

Smart
Destination

Smart Destinations Report: building the future





The “Smart Destinations Report: building the future” responds to the management delegation agreement from the Secretary of State for Telecommunications, for SEGITTUR (Information Society to the state owned enterprise for Management of Innovation and Tourism Technologies, to use its full title, hereinafter referred to as Segittur) to perform the actions necessary to implement the Smart Destinations Specific Report, within the framework of the National Smart Cities Plan, from the Digital Agenda for Spain.

Madrid, September 2015



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José Manuel Soria López
*Minister for Industry,
Energy and Tourism*

Spain is a clear leader on the world tourism stage. We are the world's number one destination for holiday travel, second in terms of tourism expenditure and third per number of international tourists we welcome. The tourist trade accounts for 11% of GDP; creating more than 12% of our jobs and offsets a large portion of our trade deficit. It is an important asset for both wealth and job creation, as well as being a driving force for many of our country's other economic sectors.

From the beginning of the parliamentary term we have taken the importance of tourist activity into consideration; designing a tourism policy which galvanises the

competitiveness of the industry, as much in the public sector as in the private. This policy is intended to boost innovation and sustainability in such a manner that Spain as a whole, both in the medium and long term, will cement its position as a world leader.

In the age of knowledge and the digital economy this isn't an easy task. Technology and innovation have produced significant changes in tourists' habits (they're better informed, über-connected and multi-channel) and new business models. This is in addition to new, competing destinations and scenarios which change incredibly quickly.

Therefore, in our roadmap, the National Integral Tourism Plan (NITP), approved by the Cabinet in June 2012, we invest our efforts into the innovation of companies, entrepreneurs, changing the tourism model, talent and knowledge... All of these elements will allow Spain to continue to be a leader in world tourism, responding to the new digital tourist, given that innovation is necessary in all areas of society. The leadership of a country, a region or an industry over time depends on its ability to anticipate the future and consciously prepare itself to welcome it in the best possible conditions.

In this context, the need to create and implement a new concept for tourist destinations has arisen: the Smart Destination. This initiative, which is of crucial importance for the present and future positioning of Spain as a destination, was officially taken into account in the NITP. New initiatives for driving innovation were sought, with the roll-out and development of ICT

systems in such a way that distinctive and highly competitive services could be created, which would lead the way in terms of competitiveness and profitability. These initiatives turn threats into opportunities and allow product differentiation, fight off the risk of seasonality, drive diversification and build on successes.

After four years of work, the time has come to take stock and learn from the results. In this period, the concept of smart destinations has been developed and a pilot program has been implemented in more than ten destinations. In addition, a standard has been created, by general consensus, which forms the blueprint for destinations seeking to become smart destinations. Moreover, the considerable contribution and worth of including this initiative in the National Smart Cities Plan from the Ministry for Industry, Energy and Tourism has been recognised.

Finally, the work carried out returns us to our position as leaders in the tourism industry, given that we are pioneers at a global level in terms of Smart Cities' development. The state-owned enterprise, SEGITTUR, along with Spanish companies, has begun to export the working model and methodology to other international destinations; thus opening up innumerable internationalisation opportunities for Spanish enterprises.

This has all been possible thanks to the work and effort of all involved; public-private collaboration has been, and continues to be, key in achieving a much wider objective: transforming Spain as a whole into a smart destination.



In this report, which will form part of the *White Paper on smart cities*, and which is, in itself, a white paper on smart destinations, the circumstances and importance of tourist activity in our country will be analysed within a global framework.

In an ever-changing environment, dominated by the new digital economy, and with a tourist profile that is much more demanding, informed, über-connected and multi-channel, the Ministry for Industry, Energy and Tourism decided to invest in the transformation of the Spanish tourism model in 2012. They sought to base it on concepts around innovation, technology, sustainability and accessibility; guaranteeing, in this way, both the present and the future of tourism in our country.

Through this, the smart destinations initiative has emerged, which, following in the wake of the trail blazed by

smart cities, albeit with the focus on the impact of the millions of tourists arriving in Spain each year (before, during, and after their stay), it seeks greater control of tourism, more efficient and sustainable management, along with an increase in its profitability and competitiveness across the entire economy.

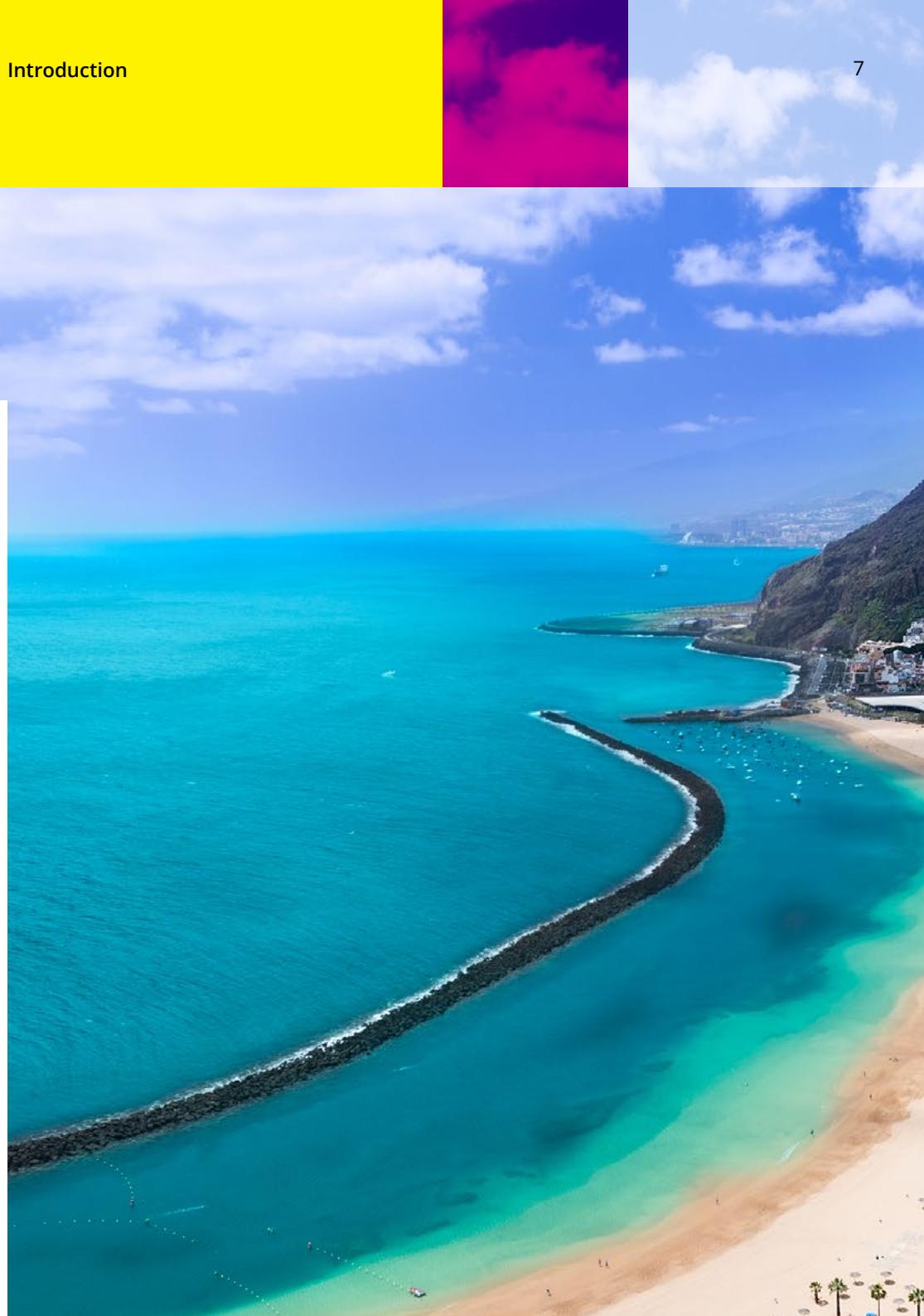
We will analyse good practice from a selection of smart cities pilot projects undertaken in this period (2012 - 2015), in which we will see how, following the destination's diagnostic report and the action plan implemented by Segittur, Palma de Mallorca installed the largest free

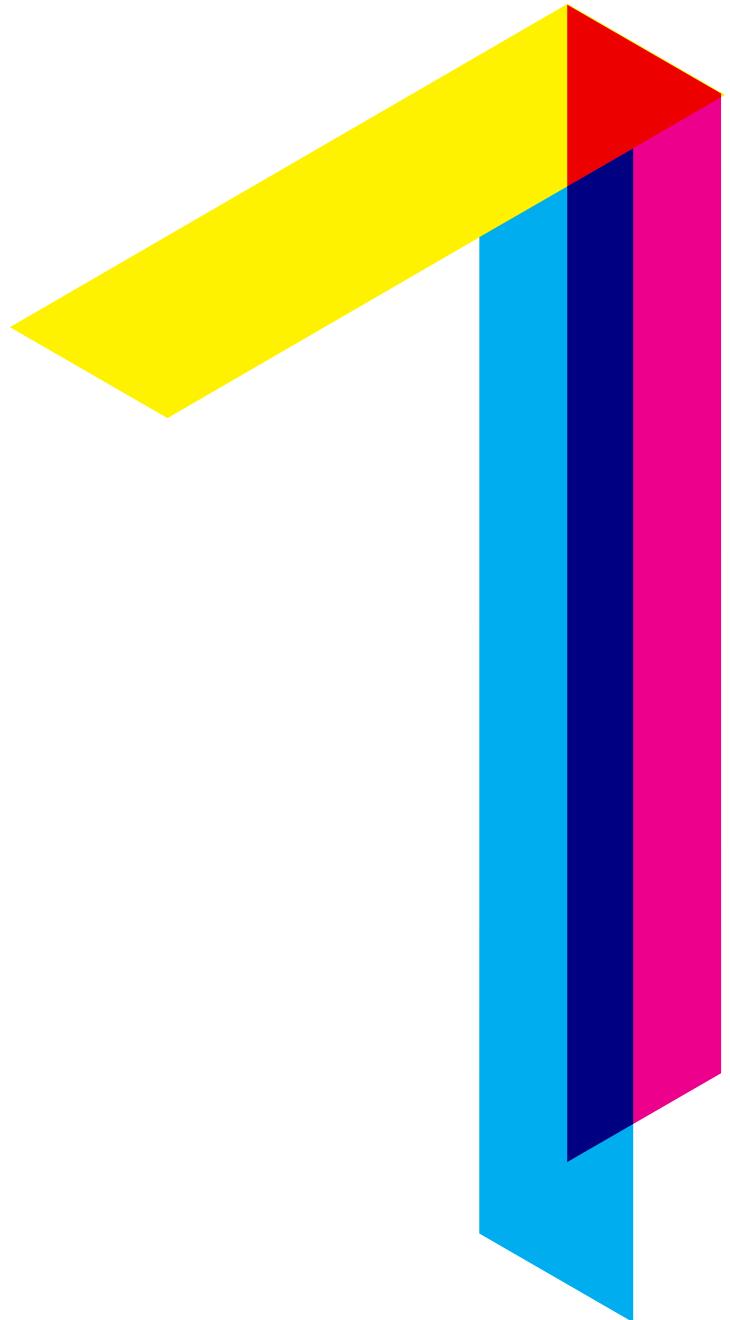
Wi-Fi zone in Europe, as well as its tourist monitoring platform. We will also examine how Las Palmas de Gran Canaria implemented the first push model for shopping tourism in the city, through its multilingual mobile technology; how Badajoz has implemented the first comprehensive tourist information system which captures and manages millions of structured and non-structured data in real time; and how the island of El Hierro has come to be considered the first *smart island* in the world.

Being an initiative which is based on public-private cooperation, the protagonists of the public-private world could not be left out; therefore a wide range of collaborative articles written by companies and bodies which were linked, either directly or

indirectly, to the development of smart destinations, have been included in the book.

Lastly, once the basis of this new tourism model has been established, and with the launch of the first full projects, this initiative must be replicated across the Spanish territory by the public and private sectors, for which all necessary information on sources of finance to facilitate the redevelopment of destinations has been collected and offered by both the Ministry for Industry, Energy and Tourism, through the National Smart Cities Plan, Emprendetur and FOMIT, as well as the European Union, through ERDF funds.





Smart Destinations Report:
building the future

THE SPANISH TOURIST INDUSTRY IN THE 21ST CENTURY: FIGURES AND ECONOMIC IMPACT

The Spanish tourism sector produces:

11%
GDP

12%
Employment

2.2 million
workers

Importance and economic contribution of tourism in Spain

Spain has a tourism sector that is as important as it is strategic; it is a driving force of the economy and a generator of employment and wealth, in addition to being a mechanism for re-balancing the national balance sheet. In order to put the importance of the Spanish tourism industry in context, it should be pointed out that 11% of GDP and, in turn, 12% of jobs, are directly generated by tourism. In employment, tourist activity engages more than 2.2 million workers.

In recent years, tourism in Spain has evolved in a more positive way than the rest of the economy, demonstrating its crucial role as an economic driver and a primary

boost for recovery. Moreover, being a cross-disciplinary sector, it has a positive "snowball" effect on the other economic sectors, especially trade and the food industry.

The Spanish tourism industry has demonstrated its great strength, reflected in its adaptability to hostile environments and in its considerable resistance when faced with the crisis. In this sense, its challenge lies in consolidating and conserving Spain's traditional markets (the UK, Germany, France, Italy, etc.) and knowing how to take advantage of emerging markets, such as those tourists from Asia and South America.



Globally, the number of international tourists surpassed 1,135 million in 2014

We must continue diversifying markets and promoting the innovation and differentiation of the Spanish tourism sector in the face of our competitors. To do this, the adaptation and leverage of ICT plays a key role. In this regard, it's worth stressing initiatives such as smart destinations, spearheaded by Segittur.

Revenues from tourism on the 2014 balance of payments amounted to 49,068 million euros, which generated an approximate surplus of 35,402 million euros that year. This positive balance offset 165% of the deficit shown on the balance of trade, which was 21,444 million euros in 2014.

Furthermore, Spain occupies first place in terms of tourism competitiveness out of 141 analysed countries in the

bi-annual study *The Travel & Tourism Competitiveness Report 2015*, produced by the World Economic Forum. This leading position has been achieved thanks to its great cultural and artistic heritage, its magnificent transport and infrastructure systems and its continued "adaptation to tourists' digital consumer habits", given that travellers select, plan and review their journeys online through smartphones and applications (apps). Spain has scaled the rankings in this global classification, given that it occupied fourth position in the previous year's edition (2013), and eighth position in 2011.

International tourist demand

Spain continues to take advantage of the flow of international tourists. Globally, the number of international tourists surpassed 1,000 million in 2012, reaching 1,135 million in 2014 (+4.4%). The projections of the World Tourism Organisation (WTO) predict 1,400 million in 2020 and 1,800 million in 2030, with a global growth average of 3.3%.

Spain currently occupies third position on the global rankings for arrivals, behind only France and the United States. It holds second place for tourism revenues and has sufficient capacity at its disposal to be able to absorb future rises in international tourist demand and retain its spot at the top of global tourism.

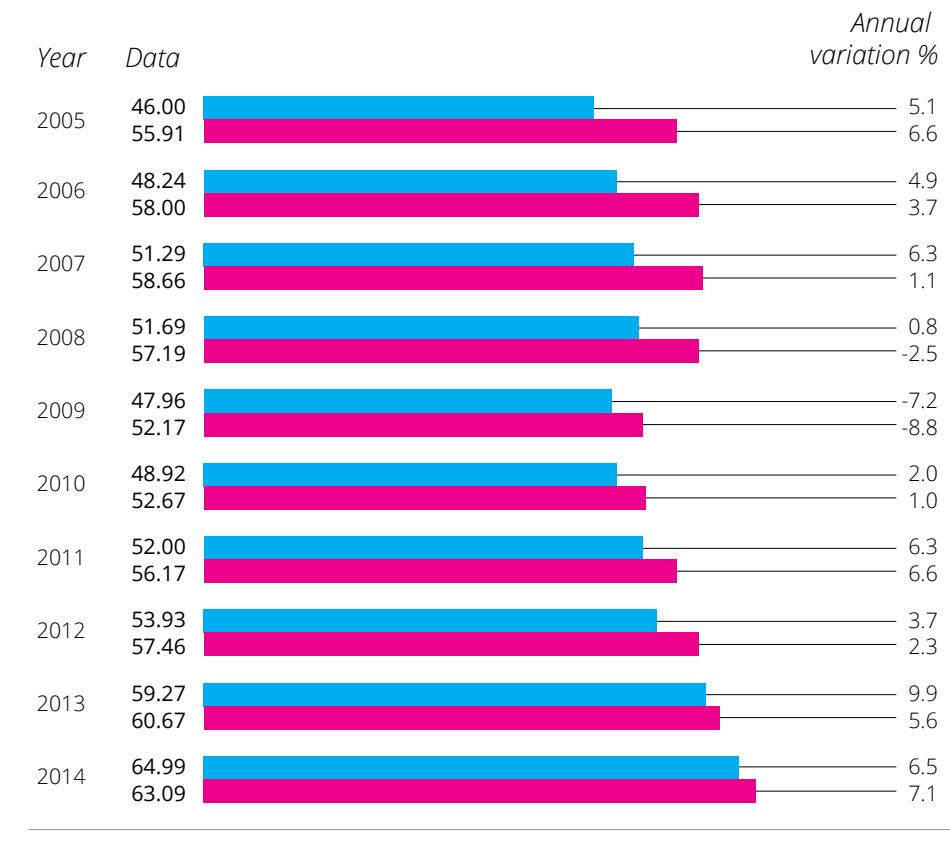
In the last tourist year, 2014, inbound tourism maintained the positive trend from the preceding years, reaching a new historical maximum of 65 million international tourists, a 7.1% increase on the annual rate. In absolute terms, this translates into 4.1 million additional arrivals. Conversely, tourist spending by these tourists is also an improvement on the figures achieved in the previous year (+6.5%), reaching the maximum value (63,094 M€) in the Tourist Expenditure Survey (Egatur).

In this regard, Spain is growing above the global average, which, according to the WTO, sits at 5% annual growth.

In addition, Spain is the third place destination for business tourism globally by number of international meetings held, with Madrid and Barcelona among the five top cities, according to the ICCA (International Congress and Convention Association). When the number of participants is taken into consideration, Spain climbs a position, with Barcelona and Madrid occupying second and third place, respectively, in the city rankings.

Tourism, in the last 65 years, has been front and centre of the Spanish economy and society; from 700,000 foreign visitors in 1950, to 107.6 million in 2014 - of which more than 60% are tourists, i.e. individuals who spend more than 24 hours in Spain.

Foreign tourist trend and tourist spend



 Tourists (millions) Total spend (billions of €)

Source: prepared by the authors using Frontur and Egatur (Turespaña) data.



According to the HOS, more than 104 million overnight stays were recorded in Spain in 2014.

International tourist demand is characterised by **not purchasing package holidays** when organising the journey (70%), a pattern which has been on the increase in the past year, and which also happened in 2013, after it had risen transiently in previous years as a result of the Arab Spring and the transfer of tourists coming through tour operators.

Airports are the gateway for the majority, and are where the greatest proportion of the rise in foreign tourists is concentrated this year (3.1 million additional tourists). Roads haven't been left behind and present an increase of 10%.

When it comes to the type of accommodation, hotels are the most in demand, accounting for 63% of arrivals; although in 2014 it was

non-hotel accommodation which recorded the greatest volume of tourists, in particular rented properties (with more than a million additional tourists in comparison to 2013).

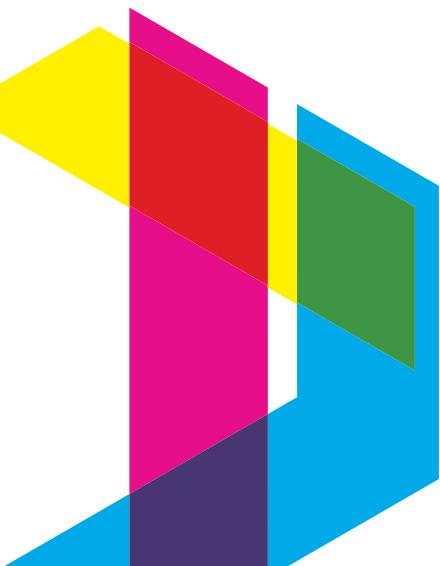
In 2014, traditional source markets (the UK, France and Germany), with 55% of arrivals, were the driving forces behind the growth in inbound tourism in Spain. The role of the French market stands out, contributing almost 1.1 million tourists to the annual increase. Likewise, all of the main autonomous regions have improved upon their arrival statistics compared with the previous year. Catalonia was the most favoured, coming out on top with almost 1.2 million additional tourists.

National tourist demand

In turn, national tourism also plays an important role, by contributing to the de-seasonalisation of the tourist demand, given that, of the 150 million journeys undertaken by Spanish residents, half of them are trips taken on normal or long weekends.

Residents' journeys tend to be characterised by the use of non-hotel accommodation (in 80% of cases) and the main mode of transport is by car. Nonetheless, national hotel demand, according to the Hotel Occupancy Survey (HOS), assumes that there were more than 104 million overnight stays in 2014.

The preferred destination for residents is Spain - only 8% chose to travel abroad. Moreover, the importance of day trips - journeys with no overnight stay - should be highlighted. These exceeded 300 million annually, according to data from Familitur, and boosted many rural areas.



Touristic supply

The tourism industry in Spain has important assets which favour international competitiveness in the tourism arena, and which provide an important basis for the development of the tourism sector, along with other industries which benefit from it.

From the perspective of supply, it is a sector characterised by a corporate structure of small and medium sized businesses - in many cases micro-businesses. It comprises more than 450,000 companies (according to the NIS), of which: 62% belong to the hotel trade; 18% to the transport industry; 17.5% to other tourist activities (recreational, entertainment, museums, car hire, etc.); with the remaining 2.5% belonging to travel agencies. Sales volume for the sector as a whole hovers around the 100,000 million euro mark.

Spain has a wide and varied supply in terms of tourism and, additionally, can rely upon modern infrastructure and excellent connectivity: a large airport network (46), cruise ports

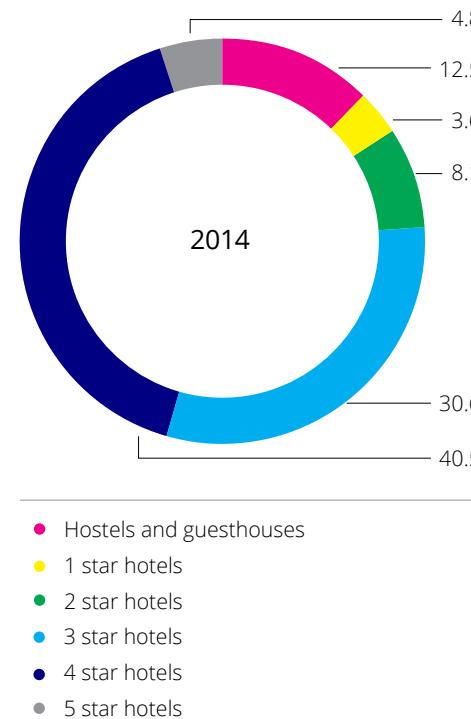
and marinas, motorways, and the second most extensive high speed rail network in the world (second only to China).

The richness of its natural heritage, together with its excellent climate, are other pillars upon which the industry is built. Spain has 15 national parks and 128 nature parks, as well as 7800 kilometres of coastline which have 573 blue flag beaches. It is the third country in the world to have locations designated UNESCO World Heritage Sites, and the first in Europe for protected natural areas.

Furthermore, Spain has more than 19,000 hotel establishments, offering almost two million rooms. There is also a wide, and growing, supply from non-hotel accommodation sources (camp sites, apartments, rural houses), which rose in 2014 to 183,000 establishments and 1.6 million rooms, and which complement offerings from hotels.

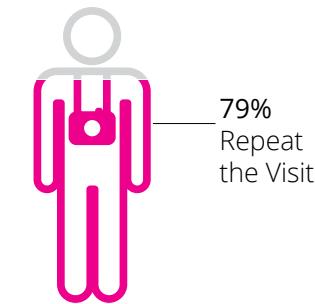
Hotel rooms by category in Spain

Data as a percentage of 100%

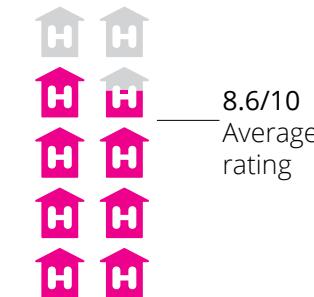


Source: prepared by the authors with data taken from the hotel directory of the Instituto Nacional de Estadística (INE).

Tourists who visit Spain are characterised by a high level of loyalty to the destination.



and by their high level of satisfaction - the average score issued for all stays is 8.6 points out of 10.



The role of technologies and tourists in the 21st century

Economic activities which are leading the way in e-commerce worldwide are those found in the tourism sector: accommodation, airlines and travel agencies. It's a fact that ICT, principally universal access to the internet, has resulted in significant disruptive innovation in the relationship between supply and demand.

Hence, adapting to the new digital economy is key if Spain is to retain, and even improve, its competitiveness on the tourism front. Therefore, both the public sector (destination managers), as well as the private (all types of business) have to be prepared to cover the requirements and needs of the new digital tourist or traveller

(very informed, multi-channel and extremely demanding) if they wish to continue to be a reference case at an international level. Democratisation of technology has been the cause behind the industry's shift away from being controlled by supply (companies) to being dominated by demand (civil society).

98.3% of Spanish companies with ten or more employees have an internet connection, and seven out of ten have a website, something which is fundamental in a global company in which businesses must be only a click away from potential clients anywhere in the world.



In this sense, the digital sphere allows us to promote destinations, products and services, as well as, at the same time, getting to know our client and adapting to him as never before. It allows us to offer more personalised, higher quality products and services (segmentation and hyper-segmentation of the market, reduction in costs, greater efficiency and competitiveness...). From this point of view, ICT has opened up a new horizon in the tourism industry which poses challenges and opportunities simultaneously, and which requires great effort to adapt on the part of both the companies providing these services as well as the tourist authorities.

In 2012, which was the year the National Integral Tourism Plan (NITP) was presented, the number of tourists arriving in Spain began to climb back to the pre-2008 and 2009 levels, after the economic crisis. However, the profile of the tourists visiting and the way they planned their trips had changed substantially. Travellers were now more independent (the purchase of package holidays had fallen gradually from 50% in 2000 to less than 20% in 2012) and better informed (thanks to the Internet: websites, social networks, etc.). They organised their trip themselves and required a range of digital services at the destination, just the same as they did at home

(connectivity, use of proximity based apps, social networks, etc.).

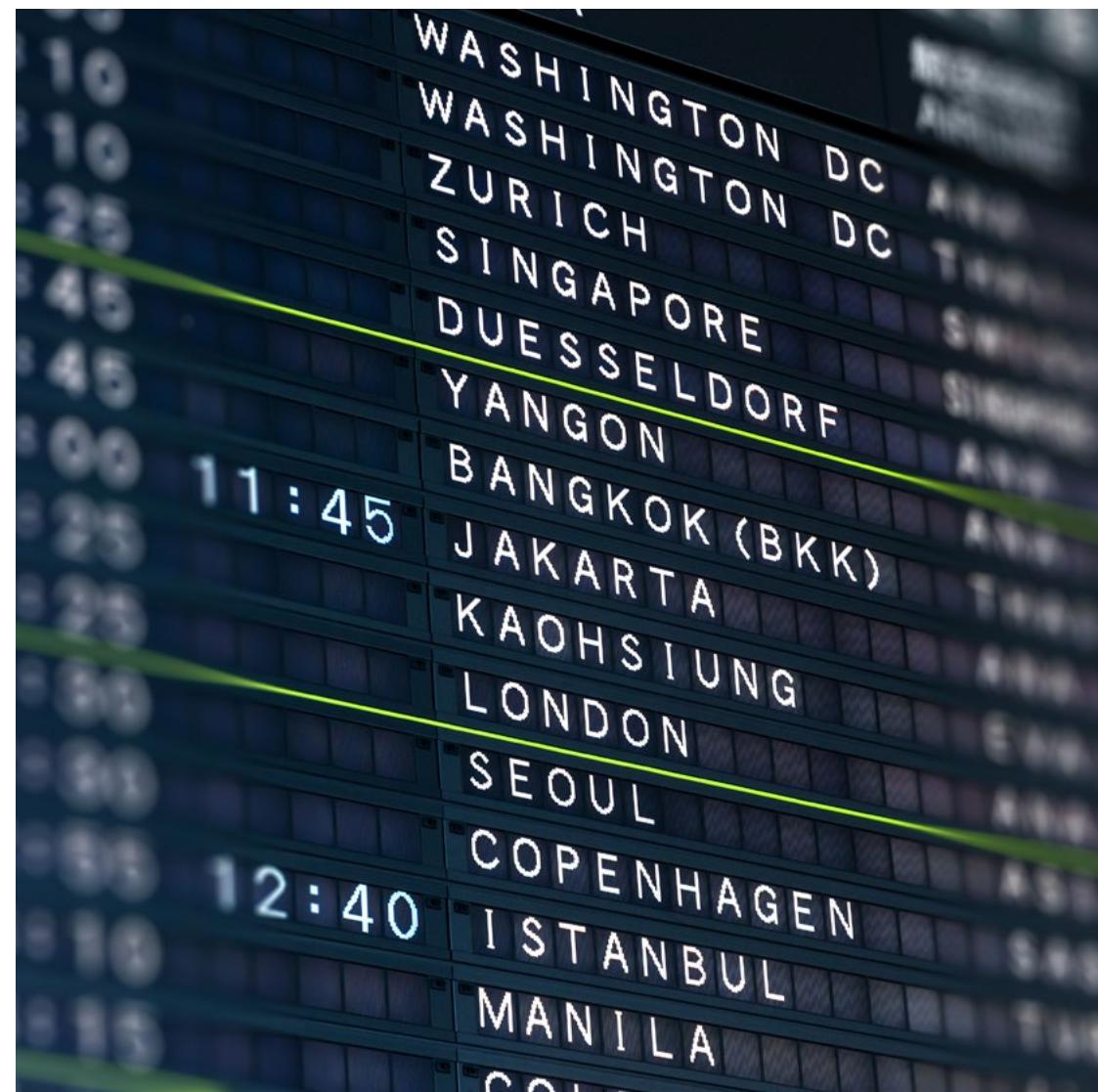
Furthermore, the way they accessed the internet had changed. Desktop computers and laptops had been left behind in favour of mobile devices (smartphones and tablets), the latter being used not only for communicating between individuals but also for managing information in real time, communication with objects, and even objects communicating with each other (known as the Internet of Things). This opened up an infinite number of opportunities to become more efficient in both public and private management.

In this new landscape, the tourist instantly has all the information he needs on products, services, itineraries, timetables, prices, availability, and more. At the same time, destinations which had previously been unknown began to emerge, with the accompanying revival of the tourist trade in areas which had historically been in less demand.

Professionals in the sector, aware of this new set-up, have faced the challenge through the medium of innovation in business models, creativity in supply and incorporation of technology into the promotion and management of their companies.

Only through this strategy will they be able to continue being competitive and achieve profitability, which will be of benefit to the positioning of the destinations.

In conclusion, the Spanish tourism industry, vital and strategic to the national economy since the middle of the last century, continues to occupy one of the top spots on a global level and, moreover, has great potential for development and growth. For this to happen, adapting to a scenario that is extremely technologically, economically and socially dynamic, and to the wishes and demands of the digital tourist or traveller, has been of fundamental importance.





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- World Economic Forum: <http://www.weforum.org/>



Smart Destinations Report:
building the future

SMART DESTINATIONS: KEY POINTS FOR COMPETITIVENESS

Advances in connectivity, the arrival of web 2.0 and the ever-increasing use of mobile devices and social networks has had a huge impact on tourism, making it one of the most profoundly changed sectors.



As we have already seen in the previous chapter, the information and knowledge society has impacted habits relating to social, cultural and economic activities greatly. And tourism cannot be separate from it. In fact, we mustn't forget that both adoption of the internet and e-commerce development were quicker in the tourism sector than in other economic sectors.

Latterly, advances in connectivity, as well as the arrival of web 2.0 during the first decade of the 21st century in the big cities and main tourist destinations, resulted in increased use of mobile devices (with their many associated

apps) and social networks (Facebook, Twitter, Foursquare, Google+...). These events produced a huge impact on tourism, which is one of the sectors which has experienced the most change.

We could say that a sea change in the consumer habits of travellers has occurred: in their expectations and interests, in the way they plan their trips, the way they search for and compare information, how they choose and book it, whether it's travel or just the destination, how they visit, and how they share their experiences.



As a result of this, the tourism industry has evolved and adapted to this new über-connected and interactive traveller profile and offers products, services and experiences which are ever more exhaustive, flexible and personalised. All of this would not be possible without the arrival of certain technologies, in particular, as we said, of the internet and mobile devices, which have driven the production of new business models for tourism and which handhold the visitor through the three phases of travel.

- Pre-trip (assisted inspiration): access to a huge range of perfectly structured information (text, images, audio, videos, infographics, maps...) on destinations, products

and services markedly enriches the choosing experience for tourists.

- During (smart mobility): the increase in connectivity in destinations and the rise in the use of mobility technology and applications makes the entire tourist experience much easier and more flexible. The traveller interacts continuously with product and services providers, as well as other connected tourists, and can make smarter on-the-ground decisions.
- Post-trip (shared satisfaction): the main challenge for companies and destinations is knowing where, how and who is talking about their products and services. There are

a number of different interactive communication apps, especially on social networks, which make it possible to get a handle on the level of satisfaction among tourists and put continuous improvement systems in place, as well as developing new loyalty schemes.

This new tourist set-up casts the visitor as the lynchpin of development and helps to drive smart systems geared towards improving integration and interaction with the destination. For this to happen, it's vital to create elements which facilitate interpretation of the environment, speed up decision making and improve the quality of holiday and leisure experiences.

THE CYCLE OF A TOURIST JOURNEY



Before



Inspiration



Decision



During



Experiences



After



Memory



Satisfaction



1. History of smart destinations from the tourist point of view

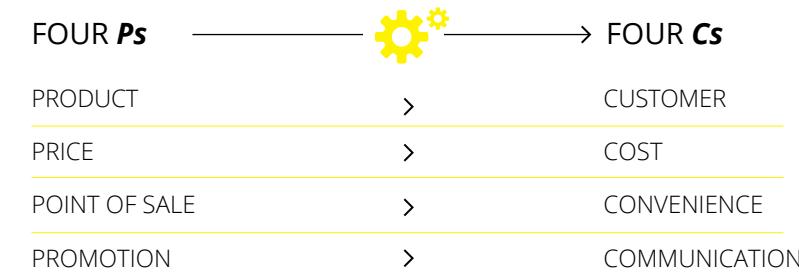
The times we live in are, as is the case for any living reality, the product of evolution; an evolution which has indeed accelerated from the dawn of the 21st century to the roots of the emergence of web 2.0, with the increase in connectivity in cities and new computing and data storage tools. These have made interactivity between all social players possible and have driven the shared and contributory knowledge economy forward.

Until a few years ago, a large part of tourism was in the hands of the big tour operators and the agencies that fed into them, managing supply. They chose the destinations, routes,

transport modes, booking methods, information on products and services - all drawn from a series of variables in which the final user hardly got to participate (apart from a few statistics tools, the majority of which were short range and of limited efficacy, and sought to ascertain the level of customer satisfaction for a particular "strategic" product or service).

They were times during which the focus of attention was centred on the product, the first and fundamental *P* in the four *Ps* which make up the key concept behind the *marketing mix* - product, price, point of sale (or *place*) and promotion. A formula which, incidentally,

EVOLUTION IN THE *MARKETING MIX* STRATEGY



was perfectly valid for the time and which tourism shared with practically all other sectors of the market.

Yet there was no internet, no web 2.0 and no e-commerce, which have evolved to update the *marketing mix* strategy, and make it much more contributory. The four *Ps* have been replaced by the four *Cs*: "product" has been replaced by "customer" (which has meant adaptation through a variety of offers and approaches which would have been unimaginable just over a decade ago). "Price" has been substituted for "cost" (as can be seen with the emergence of "low cost" companies, group buying

or contributory initiatives). "Place" has become "convenience" (close connection and interaction between companies and customers allows the former to provide each potential customer the most appropriate offers at exactly the right time). And finally "promotion" has made way for communication (which is all about being transparent, so that the customer can detect dependability, professionalism, honesty and consistency in the multi-channel offers they receive. Ultimately, communication needs to be employed to convey values and emotions which illicit loyalty in customers).

All this was in order to adapt to a new tourist profile, one which is much better informed and, as a result, more demanding; a tourist who has started to look for more personalised and complex products and services, and has shown themselves to be more open when it comes to other options for travel - based on a greater degree of autonomy and on the new offers borne out of the collaborative models that have emerged through digital reality (specialised search engines, new modes of transport and shared accommodation, comparison tools for prices and services, joint purchasing,

etc.). But up until the 21st century, almost everything was managed in an analogue, unidirectional form: always from the tour operators to the customer.

In those years the first authorised guide to the tourism phenomenon in our country came out, the *White Paper on Spanish tourism*, published by the Secretary General for Tourism in 1990. From this report, which put forward the main strengths and opportunities for tourism in Spain, as well as weaknesses and threats, two fundamental initiatives emerged. The

first was the Master Plan for Spanish Tourism Competitiveness (Futures I and II plan), which represented the first step in defining the tourism strategy which would make the development of a more competitive and profitable sector possible. The second was the Integral Spanish Tourism Quality Plan, which sought to converge with the European Union programmes and initiatives and began to take environmental sustainability criteria into consideration; a move which was crucial for all of those who came after and, in particular, for smart destinations.

These criteria, however, were strengthened following the United Nations Conference on Environment and Development, which took place in 1992 and is known as the Rio Summit or the Earth Summit. At the root of its conclusions, it puts the preservation of the environment at the forefront of any development initiative. Some relevant actions which came from this summit were the implementation of *Agenda 21* at a local level, from 1996 onwards, and the launch of Green City (now known as Sustainable Tourist City), from 1998.



By 2050 70%
of the global
population will be
concentrated in
cities, i.e. some
6,300 million
people.

1.1 History from an urban perspective

Smart Places (1998)

The consideration of urban development around tourist destinations was a key factor conditioning the evolution of the region, especially when it is estimated, according to recent reports from the UN, that in 2050 70% of the global population will be concentrated in cities. That translates into 6,300 million people, who will be distributed mainly in megalopolises and big cities of more than five million inhabitants.

With the aim of studying the evolution of cities' growth, in 1998 the University of Pennsylvania launched the study *Project Cities*, currently coordinated by the Fundación Metrópoli, which sought to track the urban experiences of twenty innovative cities. At the root of this project, the title *Smart Places* was bequeathed upon innovative cities which were able to find a balance between the issues of economic competitiveness, social cohesion



and development, and cultural and environmental sustainability - and are the closest test case to the subsequent *smart cities*.

Smart cities, seeds of smart destinations

Smart cities, also known as *efficient cities* or *e-cities*, are understood as cities with fully defined limits from a geographical and political-administrative point of view. They assign primacy to ICT with the aim of designing innovative urban spaces which facilitate sustainable development and improve the quality of life of their residents.

Even though, as we can see, the concept is powerful and extremely attractive, it doesn't stop it being vague and open to many approaches, which is why it must be made operational and measurable. Therefore, in recent years efforts have been made to determine and collect criteria which serve to guide the design of these types of cities and which furthermore allow a level of evaluation of just how smart these smart cities are. In this sense, it's worth pointing out the study promoted in 2011 by the International Data Corporation (IDC) with the purpose of creating the Index of Smart Cities, based on the level of "smartness" of Spanish cities with a population greater than 150,000.

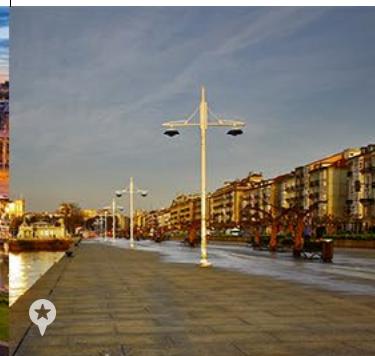
MÁLAGA



BARCELONA



SANTANDER



MADRID



SAN SEBASTIÁN



This index is developed from two strategic areas: the **smartness dimensions**, which analyse the policies and projects which are undertaken pertaining to the great metropolitan challenges (*smartness degree* of their governments, urban and energetic infrastructures, their mobility, their environment and their services), and so-called **enabling forces**, which can either facilitate or obstruct the move towards the status of smart city (the citizens, the economy and the ICT). In line with the results from this report, rankings were produced, and the

following were the cities that came out on top:

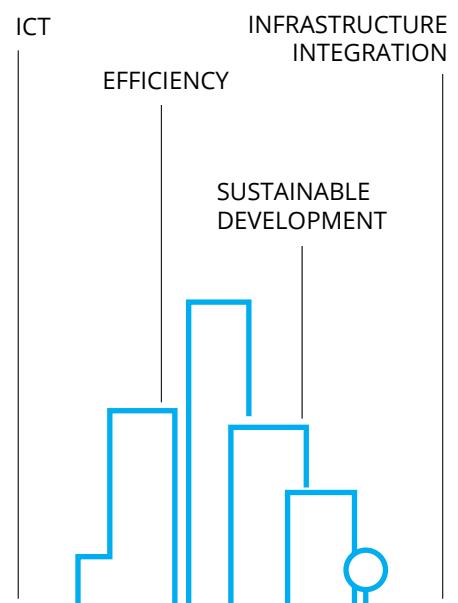
- Málaga, for eco-efficiency criteria;
- Barcelona, for mobility efficiency;
- Santander, for mobility and environmental management;
- Madrid, for its emergency services; and
- San Sebastián, for the “smartness” of its services and its mobility system.

This line of studies, which are produced with different approaches, although closely related in the whole of the Western world, reveal the ever-increasing importance that is given to designs coming from a strategy built on knowledge bases.

Considering this thread of argument and focusing again on the aim of the study, the tourism sector, the logical evolution of *smart cities* towards *smart destinations* is demonstrated.

1.2. Development vectors of smart cities

Following the consensual definition of *smart city* in the Comité Técnico de Normalización AEN/CTN 178 de Ciudades Inteligentes de la Asociación Española de Normalización y Certificación, AENOR, the definition of the four fundamental vectors are:



«Smart city is the holistic view of a city that employs ICT for the improvement of the quality of life and accessibility of its inhabitants, and ensures constant improvement in sustainable economic, social and environmental development. A smart city allows inhabitants to interact with it in a multi-disciplinary fashion and is adapted, in real time and in a quality and cost efficient manner, to their needs. It offers open data, solutions and services geared towards residents as people, to deal with the effects of growing cities, in public and private domains, through innovative integration of infrastructure with smart management systems.

Definition of smart city from the Grupo Técnico de Normalización 178 de Aenor (AEN/CTN 178/SC2/GT1 N 003)



1. ICT

This refers to a cross-disciplinary element, without which all others would be extremely limited; not only does it make smart management of services, infrastructure and the city's assets possible, but it is one of the cornerstones of innovation.

