

FACING THE **OVERTOURISM** CHALLENGE IN CULTURAL AND NATURAL HERITAGE SITES USING **OPEN/BIG DATA**

SUMMARY



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Developer



Project co-financed by the European Regional Development Fund

MANAGEMENT

Area of Competitiveness of TURISME COMUNITAT VALENCIANA

DRAFTING TEAM

Coordination

IGNACIO DÍEZ TORRIJOS, agricultural engineer, Master in Landscape Architecture, Doctorate from the Polytechnic University of Valencia.

State of the art technical support

JOSÉ VICENTE SÁNCHEZ CABRERA, geographer.

Contractor

cercle Territorio, Paisaje y Arquitectura Coop. V.



Document texts

Ignacio Díez, José Vicente Sánchez in state of the art

Layout and graphic design

Ignacio Díez

Translation

MOROTE TRADUCCIONES

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VALENCIA

*Jaume Mata. Turisme i Ciutat. València Convention Bureau.
Carole Duserre. Technical Expert in the Maritime of Valencia.
Leire Bilbao. Manager, Visit Benidorm Foundation.*

BARCELONA

Xavier Suñol. Tourism Director of the City Council of Barcelona.

OCCITANIA

Magali FERRAND. Directrice Déléguée. Direction du Tourisme et du Thermalisme/ Site de Montpellier

FLORENCE

Alessandro Monti. SSenior Project Manager. EU Project Manager Fondazione per la Ricerca e l'Innovazione promossa da Università di Firenze.

Andrea Giordani y Carlotta Viviani. Tourist and Economic Promotion Office - City of Florence.

WESTERN GREECE

Lavrentios Vassiliadis. Department of Tourism Planning and Strategy. Region de Western Greece.

AMSTERDAM

Dr Ko KOENS. Associate Professor - Tourism, Hotel & Facility. Breda University. Co-author of: 'Overtourism'? Understanding and Managing Urban Tourism Growth beyond Perceptions. Edited World Tourism Organization (UNWTO). 2018.

Claartje van Ette

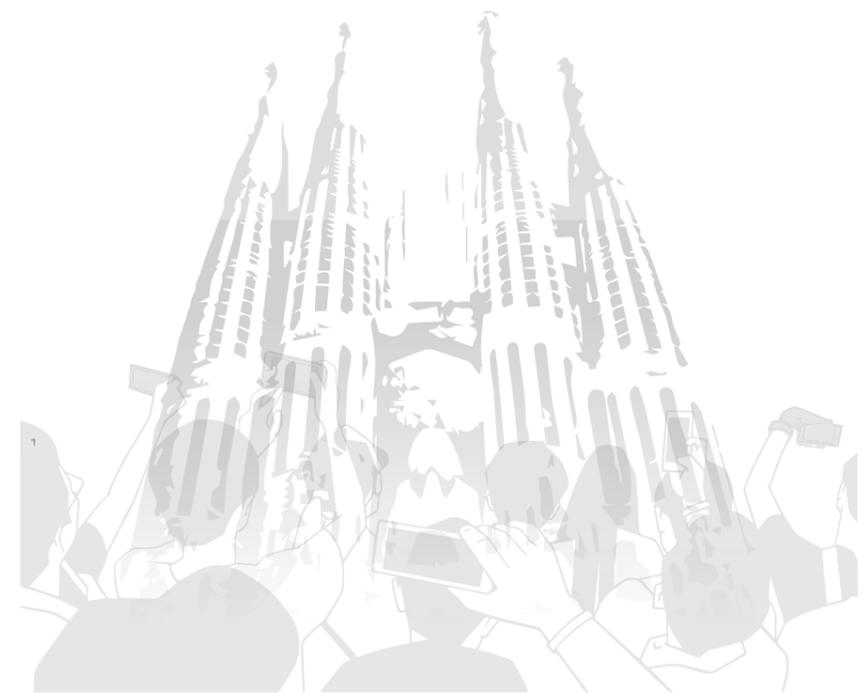
Program manager City in Balance

Daniel van Motman

Expert consultant in traffic management. Traffic and public space.

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**FACING THE OVERTOURISM CHALLENGE
IN CULTURAL AND NATURAL HERITAGE SITES
USING OPEN/BIG DATA**

Up until recently the ultimate aim of tourism seemed to be guided by the idea of "more is better". However, the symptoms presented by certain tourist destinations are bringing us to question the sense of tourist activity, in other words, the ultimate purpose of the phenomenon. The eruption of mass tourism is altering the nature of the places in which it is interfering. Social and environmental sustainability are dimensions that forcefully emerge in order to guide a new way of managing tourism, and new technologies can help us to drive the process.



DETOURING. 'Washington Post' november 2018

INTRODUCCIÓN



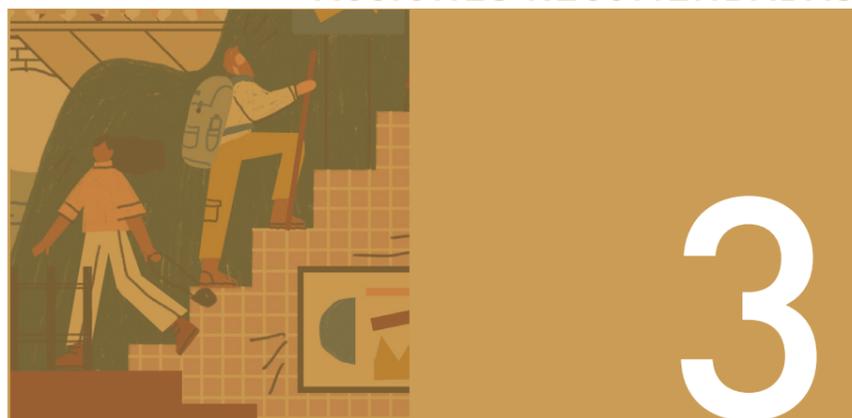
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INTRODUCTION

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1 1 HERIT-DATA. THE ROLE OF TURISME COMUNITAT VALENCIANA (TCV) AS A PARTNER OF THE PROJECT

One of the objectives of the so-called cohesion policies of the European Union (EU), is to work to reduce the existing inequality among its different regions. In this line, the community Executive promotes different actions in order to achieve a more innovative, sustainable and inclusive European area. All of these actions, among which is included the Interreg Europe financial instrument, are set within the growth and employment agenda known as the Europe 2020 Strategy (2014-2020), financed by the European Regional Development Fund (ERDF). This financial instrument is different regarding objectives, execution, and funds, from other cohesion programmes, case for example of transnational and/or cross-border cooperation. The primary purpose of Interreg Europe is to support all types of interested agents and institutions belonging to the different European regions, implementing a series of concrete development and knowledge policies and actions, sharing experiences and implementing good practices when these are transferable.

The eligible countries for the development of the project include the 28 Member States, and the outermost regions of Norway and Switzerland. Furthermore, the entities of other countries may participate in the different calls, provided that they incur their own costs. The scale approach of this type of European project is regional, according to the sharing of its different objectives, problems or interests. For instance, the MED projects bring together partners from countries in the Mediterranean region.

In this context, the Integrated Territorial Project "HERIT-DATA" emerges, in which Turisme Comunitat Valenciana (hereinafter TCV), in one of the participants. In accordance with its data sheet (<https://herit-data.interreg-med.eu>), this project has as its objective "to reduce the impact of human activities related with tourism in the areas of culture and heritage". A project that coincides with the celebration of the Year of European Cultural Tourism 2018, promoted by all of the EU institutions (European Commission, European

Parliament, and Council of the European Union, in addition to the Committee of the Regions and the European Economic and Social Committee). All of them have been organising different events to celebrate this year, launching different activities focused on the protection and enhancement of cultural heritage (https://europa.eu/cultural-heritage/about_es).

The "HERIT-DATA" project, is expected to identify the best techniques and tools for sustainable planning and responsible tourism management in certain MED regions and cities, selecting for this some cities or regions with mass tourism and that treasure significant cultural heritage.

It intends to visualise the harnessing of new technologies and innovation, in particular, by using management tools, in the context of the smart cities and the use of Big Data. Furthermore, it includes, any other social or urban management policy or measure, that helps to improve the general state of the cities, including their touristic and heritage part.

The project seeks to first develop, then test and finally transfer, a series of knowledge and solutions, in line with the changes and characteristics of the tourism sector at present. Many of the tools used for this, requires the recognition of the rapid technological advances in a global and competitive scenario, in which cities embark on the complex race to be the most efficient and innovative, thanks to the use of new technological platforms and applications. The most clear case of the foregoing is the appearance of those known as Smart Cities at a general level, or the development of Smart Tourism Destinations (STD) particularly. All of these cities gather data in a massive way, they process them and look for effective solutions to certain problems, among them the overcrowding of their urban areas and their primary touristic resources.

The same data sheet as the project also indicates that the

recommendations given by the EU in matters of Integrated Coastal Zone Management (ICZM) should be taken into account, without forgetting the cultural, heritage and urban environment protection objectives (European Commission, Quality of Life in European Cities. 2015).

Any result of interest obtained derived from the application of this European project, should contribute to the proper diffusion and improvement of the processes, especially directed at decision making in the heritage and touristic cities, always from a holistic, multidisciplinary and inclusive approach.

Once presented these motives, TCV offers in its capacity as partner of the HERIT DATA project, a solid commitment to work and collaboration. Prepare and present the present analysis, by means of a complete State of the Art of the heritage situation of some cities, testing the level of implementation of certain technological tools for the analysis and management. In this respect, TCV has found the analysis of the cases of the following destinations interesting: Valencia, Barcelona, Region of Occitania, Florence and western Greece (Olympia). In the same way, Amsterdam is proposed as a city of analysis and contrast, all this without overlooking any other world or European experience that may be of interest in order to comply with the objectives of the present work. To summarise, it is about making known different works that are being developed in the MED community space, and with it the possibility of sharing ideas, techniques and knowledge, some of them with a history for their exchange and adaptation in different cities and regions.

KEY WORDS:

Cultural heritage, management of man-made threats, management of risks, tourism, load capacity, monitoring, UNESCO World Heritage, cruises, smart destinations, support system decisions and Big Data.

KEY DELIVERABLES OF THE PROJECT:

- Benchmarking of touristic overcrowding experiences.
- Measurement of indicators of load capacity for each selected destination.
- Informatic application for tourists and visitors.
- MED strategy for the destination of sustainable cruises towards the cultural heritage.
- Model for the management of mass tourism.
- HERIT-DATA memorandum of understanding.

Partner Leader: Regione Toscana - Department of Infrastructure & Technology (IT).

Partnership: Foundation for Research and Innovation (IT), Santa Maria Real Foundation of Historical Heritage (ES), City of Dubrovnik development agency (HR), Agency for Sustainable Mediterranean Cities and Territories (FR), Faculty of Science and Technology - New University of Lisbon (PT), Valenciaport Foundation for Research, Promotion and Commercial Studies of the Valencian region (ES), Region Occitanie (FR), Conference of Peripheral Maritime Regions of Europe (FR), Turisme Comunitat Valenciana – Generalitat Valenciana (ES), Region of Western Greece (EL), Centre for Spatial Research (BH).

