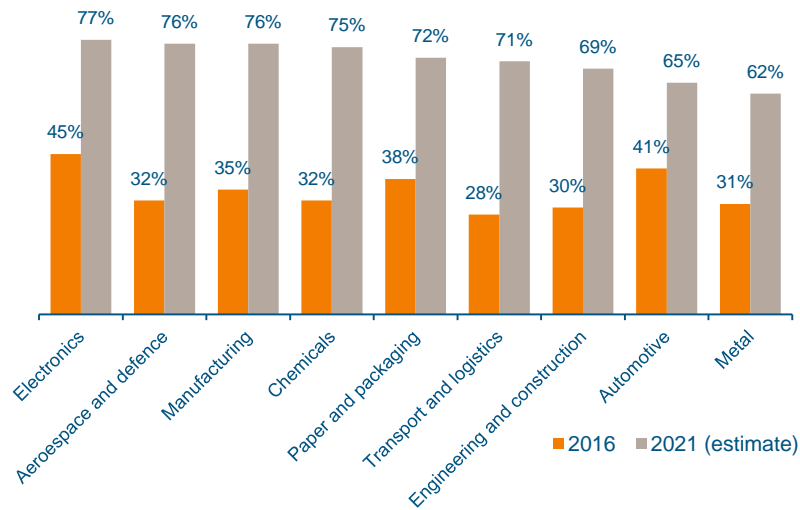
## Digitization level by country (2016 NRI Ranking)

The **Networked Readiness Index (NRI)** assesses each country's use of digitization to promote competitiveness and well-being. It can provide a picture of a **country's level of preparation to benefit from the Fourth Industrial Revolution.**

- |   |   |             |   |   |             |   |   |                |   |   |            |    |   |       |
|---|---|-------------|---|---|-------------|---|---|----------------|---|---|------------|----|---|-------|
| 1 |  | Singapore   | 2 |  | Finland     | 3 |  | Sweden         | 4 |  | Norway     | 5  |  | USA   |
| 6 |  | Netherlands | 7 |  | Switzerland | 8 |  | United Kingdom | 9 |  | Luxembourg | 10 |  | Japan |

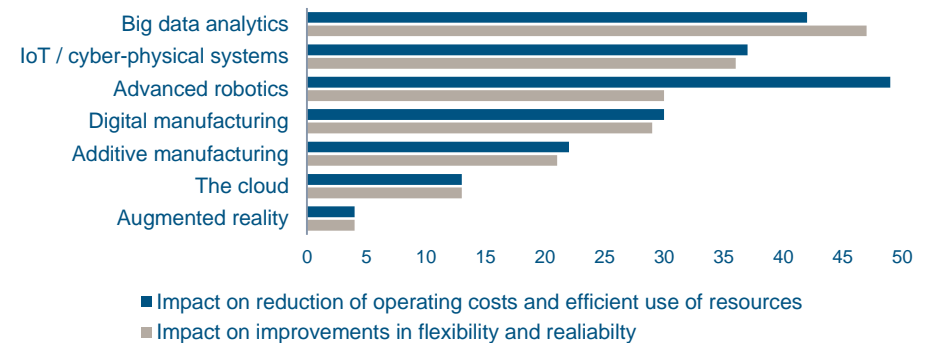
## Digitization level by sector

(Anticipated evolution of the level of digitization)