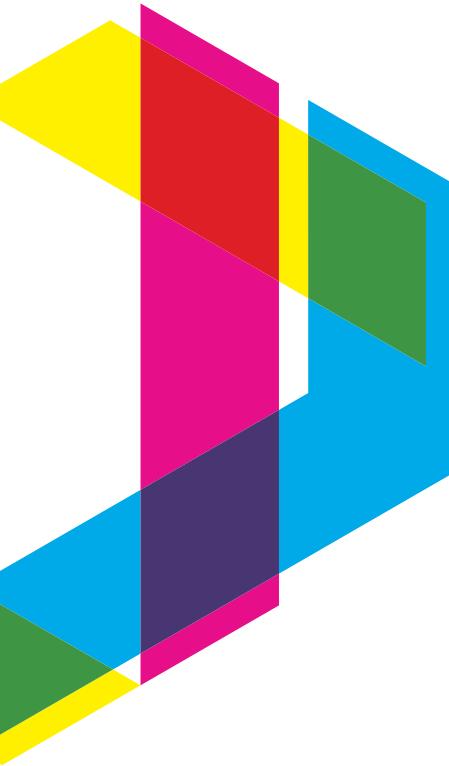
ICT is, in all probability, the central nervous system of the *smart city* organism. Always, of course, with a guiding spirit that is sustainable, social and inclusive, but we mustn't forget that ICT isn't an end in itself, but rather a means for promoting good governance. For this to occur in the first place, political and administrative authorities need to define clear aims in relation to their use, aims which guide the different stakeholders within the Government.

Among the ICT tools most frequently used in smart cities, such as those referred to in *Libro Blanco Smart Cities*

(Smart Cities White Paper) by Enerlis, Ernst and Young, Ferrovial and Madrid Network (Madrid, 2012), we can mention the following:

- Multi-access portals that incorporate internet connection, television, mobile internet, telephone channel, etc.
- Municipal wireless points (Wi-Fi connection).
- Sensors distributed throughout the city which compile information about people and vehicle traffic, parking, environmental values, waste generated, energy consumption, etc.
- Powerful data handling systems for managing all the information collected from urban sensors as well as from residents and their interaction with the city.

The development of *smart cities* in the technology sphere therefore entails the combination of powerful hardware and software systems; sensorics which allow collection of crucial information for the smart functioning of the city's basic services, including its estate and cultural networks; and powerful data storage and management systems. This is all of course in addition to having connectivity which allows and guarantees all necessary communication and interaction between the various agents.



2. Efficiency

It is significant that smart cities are also known as *efficient cities*, i.e. that *smart* is also identified with *efficiency*.

Although, often, efficiency is associated with energy, and energy efficiency, in *smart cities* it is extended to all the services and features which support them, to all the centrepieces concerned with the management of cities: mobility, urbanism, services, education, economy, healthcare, the environment...and of course, controllability.

To achieve this, public administrations must align themselves with companies and residents and, through the use of ICT, boost electronic administration (which helps with paperwork, like paying taxes online, access to municipal provisions, civil service

employment opportunities...), the digitisation of information, as well as connectivity to the area and integration and interoperability of digital services.

3. Sustainable development

Efficient resource management of a smart city must satisfy the economic, working, social and aesthetic needs of its residents, in addition to respecting cultural integrity, the environment and the biological diversity of the region. Only then are we able to discuss necessary sustainable development ('which can be maintained long term without exhausting resources or causing serious damage to the environment', *Diccionario de la lengua española*, RAE, 23.^a ed.) of a smart city.

4. Infrastructure integration

The integration of the critical infrastructures of a city, such as power, telecommunications, water supply, transport, waste management, security or healthcare is fundamental for achieving better controllability and, in the end, higher citizen satisfaction.

Thanks to connectivity, efficient ICT use, sensorisation and data storage and management tools, infrastructure managers receive real time usage information which they can sub-divide by zone, hours, seasonality, user profile... That way, these managers can be informed immediately of any incidents which may affect the city's basic services and react in advance and in a precise fashion, hence its importance to a city's vision.

1.3. Examples of smart cities around the world

Considering the degree of implementation of the aforementioned vectors, and through analysis of ten strategic dimensions fed by over sixty indicators, the research platform IESE Cities in Motion Strategies, belonging to IESE Business School, has produced, for the second consecutive year, the annual rating (2015) of the smartest / most efficient cities in the world. This ranking is based on the study of 148 cities on five continents which has been published by the knowledge portal IESE Insights.

The ten dimensions which have been analysed to assess the degree of the cities' smartness are as follows:



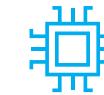
- Governance.**
Closely related to the level of citizen participation and collaboration.



- Public management.**
Alludes to efficiency and the Administration's quest for innovation.



- Urban planning.**
A sustainable, accessible and scalable urban design.



- Technology.**
Which influences the quality and sustainability of employment and offer competitive advantages.



- Environment.**
Environmental sustainability, alternative energies and efficient water management.



- International exposure.**
Improving the city's brand through strategic tourism plans, foreign investment attraction and representation abroad.



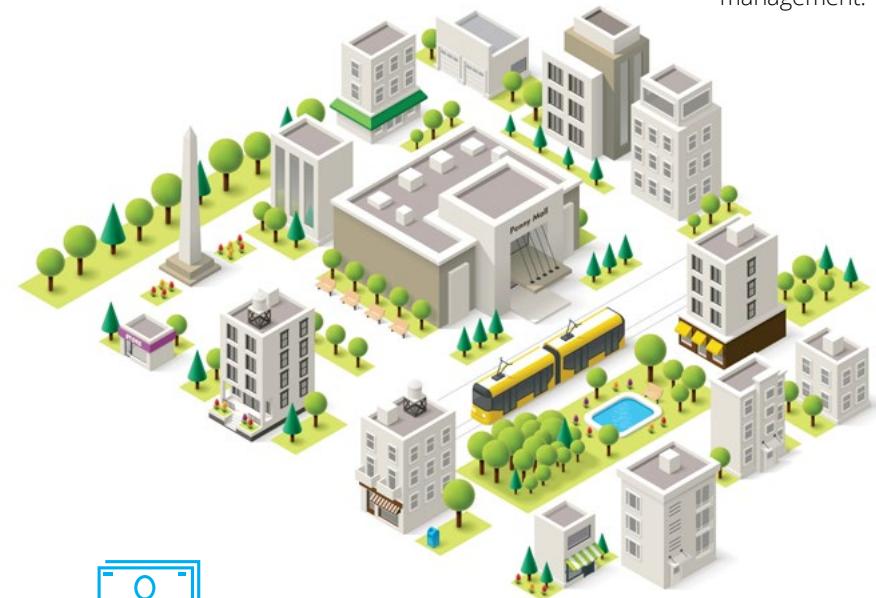
- Social cohesion.**
Inequality and immigration, care for the elderly, efficacy of the healthcare system and citizen safety.



- Mobility and transport.**
Good connectivity and easy access to public transport services.



- Human capital.**
Attract and retain talent, create plans for improving education and driving creativity and research.



- Economy.**
Promotion of the local economy, strategic industrial projects and innovation.

Among the cities scoring the most points in these criteria, London and New York stand out (in first and second place, respectively) and Barcelona and Madrid, which feature in the top fifty in the world.



2. What are smart destinations?

Given Spain's position at the top of world tourist destinations, occupying third position in terms of number of tourists and second by volume of arrivals, if we wish to continue being competitive in a market which grows more global and complex by the day we must invest in new tourism management formulae which respond to the changes and challenges of our time. Examples of this are the globalisation of the tourism phenomenon, the arrival of new competing markets (the economic and social improvement of many undeveloped countries, now known as *emerging* countries,

has elevated their "*country brand*" and their attractiveness as a tourist destination), the changes in tourists' habits and interests (which are now the centre of the value chain), the inversion of the demographic pyramid (the baby boomers from our main source markets - the UK, Germany, France and Italy - have just reached retirement age), the challenges of seasonality, the growing importance of sustainability in tourism development and, above all, the shift towards a society with an ever increasing focus on information technologies.



Watch video /
Smart destinations

Fortunately, Spain as a destination enjoys high levels of attention, recognition and loyalty from the international tourist market, a treasured, and well-deserved, standing following more than fifty years of hard work, and thanks to infrastructure and services which are more than remarkable. Our country is therefore in a position to lead a paradigm shift in tourism and undertake actions geared towards the creation of new business opportunities which allow the differentiation of the product, encouraging diversification in terms of source markets and consolidating the successes achieved in mature markets.

In this context, and with the invaluable reference of the experiences and progress of the *smart cities*, the need has arisen for creating and implementing a new

notion in the tourism realm: the *smart destination*. Therefore, the Secretary of State for Tourism, on the motion of SEGITTUR, include this initiative in their strategic plan for the legislature and assign the responsibility for leading its conceptual design as well as, and this is perhaps the most significant, its implementation through pilot projects.

The project, which is of crucial importance for the future positioning of Spain as a destination, was driven by the Ministry for Industry, Energy and Tourism, and was officially put forward in the [National Integral Tourism Plan \(NITP\) 2012/2015](#), which was approved by the Cabinet in June 2012. In this plan, among other points, the importance of giving priority to mature destinations in the strategy is recognised.

«[...] Many destinations which had starring roles in the growth of our tourism industry are facing a systemic problem. Certain mature destinations have entered a vicious cycle of increasing competition on price with destinations with smaller cost infrastructures. This prevents them from maintaining sales prices in real terms, which erodes operating margins, discourages reinvestment and causes a reduction in perceived quality standards, which in turn may reduce the potential traveller's willingness to buy and puts even greater pressure on prices.».

But, what is a *smart destination*? It concerns, as outlined by Antonio López de Ávila and Susana García, president and Director of Projects from Segittur, respectively, in their article «[Destinos Turísticos Inteligentes](#)», published by

Harvard Deusto Business Review in 2013 (n.º 224), «[...] an innovative space consolidated on the basis of land and cutting edge technology infrastructure. A commitment to the environmental, cultural and socio-economic issues of its habitat, equipped with an intelligence system which can capture information in a procedural fashion, analyses and grasps events in real time, with the aim of facilitating the visitor's interaction with the surroundings, and decision making for the destination managers, increasing its efficiency and substantially improving the quality of tourist experiences».

As we can see, in this first definition of the microcosms that comprise a smart destination, the importance of innovation, technologies and sustainability prevail - all of them at the service of the visitor. What it therefore

lacks is attention to two aspects which are considered fundamental in the governance of any tourist region: residents and accessibility. Therefore, Segittur resolved to develop a new and more detailed definition of *smart destination*, which was approved and included by the Subcomité 5 de Destinos Turísticos Inteligentes del Comité Técnico de Normalización AEN/CTN 178 de Ciudades Inteligentes de Aenor in October 2013.



[A smart destination is] «an innovative space, accessible for all, established on a cutting edge technology infrastructure which guarantees sustainable development of the land, facilitates the interaction and integration of the visitor with the surroundings and increases the quality of their experience in the destination, as well as the quality of life of residents».

In this new definition from Segittur, by consensus with the Subcomité de Normalización de Aenor, it is already taken into account that both the pillar of accessibility and the residents of these destinations both benefit from smart governance. Therefore, we witness a new model of integral tourism that is competitive, creative, sustainable, accessible and centred on people.

2.1. Differences between smart cities and smart destinations

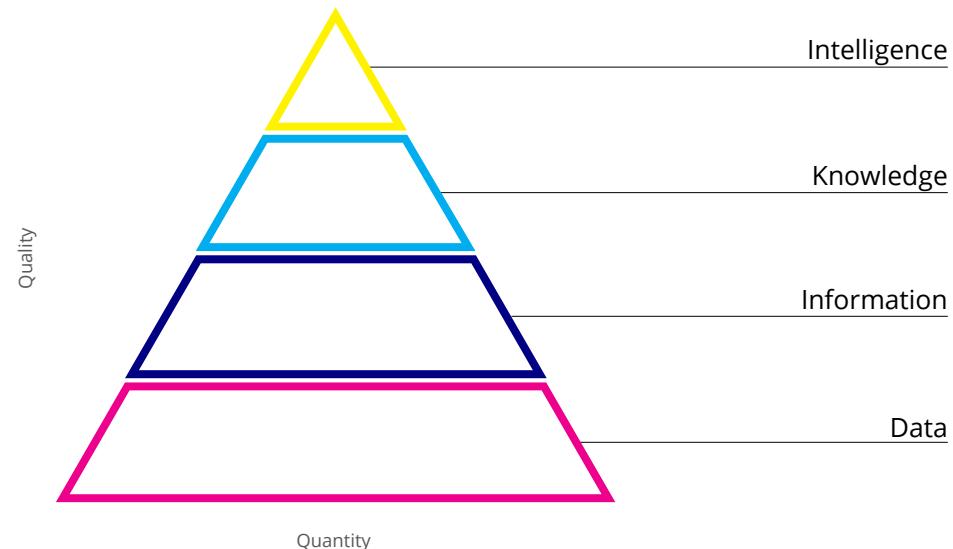
As is picked up in NITP 2012/2015, smart destinations have undeniable similarities with smart cities. Nevertheless, there are important differences. Let's look at a few of these:

- Geographical limits of smart destinations may coincide with those of the municipality or network of cities (examples: Costa del Sol, Camino de Santiago, Ruta de la Plata, etc.).
- In the smart destination, the target audience is the tourist, not so much the resident (although the latter must also benefit from the transformation of their surroundings to a smart destination). For this reason, certain issues need to be taken into consideration, such as multilingualism, cultural idiosyncrasies, culinary uses or the seasonality of the visiting population.
- The smart destination is driven, principally, by the tourism sector, public as well as private, and it is advisable that its governance is shared through the formation of inclusive entities such as boards, trusts, foundations, etc., in which all stakeholders involved in the region are represented.
- The interaction goes further than the stay itself in the city: in smart destinations it begins before the visitor has arrived at the destination, it continues during their stay and extends beyond their departure.
- Smart destinations are bound to the increase in their competitiveness and to the improvement of the tourist experience.
- Smart cities are geared towards improving their governability and to increasing the quality of life of the residents, while smart destinations are oriented more to achieving an attractive intrinsic value for visitors (compatible, always with the interests and well being of its residents, of course).

It's quite clear, therefore, that although there are important similarities, it's actually about two perfectly distinct realities, which, for that reason, must be treated differently.

Before analysing the fundamental facets which make up the development of smart destinations and inasmuch as the intelligence

applies to tourism is playing a fundamental role in the development of these destinations, it is interesting to digress briefly to discuss the different levels that exist in the *knowledge pyramid*. Although there are different variations depending on which author you consult, in general, the structure of the knowledge pyramid is as follows:



In the widest section of the pyramid we have the *data*, i.e. a symbolic representation (numerical, alphabetised, algorithmic, spatial, etc.) of an attribute or a quantitative or qualitative variable. The data describe empirical facts or events.

In the upper level we have the *information*, i.e. the organisation of the data that have already been processed and which constitute the message to be interpreted by the persons in receipt of it. Normally, we see them grouped in different formats; they can be Excel spreadsheets, CSV files, PDFs, etc. Next, we find the *knowledge* element, this is understood as the information put into a context which allows for interpretation of specific

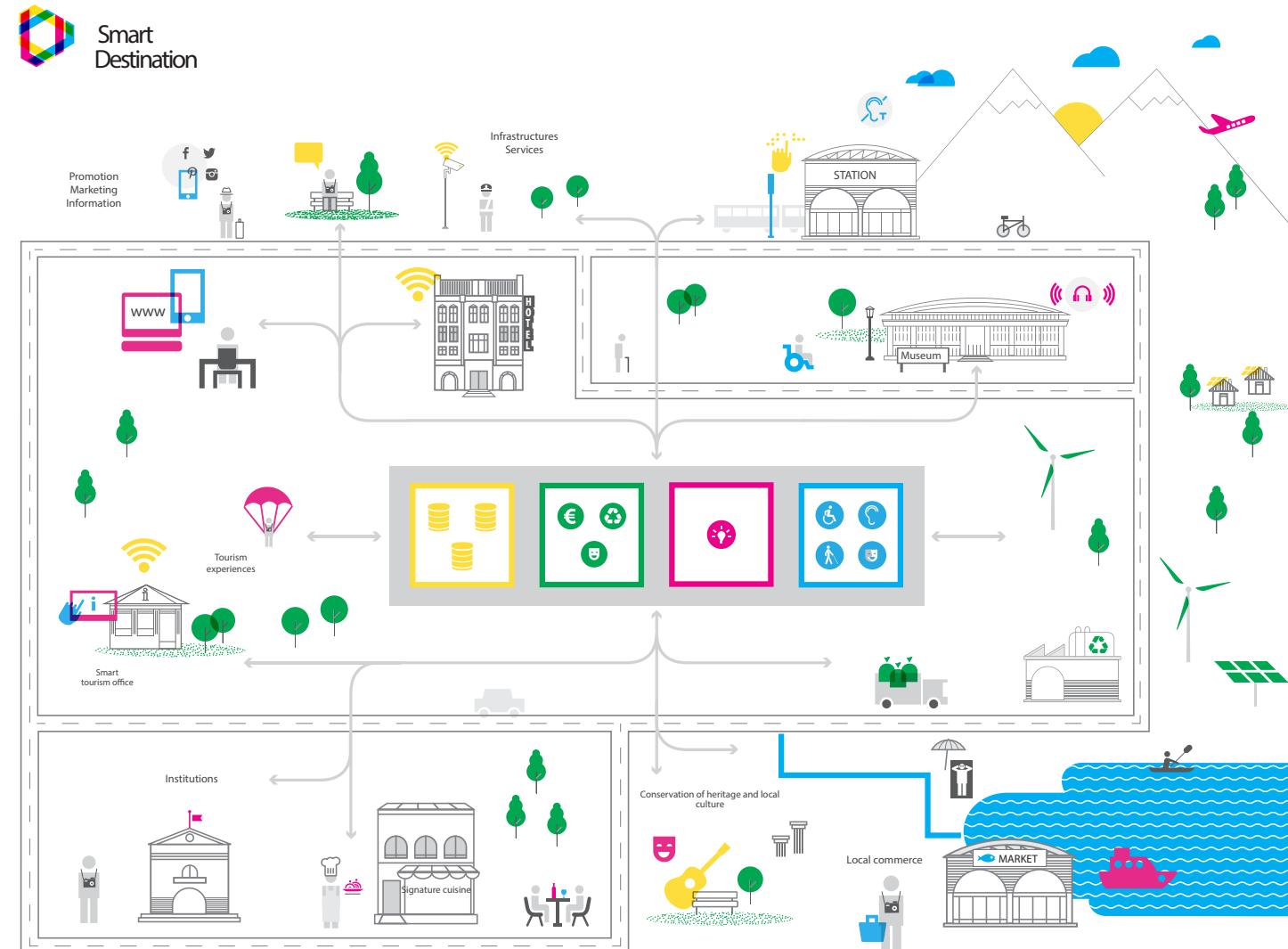
information. Finally, we have *intelligence*, which is the knowledge associated for decision making through structured processes. This is the critical point for smart destinations, given that they must possess the necessary tools for the generation and exploitation of intelligence and in this way must provide a unique experience for the visitor. In turn, all the knowledge that is created in the process must be shared as necessary with the private sector through open data tools, in a manner in which companies can incorporate this information in their value chain and, as well as winning in terms of their own competitive position, this knowledge has the positive impact of improving the destination and making it more economically sustainable.



2.2. Structure of smart destinations: fundamental axes

The aim of the Smart Destinations project is to improve Spain's position as an international tourist destination. In order for this to occur, it is necessary to seek new mechanisms which drive innovation in the earmarked locations, roll out and develop ICT which improves its accessibility and sustainability, in a manner in which distinct and highly competitive services can be created.

We will then see, one by one, the four foundations upon which smart destinations sit.



Infographic on smart destinations.

1. Technology

If, as we mentioned previously, governance is the soul of smart destinations, then technology is the central nervous system. This has been introduced into all links of the tourist value chain and has become a key factor, just as much as competitiveness, sustainability and smart governance.

Technology is not considered an end in itself, but rather a means for achieving the goals set, which in this new landscape can vary wildly and morph at great speeds. On the one hand, we talk of technology as a basic infrastructure of communication and flow of information (hardware), and on the other, of the technology needed for the management of destinations and companies (software). Both developments provide benefits not just for tourists, but also for the residents themselves.

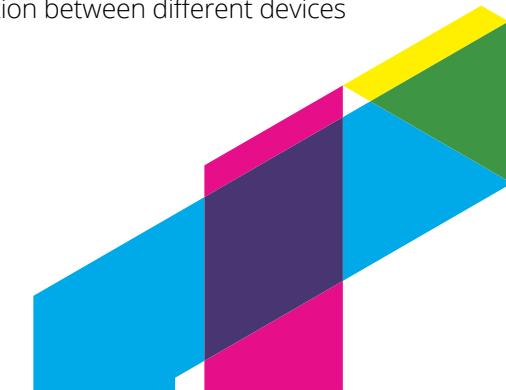
«TOURISM GOVERNANCE IS A PRACTICE OF A GOVERNMENT WHICH IS SUBJECT TO MEASUREMENT, GEARED TOWARDS MANAGING THE TOURISM SECTOR EFFICIENTLY WITHIN THE DIFFERENT LEVELS OF GOVERNMENT. IT UTILISES FORMS OF COORDINATION AND COLLABORATION BETWEEN PARTIES TO ACCOMPLISH SHARED GOALS THROUGH A NETWORK OF STAKEHOLDERS IN THE SECTOR, WITH THE AIM OF FINDING SOLUTIONS AND OPPORTUNITIES, BASED ON AGREEMENTS BUILT ON THE RECOGNITION OF INTERDEPENDENCY AND SHARED RESPONSIBILITY».

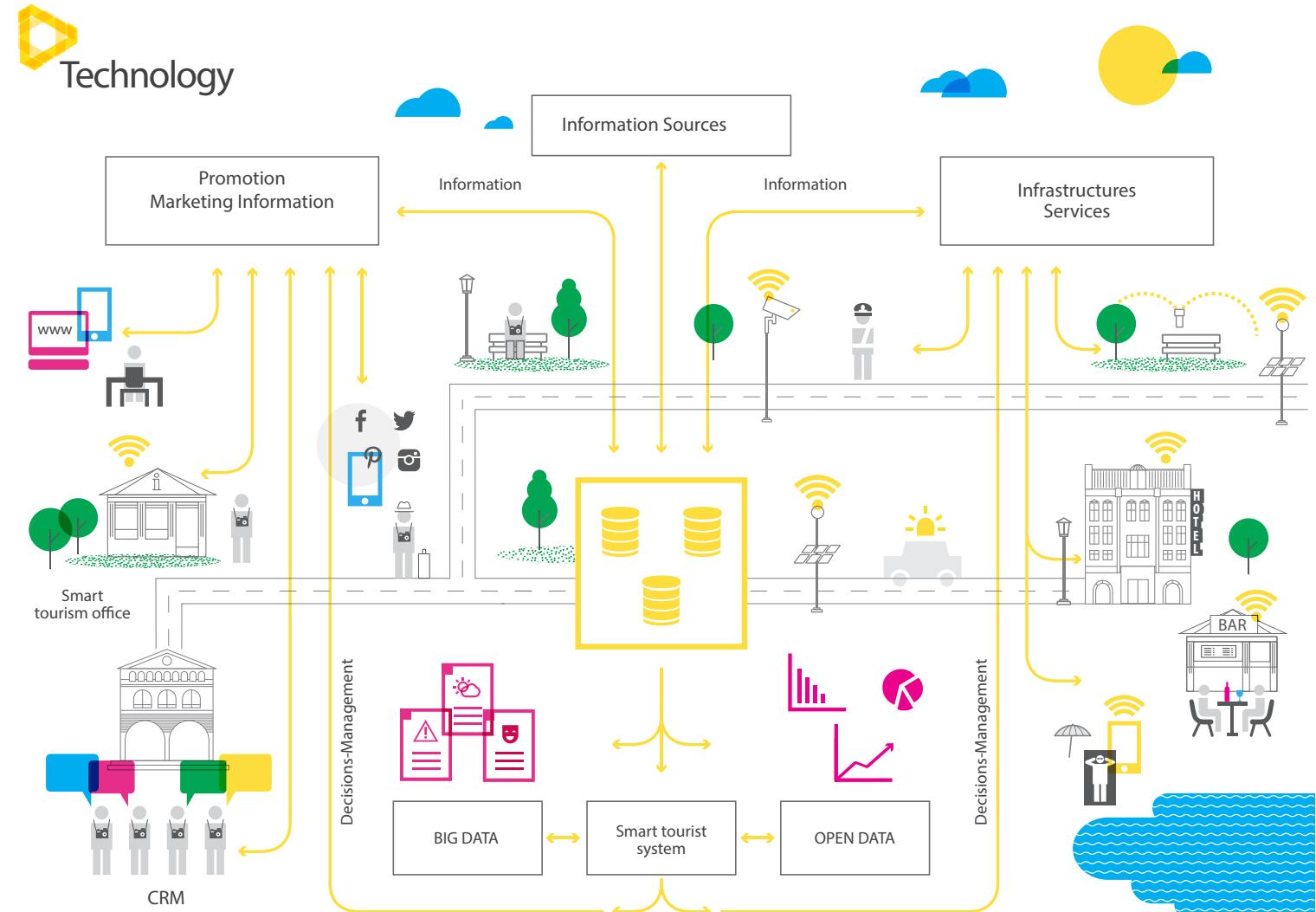
World Tourism Organisation (WTO), 2010

In the first, the impact of the internet has been fundamental, and has only increased with the use of mobile devices, like smartphones or tablets, which, in turn, have fired the use of social networks and have brought about the emergence of a huge number of mobile apps. We must take into account, for example, that according to the Impact of Online Content on Tourism in Europe study, more than half of travellers in the European Union consult websites and social networks to obtain information on trips. The intensity of internet use on the part of both tourists and companies within the sector has made connectivity of the network an essential element for management improvement and competitiveness of smart destinations. But if connectivity is important in the realm of the so-called *internet of people*, it is even more so in the *internet of*

things (IOT) and machine to machine (M2M). And just like that, we enter into the second strand of technological innovations, that which concerns the management of tourist regions.

For this, two fundamental dimensions must be considered: on one side, the sensorisation of the location itself, similar to that which is produced in smart cities, which produces information, helps recollection and transmission of data between objects, feeds high capacity storage systems and streamlines the analysis that fully feeds the system. On the other side of it, the creation of an integral mobility solution geared towards facilitating the integration of the visitor with the destination through different technologies (Wi-Fi, iBeacons...) which allow connectivity or the flow of information between different devices





and using different solutions (web, apps...). The sum of all of these will be that destinations are truly prepared to attend to the needs of all tourists found within their boundaries.

Consideration of these two dimensions provides an opportunity to increase productivity of organisations and improve the perceived quality of the destination on the part of the visitor, who will be able to access information at any time, from anywhere.

Infographic on technology development facets.



Technological proposals for action

21st century tourist information office

Big data

Free Wi-Fi

Open data

Mobile apps

Geolocation systems

QR codes

Videomapping and holography techniques

Technology developments applies to tourism

Among the technological proposals for action more closely linked to smart tourist destinations we may include the following:

- **21st century tourist information office:** referred to in NTIP 2012-2015. This is a new office concept with a strong technological base and ability to market destinations in real time. It must have touch screens, enable and encourage downloading destination apps, book and sell services, personally advise each visitor regarding the use of mobile applications linked to the destination (where

needed), have georeferenced resources, etc. As described in the NTIP (page 72), the 21st century Tourist Office «[...] should not only provide information and promote the destination, but also help its marketing, segmenting the product of the region in terms of visitor preferences. It is an innovative space that will be established as the meeting point of reference between the region and the visitor, using the most advanced technologies and applications. This project, with major technological, multicultural and multilingual components, allows the visitor to approach and interact with the destination, while enabling the destination to collect and analyse

a lot of information about itself that may bring tourists to the destination».

- **Free Wi-Fi:** a Wi-Fi connection is one of the most requested services by both tourists and residents of tourist destinations. In addition, the traffic of information that is generated produces significant benefits for the development of companies' online marketing, so Wi-Fi solutions are desirable for both supply and demand. For implementation, however, Wi-Fi solutions need to be considered economically sustainable and free for citizens and tourists, they need to offer sufficient security guarantees and a reasonable

bandwidth. They also need to allow the collection of useful information to improve tourism management.

- **Mobile apps:** produced as a result of the mass use of mobile devices (mainly smartphones and tablets), they are solutions applied for searching for destinations, products and services; for geolocation of all kinds of resources; real time information on offers; augmented and virtual reality, etc. The importance that the Spanish tourism bodies place on these types of solutions is reflected in the Spain in Apps technology, created to encourage the implementation of these types of applications.

- **QR codes:** these pixelated squares are matrices of dots or two-dimensional bar codes that link to a specific web address, charged with strategic information to link them to the reader applications for mobile devices. Their use in the tourism sector has soared, because they allow quick and simple interaction between tourists and the destination and are well suited to enrich information boards and promotional material, facilitating billing processes and loyalty campaigns, etc.
- **Big data:** the rise of digital and mobile communication, intelligent interaction between objects through sensors and the visitor with the destination through social networks and through the intensive use of technology generates a data volume that needs to be stored, analysed and managed for the best use. To achieve this

goal, new models of information management have emerged, among which are the new big data platforms (macro data), whose fundamental value is the ability to obtain and manage knowledge. This technology provides an efficient solution for the management, maintenance and analysis of the information generated. The principal characteristics of big data are adjusted to the following parameters:

- **Volume:** large volumes of data with high update frequency.
- **Variability of data and sources:** different types of data and multiple feed channels.
- **Processing speed:** capture of information, analysis tools, correlation and presentation of data in real time.

- **Business value:** analysis of the information will produce competitive advantages in different fields, among them, governance, security, mobility, healthcare, client relationship management, decision making support, exhaustive knowledge of tourist preferences, etc.

- **Authenticity:** The system is capable of intelligently handling and analysing a large volume of data and obtaining information of a high level of reliability and usefulness, which gives confidence for decision making.

- **Open data:** The large scale data accumulation produced by the technologies operated by smart destinations present numerous opportunities for management systems and tourism intelligence. Thus, the open data from public

administrations does not just pose a huge advance in terms of transparency and citizen participation, but it can also produce, thanks to the mining of this data, great business opportunities for companies in the sector and can bring about the creation of new technology startups.

- **Geolocation systems:** basics for helping visitors pinpoint all places of interest.
- **Videomapping and holography techniques, etc.:** enrich the visitor's cultural experience.

The challenge for the sector lies in integrating ICT advances with a destination to equip it with intelligence and provide specific mobility systems to the visitor which will open up authentic experiences for them.

ICT is the key piece which must become the driving force behind a tourist location when the need to design new models of tourist destinations and reinvent certain mature destinations arises.



Technological developments applied for increasing enterprise competitiveness

However, as we have expressed on more than one occasion throughout this document, technology is a truly cross-disciplinary factor in the implementation and development of destinations. It is used as a lever for efficiency and innovation across all strategic elements of government: enterprise competitiveness, mobility, urbanism, energy, water, waste recycling, security, culture and healthcare. It is therefore fitting to now mention the main technological developments applied to different areas in the management of smart regions:

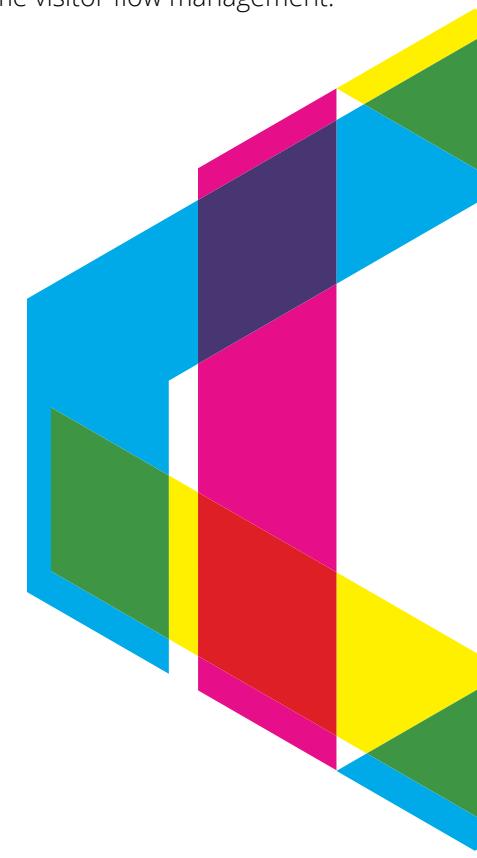
Given the current tourism scene, which is much more competitive than a few years' ago, owing to the new visitor profile, a particularly innovative and entrepreneurial business network, which provides high-performance customised to the new demand response, is necessary. Therefore, among the recommended technological developments to achieve the highest level of competitiveness, are the following:

- Business intelligence systems and competitive intelligence.
- Customer Relationship Management systems (CRM)
- Marketing systems (B2B, B2C) and Central Reservation System (CRS).
- Content Management Systems, integration with social networks and positioning.
- Online systems for training, collaboration and knowledge sharing.

Technological developments applied to mobility and urban planning

Prevision and efficient management of both people traffic and vehicular traffic in any tourist spot are fundamental for the well being of its residents and visitors. The use of beacons, mainly, as well as cameras, infra-red sensors, Wi-Fi and the rest of the devices which collect real time data from people and vehicular traffic, process them and produce smart guidelines for regulation, is one of the more notable aspects which all smart destinations must expand. Among the technological developments applied to mobility and urbanism we can mention the following:

- Free access Wi-Fi in the region and WiMax network for data transmission.
- Efficient management of intermodal transport.
- Real time traffic management systems updated with optimal routes.





Technological developments applied to energy and sustainable development

Intelligent environmental management requires an important technological dimension to achieve energy efficiency, sustainable management of water resources, waste treatment, etc. and among the recommended developments to achieve it, we can mention the following:

- Pilot projects for electricity, refrigeration and heat generation using renewable energy (hydraulic, wind, biomass and solar).
- Energy saving in street lighting through the use of LED technology.
- Sensors and lighting control depending on lighting conditions.
- Sphygmomanometers to measure soil moisture in parks and gardens to employ smart irrigation based on soil conditions.
- Efficient management of the collection and treatment of waste.
- Measurement of environmental parameters: water quality, air pollution, noise pollution, etc.
- Generation of kinetic energy on roads and pavements for traffic lights, street lighting and signage.

Technological developments applied to public safety

Safety is one of the elements upon which the tourist and the resident place the most importance, therefore the technological advances that affect their improvement must be adopted, as far as possible, by the councils and managers who govern smart destinations. Some of the recommended and available developments on the market are the following:

- Multilingual reporting mobile app (*Alert Cops*).
- Video monitoring in tunnels, subways and unsafe areas.
- Location sensors and crowd control at large events and shows.

Technological developments applied to healthcare

Healthcare is one of the elements that any smart destination must view as strategic. We can't forget that the segment of veteran international tourists, above the age of 60, is widening in Europe, and that their health needs require very narrow and specialised follow-up; that pain and disease are more distressing when we are away from home, because in addition to not having our trusted doctors and caregivers nearby, if we do not speak the language of the destination we feel particularly vulnerable; tourism invites us to undertake risky activities, etc. It is therefore very important that healthcare is supported in new technological developments that optimise performance and increase visitors' confidence. Here are some of them:

- Multilingual applications which allow access to the visitor's medical history, as well as treatments.
- Preventive health: information on solar radiation, advice on the dangers of high levels and risk profile.
- Geolocations of nearby 24 hour chemists, information on medication (generic, suitable, recommended doses...), etc.

Technological developments applied to culture and heritage

Access to destinations' culture and heritage are also one of the areas where the application of technologies has produced better results. Thanks to innovations like augmented reality, QR codes, online ticketing systems for exhibitions, concerts and all types of show or the many cultural content apps, it has been possible to bring many travellers to other forms of tourism, far removed from the traditional sun and sand holidays. Among the tools focused on the promotion of smart destinations' culture and heritage we can mention the following:

- Video and audio guides.
- Tourist routes with geolocation.
- Online promotion of the most representative tourist points of the destination.
- Historical immersion through smart optical devices.
- Personalised museum experiences with geolocation.



2. Innovation

Innovation is a cornerstone of the Spanish tourism policy, as can be seen in the NITP (2012-2015), approved by the Cabinet in 2012: «[...] This **requires a rethinking of the entire tourism sector based on tourism-centred innovation.** This means new business management models, new forms of communication, striving for the welfare of the customer in a broad sense [...]. Destinations that do not take into account this new situation and don't know how to adapt to this new reality will progressively lose their position in the market».

Innovation involves altering the very nature of things, changing or modifying what is existing, as long as the alteration of the original state of what changes generates an increase in value, and, in the case of companies and organisations with a distinct range of products and services, also produce an increase in customers, i.e. revenue.

Thus, in the sector concerned, i.e. tourism, our customers are our visitors, the number of which, degree of loyalty and average spending is increased by innovation.

Although too often we find that innovation is almost exclusively associated with the incorporation of technologies, especially ICT, in reality, many of the innovations in the tourism sector have to do with improvements in the promotion, distribution and marketing of services, the design of new products which are more personalised and aligned with the customer, and the organisation and distribution of work, so important is it to manage both radically changing demand levels and those occurring in tourist destinations.

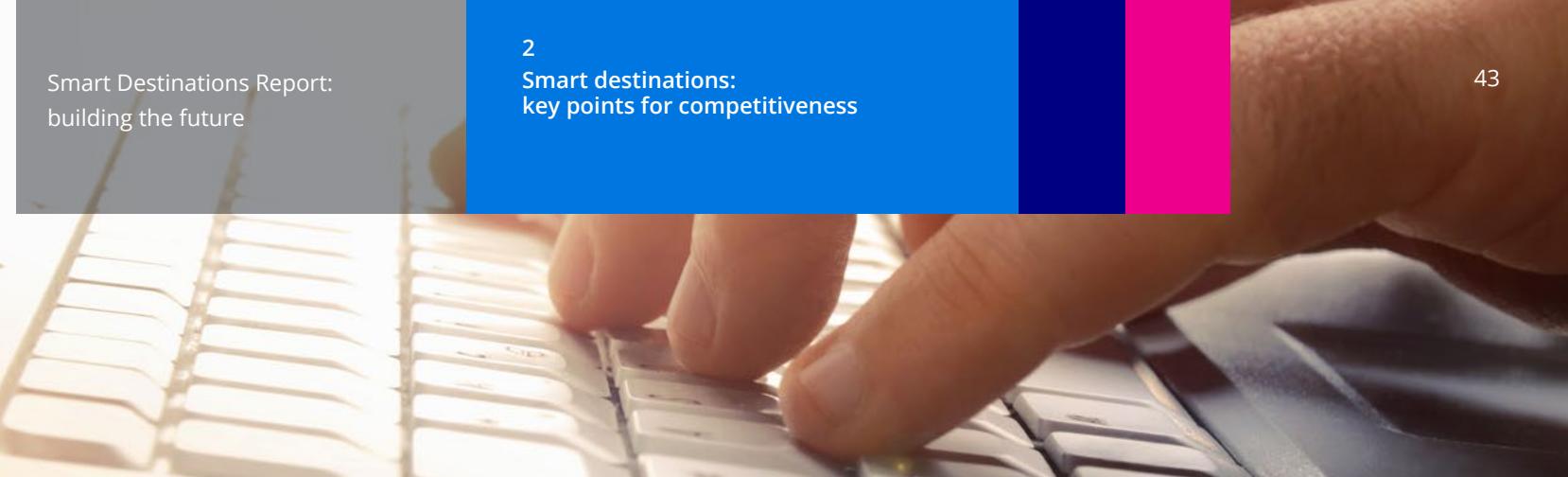
So, going back to the definition of **innovation as "any knowledge-based ability to generate value,"** we're

talking about value for companies, value for tourists and, of course, value for destinations and regions in which they're located. Innovating is about questioning everything with a willingness to transform it and thus generate more economic, social, environmental and, ultimately, human value.

Among the elements that determine the direction and strength of innovation in the tourism sector, we can point to competition and market evolution, closely related to the development of the tourist region itself. The tourist, who, given their increasing degree of knowledge about the product they're consuming, acquired mainly thanks to their mastery of ICT, which is used mostly for information on travel, both on websites themselves and on social networks, and for booking flights and accommodation, is increasingly the master of his own destiny - and destination.

Tourism, therefore, whether from the supply side or from the demand perspective, uses internet and ICT to an intensive degree, which is the reason for which why the sphere associated with **technological innovation often comes linked to the digital medium.**

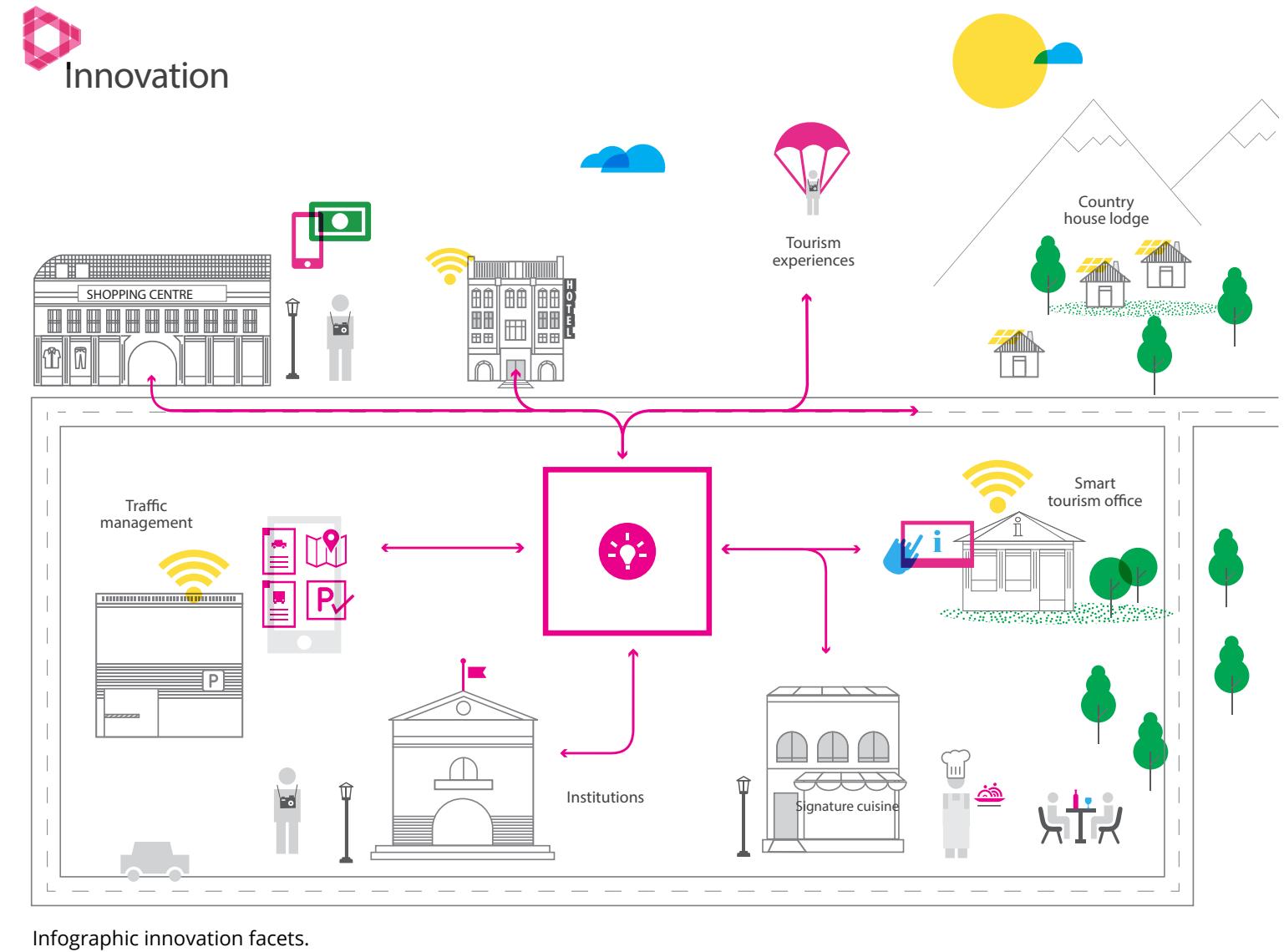
Another idiosyncrasy of innovation in the tourism sector is derived from the types of companies that take part in it, the majority of them being small or medium sized enterprises, and, in many cases family businesses with small workforces and budgets. As a result of this, innovation often springs up as a response to specific needs, to solve everyday problems, and not as a result of the implementation of powerful R&D departments, think tanks, specialised working groups, etc., something which is more typical of big industry organisations.