More information and intro: <https://herit-data.interreg-med.eu>



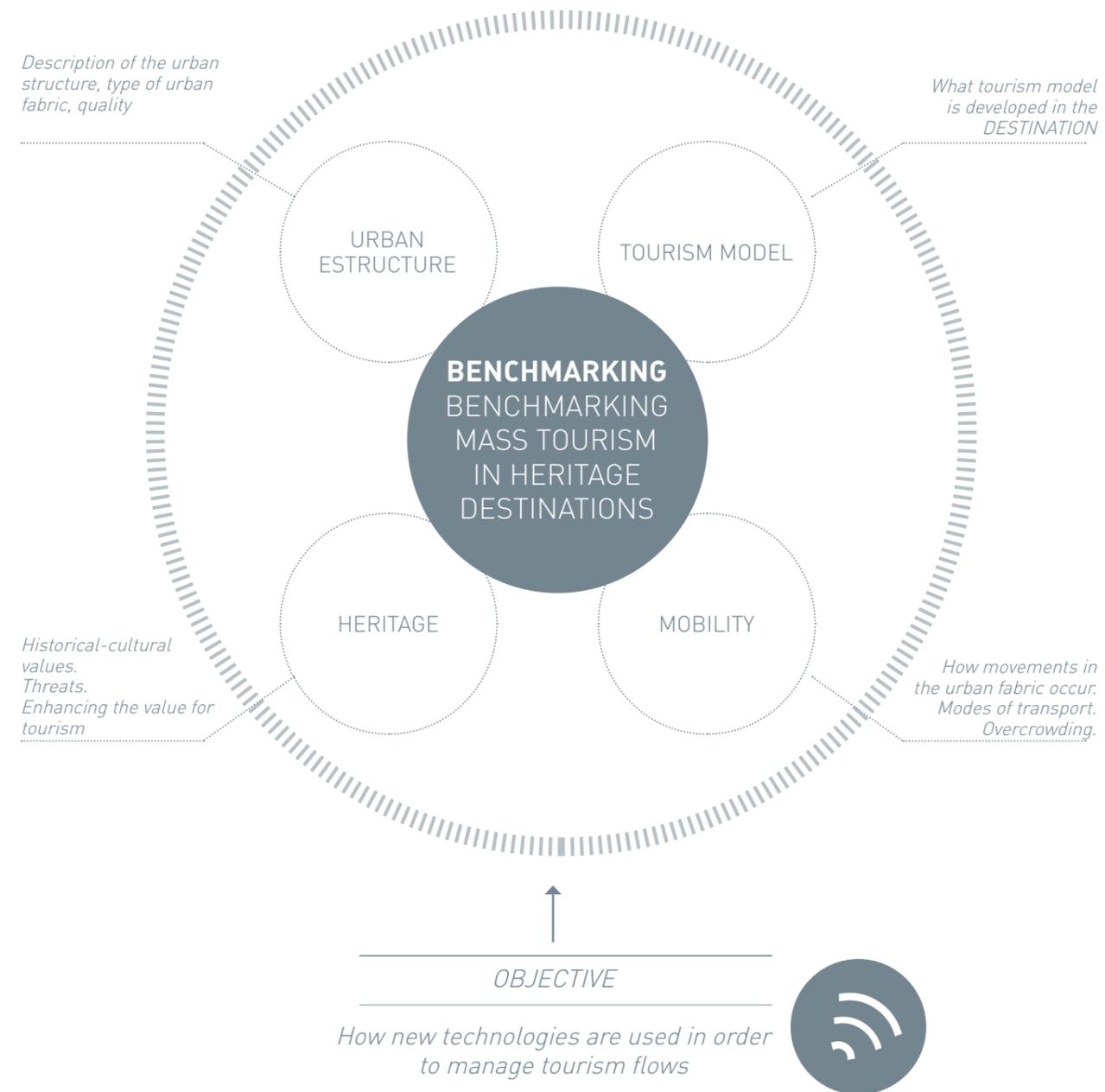


1 2 OBJECTIVES OF THE RESEARCH

The primary objective of this research is to prepare a benchmarking study on the management undertaken by diverse tourist destination in relation to mass tourism, its planning and lines of action; especially when new technologies are used to manage the flows of tourists.

The contribution of TCV in the HERIT-DATA project seeks to comply with the following objectives:

1. Review the state of the art. How the problematic nature of the tourism overcrowding on a global level is being approached, trends and current challenges.
2. Analysing case studies through research and interviews with key actors. For these case studies the following objectives are sought:
 - Identify the initiatives implemented for the purpose of taking on the challenge of tourism overcrowding in matters of urban planning, mobility and tourism management.
 - Research the use of technology for the management of tourism overcrowding. And where applicable, what devices, what data is gathered, and if possible, what measures have been adopted based on the gathered data. Analysing the use of Open/Big Data for that purpose.
 - Collect good practices that are being implemented.
3. From the study carried out recommended actions are defined for the management of tourism overcrowding by means of the new technologies.



1 | 3 STUDY METHODOLOGY

The development of the works being done from a progressive and sequential methodological approach, to ensure the quality and consistency of the results that are pursued:

1. Preparing a complete preliminary report called "State of the Art". In which the primary general tendencies of the problem that is addressed (present block or volume) are identified.
2. Analysis of the available information regarding the general state of the mass tourism in the cities subject to the study, as well as their primary resources. In the same way, those methods or tools of analysis and management will be identified, related to the handling of the new technologies and

Big Data, especially emphasizing in those that seek certain solutions to the problems posed.

3. Preparation of a questionnaire with the intention of gathering first-hand information with the actors that undertake planning and tourism management functions of the destination, as well as of more notable touristic resources.
4. Identification of the key informants (actors) of each destination, establishing contact with them, so that by means of interviews (either in person or virtually), they may provide the available information.
5. Preparation of a final report with the results obtained,

verifying the information, expanding it if that was the case.

For this, the instruments of urban or tourism management and planning are identified that are considered best practices, prospecting that successful initiatives in the management of mass tourism. In the same way, those actions or experiences that are producing undesired or unexpected results will be taken into account. It will be particularly interesting when the identified solutions or working methods can be supported in the management of new technologies, capturing, processing and ultimately using large amounts of information.





CASE STUDIES AND GOOD PRACTICES

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The “HERIT-DATA” project, is expected to identify the best techniques and tools for sustainable planning and responsible tourism management in certain MED regions and cities. With this aim, we have selected some cities or regions with mass tourism and that treasure significant cultural heritage. This project seeks to visualise the harnessing of new technologies and innovation, in particular, by using management tools, in the context of the smart cities and the use of Big Data. Furthermore, it includes any other social or urban management policy or measure that helps to improve the general state of the cities, including their touristic and heritage part.

The present section seeks to abridge the results of comparing 6 tourist destinations throughout Europe. The CASE STUDIES are:

- Region of Valencia
- Barcelona
- Occitania
- Florence
- Western Greece - Olympia
- Amsterdam

In the analysis of these 6 tourist destinations we differentiate two types:

1. Heritage city. The analysis of these places is done on an urban scale and focuses on areas with a greater heritage charge, which are those that suffer more congestion due to tourism. The selected cities are Valencia, Barcelona, Florencia and Amsterdam.

2. Touristic resource of heritage interest. In Occitania the Pont du Gard and the Hérault River Valley were selected. In western Greece the enclave of Ancient Olympia was chosen.

Along with the in-depth analysis of these 6 tourist destinations, the present study gathers international experiences at the European level that enables us to get a more complete picture of the “Overtourism” phenomenon and its management through new open technologies/big data.



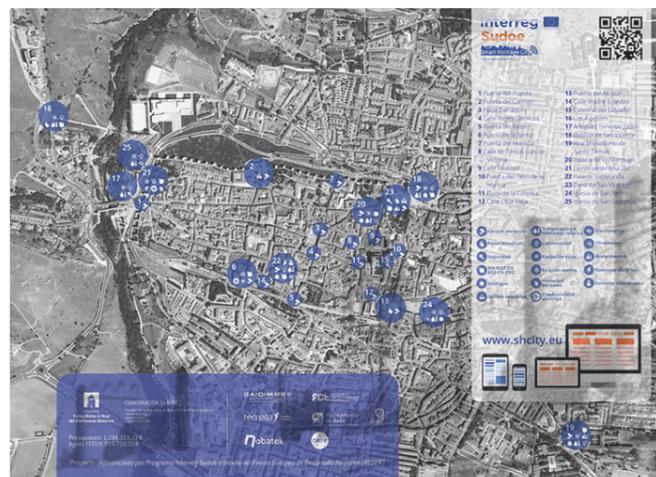
Venice

It's calculated that 30 million people visit Venice every year, and a fifth of them spend at least one night in the historic centre of the city, while the local population leaves the city due to either direct or indirect pressure. 58,000 people currently live in Venice, an amount of inhabitants similar to that of the city following the great plague of 1438. The figures show the size of the Venetian diaspora: in 1951 it had 175,000 residents; in 2017, less than 54,000. In other words, around 120,000 people left the city in the past 50 years, following the 'Corriere della Sera'. At present, 2.6 citizens abandon Venice every day, around 1,500 per year. A new budget law passed by the City Council includes a new tax, for which one will have to pay to access this place. The charge for a day trip will depend on the time of year. This tax will cost between 2.50 and 10 euros per person. However, there will be exceptions for students, people who briefly travel to Venice for work or business and regional residents.

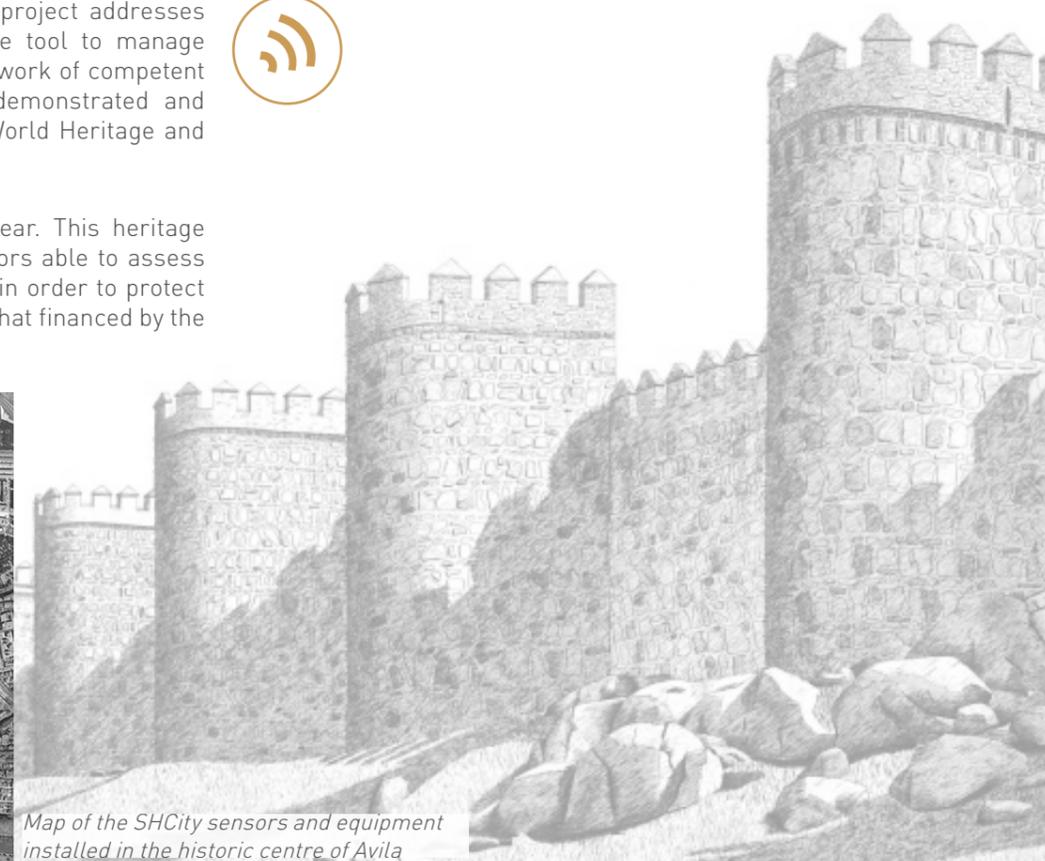
Avila

The European INTERREG Smart Heritage City (SHCITY) project addresses the innovative challenge of creating a single open code tool to manage historic urban centres and facilitate the decision-making work of competent authorities. The SHCity management system will be demonstrated and validated in the city of Avila (Spain), for being UNESCO World Heritage and participating in the Smart Heritage initiative.

The city receives some 400,000 tourists visiting each year. This heritage city tourist destination already has more than 226 detectors able to assess 1,000 different parameters in museums and monuments in order to protect them. The project has a budget of 1,194,333 euros, 75% of that financed by the European Regional Development Fund.



Map of the SHCity sensors and equipment installed in the historic centre of Avila



TOURISM & BIG DATA

Hyper-competitiveness, changes in the touristic demand and challenges related with environmental degradation and social and cultural impacts of tourist destinations, require fast information systems that make it possible to detect, and even predict, trends, and that generate more efficient responses in all dimensions of sustainability. A better understanding of tourists will allow for better satisfaction, which is fundamental for the competitiveness of the destination. At the same time, it facilitates a better performance for the local community that may make better decisions. These new resources represent clear progress on the limited preexisting knowledge of the reality of the activity. Granularity, observations of real behaviours, wide samples, diversity of data and ways of presenting the same, potential for real time management and predictive ability are some of the most prominent benefits that enable the creation of knowledge with great potential for disruptive innovations and as a pillar for **advancing sustainability of the destinations**. (Calle, 2017).