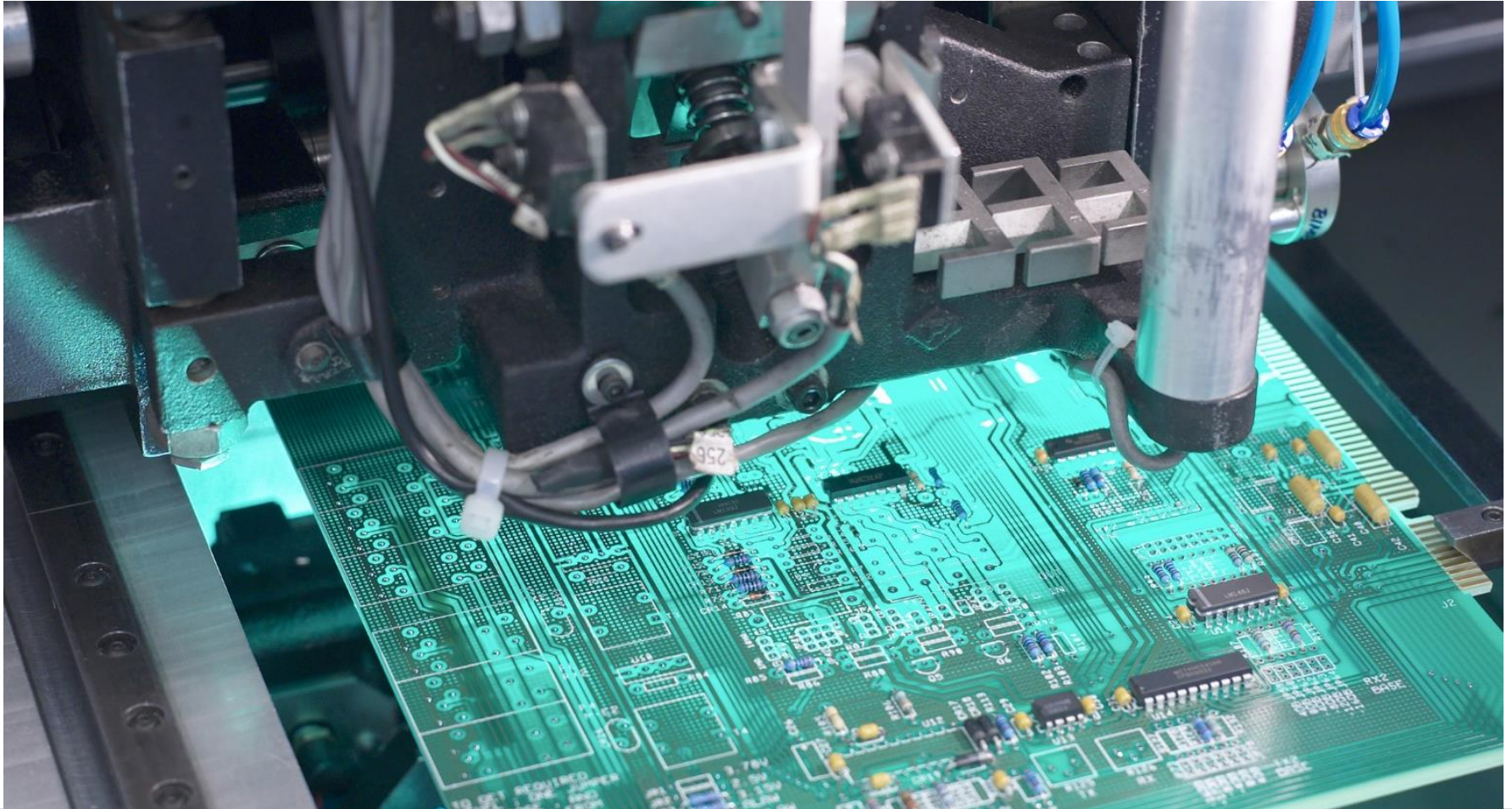
## Estimated impact of different technologies on company performance

The technologies that will have the greatest impact will be the **Internet of Things, big data** and the **cloud**. Implementation of these technologies will call for developing **cybersecurity**, which represents one of the most important barriers for many companies.



Source: EIC (DGI – ACCIÓ) based on World Economic Forum (2016), PWC (2016) and SCM World Report (2015)

# 2. Industry 4.0 in Catalonia





# Catalonia, prepared for the adoption of Industry 4.0



Source: EIC (DGI – ACCIÓ)