The important thing, in any case, is that innovation allows us to continually reinvent ourselves to face competition from increasingly assertive destinations, a tourist market that is increasingly globalised and a landscape of strategic uncertainty as we move into the 21st century. We are required to find and develop new sources of competitive advantage in our destinations to differentiate our tourism services from the competition. It is therefore essential to invest in innovation and knowledge as differentiating elements within our organisations.

The sustained success of a destination depends on its ability to anticipate the future and prepare thoroughly to welcome it in the best possible conditions. To do so, it is essential to focus on innovation, whilst being aware, of course, that there is no guarantee that the gamble will pay off, but with the assurance that if we do not failure is guaranteed.



3. Accessibility

Tourism and leisure are basic elements of everyday life in our society. An entitlement to which, however, many people, on account of disability, age, pregnancy, illness or other reasons, cannot access or do so with great difficulty, because the infrastructure, equipment and availability of information (digital accessibility) do not present accessibility conditions which are appropriate to their needs.

Smart destinations must confront and overcome these scenarios through proposals and actions which ensure maximum accessibility for all potential

visitors, both in the regions and the products and services they offer. We must therefore make an effort to adapt to the needs of people with all types of disabilities as well as children, pregnant women, the elderly, the sick..., through the elimination of architectural or mobility barriers, facilitating access to all sorts of cultural, nature, leisure pursuits, etc.

Physical accessibility, on the other hand, is not only a staple in the perception of the quality a destination's offering, but is also a not inconsiderable business

opportunity. Don't forget that it may affect four million potential customers in Spain and five hundred million worldwide.

Accessibility also responds to an individual's right to open access to goods and services, it boosts de-seasonalisation and improves the image of a destination, by positioning itself as socially responsible.

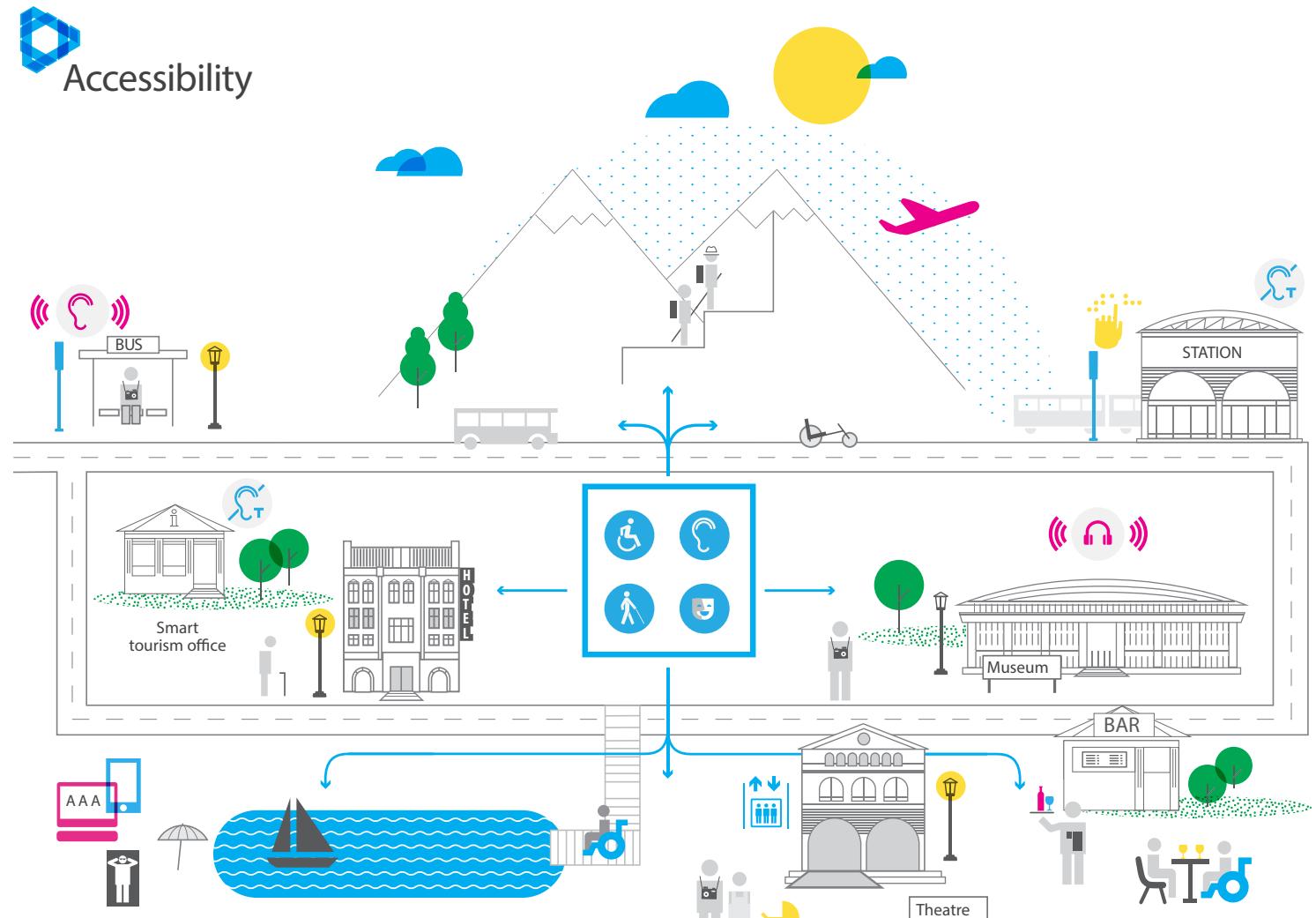
In terms of digital accessibility, a smart tourist destination should promote adaptation of all its digital

material, both their websites and online promotional materials, as well as existing international protocols, among which the Web Content Accessibility Guidelines 2.0 (WCAG 2.0), the Mobile Web Best Practices (MWBP) and W3C Mobile Web Application Best Practices (World Wide Web Consortium) stand out.



Now we'll mention a series of actions and policies that any smart destination should consider, if achieving acceptable levels of accessibility in their region is desired:

- Analysis of urban infrastructure with greater impact on the tourism sector (airports, ports, train and bus stations, museums and all public buildings and spaces in general).
- Administration momentum both in public works and through incentives for companies promoting accessibility.
- Creating assessment and management protocols to maintain accessibility.
- Recruitment or training of professionals specialising in accessibility.
- Awareness campaigns aimed at the destination's population.
- Information services (panels, web pages, etc.) accessible to people with visual impairments.



Accessibility infographic.



4. Sustainability

The World Tourism Organisation (WTO) defines sustainable tourism as that which «[...] satisfies the present needs of the regions and the tourists, protecting and improving upon future opportunities. In addition, focus must be placed on managing resources to meet economic, social and aesthetic needs, respecting cultural integrity, essential ecological processes, biological diversity and support systems life support systems», a definition that dates back to 1993 but which still applies today.

The paradigm of sustainable development rests, therefore, in ensuring a balance between economic growth (which doesn't always mean continuous steady growth, but also, for example, the region's capacity), **preservation of the environment and the sociocultural** to carve out a future based on a fair, diverse and respectful tourism with the region and its inhabitants.

In the case of tourist destinations, to achieve that balance, its managers and stakeholders have to take a series of measures in terms of energy, environmental, cultural and economic plans in order to increase the quality of life of the local population, to improve the visitor experience and protect the environment.

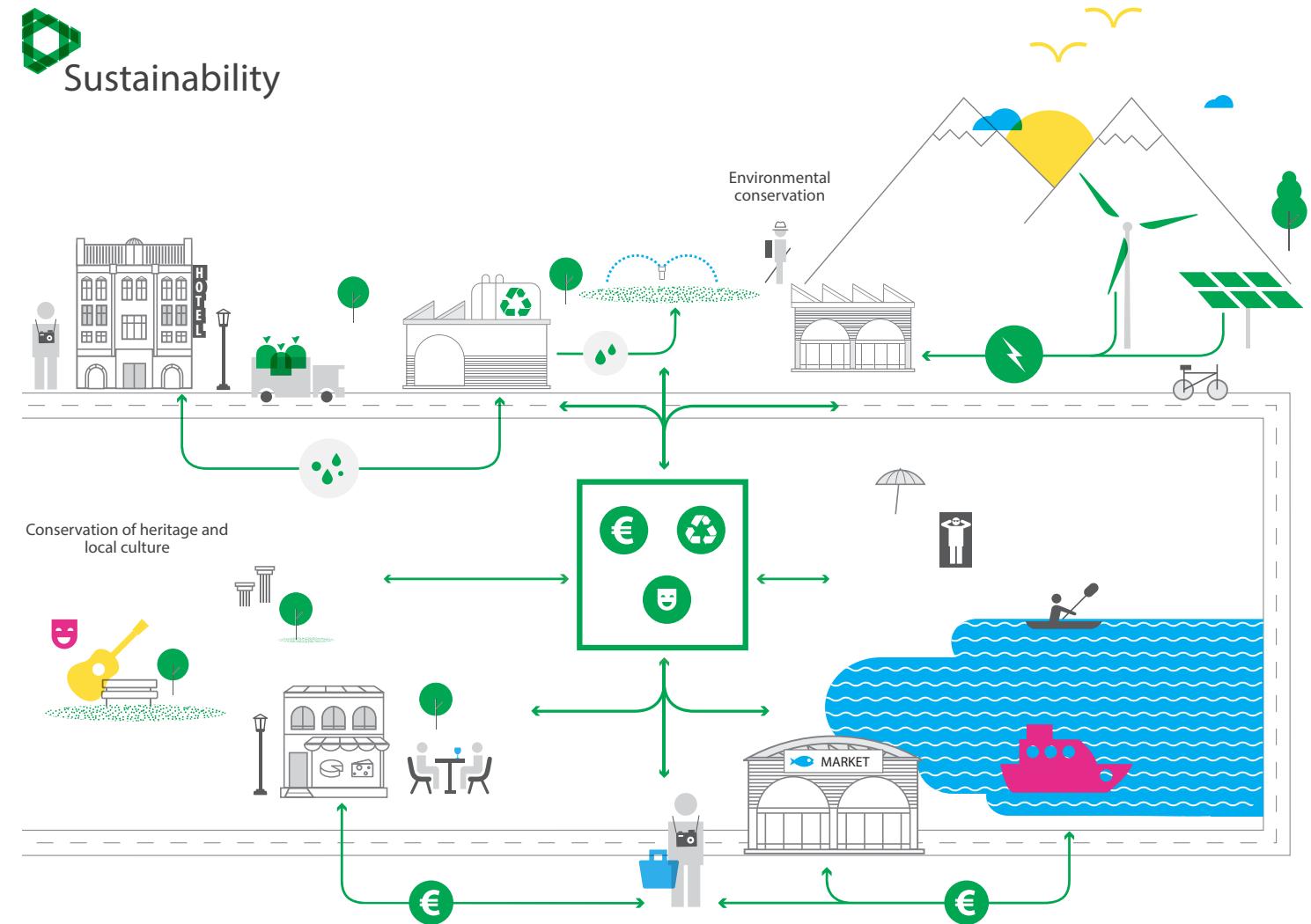
Therefore, it's necessary to start analysing sustainability through different lenses: from the local business perspective, which requires economically sustainable business models; from a cultural viewpoint, which must create new strategies which enable visitors to immerse themselves in both the traditions and history of a region without having a negative effect; and from a social standpoint, that of the resident, who, if not viewing tourism as beneficial, will invariably see it cast in a negative light.



Sustainability

On the other hand, and once again, the incorporation of ICT in to sustainable management, especially when complicated by factors such as seasonality, which changes the balance of the population and services in such a way that it becomes difficult to gauge (many regions double and even triple their population during high season), may be the solution. In this sense, consider the power of control that tools such as sensoring, Wi-Fi and WiMax networks and big data management have to offer, when processing large volumes of structured and unstructured data and when capturing strategic information about what's happening in the region.

With these premises, we will outline each one of these plans and the roles they have to play in smart destinations.



Sustainability infographic.



- 1. Environmental** (efficient energy management and use of clean energy):
- Maximise the potential of renewable energies, such as solar, hydraulic, biomass or wind, in the regions.
 - Efficient street lighting through the use of LED technology.
 - Use of movement sensors to gauge the light intensity required in public spaces.
 - Recycling of rubbish and waste.
 - Soil moisture level sensors for efficient and sustainable irrigation.
 - Video surveillance and sensor systems for the region to detect incidents in protected natural areas (fires, poaching, damage...).



2. Economy (budgets, income and sustainable working):

- Smart destinations key to competitiveness and new employment niche creation.
- Generation of countless opportunities for launching new tourist products and services.
- Enhancement of trade and small local industry (crafts, farming, etc.) as a key element in differentiating destinations.
- R&D investment in the region's companies, universities and research centres in the search for more efficient, competitive and sustainable solutions in all areas.



3. Cultural (investment determined by conscious tourism):

- Creation of strategies which enable a visitor's respectful immersion in the history and traditions of each region.
- Creation and promotion of new spaces for travellers to meet local residents, following models geared towards cultural exchange and mutual enrichment.
- Valorisation of cultural and architectural heritage in order to preserve and care for it for future generations.

Sustainable tourism development, therefore, must influence all realms of smart destination management. The aim is to make sustainability standard practice and give tourist destinations a responsibility which is clear in their commitment to the long term protection of the general interests of all stakeholders who provide investment.

Therefore, in 2012 the Ministry of Industry, Energy and Tourism, through its National Integral Tourism Plan (NITP 2012/2015), led by Segittur, launched a series of measures and actions, with the aim of transforming the traditional Spanish tourism model into a global pioneer model, linked to the *smart* concept, to innovation, to a form of public-public and public-private cooperation which has never been seen before, to entrepreneurs and innovative enterprises and to the new digital economy.

This development will directly affect an improvement on the international perception of Spain as a destination, and generate greater profitability for companies, whilst demonstrating the difference between Spain and other destinations, at the same time combating seasonality and driving a greater regional distribution of tourism activity .



LEADERS IN THE STANDARDISATION OF SMART DESTINATIONS



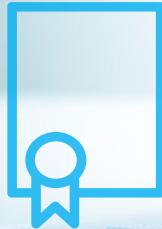
Leaders in the standardisation of smart destinations

As the *smart city* concept emerges and the application of knowledge, information and technology comes to be valued in many fields, the term *smart destination* starts to crop up. In principle, it might seem like a derivative, but in a country with over 65 million tourists and revenues of nearly 50,000 million euros annually (Balance of Payments, Bank of Spain), where tourism accounts for around 11% of GDP, for 12% of national employment and has strategic importance as a buffer factor for the Spanish economy's external accounts, the concept seems to respond to something more than just a passing phase.

Internationally, Spain is the third tourist destination in the world by number of international arrivals and second in terms of revenues, but our

country is also a leader when it comes to tourism quality. In fact, the Spanish Association for Standardisation and Certification, Aenor, is a clear reference in international tourism legislation, as it has over forty UNE standards in sub sectors such as accommodation (including hotels, rural accommodation, camp-sites, etc.), catering, recreational diving, spas, tourist offices, golf and ski resorts, among others. It's probably the country with the greatest number of tourist standards in the world, which makes it a model for other national schemes.

Standards are consensus documents that contain requirements and recommendations that involve all stakeholders and are effective instruments for improving the competitiveness of enterprises. They are based on expert technical



Commitment to tourism quality standards

analysis of a theme or sector and, above all, on the exchange of knowledge and experiences. Aenor guarantees a transparent, open and balanced process, sharing know-how that is translated into standards, in order to build effective solutions on how best to provide a service or develop a product.

In 2015, Spain led the Tourism Competitiveness Index for Travel and Tourism, prepared by the World Economic Forum (WEF).

The origin of tourism standards dates back to the nineties, when the competitive advantages held by the Spanish tourism industry (based almost exclusively on sun and sand) began to diminish, as new competitors with better prices started appearing. The hospitality companies then decided to differentiate themselves by designing a strategy based on the quality of service, a model that gradually extended to other sub-sectors, which in turn merged into the Institute for Spanish Tourism Quality (ISTQ). In early 2000, ICTE, along with private sector participation and public administration support, gradually converted the private sector specifications into Aenor public standards. This commitment to quality and competitiveness of companies

and, therefore, the country itself, in terms of tourism, has been and continues to be key as Spain continues to hold privileged positions in tourism. In fact, in 2015, for the first time, Spain has led the Tourism Competitiveness Index for Travel and Tourism prepared by the World Economic Forum (WEF), in which 141 economies have been analysed, taking 90 indicators into account.

As a natural evolution of this national strategy, and in order to internationalise Spain's know how, in 2005 Spain promoted the creation of ISO TC 228 Committee on Tourism and Related Services, of which Aenor manages the secretariat with the support of Tunisia through the MOU. Ten years later, this International

Committee, with participation from 84 countries, has published 21 ISO standards on tourism and is working on 9 projects. Led by Spain, the Committee has become a powerful instrument for the exchange of experiences, harmonisation of practices and consensus on the best way of providing tourist services. Many of these ISO standards are based on Spanish standards, such as, for example, standards for beaches, protected natural areas, industrial tourism or tourist information offices. Currently, the International Committee, divided into several groups, is working in areas such as diving, spas, adventure tourism, marinas, humanitarian tourism and renting pleasure boats.

The challenge for future destinations

In parallel to this international development, on a national level, the tourism sector and, in particular, public authorities, have felt the need to take their process of continuous improvement a step further, to better meet the needs of the new digital consumer trends, which are also in a constant state of evolution.

It's not about repeating, imitating or copying - it's about creating and innovating. All of this is within a context that's changing all the time; where markets emerge while others age, where international conflicts arise, industry goes global and the economic recovery offers opportunities but, above all, where overcrowding, disconnection and inertia must make way for innovative models of integrated destination management. The perception of the tourist destination is global, formed by a multitude of micro-experiences from

its interaction with different suppliers. The time has come to create synergies, work as a team and get everyone to agree about what the destination wants to be. It's no longer just about delivering what the tourist needs, but, above all, to anticipate their aspirations and work towards a holistic approach of the destination. Because a smart destination must integrate systems - before verticals - as well as provide mainstreaming in the analysis of information and put the tourist at the centre of the action, so that the tourist is not only the one who benefits, but they also help improve many services by providing data and information.

Mobile applications, semantic web, geolocation service systems, big data, augmented reality, tourism intelligence, monitoring visitor flow... The advance of technology is unstoppable, altering supply and demand scenarios and raising many questions: Are

destinations de-personalised when they strive to be smart or is it a means for optimising the use of resources and services? How will destinations set their goals and measure their progress? In order to resolve these and other parameters and lay the foundations for the requirements which smart destinations must meet, standards emerge as tools for articulating connection and consensus.

Aware of this significant challenge and far from settling for the positive results from Spanish tourism, the Minister for Tourism has strongly pushed for the definition of a uniform framework to enable modernisation of tourist destinations, under the concept of *smart destinations*, in a way that aligns to the trends in smart cities' creation, as is reflected in the National Integral Tourism Plan (NITP). This qualification will serve as the basis for improving the quality, sustainability and accessibility

in destination management through the efficient incorporation of innovation and information technologies in service provision, as well as equipping our country with greater competitiveness, all the while improving upon its position as a world tourist destination.



**The perception
of the tourist
destination is
global, formed
by a multitude of
micro-experiences.**



Aenor's strategy

Aenor is strongly committed to this new destination model, which is part of an ambitious smart city development strategy. To help address all issues related to the development of these projects, Aenor, in collaboration with the Ministry for Telecommunications and Information Society (MTSI) of the Ministry for Industry, Energy and Tourism, has deployed the AEN / CTN 178 - Smart Cities Technical Committee, which will help develop their full potential through the standards.

Given the wide scope covered by the Committee, and in order to be able to structure the different areas to be addressed, it has been divided into five subcommittees, which are then

further divided into more than a dozen working groups:

- SC 1 Infrastructure, coordinated by Rivas Vaciamadrid council.
- SC 2 Indicators and Semantics, coordinated by Santander city council.
- SC 3 Government and Mobility, coordinated by Valladolid city council.
- SC 4 Energy and Environment, coordinated by Málaga city council.
- SC 5 Smart Destinations, sponsored and coordinated by SEGITTUR.

Smart Destinations Subcommittee 5 has more than one hundred representatives from all sectors and stakeholder groups. Administrations (state, regional and local level), technology companies, leisure and tourism companies, consumer platforms, research centres, universities, etc. It is a clear example of public-private collaboration, which is also present in the other subcommittees. They all work actively on the development of the future technical standards, designated the code UNE 178501, which will define a management system for smart destinations.

The Smart Cities Committee CTN178's work programme currently includes 3 published standards and 44 projects in development.

List of published Spanish standards (UNE):

- UNE 178301:2015 Smart Cities. Open Data.
- UNE 178303:2015 Smart Cities. Management of city's assets. Specifications.
- UNE-ISO 37120:2015 Sustainable development in cities. Indicators for urban services and quality of life.

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**Leaders in the
standardisation
of smart destinations**

List of Draft Spanish Standards (DSS) in development

PNE 178101-1
Smart Cities Infrastructures
Public Services Networks.
Part 1. Water supply
networks.

PNE 178101-4
Smart Cities Infrastructures
Public Services Networks.
Part 4. Telecoms networks.

PNE 178102-1
Smart Cities Infrastructures
Telecoms Systems Part
1. Multiservice Municipal
Network.

PNE 178102-4
Smart Cities Infrastructures
Telecoms Systems Part 4.
Citizen Information System,
CIS.

PNE 178102-7
Smart Cities Infrastructures
Telecoms Systems Part 7.
Smart Transport System,
STS.

PNE 178101-2
Smart Cities Infrastructures
Public Services Networks.
Part 2. Waste networks.

PNE 178101-5-1
Smart Cities Infrastructures
Public Services Networks.
Part 5.1. Energy networks.
Electricity.

PNE 178102-2
Smart Cities Infrastructures
Telecoms Systems Part 2.
Data Handling Centres, DHC.

PNE 178102-5
Smart Cities Infrastructures
Telecoms Systems Part 5.
Remote Control System.

PNE 178102-8
Smart Cities Infrastructures
Telecoms Systems Part 8.
Traffic Management System,
TMS.

PNE 178101-3
Smart Cities Infrastructures
Public Services Networks.
Part 3. Transport networks.

PNE 178101-5-2
Smart Cities Infrastructures
Public Services Networks.
Part 5.2. Energy networks.
Gas.

PNE 178102-3
Smart Cities Infrastructures
Telecoms Systems Part 3.
Unified Communications
System, UCS.

PNE 178102-6
Smart Cities Infrastructures
Telecoms Systems Part
6. Safety and Emergency
Services System, SESS.

PNE 178102-9
Smart Cities Infrastructures
Telecoms Systems Part 9.
Water Supply and Sanitation
System, WSS.

List of Draft Spanish Standards (PNE) in development (continued)

PNE 178102-10
Smart Cities Infrastructures. Telecoms Systems Part 10. Waste Management System, WMS.

PNE 178105
Smart Cities Infrastructures Universal Accessibility.

PNE 178107-2 IN
Smart Cities Infrastructures Access and Transport Networks. Part 2. Wireless Wide Area Networks, WMAN.

PNE 178107-5 IN
Smart Cities Infrastructures Access and Transport Networks. Part 5. Mobile Safety and Emergency Services Networks, MSESN.

PNE 178107-8 IN
Smart Cities Infrastructures Access and Transport Networks. Part 8. Public Mobile Networks.

PNE 178103
Smart Cities Infrastructures Confluence of Management- Control Systems in a Smart City.

PNE 178106
Smart Cities Infrastructures Specification Guides for Public Buildings.

PNE 178107-3 IN
Smart Cities Infrastructures Access and Transport Networks. Part 3. Wireless Local Area Networks, WLAN.

PNE 178107-6 IN
Smart Cities Infrastructures Access and Transport Networks. Part 6. Radio links.

PNE 178107-9 IN
Smart Cities Infrastructures Access and Transport Networks. Part 9. Power Cable Communications, PCC.

PNE 178104
Smart Cities Infrastructures Integral Management Systems of the Smart City.

PNE 178107-1 IN
Smart Cities Infrastructures Access and Transport Networks. Part 1. Fibre Optic Networks.

PNE 178107-4 IN
Smart Cities Infrastructures Access and Transport Networks. Part 4. Wireless Sensor Networks, WSN.

PNE 178107-7 IN
Smart Cities Infrastructures Access and Transport Networks. Part 7. Structured Wiring.

PNE 178107-10 IN
Smart Cities Infrastructures Access and Transport Networks. Part 10. Remote control.

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**Leaders in the
standardisation
of smart destinations**

List of Draft Spanish Standards (DSS) in development (continued)

PNE 178107-11 IN Smart Cities Infrastructures Access and Transport Networks. Part 11. Privacy Issues.	PNE 178202 Smart Cities Control panel based management indicators of city management.	PNE 178304 Smart Cities KPIs for characterisation, monitoring and improvement of urban logistics or last mile distribution.	PNE 178403 Smart Cities Environmental Sensoring. Air Pollution Control System.	PNE 178501 Smart Destinations' Management System. Requirements.
PNE 178107-12 IN Smart Cities Infrastructures Access and Transport Networks. Part 12. Safety Issues.	PNE 178203 Smart Cities Citizens' Rights' Indicators.	PNE 178401 Smart Cities Street Lighting. Remote Control Type According to Zoning.	PNE 178404 Smart Cities Environmental Sensoring. Noise Pollution Control System.	PNE 178502 Smart Destinations' Indicators.
PNE 178201 Smart Cities Definition, Attributes and Requirements.	PNE 178302 Smart Cities Interoperability of charging points Minimum requirements for an electrical vehicle charging point to be considered interoperable.	PNE 178402 Smart Cities Management of basic services, water and energy supply in smart ports.	NE 178405 Smart Cities Environmental Sensoring. Smart Irrigation System.	



Smart Destinations Sub Committee 5

In October 2013 the Smart Destinations Subcommittee within the AEN/CTN 178 Smart Cities Technical Standards Committee commenced operation. Created on the motion of Segittur, its objective is the standardisation of criteria, indicators and metrics applicable to a destination so that it can be considered a smart destination.

It was logical that in a country like Spain, where the economic and social impact of tourism is so important, the Smart Cities Technical Standards Committee took this activity into when they began to standardise. Tourists interact in the region and have specific needs, different to those of citizens, which must be referred to and satisfied by the destination. In this sense, standardisation of

the management body which holds jurisdiction over the region in terms of sustainability, innovation, technology and accessibility, encourages the undertaking of the necessary work, and standardisation offers general and minimum compliance requirements.

The objective pursued with standardisation is, firstly, that the destinations implement the management system, following the structure established by the standard, evenly throughout the national territory, and secondly, that both the know-how and the technologies developed by Spanish companies in these smart destinations can be exported to other destinations. In this way, both aspects contribute to the improvement of Spanish tourism's international competitiveness.

Spain is the first country in the world to standardise using the high level structure defined by the International Organisation for Standardisation (ISO).

UNE standard 178501

As a result of the work, the first standard, UNE 178501 - Smart Destination Management System: Requirements has been published. This makes Spain the first country in the world to standardise, with the high-level structure defined by the International Organisation for Standardisation (ISO), a management system that can be implemented by destinations striving to become smart destinations and seeking recognition from an assessment body.

Standardisation of smart destinations encompasses the processes by which the destination management body manages all of its areas of expertise strategically, in order to meet the needs of tourists, taking into account the planning of the trip (before), stay at the destination (during) and return home (after). Satisfying the requirements of tourists in all of

these phases requires a strategic plan covering the entire municipality/destination and many areas of competence.

The tourist, as opposed to the citizen, uses the equipment, technology, infrastructure and services offered by a city differently; they also use tourism specific services that citizens do not make use of. Therefore, the destination must establish appropriate processes to satisfy the tourists and their specific requirements, leveraging all information that can be captured and accessed.

The decision to develop the model using its practical application through pilot projects, as indicated by the NITP, has already succeeded in generating innovative practices driven and implemented by Segittur. Experience and proven methodology in the

development of diagnostic reports and action plans within the pillars of innovation, technology, sustainability and accessibility, which serve as a roadmap for destinations, has been moved to the Subcommittee and is the model to follow for projects in which Segittur is involved internationally, with logical adaptations depending on the reality of each country.

UNE Standard 178501 Smart Destinations' Management System: Requirements is the first of several planned standards to apply to smart destinations, with the aim of becoming a roadmap for businesses and destinations when planning the conversion of a mature or emerging destination to a smart destination.

Chapter developed in
collaboration with:

AENOR
Asociación Española de
Normalización y Certificación



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Degree in Economic Law and Diploma in Tourism from the Universidad de Deusto (Bilbao). Since 2008, she has been responsible for Tourism within the AENOR's Standardisation Directorate, where she has participated in the development of more than twenty UNE standards on tourism quality, in all subsectors. She has also monitored a dozen technical standardisation committees in the tourism sector, in areas such as accommodation, catering, leisure and sporting activities and Administration-managed tourist infrastructure. She also serves as the secretary of the ISO TC 228 International Committee for Tourism and related services, coordinating the work of 84 countries, structured into 12 working groups.



Smart Destinations Report:
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OPERATING GUIDELINES FOR BECOMING A SMART DESTINATION: PRACTICAL GUIDE



The aim of this chapter is to establish some general lines of action which can serve as a guideline to managing bodies of the destinations with experience in technology, innovation, sustainability and accessibility so take the leap to become smart destinations. Additionally, several good practise case studies are included, which have been undertaken by the pilot programme destinations, such as Palma de Mallorca, Marbella, El Hierro, Villajoyosa, Castelldefels and Las Palmas de Gran Canaria.

The principal driver of transformation is the will to change. We must be aware of the need to evolve and have a firm will to put a definite strategy in place, as well as the resources to implement it, from the public sector, society as a whole and private enterprises.

Start with a diagnostic report that identifies needs in different areas of the city and assesses actions that need completing, as well as the regulatory and planning elements required to implement them. Do the necessary work in order to:

- segment the services provided and their providers, management models, costs, and degree of technology utilisation;
- conduct a study and assessment of their ICT services, determine the extent of their use, and identify obstacles and aids to their development;
- pinpoint the technical and regulatory obstacles that stand in the way of creating a smart destination; and
- indicate the distinguishing aspects that each smart destination wants to offer its tourists and visitors.

However, keep in mind that not all cities that want to become smart destinations will follow the same path. This will depend on their starting point, maturity as a tourist destination, investment capacity, and what they can offer, among other things. Each destination will have to assess their situation and develop a strategy adapted to their needs, capabilities, and resources.

Whichever path is chosen, the benefits and competitive advantages of adopting a smart destination model are significant because they are not only felt in the region's tourism sector, but in many others. This sets the stage for:

- improved governance (mobility, city planning, training, communication...), sustainability (local trade, energy savings, promotion of local history and culture) and regional accessibility;
- increased competitiveness, the creation of new businesses and jobs, and profitability of local companies;
- an improved quality of life for residents and destination experience for visitors;

- further distinction from competing destinations;
- a climate of innovation through new public-public and public-private partnerships and the inclusion of area knowledge thanks to data collection and subsequent analysis;
- the use of ICT to create a more productive relationship with tourists, residents and companies.

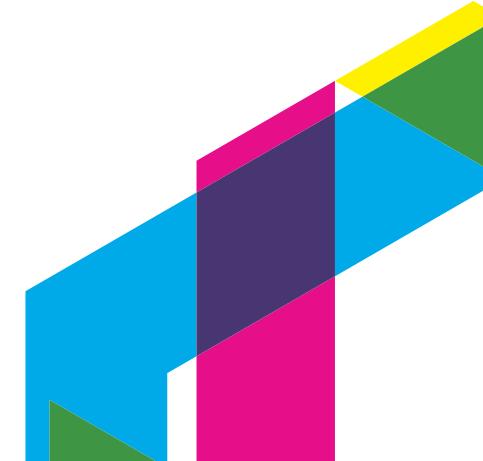
Given that the starting point for each city is very different, laying out a general work outline is difficult. Nevertheless, each case **calls for that initial analysis** and the creation of an action plan based on its results. The plan will address areas for improvement that are aligned with the

destination's desired positioning and strategy development, and also design a **master plan** that lays out priorities in that moment.

The action plan should be seen as a **unifying instrument for other municipal plans**, which is why it is helpful to **create a commission or management body** for coordination that includes all of the participating municipal departments. This include City Planning, Environment, Safety, Systems/Computers, Economics, and, of course, Tourism. And considering the large social, environmental, urban, and business impact that converting the city into a smart destination will have, **the commitment and participation of civil society and the business sector should be sought**. This includes companies in the

tourism sector as well as companies that may have contact with tourists or create a tourist experience during their operations. This can be done by creating public-private task force coordinated by the commission or management body.

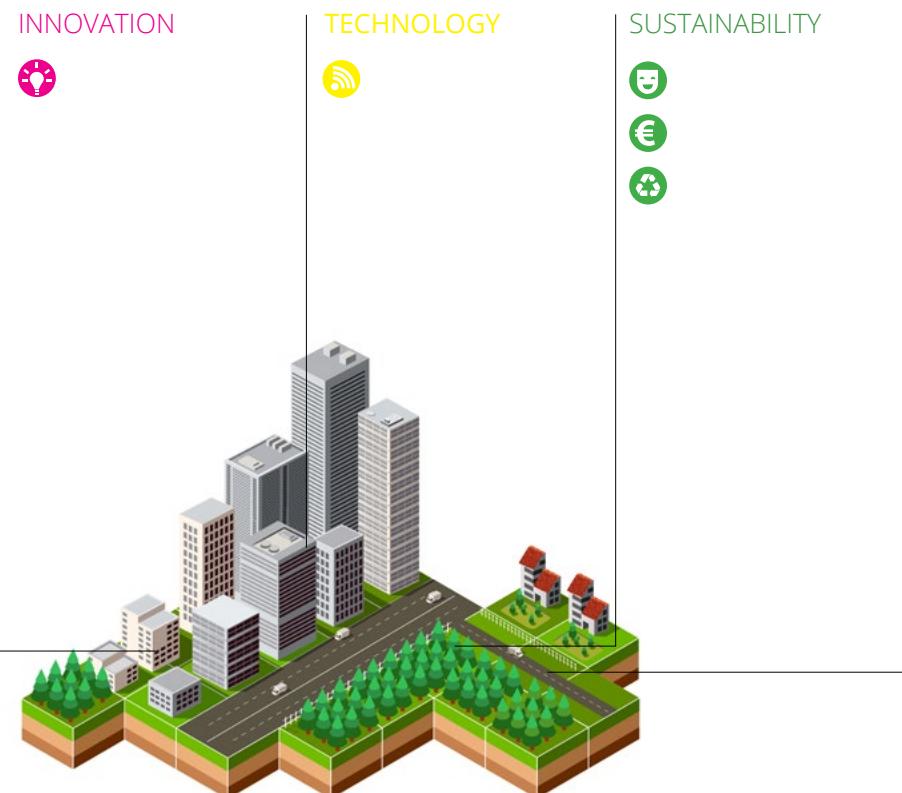
Regarding the content of the **master plan**, and the priority actions therein as laid out by the commission and the public-private task force, structure them based on the four core areas of smart destinations.



1. Innovation

A series of basic guidelines for each area of action is laid out below:

Innovation is basic and includes all areas of smart destination development, so it should be present in all of them.



When we talk about innovation, we are not just talking about technology. Innovation may be the launch of a new process, product or service, or a significant improvement, or new methods of marketing, new business models, new forms of public and private organisation... We are talking about a continuous search for efficiency, profitability, and competitiveness, something that should be in the DNA of every organisation.

2. Technology

The area of technology is fundamental to the smart destination model. In regards to management, it enables the collection and analysis of information in real time, facilitates sustainability, and improves access. Like innovation, it cuts across many sectors. We can interact with visitors as we've never been able to before. We are dealing with super-connected people on multiple channels, who want to access up-to-date information 24/7 from anywhere in the region.

Technology enables us to get to know our tourists better, even before they arrive, and to offer them more personalised products and services and more satisfactory experiences. The enormous volume of data generated by the Internet, social media, and the sensorisation of many routines and phenomena (traffic, weather, water use, trips to museums and visitors centres, power consumption, etc.) should also be available to society (open data) so that

this information creates knowledge, and therefore, new business, new products and services, higher profits, more jobs, etc.

In this sense, it's advisable to create agreements between companies, universities and research centres to enable R+D+i in all destination management processes. And the push for micro-businesses in the tourism sector to improve their level of technology and close the digital gap is equally important.

Some technology-related actions are shown below.

To promote the destination and improve the tourist experience:

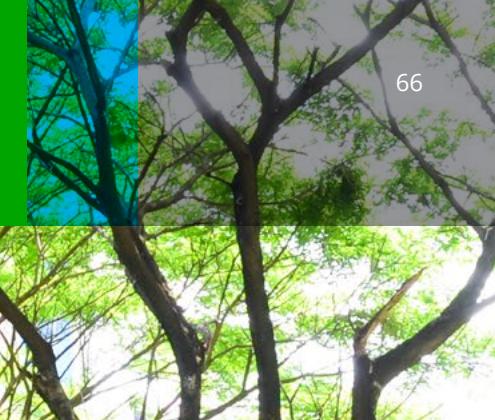
- Create an on-line promotion strategy that introduced the destination's web site and tourism company pages that offer complementary activities and existing means of transportation,

as well as tourism apps for the region and local businesses, translated into the languages of the main groups of tourists that visit the destination.

- Given tourists' significant use of social media to inform themselves about and interact with the destination, create a specific social media communication strategy within the on-line promotion strategy.
- Develop experiential content for tourists through mobile apps, augmented reality, QR codes, video mapping, etc.
- Create smart tourist cards that standardise and make it easier for visitors to learn about the diversity of the destination's offerings (transportation, guides and excursions, visits to museums, performances, etc.).

In order for **the destination to better understand tourists' behaviour:**

- Automate data collection from tablets or phones for later analysis, especially from the satisfaction survey system.



- Sensor and monitor tourist activity, incorporating opportunities offered by open data and big data services. This data will be collected and analyzed in an aggregate and anonymous way, with the highest respect for tourists' privacy (except those who wish to be identified in order to get the most personalised service possible).
- Develop an open data platform for the public sector as well as the private sector, so that they can use those data to create new tourism strategies.
- Develop a smart tourism system that enables different databases to be connected (mobility of smart phone users at the destination,

credit card use, mood analysis on social media, etc.) and, once all the information is processed, create a metric with a series of indicators that enable the destination manager to make smart decisions.

As we said before, the use of technology can be applied to all core areas. **To improve environmental sustainability**, we propose the following initiatives as examples:

- Sensorise and geo-reference the containers and "ecological islands" that enable waste collection more efficiently in real time. Geopositioning can be extended to each waste collection receptacle (garbage truck, garbage cans, sweepers...) in order to optimise

collection routes, which results in cost savings and a better image of the destination as ecologically responsible.

- Sensorise parks and gardens and automate irrigation systems. In addition to the energy savings, this system can control the water level and detect possible incidents early, which can result in important reductions in water consumption.



2.1 Good practices in technology

Las Palmas de Gran Canaria

One of the first steps the destination management body should take in terms of technology is to create a technology directorate that coordinates all ICT development during the city or smart destination conversion process.

The local government of Las Palmas de Gran Canaria has a department of New Technologies and Telecommunications (DGNTT) that plays this role. One of the first measures the department adopted was the creation of the 2012-2014 Strategic Plan, with the goal of driving ICT development in the city and thereby increasing the Government's efficiency. Next it created the "**Smart City Master Plan** (PDSC). Its fundamental areas of development are **sea tourism, city services, e-government and mobility** to improve residents' quality of life, and therefore, that of visitors.

The **creation of a fibre optic ring (FTTH) across the city** and their corresponding WiMax wireless links are notable outcomes of both of these projects. This infrastructure enabled the deployment of a Wi-Fi network made up of 42 free access points distributed in 20 tourist areas in the city. They also developed a series of mobile apps for smart phones to bring the city closer to tourists.

They created an open data portal where citizens and companies can access a large volume of very valuable data and information.

Palma de Mallorca

The local government of Palma de Mallorca created an office that coordinates and directs all conversion-related actions. The "SmartOffice" is made up of a coordinating team and technical representatives from each of the local government's managers, city departments and public companies.

In their Master Plan, Palma focused on innovation, ICT, and promoting the creation of ideas that benefit the city, with the collaboration of the private sector. These initiatives are worth highlighting:

- **SmartWifi** in Playa de Palma. A joint project between the Playa de Palma Consortium and the municipal councils of Palma de Mallorca and Lluchmajor. It was proposed with two aims: firstly, to offer residents

and tourists free access to the internet, and secondly, to act as a telecommunications network of encrypted data for use in a range of municipal self-provision services in areas such as security and mobility. It is now Europe's largest continuous area of free Wi-Fi for residents and tourists.

- **CMX (Customer Monitoring Experience) Platform:** This uses mobile applications to study the city's tourist behaviour in real time, and react accordingly.
- **Business Intelligence Platform:** A platform which will make private sector data available for use by businesses.





El Hierro

El Hierro was the **first island in the world to install Wi-Fi and WiMax networks across its entire territory**. The network has spare capacity, in order to facilitate its scalability and allow data to be transported by remote service management through the use of sensors and the centralised management of information. In this way, the backbone network WiMax, which covers the whole island, is an infrastructure which provides the basis for the development of a whole range of services offered by a **Smart Island**. The network contains 26 free Wi-Fi hotspots (both for residents and tourists), which are distributed strategically across places of tourist interest as well as public spaces in populated areas. Furthermore, given the island's geography, those involved have attempted to limit the potential environmental damage caused by the network. For this reason, solar panels have been installed, which provide power to the Wi-Fi hotspots.