Tourism of Portugal, in collaboration with NOVA SBE (University) and NOS (Telecom Company) designed a pilot project that uses mobile data, Airbnb data, and social network trackers to study the pressure of tourism in Lisbon and Porto. The project seeks to measure and monitor the tourist flows and presence in the space and time by means of the use of traffic of telecommunications (CDR data), social networks use (Facebook, Twitter, Instagram), Airbnb data and airport arrivals.

It intends to better understand the touristic phenomenon, its behaviour in the city, in other words, the duration of the stay, the most frequent routes and most popular touristic resources. A second phase of the project is to design recommendations for action and concrete actions to be taken by the authorities in the field of tourism in order to address the identified problems.

Source: Tourism of Portugal (2018).

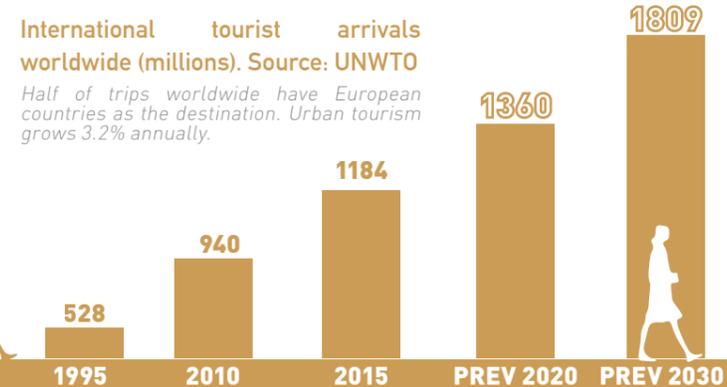




CURRENT AND FUTURE CHALLENGES

Up until recently the ultimate goal of tourism was driven by the idea of "the more the merrier". However, the symptoms shown by certain tourist destinations are calling into question the tourist activity, in other words, the ultimate goal of the phenomenon. The emergence of mass tourism is altering the nature of the places it invades. Social and environmental sustainability are facets that strongly emerge in order to guide a new form of tourism management, and new technologies may help us to lead the process.

In this timeline, data, news, lists of overcrowded tourist destinations are collected that demonstrate the topicality of the problem faced by urban environments of a heritage nature.



January 2017

Barcelona presents the law to curb tourism.

The local administration approves the new legislation intended to curb tourism. The law limits the construction of hotels and ceases to issue licences for new tourist accommodation rentals.

30.000.000 visitors
40.000.000 users of Barcelona airport
130.000 spots of regulated accommodation
24% increase of rent prices in 4 years

Timeline prepared from: <https://www.telegraph.co.uk/travel/news/timeline-action-against-overtourism/>

2017

Machu Pichu received 1.4 million visitors.



2017

June 2017

Venice plans to prohibit new hotels.

The urban planning city council of Venice presents a plan that is described as essential "for the protection of the city". It will prevent new vacation accommodations from being opened in the historic centre.

Machu Picchu restricts visitors

Any person that travels to the citadel at the top of the Andean mountain will need a ticket for the morning (6 am to noon) or the afternoon (noon to 5:30 pm). Any person that wishes to stay at the site for more than the allotted time will need to purchase a ticket for both time segments.

2017

Reikiavik

The number of international air travelers has skyrocketed; between 2016 and 2017 visits grew 25%, to 2.2 million.



July 2017

Anti-tourism protests in **Barcelona**.

3 million passengers arrive to Barcelona annually. They intend to relocate the cruises arrival area.



August 2017

Tourists and cruises are moving away from Dubrovnik.

Dubrovnik announces a two-year plan to drastically reduce the number of visitors allowed in its old centre, in an effort to prevent overcrowding in ruins.

2017

Cinque Terre Riomaggiore, Manarola, Corniglia, Vernazza and Monterosso inhabitants and receive 2.4 million visitors each year.



October 2017

Mallorca doubles the tourist tax. The Balearic Islands announces plans to double its tourist tax during the high season in an effort to combat overcrowding. The archipelago has experienced a huge increase in foreign arrivals, which has led to requesting measures in order to protect the region from uncontrolled growth and environmental damage.

Amsterdam prohibits shops targeted at tourists. Amsterdam announces the prohibition of any new store targeted at tourists such as bike rental shops, souvenir shops or others.

April 2018

Venice reflects on the visitor load. The mayor Luigi Brugnaro proposes charging visitors who enter the floating city. "The solution is obvious: those who live, work, or have a place to sleep in the city can enter, the rest should stay away".

First anti-tourism protest in **Ibiza**. More than 500 people take to the streets to protest against the impact of urban tourism in Ibiza.

Venice introduces unprecedented crowd control measures without to separate tourists from premises.

October 2018 THE TRAVELER LIST OVERTOURISM

- Majorca
- AMSTERDAM**
- Boracay
- Angkor Wat
- Machu Picchu
- Iceland
- Santorini
- Bali
- Dubrovnik
- BARCELONA**
- Venice

"In order to enjoy the visit, you need conditions that make it easier to appreciate. Everything that is accumulating people in one place is unsustainable. Mass tourism only brings about deterioration. In any case, the problem of 21st century museums is not that a lot of people go to museums, I prefer that museums die from success than see them empty." President of the International Council of Monuments and Sites. Source: El Pais. JAN 2019

- January 2019 INDEPENDENT LIST OVERTOURISM
- Ubud, Bali
 - Maya Bay, Thailand
 - Uluru, Northern Territory
 - Venice, Italy
 - BARCELONA, SPAIN**
 - Santorini, Greece
 - Rome, Italy
 - Tuscany, Italy
 - Iceland
 - The Hamptons, New York



Large amount of tourists per resident: some days, the centre of Venice receives 60,000 visitors, while its population is only 55,000.



2018

November 2017

Cruises diverted from the centre of **Venice**. Following years of debate amongst Venetians and the tourism industry, the government announces that it will prohibit cruises from going near Piazza San Marcos.

January 2018 LISTA CNN OVERTOURISM

- Venice
- BARCELONA**
- Santorini
- Dubrovnik
- Cinque Terre
- Taj Mahal
- Machu Picchu

May 2018

Venice prohibits new fast food establishments. Venice once again attempts to reduce the impacts of mass tourism by prohibiting take-away establishments from opening in the city.

November de 2018 WASHINGTON POST LIST OVERTOURISM

- VENICE
- VERONA
- MACHU PICCHU
- CHOQUEQUIRAO
- BARCELONA**
- REYKJAVIK
- BAFFIN ISLAND
- CAMINO DE SANTIAGO
- ST. CUTHBERT'S WAY
- DUBROVNIK
- ROVINJ
- AMSTERDAM**
- LJUBLJANA
- ROME
- TURIN
- CINQUE TERRE
- PORTO VENERE





STRATEGIES TO MITIGATE THE NEGATIVE EFFECTS OF MASS TOURISM

In November 2018 the report titled **“The integration of sustainability in tourism policies of major European cities”** (González et al., 2018) was published. This document outlines the main strategies to tackle the management problem of mass tourism. New technologies can be a tool to implement these strategies on various fronts such as monitoring, communication, governance or daily management of the tourism phenomenon. The strategies proposed in the report promoted by Eco-Union and the City Council of Barcelona are the following:

MANAGE CONGESTION AND GENTRIFICATION

- Promote comprehensive metropolitan tourism strategies in order to spread out tourists in wider geographical areas.
- Integrate the land use in tourism policies as regulatory instruments to avoid overspecialisation and congestion in specific urban spaces.
- Develop special urban mobility plans for tourist areas to avoid saturation around the main areas of attraction through pedestrianisation and the administration of car parks for cars and coaches.
- Implement regulations for short-term online accommodations and prevent illegal accommodations.
- Promote social housing for low and mid-income people, especially in the central districts of the city.

INCREASE THE EXCHANGE OF KNOWLEDGE, ASSESSMENT AND MONITORING

- Analyse the city’s environmental footprint and evaluate the load capacity in order to measure environmental impacts related to carbon emissions, water and energy use, waste generation, among others.
- Implement tourism observatories to collect, monitor and share tourism impacts on a municipal and metropolitan level. Data should be shared on open platforms for researchers, the tourism industry and civil organisations.
- Technical skills training and development of workshops with different types of stakeholders involved to define sustainability strategies.

GUARANTEE SOCIAL RETURN IN THE DESTINATION

- Support sustainable public procurement (SPP) practices by means of introducing green and social criteria upon agreeing to public contracts or obtaining tourism/accommodation licences.
- Implement and use of tourism taxes in order to improve the quality of the destination and maintain ecosystem services instead of reinvesting in touristic promotion.
- Promote green or social certifications at the destination and tourism industry level.
- Publicize sustainable practices, companies and products in the destination.
- Increase the support (financial and technical) for sustainable enterprise and responsible companies

PROMOTE INCLUSIVE GOVERNANCE AND CROSS-SECTOR MANAGEMENT

- Guarantee inclusive participation of stakeholders to collaborate in tourism planning with the civil organisations.
- Improve comprehensive and cross-sectoral touristic management in order to develop more integral policies regarding urban planning.

REDUCE ENVIRONMENTAL IMPACTS AND RESOURCE CONSUMPTION

- Develop sectoral mobility plans for tourists in specific sectors, places and seasons.
- Promote the offerings of suppliers of local goods to reduce the carbon footprint and promote local jobs in food and crafts.
- Ensure prevention and waste recycling plans, prohibit the use of single-use plastics and carry out educational campaigns.

In order for tourism to be accepted by local communities and civil society stakeholders, it should contribute positively to the sustainable development of European cities.

GENERAL RECOMMENDATIONS FOR IMPROVING THE INTEGRATION OF ENVIRONMENTAL AND SOCIAL SUSTAINABILITY WITH URBAN TOURISM POLICIES.

- The comprehensive assessment of sustainability is the first step to understanding the real impact of tourism in the destination. This should be done in collaboration with external experts or scientific institutions in order to guarantee an objective analysis.
- The monitoring and transparency are essential for collecting knowledge, feed public debate and properly inform urban sustainability policy makers. The access to information and its knowledge allows social, environmental and economic stakeholders to get involved.
- There is a need for political coherence and cross-cutting coordination between different urban policies, involving all city departments, reinforcing destination management beyond economic promotion and commercialisation, because sustainable tourism is a crosscutting issue.
- Mitigation and prevention of negative environmental and social impacts by integrating different policies, strategies and practices related to the management of natural resources and social equality objectives.
- Regulating the tourist market and access to urban resources is fundamental in order to reduce the overcrowding of public

spaces and guarantee equal access to (and the preservation of) public property (public spaces, land, housing, water, energy, food, etc.). There is a wide margin for improvement in matters such as urban and environmental taxation.

- The growth aspirations of quantitative tourism must be redefined under a sustainability perspective. Increasing visitor tourism in over-exploited destinations will further increase environmental and social conflicts, jeopardising the quality of destinations and the livability of cities.
- Transport and mobility patterns must be adapted to reduce carbon emissions related to low-cost airlines, cars, and cruises. National and local transportation authorities should take steps to combat climate change, and sustainable mobility strategies are a key issue in order to reduce mass tourism in cities and preserve the environment. The accessibility policy (airlines and cruises) should be redefined in accordance with climate targets.
- The regulation of the housing market and the exchange economy is another key issue where a combination of regulatory and legal policies at local, national and European levels must guarantee access to housing for permanent residents.





SHARED CHALLENGES FOR MITIGATING THE NEGATIVE EFFECTS OF MASS TOURISM IN CITIES OF HERITAGE VALUE

In 2018 the study called “**Overtourism: impact and possible policy responses**” was published. It’s a research document requested by the European Parliament’s Committee on Transport and Tourism (TRAN) (Peeters et al., 2018). This study addresses the complex phenomenon of “overtourism” in the EU. By focusing on a set of case studies, it provides information on indicators of mass tourism, analyses management approaches implemented in different destinations and evaluates the responses from the policy. However, common indicators cannot be created by the complexity of factors in each situation, this scientific study enables us to qualitatively illustrate the challenges that different cities bear to those selected for this present Benchmarking work.