# Industry 4.0 in Catalonia: key data

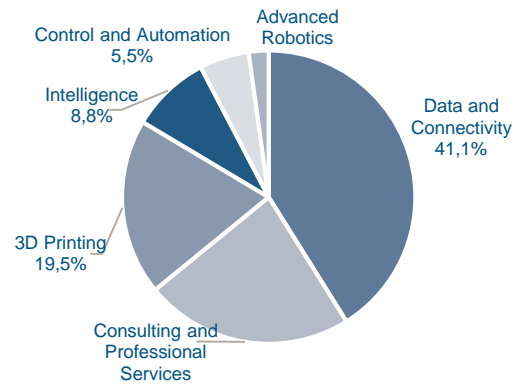
## Mapping of Industry 4.0 in Catalonia



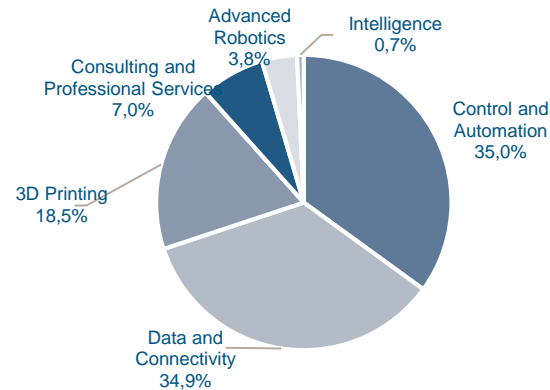
## Main companies in Catalonia



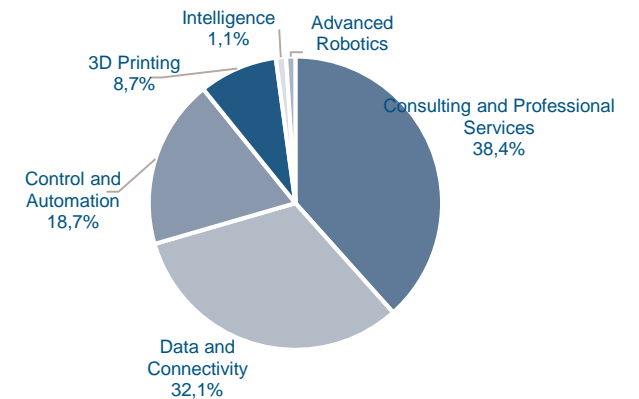
### Companies



### Turnover



### Employees



Source: EIC (DGI – ACCIÓ) based on interviews made by ACCIÓ  
Data for companies are 2017 data and turnover and employees are 2015 data.

# An ecosystem supporting Industry 4.0

## Universities offering Industry 4.0 related studies



## Trade fairs and events linked to Industry 4.0



## Clusters and business associations linked to Industry 4.0



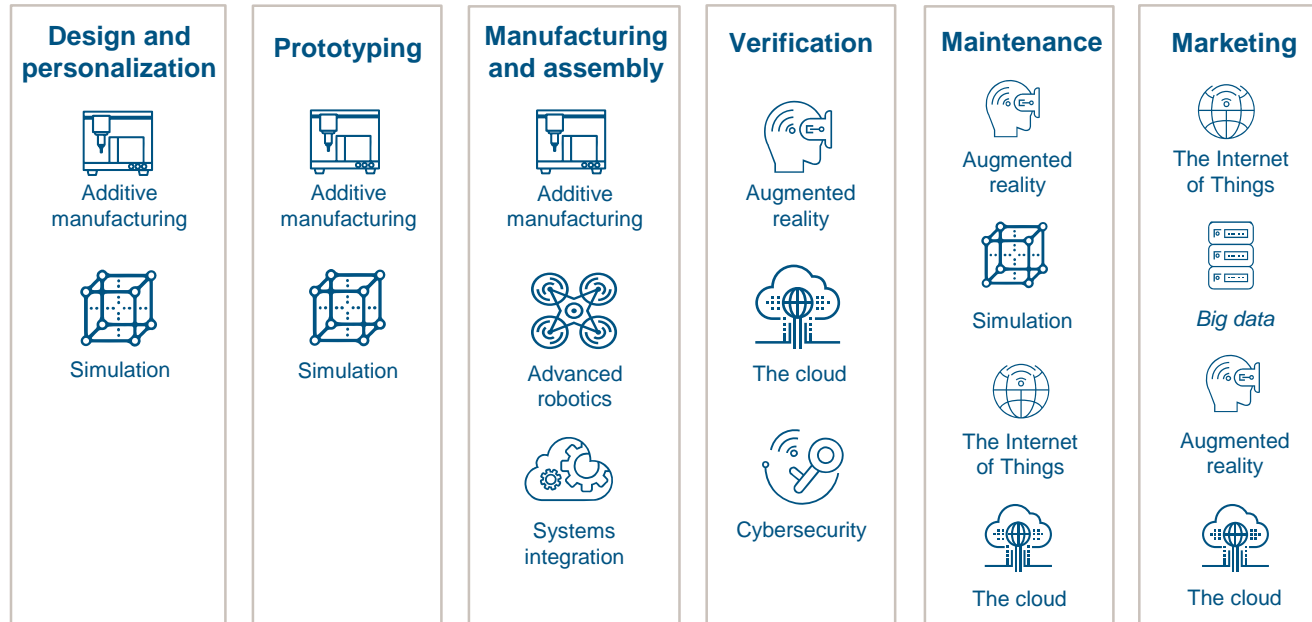
## Best pool of local and international talent