Marbella

Another municipal council which has understood perfectly the need for collaborative effort has been the Council of Marbella. The council has created a multidisciplinary working group called the Committee of Public Participation, Innovation and New Technologies, whose main aim is the technological development of the council's information and communications systems.

This Committee designed and introduced the **Marbella Digital Agenda (ADM)** as part of the Marbella Strategic Plan 2022. The ADM outlines what the municipality intends to do over the next few years in order to

improve its position as a smart tourism destination. Through constant dialogue with those involved in this area, initiatives worth highlighting include:

- **ICT infrastructure:** Marbella's inclusion in the NEREA, SARA and AGORA networks ensures the availability of a powerful backbone communication network consisting of fibre-optic (FTTH) and wireless connections.
- **Portal Marbella Direct:** A panoramic tourist webcam which shows the state of beaches and weather.
- **Development of mobile applications** for tourists, containing updated information about the destination.
- **Sensorisation of municipal vehicles** (installation of GPS).
- **Marbella Open Data Project** (the creation of databases which are accessible to all citizens).

The **Marbella Street iBeacon Programme**, which has installed 100 beacons at key tourist points in the region, provides detailed

information about the area's culture through audio-visual equipment (**touch screens**) in tourist offices; Participation in **Smart Costa del Sol projects**, with the aim of consolidating a sustainable growth model to improve the quality and efficiency of resources and services.



Badajoz

As part of the Programme for Cross-Border Cooperation Spain-Portugal (POCTEP), the Regional **Smart Tourism System (SIT)** has been designed, and includes members from the Council of Badajoz, the Elvas Chamber of Commerce and Segittur. It allows an in-depth analysis of different sources of information, **structured or non-structured**, selected depending on the needs and strategies of particular regions or destinations. It is therefore able to produce useful, relevant, systematic and ordered information which may be used by all stakeholders of the destination.

Moving beyond the SIT's value in terms of innovation and state-of-the-art technologies based on free software, another advantage is its methodological

approach, the most important stage of which involves a needs analysis. Indeed, it is of vital importance that stakeholders promote the acquisition of relevant information, in order to help the destination become the main source of local tourism intelligence and knowledge.

The general objective of the project is to promote efficiency in public management, to improve the competitiveness of SMEs and to utilise data analysis and management to develop quality tourism in the Badajoz-Elvas border area.

The aforementioned objective is divided into the following more specific aims:

- **To monitor card use and POS** in order to obtain a comprehensive analysis of residents and visitors' consumption habits.

- **To determine the factors influencing competitiveness** of the hotel, catering, business and healthcare industries, making connections between data provided by the SIT, data supplied by businesses, and information from the internet.
- **To determine resident and visitor mobility** within the city, by placing sensors at strategic points or counting people and vehicles using special cameras.
- **To combine quantitative data with qualitative**, using a wide range of criteria in order to enable the best possible decision-making.
- **To establish daily tourism assessments** within the city, and to ascertain changes and behaviours based on those strategies which have been carried out.
- **To disseminate** information to public administration and private businesses (*open data*) and to promote a collaborative culture in the achievement of global targets.

An intelligence system like the SIT, which facilitates access to and dissemination of data, is a fundamental component in innovation, efficiency in management, and sustainable tourism development.

3. Accessibility

Accessibility must be present throughout the entire tourism value chain. So-called accessible tourism can only work if the destination is working as an integrated unit that will ensure that any visitor will have the freedom to travel smoothly to the destination, choose a leisure activity they're interested in and enjoy full autonomy when carrying it out.

It's not just about having hotels, beaches or accessible attractions, it's also about all service providers working to the same strategy of achieving complete accessibility of the destination, both in terms of products and services as well as customer awareness and access to information.

Now we'll give a few recommendations:

- Making a tourism diagnosis of the region; assessing whether the destination can be promoted as accessible or not.

- Implementation of a comprehensive plan for urban accessibility (buildings, plazas, parks, shops, offices...) and a comprehensive plan for tourist accessibility (museums, beaches, accommodation, promotional material, tourist offices...).
- Promote professional training, not only in the tourism sector but also other sectors such as law enforcement, hospitals, transportation - public and private sector - to get to know the needs of tourists with disabilities and be able to serve them properly.
- Provide tourist information offices with a greater number of accessible tools, such as videos that include sign language interpretation, models of the city's main monuments so that people with visual impairment can interpret them, adapted counters and even a loan service for wheelchairs.
- Implementation of a communication plan aimed at potential customers who would avail of accessible tourism (disabled, elderly, families with young children, pregnant women...) to publicise the destination's accessibility.
- Adaptation of web portals and apps to the Web Content Accessibility Guidelines 2.0 (WCAG 2.0), the Mobile Web Best Practices recommendations (MWBP) and Mobile Web Application Best Practices from W3C (World Wide Web Consortium).
- Tourist information should have alternatives for people with partial or total visual impairments and content which uses simple, clear language and avoids jargon for people with cognitive disabilities.
- Both the city's transportation and its stations and stops should adhere to the majority of the criteria set out in Royal Decree 1544/2007, dated November 23, which regulates the basic accessibility and non-discriminatory conditions for access and use of transport modes for people with disabilities. In addition, local authorities should strive towards a minimum of 5% of their total taxi fleet being adapted vehicles.



3.1 Good practice case studies in Accessibility

Villajoyosa

In its Master Plan, Villajoyosa has made a firm commitment to be a destination which is accessible to everyone. Proof of this is the construction of the new **Museo de la Ciudad**, where all of its elements - doors, windows, lighting, accessories - have been chosen to meet international standards of habitability, functionality and accessibility. The building has been designed taking into account design criteria for all individuals, which means although accessibility was a driving force, they avoided creating specific elements for persons with physical or visual impairments if they weren't valid for other visitors.

In this sense, the new museum in Villajoyosa is a benchmark. From the outset, this architectural, museum project has been designed according to inclusive design parameters called "universal design", or "design for all", making it the most accessible museum in Europe. As for the specific training of staff attending to tourists with disabilities, an accessibility Decalogue has been proposed in the Vila Museum which envisages the creation of a handbook on different types of disability for employees, with the aim of encouraging excellence in terms of treating diverse individuals as well as proper maintenance of an accessible and inclusive resource.

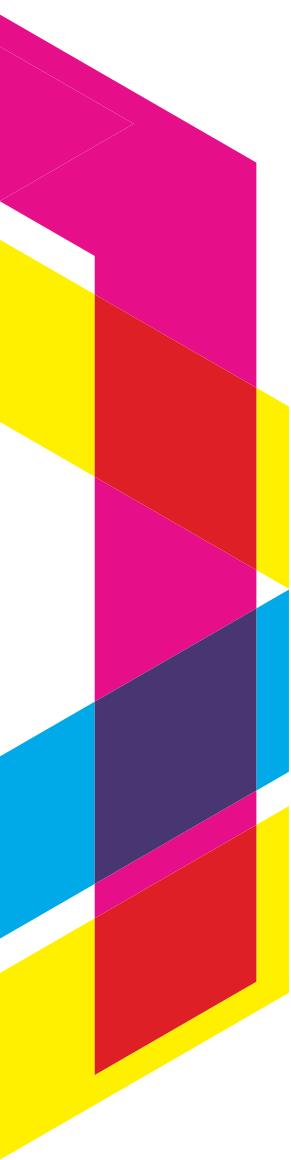


Las Palmas de Gran Canaria

It is one of the few municipalities in Spain which, at the time of assessment, had an Accessibility Department, which aims to ensure equal opportunities for people with disabilities when using public spaces and services.

The Accessibility Department is actively involved in the conversion of the city to an accessible destination and participated in the creation of the "LPA accessible" mobile application, through which any citizen or tourist can see the parts of the accessible areas of the region, and flag up those which are not.

4. Sustainability



Society's sensitivity towards environmental issues emerged about 30 years ago, and has now established itself on a global scale. The initial movement, focusing on the environment, has been extended to social, economic and cultural fields and today is a basic requirement in any project linked to the development of a region.

Thus, considering the opportunities tourism provides to society as a driver of employment, infrastructure development and distribution of wealth, it is necessary to encourage tourism management policies which include the principle of sustainability as a cornerstone in their approaches.

The concept of sustainable development emerged in the mid-eighties of the last century. Specifically, the document "World Conservation Strategy", prepared in 1980 by the International Union for Conservation of Nature (IUCN), the United Nations Environment Programme (UNEP) and the World

Wide Fund for Nature (WWF), was the first document which integrated conservation and sustainable use of natural resources.

This document laid the foundation for the "Brundtland Report" which the World Commission on Environment and Development (WCED) presented to the UN General Assembly in 1987 and where the term "**sustainable development**" is used in three dimensions: economic growth, social inclusion and environmental balance.

According to this report, the General Assembly convened the "United Nations Conference on Environment and Development (UNCED)", also known as the "Rio Conference" or the "Earth Summit", where they were to "develop strategies and measures to halt or reverse the effects of environmental degradation".

Among the various measures proposed was the adoption of an action programme for the twenty-first century: "Agenda 21". The

Programme is a detailed action plan to be undertaken at global, national and local levels, by UN bodies, governments belonging to its member states and major groups in every area in which there is a human impact on the environment. To implement this Programme, the Commission on Sustainable Development was established within the UN. Today, **Agenda 21 is the reference for the implementation of sustainable development in the territories.**

A decade later, during the "World Summit on Sustainable Development" (2002) in the South African city of Johannesburg, it became clear that the concept was not considered complete if it didn't consider three dimensions as key elements of sustainability: economic, environmental and socio-cultural.

Defining sustainable development was a further step, to adjust this concept to tourist activity around the world. As a result, the World Tourism Organisation (WTO), with reference to the definition

of sustainable development in the Brundtland Report defines sustainable tourism in the "Euro-Mediterranean Conference on Tourism and Sustainable Development" (1993) as: **"Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunity for the future. It is envisaged as leading to management of all resources in such a way that economic, social, and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity, and life support systems."**

Although there are numerous approaches to the concept of sustainable tourism, the following common principles can be pointed out:

- Planning based on economic, cultural and environmental objectives.
- The use of "capacity" to quantify the limitations of tourism resources within a region.
- Inclusive and participatory decision making.

Moreover, according to the WTO, tourism, within the framework of sustainable development, should pursue the following standards:

- Improve the quality of life of local people.
- Increase the quality of a visitor's stay.
- Maintain the quality of the environment, on which both locals and visitors depend.
- Increase the profitability of tourism.

Therefore to be able to talk about sustainable development the following pillars within which we will outline some steps to implement sustainability should be guaranteed at the centre of a smart destination:

4.1 Environmental sustainability

Development must be compatible with the maintenance of resources, ecological processes and biodiversity. It is therefore advisable to take measures such as:

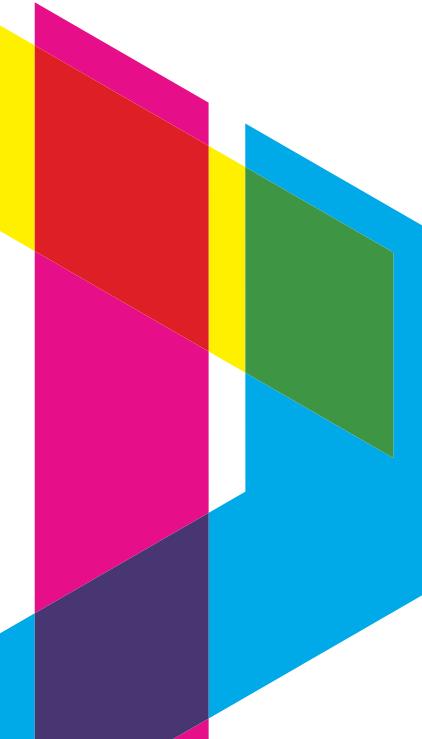
- Development of environmental sustainability good practice manuals.
- In areas that are potentially vulnerable from an environmental point of view, plans allowing management and planning of financial aid and technical cooperation which enable sustainable tourism development should be produced.
- Development of energy efficiency and optimisation plans that include, among others, the gradual

replacement of traditional lighting, especially in tourist areas, with more efficient LED lighting, as well as sensors to achieve smart lighting (intensity variation as needed, motion sensors, etc.).

- Public and private consumption reduction programmes should be designed as well as the production of documented guidelines to guarantee this. It is also important to develop periodic monitoring of water quality in rivers and coastal areas.
- Regular publication of materials on environmental issues and local produce, such as guides for environmental education and awareness, implementation and public awareness campaigns on

selective collection of municipal solid waste or the promotion of eco-tourism as a sustainable mode of tourism attraction.

- Implementation of alternative and environmentally sustainable transport and the creation of an infrastructure adapted to these new means of transport, including the construction of bike lanes, encouraging rental of electric bikes or promoting hybrid and electric taxis.
- Promotion of citizen participation in the development, creation and implementation of initiatives related to environmental sustainability.





4.1.1 Good practice case studies in environmental sustainability

El Hierro

One of the best examples that have been carried out with regard to environmental sustainability in Spain is the **hydro-wind power plant "Gorona del Viento"** on the Canary island of El Hierro, which will satisfy almost 100% of the island's energy demand through renewable energy.

Specifically, it will avoid an annual consumption of 6,000 tonnes of diesel, which is equivalent to about 40,000 barrels of oil, which would have to be imported, saving more than 1.8 million euros per year. In addition, this will mean a saving of 18,700 tonnes of CO₂ emissions per year, a principal cause of global warming. That CO₂ is equivalent to a 10,000 to 12,000 hectare forest, equivalent to 20,000 football fields. It will also prevent emissions of 100 tonnes of sulphur dioxide annually, and 400 tonnes of nitrogen oxide annually, which is equivalent to a 600 million kilometre bus journey.

Las Palmas de Gran Canaria

The council launched the "Ciudad del Mar" project, within which there are two initiatives:

- **Smart Maritim Corner:** a smart electricity management programme for the implementation of a mini wind turbine, a photovoltaic system, a solar thermal system and a wave energy model.
- **Testing platform for wind and wave power:** This project, in collaboration with the Canary Islands Oceanic Platform, proposes that the city can serve as a platform for testing and research for this sort of development.

4.2 Socio-cultural sustainability

Sustainable development must be compatible with the values of the people and strengthen community identity. It is therefore important to take a series of measures, which include:

- Create attractive mechanisms that encourage tourists to actively cooperate with the destination: to preserve, safeguard and promote it.
- Load capacity studies on the most popular destination resources in order to prevent the tourist over-exploitation and to analyse the distribution of tourism by districts, areas or regional resources, always with the purpose of assessing the load capacity of the destination so as to avoid overcrowding.
- The development by public and private institutions of actions geared towards integrated tourism planning as a contribution to social and cultural development of the region.
- Studies to assess visitor satisfaction and its impact on the destination.
- Development of tools for the support and maintenance of the destination's culture, for use by tourists.

4.3 Economic sustainability

Tourism development has to have a positive impact on the economy of the destination, it has to be profitable, to benefit the greatest possible number of residents and resources must be managed so as to preserve them for future generations. To achieve this a number of provisions must be implemented:

- Encourage joint participation and collaboration between the local government and the tourism sector for the administration of issues linked to sustainable development and its attributes. To achieve this, since it concerns progressive educational and awareness work, it is advisable to develop workshops, briefings, partnerships, etc.
- Encourage the digitisation of destination's tourist offering for better and more effective promotion and marketing of the local resources.
- Launch *product clubs* under the concept of sustainability criteria, which value local trade and craftsmanship, zero mile agricultural products, etc.
- Include compliance with sustainability criteria in public tenders.
- Development of viable economic operations in the long term by ensuring that the benefits are distributed among the various players in the sector.



4.3.1 Good practice case studies in economic sustainability

Castelldefels

Castelldefels City Council created the **Made in Castelldefels brand**, under which craftsmen, artists and local producers are brought together to promote local creators. The aim is to acquaint visitors with the work they do, put a value on it and offer original, innovative and locally produced products.

Las Palmas de Gran Canaria

The city receives almost two million visitors annually from the tourist areas of the south of the island and from

cruise ships, so it was very important to monitor these visitors in order to understand their impact on the city, both in terms of mobility and economically (information on spending patterns).

To do this, the Wi-Fi and WiMAX networks were implemented to monitor tourists and the decision was made to develop a **pioneering project with Segittur on the use of "iBeacon" technology in large open air shopping areas** of the city to promote shopping tourism. This initiative will improve the competitiveness of the destination by helping local trade become more efficient for tourists through the use

of their mobile devices when they are walking round the city. Businesses can send messages to grab their attention, as well as offers, discounts or any other type of information that the business wants (history of the shop, in the case of historical trade).

All these initiatives are of great value when transforming a region into a smart destination; but, at the risk of sounding repetitive, we must insist that it should be about comprehensive and inclusive projects. As the managers of the pilot destinations which have already been audited by Segittur (Palma de Mallorca, Marbella, Villajoyosa, Las Palmas and

Castelldefels) noted during the "Smart Destination" conference: Keys to tourism competitiveness", held in January 2015: "*A smart destination is all-encompassing*". It really is a no-brainer; it's about a project that requires the absolute conviction of all forces within the region; if somebody isn't convinced, there's nothing to be done, as the project must be totally, 100% mainstream".

PERSPECTIVES
FROM COMPANIES
AND INSTITUTIONS
INVOLVED IN THE
DEVELOPMENT OF
SMART DESTINATIONS



The development of the *smart destinations* project has been based on public-public and public-private cooperation from the beginning. For that reason it was of fundamental importance to have the opinion of the protagonists in the transformation of these destinations, among whom we find huge multinational companies, public bodies, associations, SMEs and entrepreneurs.

All of them have a lot to say and explain on the subject of development of a smart destination, in each of the facets they make up: innovation, technology, accessibility and sustainability.

But we didn't just want to get the opinion of the big experts and professionals on what constitutes a smart destination, we also wanted to know the contribution made by their companies and bodies to achieve their destination's transformation. For this reason, all collaborations presented us with case studies, directly or indirectly linked with the development of *smart destinations*.

As you would expect, not all companies and bodies who participated in the development of this project could feature. However, we have tried to offer a selection, which we believe gives us an overall

view of the role played by all the agents involved in a project as symbolic and pioneering as the *smart destinations*.

It wouldn't be right to close this brief introduction to the chapter without thanking the collaborators for the input and effort they poured into this book, which, without doubt, will serve as a reference for destinations deciding to take the leap and become *smart destinations*, as well as for all the students of a theme which will be key for improving the competitiveness of the tourism sector.



Paul de Villiers
CEO of Amadeus Spain

Paul de Villiers

He has occupied the post of CEO of Amadeus Spain since June 2006. From 1992, he worked in the Amadeus IT Group, where he occupied different positions of responsibility. The ones which stand out are his role as Director of Middle East & Africa Markets, as well as the central, eastern and southern Europe region, and Director for Western Europe Markets. He has also collaborated with the consultancies Accenture and Alexander Proudfoot.

Amadeus España

It is the subsidiary group of Amadeus IT Group in our country. Their activity centres on the travel sector, where it is the main technology solutions provider and the largest distributor of tourist services. The company is a wholly owned subsidiary of Amadeus IT Holding, which has been listed on the Spanish Stock Exchange since 29th April 2010.

Among Amadeus IT Group's clients, you'll find clients like airlines, hotels, hire car companies, rail companies, insurance, tour operators, ferry lines; as well as tourist product distributors (such as traditional and online travel agencies, major Amadeus España clients).

The sprint of technology

It's eight in the morning, you sprint out of the house, get into the car and... shock, horror, you've left your mobile at home. Do you go back for it?

We're relying on technology more and more and society as a whole submits to it to an ever increasing degree – we'd expect nothing less when it comes to travel. And travellers make use of technology from the point of designing their trip in their heads up to, upon their return, sharing it on social networks. There is no doubt that travellers are increasingly prepared to be up-to-date with technological changes, but are tourist destinations?

Spain, with its National Integral Tourism Plan 2012-2015, was a pioneering force in driving and managing the development of *smart destinations*. In this respect, Segittur has undertaken different initiatives, like this Paper, which, without doubt, will help gain recognition and push for its development. Little by little, the project is taking form, both private institutions and public Administrations are making important efforts to adapt destinations to the needs of travellers, although there remains much to do, mainly in the spheres of connectivity and access to the relevant data.

Currently, technology is a crucial factor in all phases of a trip. Years ago it played the primary role in the "before" phase (searching for prices, destinations and booking), and not so much of a role in the remainder of the stages. Today, however, technology is also present in the travel phase (online billing, luggage tracking or information about delays), at the point of arriving at the destination (checking in at the hotel by mobile or receiving personalised offers), and finally, after the journey (recommendations).

A visitor expects a destination to be smart, i.e. that it anticipates their needs and wishes. The visitor doesn't want to have to request a service. These *smart destinations*, as well as offering the traveller a host of advantages, enable tourist service providers to familiarise themselves with the likes of their potential consumers, the activities they engage in or the time they spend at a certain place. All of these data, which are increasingly easy to obtain, thanks to technology, must be taken advantage of in order to offer a better service to travellers.

Moreover, technology plays a key role in making all points of exchange of information that tourists may have during their time at the destination more fluid and comfortable, and this is thanks to the new devices currently offered on the market: smartphone, computer, tablet, SmartWatch, augmented reality glasses or advanced robots.

Among the devices that may have a greater impact for *smart destinations*, the smartphone is, for now, the most important digital device in recent years - and seems set to remain so. There are more and more applications and functionalities that make users use mobile or tablet more - to the detriment of computers, and this is never more the case than at tourist destinations, where mobility is such an important element.

On the other hand, both the SmartWatch and augmented reality devices are becoming increasingly common among technology users. Only a few years ago, when a tourist was visiting a new place they were limited to merely admiring the sights, tasting the local dishes, enjoying traditional music and feeling the warmth and aroma of another culture. Now, the traveller has a new sense through those

channels that let you live another kind of experience, thanks to technologies such as the Google Goggles app, where all you have to do is take a photo of a monument and it instantly recognises and displays all the information that appears about it on the Internet.

When it comes to the initiatives Amadeus has launched which can help the development of *smart destinations*, our company commissioned a consultancy specialising in consumer trends, The Future Foundation, to identify what "the new travelling tribes of the future" will be and how technology can help provide them with a better service. To this end, in April this year, Amadeus published the report Future Traveller Tribes 2030, which concluded that more than 1.8 billion people will travel abroad annually. Many of them will do it to get to know other cultures; others, because of social commitments; and some, to enjoy luxury and exclusivity, among many other reasons, but it's likely that most will belong to more than one tribe, depending on the vital moment that they find themselves chosen to share a journey with someone. We are not, therefore, talking about unique traveller profiles, but rather the study has defined six different traveller tribes set to emerge massively by 2030.

By then, some people will travel almost exclusively according to what social networks recommend and will make extensive use of them throughout the trip, looking to further increase their online presence or reputation; the latter will be *social capital seekers*. So called *cultural purists* will see holidays as an opportunity to dive into a unique and unrepeatable cultural aspect. For the *committed globetrotter*, the most important thing is respecting the environment and improving the lives of others; however, for those who love comfort, it will be about enjoying a relaxing holiday where you don't have to worry about anything.

Finally, there will be people travelling for a specific reason: business, education, entertainment, etc.: those *travelling by necessity*; and those who are travelling in search of exclusivity as a reward for their hard work, i.e. the *luxury lovers*.

Although we believe that all these tribes can impact *smart destinations* in one way or another, *social capital seekers and travellers by necessity* are clearly two of the groups to which *smart destinations* can contribute greatly. A *social capital seeker* need continuous Internet connection to take into account the opinions and recommendations of their contacts in the network when choosing a place to visit or restaurant to eat at. During the trip, they will share their experiences, opinions and photos on social networks and, as a result, they will increase and enrich their online presence. They are the best ambassadors of the destination, and if they have a good experience they can amplify its benefits, although they may be very critical when their immediate needs are not met. We must be especially attentive to the conversations floating around on the network, as they can become the best (and most cost effective) way to promote a destination.

Travellers by necessity are those travelling for a specific reason, whether business, leisure or studies, which requires them to seek efficiency in their actions. Often they are combined in what is called "*bleisure*" (synthesis of business and leisure). To be able to give this combination of business and leisure time optimisation will be key, and this is where technology comes in. For example, thanks to technology, business travellers will have all the services and products on a single platform, application, or point of purchase. For them, connectivity is critical, so eliminating roaming opens up many business opportunities, as well as providing free public Wi-Fi.

All of these possibilities are concerned with the business traveller, but if they want to combine it with leisure, it's important to supply applications that enable them to perform faster transfers, avoid lines in museums or book restaurants, among many other things.

So, did you go back for your phone? Of course you did. Without it you wouldn't have been able to call your client to finalise that meeting, or reply to that urgent e-mail while you were in the waiting room, you wouldn't have read that WhatsApp from your son saying he was going to be late, nor would you have... or.... And if you were lucky enough to be on holiday and you thought you wanted to be more "disconnected", you would have regretted not going back for your mobile when it comes to booking a restaurant, finding out the museum's opening hours or arriving somewhere without getting lost.

This much is clear: in this technological race travellers are in first place; so tourist destinations need to sprint if they want to take the lead.



Juan Murillo Arias
Responsible for Urban Analysis and External Collaborations at BBVA Data & Analytics

Juan Murillo Arias

Civil engineer from the Universidad Politécnica de Madrid and Executive MBA from the EOI, he has developed his career in the field of urban planning and land management, carrying out socio-economic analyses and improvement proposals, often with important tourist destinations like the ones in this study. Since 2012 he has been part of the working group for driving big data analytics applications to financial data, developed in the BBVA Innovation Centre and subsequently incorporated in the technology consultancy BBVA Data & Analytics.

BBVA Data & Analytics

BBVA Group Company, founded with the aim of creating value around financial activity data, providing information-based services and providing a new source of useful knowledge to guide decision-making planning and management in many fields.

Its greatest assets are, on the one hand, the analytical and technological ability of its experts, and on the other, the very vision around a source of thus far unpublished data for projects geared towards third parties.

New data sources to serve tourist intelligence

As a broad concept, the fact that tourist destinations are supported by the tools that today's technology offers is merely the most natural evolution within a sector that has traditionally been based on evidence analysis and knowledge to support its management and enhance the visitor experience. We have fixed on the importance of surveys for decades to get to know the intentions of potential tourists, their interests and activities during their visit and their opinion after their stay. This is a management model based on scientific knowledge, as is also the application of models for forecasting the demand in order to set dynamic pricing in the hotel industry. Seasonality requires measurements, to communicate, to make recruitment drives and adaptation initiatives, so that nothing is taken for granted. Therefore, the degree of intelligence applied to the sector was already high and yet, as in all fields, areas for improvement can be identified. Identifying and creating solutions which achieve this is simpler when partners are geared towards continuous evaluation, as is the case in the tourism sector.

As a project, the initiative led by Segittur in cooperation with all the local authorities and private sector stakeholders involved is a great example of innovation implementation. A great way to take full advantage of new technological capabilities and synergies that occur when a ideation forum is created to hear the concerns of all stakeholders involved in government and in the sustainable development of tourism destinations, striving to design and implement solutions to all of these problems.

Technology at the service of destinations

Technology is a cross-disciplinary tool, from which applications to support all stages, sectors and cycles governing the health of a region and which influence the welfare of its residents and the successful experience of its visitors, are derived.

Consider, for example, information flows, which today can be supported in multi-channel digitisation: to the tourist, access to information services which serve to better organise trips and make the most of them, nowadays this is all possible through the personalisation of their profile and interests. To entrepreneurs, access to knowledge is essential to configure better services and adapt to changing demand. To Administrations, the vision of visitor flows and areas of interest constitutes the improvement basis for establishing a government based on knowledge through continuous evaluation of the effects of all actions; from regulatory issues to the design and physical configuration of a region, or improving security management and adapting public services to guarantee service levels demanded by citizens.

Innovation, however, is much broader, and may or may not be linked to technology. In a debate often dominated by technology we run the risk of forgetting that it is constantly innovating through non-digital actions and solutions. For example, when beautification actions are performed which focus on distinctive and unique elements of an urban environment, or when sustainable tourism projects develop in the natural environment, or when

traditions that enrich the cultural attractiveness of a destination are revived. Also, when a sun and sand destination becomes more accessible, or when a commercial hub maintains the diversity and vitality that took decades to achieve, because respecting the characteristic can be innovative in a world where globalisation homogenises all environments. In these examples, technology can act as a subtle facilitator, for example, measuring the impact of transformation, promotion or communication initiatives, but the spotlight belongs to non-tech actions.

In short, few people make a decision to visit one destination or another based on digital factors, at least, not on a conscious level, but rather it'll be based on their appeal, on what the destination offers compared to alternatives, and on what the traveller is hoping for; this is where supply and demand meet, and where technology has a big role to play.

At BBVA Data & Analytics we work for the democratisation of knowledge of what happens in the region through the opening of electronic payment activity data through bank cards. In Spain we work with a flow of 650 million transactions per year, a figure which, in Mexico, a country in which we also work, increases to 1,600 million geopositioned and timely transactions which, when anonymised and aggregated, offers extremely dynamic statistics on the commercial vitality and flows of people in an environment.

This information is useful both in the diagnostic phase of the dynamics that occur in a destination and in the implementation phase of other initiatives and projects, the effects of which can be monitored by their mark on payment activity. Tourist destinations are competing amongst themselves...or maybe not: Can we help them discover complementary destinations? Today it is possible to trace visitors' itineraries during their stay in the country and, after aggregating them to preserve the individual's privacy, provide statistics to various destinations on the origin of visitors, their characteristics and areas and activities of interest.

Both the level of spatial and temporal detail of this new source of information and its update rate are very high. We have worked to develop infrastructure which allows the automation of aggregated data queries and we have made it available to Segittur, who will apply it to destinations such as Palma de Mallorca, Las Palmas and Badajoz. In parallel, we have developed ad hoc reports for destinations like Madrid and the Mayan Riviera, to which other collaborations that are still in their infancy will be added in the future.



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*Commercial Strategy Director at
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Jordi Alvinyà Rovira

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Raúl González
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Raúl González Prats

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Cellnex Telecom

The leading European operator of radio and television telecommunications infrastructure, as well as mobile telephony.

It develops solutions in the field of smart cities projects that improve services for citizens across networks and services that facilitate municipal management. In this area, Cellnex Telecom is deploying a smart communications network that allows connection between objects and, therefore, is developing a solid ecosystem for the Internet of Things (IoT) in Spain.

The intelligent and *connected* traveller

In these last few years, tourists' behaviour has also changed in the way in which they decide on, learn about and book a destination. The proliferation of destinations and their increased accessibility facilitates the search for new experiences and requires the development of formulae which enable differentiation between these destinations which operate in an environment which is intensively competitive. Nowadays, the traveller has been documented and, quite possibly, made virtual tours of hotels, monuments, museums, etc., which means that, upon arrival, everything is familiar. This means they arrive with a pre-conceived idea that can influence their feelings during their stay, and it might mean that expectations are higher.

Years ago, it was the travel agencies and advertising that provided the "inputs" to the tourist at the point of choosing a destination. At present, it's social networks, forums, mobile applications, etc., which are the additional elements carrying greater weight in the decision making process, forcing destinations to adopt *omnichannel* strategies to address potential visitors and also taking note of the three stages of the journey: before, during and after.

The new tourist needs must be met by the destination, which has the opportunity to use technological solutions to improve the visitor experience. We'll look at some examples in which solutions from a telecommunications infrastructure operator like Cellnex Telecom can help improve the visitor's experience and their stay as well as contribute to the promotion of the destination.

Margaret and John are a retired couple from northern Europe who are looking for a sun holiday. In addition, they're focusing on some other points, such as safety, tranquillity, culture and, in particular, given their advanced age, accessibility and healthcare. They might spend a long time at their destination,

so they're looking for one which will feel just like home. Their family will want to know where they are and how their health is (just like the doctors who attend them in their country of origin), so they'll expect it to be easy to communicate with them. If, when they arrive at their destination, there is also a device capable of capturing their vital signs and their location, all the better.

But what if the device also identified them when they accessed the different services in the region? For example, doctors at the health centres at the destination could access their history, immediately, and at any time. Or when they had to travel by bus they were identified at the stop and informed of when the next bus with a wheelchair access ramp would arrive. Even the ramp would be automatically activated when it arrived at that stop, and if any incident occurred during the journey, health or security services would be alerted *ipso facto*.

All of these services are possible if elements capable of communicating with networks are used - this is called the *Internet of Things*. In this case, sharing information between the tourist and the different administrations, dealers and companies enables access to services and makes more personalised and efficient care possible.

Stefania is 35 years old. Having worked all year, she wants to get the most out of her holiday, and so she intends to travel with her family (her children are between 10 and 12 years old) to a safe destination, with quality services which allow them to combine culture with family leisure time.

Stefania and her family have a circle of friends with whom they share interests, activities and with whom they are constantly connected. They have prepared for their holiday thoroughly, based on information and experience from friends, as well as searching on social networks and specialised websites. So that they can

feel at home, they have opted for a home exchange. They have also decided to travel to their destination using a low cost airline. They know what to do and how to get there, but they're looking for a certain degree of flexibility when it comes to transport, so they're not limited in their activities. To do this, they have consulted different guides, which, due to limits on baggage allowances, they can't bring with them. Arriving at their destination, when they're just off the plane, they look for an open, free Wi-Fi network in the airport to send their first photos to their friends and family. The captive portal access to the network allows them to download a free application with information on services that can be found at the venue: public transport, cultural events, tourist routes, charging points for electric vehicles, restaurants... and much more information of interest.

Incidentally, other friends are arriving the next day, so Stefania and her family would like to communicate with them - and the rest of their friends - to tell them where they are and how well things are going; this can also be done through the application they just downloaded. Once preferences for information have been selected, the application helps them plan their activities and show them public transport alternatives, car rental or electric vehicle sharing schemes. Additionally, it tells them where they can get free connectivity - though the application provides maps and information even with no Internet connection - and when they're looking for a restaurant, not only does it show them options to suit their tastes, but it also allows them to download discount vouchers. After they've eaten, they decide to tour the city and, as a fun way of doing it, the application suggests a game in which everyone can participate - even the kids. Unforgettable...

These experiences are undoubtedly positive for them, but what are the benefits for the region? And what about the businesses located there? When it comes to the region, ubiquitous connectivity is an asset of great importance, because

it puts a value on the anonymised information that the Wi-Fi network provides, which helps to improve the visitor's profile, and allows public services to adapt to the movements of tourists as well as get to know their behaviour better and anticipate their needs. As for the destination's shops and businesses, having an additional channel can mean that the offers reaching their target audience are more appropriate (and in real time), as well as getting immediate feedback, increasing their income and allowing them to adapt their supply to real demand.

In any of these scenarios it's necessary to have information systems and platforms to facilitate the exchange of information and access to infrastructure on the part of all stakeholders involved. It's also necessary to have communication infrastructures capable of implementing these services, of capturing information, interacting with users and intervening when needed. These communications infrastructures should be extensive, robust and resilient to any sort of adversity, so they provide security and confidence to visitors and improve their experience substantially.

With this in mind, Cellnex invested in multi-sector collaborative innovation, innovation which allows the creation of smart regions/destinations and improvement of the traveller experience, as well as the competitiveness of an increasingly fragmented market with strong growth in absolute terms and, as a consequence, with a high need for differentiation in a highly competitive environment. To do this, communication infrastructures must be at the service of this innovation and differentiation; we must have platforms and applications that enable access to data, creating new services and knowledge for the visitor, so that services not only adapt to demand; they anticipate it.



Aurkene Alzua-Sorzabal
CEO at CICTourGUNE

Aurkene Alzua-Sorzabal

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Cictourgune

The **Centro de Investigación Cooperativa en Turismo, CICTourGUNE**, is a scientific-technological platform created in February 2007 in the Basque Country that leads and coordinates research in the area of tourism and human mobility.

Reflections on smart destinations

Efficient use of resources, conservation and new technologies are the subject of academic and business discussions on the future of tourism in the new paradigm.

Tourism plays a key role in regional impulse, as it's one of the largest and fastest growing economic sectors in the world (providing 9% of world GDP). However, as can be seen in some mature destinations, if it's not managed wisely, tourism practice can deplete natural resources, cause loss of biodiversity, and contribute to social deterioration.

The exploration and analysis of intelligent technologies is a complex task that also has global links, but in turn, the new approaches in relation to territorial and social planning can ensure the future viability and prosperity of the destinations. The destinations as regions are complex systems composed of a large number of interrelated elements: citizens, visitors, businesses, transportation, communications networks, services and infrastructure. Experts argue that the traditional solutions implemented in the tourism sector do not respond to the demands of a growing population and put a particular emphasis on the necessary investment in new, more efficient technologies as the key to ensuring a sustainable future and increased competitiveness of tourist regions.

The momentum of new business practices and other knowledge-based innovations and new services to consumers is vital to the development of *smart destinations*. This involves the design, definition and integration of developments in the tourist value chains (generation, transmission, distribution and marketing of products and services), allowing conservation areas, safety, quality and service administration to be joined together in a single management system with the primary goal of providing efficient use of tourist destinations.

The **concept of smart destinations** seeks to develop an environment where technology is integrated into all areas within the destination itself, and involves placing people at the heart of all actions.

Economy

One of the key indicators to measure the increasing competitiveness of a country is its ability to act as an economic engine (Giffinger, Kramar, & Haindl, 2008). **Tourism is a vital part in maintaining a successful society and has become a clear catalyst for the evolution of this on many levels.** Prolonged economic instability, coupled with the influx of other factors such as globalisation and growing tourism competitiveness, have led to the conceptualisation of destinations and their formulae of political, economic and social management.

What impact do smart destinations have on the tourism economy?

A large part of the implementation and development of technology on smart destinations involves some sort of economic activity. It's no secret that business investment and improved infrastructure are key to the improvement of tourism competitiveness. While Administrations are often the centre of finance, the real task of creating and using these technologies lies in the business sector. Not only is the business sector responsible for the creation of these technologies, but it is also an employer of services generated within the framework of smart destinations.

The development of smart tourist destinations is, in fact, a way to stimulate the local economy.

The progress of a smart destination places the destination in an excellent position to generate economic development and employment, because entrepreneurs will have the best information to launch their initiatives, and because the destination reinvents itself with the ability to attract new profiles. It becomes a desired partner abroad and is positioned to attract new investments that create jobs and economic growth.

In this context, the technological revolution has also shaped the emergence of a new phenomenon that defies traditional business models. They are the so-called *collaborative economy* and *data economy*, which have led to the emergence of new technological initiatives and Internet-based business models, mobile devices and new platforms for the exchange of goods and services, which involve lower costs for users and generate new forms of travel.

Tourism based on the collaborative economy has great growth prospects and is the technological innovation that makes this type of development possible, expanding the tourist market and increasing competition between companies. **"The attractiveness of a territory is directly related to its ability to offer services that support opportunities for growth, generate economic value and create competitive advantage"** (IBM, 2012), so that the existence of such initiatives is justified as a means of territorial competitiveness.

Environment

A large part of the interest generated by a territory depends on the attractiveness of its natural and environmental conditions. Therefore, *smart destinations*' initiatives should feature the concept of energy efficiency and sustainability and strive for a balance between the environment and the consumption of natural resources. The use of information technology in order to enhance sustainability and improve the management of natural resources is a common element in the smart concept.

How does a smart destination work and how does it influence its natural environment?

The philosophy of a smart destination operates on the idea of promoting sustainability and efficiency, using technology to help in environmental issues, which have an impact not only on the health of its inhabitants, but also on visitors' perception.

Capitalising on ICT for the benefit of sustainable growth and environmental protection is already a reality in some areas: sensors for environmental measurements, smart networks for electricity production and supply in cities, strengthening smart solutions for managing load capacity, etc.

The strategy of a smart destination should be effective considering the intrinsic context of a region, boosting its environmental attractions and mitigating their weaknesses through appropriate management measures and environmental protection (Enerlis et al., 2012).

Through analysis and research into environmental processes (pollution, waste management, etc.) we can identify immediate impacts on energy consumption and natural resources, as well as future trends associated with the production and growth of tourism in each region. Both consultations are required for sustainability and provide a unique view of the importance of the technologies for the future development of *smart destinations*.

Community action

The concept of *smart destinations* means the visitor can feel welcomed and integrated into the environment in which they're travelling, and offers greater capacity for interaction with residents (Alorda, 2013).

How can community members benefit from smart destinations?

While much of the philosophy behind smart destination innovation revolves around the idea of climate change and sustainability, **community involvement and social sustainability play a vital role in its development from the beginning**. The smart destination philosophy is based on a collective strategy for the implementation and use of smart systems; smaller communities within this area often act as the engine or the unit behind the development of the region. Without the support of these communities, the implementation of smart technologies won't really help local people and visitors, and there's also the risk of creating gaps in municipalities or between public and private institutions.

The basics of the smart destination are based on the idea of preservation of community values, incorporating the participation and support of the community. In fact, to ensure the success of a smart destination, the part played by the population is key. The community is the main axis around which the other components of the region should revolve, therefore keeping the community involved in building the region is essential.

Technology and the degree of humanisation can be determined as fundamental parameters when assessing a destination. A destination becomes smart when it reaches a relevant degree of humanisation, as well as a powerful technological network, not only for accessing information but also as a vehicle for participation. It's the degree of humanisation and commitment to technology as a whole that give the smart status to a region (Lecuona & Abad, 2014).

The human factor (urban stakeholders, residents, city users, tourists, etc.) becomes increasingly important, since it involves the future of a region.

Governance

With the aim of adapting to change that the use of the smart destination concept involves, it is necessary that all sectors of society are present. The public sector and the private sector must work in a coordinated manner, since they share the same region (Buhalis & Amaranggana, 2013). Governance is based on community participation and public-private cooperation, and depends on the implementation of an infrastructure that should be responsible, responsive and transparent. This infrastructure enables collaboration, data exchange, service integration and communication.

The movement of the smart destination phenomenon is essential if each of us - citizens, public bodies, tourism companies - is to have a role to play in the new future. As we recover from the recession, the transition towards smart tourism management has the potential to grow our economy and create thousands of jobs, but only if we accelerate that transition. We need to seize the moment and drive greater collaboration between science and business, between the scientific community and citizens and between the public and private sectors.

How does policy development contribute to the development of smart destinations?

In recent years, the Government has shown great interest in promoting the use of technologies in *smart destinations*. The Administration plays an important role in promoting *smart destinations*; without this support there would not be sufficient funds and resources to fully launch the *Smart Destinations* project nationwide.

It's necessary to take into account the large number of restrictive laws and regulations on ICT-based projects for the development of digital governmental actions, as well as the challenges generated by the institutional framework itself, and the environment in which they develop their own policies (standards, actions and behaviours that may or may not be approved).

In addition, new forms of governance are crucial to deploy initiatives, mainly based on education and the involvement of academic institutions in this new paradigm. Without the knowledge gained from research and study, progression in the innovation of *smart destinations* cannot be guaranteed. Undoubtedly, education has been of vital importance in the development of smart technologies.

The role of big data in the smart destinations' concept

Globalisation and new technologies have prompted a series of social and economic factors that allow us to better understand the world around us, a world that is now more interconnected and offers better opportunities to see what's happening in our own environment.