According to the research undertaken by the European Parliament, the most common impacts are the overcrowding of infrastructure (of transportation) and of touristic areas, pollution, and problems related to waste. On the other hand, the negative economic impacts of mass tourism were the least reported. The most frequent measures (but not necessarily the most appropriate/effective) are those related to limiting the number of people in access points (by distributing them to other areas), ensuring that visitors respect the rules and regulations and improve the ability of the destination to deal with a greater number of people (by increasing abilities, efficiency of infrastructure, facilities and services). In coastal and island destinations, a wide range of measures are applied that reflect the wide range of impacts these destinations are facing.



LISBON, PORTUGAL

To prevent the negative impacts of “gentrification” more effecting public housing and tourism policies and a better dialogue with urban social movements are required. Innovation is needed in the design of urban regeneration processes and policies to prevent displacement and eviction of residents, as well as taking concrete measures and initiatives to guarantee the “right to housing” instead of “tourism-led gentrification”.

CINQUE TERRE, ITALY

For the time being, it is unrealistic to predict a decline in the numbers of visitors to Cinque Terre. Therefore, the discussion about tourist overcrowding will likely remain focused on how to most efficiently manage the increase in tourism flows and how to communicate better with visitors. A “no action” scenario in the long-run could lead to irreversible deterioration with social and environmental collapse.



MAJORCA, SPAIN

Tourist overcrowding and subsequent protests are a serious problem for local authorities. The local social movements are protesting and signaling that tourism is destroying the social and economic fabric of Palma de Mallorca. It is likely that these protests will continue and grow stronger in the future. The Pla d’Equilibri Ambiental i Turístic 2017-2020 (Environmental and Touristic Balance Plan) proposes sustainable development measures for the island.

VENECIA, ITALIA

Italy is taking active steps to promote lesser known parts of the country. The city itself has implemented a great deal of actions, including: management of groups, creation of a new platform to acquire the various services of the city, coordination of landings, diversification of the private coach arrival points, changes in public transportation, regulation of tourist facilities, increased roadblocks, smartphone-enabled devices for visitors' personal use, agreements with mobile providers, posters and information totems, etc...



It is expected that arrivals in Malta will exceed 2.5 million in 2018. With tourism contributing approximately 27% of the GDP, the industry will continue being one of the main sources of revenue for the country. As an effect of the actions of the La Valletta 2018 foundation and the intense cooperation between Air Malta and Malta Tourism Authority, it is expected that the number of arrivals will increase even more, which will increase the pressure on La Valletta, the capital.

VALLETTA, MALTA

BUCHAREST, ROMANIA

Overnight stays have grown 50% in the past 4 years and this growth shows no signs of stopping in the short-term. This could make the situation worse in terms of impacts related to tourist overcrowding, further damaging the environmental condition and overcrowding of the city. Local authorities must adopt a more strategic approach to tackle the general problems of tourism, in order to preserve the environment, reduce the overcrowding of the city and efficiently manage the impact of the tourist flow increases.



The lack of tourism governance and strategic cooperation between the local and national authorities could put the future of the destination at risk. The implementation of effective policies aimed at managing and regulating the increase of tourist flows is needed in order to alleviate the negative consequences of tourism in the local community. This is necessary in order to preserve the destination's image, prevent deterioration and safeguard the future tourist attraction of the island.

SANTORINI, GREECE

CONCLUSIONS OF THE STUDY

- There is a serious lack of detailed and reliable information that hinders the effective identification of the state of, or risk of, "overtourism" for a destination.
- It is necessary to generate a system of indicators that makes it possible to monitor the touristic development of a destination.
- Although the number of destinations experiencing "overtourism" is generally low, the effects of it are potentially serious, to a degree that cities may lose their appeal and main functions.
- It is necessary to redefine the 'growth paradigm', where the measure of success is not only focused on the extent of visitors' arrivals, but rather the in the value that said presence contributes to a destination in terms of profitability, local employment or fair pay for the workers involved in it.
- The development of platforms such as Airbnb as entities outside the control of the destinations, as well as the loss of revenue associated with these platforms, deserves more attention.
- Economic policies are needed that improve the socioeconomic benefits for residents, specifically those who do not participate directly in the tourism economy. These may include measures such as charging visitors a tax so that they may support the cost of local infrastructure, public transportation and municipal services such as street lighting.
- Social policies that alleviate the burdens imposed on residents are necessary. These may include policies, such as limiting Airbnb rental periods, limiting the number of beds in specific areas, or efforts to better distribute the tourist pressure.

AYIA NAPA, CYPRUS

The projections show that by 2030, Ayia Napa will reach 1 million tourist arrivals per year, 75% of which are expected to be international tourists. This will entail an increase of approximately 350,000 visitors in comparison with the arrivals in 2017. The impacts of tourist overcrowding is raising the awareness among interested stakeholders in how these problems damage the image of the destination, the environment and the social fabric.



In accordance with the study “Overtourism: impact and possible policy responses”, a research document requested by the European Parliament’s Committee on Transport and Tourism (TRAN) (Peeters et al., 2018), it is concluded that Florence, Amsterdam and Barcelona are at a level at which they are showing signs of “overtourism” and the Region of Valencia is presenting indications of trending towards “overtourism”.

This study provides a series of conclusions that are important for this work. Thus, the primary challenges to be addressed were detected:

I. There is a serious lack of detailed and reliable information that hinders the effective identification of the state of, or risk of, overtourism for a destination.

II. Although the number of destinations experiencing overtourism is generally low, the effects of it are potentially serious, to a degree that cities may lose their main function as residential space.

III. Many authorities manage their destinations based on a growth paradigm, they value increasing the number of visitors and cannot identify and mitigate the state of overtourism.

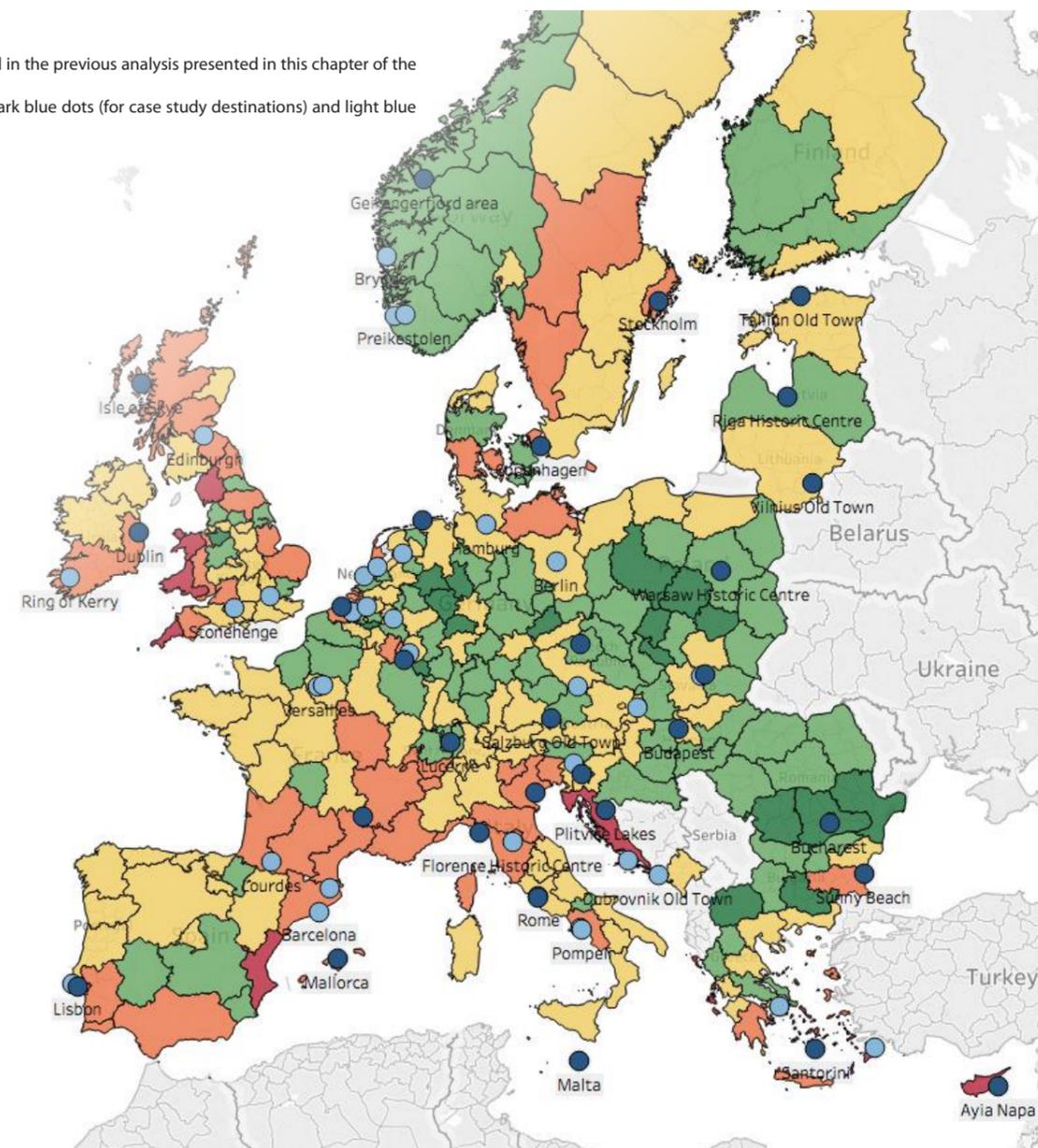
IV. The role of ITCs, social networks and peer-to-peer platforms are often identified as one of the primary causes of overtourism, given that they accelerate the seasonal and geographical growth and concentration of the flows and volume of tourists in certain places.

Average of the 5th percentile of the nine significant indicators and location of the destinations in state of overtourism from the initial gross list of destinations



Source: elaboration of this study based on all data used as outlined in the previous analysis presented in this chapter of the study

Note: The destinations in a state of overtourism are indicated by dark blue dots (for case study destinations) and light blue (other overtourism destinations).



Therefore, according to the study carried out, the members of the European Parliament may consider the following recommendations for action:

- **Promote tourism monitoring and identify its evaluation methods and procedures.** Said methods must include not only measures of tourism volume and density / intensity, but also measures related to the collecting of data about the number of one-day tourists and visitors, Airbnb and other new forms of accommodation and transportation systems.
- **Promote the inclusion of additional overtourism statistics in the current Eurostat tourism statistics monitoring system.** It is desirable to increase the level of detail within the economic indicators, such as tourism revenue. Furthermore, the scope of tourism statistics should be widened from overnight stays to daily visitor accounts. The important indicators that must be included are nights of accommodation, visiting days, length of stay, capacity and revenue from all specified visitors not only for conventional tourist accommodation and resources, but also for Airbnb-type accommodation, use of the mode of transportation includes the proportion of air transport arrivals and cruise ship arrivals / flows.
- **Encourage the rebalancing of a 'growth paradigm' with a 'regional development paradigm',** where the measure of success is not only focused on the extent of visitors' arrivals, but rather the on the value? that said presence contributes to a destination.
- **The destinations' touristic management strategies should focus instead on managing the volume (growth) of tourism instead of just on the distribution of visitors in space and time.** The destinations' policies should point to a better monitoring of the commonly agreed upon performance indicators. Destinations should also identify and promote good practices and improve the national and regional legislation in order to address the overtourism phenomena.
- **Encourage the development of a set of EU policies designed to alleviate the vulnerability of "coastal and island" destinations and "heritage**

resources" in comparison with the general care given to urban areas. These EU policies should be based on studies that evaluate overtourism in this type of destination, based on the environmental load capacity and how to govern a significant volume of visitors. One problem that causes overtourism is the strong competition between destinations which strengthens the growth paradigm in the majority of destinations. Therefore, some form of cooperation is recommended to help distribute visitors within the load capacity of these destinations.

