



A Smart City is a **city that applies ICT to improve the quality of life** and accessibility of its inhabitants and ensures **sustainable economic, social and environmental development** in continuous improvement. **ICT is the enabler** to producing this improvement, the lever of the introduction of **innovation in urban environments**, and the **fact that it allows information** regarding the provision of public services and the management of urban infrastructure **to be measured, monitored and predicted**, results in a better overall functioning of cities. In this sense, cities acquire **new technological solutions** that allow them to achieve the desired results and improve the quality of their services.

### ORIGIN OF THE INVESTMENT OPPORTUNITY



This opportunity arises from the problem of having to manage increasingly complex urban environments, which have become the real centres of economic and social development. The urban population has been multiplying since the mid-twentieth century, and with it, the difficulty of maintaining the proper functioning of infrastructure and services provided to citizens. In addition, there has been a **public demand for higher quality public services**.

Cities have to face the challenge of managing and making the most of resources, improve their organisation, efficiency, waste management, water supply and mobility, and there are **technological solutions** in response to these challenges that aim to provide **infrastructure, services and features to make cities sustainable**, improving the quality of life and **participation of citizens**.

At the **policy level**, a **clear commitment** to the development of smart cities has been made. The Spanish and European strategic framework outline the development of society, also allocating **specific funds** to boost the technology industry for Smart Cities in Spain and to help administrations in the process of transformation to **Smart Cities and Destinations**.

### LOCATION OF THE INVESTMENT OPPORTUNITY IN THE SECTOR VALUE CHAIN



This business opportunity is found in the **services link the value chain** of the ICT sector. Technology companies **adapt** their products and services to the **needs of the city, making its portfolio** specifically meet this opportunity. These **products and services** ranging from **sensors and hardware**, augmented reality technology that allows **data capture** from the city, **M2M** technologies for the transmission of information, **data repositories**, through to **Big Data** technology that enables storage and reuse of data.

### DIFFERENTIATING FACTORS OF THE INVESTMENT OPPORTUNITY

CONSUMER/USER	COMPANY/INNOVATION	SOCIETY
<ul style="list-style-type: none"> <li>● ● ● Innovation</li> <li>○ ○ ○ Price</li> <li>● ● ● Quality</li> </ul>	<ul style="list-style-type: none"> <li>○ ○ ○ Operations</li> <li>○ ○ ○ Supplies</li> <li>● ● ● New business lines</li> </ul>	<ul style="list-style-type: none"> <li>● ● ● Environment</li> <li>● ● ○ Well-being</li> <li>● ○ ○ Safety</li> </ul>
<ul style="list-style-type: none"> <li>In this case, <b>users</b> of Smart solutions would be the <b>public administrations</b> that will be able to provide more efficient services of higher quality by using these solutions. With the development of the Smart Cities, <b>efficiency and quality of services increases</b> by properly managing resources. There is an <b>automatic and efficient management</b> of urban infrastructure, improvement in energy conservation, mobility management, etc.</li> </ul>	<ul style="list-style-type: none"> <li>For <b>businesses</b> the rise of Smart Cities is a way to innovate, create <b>new businesses and ideas</b> and adapt their products to the needs of cities.</li> <li>New products range from <b>sensing</b> different aspects of the city for the collection and transmission of data to the platforms for <b>storage, analysis and reuse</b> of this data.</li> </ul>	<ul style="list-style-type: none"> <li>Smart Cities use the concept of energy efficiency and sustainability, pursuing a balance between environment and consumption of natural resources.</li> <li>They facilitate the identification of the needs of the city and the approach of new services, thus increasing the welfare of citizens. Furthermore, they perceive a higher quality service and the possibility of participation in the development of the city.</li> </ul>