«Today, the various subsystems within a region are still very independent, there is no interaction between them. Big data (generation and analysis of large volumes of data and information) can help build the ecosystem of the destination, get higher correlations and find better solutions. This is the embodiment of the true smart destination concept.» (Zufiría, 2015).

The smart destination concept then emerges in parallel to the big data phenomenon. The tourism sector is an intensive sector in the generation and use of information and increasingly generates digital information that can

be analysed using big data techniques. Technology allows the connection of different physical elements, services and spaces, and in the near future all regional elements will be interconnected, enabling approximation in real time and generating huge amounts of data.

We have more information and analytical capacity of the context around us, giving us greater ability to make better decisions. The challenge is to be able to have a specialised approach that allows us to understand and look for correlations in a world dominated by data. **The expert analysis of the data is what will allow us to make the quantum leap into the future.**

A smart destination has to measure, integrate and analyse all the information collected for decision making, prioritising actions and looking ahead. Effectively, big data is shaped as a primary element for the **design and construction of smart tourist destinations of the future.**



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José Manuel Petisco
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José Manuel Petisco

CEO of Cisco Spain. Qualified in Law and Economics from the Universidad San Pablo CEU in Madrid, Jose Manuel Petisco spent 25 years working in companies within the telecommunications sector such as Ericsson, Alcatel and 3Com. He joined Cisco in 1999, where he held various positions in the areas of Sales, Marketing and Business Development in Spain and in Europe, contributing to major market transformations led by Cisco. Since 2007, he has served as CEO for the Spanish subsidiary. In the past eight years, and under his leadership, Cisco Spain has been recognised as the *Best Company to Work for* by Great Place to Work.

Cisco Spain

Cisco is the world leader in IT that helps businesses and Administrations take advantage of the opportunities of the future, showing the changes that can occur when they connect to the network of people, processes, data and things.

The ability to anticipate and lead market transitions is in our DNA: since 1997, when we consider that voice and video would be one, through 2000, when we defined the concept of '*network of networks*', and even today, when we talk about the network as a platform, from the transition to collaborative technologies and the new Internet of everything era, where the convergence and interaction of connected people, processes, data and things generate enormous opportunities for the progress of countries, companies and society in general.

More information can be found at:
<http://www.cisco.com> or
<http://www.cisco.es>

Smart tourism, towards a more sustainable, accessible and profitable tourism

Throughout the past year, the tourism sector has continued to consolidate itself as a key factor of the economic recovery and contribute to the generation of wealth and employment, to environmental protection and to multicultural exchange.

According to the World Tourism Organisation, the number of international tourists increased by 4.4% in 2014, reaching a new record by surpassing the 1,100 million visitors' mark.

Both Europe and Spain are in a privileged position in the international tourism context. Europe was the most visited region in 2014, receiving 584 million foreign visitors, who spent more than \$500,000 million.

For its part, our country exceeded all expectations by receiving 65 million international tourists (7.1% more than in 2013, the highest growth in the last 14 years), according to the Ministry for Industry, Energy and Tourism.

Nevertheless, tourism has a strong impact on destinations, making it necessary to establish mechanisms for respecting the environment, historical and cultural background, as well as local customs and usages. In turn, destinations must adapt to a new type of visitor: *über-connected* tourists who demand personalised offers in real time; anytime, anywhere.

To respond to these great challenges - unstoppable growth in visitors, sustainable tourism and *über-connected tourists* - businesses and authorities are making an important investment in converting traditional destinations to *smart destinations*.

Basic facets

According to industry professionals, smart tourist destinations are those that incorporate four pillars in all stages of the value chain: innovation, technology, sustainability and accessibility.

With that in mind, Segittur defined them as «innovative destinations, built on cutting-edge technological infrastructure that ensures sustainable development of the region, is accessible to all, which facilitates the interaction and integration of visitors with the environment and enhances their experience in the destination and improves quality of life for residents.»

Thanks to this convergence and advanced technological solutions like mobile connections, context-based location services and open data platforms, *smart destinations* have three major advantages: they respect the environmental, cultural and socio-economic environment; they facilitate interaction between tourists and destinations; and they generate new revenue sources that extend to adjacent sectors (food, culture, leisure, transport, etc.).

In the digital vortex

With the exponential growth of people, processes, data and things connected to the internet (Cisco estimates there will be 50,000 million connections worldwide by 2020), the digital transformation has the potential to reshape the business market faster than any other known force.

According to the report, Digital Vortex, recently presented by the Global Centre for the Digital Transformation of Businesses (an initiative from Cisco and the International Institute of Management Development, in Lausanne, Switzerland). Four out of every ten companies will be moved from their market position (and may even disappear) in the next five years, pushed out by those organisations capable of a digital transformation.

So, each city, each country and each business will have to convert to digital to be able to advance and survive in the new economy, a transformation driven by start-ups, by digitally proactive competitors, and increasingly, by the interconnection of sectors, given that digitisation is blurring market limits.

They aren't just changing business models, but also the value chains and product offers; something that's essential in the tourism sector, companies making the move to the centre of the digital vortex - the driving force created by digitisation - creating new value sources in terms of costs (prices by consumption, purchase aggregation, incentives, etc.), experiences (offer personalisation, ability to choose, ubiquity...) and platform (digital markets, shared economies, etc.).

Public-private collaboration

It's the same in public bodies, the tourism industry and technology companies - we need to establish mechanisms for cooperation in order to encourage the digital transformation of the tourism sector according to the new types of services being demanded by citizens, companies and tourists.

With good reason, the different smart destination projects being carried out by Segittur in more than a dozen Spanish municipalities join the National

Smart Cities Plan (which began in March 2015), and which aims to improve the efficiency of local authorities in the provision of public services through the use of ICT.

This public-private collaboration has enabled the launch of various projects which offer numerous advantages for tourist destination managers, users themselves and local businesses.

In Palma de Mallorca - one of the *smart destinations* boosted by Segittur - the largest free Wi-Fi zone in Europe (by scope) has been deployed. In collaboration with Cisco, Mallorca Wi-Fi and local government, Palma's beach, which is 5 kilometres long, had 300,000 people connected simultaneously last summer, without a single incident.

The network - at no cost to the Administration - not only improves the quality of visitors' experiences, but is also an incentive, as local businesses may publicise their offers through location-based services, an experiment Cisco has introduced in different airports, shops and hotels around the world.

Barcelona, world reference

Barcelona - declared the *smartest city* in the world in 2015, according to Juniper Research - is another clear example of how tourism is a fundamental detail within the framework of *smart cities*, with more than 22 public-private programmes in operation across various fields.

Cisco is part of many of these initiatives, including an urban connectivity platform for connecting sensors in public spaces, along with other partners (Streetline,

Urbiotica, Streetlight ...) who design applications such as smart parking, waste and rainwater management, video surveillance or tourist services.

We also participate in iCity, an open data project created by the EU to enable open innovation in public services, which is led by Barcelona, supported by London, Geneva, Bologna, and with Fraunhofer Fokus and Abertis Telecom as technology partners.

This collaboration between Cisco, the local government and a full range of partners allows, for example, analysis of the flow of pedestrian movement - anonymously - to find out the number of visitors and the busiest times in tourist areas.

Meanwhile, smart bus stops provide connectivity for travellers - even within buses - and offer multilingual applications, such as a route planner, the location of bicycles for public use or practical information on nearby services, not forgetting sensors which continuously monitor environmental noise or air quality.

Open innovation, commitment to the future

As a result of this important commitment, Barcelona has attracted more than 1,500 new companies and has, to date, created 45,000 new jobs related to its status as a smart city. This is in addition to significant savings and improvements to the quality of life of residents and tourists.

Cisco is also building an innovation centre for smart cities in the renovated *Smart City Campus* of Barcelona (district 22@), which is open to collaboration with

partners, start-ups, government agencies, research and educational bodies and, where smart destination applications will be clearly dominant.

Smart tourist destinations are in a process of growth and consolidation where digital disruption is essential to promote a new model of more sustainable, affordable and profitable tourism that requires the involvement of businesses, governments and all stakeholders involved in tourism management and the adjacent sectors.



Gloria Díaz
Managing Director at CONETIC

Gloria Díaz

Degree in Economics and Business from the Universidad de Oviedo and postgraduate in Financial and Analytical Accounting from the Universidad Politécnica de Madrid, her professional life has been linked to the information technology sector since 1997, in which she has performed different responsibilities, mainly in the fields of technology consulting and project management. She has also been professor of zero-base budgeting within the Diploma in Business Administration and is CONETIC managing director since 2009.

CONETIC

The Spanish Confederation of Information Technology, Communications and Electronics Businesses in the ICT sector, is a state owned non-profit organisation, created in late 2005 and consisting of fourteen regional associations, whose essential purpose is defending the interests of the Spanish ICT sector, improving the competitiveness of their businesses and the projection and use of technology in all sectors of the economy and society in general. Represents more than 1400 companies and 66,000 workers throughout the Spanish territory.

www.conetic.info

The contribution of ICT to tourist destinations' intelligence

The importance of the Spanish tourism industry is unquestionable. We only need to look at the analysis of the extent of the main indicators and their evolution, period by period, how it has grown in relation to the number of international visitors, total expenditure, average expenditure per person, hotel occupancy, etc. In short, the income generated each year entails a greater contribution to national GDP and a positive balance of payments.

Obviously, the technology sector is no stranger to the importance of tourism, and not only that, but we share the view of the European Commission when it declares in its statement «Europe, the world's top tourist destination: a new political framework for European tourism» (Brussels, COM (2010) 352/3) that “[...] the arrival of tourists offers business opportunities based on increasingly intensive use of technology needs, which makes it advisable to promote their use on the part of public and private stakeholders, in particular for SMEs». For all these reasons and because, faced with a temporary situation that predisposes the visitor to choose Spain as a destination over others, we have a golden opportunity as a country, we must act to improve the competitive positioning in the global tourism industry, aware that the ICT sector is key to that positioning.

This opportunity has been able assessed by the Ministry for Industry, Energy and Tourism when, in 2012, it confidently launched the creation of the *Smart Destinations* Project, the definition of which, along with the establishment of the bases and minimum requirements to become a Smart Destination, are being worked on by a public-private collaboration forum, under Technical Committee 178 for Standardisation of Smart Cities (CTN178) from Aenor, led by Segittur, and in which CONETIC participates as a stakeholder, taking responsibility for boosting

the work of the Technology group and coordinating its progress with the other groups that make up *Smart Destinations* Subcommittee 5.

With this standardisation work it is intended to provide clear guidance to the managing bodies of destinations on applicable requirements to be considered a smart destination, based, first, on establishing the concept itself:

«A smart destination is an innovative destination, accessible for all, built on cutting-edge technological infrastructure that ensures sustainable development of the region, which facilitates the interaction and integration of visitors with the environment and enhances their experience in the destination and improves quality of life for residents.»

Smart destinations are formed of four fundamental pillars: innovation, accessibility, sustainability and technology.

The aim of this work is to achieve, from the knowledge gleaned from the public and private stakeholders involved, a consensual vision which allows the development of a destination to be driven forward on a solid base which offers the visitor a distinct or inclusive product or service. What we mean by this, is that it tends to the various needs of the visitor without neglecting the citizen who coexists with the visitor in the destination; a product or service which is, in addition, respectful of the environment and competitive.

In this context, technology serves all of these individual objectives by acting as a facilitating element to complete the process of the journey. This starts pre-trip

(positioning, promotion, marketing), continues during (responding to an ever-increasing demand in technology usage), up to the post-trip segment (providing feedback to the destination and allowing continued improvement).

The challenge is ambitious, especially considering the commitment that is required on the part of the agents involved in the destination, to validate the bases upon which the destination sits.

For its part, the ICT sector is prepared. It includes companies that develop a clear value proposition for the tourism sector, although it is important to remember that it is up to all of us to live up to what is expected of us as a sector. As industry players, in order to contribute to better positioning of the destination we have a responsibility to raise companies' awareness about promoting standards and interoperability of platforms that support different solutions developed by companies and require from those same companies the development of interoperable products and services that increase the efficiency of investment destination and act in turn to improve the visitor experience. Otherwise, we will generate unproductive expenses which shall negatively impact efficiency in a world where this is vital to be competitive, and is exactly the same from the point of view of a visitor who encounters disaggregated applications to meet their needs.

In CONETIC we have been working on this awareness-raising for nearly three years, involving not only companies but public authorities and various destination stakeholders, because only in this way, from a consensual technological approach, are we able to achieve smart development for the destination, and this will only be

achieved if everyone is involved in their accomplishment: specifiers, buyers and developers.

The technology sector goes hand in hand with tourism. Given the predominant place Spain occupies as a destination worldwide, it is a great opportunity. Giving technology companies the opportunity to take a leadership position both when accompanying the tourist companies in their internationalisation and when used as cover letter, considering its position.

The same applies to public authorities responsible for or with expertise in the destinations. If we are able to collaborate with them by establishing consensus on what a smart destination must collect from the point of view of technology and contribute to its implementation, Spanish technology companies have an excellent opportunity to grow and take hold, in addition to venturing abroad with an impeccable résumé.

There have already been examples of this collaboration under the umbrella of CONETIC with two projects: Intelligent ICT and CARISMA, which were conducted in cooperation with some municipalities spread across several regions and whose purpose was the mentoring of these institutions towards a smart strategy from a technology standpoint. Among other things, the peculiarities of the tourist municipalities were assessed in terms of population increase which suffered, either seasonally or continuously, with the arrival of tourists, which affects many aspects of the day-to-day reality of *smart destinations*. The sustainability of the destination (changes in energy and water consumption, waste generation, etc.), accessibility



(e.g. management in “senior” tourism), mobility (greater visitor numbers have a significant impact on transport services), tourist information and assistance (public involvement), safety, etc. Last but not least, the handling of large volumes of data (big data), which provides much of the intelligence to the destination, and allows better management of the same, promoting an improvement in the quality of the tourist experience, but also better quality of life for citizens.

Let's meet the targets for the development of *smart destinations*, contained in the National Smart Cities Plan, with a collaborative approach between all the stakeholders involved, and let's do it without leaving anyone behind. This way, we'll contribute to the development of this type of smart destination and build relevant experience as a country, which will in turn grant us a competitive position in the international market.



José Damián Bogas Galvez
Managing Director of ENDESA S.A.

José Damián Bogas Galvez

Born in Madrid in 1955. Industrial Engineer from the ICAI (1978). Managing Director of ENDESA S.A.

At ENDESA he has held positions as CEO of Spain and Portugal (2004-2014), CEO of Electricity Business (1998-2004), CEO of ENDESA and CEO of Generation (1997-1998), director of Control and Energy Management (1988-1997), deputy director of Control and Energy Management (1988), head of the Department of Trade Relations (1984-1986) and head of the Market Research Section at the Planning Department (1982 - 1984). He was also a technical and economic adviser to the Directorate General for Energy in the MIE (1986 - 1988) and previously worked as a systems analyst in ERIA (1981-1982) and as a systems engineer in the Engineering Division in DIMETRONIC (1980-1981).

Endesa

The industry leader in the Spanish electricity sector and the second operator in the Portuguese electricity market. It is also an important operator in the natural gas sector and develops other products and services related to energy. In recent years, it has developed intense activity in fields related to the electrification of demand and energy efficiency, such as electric mobility projects, efficient lighting, digitisation, deployment of smart meters and smart cities projects in Málaga and Barcelona.

What are the boundaries of smart tourism? Smart tourism and electrical energy: a vital collaboration

In tourism statistics in recent years, Spain consistently appears in the top positions at an international level, by number of international visitors or volume of income.

In reality, regardless of any statistic, the essential fact is well known: tourism is one of the major economic sectors of the Spanish economy; one of the main foundations of its GDP, its external account, regional development and job creation.

I am aware of having devoted two paragraphs to underscore a well-known social and economic fact. However, I'm not sure that we are sufficiently aware of its importance. An importance which is manifested in at least three aspects: in our country's natural conditions for being a preferred tourist destination; in the traditional capacity of our industrial, commercial and services fabric to favourably exploit these comparative advantages; and, above all, in our ability to anticipate the needs and expectations of national and international tourism and make increasingly innovative and competitive offers.

Perhaps this last element is, in my humble opinion, the most important distinguishing feature of recent years. I will not waste too many words trying to prove a fact that seems, at this point, incontestable: although the phenomenon has not yet fully disappeared, the Spanish tourism sector has long since grown out of the "sun and sand" cliché which was an important, perhaps even inevitable, foundation of its development in days gone by. It has instead opted for high quality, widely diversified and segmented tourism, which is capable of making an offer that is reasonably balanced both in price and quality, respecting the purchasing power of all citizens; and, in addition, has placed, and continues to place, as much importance on tourism from abroad as domestic tourism.

The funny and interesting thing, in my opinion, about this "quality" or "high quality" tourism is that it is becoming increasingly borderless. We know it is a type of tourism that has long ceased to position the good weather or low prices as the only incentives; valuing attractive hotels and restaurants more and more; increasingly appreciating the availability of complementary leisure facilities, the environment, training, sport, art or culture in general; seeking comprehensive packages to provide everything in a manner that is harmonious, convenient and flexible; demanding facilities for recruitment, especially online...and that makes it necessary for the provision of basic services in the destination to be consistent with the level of social and economic development that is expected of our country.

In short, smart tourism with which the citizen, whether national or foreign, identifies, because not only does it respond to the needs of this formula, but also to expectations of which they're maybe not aware, but they'd recognise as their own when they're met.

I think this is where the reflection from someone like me, who's been linked to the Spanish electricity sector for so long, is a logical and natural connection. In this smart tourism, the quality of services in general, and electricity in particular, is essential from a dual perspective: on the one hand, to respond without any hesitation or form of collapse, to standards of quality and safety of electrical supply that are already required and indispensable in a modern society like ours; on the other, and more importantly, to demonstrate that Spanish electricity companies are at the top of innovation, energy efficiency and environmental conservation... i.e. sustainability on an international scale.

What do I mean by that last statement? Any citizen, whether national or foreign, who devotes a significant portion of their income to enjoying a well-deserved

holiday, expects the destination of their dreams, that's to say, the rural, urban or beach destination, on which they've spent not only a significant amount of money, but also their hopes and dreams, to be well lit. They expect that gas and electricity services will always be available, that it will provide access to any audio-visual package they might desire, that the use of any digital device is just at the touch of a button and, why not, that they can be sure that the use and enjoyment of the pleasures of tourism are compatible with the preservation of the environment and against any form of energy waste.

Granted, not all tourists demand so much, but demand is increasingly moving in that direction. It is therefore logical that a country that does not position itself in this way will lose competitive advantage in today's tough market of tourist offers.

I am convinced that Spain has risen to this challenge because there is sufficient evidence and a large number of sound practices that are aligned to that effect. But it is a continuous and increasingly demanding race in which the boundaries between tourism and other service sectors become increasingly blurred.

This is not the time or place for a speech or catalogue of what my company can, and does, contribute in this area. But I cannot fail to note that we are aware that our understanding of the electricity business must be based on the conviction that our service must be increasingly diversified, richer, more complex, more efficient and more customer oriented.

Whichever way you look at it, any quality tourist offer does the rounds of a growing electrification of services, and their increasing digitisation, which is a different way of saying that they will also increasingly be electrified, because digitisation is not possible without electrification.

This is one of the reasons why our company is committed to offering an increasingly digitised electricity service, through the development of the electrification of the domestic consumption of heating and air conditioning, the installation of smart electricity meters, facilitating electric mobility by enhancing efficient lighting, developing environmental conservation activities, promoting the integration of renewable energies into the electricity system, by advising hotel and tourist establishments on facilities and energy efficiency...even by integrating these and other services and equipment into a global concept that has already been dubbed smart city, but which we prefer to call *sustainable city*.

It is an investment which not only benefits the Spanish tourism sector but also the national economy as a whole, and it also has a clearly positive impact on the attractiveness of Spain as a tourist destination.

So I think we should all be aware that the walls and boundaries between sectors of the economy are becoming ever more porous and thinner; that, in particular, it is difficult to talk about smart tourism without talking about smart cities; and, of course, it is impossible to talk about tourism and smart cities without talking about the electrification of energy services.

It's a big commitment, in an essential sector of our economy, which requires strong and effective involvement of all public and private stakeholders that are objectively involved in it. And, of course, we are willing to take on this challenge.

**Ignacio Alcalde***Vice President of the Fundación Metrópoli****Ignacio Alcalde***

Urban architect, with almost three decades of experience. He has focused his activity on structuring projects and plans for the development and transformation of cities and territories, working at the intersection between public and private entities to improve cities.

Fundación Metrópoli

Fundación Metrópoli is an international innovation centre for cities and regions. It is an international institution based in Spain, which aims to contribute to the positive transformation of cities and regions. It's geared towards the creation and dissemination of innovations with the aim of building a sustainable future and aspires to be a catalyst for collaboration between the public and private sector in building the cities of the 21st century.

In the last fifteen years it has developed a priority line of research on smart regions, with practical applications in relevant cities and regions in the international context, such as Bilbao, Singapore, Mexico City, Moscow, the Colombian Caribbean, Malaysia, etc.

Cities as smart destinations

A world in accelerated change

An essential trait that defines our society is the speed at which it changes. Although it is certain that change is inherent to life itself in any society, we can state that the current times are distinguished from other eras by the accelerated rhythm of change. This reality, affecting numerous aspects of life, including daily customs, social relations, the economy, predominant tendencies, relationships with nature, energy consumption and technologies at our fingertips.

There are two features which are worth highlighting in this world of accelerated change: the spectacular development of the new digital technologies and the ever-increasing starring role of cities.

The digital age

We have fully entered a new era characterised by a digital lifestyle. It is not simply about a boom or intense development of new technologies, but rather it's about a new paradigm defined by the permanent and continuous presence of digital technology in our lives, transforming individual habits and social relations in a process that is also growing and the limits of which we cannot imagine.

Some studies indicate that 2002 was the turning point, the moment when mankind produced more digital information than analogue, in a trend that is growing and unstoppable to this day. Beyond an anecdotal date, what matters is that today most of the information produced is digital and that the relationships between people is of exceptional importance to digital technology. In this sense, the best, and most interesting, is surely still to come. Realities such as the rise of big data and the peak of the Internet of Things will come to define a world that is complex, not to mention different, from the one we know today.

Some conclusions which can be drawn from this trend are the need to keep interest in digital technologies alive and well, beyond our field of activity, and secondly, a continuous and permanent openness to innovation.

The time has come for cities

Society is increasingly urban. Today, cities have an importance in our world that they've never had before. The majority of the world's population lives in cities and the majority of the problems and opportunities of our society can be addressed from cities.

Traditionally, cities have been the critical point of coexistence and one of the best expressions of a civilisation. Today, in addition, cities are the great drivers of the economy and play an unprecedented role on the international stage.

Smart cities

In this context, the application of advanced technologies to cities is creating a huge field of opportunities that many companies around the world have discovered and on which they are focusing their expansion strategies. The impressive rise of smart cities in recent years is an indicator of the great business potential that technology companies have discovered in the sphere of cities.

However, smart city projects are frequently limited to a more or less ambitious plan of applying advanced technology solutions' catalogues to the city. It is an approach that could be described as limited, as it understands the "intelligence" of a city to be a mere increase in efficiency of the provision of certain services; something that is undoubtedly positive, but nonetheless insufficient.

"Smart regions", going beyond *smart cities*

Beyond these limited concepts around smart cities, among the specialists critics are emerging who seek to identify the true essence of a smart city or region. Along these lines is the work of the Fundación Metrópoli, which in the last fifteen years has been building its own discourse about smart regions. They are defined as those cities or regions that have managed to acquire a future project which is shared by different urban stakeholders and is based on its identity, idiosyncrasies and, particularly, its uniqueness and components of excellence.

Research by the Fundación Metrópoli in relevant cities on five continents have identified the following features common to smart regions:

1. Communities design smart regions.
2. They demonstrate environmental sensitivity and responsibility.
3. They are able to create competitive advantages.
4. They are committed to social cohesion and development.
5. They are based on coherent governance structures.
6. They are "in dialogue" with their surroundings.
7. They pursue innovation.
8. They establish connections with networks of cities.
9. They use digital technology.
10. They integrate physical and virtual worlds.

Cities as smart destinations

Tourism is one of the main economic activities in the current international context and their importance will continue to increase in line with the developmental progress of society.

Cities and regions are the physical support on which tourist activity is developed, and they also frequently constitute the raw materials for the creation of successful tourism products. Cities like New York, Paris or Barcelona are some of the most important destinations in the world. At other times, cities are the foundation that provides access and services to the neighbouring regions from which tourists travel to enjoy the closest tourism resources. In either of these cases, cities are performing a fundamental role in the development of the tourist industry.

Of the various urban models, the rise of large cities is observed at an international level. However, it is more interesting to look towards a different model, that of medium-sized cities that successfully combine a sufficient level of equipment in terms of superior quality of life within a more sustainable model.

In addition, complex urban systems formed by a network of medium-sized cities are especially interesting. This polycentric regional model is characteristic of Europe and brings many qualitative advantages. The close cooperation and complementarity between medium-sized cities working as a network generates sufficient critical mass to have visibility on a global scale, maintaining the identity and all of the values of each of the cities.

Investing in the city as a smart destination means highlighting items related to identity, tradition, culture, sustainability, as well as functional character aspects related to connectivity, equipment and services, etc. In this sense, it is a smart bet to use the attributes and strengths of the medium-sized European city model as a magnetic element for tourism. The case of Bilbao is a good example of how a medium European city in deep crisis may be able to radically change its economic model through diversifying activities and including tourism as one of its new economic drivers. But one of the keys to this success is the integration of this medium city into a polycentric system, «Euskal Hiria, the Basque city-

region» which comprises two complementary capitals with attractive profiles, like Donostia/San Sebastian and Vitoria-Gasteiz, as well as their spheres of influence, creating a varied and competitive package which combines an urban offering with attractive outer regions, like those in La Rioja in the world of wine, natural spaces, coastlines, etc.

In short, Europe, and particularly Spain, have great strength within their urban system that can also be exploited for the development of tourism. It is key to value the uniqueness of the network of medium-sized cities and work on the design of regional spatial strategies. It's about investing in polycentric models where several nearby medium cities combine their resources with those in the adjacent region, generating balanced regional structures, which are sustainable, well-articulated and ultimately, competitive in terms of development of economic activities and tourism in particular. They are, in short, ***smart destinations***.



Jesús Hernández-Galán
Director of Universal Accessibility at the Fundación ONCE.

Jesús Hernández-Galán

Director of Universal Accessibility at the Fundación ONCE and ex-CEO of Fundosa Accesibilidad, S.A. (2002-2003). He is also president of the eVIA Technology Platform, vice president of the European Network for Accessible Tourism (ENAT) and president of the Technical Standards Committee AEN / CTN 170- UNIVERSAL ACCESSIBILITY AND DESIGN FOR ALL at AENOR.

He is also a member of the Acces City Award jury of the European Commission and the Reina Sofía Accessibility Awards; Chairman of Mandate 420 of the European Commission on Accessibility in the Built Environment and head of Special Projects in South and West Europe for EIDD, a joint European platform for architects, designers and others who believe in the potential of their careers in playing a vital role in the necessary transformation of our societies. He is also editor of the Journal of Accessibility from the Polytechnic University of Catalonia.

Fundación ONCE

The Fundación ONCE for Cooperation and Social Inclusion for Persons with Disabilities was founded in February 1988 by agreement of ONCE's General Council and presented to the public in September of that year as an instrument of cooperation and solidarity of Spanish people with visual impairments with other groups of disabled people, with the aim of improving their living conditions. Fundación ONCE's mission is to contribute to the full social inclusion of people with disabilities, contributing to the implementation of the principle of equal opportunities and non-discrimination.

Social inclusion as a foundation for smart destinations

Taking into account that in 2012 international tourism achieved the historical landmark of having one billion people travel around the world and considering that this trajectory continued its growth by reaching a world record of 1.087 billion arrivals in 2013, tourism is positioned as a key driver in socioeconomic progress (World Tourism Organisation, 2013).

The development and evolution of *smart destinations* in Spain is notable for its efficiency throughout its long history, and Spain has been labelled a mature destination thanks to its established offering and its definite appeal (Monfort, 2010). However, given that Spain wants to promote innovation in the tourism sector, thereby contributing to its development, modernisation and maintenance through accessibility, innovation, technology and sustainability, it should set out to improve the needs of all.

We understand that innovation in the area of tourism is a tool for facing new challenges and showcasing the sector, by using all of its resources, and that it develops on the basis of knowledge of the social reality within which it resolutely aims to improve or create products or services that satisfy the needs and expectations of its clients. This is independent of its functional capabilities (RENFE, 2011). To that end, it's necessary to get to know the reality of the population, marked by the fact that worldwide, there are more than one billion people with some kind of disability, linked to the growth of the population, which is aging, and maintaining that "disability forms part of the human condition and that almost everyone will suffer some kind of temporary or permanent disability at some point in their life" (World Health Organisation, 2011:7).

Tourism continues its growth and the new setting of *smart destinations* represents an opportunity to promote gender equality, environmental sustainability, trade and economic growth, but without doubt, the smart

destination should incorporate the aim of pursuing promotion of personal autonomy, with development in the tourism industry being a key factor in the achievement of goals towards achieving accessible tourism for all, as stated in the *UNWTO Annual Report*.

Positive development and contribution to socioeconomic welfare will depend on the quality of tourism offered, which is why the new trends and challenges facing the tourism sector should be approached with a search for specific strategies that allow it to grow, thereby increasing its competitiveness and providing added value that positively influences the touristic experience (González, 2008). A form of tourism that is accessible to all implies an ethical challenge in which the smart destination must be able to provide inclusive touristic activity, projecting intelligence from functional experience through the fulfilment of the accessibility chain; in other words, all the activities that are carried out have guarantees of access, usage, enjoyment and continuity. This accessibility chain will be comprised of: planning and information; arrival transport; the urban environment; local transport; accommodation; restaurants and shopping; leisure activities; excursions; medical and support services; and outward transport, and this, as long as this chain is not broken, will be what determines the satisfaction level of the tourist in their final experience (WTO, 2015).

A key reference framework for inclusive tourism, through the resolution adopted by the United Nations General Assembly in 2001, is the Global Code of Ethics for Tourism, drawn up because "it is the right of all persons to use their free time for leisure pursuits or travel with respect for the choices of society of all peoples". Among its principles, Article 2.2 stands out: "Tourism as a vehicle for individual and collective fulfilment: Tourism activities should respect the equality of men and women; they should promote human rights and, more particularly, the individual rights of the most vulnerable groups".

Thus, an inclusive touristic activity will be capable of benefitting all tourists, both those who demand it as essential for carrying out the activity and those regular clients who benefit from accessibility to it and perceive it as an unconscious emotional pleasure and a sign of quality (Alcántara and Reina, 2014). In this way, the intelligence supplied to the destinations will be aimed at introducing the foundations for an efficient system which acts in the areas which have yet to be improved and it will be a positive factor for universal accessibility and social inclusion, avoiding exclusion of people which is defined as equipment, services and resources which are not accessible to all (Espinosa, 2006).

Not forgetting that the foundations for smart destination lie in the smart city, the intelligent and inclusive city, or smart human city, a concept coined by the ONCE Foundation, "will be the city which makes use of innovation to encourage and strengthen social inclusion by acting on buildings and urban spaces, means of transport and mobility, ICT applications, with the aim of making its infrastructure and public services usable by everyone under equal conditions, with greater efficiency and interactivity" (Alvarez et al., 2010:41).

In this regard, the right to the city, and with it to the *smart destinations*, is based on the dynamic of progress and achievement in which social movements are the driving force in ensuring their fulfilment (Mathivet, 2009). It is a question of destinations responding to human needs, creating meeting points for the construction of collective living, where citizens can reclaim ownership, as the highest expression of accessibility and design for everyone (Harvey, 2009).

INITIATIVES

Among the initiatives that the ONCE Foundation has launched regarding accessible tourism and innovation, the Universal Access Plan in Lusail is noteworthy, with which Qatar aims to complete the design of an accessible city through a diagnosis of physical and technological accessibility in hotels, gardens, etc. This activity aims to establish an action plan which considers accessibility in the city.

Another project which has been carried out is based on the complexity of the public transport system in Barcelona, where, although it has several aids for accessibility, there are still people with visual impairments who have authentic mobility problems in both the metro and bus systems. The project aims to show how two technological solutions based on the use of radiofrequency beacons and mobile devices will improve use of the public transport services offered by Transports Metropolitans de Barcelona (TMB) by people with disabilities, especially those who are blind or have visual impairments.

On an educational level, since 2012 the ONCE Foundation has collaborated in the development of the Master's degree in Universal Accessibility and Design for All at the University of Jaén. It has also provided continuity to this educational training, in 2014 both institutions launched the first edition of the Master's degree in Accessibility for the Smart City: the Global City, a pioneer in online education, which extends its offering and whose aim is to understand, diagnose, design and produce accessible instruments through the new city model, with space for all services, including tourism. It is worth mentioning that this Master's degree includes homologation by the Andalusian Institute of Public Administration, which reinforces the importance of the training needed by professionals in universal accessibility and design for all, and emphasises to those in education that they must bear in mind the functional differences and limitations and pursue the goal of achieving a society that offers equal opportunities (Hernández, De la Fuente and Campo, 2014).



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Luigi Cabrini
*Presidente of the Global Sustainable Tourism Council (GSTC)
advisor to the Secretary General of the WTO.*

Luigi Cabrini

He is president of the Board of the Global Sustainable Tourism Council and advisor to the secretary general of the World Tourism Organisation (WTO). He is director of the WTO's Programme for Sustainable Tourism, focusing its activities on tourism and climate change, tourism and biodiversity, sustainable tourism observatories, the green economy, tourism and heritage of humanity. Previously, he was the WTO regional representative for Europe and Secretary of the General Assembly and the Executive Council of the WTO.

Before joining the WTO, for 20 years he was in charge of the United Nations programmes for the development and protection of refugees in Guatemala, Mexico, Somalia, Pakistan, Poland and Spain.

Global Sustainable Tourism Council

The Global Sustainable Tourism Council (GSTC) is an international association that aims to promote greater awareness and understanding of sustainable tourism practices, promoting the adoption of universal principles and creating demand for sustainable travel. The Global Sustainable Tourism Criteria for Hotels, Tour Operators and Destinations are the core of its activity.

Global Sustainable Tourism Criteria, an instrument for the responsible management of destinations

Introduction

Tourism is recognised today as a sector which contributes to sustainable development and poverty mitigation, just as is reflected in the "The Future We Want" declaration, adopted by the Rio+20 United Nations Conference on Sustainable Development. The tourism sector generates 9% of world GDP and creates one in every eleven jobs worldwide. In many developing countries, tourism is often the main economic activity, and has arrived in regions which are less developed, generating opportunities for mothers and young people. In developed countries, like Spain, tourism has provided an important course of income and employment during adverse economic times.

With more than 1100 million international tourist arrivals in 2014 and 1800 million forecast for 2030, together with an estimate of 6000 million national tourist arrivals, it has become necessary to manage negative impacts that inflows of this magnitude cause on the environment, resources and communities. Sustainability has become a vital aspect for all the stakeholders of the tourism sector and must be translated into concrete and effective actions.

The Global Sustainable Tourism Council and its criteria

In 2010 the Global Sustainable Tourism Council was officially formed. The GSTC is an international not-for-profit body whose principal aim is the establishment and management of standards in relation to sustainable tourism, with the goal of broadening knowledge and practise of this type of tourism amongst public and private stakeholders. It is an independent, neutral organisation, with a diverse and

global membership, including United Nations' agencies, sector company leaders, hotels, national tourist councils, tour operators and destinations who commit to achieving best practises in sustainable tourism. Currently, the organisation has around 150 members worldwide, and is continuing to expand rapidly.

The Global Sustainable Tourism Criteria play a crucial role within the work of the GSTC. The criteria represent the requirements that any tourism company or public management authority of destinations would have to achieve for the protection and preservation of natural and cultural resources, at the same time contributing to the eradication of poverty. The GSTC criteria have been put together based on decades of previous work and experiences from around the world, analysing the numerous guidelines and standards on sustainable tourism on each continent. Furthermore, the criteria were widely consulted both in developed and developing countries. The criteria have various aims: to serve as basic guidelines for companies of all sizes who wish to be more sustainable, to serve as a guide for travel agencies when the time comes to choose suppliers and sustainable tourism programmes; and to constitute a common denominator for the media when citing real examples of sustainable tourism.

Two sets of criteria have been developed: one for hotels and tour operators and the other for destinations. They are both organised into the four pillars of sustainable tourism effective planning of sustainability; maximisation of the economic and social benefits for the local community; reduction of the negative impacts on cultural heritage; and reduction of the negative impacts on the environment.

GSTC programmes

To strengthen its mission of promoting the widespread adoption of global standards for sustainable tourism, the GSTC has developed various specific programmes:

The Destinations Programme helps destinations across the globe benefit from a systematic application of the criteria to improve destinations' sustainability. Fourteen destinations from various regions around the world of different sizes and characteristics have already benefited from the evaluation of their strengths and vulnerabilities, measured according to GSTC criteria. Some of those have implemented strategies to address the recommendations identified during the process, by which local communities, government agencies, NGOs and the tourism industry can adopt a united approach in order to preserve the cultural, environmental, economic and artistic integrity of their country, region or city. This programme has an important potential to support *smart destinations*. Recently, Tourism Ministries in countries such as India and Ecuador have adopted the global criteria for sustainable tourism for destinations as national standards for their tourism sectors, highlighting the importance of a clear framework for touristic sustainability on a national level.

The **Integrity Programme** checks whether certification programmes meet the GSTC criteria for sustainable tourism. The GSTC recognises three levels of verification. The *Recognised* programmes meet the GSTC criteria, while the *Approved* or *Accredited* programmes follow its procedures in accordance with the requirements of transparency, impartiality and technical competence as

stipulated by the Council. Twenty-four certification programmes have already been *Recognised* and two have been *Approved*. The Biosphere certification programme, managed by the Institute for Responsible Tourism (ITR), is the first to receive the level of *Approval*. This means that hotels and destinations certified by Biosphere can publicly use the GTSC logo together with the logo awarded by the certifying body. The GTSC does not compete with or replace tourism certification programmes, but strengthens them by awarding a global seal of verification and contributing to greater clarity for consumers who are often confused by the growing variety of logos and seals.

Various Spanish destinations have signed a letter of commitment to sustainability with the GSTC and the ITR. This approach, where a certification programme and the GSTC jointly support a review of the destination towards an improvement in their sustainability parameters, can constitute an important instrument in the strategy of *smart destinations*.

The **Market Access** Programme aims to increase demand for sustainable travel by creating confidence among tourists through actions geared towards:

1. increasing the number of sustainable tourism products offered by creating market incentives;
2. promoting contracting policies that demand sustainable options;
3. contributing to the recognition and promotion of local sustainable products; and
4. providing easy market access to small businesses and community-based tourism.

The main aim of the **Knowledge, Education and Training Programme** is to increase and share knowledge of sustainable tourism by:

1. the creation of educational and training material adapted to each sector, helping to implement sustainable tourism employing the GSTC Criteria as a foundation;
2. guaranteeing that the Global Criteria for Sustainable Tourism form part of the study programmes of universities, training schools and other programmes; and
3. developing competencies with the different organisations for the promotion and marketing of tourist products, services and businesses with the aim of informing their clients about the most sustainable options.

The Programme offers courses designed for all tourism and travel operators, including hotels and tour operators; destination managers; government employees; resource managers; and educational institutions. The GTSC can develop courses designed for the specific needs of SDs.

Conclusions

The GTSC does not receive public funding; it relies on the resources that it generates through membership fees, sponsorship and services provided for the implementation of the programmes described above. The Council is fundamentally a virtual organisation, without office costs and whose staff are remunerated for the services provided.

Despite these limitations, we believe that the GSTC has contributed to a greater adoption of sustainable practices in the tourism industry, in both the private and public sectors. Important players in the tourism industry actively support the GSTC programme. Concrete results have already been achieved and many more are expected in the future.

The mission and strategic aims of the GSTC are coherent and aligned with the aims of the DTI project, and therefore represent a potential opportunity for effective collaboration between the two initiatives.



John Mora Williams
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John Mora Williams

Born in Bilbao in 1962, he holds a degree in Administration and Business Management from the Escuela Superior de Estudios Empresariales del Instituto Social Empresarial. He is a global member of the Internet Society, member of the American Society for Quality Control (ASQ) and member of the Spanish Association of Strategic Planning (AESPLAN).

John Mora's work focuses on new areas of innovation and its impact on society and industry; in particular, it considers the fundamental change of perspective that a highly digitised market and the presence of the always-connected traveller imply. Likewise, he constantly considers the way in which successive generations present challenges to touristic destinations and businesses according to their preferences in the use of technology.

As a member of Globaldit, he leads teams for the development of new business opportunities and promotes new business ventures through alliances with external partners.

Globaldit

International consulting company and an expert in the travel, tourism and leisure sectors, with offices in Valencia, Mexico City and Buenos Aires. In Mexico, we operate through our idt subsidiary.

We work with the tourism administration at national, regional and local levels; touristic destinations; large companies and cultural and leisure resource managers. In the almost twenty-five years we have been running, we have completed more than a thousand projects in nine countries and we have collaborated with more than two hundred destinations.

Globaldit is a leading company for projects in technological development applied to tourism in the design of institutional policy, the positioning and marketing of destinations and planning.

Speed and innovation: the next generation of destinations

Today we find ourselves immersed in a huge challenge: building the digital layer of the world we inhabit. Furthermore, we want to continue growing in a responsible manner. In a smart world, it is the consumer/citizen who, with technology in the palm of their hand, is instigating the transformation of entire industries by projecting new expectations. Keeping the client in the centre is a *sine qua non* condition for the success of any product or service. And tourism is no exception.

Pioneering destinations are beginning their transformation into *smart destinations*. The transformations will be necessarily long, dynamic and participatory. At Globaldit, we consider that *smart destinations* can generate results from the launch phase. Therefore, we choose to accelerate certain events that ease the adaptation of the brand's (destination) value proposal to the new realities and take advantage of the market opportunities and the whole potential that the technology offers.

All of the destinations wish to improve their results. The *smart destinations* also aim to do so in a sustainable manner, incorporating aspects of social and environmental responsibility that, although they exceed the strict scope of the destination, create spaces for growth in a competitive environment. Furthermore, *smart destinations* are developing new governance models adapted to the era in which we live, led by the government and with the active participation of the private sector.

One of the aims of *smart destinations* is to close the digital divide through the development of a technological infrastructure (central and sensoring), given that technology—which connects everything (the Internet of Things)—is the driving force for change. And to the technological infrastructure on which *smart destinations* are based, we have to provide content and information.

This is the smart transformation: putting technology at the service of the destinations.

Now is the time to create technological solutions that connect all aspects of the destination and which allow them to create value immediately through the use of complex and innovative, but always practical, instruments: the **accelerators of change**.

The destinations are touristic brands where the promise is materialised in the traveller's experience. The brands unfurl the digital layer, incorporating it into all aspects of the value chain of the touristic experience.