- **Support a thorough assessment of the role of social networks, digital platforms, etc...to cause overtourism.** There is evidence (also confirmed by this study's analysis) that it leads to the concentration of tourist flows, but more research is needed to better understand these interrelationships. This is necessary in order to better govern the sharing economy, regarding its effects on tourist flows (concentration in certain places; decrease in the length of stay), competition and tax evasion.
- **Stimulate the identification of actions at various levels that go beyond the assumption that overtourism is directly related to seasonality, and that decentralisation, visitor spreading and decongestion policies will provide the solutions.** These measures may relocate the problem to another area, but not fix the underlying problem of an ever-growing number of tourist arrivals, over the load capacity of the destinations.
- **Emphasise the need to develop economic policies,** in the form of taxes or incentives, by improving the economic benefits for residents, specifically those who do not participate directly in the tourism economy.
- **Advocate for the creation of a European working group** on excessive tourism in order to monitor at-risk destinations and to annually report on trends, with specific intervention recommendations at the macro level.

- **Push national governments to implement regulations that restrict the granting of housing licenses for tourist use in congested areas.**
- **Propose the creation of executive boards in Destination Management Organisations** to include resident representatives, neighbourhood entities and grassroots organisations, and allow them to proactively contribute to the policy decision-making forums, particularly focused on the planning and management of tourist destinations.



2 1 REGION OF VALENCIA

The **Region of Valencia and the city of Valencia** specifically have started on the path of implementing new technologies for governing the touristic phenomenon.

The **NETWORK OF SMART TOURIST DESTINATIONS OF THE REGION OF VALENCIA** (DTI network) is bearing fruits with relevant experiences, as is the case with works being undertaken in the Valencian regions' different municipalities, like **Benidorm** in which the areas of greatest influx are being monitored and the information is being shared among public and private stakeholders.

Valencia is boosting the governance of the destination under the **Smart City premise, through the Smart City Office**. This initiative was honoured with the EnerTIC2016 award as the Best Project 2016, Best Smartcities and Smart e-government Project.

Within the Valencia Smart City project **AppValencia** was developed, an application that has various functions in order to improve the tourist destination experience and functioning of the city.

Currently in the **Port of Valencia**, a very interesting experience is being carried out, based on the "placemaking" philosophy in which the influx of people to the port area is monitored in order to then implement management mechanisms.

In 2019, the **City Council of Valencia** in collaboration with a mobile phone company intends to carry out a monitoring experiment in order to know the flows within the municipality of Valencia of residents and non-residents during February and March. This time period coincides with the local festival of the Fallas, declared Intangible Cultural Heritage of Humanity by UNESCO in 2016 and recognised as a festival of international touristic interest. The results will be available in the third quarter of 2019.

2 2 BARCELONA

Monitoring elements are being regularly tested in High Influx Areas (HIAs) in order to know visitor flows and diverse metrics in order to improve the management of these areas.

In Ciutat Vella regular tallies have been carried out and at the beaches, drones were used for visual examination. The Rambla is a critical area and seeks to comprehensively tackle improving the urban spaces as well.

The City Council of Barcelona has a tech team that, through open-data and big-data, is dedicated to inspecting the irregularities in tourist accommodation. In the same way there are experiments in the use of credit card usage data to define commercial areas.

In the **Sagrada Familia** a pilot project was carried out. A successful experiment in which the effects of the European Directive on data protection were evaluated. Traceability in order to understand behaviours is of interest, but it is necessary to know the limits.

There is an agreement with the telephone provider in order to supply the mobile phone data. An analysis is being done of the important data by the Supercomputation Centre of Catalonia, however, it is in the preliminary stages.

Turó de Rovira Experiment. There are devices for counting people using 3D cameras that analyse volumes without reference images to better distinguish individuals at the top-down level. Privacy is maintained. It has arrival and exit controls and makes it possible to have "real time data". Once the maximum occupancy is exceeded, it is controlled and services such as cleaning and security can be managed. In any case, the load capacity has not yet been calculated.

2 3 OCCITANIA

Officials in matters of tourism point out that it would be interesting to monitor these arrival points using new technologies in order to regulate tourist overcrowding. Today no measures of this type are being carried out in the area of study.

INTERVIEWS



"New technologies allow us to understand the touristic phenomenon and control mass tourism in heritage resources such as the Pont du Gard".

Magali Ferrand.

Directrice Déléguée. Direction du Tourisme et du Thermalisme/ Site de Montpellier



2.4 FLORENCE

Florence uses open big data, but there are not yet results at the city level to resolve the overcrowding problem. The Internet of Things (IoT) is a reality in Florence and soon they will have interesting results according to the experts consulted.

Florence, as it regards to decongesting tourist flows, is creating a new system that will inform tourists about the level of overcrowding the areas of the city, through Wi-Fi on their smart phones in real time. Universal signage (traffic lights: green/yellow/red) will orient them during their stay, also proposing alternative routes, with invitations to visit lesser known or less crowded museums and exhibitions at that time.

This will all be possible thanks to the installation of sensors, throughout a series of strategic points of the city, which will make it possible to track attendance; but also, thanks to the collaboration of telephone companies able to analyse data anonymously.

GOOD PRACTICES The new Uffizi system, by means of which the tourist obtains the entry on a touch screen in which the exact entry time is shown based on an algorithm's calculation. In this way the waiting time is used visiting other places in the city.

From 2011 a new instrument has decisively contributed to managing the tourist flows: the Firenze Card. With this card, tourists may visit all of the places of interest in Florence with priority access during a period of 72 hours (with the possibility to extend another 48 hours). According to recent studies we know that, thanks to this instrument, visits to "less relevant" museums is constantly increasing, as well as the duration of the average stay in Florence.

2.5 WESTERN GREECE

At present no new open-smart/data technologies are being used to address the touristic overcrowding of the site. In the future it could be one of the routes for improving the management of the archaeological site, its access points and the connection to the main resources of the tourist destination (museums).



2.6 AMSTERDAM

Amsterdam has an **overcrowding in the public space monitoring system (Crowd MONITORING System Amsterdam_CMSA)** operating in two critical points: Redlight District and Kalverstraat (main shopping street). This is a system of Wi-Fi sensors and smart counting cameras. The data are used in order to have an idea of the amount and the density of the crowds. From this view of the data, operational scenarios are created in order to manage crowds. The traffic department and the public space of the department of Amsterdam are responsible for the overcrowding management of the public space in coordination with the police as those responsible for street checkpoints on foot.

The CMSA systems only verify public space areas. The CMSA is a pilot program and at present is evolving towards a generalised use in the rest of the city. They want to combine data from the department of traffic and the public space with other data related to overcrowding. This will provide a comprehensive view of the phenomenon. An important fact is the respect for privacy norms, which means that data are protected, therefore individuals may not be traced.

The Veovo BlipTrack Guest Predictability has been installed in the **Amsterdam Airport**. This infrastructure serves as a transit centre for more than 300 destinations, the number of passengers skyrocketing from 50 million in 2011 to almost 70 million in 2017. It's a base for 107 airlines and has six runways. The challenges of managing passengers in Schipol are undoubtedly very important.

The recent developed hybrid camera/Wi-Fi technology helps the airport to mitigate overcrowding, while measuring the passenger flows provides a perfect picture of the movement and behaviour of the passengers throughout the airport. With this information, the airport gains an understanding of how interruptions affect behaviour in order to improve contingency planning. It also helps the airport to add value to existing facilities and to make investments that open new business opportunities.



CONCLUSIONS AND RECOMMENDED ACTIONS

3

3.1 General conclusions

3.2 Guidelines

3.3 Recommended actions

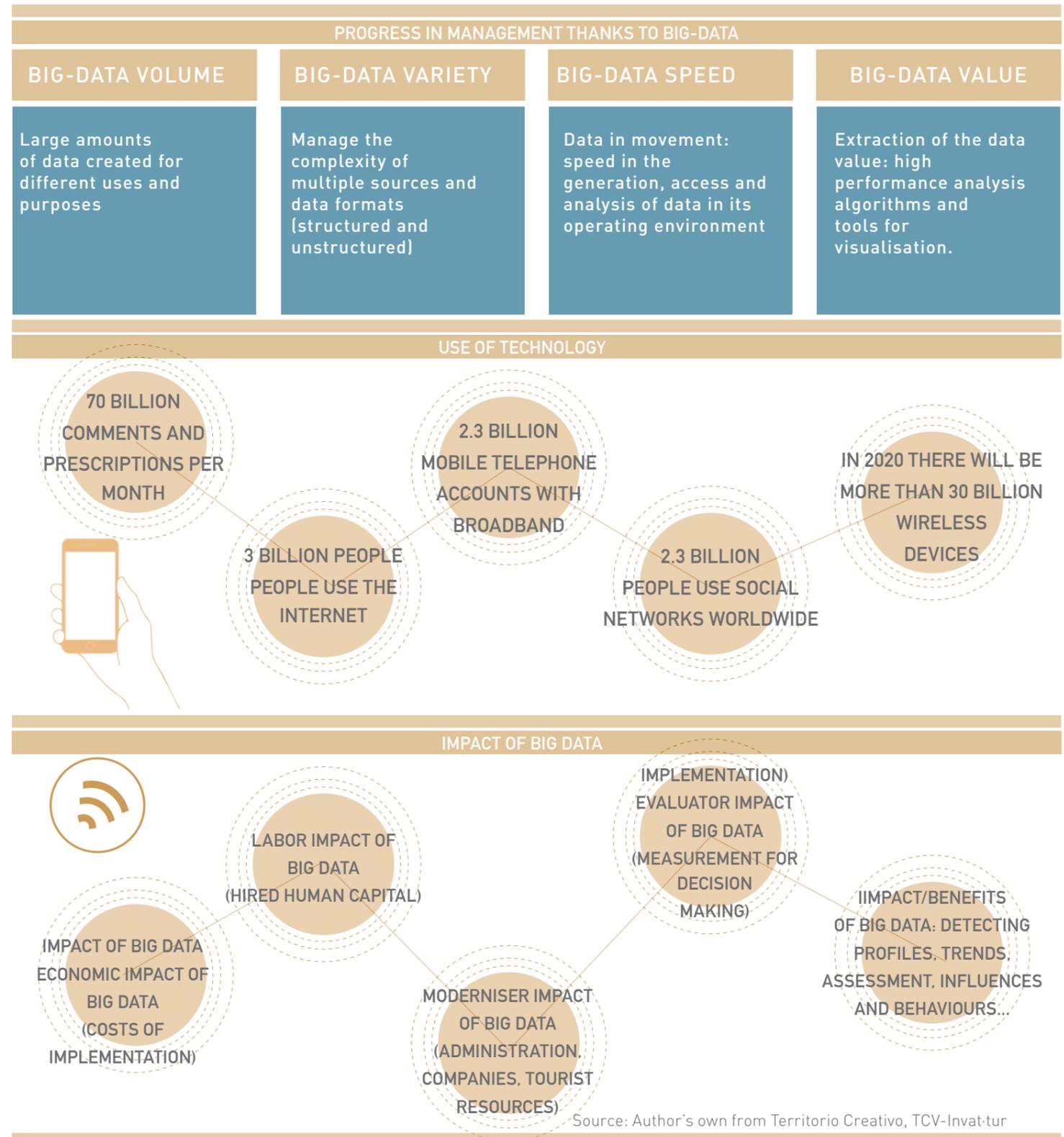


3.1 GENERAL CONCLUSIONS

The effects of the “overtourism” process in the city may be observed from the analysis carried out. In recent years **changes in business, housing or the public space show us the effects of the touristification process that change the place.** Therefore, traditional or neighbourhood business is being sidelined by activities linked to leisure and tourism. Furthermore, the massive eruption of commercialised tourist housing by means of online portals, creates problems of coexistence and causes an upward trend of rental prices for housing (more than 25% in the past year for the case of Ciutat Vella in Valencia). The tertiarisation of the urban landscape exerts a heavy pressure on the public space that loses quality, entity and social functionality.

This **global process** transforms the city and the observed trends for the majority of European tourist destinations are those of **visitor growth** (except in those cases that have temporarily broken this trend due to unexpected events). This circumstance poses a significant dilemma, that of imposing a limit. The process of touristification has a social impact on the local level that may be important and is subject to significant fluctuations over time. In this respect, **the introduction of the sustainability of the model, the correction of vulnerabilities and the restoration of balance become priority objectives.**

The advantages offered by using open/big data for managing tourist destinations are a given thanks to the volume and variety of information handled, the speed with which it may be managed and the value that may be taken from their handling. Faced with a scenario of increased tourist pressure on destinations that make up historic cities, **an increase in the visitors’ interaction with new technologies** is observed. This fact opens a field for the better knowledge of the process that will necessarily have an **impact that it is necessary to evaluate and consider.** The safety in the cities or the privacy of people are issues that must be kept in mind in the handling of big-data for managing “overtourism” in cities of a heritage nature.



