The connected car allows for the transfer of data via the Internet through an integrated communications module or other devices such as smartphones. The services that the user is aware of in a smart car are related to: road safety (eCall, stolen vehicle alert, geolocation and speed control), infotainment (internal wireless networks, multimedia content streaming, social networking connection), traffic efficiency (available parking spaces, best fuel prices, real-time traffic levels), cost reduction (monitoring of dangerous behaviour, telematic insurance management) and interactivity with the system (manufacturer call centre, remote control, payment of parking metres).

ORIGIN OF THE INVESTMENT OPPORTUNITY

The benefits and services that the internet connection allows creates a demand for it in almost all industries, such as the automotive sector. Nowadays, a very high percentage of the sector's customers choose the car based on its connectivity features rather than for the performance of the vehicle itself. This is a change in the trend as until now there had been no significant interest in connected cars, although they first appeared in the sector several years ago.

Car connectivity allows its occupants to exchange data with other vehicles and the surroundings, reduce costs, access entertainment applications, and other services related to road safety, such as theft detection, speed control and an emergency call system. The latter, known as eCall will be implemented in all cars manufactured in Europe by 2018, following the guidelines under the Regulation (EU) 2015/758 of the European Parliament and Council, published in 2015.

The automotive industry must adapt to meet the new demand and to meet the sector’s regulatory requirements.

LOCATION OF THE INVESTMENT OPPORTUNITY IN THE SECTOR VALUE CHAIN

This change in trend is an opportunity for all manufacturing of components in the sector, with there being the possibility to expand market share and increase product range. Moreover, this trend may promote the entry of new players into the industry, such as companies that manufacture electronic components or involved in software development.

DIFFERENTIATING FACTORS OF THE INVESTMENT OPPORTUNITY

- Internet connection in the vehicle allows its occupants to enjoy entertainment applications, access information and other services similar to those offered by a smartphone.
- This context provides many advantages to its users, such as reduced costs in terms of operation and maintenance of the car and improvement in fuel efficiency due to the different services.

INVESTMENT OPPORTUNITY LIFE CYCLE

"The Internet of things" is a concept which has been used for years and its application to all types of machinery is marking a new phase in the industry. Connected cars are going through a period of introduction in the Spanish market: 21 automotive brands of the 54 currently selling cars in our country have technology platforms focused on a real connectivity strategy and 24 of these brands already offer some type of connectivity solution.

With respect to forecasts regarding the opportunity it is estimated that the total number of vehicles with integrated connectivity will increase from 10% of the entire global market to 90% in 2020.

### Supply

#### Top 5 Competitors in Spain

<table>
<thead>
<tr>
<th>#</th>
<th>Company</th>
<th>Net sales</th>
<th>Last available data</th>
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<tbody>
<tr>
<td>1</td>
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<td>2014</td>
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<tr>
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<td>Microsoft</td>
<td>€464.01 M</td>
<td>2014</td>
</tr>
<tr>
<td>3</td>
<td>Apple</td>
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<td>2014</td>
</tr>
<tr>
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<td>Google</td>
<td>€52.18 M</td>
<td>2013</td>
</tr>
<tr>
<td>5</td>
<td>Octo Telematics</td>
<td>€0.703 M</td>
<td>2013</td>
</tr>
</tbody>
</table>

### Demand

#### Growth

- The market for connected cars will reach **mass penetration** in the coming years, it is expected that the total number of vehicles with **integrated connectivity** will increase from 10% of the global market at present to 90% in 2020.
- Globally, 71% of drivers are interested in or already have some connected car services. In Spain, this percentage is higher at 85%.
- 66% of Spanish consumers choose the car depending on its **connectivity** instead of the performance of the vehicle itself. (2)

### Success Stories

**Spotify** subscribers, whether via PC, tablet, iPad or smartphone, can access the catalogue of more than 20 million songs from their car.

The synchronisation between the car and Spotify will be possible through Ford SYNC AppLink. Following the agreement between Ford and Spotify on 26 February 2013 at the **Mobile World Congress (MWC)** in Barcelona, this technology was created which allows mobile devices to synchronise automatically with the car’s **entertainment system** and be controlled by voice and gestures. Ford’s objective is to be available in 3.5 million vehicles in Europe in 2015.

The manufacturer **Opel** uses its **own connectivity platform**, Intellilink. This entertainment system is compatible with devices using Android and Apple iOS. The **voice assistants** play a key role in controlling functions in the infoentertainment systems. If the user has an iPhone, Siri will perform that function. Recently, Opel has announced an **app market** of its own called Opel Apshop. Currently, there are three applications available: BringGo, a **European navigation system** that provides maps in 2D and 3D; Stitcher, the Internet’s most popular generalist radio service; and TuneIn Radio, which provides a network of 70,000 online radio networks from across the globe.