 **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. **Barcelona** is a magnet for professionals and a **key city in the availability of scientists and engineers.**

Source: EIC (DGI – ACCIÓ)

# On the top digital market transformation (I)

## Main applications of the most developed industry 4.0 technologies in Catalonia



### ICT Catalan sector is ready to accompany industry in the digital transformation process

**15,757** COMPANIES  
(2018)

**€16,667 M** TURNOVER  
(2016)

**106,400** EMPLOYEES  
(4th quarter, 2018)

Source: EIC (DGI – ACCIÓ) based on interviews made by ACCIÓ. *Secretariat of Telecommunications, Cybersecurity and Digital Society*

# On the top digital market transformation (II)

Industry has a relevant weight in Catalan economy. Catalan industrial GVA gets to 21%, above European average.

## Sectors that have made the most progress in the application of Industry 4.0's technologies

	Automotive and motorcycle industry		Gestamp  Continental  SERT  NISSAN 
	Machinery, metallurgy and equipment		COMEXI  EN  SALICRU  CELSA GROUP  QUALITY ESPRESSO 
	Healthcare and medical equipment		AVINENT Implant System  phibo  SJD  Sant Joan de Déu Barcelona - Hospital  Bikit  A Werfen Company
	Other transport industries		ALSTOM  TMB  PROMAUT 
	Logistics, e-commerce and distribution		amazon  BOSSARD  MANGO 
	Chemicals and plastics		refisa  composites structures  P&G  Henkel 
	Pharmaceutical industry		NOVARTIS  GRIFOLS 
	Energy and resources		endesa  FLUIDRA  gasNatural 
	Food		bonArea  esporc  NOEL 
	Circular economy		la cabaña 

Source: EIC (DGI – ACCIÓ) based on interviews made by ACCIÓ. IDESCAT

# World-class innovation hub

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

- **1.47%** of its GDP dedicated to R&D (2017).
- **9,282** innovative companies, representing **22.2%** of the Spanish total (2016).
- **ACCIÓ**, winning agency for **Best R&D Support** (*FDI Strategy Awards, 2017*)

## Barcelona

**1st** European capital of innovation (*iCapital Prize 2014*).

**5th** City in Europe in terms of scientific academic production (*UPC, 2017*).

**2nd** Smart City in the world (*Juniper Research 2016*).

**5th** City in Europe in terms of innovation (*Innovation Cities Index, 2016/2017*).

## 31 technological centers with TECNIO accreditation linked to Industry 4.0



Source: EIC (DGI – ACCIÓ) based on INE, TECNIO

# Barcelona, the driving force of Catalonia's entrepreneurial engine



## Over 1,300 startups in Catalonia



Industry 4.0 technology startups are the most numerous, representing the **17%**.