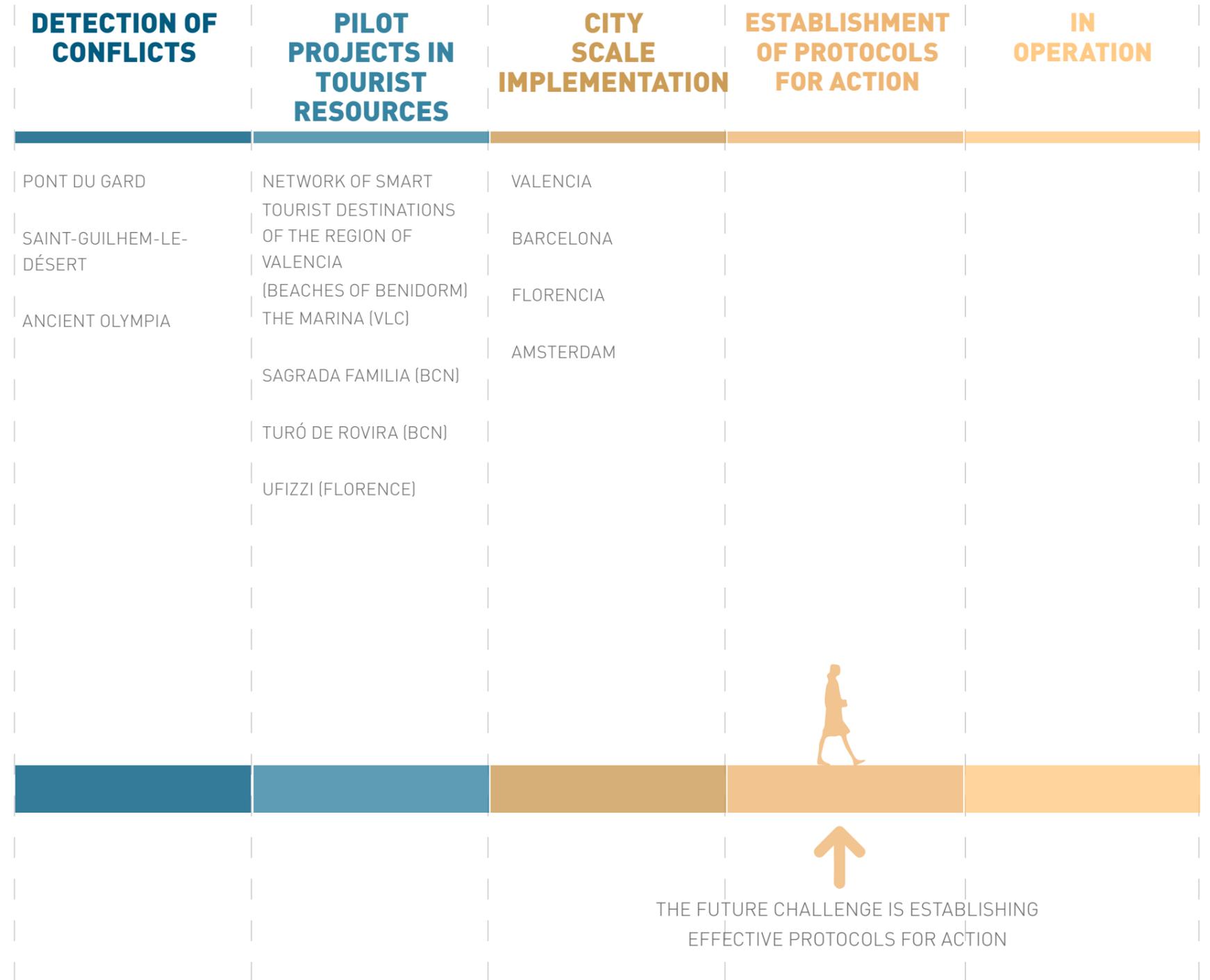
From the analysis carried out in the present study we can see the unequal state of development of the tourist destinations in the implementation of new technologies for managing the phenomenon known as "overtourism".

At the first level we could note destinations that **understand the weaknesses in the management of tourist overcrowding and they address it with conventional methods**. Therefore the need to apply new technologies is highlighted, but for the time being it is not being undertaken, as is the case of Saint-Guilhem-le-Désert, Pont du Gard and Ancient Olympia.

In the case of touristic cities we observe a greater development of the studied cases. On the one hand, the **implementation of small-scale pilot projects** prior to tackling the city scale, it is enabling us to understand the application of new technologies and the limitations of its management. This is the case of the Sagrada Familia in Barcelona or the Marina in Valencia. The testing of these spaces makes it possible to verify the proper functioning and climb towards more complex levels of management.

Furthermore, cities such as Valencia, Barcelona, Amsterdam and Florence are preparing to take the leap for the **monitoring and management of tourist spaces by means of new technologies**. Florence, as it regards to decongesting tourist flows, is creating a new system that will inform tourists about the level of overcrowding the areas of the city, through Wi-Fi on their smart phones in real time. Universal signage (traffic lights: green/yellow/red) will orient them during their stay, also proposing alternative routes, with invitations to visit lesser known or less crowded museums and exhibitions at that time.

At a more advanced level of management would be the **establishment of protocols for action** tied to new technologies. We still don't see this level for the studied cases; however, we are talking about a very near future where conventional systems are nurtured by open/big data in order to improve the experience in tourist destinations with overcrowding problems.





3 2 GUIDELINES

3.2.1. UTILITIES OF NEW TECHNOLOGIES IN MASS TOURISM MANAGEMENT IN HERITAGE SURROUNDINGS

According to the study from the World Tourism Organisation (UNWTO) titled: “Overtourism? Understanding and Managing Urban Tourism Growth beyond Perceptions” (Koens et al, 2018) 11 strategies to mitigate the negative effects of mass tourism in urban environments are defined.

Any successful urban tourism management strategy must specifically address the short-term challenges derived from the growth of tourism, while simultaneously they must tackle the long-term challenges. This demands a greater planning of the destination and its management and an approach that gathers the aspirations of the many interested stakeholders. It involves deploying a coherent and effective strategy in order to ensure the sustainable development of tourism and to generate benefits beyond the tourism industry operators.

From the measures proposed by UNWTO in the following table, we detail those in which new technologies may help us make managing mass tourism in urban spaces more efficient of heritage value in accordance with the Benchmarking work carried out. However, strategy 11 defines the conceptual framework of the present work.

STRATEGY 01

PROMOTE THE DISPERSION OF VISITORS IN THE CITY AND IN THE AREA

- Organise events in the lesser-visited parts of the city and its surroundings.
- Develop and promote tourist resources in the lesser-visited parts of the city and its surroundings.
- **Improve the capacity and time that is used in visiting tourist resources.**
- Create an joint identity of the city and its surroundings.
- Implement a trip card for unlimited local trips.
- Define the entire city as city centre in order to encourage visits to lesser-visited parts

STRATEGY 02

PROMOTE THE DISPERSION OF TOURISM OVER TIME

- Promote experiences in months with less activity.
- Promote dynamic prices.
- Promote events in months with less activity.
- **Establish time intervals for tourist resources and/or popular events attended by real-time monitoring**
- **Use new technologies (applications or others) to promote the dynamic dispersion depending on the time.**

STRATEGY 03

ENCOURAGE NEW ROUTES AND TOURIST RESOURCES

- Promote new routes in the city's points of entry and through the visitor's trip, including in information centres.
- Offer combined discounts for new routes and tourist resources.
- Produce guides and books of the city, highlighting “hidden treasures”.
- Create dynamic experiences and routes for different visitor niches.
- Stimulate the undertaking of guided visits in lesser-visited parts of the city
- **Develop virtual reality applications in the famous sites and tourist resources to complement on-site visits.**

STRATEGY 04

REVIEW AND ADAPT THE LEGAL FRAMEWORK TO THE PHENOMENON

- Review the timetables offered by the tourist resources.
- Review the regulations on groups accessing the most important tourist resources.
- Review traffic regulations in busy areas of the city.
- Ensure that visitors use the parking installations on the edges of the city.
- Create specific drop-off areas for cars and groups in appropriate places.
- Create pedestrian-only areas.
- Review regulations and taxation of new tourist services platforms.
- Review regulations and taxation in hotels and other accommodations.
- Define the load capacity of the city, critical areas, tourist resources, etc.
- Consider a licensing system operator to monitor all the operators, etc.
- Review regulations on the access to certain areas of the city for tourism-related activities.

STRATEGY
05

IMPROVE THE
SEGMENTATION OF
VISITORS

- Identify and select segments of visitors with less impact according to the context.
- Target of repeat visitors.
 - Discourage certain segments of visitors from visiting the city.

STRATEGY
06

ENSURE THE
RETURNS OF
TOURISM ON THE
LOCAL COMMUNITY

- Increase the quality of employment linked to tourism.
- Promote positive impacts of tourism, create awareness and knowledge of the sector among local communities.
 - Involve local communities in the development of new touristic products.
 - Carry out an analysis of the supply and demand potential of the local communities and promote their integration in the tourism value chain.
 - Improve the quality of the infrastructure and amenities considering residents and visitors.

STRATEGY
07

CREATE
EXPERIENCES
IN WHICH
RESIDENTS AND
VISITORS
BENEFIT

- Evolve the city to adapt to the needs and desires of residents and consider tourists to be temporary residents.
- Develop touristic experiences and products that promote the participation of residents and visitors.
- Integrate visitors into the local festivities and activities.
- Create and promote local ambassadors of the city.
- Promote cultural and artistic initiatives such as urban art in order to offer new perspectives on the city and expand visits to new areas.
- Extend the opening hours of visitors' tourist resources.

STRATEGY
08

IMPROVE
INFRASTRUCTURE
AND AMENITIES

- Develop sustainable mobility plans.
- Create a grid of hierarchical pathways.
- Improve the urban cultural infrastructure
- Improve directional signage, interpreting equipment and warnings
 - Make public transportation more suitable for visitors.
 - Establish specific transport installations for visitors during peak periods and appropriate public facilities.
 - Create safe cycling routes and promote bike rentals and safe, attractive and specific walking routes. They must be appropriate for people with physical disabilities or advanced age.
 - Safeguard the quality of cultural heritage.
 - Ensure the cleaning times are adjusted to tourist resources and their "peak" hours.

STRATEGY
09

COMMUNICATION
AND
PARTICIPATION.
INVOLVE
LOCAL
STAKEHOLDERS

- Ensure that a tourism management group, where all interested stakeholders are included, is established and is regularly convened.
- Organise professional development programs for members, etc.
- Organise local discussions for residents.
- Carry out periodical investigations between residents and other local interested stakeholders.
- Encourage residents to share interesting content about their city on social networks.
- Communicate with residents about their own behaviour.
- Construct social subjects in communities in which there is no cohesive social fabric.

STRATEGY
10

COMMUNICATION
AND
PARTICIPATION.
INVOLVE

- Raise awareness among visitors on the impact of tourism.
 - Educate visitors on local values, traditions and regulations.
- Provide suitable information about traffic regulations, parking, rates, shuttle bus services, etc.