### INVESTMENT OPPORTUNITY LIFE CYCLE



The smart city concept is still being introduced, however, **cities are constantly evolving** which makes it necessary to provide **new infrastructure and services based on the stage of development** where they are. In the **early and growth phases**, it is important to provide **adequate infrastructure** to meet the growing demand for **basic services** such as electricity and water, supporting minimum living standards. However, once a city enters in the **mature or transformation phases**, they need to focus on generating **new high value-added** services to improve competitiveness and strengthen the economy. <sup>(1)</sup>

Sources: (1) Report- How to invest in the field of ICT- CONETIC

CHARACTERISTICS OF THE ICT SECTOR <sup>(2)</sup>

## Turnover



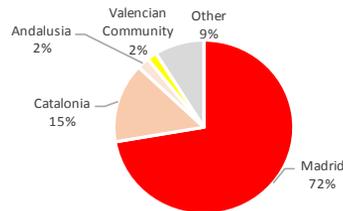
## Trade balance



## Employment



## Territorial distribution of turnover (2014)



## SUPPLY

## TOP 5 COMPETITORS

#	Company	Net sales	Last available data
1	Telefónica	€59,104 M	2014
2	Endesa	€28,916 M	2014
3	Ferrovial	€8,969 M	2014
4	IBM	€2,177 M	2013
5	Schneider	€780.97 M	2013

## DEMAND

## GROWTH

- The concept of Smart Cities will bring together **investment from diverse backgrounds**, such as smart buildings, cars and energy suppliers.
- There are various estimates of the volume of business that can be generated, but in all cases it is agreed that a market is exploding. The global business around the Smart City is worth **1.2 billion dollars in the next 10 years** <sup>(3)</sup>. The rapid development of smart cities is being pushed **because according to UN estimates, by 2050 66% of the world population will live in urban areas, where 80% of economic wealth is generated.**

## SUCCESS STORIES



Barcelona, **No. 1 Smart City in the world in 2015, as ranked by Juniper Research.** Some successful actions that define the Barcelona Smart City are, among others, the cycling network, management of public transport, the automatic lighting plan, containers with capacity sensors, telematic control deposits rainwater, public network digital manufacturing, energy self-sufficiency plan and the programme to promote electric car.

Barcelona has also gained widespread international recognition by organizing the annual **Smart City Expo World Congress**, which is an event of worldwide reference with more than 11,000 attendees from 400 cities who study and analyse the future of cities.



Valencia is the first completely connected city via the Intelligent Platform Valencia City, with efficient infrastructure for telecommunications, gas, transport, emergency services and security, public facilities, environment, cleaning, waste collection, street lighting, towing, gardening and meteorology.

It also developed an augmented reality app that provides real-time information on facilities and municipal services (libraries, police stations, health centres, sports facilities, tourist attractions, transport, faults, etc.) for the location in which the citizen is. Thanks to augmented reality technology, the user can see elements (drawings, icons, 3D buildings) on device that does not exist in reality but add virtual information to the existing physical information.



The **ZEM2ALL movement is an initiative to know how will mobility in the city of the future, today.**

Zero Emissions Mobility To All, or what is the same Zero Emission Mobility for All is a pioneering initiative to give all citizens the opportunity to have an emissions-free mobility. ZEM2ALL serves as a real litmus test of the functioning of the free electric mobility emissions. With this initiative we know the impact and management of resources of electric mobility in the city of the future. The use of cars, recharging, which services may be offered, the impact on the energy management of the cities... all starts in the city of Malaga.



POSITIVE FACTORS FOR INVESTING IN SPAIN

Favourable factors in Spain for the development of the opportunity

Public support for the development of Smart Cities
Technological modernisation process underway
Good position of the Spanish cities
Social factors and habits

The Ministry of Energy, Tourism and Digital Agenda supports the development of Smart Cities by the National Plan for Smart Cities. With a budget of 188.350 M € is intended to help local authorities in the process of transformation towards Smart Cities and Destinations. Furthermore, it has been the Smart Cities Sector Forum whose aim is to Spain to play a pioneering role in the development of Smart Cities.
Spain is committed to the technological advancement of the cities in providing their services. Law 11/2007 on electronic access of citizens to Public Services forces cities to acquire technology infrastructure, which means that the starting point in the development of smart cities is already underway.
Seven Spanish cities among the top fifty European, according to the index IESE Cities in Motion (ICIM). Moreover, Barcelona was recently named Global Smart City 2015 by Juniper Research, after a solid score in intelligent networks, traffic management, public lighting, technological, social cohesion, etc.
The high level of development of E-government in Spain and online public services is highlighted. 99% of the administrative procedures of the Central Government are available electronically. This facilitates relations with the public administrations ranging from payment of taxes to the Social Security contributions through the application of permits and licenses for different activities.