BMW’s commitment in terms of its multimedia connectivity services is called **BMW ConnectedDrive**. It is one of the most mature and **advanced connectivity systems** on the market, bringing together a set of technologies that connect the driver and vehicle with the surroundings. A standout among its applications is the **dynamic parking prediction system** which is able to report on the availability of parking spaces using information regarding the movement of the fleet of vehicles. The application is able to identify available parking spaces on the street and the number of drivers looking for parking are taken into account for the calculation. This system provides an effective way to reduce traffic related to the search for parking.

### Sources

Technologies that drive research

The information and communications technology and the trend towards the electrification of urban transport and roads is promoting a rapid evolution of vehicle interaction with its surroundings. This situation led to the creation of a technology platform that integrates 150 companies, technology centres and research centres: Move to Future. This platform has a working group dedicated to researching improvements in V2V (vehicle to vehicle) and V2I (vehicle to infrastructure) communications as well as new services for users for both the vehicle and its passengers.

Experience in implementation of eCall services

Spain participated in the second pan-European pilot for the in-vehicle emergency call service, eCall (Project HeERO). The aim is to promote the new road safety service which automatic calls the European emergency number 112 and through which could save hundreds of lives a year through emergency calls. Spain has also promoted one of the first European pilot projects to implement emergency call services (eCall) in two-wheeled vehicles.

Social factors and habits

The digital revolution is making its mark in Spain which has become the top country in terms of smartphone penetration in the European Union, accounting for 81% of all mobile telephones. Spanish Internet users use these devices intensively, with the figure reaching 26 million active users making 3.8 million daily downloads of applications. Also, 94% of Spaniards access the Internet while on the move, so they are connected anytime, anywhere.[3]

With regard to the degree of penetration of ICT in Spain, it is increasing exponentially and reached 80% in 2014, compared with 59% the previous year.[4]

Macroeconomic situation

The Added Value of the automotive sector in 2013 was 8.382 billion euros, representing 6.73% of the manufacturing sector. Sector exports totalled 39.0495 billion euros, representing 18.5% of the exports of the industrial sector.[5]

Labour market

The average productivity per employee in the automotive sector is 63,600 euros per year. Their average individual remuneration is 43,100 euros per year. The Unit Labour Cost accounts for 67.8% of the ratio between the remuneration per employee and the individual productivity (productivity defined as value added per employee).[5]

Incentives

The Spanish government has launched a new set of incentives for the purchase of efficient vehicles, the PIVE Plan, which aims to promote a reduction of energy consumption nationally through incentives for the modernisation of the fleet of family vehicles (M1) and commercial vehicles (N1) with energy-efficient models, with lower fuel consumption and CO₂ emissions, all under the 2011-2020 Energy Saving and Efficiency Strategy. The previous seven editions of this programme have seen the replacement of 890,000 old cars with new, cleaner and safer cars. The central government and car manufacturers have each earmarked 850 million euros for the programme.

R+D+i

There are 390 innovative companies in the automotive and aerospace sector and the percentage of innovative companies is 39.3%, spending a total of 2.610475 billion euros on innovation. [6]

Suppliers, Supplies, Raw materials

An sector with a great tradition in Spain and directly linked to the car industry is that of the machine tool, which stands out as one of the most advanced in Europe. It is important to highlight the industries producing materials such as plastic and steel, that are the raw materials for the construction of vehicles and their components. Spain is a leading producer and exporter of these materials.[7]

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 17 manufacturing centres distributed throughout Spain and belonging to 10 different vehicle manufacturers. Most of the production of family vehicles has been specialised in mid-range and small vehicles, with Spain being one of the European leaders in this competitive segment. These centres have a high level of automation and robotics, with 89 robots per 10,000 workers, positioning the country 5th in Europe. In addition, there are 9 parks and 34 technology centres with projects related to vehicle manufacturing in Spain.[2]

Transport infrastructure and logistics networks

Spain has the best high-speed rail network in Europe and has excellent sea connections to its 46 ports distributed along the Atlantic and Mediterranean coasts. The agreement signed in 2013 between the Ministry of Public Works and Transport and the Manufacturers Association ANFAC will bring the rail networks together with the automobile manufacturing plants to connect them to the ports with greater importance in the sector and the Spanish border.