A process of profound transformation such as the one implied by a smart destination will go on for years. The digitisation of information relevant to the traveller, which integrates all the components of the destination, should begin at the launch phase, and should be anticipated whilst working on other medium-term projects.

Anticipation has three important operational effects:

- **On the traveller**, immediately improving their satisfaction levels. The system facilitates the personalisation of the touristic experience, offering the traveller inspiration, useful information and context, assistance when they need it and the chance to share and interact.
- **On the destination**, given that the data generated by the system provides very valuable information. The data intelligence should enrich the planning and management processes, the monitoring of results, the identification of new needs, the adaptation of the value proposal and the allocation of resources.

- **Effects on the sector**, building confidence; the destination begins to act on it immediately. This leads companies to get involved in the movement toward innovation, which is fundamental for the future success of all the networking designed for the innovation driven by the smart destination.

From this perspective, facilitating the interaction between destination and traveller in the digital plane meets the immediate needs imposed by today's tourism market and the view of the efficiency of public activity.

1. The user and the context for interaction. We are now connected 24/7. But *millennials*, *GenX* and *boomers* differ in terms of their channels, devices and contexts. Therefore, it is necessary to track the use cases while keeping in mind the context (stage of the holiday), the channel (for positioning, sales, post-sales and engagement), the user profile, the use of ICT and the device used. A tourist destination should fill its information system with relevant content in order to be understandable to the traveller. Interaction should be fast (the most valued trait among digital users, especially millennials), capturing their attention and inciting conversion (integrating useful third-party services for the traveller, such as booking or shopping) and offering information that is segmented (allowing the traveller to personalise their experience), multi-channel and high impact (so that the user shares their experience and becomes a promoter for the destination). Developing strategies for creating and distributing relevant tourist content designed for inspiration, consumption and engagement enables the brand to improve its connection with its target audience.

2. Distribution and intelligence of information for continuous upgrading.

The destination should provide information to the traveller through several channels and evaluate the impact and scope of this content in relation to each

channel's target audience. This is the only way to ensure constant adjustment to travellers' needs. Maximise the correlation between the information being distributed and the intelligence of the data. Each interaction creates enormous quantities of information about travellers throughout their various itineraries of consumption. Once the data flow is collected, the most important thing is to correctly identify the contexts. The interrelation of KPI in their cases will be key to the evolution of the smart destination.

3. In a smart destination, companies should be smart. The tourism industry has managed its digital transformation unevenly. Distribution is purely digital, intermediation was disrupted years ago with the advent of OTAs, and large hotel groups and airlines compete based on intelligence. However, for sectors such as leisure and gastronomy, and for SMEs overall (the backbone of the industry in Spain and many other major destinations), digitisation has yet to be addressed. Destinations can only really be considered "smart" if their key spaces, companies and public services are perfectly digitised and integrated into their system. This is the only way to measure the efficiency of the initiated action and ensure projected performance.

The structural importance of digitising the foundation of tourism-based SMEs as a generator of information, value and context must be understood. To support *smart destinations* in sectoral innovation and technification from the top down, mass digitisation tools should be developed that incorporate the digital plane into professionals' day-to-day.

Technology evolves quickly; so do travellers. The complexity of the definition of the smart destination model demands the experience of many people, the intelligence of public- and private-sector teams, and the combined talents of everyone.

It demands quick, versatile solutions that can be adapted to coming changes, solutions such as the Smart Traveller Information System®, globaldit's answer to the needs raised by destinations: to act today and prepare for the complete digitisation of the digital plane, just as anticipated by *smart destinations*. We can't predict the future, but we know it will be amazing.

Illustrating the concept: the digital transformation of Mexico City *globaldit is implementing the Smart Traveller Information System® in Mexico City, a large capital with more than 22 million inhabitants in its metropolitan area, and the second largest city in America after New York. The project is sponsored by the Government of the Federal District and supported by the Mexican Secretary of Tourism.*

Mexico City receives 12 million tourists, and projects the values of an authentic and cosmopolitan city that is a destination for gastronomy, culture and business. The first task was to create a large repository of information that included more than 6,500 tourism elements. The city was divided into 23 destinations, which include almost two thousand resources and an equal number of restaurants, as well as 459 hotels. The system lets travellers connect with different ways of experiencing the city through fresh content (123 experiences). The city and its destinations are accessible and understandable to travellers thanks to a here&now contextualisation algorithm.

The system gets its information from the city's official website (cdmxtravel.com), digital tourist information modules and the capital's social media presence. All through a working environment that enables the loading, updating and dynamic monitoring of interactions.

On the agenda are the development of new apps from current functionalities; the capture of new targets; the enrichment of the value proposition with the integration of CONACULTA's cultural offering and Ticketmaster shows; and the development of a data usage system that enables the creation of tourist intelligence.



Ricardo Alonso Maturana
Founder and director of technology company GNOSS

Ricardo Alonso Maturana

Born in Bilbao in 1962. He has a degree in Philosophy from the University of Deusto and a Ph.D. in Sociology from UNED. He is the founder and director of technology company GNOSS and educational company Didactalia. He is also an advisor to and in charge of R+D+i and Corporate Development for Grupo Maturana Material Quirúrquico. He was an international consultant for the development of training and knowledge management systems and a strategic consultant for various public administrations and large companies. He also teaches at high school and university level. He has published several books and articles. He currently shares his thoughts about the semantic web, linked data and business on the blog Watermelon.

<http://red.gnoss.com/comunidad/watermelon/recursos>

GNOSS

GNOSS is a Spanish technology SME whose principal objective is to increase the value of its clients' digital content by creating and editing **semantic web pages** and knowledge bases. GNOSS programmes, designs and develops technology with regard to semantic web standards and tools, in the framework of the large international project **Linked (Open) Data**.

<http://products.gnoss.com>

The value of digital content in smart destinations

When configuring a smart destination, remember the need to increase the value of the digital content that represents what that destination offers: hotels, restaurants, scenery, routes, experiences, events, activities, news, etc.

Increasing the value of digital content means making it more popular, and more accessible. It means making sure that it is better positioned on the Internet for search engines and that it can be linked to offer the tourist a web experience in which the search becomes a path for learning and discovery. Ultimately, an enriched web experience that stimulates and generates a desire not only to spend more time on the tourist destination's web page, but, above all, to physically visit. In other words, increasing the value of digital content means increasing the conversion rate, going from a simple search and inquiry to visiting, consuming and making purchases at the specific destination.

To address the smart destination's needs, use platforms and applications that act on the outermost layer, the closest to the final user, or rather, develop a **cutting-edge technology infrastructure**.

Incorporate *intelligence* where the tourism offer or product (tourist destination) is created in all digital projects where the goal is to provide a web experience that encourages learning, discovery and ultimately, a visit to the destination. Do it, as we will describe later on, from a technological approach.

One of the alternatives is to apply **semantic technology** that produces a **knowledge base** with the digital content of the tourism offer, as well uses for content that are not obvious or even possible with traditional technologies.

This way, when a user publishes their information on a **semantic web**, they are creating, natively, data represented semantically in RDF/OWL: data that can be

read by computers, data that can be linked to other data and form a tourism knowledge base (tourism linked data). From here on, these data will work to their benefit, for example, offering them better information retrieval systems through faceted searches that emulate the human mode of reasoning; the creation of contexts that are relevant, personal and documentary, for certain information; and advanced recommendation systems.

Create a tourism knowledge base with more efficient usages: faceted semantic searches such as keys for usability and accessibility

On the Internet we are moving from a **document-based web**, which is what we currently have, to a **data-based web**, which is what is emerging. This opens the possibility of developing a large **general knowledge base**, also touristic, with data uses that up until now, with current systems for editing and publishing digital content (CMS, social media, etc.), were not possible.

At the operational level, this means improving the interactions between people and computers (human-computer interaction) and, therefore, improving the web experience for users.

What happens if tourism data is represented semantically in RDF/OWL? It may create a tourism knowledge base and be used through a search system of the value base for users, or rather, we can offer a search experience that becomes a route to learning and discovery. We are talking about faceted search engines, about meta-search engines, like the one created by the La Rioja tourism portal (www.lariojaturismo.com), where they have applied the GNOSS platform and semantic content manager, or those seen in large web portals, like Amazon, Booking, e-Bay, etc.

These faceted search engines have the following features:

- **They offer a summary** based on properties specific to the results shown. For example, when showing hotels, the properties shown and summarised could be: place, type of hotel, number of stars, prices, public rating, added services, etc.
- **Each possible property value is an option for refining** the search. For example, if we search for restaurants on www.lariojaturismo.com, the faceted search shows us facets to continue searching for places, types of food, menu types, category, etc. When we choose one of them, for example, "Pairing menu", we see 116 restaurants, and if we filter for the locality of Haro, four remain, which becomes just one if we add the facet "New cuisine". Therefore, we're talking about precision and relevance.
- **The refinement options offer possible results.** In the previous example, it's impossible to choose "International cuisine" as a type of food, because none of the restaurants in Haro offer it.

The possibility of combining search options that do not return results is a frequent defect in some search systems.

We can affirm that this type of information recovery system, where we help the user choose between possible alternatives emulating the human mode of reasoning, with restrictions, learning while it searches, is a system that lets us act more "intelligently". Let's remember that *intelligence*, etymologically, indicates the quality (-ly) of someone (-nt) who knows how to choose (legere) between (inter-) various options. In that case, intelligent would be knowing how to choose the best option among several.

A knowledge base that contains numerous, diverse sites that can be personalised

Semantic dynamic publishing of a knowledge base also includes all of the possible web pages that can be made with that content, and even better, these show up automatically with an adequate search system. For example, the knowledge base for La Rioja tourism includes the web pages for its bodegas, hotels in Logroño, camp sites in La Rioja Alta, restaurants with menus, activities and festivities, etc.

A knowledge base, to the extent that it records or identifies the entities in the content, enables us to give weight to that same content for different ends than originally intended. For example, a significant part of the work done in a museum could also be valuable for tourism. Museum content could eventually be part of or link to bases whose primary content was intended for tourism, so that when a tourist expresses interest in a cultural site, like the monastery of San Millan de la Cogolla, existing information, content and images of San Millan appear from the Museo de La Rioja or the Museo del Prado. This is called **linked (open) data**: information that is open and linkable.

In turn, and given that a knowledge base provides a semantic core for a large foundation of knowledge, it's possible to develop a strong business by proactively offering each user ad hoc and contextual information based on their interests, especially to those who are registered or subscribed, and whose information may even be included in the knowledge base itself. The ability to personalise information, and therefore advertising, is one of the key opportunities of a knowledge base that also represents users and their interactions semantically.

NEW TOURIST NARRATIVES BASED ON DATA

Another advantage of semantic representation of tourist content is the opportunity to create new tourist narratives using the machines' capability to make automatic inferences about the explicit relationships between the entities in the base and to present them to users in a helpful and attractive way.

The narratives based on automatic inference systems enable the development of a conversation based on a person's interests, showing inferences that are related to their request and expanding the possibilities for dialogue and conversation between people and content represented in the knowledge base with new possibilities for navigation.

Let's imagine a tourist route on the Camino de Santiago in Galicia. Using the implicit relationship in the base, the machine may infer its connection to other places that are part of the Camino de Santiago, or religious routes, or to the most significant monuments on the Camino de Santiago, or to restaurants and establishments that offer a *pilgrim menu*..., and make inferences based on each one of those attributes, leading to exploration and discovery. This type of narrative proposes a significant and intriguing *digital journey* that encourages curiosity and the instinct to learn and know more.

Ultimately, seen from this mode of automatic narrative creation, a base multiplies the opportunities for permanence and pages viewed in the tourism portal.



Francisco Ruiz Antón
Director of Public Policy and Institutional Affairs
Google Spain and Portugal.

Francisco Ruiz Antón

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Google

Google's innovative search technology makes it possible for millions of people all over the world to access the information they need every day. Founded in 1998 by Stanford Ph.D. students Larry Page and Sergey Brin, Google has become a tremendous asset in every global market. Google's segmented marketing programme gives companies of all sizes quantifiable results, while improving users' overall web experience. Google is headquartered in Silicon Valley and has offices in America, Europe and Asia.

Google technology makes destinations smarter

The Internet has become one of the largest information access points in existence, bringing knowledge to 2.6 billion people all over the world almost instantly. Making our heritage more reachable through new technologies is vital to making our unique legacy visible and accessible.

In Spain, approximately 44% of tourism-related searches are about cultural elements. Destinations that use the Internet to attract customers have gained market share over their competitors.

According to the study "Impact of online content on European tourism", more than half of travellers from the European Union consult websites and social media to find travel information. And, according to data from the Oxford School of Economics, 52% of Facebook users say that they were inspired by photos of friends on holiday when planning a trip to the same destination.

At Google, our mission has always been to organise the world's information and make it accessible to users wherever they are. Out of the enormous amount of information that exists, historic and artistic heritage is key for us. Because of that, we are starting to look at how we can use technology to bring these treasures to users, so that they have the opportunity to enjoy them in person or from afar in every corner of the world.

Using Street View, we make it possible for them to be right there in cities, nature, inside landmark buildings; with Google My Business, they can visit the interior of hotels, restaurants and other locales before arriving; and with Cultural Institute and Special Collections, they can enjoy art in high resolution and the wonders of the world almost as if they were right there.

Technology and the Internet are an undeniable way to bring together users, institutions and companies, facilitate the discovery of our culture and heritage, and build interest in the beauty of our country at a global level. It's up to us to use what we have to guide that next tourist through the corners of Spain.

Using technology, Google offers users the chance to lose themselves in the pyramids of Egypt, navigate the Venician canals or the Amazon..., or discover almost every nook and cranny of Spain, thanks to Street View. But thanks to Google My Business, they can know if the hotel or restaurant they are visiting meets their requirements, and thanks to Google Cultural Institute, they can discover new works of art in museums, exhibitions and archives all over the world.

Nowadays, it seems cliché to talk about how new technologies, and the Internet in particular, have changed our lives. In very little time, we have witnessed, almost without realising, a change in the way in which we access and enjoy information, the way we communicate and relate to each other, and of course, how we interact with content.

We believe that technology can play a pivotal role in showing country or region's cultural wealth to the world, and we are firmly committed to creating initiatives that bring all of these possibilities to users from any part of the globe.

One of the clear advantages of these new technologies is the elimination of borders, and with that, the democratisation of knowledge the possibility of universalising the culture. Today it's possible to study the details of master works millions of kilometres away from the comfort of our homes. And any artist can show their talent and creations to the whole world from almost any corner of the planet.

Google has worked so that tourist destinations become smart, and it has done so, among other thing, through three revolutionary means: Earth, Special Collections and Cultural Institute.

2005 was the beginning of Google Earth's evolution. In August of that year, Hurricane Katrina showed us how mapping tools like Google Earth could be very useful when responding to this kind of crisis. Using Google Earth satellites, the rescue teams compared images from before and after the hurricane to try and locate isolated groups of people. And later, with more than two billions downloads in almost every country in the world, Google Earth allowed people to discover new coral reefs, take a trip to the Moon or to deep space, find long-lost parents, obvious land mines and much more.

Using Google Maps, Special Collections also enables access to the interior of landmark buildings, gardens, beaches or stadiums; the heritage of Roman Spain; the footprint of Al-Andalus; the gothic art of the Middle Ages or nineteenth-century Catalonian modernism. Whatever you can find traveling through Spain is accessible to anyone thanks to the technology of Google Maps, and they can also be captivated by a 360o view thanks to the technology of Street View.

Virtual tourists can examine every corner of the Alhambra and the Generalife, stroll through the grounds surrounding of the Tower of Hercules, lose themselves in the reddish sands of Las Medulas in Leon or spend hours admiring the incredible crypt of the Expiatory Church of Sagrada Familia. Visiting places as diverse as the Bardenas Reales (a semi-desert landscape that shows an unusual view in the southeast of Navarre), the Congress of Deputies (a neoclassical building flanked by two large bronze lions, designed by architect Narciso Pascual

y Colomer), the Leon Cathedral (famous for starting the dematerialisation of Gothic art in the thirteenth century by replacing the walls with stained glass), or the small medieval village of Albarracin (an independent estate for centuries still surrounded by walls that guard its curious history) all in the same day is possible today thanks to this new virtual collection available in Street Views.

In order to show all these places and for each user to be able to explore them from their house, we have used three of our 360o image capture technologies: the trekker, a backpack equipped with a system of cameras in the upper part that allows us to move through narrow sites and locations that are only accessible by foot; the trolley, which we use to take very detailed pictures of the building interiors; the bicycle or trike, a three-wheeled velotaxi, also equipped with cameras, with which we have taken instant shots while we pedal around the exteriors of some of these places.

Lastly, the Google Cultural Institute page houses digitised expositions from hundreds of museums and thousands of places and makes them accessible to millions of people all over the world. Our Cultural Institute, available all over the world, had 20 million unique visitors last year and was launched in Spain, in the Prado Museum, with the digitisation of fourteen of its master works.

This initiative has special significance for us. It represents one more step in our commitment to democratise access to culture, preserve it and contribute to the national and international diffusion of Spain's heritage, which no doubt facilitates visits from tourists all over. It's our way of helping to universalise culture, make tourism smarter, and show the world our legacy, rich heritage and priceless traditions that demonstrate our county's way of life.

Collaboration between the public and private sectors has been essential to achieving this result with Special Collections and Cultural Institute. Google invests the effort, knowledge and means, but it needs the institutions and companies that have made these projects possible with their inspired vision of the future.

Today's Internet users have this cultural opportunity thanks to the willingness of these institutions to make our heritage accessible and universally recognised. Ultimately, Google provides the technology, but it's those who facilitate and make possible its digitisation who are responsible: that collaboration enables the final user experience and designation of *smart destinations*, which makes the destination more comfortable and attractive for the tourist, and therefore, better traveled.

At Google, we are dedicated to keep working to help bring a small piece of our rich artistic, architectural and cultural heritage abroad wherever possible.



Jaime Solano Ramírez
Founder and CEO of GVAM

Jaime Solano Ramírez

Is the founder and CEO of GVAM. He has a degree in Economics and Business from the Universidad Pontificia de Comillas and a Ph.D. in Information Science from the Universidad Complutense de Madrid. In addition to his work at GVAM, he is a professor and researcher at Universidad Carlos III in Madrid.

He is the author of such publications as Museums of the Future. Accessibility and Mobile Technologies and of several articles, including "*Mobile and Accessible ICTs for Museography*", published in the magazine *Knowledge Society*.

GVAM

Guías Interactivas (www.gvam.es/en/) is a technology company that develops apps for visits to cultural spaces and tourist sites, creates specific content for this type of guide and manages user service. It started in 2013 as a result of a research project started in 2007 through private-public mechanisms. It currently operates in several national and international museums, as well as in the cities that best represent Spain. GVAM's mission is to provide the best educational and emotional experience when exploring cultural spaces and tourist sites. GVAM believes that culture is everyone's right, and technology as a goal in service of that.

Appside: Accessible apps for fifteen Spanish World Heritage cities

Culture as an essential management element of smart destinations

Although it's true that culture is not given the same weight as infrastructure and energy when it comes to smart cities, in a high percentage of cases, cities' cultural offerings are what differentiates them in the eyes of tourists. Therefore, when talking about *smart destinations*, it seems obvious to place heritage, history and art among resources to be managed.

This article focuses on the relationships between culture and the four defining features of a smart destination (innovation, technology, sustainability and accessibility) and how museums and cities that work with GVAM benefit from information and communication technology (ICT) to provide value to tourists.

As we said before, the cultural factor is a crucial value to communicate to our residents and to our potential tourists. Museums should see themselves as leisure spaces that form part of a related tourist offering. Cultural spaces are also drivers of change in deciding factors for the future of cities and their development (climate, globalisation, historic analysis, etc.), which is why citizens also benefit from their technology management.

This connection between the smart destination and smart city concepts is interesting because of its innovative outlook: citizens are the ones who can help

1. López de Ávila Muñoz, Antonio; García Sánchez, Susana. Smart destinations. ECONOMY MAGAZINE INDUSTRIAL.

establish these ties (education, leisure, culture and tourism) and determine other advanced services that take us from tourist destination to smart destination. For example, look at the opinions and information that residents themselves provide about their cities on tourism promoting-platforms or on social media.

As providers of products and services for *smart destinations*, at GVAM, we believe that museums, monuments and tourist attractions are in the process of adapting to the requirements of a 21st century visitor. Companies, together with governments, are the principal drivers of this change. On this point, it's important to be creative and committed to adapting the classic management models to an environment where the *here and now*, interactivity, audience segmentation and property management are the keys to profitability.

Managing this technology phenomenon is impossible on a global scale, but what we can do is go along with it and be more responsible to citizens through standards for sustainability and accessibility. Therefore, the driver behind concepts like *smart destinations* is necessary as a unifying force for new formulas and practices, many of them in their experimentation phase.

The role of technology in developing smart cultural destinations

In keeping with the vision of Angel Diaz Gonzalez (president of the Advanced Leisure Solutions or ALS), GVAM's objective is "to maximise the smart integration of technology in every link on the *destination* value chain." At the core of this mission, we conclude that the future of the relationship between culture and ICT in *smart destinations* is undergoing a large technological change that we have broken down into ten points. These ten changes, if undertaken by the public and private sectors, will contribute to the consolidation of true *smart touristic-cultural destinations* in Spain:

1. We are witnessing a social and generational change. This will not only affect demand, but also management systems: "digital natives" will be the ones making decisions.
2. High-speed wireless networks (4G, NFC) and free Wi-Fi are bringing down barriers to transmission.
3. The possibilities of UGC (User Generated Content) are blurring the traditional lines between issuer and receiver. There are significant opportunities for complementarity and cooperation.
4. It is becoming easier and easier to systematically measure an action, and we therefore have greater possibilities for backlash and more responsibility.
5. Personal devices show the value of ubiquity for the benefit of the culture. Audio and web guides are already being replaced.
6. The availability of proprietary content on Google, Amazon and specialised networks (such as the European network) incentivise knowledge and citizen participation.
7. Segmentation is a priority for websites, portals and generalist applications.
8. The evolution of technology goes hand in hand with the search for new forms of financing. Crowdfunding has quickly been accepted by the cultural industry and the public.
9. The visitor/user should no longer be someone who "puts up with" technology; there are new ways to power content without displacing certain audiences and these should be explored with each new advancement (augmented reality, gamification, 3D, etc.).
10. The elimination of roaming charges in 2015 will end a traditional obstacle to the flow of information. Not only does this mean change in availability and mass use, but also in the response of cultural and tourist institutions.

Appside as an example of a cross-sectional project in the smart destination environment

Appside is a project that Fundación Orange and GVAM have been working on since January 2014 to bring Spanish culture and heritage to the public through mobile technology. It operates in the digital tourism, leisure time, education and culture sectors, according to the definition of the smart city fields created by AMETIC3.

The initiative is based on three concepts that GVAM has been working with since it was founded: technology, innovation and accessibility. The apps developed are guides to museums and cities with special national relevance, in which the tourist is guided by a voice and various visual materials. All of the apps include resources for people with visual and auditory impairments through an option to activate subtitles, Spanish sign language or the audio description.

2. Ángel Díaz González. Reference parameters for a smart destination. Advanced Leisure Services.

3. NATIONAL TELECOMMUNICATIONS OBSERVATORY AND SI. Ministry for Industry, Energy and Tourism Study and methodological guide to smart cities. May 2015.

The involvement of the **Grupo de Ciudades Patrimonio de la Humanidad (GCPH; World Heritage Cities Group) and the Ministry for Education, Culture and Sports** strengthens the project's sustainability. With Appside, Alcala de Henares, Avila, Baeza, Caceres, Cordoba, Ibiza/Eivissa, Merida, Salamanca, San Cristobal de la Laguna, Santiago de Compostela, Segovia, Tarragona, Toledo and Ubeda will have an accessible app. The tour through central Cuenca will be included in the application for the province, bringing together offerings for leisure, nature and culture. The Museum of Sculpture (Valladolid), the Museum of Altamira (Santillana del Mar, Cantabria), the Museum of Roman Art (Merida, Badajoz) and the Sephardic Museum (Toledo) have all joined the project. Those last two reinforce the accessibility of their respective cities and enable the establishment of museum-city connections.

The apps have various thematic and geographic tours with information about key monuments, sites, festivities, traditions, etc., at the destination. The objective is to maintain equal standards of heritage education and awareness through accessible mobile technology, incorporating cultural offerings into the tourism promotional chain and vice versa.

The **basics** of Appside, the features that empower a tourist destination to become a smart destination, are the following:

- It operates on a geographic level (city) as well as a conceptual one (World Heritage cities, museums, state museums), so a twin promotional mechanism applies.
- Unlike an audio guide project or a guided tour, Appside is based on ubiquity: it starts before the visitor arrives at their destination, continues during their stay and lasts until after their departure.

- It enables them to personalise the offer through different thematic tours and for different audiences. From this point forward, the user can create their own routes, select their favourites, share what they like most on social networks, etc.
- It provides information based on the visitor's location, as well as geo-referenced resources. It uses two-way location through a GPS location option and permanently "drawn" routes for users without connectivity.
- It adapts efficiently and universally to the needs of each user through accessibility settings.
- It increases the efficiency of destination managers, as it enables them to directly evaluate the effect of suggested routes and tours through a content manager or CMS.
- This CMS allows an institution (such as the GCPH) to intelligently manage their services and update different mobile apps at the same time.

Future plans for the project include incorporating spaces to reserve tickets for related events, tours promoted by local brands or businesses, discount vouchers for other services available for download from the app, collaboration with schools and museums for sharing content in other contexts, etc. These initiatives intelligently use and interrelate the various tourist services according to a 21st century destination management model.



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IBM

With an annual investment of approximately six billion dollars in R+D+i and the largest number of registered patents for twenty-two consecutive years (7534 patents registered in 2014), IBM is at the cutting edge of technology, with a presence in 175 countries and a global team of 380,000 professionals. Their focus is providing their customers with technology solutions, business consulting services and information technologies that help their businesses succeed.

These activities include research, development, manufacturing and marketing of technologies and hardware and software products, as well as the distribution of technology services, outsourcing, integration systems and business consulting.



Knowledge and innovation for tourism

Over the last decade, talent has become a driver of growth, and cities are one of the more visible focal points of that transformation. They possess a significant knowledge reserve with individuals who are increasingly better informed, more creative and more enterprising.

They are the key to making our surroundings more efficient, whether those are surroundings are cities, areas or regions. There is a close connection between innovation and cities' standard of living. With a better quality of life, there is a greater chance of capturing and retaining the necessary talent to encourage a prosperous economy. Investment in improving the intelligence of basic urban systems enables them to take advantage of resources, save on costs, generate long-term development, favour competition and become a good draw for tourism. Therefore, cities and their managers need to act and innovate. From creating major transportation networks to supporting technology research.

A smart destination is sustained by the innovative capacity of its surroundings, through the deployment and development of technologies, to learn about and meet tourists' needs and expectations. This means seeing and managing the city and its services from their perspective, while improving quality of life for residents. It means recognising the visitor as another inhabitant of the city.

However, it should be understood that becoming a smart destination is a process. A change that will be more revolutionary than evolutionary, with the implementation of next-generation technologies. At IBM, we believe that the use of analytical systems, the cloud, mobility, the social relationship, and cognitive computing will facilitate and enhance people's interactions with their surroundings.

These advances in technology come with increased monitoring of critical aspects of a city's operations and development. We live in a society that is increasingly digitised and sensed, where our actions leave a footprint of more than 2.5 trillion bytes of data per day. That immense universe of information is very valuable if processed and analyzed with the appropriate tools. During this process, cities should learn to actively listen to their visitors as a first step to offering them quality treatment. The use of predictive analytics helps the tourism sector personalise their services to the preferences of each traveller, creating a distinctive and competitive offer.

Approaching the new digital tourist

Technology is already present in traditional business models, such as travel agencies, which are evolving toward an omni-channel service that manages all of its sources of information for greater economic benefit and increased user satisfaction. Using this approach, IBM worked with Barcelo Viajes on a programme to analyse its customers' behaviour patterns, by identifying their time of purchase through the website as well as through agency branches.

This way, Barcelo Viajes has planned their strategy to better tailor their campaigns and promotions, in addition to offering a rapid and optimal response to users during every stage of their trip.

Service should be exceptional at all times. And with mobile technologies, it's possible to offer the customer new amenities and greater accessibility. IBM and Apple have launched an offer for business applications, IBM MobileFirst for iOS, which includes travel and transportation solutions.



Passenger Care lets airline agents speed up the billing processes and the decongestion of airports, as well as more efficiently manage passenger concerns and questions from anywhere.

Smart destinations will need to identify where and how to best apply these kinds of solutions in context.

It's a fact that the Internet and connected devices have made tourists more digital and more informed and given them more decision-making power. Nine out of every ten users have their smartphone in hand practically 24 hours a day and they send 500 million messages per day on social media such as Twitter, recording their current opinions and ideas.

The chance to track market trends led Melia Hotels International, in collaboration with IBM, to make innovations in their customer relationship model by using new technologies and communication channels. The hotel company launched the world's first Tweet Experience Hotel from their Sol Wave House facilities in Mallorca. This initiative allowed guests to interact with each other through an exclusive social network, SocialWave, which they accessed through Twitter. That way, Melia Hotel International expanded their customers' digital experience during their stay at the hotel and saw first-hand, in real time, their comments about the service, so that they can create an experience closer to their expectations in the future.

That study of tourist information has also been applied by public administration. Authorities in Amsterdam have increased arrivals at their international airport by 7% and increased their hotel occupancy by 14% thanks to the use of analytic tools.

What else can technology do for the tourism industry?

In this new era of knowledge, with data as a raw material, we are also working with IBM Watson, a pioneering cognitive computing technology. These systems are capable of processing large quantities of information in a manner similar to human beings, and can respond to complex questions in a few seconds using natural-sounding language. And if this power were used to advise tourists? An IBM research team in India has designed a mobile application with IBM Watson technology, which offers information of interest by personalising visits to museums. The app Usher, still in testing, determines the user's location in order to provide information about the works of art around them. This tourist guide also learns from interactions with each visitor, learning more and more each day, which enriches the users' final experience. This kind of initiative, developed from cognitive technology, may also extend to other tourist areas, such as monuments, historic sites and natural areas, taking advantage of the resources at each destination.

Reviving a city's image and increasing its efficiency results in greater appeal to tourists. In Brazil, on the occasion of the last World Cup, and facing the celebration of the 2016 Olympic Games, transitioning to a smarter urban model became imperative. They needed to modernise the prediction and coordination of services, improving the capacity to respond to daily incidents and natural disasters, such as floods and landslides. That was the origin of the Intelligent Operations Centre (IOC) in Rio de Janeiro, the first in the world to integrate all phases of an emergency, with continuous and integrated supervision of the city's most important infrastructure. Its implementation has reduced the crisis response time by 30%. One more guarantee of safety for those who decide to



travel to the new Olympic venue, and therefore, enjoy its various attractions.

Any city has the ambition to optimise its efficiency. And large events and celebrations act as motives. IBM's projects in smarter cities are designed to improve the quality of life in cities all over the world. In Spain, specifically in Madrid, the MiNT platform addresses the management of maintenance, green areas and street lighting, including mobile technologies as a relevant part of the process, while Barcelona uses cloud data analysis to care for parks and beaches in the Metropolitan Area.

If a setting works properly, it will create a suitable ecosystem for sustainable business growth and citizens' quality of life. Without a doubt, these are two of the fundamental pillars, together with appropriate use of new technologies which will support the development and evolution of *smart destinations*.



José Luis Moreno
Development of Sustainable Business Solutions,
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Indra

Indra is a global consulting, technology, innovation and talent company, a leader in high value-added solutions and services for several sectors, including Transportation and Traffic, Energy and Industry, Public Administration and Sanitation, Financial Services, Security and Defense, and Telecom and Media.

We operate in more than 128 countries and employ more than 42,000 professionals around the world, with a focus on developing innovative solutions that meet the needs of the most demanding customers. Innovation is the backbone of our strategy, business model and sustainability. It has made us the second largest investor in R+D in our sector among European companies.

Sustainability in smart destinations

Gone are the days when we questioned the need to conduct our activities, whatever they may be, in a highly sustainable way; today, practically the whole world understands that this is a basic, and also essential, part of all our actions. Taking advantage of the fact that awareness has grown and that everyone understands that actions have consequences, we should focus our efforts on making them as positive as possible.

The tourism sector cannot be left out, especially in Spain, where it represents approximately 11% of GDP, and has an unquestionable impact on employment, accounting for about 12% of the total. With this data, it is clear that we should all strive for clearly sustainable tourism.

What do we mean by a sustainable tourism destination?

A sustainable tourism destination is capable of providing sufficiently attractive tourism, whilst also supporting local development. It is able to identify and manage its impact (both positive and negative) and, of course, to create economic sustainability for the destination itself. In order to achieve this level of sustainability in tourism, we strongly believe in several fundamental pillars which support the growth of the Spanish tourist industry.

Of course, we understand that we must be able to provide high-quality tourism; in fact, significant progress has been made in this regard over the last few years. This has been evidenced by several certificates that Spanish tourist destinations have been awarded, such as the number of blue flag beaches and marinas, a considerable increase in the numbers of certifications in the areas of management and business excellence, for example Quality Management

Systems (ISO 9001) or the "Q" mark of quality approval granted by the Institute for Spanish Tourism Quality (ICTE). We know that this is the way forward, a fact which is being recognised by the tourists themselves, thus ensuring that Spain, year after year, cements its position as a leading tourist destination.

Another factor that a sustainable tourism destination should take into account is that of active environmental management. The environmental impact caused by tourism is high and this must be managed in order to limit its negative consequences. It is not enough to merely state environmental principles; we must control and manage the existing (and potential) environmental damage caused by tourism. There are many guidelines which support this pillar (ISO 14001, European Regulation EMAS III, etc.), but it is everyone's responsibility to raise awareness and to commit to the active management of this problem. Here, both public institutions and businesses have an important role to play.

Sustainable destinations should aim to have as many resources as possible, whether material or human, and should strive to transform these resources into their greatest assets, given that they make a significant contribution in terms of sustainability.

Undoubtedly, material resources contribute because they help create nearby businesses. In the case of human resources, they contribute towards greater adaptation and care for the surroundings.

Although local resources are essential, it is no less important for there to be a wide range of sustainable tourism which seeks to achieve greater harmony with the land. If we are able to create tourism which is multidisciplinary (based,

for example, on historical heritage, cultural values, biodiversity, gastronomy, sports, etc.), we will undoubtedly minimise the (negative) impact on available resources and the land. As was the case for active environmental management, government institutions must take on an important role by actively encouraging entrepreneurs and innovators in tourism.

From a social impact perspective, we must seek to achieve a sense of solidarity with our tourists. We must involve them at all times; we must make them feel that the place where they are spending their holidays is a part of themselves. If we are able to achieve this, they will feel the need to preserve the destination, because it will be something that they feel is theirs.

Finally, we must not forget the importance of energy efficiency for sustainable tourism, given that this guarantees that these destinations will continue to exist. Managers in both the public and private sector are placing an increased emphasis on energy efficiency, for example attempting to reduce carbon footprints, introducing ISO energy management systems (ISO 50001), adapting and modernising facilities in order to reduce energy consumption, buying green power, etc. It is perhaps in this pillar, together with that of water management, where the most work is currently being done, because it tends to be associated directly with the concept of energy saving, and this saving helps us initiate change and progress.

At Indra's Sustainability Solutions Unit, we promote these kinds of strategies as well as many others which are of great value and contribute towards tourism sustainability.

Our work includes the implementation of the latest energy management technologies, specific consultancy regarding sustainable construction, projects to calculate carbon footprints, and the introduction of management systems which aim to achieve greater efficiency from a quality and environmental responsibility perspective. We feel that these initiatives are key to the future of our tourist industry, but they must be accompanied by other strategies from both the private and public sectors.



Javier Solsona
Director at Invat.tur

Javier Solsona

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Invat.tur

Invat.tur, the Valencian Institute of Tourism Technologies, was created as a meeting place for all those involved in the tourist industry. It represents one of the main centres for improving competitiveness and sustainability in the Valencian Community, through the development of RDI projects and adaptation to all aspects of new tourism market trends.

Government as an essential player in the creation of smart destinations

It is clear that the concept of a smart destination (SD) is closely linked to that of a *smart city*, which refers to the availability and quality of information and communication technology infrastructures, but also, as summarised by Caragliu et al. (2009), with other factors, such as social capital, innovation and entrepreneurial capacity. According to the aforementioned authors, the idea of a *smart city* is still somewhat unclear, although a number of general characteristics are nevertheless recognised:

- The use of a network of infrastructures to improve economic and political efficiency and to allow social, cultural and urban development. Connectivity is therefore one of the key components of the city's development model as well as a source of growth.
- An emphasis on development based on entrepreneurship and the economy as the driving force behind urban development.
- The promotion of integrative and socially inclusive development.
- The importance of high-tech and creative industries (Florida, 2002), as well as social and relational capital and innovation absorptive capacity.

At IBM, Dirks and Keeling (2009) state that, given the changes cities are experiencing, they must be managed in different ways than they are currently. They argue that it is necessary for them to become "smart" cities through the use of new technologies in order to transform their central systems (infrastructure, services, etc.) and optimise the use of limited resources. Technologies transform a city into a *system of systems*. The new "smart" city is based on the effective combination of digital communication systems (the nerves), ubiquitous intelligence (the brains), sensors (sensory organs) and software (cognitive competence) (Chourabi et al., 2012).

Along these lines, Fundación Telefónica (2011) defines a *smart city* as a city that uses ICT to enable its critical infrastructure and public services to be more interactive, efficient, and closely connected to its citizens. According to this definition, the concepts of *smart city* and the *Internet of Things* are linked, both of which fundamentally based on M2M (machine to machine) communications.

Other authors have conceptualised the smart city from an urbanistic perspective. For example, Vegara and Rivas (2004) identify a smart region as one which aspires towards sustainable development based on continuous development and competitive advantage, combining economic, social and environmental objectives. Similarly, Seisdedos (2007) makes reference to a new system of urban management based on city branding, new public and private formula funding, and the concept of the *lean city*, which refers to a city with more efficient services, designed around the demands of its users, which reduces waste.

Another approach emphasises the relationship between smart regions and competitiveness. This is the case of Jakinbask (in Fernández and González, 2009) who define a smart region as "[...] one which demonstrates a continuous capacity for learning and reinvention, in relation to competitiveness and development, allowing a balanced increase in people's quality of life in terms of their economic, social, natural and individual wellbeing within their immediate and global surroundings". Returning to the concept of *smart destinations*, although it ought to be recognised that the concept of smart destinations is not synonymous with that of smart cities, it must nevertheless be noted that, in the latter, structural changes are created which justify the need for new approaches which may transform *smart destinations* into points of reference in terms of tourism management.

Tourism market dynamics (demand trends, which attract new tourists and change traditional consumption habits; and supply trends, which propose new products and restructure old ones), as well as demographic, political, economic and social changes, present new management challenges for those who utilise more advanced, fundamentally technology-based tools (Buhalis and Costa, 2006; Walder *et al.*, 2006).

However, regardless of the extent to which the two paradigms of smart city and smart destination resemble each other, what seems beyond doubt is the importance of governance. This is management based around the participation of citizens and social actors, together with public authorities.

Smart Economy (Competitiveness)

- *Innovative spirit*
- *Entrepreneurialism*
- *Brands and economic image*
- *Productivity*
- *Flexibility of the work market*
- *International roots*
- *Capacity for change*

Smart People (Human and Social Capital)

- *Level of qualification*
- *Affinity with lifelong learning*
- *Ethnic and social plurality*
- *Flexibility*
- *Creativity*
- *Compromise/ Open mindedness*
- *Participation in public life*

Smart Governance (Participation)

- *Participation in decision making*
- *Public and social services*
- *Transparent governance*
- *Political perspectives and strategies*

Smart Mobility (Transport and ICT)

- *Local accessibility*
- *(Inter)national accessibility*
- *Availability of ICT infrastructures*
- *Sustainable, innovative and safe transport system*

Smart Environment (Natural resources)

- *Attractiveness of natural conditions*
- *Contamination*
- *Environmental protection*
- *Sustainable management of resources*

Smart Living (Quality of life)

- *Cultural infrastructure*
- *Healthcare conditions*
- *Individual safety*
- *Quality of homes*
- *Educational infrastructure*
- *Attractiveness of tourism*
- *Social cohesion*

In fact, in the report *Smart Destinations* by the Generalitat Valenciana (Agencia Valenciana de Turismo, 2013), prepared by the Institute for Tourism Research at the Universidad de Alicante for Invat.tur, governance is considered one of the keys for adapting tourist destinations to the smart cities principles, highlighting the need to establish a new framework for relations in local tourism management through greater involvement and joint responsibility from the private sector.

In addition, among the factors that justify setting up *smart destinations* - along with technology, demand, changes in business management, new business models and sustainability - is competitiveness, understood not only from the technological point of view, but also emphasising the importance of strategy, planning and destination management as a means to improve resource use, adapt to the different market contexts and gain competitive advantages (Crouch and Ritchie, 2000; Dwyer and Kim, 2003).

The study of competitiveness of urban Spanish destinations prepared by Exceltur (2013), in the "Governance and Strategic Management" section includes indicators related to political priority given to tourism, the existence and consistency of strategic tourism management, development and comprehensive management through product clubs, tourism policy and marketing through new online channels, and efficiency and effectiveness of the tourism management system.

If you address business competitiveness in a scalable fashion, referencing the works of Porter (1990), the competitiveness of the company is the sum of advantages at different scales: country, industry, destination and business (Camisón and Forés, 2011), so that the configuration of a smart destination may strengthen the advantages at the destination level (integrated management,

public-private cooperation, innovation...) and, as a result, enhance the competitiveness of companies located there.

Therefore, the principles of governance - applicable at all levels of government - are sine qua non for the development of *smart destinations* (CEC, 2001). These principles are:

1. **Openness.** Institutions should work in a more open manner, with more active communication and language that is more accessible to the general public.
2. **Participation.** Broad citizen participation in all phases of each policy from conception to implementation.
3. **Responsibility.** Clarification and accountability of all stakeholders involved in policy.
4. **Effectiveness.** Measures must be effective and timely, tailored to objectives and measurable.
5. **Coherence.** Policies should be consistent; this requires political leadership and a firm commitment.

Moreover, the application of ICT facilitates the development of these principles in areas such as e-administration or e-government and open government. The e-government in the OECD countries (OECD, 2008) is promoted to improve the efficiency, quality of service, good governance and the effectiveness of policies. This involves interesting theoretical principles; however, in practice, it has been difficult to consolidate jointly managed entities, to obtain the financial

participation of tourism businesses, and even to coordinate municipal strategies which have an influence on tourism, an important aspect from the perspective of *smart destinations* (Heely, 2011).

Governance and the smart destination model are mutually reinforcing; it is therefore convenient to promote them together and in an integrated manner. From the point of view of the smart city/destination, governance constitutes one of its key characteristics (Giffiger et al., 2007), given that it implies public participation in decision-making, transparency and an emphasis on public and social services. Indeed, some of the main successes of smart initiatives have been aspects such as collaboration, leadership, participation and partnership, communication, data exchange, responsibility and transparency (Chourabi et al., 2012).