STRATEGY
11

ESTABLISH
MONITORING AND
ACTION
MEASURES

- Monitor key indicators such as seasonal fluctuation in the demand, arrivals and spending, visit patterns to places of interest, segments of visitors, etc.
- Promote the use of big data and new technologies to monitor and evaluate the development of the tourist phenomenon and its impacts.
- Create contingency plans for peak periods and emergency



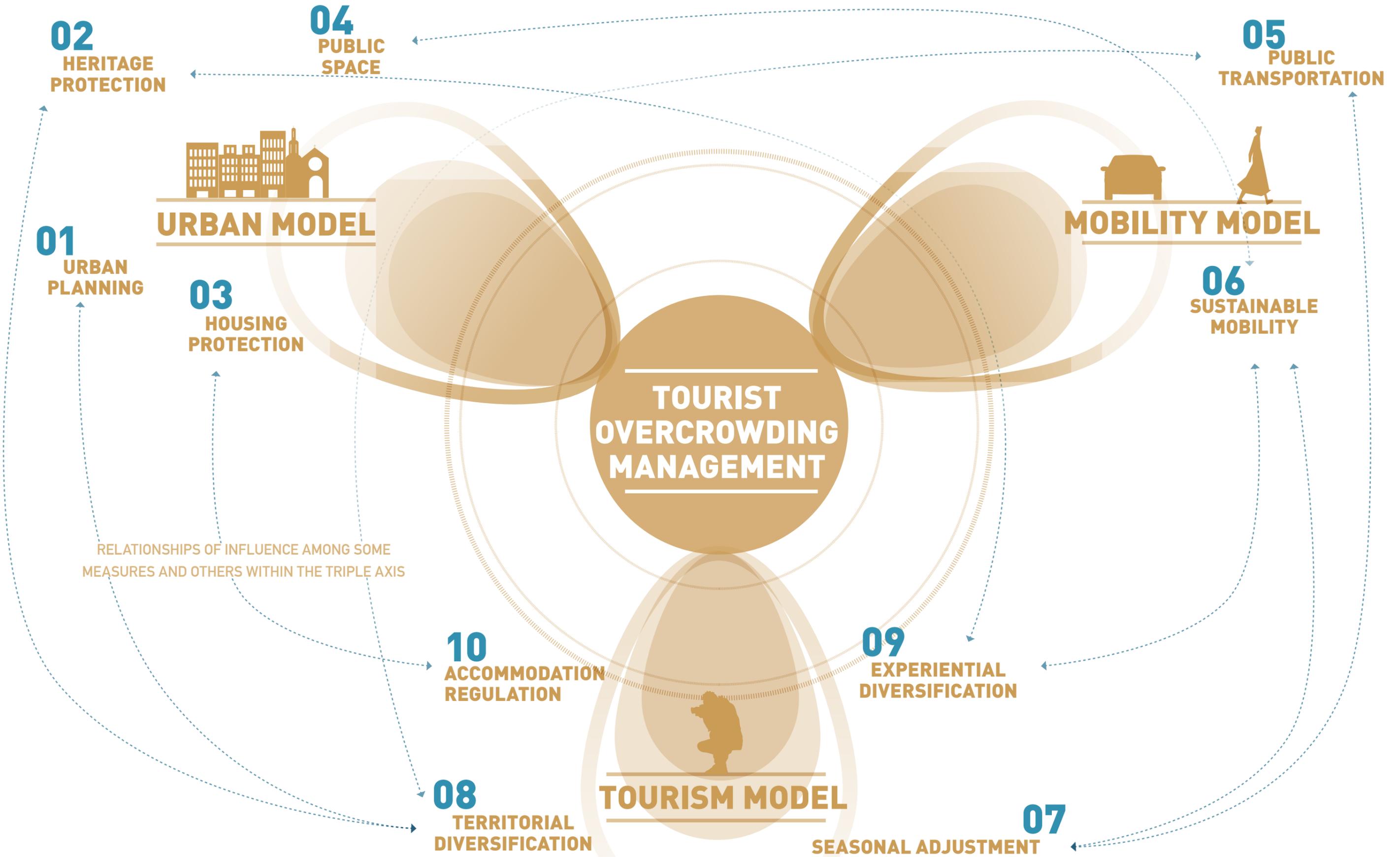
3.2.2. TOWARDS A COMPREHENSIVE TRIPLE AXIS MODEL: TOURISM, URBAN PLANNING AND MOBILITY

In accordance with the study carried out in the context of the Herit-Data project, these are the preferential areas of action in order to correct the trends that may devalue tourist destinations due to the "overtourism" phenomenon. The following table shows the lines of work that have been observed of interest when performing the "benchmarking" of the 6 chosen destinations.

These lines of action are organised around a triple axis model with interactions among them.

1. URBAN PLANNING
2. HERITAGE PROTECTION
3. HOUSING PROTECTION
4. PUBLIC SPACE
5. PUBLIC TRANSPORTATION
6. SUSTAINABLE MOBILITY
7. SEASONAL ADJUSTMENT
8. EXPERIENTIAL DIVERSIFICATION
9. TERRITORIAL DIVERSIFICATION
10. ACCOMMODATION REGULATION

	MECHANISMS FOR CORRECTING NEGATIVE IMPACTS	USE OF NEW TECHNOLOGIES TO IMPROVE THE CORRECTION MECHANISMS
01 URBAN PLANNING	ZONING strategies in the city. Define the areas of focus	Implementation of monitoring systems as a matter of priority according to the ZONING criteria
02 HERITAGE PROTECTION	Strategies for managing the historical legacy, preventing the negative impacts of "overtourism"	Implementation of critical spaces-resources
03 HOUSING PROTECTION	Defence of the city's character as a residential space.	Surveillance and supervision of the trends in the urban area according to the ZONING.
04 RE-QUALIFICATION OF THE PUBLIC	Urban re-qualification strategies based on ecosystem services. Green urban infrastructure	Monitoring critical areas and information to users of alternative spaces.
05 PUBLIC TRANSPORTATION	Intermodal coordination strategies in order to prevent overcrowding of the tourist destination.	Contribute to the time-space diversification strategies and attention to the critical areas. Fast information and systems for the user
06 SUSTAINABLE MOBILITY	Promotion strategies for pedestrian-cyclist mobility in overcrowded areas.	Communication with the user for the experiential improvement of the destination by offering alternative
07 SEASONAL ADJUSTMENT	Promote the decongestion of the critical periods for the tourist destination.	Promote alternatives for peak periods that exceed the destination's load capacity.
08 EXPERIENTIAL DIVERSIFICATION	Promotion of lesser-known resources that complement the destination's archetypal offering.	Coordination of the offering in the destination. Exchange of information.
09 TERRITORIAL DIVERSIFICATION	Partnership-building at the regional level to decongest the heart of the experience, the historic centre	Coordination of the offerings with the region. Exchange of information
10 ACCOMMODATION REGULATION	Control and regulation of the accommodation offerings.	Information and awareness towards the user Monitoring the offerings.





3.2.3. OVERTOURISM AS A PROCESS COMPLEXITY OF THE LIMIT AND TREND SCENARIO

As it was previously expressed, mass tourism requires monitoring and therefore the destination must be evaluated in terms of load or reception capacity. In recent years a significant gap has been opened between official figures and real figures of a destination's visitors. It is necessary to correct this information "gap" and parameterise the flows of people in urban destinations. In this respect lines of action of control are pointed out that may be implemented with new open/big data technologies.

- **Control of accommodations.** Supervision of online platforms that enables real time management of a destination's offerings.
- **Control of public transportation.** The cooperation with public or private metropolitan transportation companies (bus, train, taxi, CTV, bike rental, scooters, motorbike) may make it possible to provide relevant information on the tourist flows in the city.
- **Control of "entrance doors".** Urban hubs, ports, airports, stations, etc...become key spaces that make it possible to predict the tourist overcrowding that the urban spaces will later suffer. In cities that receive cruise passengers this is a key aspect.
- **Supervision of the public space.** The implementation of "in situ" monitoring systems (3-D cameras, Wi-Fi networks...), as well as cooperation with mobile telephone companies will allow us to undertake a phenomenological approximation of the overtourism phenomenon .

On this analytical basis, regulation thresholds can be established according to space and time. Depending on the urban space, three approximation scales are proposed:

- **Areas of greatest overcrowding.** These are the areas that withstand the greatest overcrowding of visitors. They tend to be arranged around hubs of urban activity such as main squares or tourist resources. Examples of this are Piazza della Signoria in Florence, Town Hall Square in Valencia, around the Cathedral of Barcelona and Royal Palace Square in Amsterdam.
- **Core o centre.** They represent the centre of the tourist experience, encompassing the site with the most heritage value, as are the areas within the walls prior to the 19th century. At times,

the core presents a star structure encompassing resources outside the historic centre, as is the case of the Sagrada Familia in Barcelona or the surroundings of the Van Gogh Museum in Amsterdam.

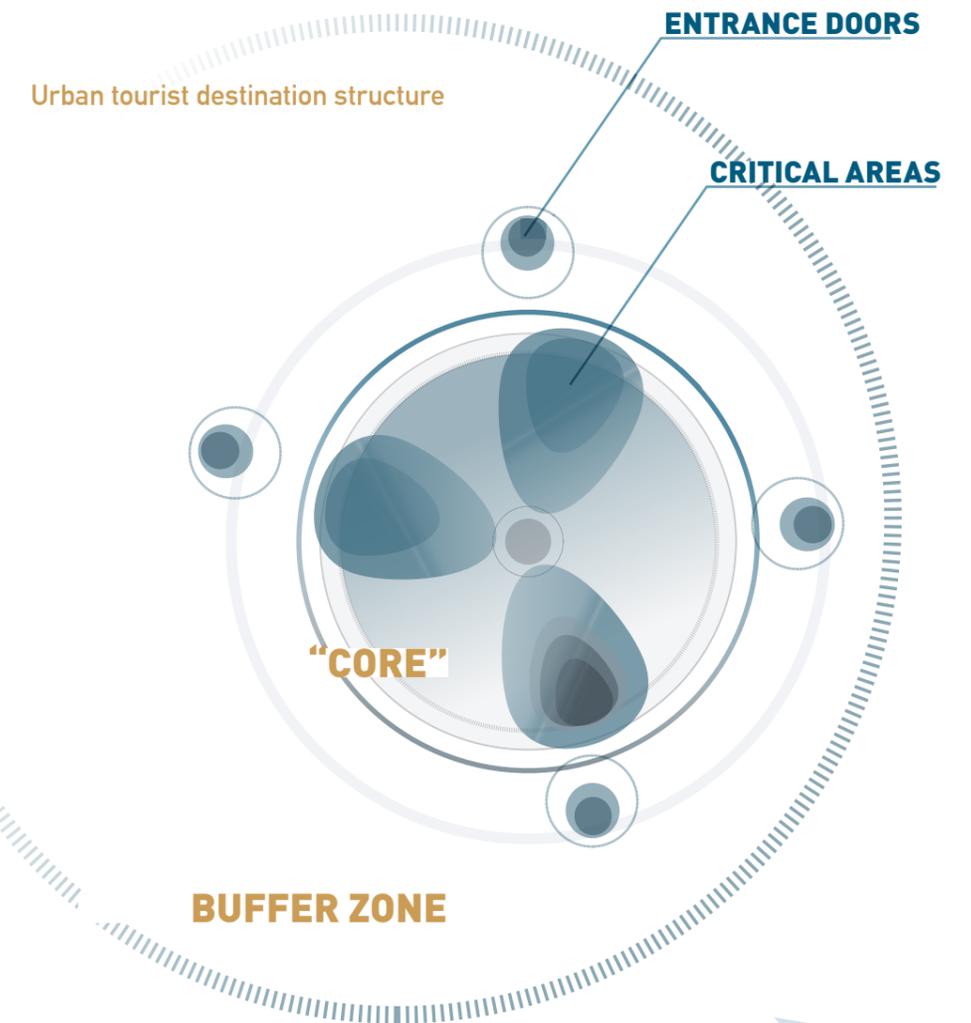
- **Buffer zones** (See regional model). They tend to be areas of urban expansion carried out from the 19th century that respond to a residential nature.

On these three basic levels, regulatory measures may be refined according to their specific reality. Depending on the time, the measures may be adjusted to the stages of tourist influx, fine-tuning if it's a peak or valley period within the seasonality of a destination.