**13,820** jobs related to Catalan startups.

**13%** of Catalan startups are **Deep Tech**.

**3** out of every **4** Catalan startups have **obtained financial backing**.

Source: [startupshub.catalonia.com](http://startupshub.catalonia.com) (Barcelona & Catalonia Startup Hub)

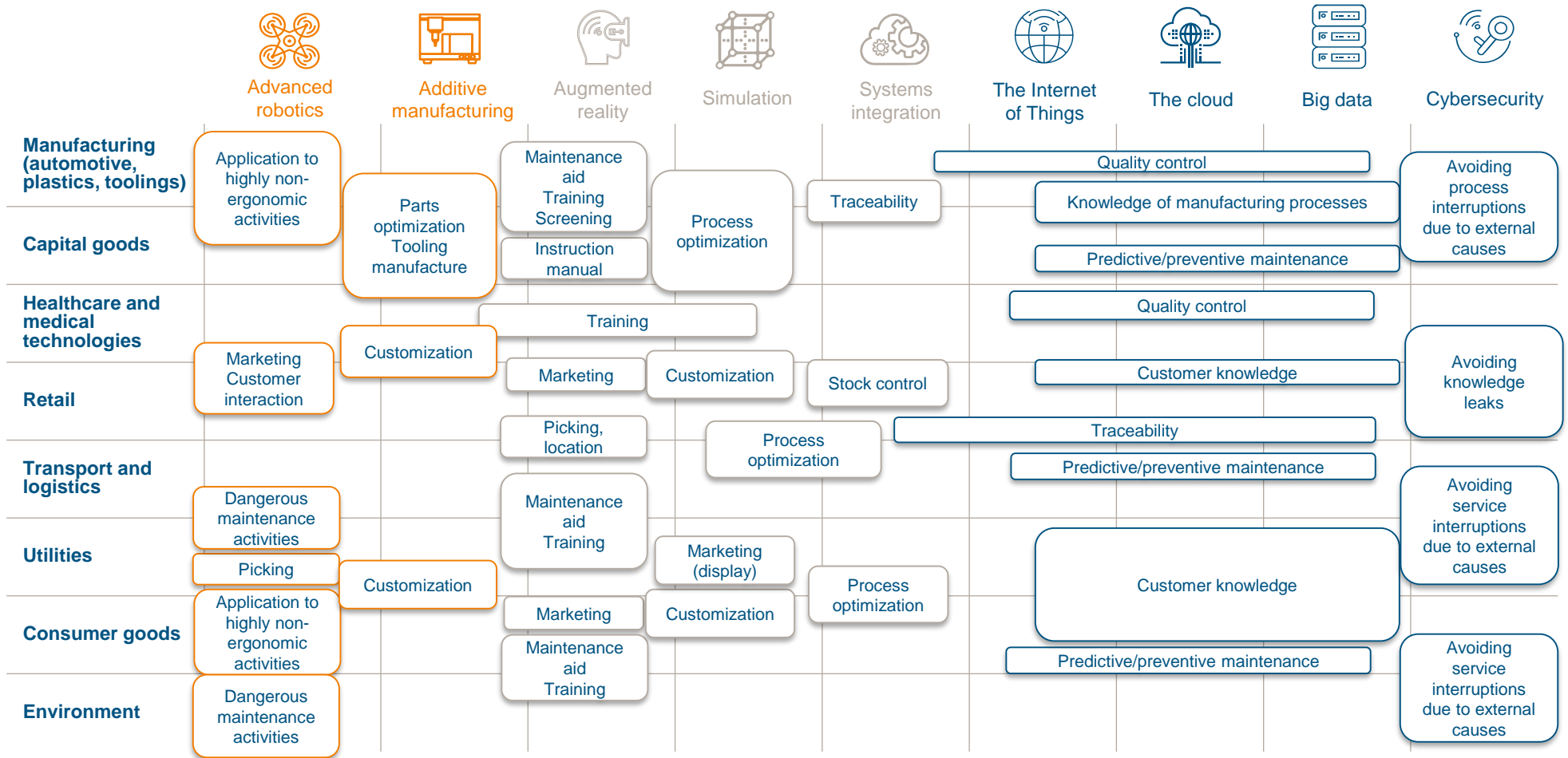
# 3. Opportunities in the Industry

## 4.0





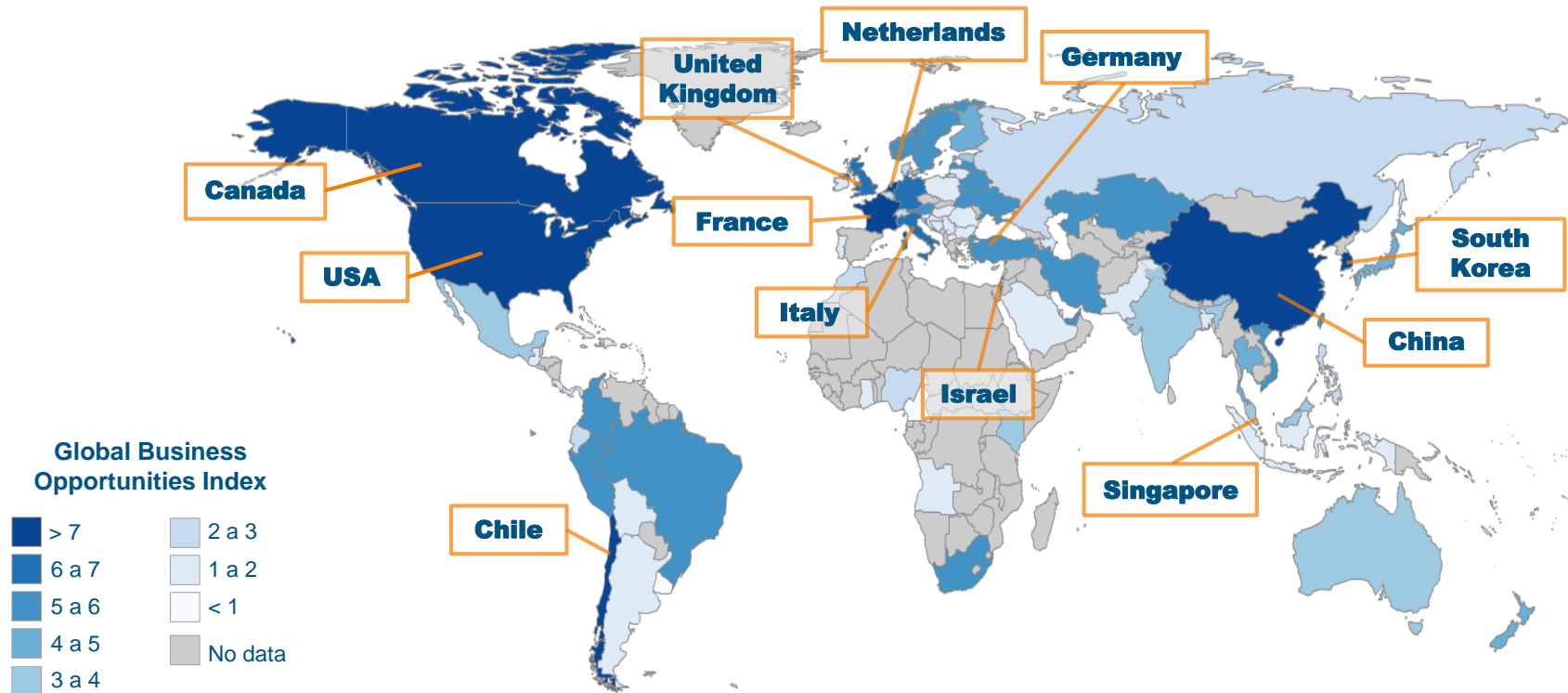
# Technological and business opportunities in Catalonia



Source: EIC (DGI – ACCIÓ)

# International opportunities for Catalan companies

ACCIÓ's global business opportunity index in the 4.0 industry.



Note: Index represents a value between 0 and 10  
 Source: Global trade mapping, 2018 by EIC (DGI – ACCIÓ)



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<http://catalonia.com/.content/documents/industry-40-in-catalonia.pdf>



**Further information about the sector and opportunities:**  
<http://catalonia.com/trade-with-catalonia/industry-40.jsp>