Creating *smart destinations* implies the following participation from governments:

- The creation of a new digital tourism environment which favours the connectivity of the Administration, businesses and the tourists themselves. This new digital environment favours the use of ICT and the improvement of competitiveness for the destination and the businesses within it.
- Greater ease in generating and disseminating information relevant to the tourist industry, and sharing it with those involved in tourism. This provides two main benefits: increased transparency and a greater pool of knowledge which may be applied to tourism management.
- A movement towards truly “smart”, knowledge-based competitiveness which favours systematic processes of information retrieval. These prove useful for management in four aspects: the monitoring of surroundings, competitors, commercial (providers, clients and markets) and technology.

- To lay the foundations for the improvement of e-administration, to develop open administration by making public data available and the encouragement of reuse, and to adapt to a big data scenario, again in collaboration with businesses.
- To make use of online marketing opportunities in order to develop initiatives with a favourable cost-impact ratio.
- To improve the measurement of the returns of tourism management initiatives.
- To encourage tourism innovation processes which are not only technological but also those that promote new product development, the acquisition of new markets and organisational and strategic innovations.

In summary, the concept of the smart city, which refers to a more efficient, technological, innovative and participative mode of city management, should inspire the more specific term smart destination, in which, among other qualities and characteristics, a fundamental role is placed on a more advanced, participative and transparent form of government in which there is increased participation and co-responsibility between different local actors, especially those from the private sector.



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Iphonedroid

Iphonedroid is the first mobile applications' factory in Spain which specialises in the development of native apps for iOS, Android and Windows Phone. We also offer proximity marketing (beacons) services and geofencing integrated into mobile applications.

Mobile technology and proximity marketing: uses for the tourist industry

Technology and mobile devices are changing the way in which businesses communicate with their interest groups. They have permitted a change in the way they interact with their clients, how they share and distribute relevant information, and the way they optimise business processes to offer better services and increase the possibilities of transactions in the medium and long-term. The here and now is even more relevant thanks to smartphones, tools which allow us to access information in all formats, at all times, and from any location.

This paradigm is especially important within the tourist industry, where services may be provided and purchased remotely. Recommendations are very important; online opinions are often the only source of information available to the customer before a purchase and therefore increase credibility before the decision is made to buy. Fundamentally, it is the capacity for loyalty and the opening of direct communication channels with clients which make the difference between profitable businesses that make the most out of technology and innovate to establish a presence and influence in digital environments, and those that still use traditional tools, which are becoming less and less effective, to make contact with their clients.

According to Gartner, organisations will have to face the challenge of using new tools, creating new communication channels and developing mobile applications more quickly, if they wish to satisfy market demands. The aforementioned study predicts that, by the end of 2017, the market demand for the development of mobile applications will have grown at least five times faster than the capacity of businesses to provide them. It forecasts that mobile phone sales will reach 2.1 billion by 2019, leading to a significant demand for high-performance, easy-to-use apps.

It appears that technology will become increasingly important in all sectors, and the tourist industry is expected to be no exception to this trend. This is not only related to the introduction of the internet (without doubt, one of the industries which has most evolved in terms of processes of intermediation and purchasing), but also due to the proactivity of businesses in an increasingly competitive market which utilises technology and apps as strategic elements that contribute towards improved business figures and visitor traffic.

It is within this context that, having developed almost six hundred apps for large businesses and agencies over the last six years, we are noticing changes in the types of applications that are being demanded by different sectors, in terms of their individual strategic and tactical approaches and the kinds of objectives that they seek to achieve. We are also observing changes in the demand for multi-device development, given that users often use different devices; indeed, a significant increase is predicted for when technologies such as wearables or the Internet of Things are eventually adopted on a massive scale.

We view the future as one of mobility, data and connected experiences. Mobile devices, in all of their formats, are able to create new experiences in the lives of their users, to simplify processes and to become direct communication channels to satisfy the information and content demands of clients, employees, shareholders, journalists and other stakeholders.

In the tourist industry, from our experience, we believe that the power of mobility will change all of the rules of the game: it will create new working systems, purchasing habits, consumer behaviour..., and businesses will have to be aware of all of these changes if they want to remain competitive.

Additionally, the use of smartphones is allowing us to carry out projects where the acquisition of information (big data) is the ultimate aim, as opposed to increasing sales or making an impact in the short term. Big data is the new way in which brands are able to better understand their consumers and offer them more personalised experiences which have greater chances of success. Big data obtained through the use of apps is something that is being demanded more and more in order to create more efficient strategies that enable businesses to set themselves apart from the competition.

Many of our projects are linking apps with beacons, where proximity marketing allows us to make an impact in a much more efficient way; to analyse what works and what generates returns through analyses and reports adapted to the needs of each sector and client.

Up to now, geolocation-based systems combined with mobile devices were able to send notifications within a limited area over a set of coordinates close to a certain point (hotel, shop, area of a city, airport, event, etc.). However, nowadays, the accuracy of tracking systems and their integration into mobile applications which communicate through beacons provide us with a previously unthinkable level of accuracy, not to mention the possibility of segmentation and the sending of offers and promotions based on clients' profiles.

These systems are based around three elements which work together: beacons, CMS, and the brand's mobile application.

Beacons. A low-cost piece of hardware with its own power source which is able to detect the user at a distance of up to seventy meters through BLE technology.

CMS. The platform that allows us to configure content, messages and notifications which arrive into mobile devices. It is very important for the CMS to be customisable and adaptable to the needs of each client. The capabilities of the Kappta CMS are as follows:

- Management of locations and beacons.
- Management of advertising and campaigns.
- Management of messages (text, video, image and HTML5), sending frequency and segmentation by certain parameters (sex, age, frequency, time zone, proximity, etc.).
- Management of new user-defined parameters for segmentation tailored to the client's needs.
- Integration with Passbook.
- Placement of beacons on plans.
- Placement of beacons on maps.
- Analytical graphs.
- API connection with any CRM or ERP to segment hits depending on client profile.

Mobile application. This communicates with beacons to ascertain the proximity of the user, and subsequently, with the CMS, in order to find out if the conditions have been met in order to send a message to that user. The app must have, in its source code, an SDK to connect to a Kappta platform, meaning that native development (not web) is necessary for both new and existing apps. Messages arrive into the device regardless of whether the app is running in the foreground or minimised in the background.

It involves combining BLE (Bluetooth Low Energy) with any mobile application to detect the proximity of a user to specific points (beacons) inside or outside an establishment, communicating with this individual within a specific range. Moreover, they may be combined with "virtual" beacons which allow, through the use of GPS, to reach considerably further, such as areas, neighbourhoods or districts where users may find themselves. This is what is known as smart communication, an innovative service with enormous potential and a wide scope of application (in the USA this technology is already being used by hotel chains, airlines, agencies, etc., to increase engagement and consumption through the segmentation of offers and personalised advertising).

Brands which are connected to the consumer no longer differentiate between digital and "mobile". They are thinking of technology, how to utilise multiple channels in order to evaluate when information is consumed. Today, there is no single hotspot; the consumer is moving through different channels until they decide to buy, and it is at this precise moment when availability and user experience must be in perfect sync.

Some of the projects that we are working on allow the customer to buy a product or service using their mobile device; or to pay without being attended by a person; or to create personalised shopping lists; or to receive a specific offer based on their profile, purchasing history, tastes, passions and reoccurrence. Without doubt, these features can be directly applied to the tourist industry and will contribute towards improving service at all links of the commercial chain: operators, agencies, hotel chains, destinations..., and, above all, to consumers, who will directly benefit from this technology.





Alvaro Carrillo de Albornoz
Director General at ITH

Álvaro Carrillo de Albornoz

Aeronautical engineer and ex-MBA in the Instituto de Empresa (IE). He has been director general of the ITH since 2008. Previously, he worked as a strategic consultant for ENDESA.

Additionally, he is Director General of the Technological Tourism Platform Thinktur, as well as being a member of the RDI Commission and the CEOE Tourist Board. Furthermore, he is coordinator of Working Group 2 of the Innovation Management System of the European Committee for Standardisation (CEN) / Technical Committee (TC) 389 Innovation Management CEN / TC 389. He combines all of these activities with his work as a lecturer at the IE.

ITH

The Instituto Tecnológico Hotelero (Hotel Technology Institute, ITH) is a centre for innovation for the hotel and tourist industries. Attached to the Spanish Confederation of Hotels and Tourist Accommodation (CEHAT), its mission consists of improving the competitiveness of these sectors through the introduction of innovation and technology.

Its main activities are to generate knowledge through dissemination and training about innovation and technology in order to improve the competitiveness of businesses. In addition, it communicates solutions to promote development and the introduction of innovation in hotels, providing the industry with technologies adapted to the environment or specific needs, and promoting knowledge and implementation of these technologies within businesses.

The global approach of smart destinations remains a challenge

Three years ago, the NITP 2012-2015 assessed the capabilities of different aspects of the Spanish (public and private) tourist industry. In the report, a number of attributes were proposed which, it argued, Spain should seek to achieve in order to maintain its status as a leading tourist destination:

- A leading destination on an international scale.
- Economically, socially and environmentally sustainable.
- Offering destinations that are economically profitable.
- Efficient business models.
- Excellence in talent.
- Immersed in the digital age.
- Collaboration between the public and private sectors, as well as other social agents and organisations within the industry.

All of these key elements are the foundations on which *smart destinations* (SD) must be built.

Since the term was introduced almost four years ago, there has been a great deal of debate regarding the meaning of *smart destinations*, taking into account the various public and private projects carried out in smart cities, of which there are many aspects in common. However, each individual destination has its

own unique particularities, which must not be forgotten when embarking upon projects to transform a destination into a smart destination.

During the three years that the ITH has worked in this area, we have reflected on the meaning of a smart destination. In doing so, we have collaborated with managers from public bodies, businesses from leading tourism destinations, technology centres and universities that are directly involved in this field, as well as businesses from different technologies relevant to SD.

Our reflection is that an SD should be a destination with more than just technology; many other aspects must be taken into account, such as mobility, energy and sustainability, urban management and planning, social and cultural factors, including both residents and tourists..., but always with a clear focus on people, on which these improvements will have an impact.

SDs are here to stay, but are offering a more holistic, global approach, in which technology is merely a support and tool.

The starting point for *smart destinations* should be sensoring of its different elements (buildings, traffic lights, vehicles, machinery, mobile devices, wearables, flows of people, energy, water, goods, waste, etc.), which provide a large amount of data about the environment, transmitted information, mobility of people and vehicles, the state of equipment and procedural management, among others.

All of this data is useful for businesses, public administration and scientific bodies, because it allows them to develop new products and services, to control the surroundings in which they find themselves, to optimise business

management, etc., achieving a merging of information from diverse sources and structures which together make up **big data** (and open data) scenarios.

However, in this complex and varied ecosystem of information, it is vital to develop processing and management systems so that relevant information may be extracted, through data mining techniques, regarding behavioural patterns, consumer profiles, flows and movements, prospective and early demand; in short, **business intelligence**.

Over the last few years, ITH has established two initiatives which focus on the evolution of the hotel and tourist industry as a whole. The first of these is the **Sustainable Hotel Programme**, which strives to integrate a series of technologies and equipment which, when applied to a hotel, can help it improve its energy efficiency and reduce its environmental impact. This integral project involves developing pilot projects in several related areas (air conditioning, renewable energies, circulating or heat pumps, thermal enclosure and smart glazing, monitoring and control systems...) and disseminating the findings and results within the hotel and tourist industry, allowing us to understand not only their material benefits but also their value as a sales pitch, as factors in brand differentiation, and to help build a reputation that will translate into more clients and more income.

The second initiative that ITH has developed and implemented is the **Third Generation Hotel Programme (HotelGen3)**. The hope is that new generations of hotels will respond to the needs of increasingly technologically advanced clients. This will happen through connectivity, but a connectivity which is not limited to person-person or machine-machine relationships, but rather

through the increased prominence of the **Internet of Things**. This refers to the combination of people, processes, data and things in order to make connections that are more relevant and useful for users and businesses.

This is the context in which the first *smart room* was created at the Hotel Eurostars Barcelona Design. In this technological room, with the concepts of Internet of Things being applied, the guest may create their own experiences. To do this, the user chooses, through an application on their mobile phone, the experience that they would like to have from a wide range of those available. The new smart room, a project developed by the Hotel Technology Institute (ITH) and Broomx, offers a wide range of possibilities for the guest so they can make the space their own.

Smart rooms also facilitate the operational management of the hotel to be optimised, given that the user is able to connect with their immediate surroundings and the destination, enabling them to enjoy a totally immersive experience. Indeed, the room can transform itself immediately into the environment that best fits with the user's needs; the client can *live* an experience by the sea, in their home town..., and even enjoy their own media content through their *smartphone*. Furthermore, it facilitates the processing and reservation of hotel services from the client's own device (catering, spas and treatments, leisure activities, pillows, minibar) as well as the management of billing and checkout.

The relevance of this fascinating journey into the technology trends recorded by users is that a smart destination cannot be understood without companies that share this vision of the destination. Third generation hotels (private companies) in

smart destinations (public sector management). And this is where it becomes clear that public-private collaboration is essential to advance the real and applied set up of smart destinations; it must be the managing bodies that lead, with the help of private companies that make up the joint project in which the smart destination is involved. Otherwise, other destinations will always be the ones leading change, and so, if we wish to remain leaders in tourism, we cannot allow this.



Alvaro Prades
Director of Marketing and Trade Marketing at Mobdala

Álvaro Prades

Born in Barcelona in 1974, he has twenty years of experience in positions such as Director of Marketing and Trade Marketing, CEO and member of the executive boards in different companies. Álvaro Prades is, simultaneously, coach, specialised consultant in bringing to market, optimisation and monetisation of products and services and the smart-tech evangelist behind Mobdala. Director of Smart cities Lab in Barcelona, consultant in Smart cities Division at Ficosa International, a founding partner of Navitas Smart Business Initiatives and, looking back, member of the advisory board of the CG Group, Chad2Win (now Quack Messenger) Bit Carrier, Family Offices advisor and member of the team that introduced Red Bull to Spain as Trade Marketing Manager.

Mobdala

Develops software solutions based on multi-screen localisation which enhance the visitor experience thanks to a new way of interacting with them. We develop value-added solutions for mobile, tablet, goggles or other wearables on your Wi-Fi infrastructure to enhance your visitors' engagement and loyalty, creating new business models.

www.mobdala.com

Reflections on smart destinations

Technologically adapted tourists seeking destinations in cities that have adapted to new technologies and can, as a result, offer more services and better quality. Some cities have started a race which is running parallel to the technological revolution, in which cloud computing, the **Internet of Things** and other user **connectivity** options have taken a leading role in tourist decision making when it comes to choosing their next destination.

The implementation and use of new standardised technologies in citizens' daily life become *smart destinations* in the research and development field.

In this new age, destinations are increasingly offering visitors the opportunity to enjoy a smart experience, with the aim of enabling the user to manage information about their interests through connected mobile devices, as well as through electronic signage in public places.

It's in this incorporation of intelligence in tourist destinations where the clear need for interactivity which responds to a driving action plan, the function of which should be to invigorate the various stakeholders involved (visitor, destination as an experience generator, ratings companies, local technology ecosystem and digital culture in services and trade) as the backbone of the *smart destination*.

The natural evolution of the smart destination involves full adaptation and optimised use of the proprietary ICT tools in a form of continuous update as they appear. We have gone from the recognizable QR codes to geolocation, augmented reality, audio guides, RFID (Radio Frequency Identification) systems or NFC (Near Field Communication), iBeacon transmitters... The evolution of *smart destinations* also involves innovation, creation of new business opportunities and adopting the necessary disruptive approach to stand out in comparison with rival destinations.

Technological development adapted to modern times is inherent to the progress and proper establishment of a *smart destination*. It's not enough to just have

any type of development, it must be adapted to the ecosystem of each tourist destination. Given these factors, we believe that we must urgently establish research centres operating on the ground, and give local teams the opportunity to contribute their knowledge and initiatives to stimulate and strengthen the smart destination. A smart destination must be protected by a technological fabric that links stakeholders and the elements that form its backbone to facilitate the emergence of new experiences, expanding both the use and the acceptance of smart information and services. The term "smart" isn't just for visitors, it's also directed at the smart destination's citizens, i.e. those who will be immersed in a city adapted to technology.

When we talk about efforts to transform a city into a smart destination we believe it's necessary to consider the public-private partnership between the stakeholders involved, establishing a link that encourages creativity and innovation. Private companies offer innovative design, due to their independence from the public sector, and also the day-to-day management and up-to-date maintenance of the projects. The transformation of a city to a smart destination not only encourages citizens and tourists, it is also conducive to attracting foreign investment, which would ensure its economic sustainability in the medium term. Although this might seem perfect, we run the risk of the private sector gaining strength and the public sector ending up in a more marginalised position. So this doesn't happen, and in order to maintain equilibrium, we must achieve a positive meeting point between the two sectors.

A community becoming a smart destination should not be subject to political influence at the time. The use of new technologies in people's daily life is already a reality, but there is still a long way to go until most of municipalities are transformed into *smart destinations*. Furthermore, in our country, which happens to be one of the main tourist attractions in the world; we have much to offer throughout the entire geography of our region. These developments must not be understood as a competition between the parties governing a certain area, within which different ideologies are represented, but, beyond the political colour

of each location, positive competition should be encouraged to drive better ideas, to see who can put forward a more efficient and useful application. To achieve a healthy level of competition in which everyone participates and within which everyone develops positively towards technological adaptation of the sector, local governments must be given the right to opt for the "smart" stamp, regardless of the political orientation of ruling party in the region.

It should be noted that there is little room for those who haven't managed to overcome the digital divide. We believe that both tourists and citizens share responsibility for their own ability to adapt to technological development. Therefore we recommend not only focusing efforts on exploring the potential uses of new technologies, but also taking responsibility, (institutions too) for educating both visitors and citizens on how to make good - or better - use of new technologies through a series of learning programmes that prioritise a strategic vision that endures over time.

After these considerations, we will now expand on our activity in the sector. We approach our work on initiatives related to *smart destinations* from two sides; Mobdala, a start-up that provides wireless infrastructure geolocation services (GPS beacons, Wi-Fi...) services and Navitas Smart Business Initiatives, which acts in a complementary fashion by acting on the layers of multilevel design and conceptualisation.

In the field of *smart destinations*, the Mobdala solution has been implemented, among others, in projects such as Mallorca Wi-Fi, for the installation of aerials and revitalisation of the Mallorcan coast of Magaluf; the Mexican Tennis Open in Acapulco, a clear example of an event which combines sports tourism beach tourism; the Pedralbes Gardens Festival, an event in which culture is the engine of experiences through the medium of music; or the International Symposium of

Ingram Micro, which is an example that can be associated with business tourism. All of these initiatives can be added together in commercial infrastructure and in services such as shopping centres, stadiums, hotels and retail in general. Navitas is involved in initiatives such as, to name but a few, SB Deal Finder, a web application based on the commercial distribution and promotion by selling online advertising for establishments on the coast of Tarragona; Paleorutes, an interactive, geo-located guide through routes of high paleontological interest in the Barcelona region of Hostalets de Pierola, a project in collaboration with Barcelona Media and the European Regional Development Fund (ERDF); iBeach, a smartphone application developed by Aqualogy for swimmers to enjoy a day at the beach with all the information they might need, including detailed meteorological and marine information, useful data on the state of the beach, basic geo-located services and information on local shops; or Upstairsbcn, a new cultural platform which opens flagship private terraces to the public to host all sorts of cultural and leisure activities that can take place on a rooftop. This last application, designed for the 2014 Mobile World Congress, was a finalist in Mobile World Capital.

It's thanks to the development journey of these projects that we have acquired the necessary know-how to find out what makes us different and how we can be a disruptive force. We want to anticipate what everyone is doing, and through this, we need to understand the technological processes that must take place, or go one step further and produce them.



Josep Piqué Camps
Vice president and Managing Director at Grupo OHL

Josep Piqué Camps

Born in Vilanova (1955), he has a degree and a doctorate in Business and Economics, with Honours and Cum Laude, respectively, from the University of Barcelona. He has a Law degree from the aforementioned university, is currently Vice President and CEO of the OHL Group, director of Villar-Mir Group, member of the Advisory Council in Spain Volkswagen Group (VW / SEAT / Audi), chairman of the Spain-Japan Forum and Foundation, honorary Chairman of the Spain-Korea Chamber of Commerce and a member of the board of the Economic Circle. Throughout his career, he has also served on the Board of Airbus Group (2012-2015) and as non-executive chairman of the airline Vueling (2007-2013).

Among the public sector roles he has fulfilled are: Minister for Science and Technology for Spain (2002-2003), Foreign Minister for Spain (2000-2002), Minister for Industry and Energy for Spain (1996-2000) and speaker for the Spanish Government (1998-2000).

OHL

One of the largest international concession and construction groups. It is part of Grupo Villar Mir, its main shareholder, and listed on both the Spanish and the Mexican stock market, in the latter through its subsidiary OHL Mexico.

It has been in business for over one hundred years and has a strong presence in Spain and in a further thirty countries on five continents.

The OHL Group is the world leader in the construction of hospitals and railways, strategic developer of public-private partnership projects, thirty-first largest international contractor and sixth largest in Latin America, as well as a leading partner of Abertis, a global leader in toll roads.

Public-private partnerships as a development driver of smart destinations

The economic potential represented by tourism today is undeniable. According to the World Tourism Organisation, the sector already generates 9% of world GDP and is responsible for one out of every eleven jobs. Its resistance to business cycle alternations is equally remarkable, as evidenced by the average annual growth of 3.4% experienced during the period 2011-2014, compared with 2.3% of the world economy. If predictions are met, this figure will only increase in years to come, with an annual trend of 5.2% until 2020, as noted by the World Travel and Tourism Council.

Spain, traditionally a leading global tourist destination, has benefited from developments in the sector, which represents about 11% of GDP. In 2014, 65 million tourists were received, 7.1% more than the previous year, with an increase in average spending per visitor of the order of 4%. But tourism in our country doesn't just stand out because of sheer volumes. In 2015, Spain topped the world's first tourism competitiveness ranking, prepared by the World Economic Forum.

In this context, the continuous improvement of the competitiveness of Spain as an international destination must occupy a central position on the agenda of businesses and relevant public administrations, promoting projects which facilitate the sector's adjustment to a new generation of digital travellers. The role of new technologies linked to the concepts of innovation, sustainability and accessibility form the pillars of the so-called smart city and is also found within the smart destination concept - which is the variant linked to this activity. The evolution of the sector towards quality models is recognised by the World Economic Forum

itself, which, in its 2015 report, highlights the need for rapid adaptation to online services, the development of ICT and environmental protection as engines for economic growth and job creation.

In line with this, it is essential to ensure the commitment and cooperation of the various economic stakeholders, both in the public and private sectors to create *smart destinations*. In this regard, there are numerous initiatives launched to date in our country and abroad, all made possible by the combination of the excellent performance of companies and corresponding institutional support. The big Spanish construction, engineering and services groups have played, and continue to play, a major role in this process, since they encourage the advancement of society through their constant commitment to research and development in the search for innovative and sustainable solutions in their different operational areas.

The improvement of public transport systems is one of these fields, a field that's as much associated with the concept of sustainability as the importance of accessibility in developing *smart destinations* and improved visitor experiences. Along with traditional elements such as planning an efficient underground network connecting the main attractions of a city, other concepts such as intermodality are becoming increasingly important: middle and long distance trains today join the high-speed rail network and air transport to an ever increasing degree, as a result of the development of low cost airlines. Spanish cities such as Madrid are true success stories in this regard, with a metro praised for its commitment to accessibility and reducing CO₂ emissions, Adolfo Suarez Madrid-Barajas was

recognised as Global Airport 2011 by the British ITM, thanks to its "leading position among the world's airports" and its "environmental responsibility" and, finally, the connectivity that the AVE network provides between major cities. Similarly, road transport is evolving thanks to the development and implementation of technological solutions in smart transport systems, including actions like live traffic characterisation from roadside sensors, accounting and control of infrastructure service levels and management and optimisation of incident response, resulting in a more efficient and therefore more sustainable use of our highways.

The revival of urban centres is another key point in building *smart destinations*, particularly in strengthening the image given by big cities to the more discerning tourist. The development of new areas in the periphery implies, in many cases, depopulation of historic centres, resulting in their deterioration from an architectural, urban and environmental perspective, in contrast to its enormous potential. The search for sustainable solutions that enhance the livability and use of these spaces is the joint responsibility of public authorities and companies involved in these projects, and they must be addressed from this perspective.

Moreover, the strategy for managing all *smart destinations* must consider the rational use of energy through technologies that help optimise the distribution network and contribute to providing a better service. The installation of smart meters or remote control and telecommunication systems are just a few examples that are already being implemented in our country. In the field of generation, Spanish companies also stand out in the development of renewable energy, the use of which is increasingly widespread in institutional buildings, street lighting systems or public transport. Finally, it's worth noting the progress achieved in the process of collection and treatment of urban waste, allowing them to obtain returns from the waste and reintegrate them into productive cycles.

The OHL Group is resolutely investing in innovation, sustainability and the constant optimisation of our processes. We believe in the creation of economic, social and environmental value in the activities that we carry out, and this is reflected both in our Corporate Sustainability Report and through our support for initiatives led by organisations such as the United Nations, the International Labour Organisation or Organisation for Economic Cooperation and Development. Environmental protection and contribution to a low carbon economy are present in all the business strategies we develop.

The OHL Group has actively contributed to numerous enclaves adapting to the new *smart destinations'* standards. OHL Development, for example, has international references related to the sustainable, high quality tourist-hotel sector. On the one hand, the Mayakoba resort in Riviera Maya, Mexico, was awarded the Innovation Award by the World Tourism Association, under the UN, and the Award for Sustainable Standards by the Rainforest Alliance, the first granted in Latin America to a project of this nature.

In addition, the Canalejas Center stands out; the emblematic project that will revitalise downtown Madrid, second Spanish city by number of visitors, and the Old War Office in London, with a similar concept that seeks to become a benchmark for quality, residential hotels in the British capital.

Meanwhile, OHL Construction has contributed to improving the accessibility of some of the major tourist destinations in the world and strengthening their communications through the design and construction of high-speed rail lines, underground networks, airport terminals, marine works and highly technical and complex viaducts in more than thirty countries. In addition, through OHL Concessions, we have extended our commitment to the development of new

infrastructure through the financing and operation of major projects in Spain and Latin America.

OHL Industrial has important references in the field of renewable energy, a sector which is key to the sustainable development of the new *smart destinations*. This includes the Huelva biomass plant, the largest in Spain, or the Arenales solar thermal plant in Seville, capable of powering 42,000 homes. Finally, we should mention the role of OHL Services, which incorporates the latest technologies into its business model to provide innovative solutions in the field of energy efficiency and quality, sustainable urban services.

As vice president and CEO of the OHL Group, I can only congratulate those responsible for SEGITTUR for the brilliant work in leading the *smart destinations* project, and to reiterate my personal commitment, and that of the OHL Group, to this vital initiative for the future of the tourism sector in Spain.



Tatiana Alemán Selva
Technical Director at PREDIF

Tatiana Alemán Selva

PREDIF technical director, she is an architect from the Universidad Centroamericana José Simeón Cañas in El Salvador, postgraduate in Universal Accessibility and Design for All from the Centro Superior de Estudios Universitarios La Salle-Universidad Autónoma in Madrid, and Master in Assistive Technology, Accessibility and Design for All of the Universidad Carlos III in Madrid.

She has worked in the fields of accessibility and disability since 2004. She is member of the Commission for Inclusive Leisure and Tourism at CERMI (Spanish Committee of Representatives for Persons with Disabilities) and participates in the Technical Standards Committee AEN / CTN 178 / SC 5 for *Smart Destinations*.

PREDIF

PREDIF, the Representative State Platform for the Physically Disabled, is a non-profit, state-wide, public interest body which represents more than seventy thousand people with severe physical disabilities, develops programmes and promotes actions on their behalf. She has more than thirty years' experience. PREDIF is now a benchmark in accessible tourism, it chairs the Commission for Inclusive Tourism and Leisure at CERMI (Spanish Committee of Representatives for Persons with Disabilities) and its protocols and standards in the field of accessibility are agreed throughout the disability sector.

If it's not accessible, it's not smart.

The *smart* concept has, over recent years been applied to several fields. One of which is urban development, with the concept of smart cities and, stemming from this, *smart destinations*. The original smart concept was linked to use of technology, sustainability and efficiency, until, little by little, another key element was introduced: people. A smart strategy only makes sense when it caters for all citizens, inclusively, not discriminating according to ability. The concept of accessibility was finally included in the National and Integral Tourism Plan 2012-2015, which defines *smart destinations*, among other things, as being "accessible to all", and "facilitating the interaction and integration of the visitor with his or her surroundings".

The smart concept, applied to destinations, has strategic value. As such, it should be employed with analysis of the destination itself as a starting point; what it has to offer, its environment, its inhabitants and their needs and circumstances, how its richness can be tapped into to make the tourist experience accessible for visitors and integrate them. Technology should thus be incorporated as a means, not as an end in itself. The objective is for visitors to enjoy the destination in all its dimensions, and for the use of technology to facilitate their access to that which interests them or fits their preferences. On the demand side, technology provides a channel through which information can be obtained and analysed, allowing for continual optimisation of the user experience.

For PREDIF, the concept of *smart destinations* only made complete sense once accessibility was included in its definition. From our point of view, a destination cannot overlook people's diverse needs. Technologies are a tool that can facilitate a satisfactory experience for users with a given disability.

How? By allowing them to choose between planning and improvisation, or enabling them to cope with unexpected situations, making a simpler solution possible. For this to happen, accessibility must have two components: on the one hand, the destination has to be accessible and consider the physical, visual, auditory and cognitive needs of visitors and residents alike. Destinations should therefore approach an accessibility inclusion strategy as another component within the smart global strategy. This means setting objectives, action points with dedicated budgets, a calendar and ongoing evaluation and management systems. On the other hand, *smart destinations* cannot carry out technological developments that disregard accessibility and which are not easily used and adapted to the needs of all. We do not measure how smart a destination is by the number of its technological applications; but by the benefits offered by this form of management, to residents as well as to tourists. Therefore, accessibility is a quality that, much more than being included in a definition, offers economic, as well as social value; deseasonalisation, attracting groups such as the elderly or families, positive recommendations of the destination by users, improved reputation and overall enhancement of the quality of products and services, since the benefits resulting from accessibility signify an improvement for tourists of all profiles.

In keeping with these principles, PREDIF suggests that *smart destinations* complement their smart strategy with a series of concrete measures that allow accessibility to be included from a global perspective:

- Stimulus and collaboration for private initiative in the area from local public administration.

- Analysis of what's on offer for tourists, application of corrective measures and creation of accessible tourist services in line with demand.
- Creation of evaluation and management protocols to ensure continued accessibility.
- Training so that professionals are aware of the specific needs of all types of visitor profile, and to ensure continued accessibility of tourist environments, products and services.
- Design of a communication plan aimed at the target audiences most affected by accessibility, to raise awareness of the offerings and location of the destination.
- Setting indicators to measure the results of implementing the accessibility strategy within the smart strategy.

The inclusion of this accessibility strategy as part of the *smart destinations* strategy will enable the measures taken for technological development, sustainability and efficiency to take into account the human factor, in all its diversity. Thus, a destination with these characteristics will be seen as closer to the people, rather than just an amalgamation of somewhat useful and original gadgets and apps.

In this sense, PREDIF's activity focuses on highlighting how important it is that smart actions consider the role of people in the whole process. There are two sides to PREDIF's measures for promoting the inclusion of accessibility as a strategic value in accessible destinations:

1. Supporting destinations in the creation and development of their accessibility strategy.
2. Development of the TUR4all mobile and tablet app, in collaboration with the Vodafone Spain Foundation.

Regarding the first point, PREDIF acts as a support agent, advising destinations throughout the process. This covers everything from implementation of public-private collaborative measures, analysis of the tourist offering, creation of a strategic accessibility plan, proposing steps for the tourist sector, training staff members, to the design of communications activity. Not forgetting the assignation of indicators for measurement of results, or to determine the steps needed for sustainability and improvement.

Concerning the second point, PREDIF has developed the TUR4all app as a global tool with various functionalities:

1. For over ten years PREDIF has been using an assessment method to gauge the accessibility of all types of tourist routes and establishments. It takes into account current policy, good practice and the recommendations of organisations for the disabled. This methodology has been reproduced in a private app, which allows technicians to audit accessibility using tablets, centralising data collection into a single system. PREDIF offers this auditing app to destinations that collaborate with our organisation to include accessibility in their region.

2. The information from the aforementioned system feeds into the TUR4all app, which is public, free and accessible. TUR4all has data on around 2,500 tourist establishments throughout Spain, all of which are audited by PREDIF. This database is available to users, who can tailor their profile to carry out searches based on their specific accessibility needs. The aim is for disabled users to be able to improvise once at the destination, as they typically have to plan every aspect of their trip in advance to ensure a satisfactory experience. In this way, they are able to enjoy the same options as other tourists.
3. For the destinations that collaborate with PREDIF, TUR4all user information allows for analysis of tourist preferences. This enables them to better understand user habits in order to improve their offering. For example, more frequent use of some establishments and routes than others allows investment decisions to be made to improve the global offer. This in turn provides visitors with increased choice. This information will be enhanced in the next release of the application, which will allow users to rate and review establishments, as with other tourism apps and websites. The user becomes the prescriber.
4. Furthermore, PREDIF is developing TUR4all in a personalised way, as is currently the case in the Spanish Group of World Heritage Cities. This project includes a bespoke app linked to TUR4all, with a website and a series of steps allowing cities to adapt and improve their offering to ensure it is accessible to all visitors.

In short, PREDIF's actions take into account technology and its smart use in order to serve end users. It enables the tourist sector to better understand demand and improve its products and services to satisfy visitors' needs. People are at the centre of the tourist experience, and our actions seek to use technology to strengthen decision-making, empower the public and turn them into prescribers. Furthermore, they serve as an incentive for tourist bodies to consider accessibility measures as more than a social factor, since they are a question of fundamental rights and because they also carry a key link to economic development. Only tourist businesses which apply technologies and the principles of sustainability and efficiency, which see human beings as diverse, and appreciate their rights as consumers and users, and which understand clearly the evolution of the population pyramid towards ageing, with its corresponding accessibility needs, can truly be called smart.



Patricio Azcárate Díaz de Losada
Communications Director, Responsible Tourism Institute
CEO, Biosphere Responsible Tourism

Patricio Azcárate Díaz de Losada

Holding a degree in Biological Sciences from the Complutense University of Madrid, and an Executive Master's in Business Administration and Management. Currently the CEO of Biosphere Responsible Tourism, and Communications Director for the Responsible Tourism Institute.

RESPONSIBLE TOURISM INSTITUTE

The RTI is an independent organisation whose purpose is to implement programmes and measures for sustainable development in the tourist industry. The RTI created and developed the Responsible Tourism System, the certification for which, Biosphere Responsible Tourism, is recognised and approved by the Global Sustainable Tourism Council (GSTC).

The Institute follows the recommendations of the United Nations Conference on Environment and Development (UNCED, Rio de Janeiro, 1992) and the directives of various programmes of the World Tourism Organisation (UNWTO) and of UNESCO on sustainable development and the protection of cultural and natural heritage.



Sustainability, the heart of smart destinations. On the road to the future.

In the last two decades there has been a growing awareness of the need to reconsider a substantial part of our socioeconomic machine. In particular, one of its key sectors, the tourist industry. We now realise that current systems of production and consumption cannot address threats such as climate change, the loss of cultural diversity, the inequality associated with development patterns and other challenges not taken into account in the models of growth and development traditionally employed by destinations.

In 1998 the Responsible Tourism Institute (RTI) was created. The RTI advocates a model of tourism that is economically, socially and environmentally sustainable.

The aim is to make destinations and businesses more sustainable, guaranteeing visitors an authentic experience while valuing and protecting culture, improving the local economy, making business profitable and reducing environmental impact. This is achieved through the most innovative channels and services, which are in constant development.

A rationally-developed tourism can contribute to new tourist models that are not aggressive, such as care of the environment from the perspective of social and cultural enrichment. For this to be achieved, the need to develop effective certification of these models must also be taken into account.

One of the key challenges currently, and a responsibility of all players in the tourist sector, is the design of sustainable models which allow for the development of sustainable products and destinations. In relation to this vision, the RTI has created the Responsible Tourism System (STR), a programme developing a series of certifications to guarantee compliance with specific requirements regarding sustainability principles and the improvement of destinations. In this sense, we must mention the Biosphere Responsible Tourism certification. This certification has been designed by the tourist industry and is endorsed by independent auditors, which is respected by the international market. This certification, created by the RTI through the Responsible Tourism System and under the auspices of UNESCO, is derived from the World Charter for Sustainable Tourism signed in 1995. Furthermore, it is recognised and backed by the Global Sustainable Tourism Council.

As such, we understand that the cornerstone of a *smart* destination is that it takes into account the two aforementioned principles. Firstly, it should offer flexibility in how tourists experience the destination, allowing them unrestricted access to the global information exchange network. This allows visitors to share their experiences and themselves generate a stimulus for other potential tourists to share them. Secondly, the destination should work tirelessly to achieve environmental, cultural and social sustainability, in order to meet tourist, as well as resident demand, so that both groups can enjoy the benefits of tourism.



We understand that *smart destinations* should be centred on continuous improvement. This is what we aim to achieve, focusing mainly on steps to address the following: reducing consumption of national resources through constant monitoring and transparency of use; data collection regarding the experience of current visitors to enrich that of future tourists; positioning the destination so that tourists are aware of it, and marketing through global communication channels to create a unique identity; and, above all, providing tourists with full value-added information about their journey through appropriate channels, taking the relevant context into account at all times.

If steps are taken along the lines previously laid out, a smart destination will be sustainable, will generate an experience beneficial for the destination itself as well as for tourists, and will achieve a key objective: their loyalty.



Íñigo de la Serna Hernáiz
President of the Spanish Network of Smart
Cities (RECI)

Íñigo de la Serna Hernáiz

Born on 10 January 1971, he holds a Civil Engineering degree from the University of Cantabria, with specialisation in Hydraulics, Oceanography and Environment. He has worked in private business as head of the Hydraulics department for engineering firm Apia XXI. He acted as Cabinet Director for the Environment Minister for the Government of Cantabria. He is currently the mayor of Santander, president of the Council of European Municipalities and Regions (CEMR), president of the Spanish Federation of Municipalities and Provinces (FEMP) and president of the Spanish Network of Smart Cities (RECI).

RECI

The Spanish Network of Smart Cities was established in June 2012 with the aim of exchanging experiences and working together to develop a sustainable management model and improve citizens' quality of life, impacting areas such as energy saving, sustainable mobility, electronic administration customer service and security. Its technical office is the Fundetec foundation.

Currently it's formed of 62 cities: A Coruña, Albacete, Alcalá de Henares, Alcobendas, Alcorcón, Alicante, Almería, Alzira, Aranjuez, Arganda del Rey, Ávila, Badajoz, Barcelona, Burgos, Cáceres, Castellón, Ciudad Real, Córdoba, Guadalajara, Elche, Fuengirola, Getafe, Gijón, Jaén, L'Hospitalet de Llobregat, Huelva, Las Palmas de Gran Canaria, Logroño, Lugo, Huesca, Madrid, Majadahonda, Málaga, Marbella, Mérida, Molina de Segura, Móstoles, Motril, Murcia, Oviedo, Palencia, Palma de Mallorca, Pamplona, Paterna, Ponferrada, Pozuelo de Alarcón, Rivas Vaciamadrid, Sabadell, Salamanca, Sant Cugat, Santa Cruz de Tenerife, Santander, Santiago de Compostela, Segovia, Sevilla, Tarragona, Torrejón de Ardoz, Torrent, Valencia, Valladolid, Vitoria-Gasteiz and Zaragoza. The Fundetec foundation is their technical office.

Smart cities and tourism: two fields Spain is leading

Tourism offers an opportunity for growth in Spain that our institutions cannot afford to miss out on. The sector makes up 11% of GDP and 12% of employment. Many experts maintain that tourism can be a key motor for economic recovery and job creation.

Tourism is an area that has been able to understand and take advantage of the benefits offered by new technologies from the outset. For years all of the players involved in its value chain, both public and private, have made full use of those benefits to improve the competitiveness of their businesses, access new markets, strategically position their services, attract new customers and secure the loyalty of existing ones. Innovation is, in itself, a strategy of the tourism sector institutionally supported by the Ministry for Industry, Energy and Tourism through Segittur. Furthermore, Spain is a worldwide model in the area of smart cities, as the current country with the largest network of cities seeking to move towards the smart model. This is due in a large part to the driving role taken on by the General state administration and the Secretary of State for Telecommunications and Information Society (SETSI) with the implementation of the National Smart Cities Plan and when it comes to having the support of leading business in this field, as well as in the tourism sector. In like manner, the work being undertaken by the Spanish Network of Smart Cities (RECI) is also key. The RECI was established in June 2012 under the initiative of a group of 25 city councils and currently brings together a total of 62 cities. Spain, through the RECI, is generating a great deal of interest not only from its European neighbours, but also inter-continentially. This is especially true of Latin America, the source of regular enquiries and requests for information about our organisational and management model.

The main purpose of RECI is to facilitate the exchange of experiences and shared and supportive work, with a clear technical focus, in order to develop a sustainable model and improve the quality of life of the citizens by promoting the automatic and efficient management of urban infrastructures and services, as well as reducing public spending and improving the quality of the services, thereby attracting economic activity and generating progress.

One of the work areas of RECI focuses on tourism and *smart destinations*, bringing together successful cases from different cities, some focused more on cultural tourism and others on coastal tourism, but both with developments where technology has facilitated both a good experience for the visitor and the promotion of the destinations.

Smart cities revitalise local economies and generate business opportunities for all kinds of companies, not just from the telecommunications, energy or services sectors, but also for a large number of businesses connected to tourism.

Information and communication technology is critical to improving the efficiency and profitability of the businesses in the sector and promoting and commercialising Spanish tourism abroad. Important public initiatives have been carried out at the national level, but we can also work directly from the cities themselves to create the models for the tourist cities we hope they become, create strategies based on technology and reach out, on a case-by-case basis, to the kind of visitors we want to attract.

It is a matter of establishing a strategy to enhance the destinations by better taking advantage of their natural and cultural appeal, creating innovative resources and improving the efficiency of the production and distribution processes. Ultimately, *smart destinations* must unite the concepts of sustainability, accessibility, innovation and technology.

Thanks to the smart use of technology, it is possible to make better use of the tourist resources and improve the efficiency of the offer's production and marketing processes. It is also possible to use the information generated by the management systems themselves to ease decision-making and offer the visitor a better experience at the destination. The sensorisation and interaction between objects (Internet of Things) facilitate the gathering and transmission of the data that must be stored, analysed and managed. To do so, new information management models have come about, such as the new big data and open data platforms, whose main value is the ability to create smart tourism systems.

On the other hand, given the multi-sector nature of tourism, the positive effects of the smart and innovative management of the destinations have positive repercussions on other sectors, such as mobility, security, health, energy and culture, which provide new business opportunities to small companies and entrepreneurs, and not just large corporations.