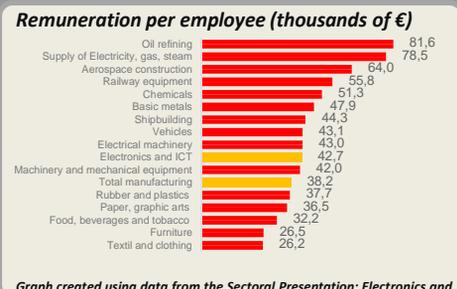
Favourable factors for the sector in Spain

Macroeconomic situation

The Added Value of the information technology and communications sector in 2015 was 45,296 million euros, representing 4.9% of the added value of the Spanish economy.
Sector exports totalled 13,032 million euros. (2)

Labour market

The average productivity per employee in the ICT sector is 52,100 euros per year. Their average individual remuneration is 42,700 euros per year. The Unit Labour Cost accounts for 81.8% of the ratio between the remuneration per employee and the individual productivity (productivity defined as value added per employee). (4)



Graph created using data from the Sectoral Presentation: Electronics and ICT.

Incentives

Through the National Plan for Smart Cities, a €188.350 budget has been established to facilitate the process of urban transformation towards a smart city, through projects for efficiency of ICT in reducing costs, improving citizen satisfaction and creation of new business models and the development and growth of the ICT industry. In addition, the Ministry of Energy, Tourism and Digital Agenda allocated 200 million euros to R&D in the ICT sector in 2015 to promote high value technologies in industries of the future (including smart cities) Cybersecurity and digital trust, energy efficiency and digital content.

I+D+i

There are 15,736 innovative companies and the percentage of innovative companies is roughly 28.5%, spending a total of 13,6747 million euros on innovation. (5)

Talent

Installs in Spain Google Campus to the world's largest entrepreneurs, ahead of London, Seoul and Tel Aviv, demonstrating confidence in the creativity and talent in the country by leading companies the sector. These facilities provide work areas and technical advice for the implementation of new projects. TechHub is involved in this project which manages a global community of digital entrepreneurs.

Geographic location

Spain is within reach of three main regions: the European region, the Mediterranean region and the Atlantic region. Spain is considered to be the gateway between North Africa and Europe, and a key link to Latin America, not only because of its geographical location but also because of its strong historical and cultural ties with the region. In Spain the Canary Islands play a key role with regards to maritime traffic with West Africa.

Technological and research infrastructure

Spain has a very advanced technological infrastructure as shown in areas such as: the presence of 84 technology parks that house more than 5,000 technology companies and a broadband coverage of 96.5%, one of the few OECD countries that has had included in its legislation since 2012 the universal obligation of 100 Mbps broadband supply. In the business arena, broadband penetration exceeds that achieved in the European Union. In 2016 99% of companies in Spain that access the Internet do so by broadband (6).



Graph created using data from Spanish Foundation for Science and Technology.

Transport infrastructure and logistics networks

There are 250 airlines operating in Spain in its 47 airports; its high-speed rail network is the 2nd best in the world and the best in Europe; it is ranked 1st in the EU for its motorway network; and it has excellent sea connections to its 46 ports distributed along the Atlantic and Mediterranean coasts.

Sources: (4) Electronics and ICT Sectoral Presentation. April 2015. Ministry of Energy, Tourism and Digital Agenda (5) Innovation Survey in companies 2016 (6) ONTSI