There are infinite possibilities within the tourism field -which are shared between the cities belonging to RECI- for developing technology-based initiatives (sometimes using apps) to offer all kinds of useful tools of interest to visitors: translation tools, nearby parking suggestions, finding open parking spaces,

geolocation systems, augmented reality, video guides and audio guides for tourist routes, video mapping (projections on monuments)...

On the other hand, and using the philosophy of RECI, it is important for the municipalities to share their successful experiences, which standardise protocols, promote interoperable technology and more, to reach their goals more quickly.

The tools are there, along with institutional encouragement, and fortunately we are not lacking visitors, as is made clear throughout this book. With all the actors present, both public and private, we should be able to take advantage of the opportunities offered to us by innovation applied to tourism in order to, as mentioned above, make the most of all the potential for growth this field offers us and put our country at the top of the world's *smart destinations*.



Felipe Santi
CTO of Sismotur

Felipe Santi

Industrial Engineer with a graduate degree in Electricity, Automation and Electronics from the *Universidad Politécnica de Madrid* and INSA (National Institute of Applied Sciences) of Lyon, and an MBA from the *Collège des Ingénieurs* of Paris. He has more than 10 years of experience in the banking and industrial sectors, where he has developed and directed the implementation of information and management systems on an international scale.



Augusto Ramos
CEO of Sismotur

Augusto Ramos

Industrial Engineer with a graduate degree in Business Organisation and Management from the *Escuela de Ingenieros de Sevilla* and a Master's in Technological Management and Innovation from the *École Centrale Paris*. In Spain, he has developed a new off/on vision for the integration of tourist signage and information systems and he has worked on more than one hundred destination plans. He is specialised in developing cloud computing systems to manage tourist signage and information, performing studies and creating master plans and tourist directional signage.

Sismotur

We are a Spanish consultancy firm specialised in the development and implementation of advanced tourist signage and information systems for the promotion of *smart destinations*. Since 2000 we have partnered with more than one hundred tourist destinations to improve their promotion and tourist information (Canary Islands, Balearic Islands, Catalonia, Castile and León and more).

Off/on integration: a different vision for promoting and developing smart destinations

At Sismotur we believe that **the basic objective of tourist destinations is to integrate and tend to all of the needs of all the actors** involved in the sector:

- Tourists want to visit a destination that welcomes and accompanies them, giving them information before their trip, receiving them and guiding them during their stay, and listening to them once their trip is over.
- Tourism companies should profit from the investments they make to create tourist products and services, and in order to do so, among other things, they need promotional tools that give them the visibility to reach their clients in the most direct and affordable way possible.
- Destinations want to sustainably and competitively promote the economy of their region, and at the same time make the most of tourism to create wealth and employment that cannot be outsourced.

That said, **the current context is very different** from the context in which traditional tourism developed in Spain and in other developed destinations over the last few decades:

- Tourists today are different. They are constantly online, thanks to new technologies like smartphones and tablets, and they have more and more information available to them about tourist destinations and services. They request personalised experiences adapted to their tastes and lifestyle.
Tourism is changing from a model of tourism for the masses to a new individualised model.

- The tourism sector is expanding rapidly, thanks to the increase in the standard of living across the world.
- An unprecedented financial crisis has hampered the investment abilities of western tourist destinations like Spain, along with the purchasing power of their population.

With this new situation, which is radically different from what we have known until now, tourist destinations are being forced to react and adapt in order to continue to meet their objectives in the new global tourism market.

The correct response, we believe, is the one selected by SEGITTUR: promoting the *Smart Destinations* project, in which technology is a key factor of success.

Therefore, in the following section we will present our vision of a *smart destination*, focusing on the contribution of technology and the functioning principles we believe necessary to create and develop them.

WHAT CAN TECHNOLOGY CONTRIBUTE TO TOURIST DESTINATIONS?

By technology applied to tourism we mean, mainly, technology based on web services, because it is the only kind that responds to the challenges set forth in the previous section:

- It is scalable, since it makes it possible to take care of everyone on the planet at a reduced cost.

- It is universal, since it makes it possible to spread content in many languages and link it to all the resources present on the internet, without limits.
- It makes it possible to search for tourism content tailored to the interests of smaller groups or market niches.

Currently, tourists mainly use search engines to find tourist information. Nevertheless, the results do not always respond to their needs, since the information tends to be imprecise, fragmented and of inconsistent quality.

Therefore, we believe the goal is to have an integrated system that serves all the actors in the tourism arena.

We believe the following three elements are especially necessary when turning a destination into a *smart destination*:

a) Off/on integration: a unified information system for tourist resources and services

We believe the basic pillar of a *smart destination* is the digital information system for its resources and services. The information contained should be accessible to all actors. We think the following characteristics are important for the system:

- **The data model should be unique, flexible and dynamic, and it should allow for the characterisation of any tourist resource or service** with enough complexity to respond to the particular needs of each type of tourism.

- **The language should be simple and clear so that the information is easily understood by everyone.** We propose, in particular, adopting the nomenclature of [Schema.org](#), the use of which is supported by the main search engines.
- To respond to the integration needs of the different actors, we suggest an open data strategy implemented with a [RESTful API](#) that publishes data in standard formats (we support [JSON-LD](#)). This will allow the data to be integrated in real time with other web applications, like tourism pages, booking engines, social networks or apps.

b) Off/on integration: tourist signs and digital information systems

We believe that an important application of the Internet of Things (IoT) for the field of tourism will be the ability to integrate into the interpretive signage (poles, screens, plaques, etc.) connections to the destination's online tourist information system. **With that, we can add the universally accessible signage systems to the possibilities offered by the new online technologies.**

The off/on integration will allow us to welcome and accompany the tourists at the destination, in particular by giving them information within the context of the time of day, weather and location, as well as of their particular preferences as an individual or group.

The process of defining an off/on model should consider all the complexity involved in the diagnosis, definition, design and updating processes of the tourist signage and information systems. We believe a comprehensive model is supported by four basic pillars:

- Methodological framework: analysis and diagnosis of the current situation, creation of a tourist signage and information policy and a manual for tourist signage.
- Public-private agreements: creation of transversal multi-sector working groups to avoid a lack of coordination between administrations and include the tourism companies.
- The use of specialised technology: we need systems capable of working with georeferenced information and cloud computing and that have social artificial intelligence engines to analyse individual and group preferences.
- Available off/on connections: QR codes, NFC chips and beacon networks or analogue devices.

c) Off/on integration: redesigning regional marketing

We believe that it is essential for the public institutions, businesses and residents of a destination to promote tourism in their region at all levels. To do so, the shared use of the off/on information system described previously is necessary. Here are some examples that demonstrate our idea of regional marketing:

- Tourism offices that create tailor-made trips and distribute them to the tourists in person, by e-mail or through social media.

- Destinations that manage and update in real time what information to give to tourists when they walk by a connected tourist sign, based on their tastes and preferences.
- Hotels that create personalised travel experiences for their clients and improve the visibility of their offers and their sales channels, thereby reducing their dependency on the major online distribution channels.
- Satisfied tourists who find it easy to share their trips on social media, helping to improve the image of the destination.

In short, we believe that technology applied to tourist destinations is a nearly endless source of opportunities for the companies and administrations that use it correctly. We believe it will allow the destinations to position themselves competitively.

HOW DOES SISMOTUR APPLY THESE CONCEPTS?

The products and services offered by Sismotur are perfectly in sync with the off/on integration vision we have explained. To meet these objectives, during our fifteen years of existence we have partnered with more than one hundred tourist destinations, developing the comprehensive tourist signage and information systems Signing and Inventrip.

- Signing is a desktop and web platform for planning, managing and updating signage. It was launched in 2004 on a project to improve the signage in Catalonia.
- Inventrip is a personalised online information service, launched in 2014 on the [Ribera del Duero Wine Route](#), that has an interactive web service that lets you look up the tourist offerings of a destination, create custom-made trips, access them from computers, smartphones or tablets, and share them through social media or physical connection devices (QR, NFC, beacons, etc.).

The following illustration sums up how we see Inventrip:



We are currently working on the following lines of development:

- Improving Inventrip's data model.
- Creation of an API for Inventrip.
- Creation of a system to access Inventrip based on beacons.
- Integration of booking systems within Inventrip.



Jesús Herrero
*Head of Tourism Market at TECNALIA
Research & Innovation*

Jesús Herrero

PhD in Information Technology from the *Universidad de Deusto* (1999). Master's (MSc, DIC) in Foundations of Advanced Information Technology from the Imperial College of the University of London (1990). Degree in Information Technology from the *Universidad de Deusto* (1989). He has 24 years of experience at TECNALIA R&I (including during the periods when it was called ROBOTIKER and TELETEK). Currently, he is part of the eServices business team of the ICT-European Software Institute division and is the head of comprehensive tourism offerings at TECNALIA.

He coordinates the ICT work group at ThinkTur, the Spanish tourism technological platform. He participated in the innovation group for completing the Plan on Competitiveness and Innovation in Basque Tourism 2010-2013.

TECNALIA

TECNALIA Research & Innovation is the premier private applied research centre in Spain and one of the most important in Europe. It is a private, independent and non-profit foundation. It is the top private Spanish organisation in terms of **participation and returns from the 7th Framework Programme**.

The greatest value of TECNALIA is found in a team of about one thousand five hundred experts of more than twenty nationalities, distributed among twenty-two offices around the world, working to transform knowledge into GDP to improve people's lives and creating business opportunities for the companies.

Smart destinations: regions and people

The smart destination is a large and ambitious concept that should be linked to the region and the people who live there and visit it. A smart destination aspires to improve every visitor's experience without decreasing the quality of life of its residents and preserving the region's sustainable development.

The majority of the world's population is urban, and it is expected to double by 2050, with cities absorbing 70% of the growth. A tourist destination can go beyond the limits of a city, but this urbanisation movement is creating a serious challenge for all of humanity. The cities are established in growing poles of knowledge and innovation ability concentration, which should favour social, economic and environmental sustainability.

A *smart destination* should create sustainable advantages for the cities and the region, producing outstanding experiences for tourists and wellbeing for residents. It should be an instrument for determining a vision for the future and a transformation strategy that encourages social, economic and environmental sustainability.

It is a matter of converting the smart destination project into an opportunity for three main actors:

- The people of a place, whether residents or temporary visitors, by facilitating access to new services and solutions that make life in the city or visiting the city easier and more comfortable, in areas such as transportation, security and health.
- The companies, by providing a platform to facilitate the creation of products and services in sectors like mobility, energy efficiency, data collection and processing, mobile interactivity, etc.

- The Administration, which can provide its services more effectively and at a lower cost by making new services, more social communication and participation options available to people options.

At the same time, a smart destination should be useful for making progress on large issues within tourism that have yet to be resolved, like the relationship between residents and visitors. Tourist activity should not negatively affect the daily life of residents. On the contrary, the resident population should be positively involved in the tourism phenomenon.

Smart destinations should encourage a sustainable and responsible type of tourism, in both urban and natural destinations, that does not modify the original region to such a degree that it loses its original richness and appeal. Resources should be used more efficiently, especially in those destinations that suffer from off seasons and consume resources with great variation throughout the year.

The contributions of technology to smart destinations

Smart destinations propose a broad and integrated approach where technology improves the efficiency of the city's operations, the experiences had by the visitors, the quality of life of its residents and the growth of the local economy.

The challenge faced by the cities that plan to apply smart approaches is making the transition from the current functional systems to more sustainable and smart systems. Putting this plan into practice means identifying the ideal technological solutions and integrating them with rational judgement, to put them at the service of a smart city project. This means paying attention to a relevant factor linked to technology: the economic and business models.

The introduction of these new products and services with strong technological bases, which require high speed deployment, will depend largely on the suitability and social acceptance of the economic and business models which are presented to the market.

The market-technology-business model trinomial is the core of action for the deployment of technology-based innovations. Technology is not just a tool for solving problems; it also plays a major role as a lever to create new business, facilitating the generation of a renewed industry based on knowledge and innovation.

In this context currently, the big data scene presents significant opportunities for tourism, from the large amount of information that flows between all actors in the value chain of the sector: between companies, public administration and the users themselves. The aim is that from an intelligent analysis of information you can make smart predictions that help in decision making.

Improved customer knowledge is still a need that must be met through intelligent analysis of the large amount of information from diverse and mixed sources. Knowing and segmenting customers to be able to adapt supply to achieve hyper-personalisation is, right now, within a very competitive environment characterised by huge customer infidelity, a prerequisite for any entity in the tourism sector.

The trend must be the development of lightweight tools for big data, in the form of SaaS, which do not require excessive investment and enable enterprises, especially SMEs, to take advantage of the potential for smart analysis and prediction.

Moreover, it must face the exciting challenge of how to strengthen, through technology, the uptake of a tourist experience that is mainly perceived through the senses: through what is seen, heard, smelled, touched, tasted...In this context, technology cannot be an end in itself; it must be a, sometimes invisible means, of strengthening and complementing this experience. Virtual reality and augmented reality technologies, the Internet of Things or wearables (which integrate both the activity and user actions) open up many possibilities in this field.

Our own initiatives in this area

The H2020 Framework Programme devotes considerable space to R+D+i on smart cities and communities, but there is a deficit in the inclusion of projects and fields related to tourism. The development of pilot validation schemes related to tourism should be promoted, for their ability to absorb multidisciplinary projects and impact a sector of great importance for Europe in economic terms.

Tecnalia participates in European projects related to smart cities from this multidisciplinary perspective, in areas such as energy efficiency, sustainable construction, health, social innovation and ICT. Examples include its leadership in the IES Cities project (iescities.eu) and WeLive (welive.eu). Both projects inspire cities to make better use of the deployed infrastructure and information technology to improve efficiency in the city's daily activities.

The IES Cities project aims to validate a set of mobile services focused on citizens and based on an open platform where the information comes from two sources: from the open data model of the municipalities and from citizens themselves.

The WeLive project, meanwhile, is designed to convert the current eGovernment to an approach in which all actors in public administration, i.e., citizens and local businesses, are treated as active collaborators, providing the means to carry out this transformation process.

In another area, a concrete example is Tecnalía's development of the Qing services platform (www.qing.solutions), based on the use of a smart bracelet. Qing is a platform that allows you to design personalised experiences through the use of wearable technologies, creating new income models and increasing customer awareness. It provides better consumer experience offering security and convenience when making payments, accessing restricted areas or using personalised services. In hotels and resorts you can also include the room key.

This platform can also be applied in other settings, such as cruises, festivals, events... or it may become a new form of personalised tourist card for visitors at a destination.



Raquel Morito Robles

*Head of Development of Vertical Services
and European Funds in Major Client Public
Administrations Marketing at Telefónica.*

Raquel Morito Robles

Since 2002 she has been working at Telefónica, where she is responsible for Local Government, Tourism and European Funds in AAPP Marketing. She is a member of the Commission of Smart cities at Ametic, where they are working on a consensus from the ICT sector so that Spain can be the market leader for smart cities.

She is a member of the AEN / CTN 178 Standards Committee on Smart Cities at Aenor and member of the CEOE Committee on Smart cities, which is developing guidelines for the design and construction of a smart city which addresses key issues such as public-private collaboration, security, European funding or new professional profiles.

Telefónica

One of the largest telecommunications companies in the world by market capitalisation and number of customers. Based on the best fixed, mobile and broadband networks, as well as an innovative range of digital services, the Company is becoming a digital telco, which positions it very favourably to meet the needs of its customers.

Present in twenty one countries and with a customer base of 341 million, Telefónica has a strong presence in Spain, Europe and Latin America, which it concentrates most of its growth strategy.

Telefónica's commitment to smart destinations

A smart destination from the point of view of the visitor must be a place where *you think like a tourist*, anticipating their needs, adapting nimbly to their idiosyncrasies, and giving them a unique experience. To do this, among other things, destinations must ensure the following:

- Access to information when and where it's needed (language, telecommunications...).
- Correct operation of public security services, transportation, cleaning...and their relevance to particular needs (elderly, disabled, language...).
- The attention and skills of people working in and for the sector (guides, hotels, taxi drivers...) and a civic culture of hospitality.
- Constant improvement of tourist experiences and cultural, sports, entertainment, shopping, dining, business and health attractions.
- Protection and maintenance of heritage (environmental, cultural, architectural...).
- Reduction of impact on the environment and consumption of natural resources.

The relevance of technology

We are a country blessed by our language, climate, culture, festivals, customs, cuisine, security, geography, history, etc. All of these elements allow us to be one of the top tourist destinations in the world. The global and competitive

environment in which we find ourselves today makes it essential to constantly be observing and innovating to meet challenges, anticipate events and improve.

The tourism sector is pioneering the transformation of its model, mainly motivated by a digital economy which has changed: from how to select a destination (travel magazines versus social networks, personal opinions...), how to book (package holidays compared to make-your-own holidays, tailored to each tourist) or how we consume (collaboratively, sharing or exchanging, e.g., transportation, home, mobile...).

As we've said, it's common for destinations to use and apply technology in their processes; usually they're on social networks, have a website or have one or more smartphone apps. Our destinations, in their development, must be aware of technology trends which help them refine their model. We're going to mention five which are worth highlighting:

- *Big data*: making the most of data and information and transforming them into knowledge; for example, on the effectiveness of existing tools (portals, apps, social networks...) or on visitors (what they're searching, what they need, how a destination behaves, consumption patterns, etc.).
- *Internet of Things (IoT)*: extracting and interpreting any information about the destination, such as the water quality of our beaches and rivers, temperature, currents, pollution levels, jellyfish, algae...; the number of people, vehicles, road conditions, fill levels, rubbish, etc. from deployed sensors (buoys, cameras, street furniture, mobiles...).

- *Drones*: capturing high quality images, photos and videos for tourism promotion and for the improvement of services; for example, security (civil protection on beaches ...).
- *Virtual reality*: displaying and designing immersive digital content such as ways to capture the attention of tourists and enrich their experience.
- *MiFis*: wireless connectivity for mobile data consumption.

A number of applications are being developed based on these five technologies, as well as new developments that will improve personalisation and loyalty for visitors, who can access the content and services from any device, at any place and any time.

At Telefónica, we are building the value proposition with our clients (both private and public) under the philosophy of accompanying the visitor or tourist on the entire cycle of their trip: before, during and after, since the technology is key in all three phases of the journey or stay. The following are some of the projects that we have worked on.

- Web portals, such as Elche, Benidorm, Valencia Tourist Board or the Andalusia Board, where, in addition to the intuitive and accessible design and multichannel integration, some of the newest features are the integration with social networks, multi-device access (the portal works as an app) or collaboration between private and public sectors, where local businesses have the opportunity to incorporate content and add to tourist experiences.

- Digitisation and file management, for example at the National Library and the Reina Sofia Museum.
- Live video broadcasting, or not, at various events in the Santander and Madrid areas, or in Cabildo in Gran Canaria. • Interior design and exhibitions geared towards tourists, grabbing their attention with multimedia elements, such as in the tourist offices in Bilbao, the 125th anniversary exhibition of Unicaja or the Pronillo Palace exhibition centre in Santander.
- Planning services in accordance with the tourist behaviours and their behavioural patterns. In Barcelona, on the island of Gran Canaria and in Mallorca we have collaborated with the government to see how tourists move around the destination, to figure out whether the visitor is getting all the information they need to enjoy their experience. For example, if a cruiser doesn't move from the port, this requires investigations to see if there are any problems relating to transport, timetables, lack of information, etc.
- Mobile applications in Málaga, Barcelona, Santander, Alicante and Palma de Mallorca give tourists access to the content and services offered by the destination, from the availability of the car parks to the state of traffic, cultural agenda, virtual tours or simply learning about local business' offers and promotions.
- 112 emergency apps for *smartphone* - customised for those with hearing impairments, the elderly and non-nationals.

- Smart city projects in Valencia to improve public services, or in Santander, Málaga, Seville and Las Palmas, to encourage support of entrepreneurship and business tourism.
- *Smart heritage*: sensoring our heritage to ensure proper management, as well as safety and maintenance of walls, fountains, monasteries, etc., in various cities, such as Avila.
- Adaptation of hotels, auditoriums and large venues with communications infrastructure, audio-visual elements, etc.



Javier Navarro Rico
Co-founder of The AppDate

Javier Navarro Rico

Born in Madrid in 1967, he has a degree in Information Sciences from the Universidad Complutense de Madrid, Master in Business Management and Marketing from the Business School, the New Technology Playground Executive Programme (IESE) and the Leveraging Marketing Communications course (INSAED, Fontainebleau).

He has worked in various media agencies. In 2000 he founded his own company, TheNextAd. He then worked in the Havas Group as Regional Manager of the digital department of the group, creating and directing five digital companies in the areas of media planning and buying, measurement and analysis, creativity and phones: Media Contacts, iGlue, Mobext, Archibald Ingall Stretton and Data&Analytics. Cofounder of TheAppDate, WakeApp and Wake App Health. He has also been president and vice president of the IAB (Interactive Advertising Bureau) and member of the Club Jurado de la Eficacia (EFI).

TheAppDate

The company was created in 2010, and has since become, through its events, the point of contact between developers, companies, investors, designers, media ... TheAppDate is the largest network of influencers, the Spanish benchmark platform for research and training, as well as for the dissemination of content on the world of mobile applications (apps), the Internet of Things (IoT), as well as projects and developments in virtual reality (VR). It currently has a presence in Spain, San Francisco, Mexico, Chile, Peru and Colombia, reaching more than four million users every month.

Apps serving smart destinations

The development of *smart destinations* is a logical evolution of the implementation and adoption of technology in people's daily lives. This use of technology has mainly derived from smartphones, the supercomputer that we can't do without, the one we always carry, and which, of course, goes with us on our travels, whether for work or play. We can't conceive of travelling without being connected, without technology in our luggage or our hand.

A smart destination can be a competitive advantage which enhances tourism. From the point that a user begins to investigate and think about possible destinations until they arrive at an airport, train station, hotel..., through the experience of a visit to a museum or monument, or how to discover the most celebrated spots of a city, accompanied by images, audio and videos...

If Spain is already one of the strongest tourism competitors in the world, through its culture, gastronomy, leisure, beaches, infrastructure... there are several elements that can boost this status even more. Broadband connectivity in the destination as both a facilitator and connector; multilingual, personalised services as differentiating factors; value-added, geo-located content as a supplement; and the ability to share experiences and opinions on dynamics and loyalty can make up a proposal that offers superior, unforgettable value.

Technology's contribution to smart destinations

Technology is making our lives easier and equipping us with *superpowers*. It lets us reduce the time we spend on processes, it organises tasks, enhances experiences, finds solutions, builds relationships... For every need there is a technological solution and, of course, it's increasingly helping us do this when we're on holiday.

Spain has the most competitive tourism industry in the world, and is now standing out in the use of technology in the habits of visiting tourists. And we're only at the beginning. There are infinite possibilities for improving travellers' experiences, bringing information and services closer and personalising them to their needs.

If we did a quick refresher, many trips start by looking for transport, for which there are applications which are already well-known, like Skyscanner Flight info, Kayak... to help us find the best flight.

One of the main challenges for visitors is the language, and in this area we find developments that provide help for translating signs or menus by taking a photo or even through remote simultaneous translation by professional translators, depending on our needs (leisure or business), or through voice recognition translation (e.g. IHG Translator, Babel, Lingua...).

Accommodations are smart - there's no need for keys, tickets or identification... We're recognised at the entrance and welcomed with information on facilities, breakfast times, the possibility of booking a beauty treatment or renting a room by the hour (e.g. Starwood Hotels & Resorts app and Accor Hotels, Byhours...).

Guides are smart, offering personalised itineraries based on our interests, travel style, day of the week, time available...and even depending on our mood (e.g. CityMapper, TripAdvisor, Aroundme...).

Fuelbands or smartwatches help us during our stay by reminding us about restaurant reservations, suggesting menus or ensuring that we're greeted by name when we walk in. Even finding our lost child in a department store (e.g. Disney MagicBand...).

The new apps also allow us to record photos and videos in 360º and share them on collaborative apps (e.g. Photosynth, VR2APP, 360D...).

Tourism services offer free connectivity in return for certain data; not personal data, but rather information about an individual's preferences, of restaurants, hotels, shopping, entertainment; they can send suggestions, points of interest, offers or promotions.

Spain is a leader when it comes to tourism products and services, and we are compelled to develop these in new spaces and environments thanks to technology. *Smart destinations* will most definitely mean improvements to the tourist experience, both in the decision making process before the trip (destination selection by interest through apps or virtual tours that allow us to get closer to the destination, finding accommodation , flights...), as well as during the stay (trip advisers, information obtained in augmented reality, security at the destination, simultaneous translation...)

And also in the post trip experience, given that one of the main attractions is being able to share experiences (photos, videos, comments in the cloud about places we've visited or where we've walked...), which will eventually become the best promotional tools for the brand that is Spain.

From TheAppDate, we have already held thematic events which showcase the most relevant Spanish tourism projects that are at various stages of development. The aim is to make them known to the public and promote acceptance, as well as showing the other players in the industry the possibilities that technology brings to the sector.

Also, we report on the main trends in tourism applications and we analyse them: cars, hotels and connected tourist apartments...; the main data downloads or economic figures showing the impact of technology on the economy, etc. Our latest project is to boost knowledge, design and content creation in virtual reality (VR), allowing us to bring to the public the different sensations that our country can provide tourists - doing this creates the need to travel to those destinations in Spain in the minds of users, before they even really know them, and to help them in the selection process of their stays, their holidays... Is there a better way to experience immersive reality than as an aperitif to a trip?



FINANCING SOURCES FOR BECOMING A SMART DESTINATION

Among the great challenges currently facing councils, trusts and other managing bodies who operate smart destinations is the search for economic resources to achieve the actions that will allow their transformation to smart destinations.

Often, it is complicated to assume the cost of the new technological platforms, systems and applications with their own funds, not to mention the necessary infrastructure to face the challenges associated with converting the region surrounding a smart destination. To do this, the government and the European Union have established a series of financial aid mechanisms which allow initiatives which are directly or indirectly linked with smart destination development to be implemented.

National aid

The government wishes to maximise the possibilities offered by smart cities and destinations to invigorate a new strategic industry committed to driving the economy and employment, therefore they have pushed a series of actions, among which we'll highlight:

Smart Cities National Plan



Endowed with 188 million euros, it's a commitment from the Ministry for Industry, Energy and Tourism to drive the technology industry of Spanish smart cities and provide help to local bodies in the process of converting to smart cities and destinations.

Watch video

The Plan, the aim of which is to contribute to economic development "[...] by maximising the impact of public ICT policies to improve productivity and competitiveness, as well as transforming and modernising the economy and Spanish society through efficient and intensive use of ICT by citizens, companies and Administrations", according to what is set out by the Digital Agenda for Spain, and it is structured into four main areas:

- **Area I: help cities with the process of becoming a smart city**
The first item aims to drive demand by helping municipalities with the process of transforming themselves into smart cities, through aids for development and specialisation. Standardisation, interoperability, recycling and monitoring of the most relevant initiatives will be promoted.

A White Paper will be developed which will allow progress in the metrics and governance of smart cities and destinations.

- **Area II: projects demonstrating the efficiency of ICT in reducing costs, improving citizen satisfaction and the creation of new business models**

The second area will help the development of projects which demonstrate the efficiency of ICT through financial aid, support and funding measures for public-private cooperation initiatives and promotion of innovative public procurement.

- **Area III: development and growth of ICT industry**

The third line of action is geared towards the development and growth of the ICT industry, with actions which drive new technological solutions intended to contribute to the advance of smart cities and encouragement of their internationalisation.

- **Area IV: communication and dissemination of the Smart Cities National Plan**

This fourth area is oriented towards the communication and dissemination of the Plan; ensuring its understanding, guiding development of smart cities through participatory processes and communicating the opportunity of steering the construction process of smart cities with open, interoperable and recyclable solutions.

Its implementation involves numerous actions, among which assistance for municipalities, support from companies within the sector and cooperation between smart cities or islands should be highlighted.

The actions include the call for smart cities, which can benefit local entities of more than 20,000 people throughout Spain (municipalities, associations, councils, and Provincial Councils) and single-province, autonomous communities. This tender is intended for initiatives which drive industry and involve quantifiable savings for periods of time, efficiency improvements in public services and accessibility, or involve innovative construction projects, the promotion of interoperability between Administrations, the creation of technological spaces, etc.



emprendetur • ●

[Watch video](#)

The NITP brings together concrete methods for funding the conversion to smart destination status. On the one hand, within the criteria it includes, the evaluation of investment projects from the Fondo Financiero del Estado para la Modernización de las Infraestructuras Turísticas (FOMIT) funding of “[...] measures which contribute to the use of new technologies for tourism management of mature destinations”. On the other, with the aim of supporting innovative projects directly or indirectly linked to the development of smart destinations, in 2012 the Ministry for

Industry, Energy and Tourism created the EMPRENDETUR funding line, driven by the Secretary of State for Tourism. This line, in its three forms, has allocated almost forty million euros to almost two hundred projects which respond to and anticipate the needs of digital tourists in the various areas within tourism activity – transport, accommodation, range of activities and experiences in destinations, etc.

European aid

The European Union has recognised the great importance of the tourism sector within its territories - it generates 10% of GDP - and, as a result, has created specific funding lines for tourism for the first time, in its 2014-2020 framework plan. In detail, there are measures in place which mean smart destinations are eligible through the different community programmes and initiatives. Therefore, we will now analyse the most notable funding lines for building a smart destination in any of its dimensions.

1 Integral *smart cities* projects

In Section 2 (*Investment priority 2. c*) of the Smart Growth Operational Programme 2014-2020 (SGOP) the funding of integral smart cities projects is presented; examining all of its dimensions and focal points. In particular, projects which are to be developed in the realm of smart cities are framed within the specific objective of strengthening so-called *e-Government*.

When selecting projects to develop, priority will be given to those whose impact on the population as a whole will be more strategically relevant, as well as the number of users who will benefit from the saving and efficiency in resource management. Specifically, it will prioritise those favouring a comprehensive transformation of all



dimensions of the city, and achieving the involvement of all public and private stakeholders through driving electronic exchange of information between them. With all of these projects, priority will be given to those which, through the use of IT, enable more efficient and sustainable management of the city and government's services.

Additionally, from these types of project, preferably those in which the cities increase their sustainability commitment from the smart city model are addressed, as well as through co-funding of actions such as by the involvement of municipal Government, the economic fabric and the civil population of the area.



The Horizon 2020 programme has a specific tender for financing large scale smart cities projects, which are easily replicable (so-called lighthouse projects), and the development of standards systems for smart destinations in which the creation of districts are prioritised and characterised by:

- low energy consumption;
- the use of integrated IT infrastructures; and
- integrated urban mobility.

2 Funding for innovative and intensive IT projects

2.1. ERDF Sustainable Growth Operational Programme

Within this Operational Programme (OP) support will be given to projects which respond to an integrated and sustainable urban strategy and which can act across a range of thematic goals, among which is the encouragement of urban ICT (including its accessibility to all citizens) which enable smart management of the city and its interconnections' activities and services, geared towards the smart city concept. In particular, the deployment of management and services platforms for the smart city, sensor networks, actuators networks or communication

networks, and the development or deployment of applications and services to the city, especially those geared towards improving the level of services to tourists and citizens, through, for example, mobile applications.

2.2. Smart Growth Operational Programme (SGOP)

Priority 1. b) of Section 1 within the SGOP includes encouraging all projects that improve the ecosystem of R+D+i by creating public-private partnerships and, in particular, by promoting investment in the development of technology products and services,

6 Financing sources for becoming a smart destination



technology transfer, social innovation, eco-innovation and public service applications in key areas for smart specialisation. Within this priority all actions aimed at technological improvement in smart destinations must be included, promoted from both the public and private sectors and, in particular, partnerships between research groups and companies that enable technology acceleration for the provision of new tourist facilities and visitor interaction with their destination.

In the same vein, investment priority 2. b) will promote the implementation of ICT products and services, in particular e-commerce, in line with the priorities

from the Digital Agenda for Spain. In this case, the emphasis is on training stakeholders about the tourism value chain, focusing on the use and adoption of ICT by businesses and SMEs, in particular.



3 Funding of projects for accessibility improvement

3.1. ERDF Sustainable Growth Operational Programme (Area 2 Sustainable and Integrated Development OT 9 Inclusive City)

Area 2 of the SGOP (Sustainable Growth Operational Programme) regards the encouragement of infrastructure geared towards social integration of all groups, equality of opportunities – and equality in general. The actions of the Operational Programme in this area will be coordinated with measures from the National Social Inclusion Plan 2013-2016.

Actions which respond to *priority 9. b*) (support for physical, economic and social regeneration of disadvantaged urban areas) will be promoted, also considering support for local trade in these areas in an incidental manner. The accessibility criteria, in addition to constituting one of the distinctive features of smart destinations, will also then be transformed into a cross-disciplinary element of smart city management as a smart destination.

4 Project funding for improving sustainability

4.1. ERDF Sustainable Growth Operational Programme Notable Low Carbon Economy Projects in the urban area.

Section 2 of the SGOP presents the promotion and funding of integrated and sustainable urban development strategies, including the incorporation of ICT, directed towards the smart city concept; the rehabilitation of the urban environment and its natural and cultural heritage; reducing levels of pollution in all its forms; and action in the field of the low carbon economy. All with the goal of moving to a model of an smart, sustainable and inclusive city in which priority is given to projects which prioritise an integrated and coherent intervention in different sectoral areas of municipal or supra-municipal competency, among

which we must consider tourism, whose activity influences (and benefits from) heritage conservation, sustainability and the extensive application of ICT in governance and management of the urban environment.

Also, among the Sustainable Urban Development Projects, those which are notable in relation to low carbon economy will be encouraged, such as the implementation of sustainable urban mobility plans (OE 4.5.1), smart traffic management systems and green infrastructure which support transport modes with low carbon emissions.

Additionally, Section 1 of the SGOP also mentions that projects aimed at improving the energy efficiency of buildings and municipal facilities or

external lighting (OE 4.3.1) will be funded, as well as those that impact the use of renewable energy (OE 4.3.2).

All these activities emphasise the sustainable nature of a destination and are integrated into the destination's offering, aligning the features of a smart city with the defining features of a smart destination. Ultimately, these actions of environmental improvement of urban environments become an input for managing smart destinations.

Finally, given the impact of tourism on urban economic activity, actions on Sustainable Urban Development (SGOP Section 2) will have an important role in the conservation and restoration of the cultural, natural and artistic-historic heritage of cities (OE 6.3.4). Spanish cities





4.2. LIFE Programme - Environment Sub-programme Environment and Resource Efficiency Sub-programme for Climate Action

LIFE is the only financial instrument in the European Union dedicated exclusively to the environment and climate. It is managed centrally from EASME (European Agency of Small and Medium Enterprise).

Among the objectives of LIFE is to "[...] contribute to the transition to an efficient economy in the use of resources, low carbon and resilience to climate, as well as protecting and improving the quality of the environment" in line with the sustainability dimension that characterises both smart cities and smart destinations.

One of LIFE's major developments in the period 2014-2020 is the Climate Action sub-programme, named in line with its objective to promote the mitigation of climate change through measures and specific adaptation strategies, as well as developing

platforms, awareness projects and public information on EU policies in the area of climate change. In addition, LIFE also promotes environmental protection projects that affect the protection of natural resources and their sustainable compatibility with the development of other economic activities - such as tourism - under the sub-programme Environment and Resource Efficiency.

LIFE projects can be pilot projects, demonstration projects or "good practice" projects. In all three cases a methodology for environmental protection (climate or natural resources) is tested; this might be new or may not yet have been implemented in that social or geographical context, assessing whether the results are generalisable to other similar contexts or on a larger scale, and whether they can be considered as cost-effective methods for each particular context or case.

In the field of smart destinations, LIFE can finance innovative or demonstration projects that either

allow tourism compatible with the protection of natural resources, help to preserve or rationalise their use, impact on the priorities for mitigation and climate adaptation, such as the reduction of greenhouse gases, urban planning incorporation of green infrastructure or awareness projects on the need to mitigate the effects of climate change.



4.3. Regional cooperation programmes

The various programmes through which cross-border or transnational cooperation is promoted within the EU also include extensive funding opportunities to promote sustainability of smart destinations.

Thus, the Spain-Portugal Cross-Border Cooperation Operational Programme Interreg VA (SPCBCOP) includes within its Section 3 (*Sustainable growth*) the prioritisation of measures for the protection, promotion and development of natural and cultural heritage - *Investment Priority 6. c)* - improving the urban environment and rehabilitation of industrial zones - *Investment Priority 6. e)* - and the application of new technologies for more efficient use of natural resources - *Investment Priority 6. f)* - all variables which comprise the sustainability dimension of a smart destination.

For its part, the Interreg Sudoe VB Operational Programme (southwest Europe) includes among its priorities (Section 5): reducing the impact of human activity on the cultural and natural heritage - *Investment Priority 6. c)* - and the adoption of environmental awareness measures in tourist areas.

Section 4 of the Atlantic Area Operational Programme also includes the goal of enhancing biodiversity and natural and cultural assets to stimulate economic development, allowing the region to attract more visitors and generate new products and services which can contribute to the development of economic activities and the creation of new jobs at a local level.

Chapter developed in
collaboration with EOSA



<http://www.eosa.com/>

Annex. Information relating to European programmes

Information relating to the
aforementioned European
programmes can be found at:



WEBOGRAPHY

- OP Sustainable Growth and OP Smart Growth: <http://www.dgcsgp.meh.es/sitios/dgc/en-GB/Paginas/Inicio.aspx>
- LIFE Programme: <http://ec.europa.eu/environment/life/>.
- Horizon 2020 Programme: <http://ec.europa.eu/programmes/horizon2020/>
- Interreg V-A OP (SPCBCOP).
- Interreg V-B Sudoe OP.
- PO Espacio Atlántico: <http://atlanticarea.ccdrn.pt/>.

Additional information on available funds for funding
tourism-related projects can also be found at:

Guide on EU Funding 2014-2020 for the tourism sector

CONCLUSIONS



Throughout the report we have seen that smart destinations refer to a very broad concept, the aim of which is to transform our traditional tourism model to a smart model, aligning with the knowledge society and the digital economy. A necessary process for maintaining - even strengthening - Spain's leadership in tourism and its competitiveness on the international stage.

In 2012 the profile of the tourist visiting us and the way they organised their trip had already changed significantly, so it was necessary to act. 70% of tourists coming to Spain organised their trip independently. It's all about travellers who are more informed - connected to numerous channels and information carriers - and, therefore more demanding, requiring digital services at their destination which behave the way they do at home (24/7 connectivity, location-based mobile applications, access to social networks, etc.).

Hence, adapting to the new digital economy was key if Spain is to improve its profitability and competitiveness on the tourism front. Therefore, if we wish

to continue being a world reference point for tourism, both in the public sector (destination managers) and in the private (all types of companies), we have to be prepared to meet the requirements and needs of this new digital traveller.

To do all of this, the Ministry for Industry, Energy and Tourism pushed the National Integral Tourism Plan (NITP) 2012-2015, which, from the outset, takes into account a series of measures and actions geared towards transforming the traditional Spanish tourism model into a pioneering global model, a model bound to the smart concept, to innovation, to innovative entrepreneurs and business people, and to the digital economy. In this way, the smart destination initiative is presented in the NITP as one of its fundamental pillars, and its development was entrusted to Segittur.

Competitiveness of our destinations had to be stimulated through innovation, technology, sustainability

and accessibility, as well as committing to a model of public-public and public-private cooperation that had never been seen before. Four years on, we have seen how the actions are impacting significantly on improved international perception of our destinations and increased profitability of companies based within them.

But the path to this point has not been without obstacles. Conveying the need for change, both in public and private sectors, when tourist numbers are up, has not always been easy. We need to be aware of this need and have the determination to put in place a concrete strategy and a series of resources to carry out the change. And that is one of the main characteristics of a smart destination - the ability to generate intelligence.

This means that its management bodies must be able to obtain real-time data, analyse it and make decisions that allow them to be more efficient in the management of the

destination: in its promotion and marketing, in the creation of unique and personalised experiences for tourists, in caring about residents, in promoting environment sustainability, etc. And this is where innovation and technology provide tools which are so valuable to the destination.

One of the first milestones on the path to smart destinations was the creation of the Technical Subcommittee for Standardisation of Smart Destinations within CTN178 of Aenor Smart Cities. This committee represented Spanish society as a whole and, thanks to consensus between Segittur and the other public and private stakeholders involved in the project, a definition of the concept was created. It was a necessary step to progress in the right direction. Thanks to this work, Spain has the first standard on smart tourist destinations in the world, a real example for the international community.

But how do you lead the way? It should start with an assessment report and an action plan which provides destinations with a roadmap for progress, following a comprehensive strategy that links to and covers four key areas within which smart destinations sit: innovation, technology, sustainability and accessibility.

In addition, public-public and public-private cooperation projects should always be presented. Otherwise, projects will be biased and will not be sustainable over time. It needs to be a project for everyone - in which civil society as a whole is informed and actively participates.

On the other hand, cross-disciplinary strategies should be mentioned, which is how we define tourism itself, which impacts on mobility, energy, security, health, culture, the economy...This has opened the door to an infinite number of business opportunities, as well as for

new professions directly or indirectly linked to tourism which, at this time, we can only imagine.

Opportunities which don't only emerge in our own country, pioneer of the implementation of smart destinations and the *living lab* of their development, but also beyond our borders.. The methodology and processes framed by the standard, the know-how from this transformation both in mature and emerging destinations, as well as all of the solutions, services and technologies applied to these developments will be able to be exported by Spanish companies to all corners of the globe who wish to take the leap towards becoming smart destinations, something that's already being done in countries like Mexico, Colombia and Peru.

Currently, several Spanish destinations already bear the smart destination stamp, a badge awarded by Segittur

to municipalities which already have an assessment and an action plan, which are beginning to develop the first concrete measures to be able to differentiate themselves as smart destinations and which are already prepared to receive the new digital tourist of the 21st century. Destinations which already meet the requirements demanded of smart destinations, among which the following should be highlighted:

- Visitors must form the backbone of the destination, however this must be done without forgetting the benefit for residents.
- A governmental team capable of making decisions in an agile manner must be in place, one that is not afraid of change and which generates synergies with the private sector.
- All stakeholders must be involved in decision making and, of course, must be open to new ideas.

- Transparency in the information generated must be present from the outset of the transformation process. This will allow the analysis of the effect of adopted measures, and the evaluation of them in real time.
- Preserve the privacy of visitors. Data should be aggregated and anonymous, unless the visitor voluntarily supplies their details to receive personalised information.
- Infrastructure (communications, energy, connectivity, etc.) plays a key role. The destination should be aware that it's not just about having the ability to receive investment, it's about ensuring they remain operational and in excellent condition.

Today we are beginning to build a future which is just beginning to bear fruit. Over the last four years we have learned much from the pilot projects,

but the aim going forward is much more ambitious. It's about ensuring that the public bodies managing the tourist regions collaborate with companies, universities, entrepreneurs, citizens and, in general, all of the living forces based within them to transform Spain into a living lab whose objective is not to simply have a multitude of smart destinations within Spain, but rather that our country, as a whole, becomes a great, global smart destination. And this, we must insist, is everyone's job.



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