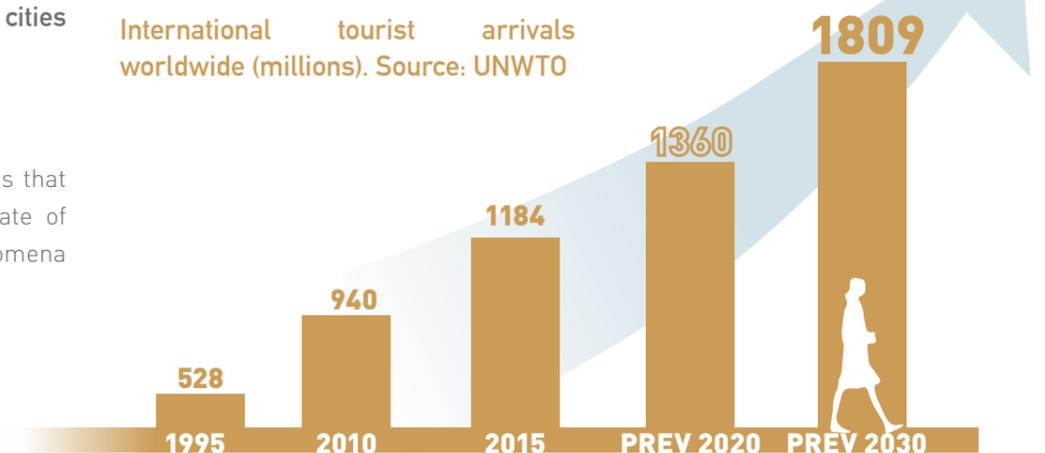
Together with this basic scheme of measures adapted to the space and time, the importance of **evaluating the model of the desired city and its relationship with tourism** should be emphasised. From the present study and in tune with other benchmarking studies that address the same phenomenon, the idea emerges that **"overtourism" is the culmination of an unrelenting process that all urban destinations of heritage value follow in an international context of an increased number of trips and the visitors' selection of urban tourism.**

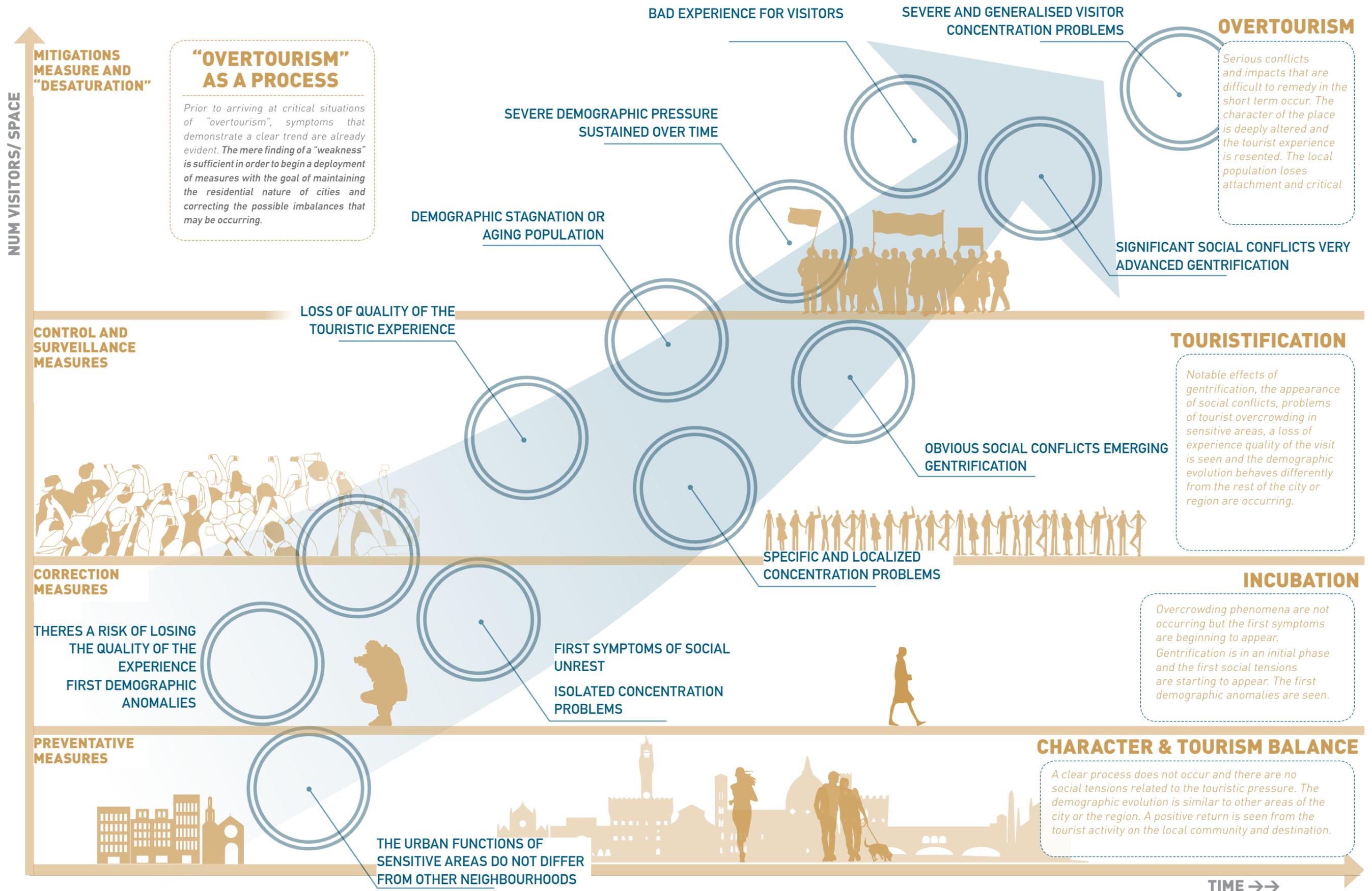
Prior to arriving at critical situations of "overtourism", symptoms that demonstrate a clear trend are already evident. **The mere finding of a "weakness" is sufficient in order to begin a deployment of measures with the goal of maintaining the residential nature of cities and correcting the possible imbalances that may be occurring.**

In the figure on the page to the right we can see the main stages that urban tourist destinations experience prior to reaching the state of "overtourism". This upward escalation is based on global phenomena that have a clear and significant local impact.



International tourist arrivals worldwide (millions). Source: UNWTO







3.2.4. TOWARDS A REGIONAL MODEL THE TOURIST DESTINATION AS CONSTELLATION OF PLACES-EXPERIENCES

New technologies allow us to optimise criteria that previously were defined in urban, mobility or tourism policies. Tending to the heritage city as a complex entity, in the 4 cities studied (Valencia, Barcelona, Florence and Amsterdam) a pattern has been observed that places value on this study and what we call the **space-time model**. This model is based on improving the interrelationship of the three types of spaces that comprise an urban destination.

1. "Core". Historical Nucleus In this space the most notable effects of the "overtourism" phenomenon are deployed. Increased housing prices, substitution of local or traditional business, pressure on the public space, tertiarisation of the urban landscape, social conflict, etc... The functions of monitoring and action of tourist overcrowding by means of new technologies in these areas are critical.

2. "Buffer". Buffer zone. It involves an urban fabric that accompanies the heritage value space and tends to be configured like a compact and homogeneous urban grid. In this space the indirect effects of accessing areas that tend to get overcrowded are concentrated. They represent a fabric that may complement the "core" as long as it does not become a dispersal of the negative effects that then colonise the entire city.

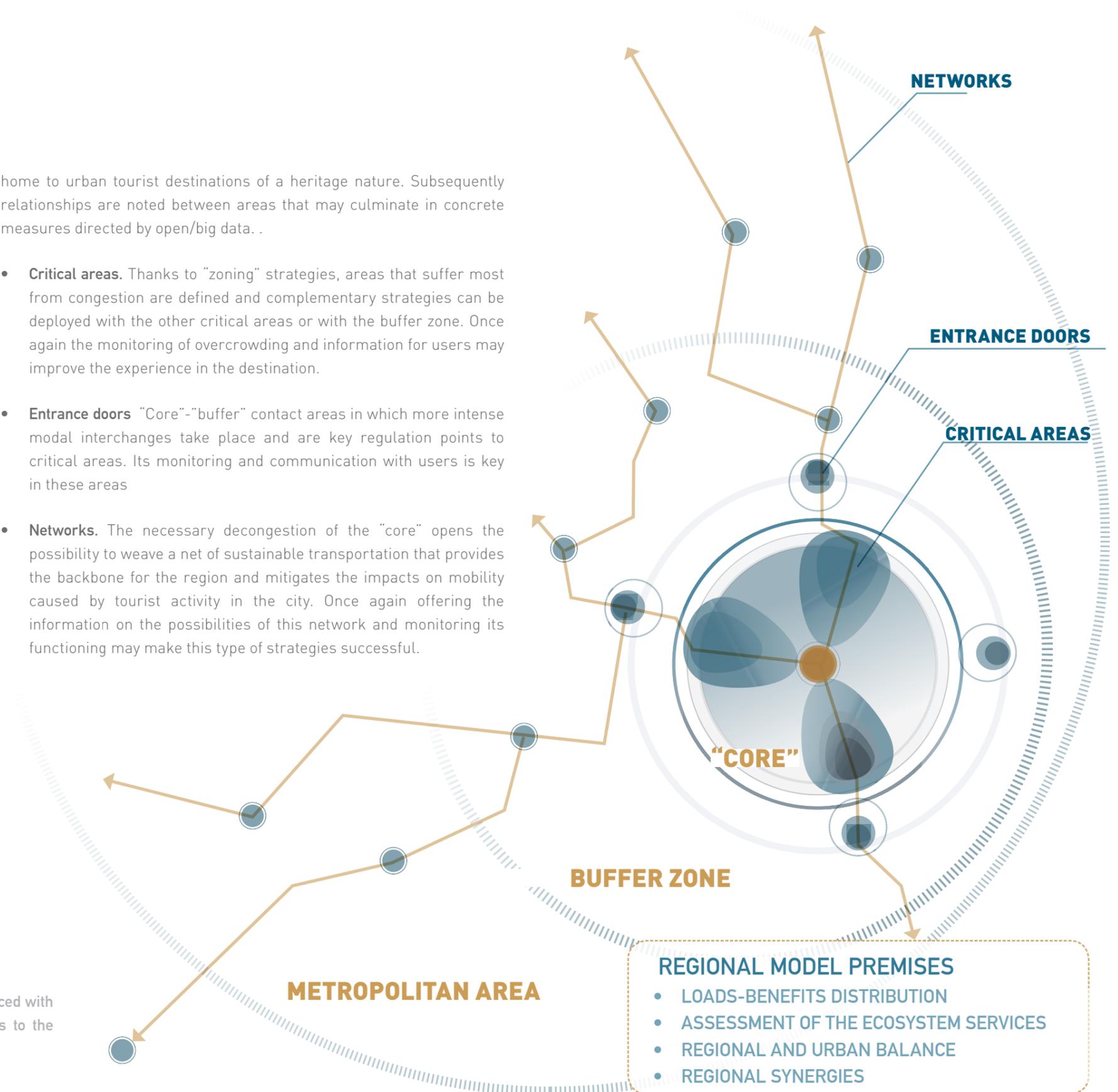
3. "Area". The Metropolitan Area is home to a larger, more diverse area that may be linked to the "core". Regional diversity may favour an experiential diversification and seasonal adjustment of the touristic phenomenon.

New technologies may help to coordinate and manage the areas that are

home to urban tourist destinations of a heritage nature. Subsequently relationships are noted between areas that may culminate in concrete measures directed by open/big data. .

- **Critical areas.** Thanks to "zoning" strategies, areas that suffer most from congestion are defined and complementary strategies can be deployed with the other critical areas or with the buffer zone. Once again the monitoring of overcrowding and information for users may improve the experience in the destination.
- **Entrance doors** "Core"- "buffer" contact areas in which more intense modal interchanges take place and are key regulation points to critical areas. Its monitoring and communication with users is key in these areas
- **Networks.** The necessary decongestion of the "core" opens the possibility to weave a net of sustainable transportation that provides the backbone for the region and mitigates the impacts on mobility caused by tourist activity in the city. Once again offering the information on the possibilities of this network and monitoring its functioning may make this type of strategies successful.

The spatial-time diversification cannot be an escape route when faced with the effects of over tourism. It involves complementary measures to the review of a comprehensive model for the city and its area.



3 3 RECOMMENDED ACTIONS

As a summary of the work, as a final reflection, 8 lines of action are collected that should guide a proper implementation of the new open/big data technologies within the management of urban tourist destinations of a historical nature. These are:

1. UNDERSTANDING OVERCROWDING
2. OVERCROWDING PLANNING
3. ZONING OVERCROWDING
4. GOVERNING OVERCROWDING
5. TECHNOLOGY AT THE SERVICE OF PEOPLE
6. FROM MEASUREMENT TO ACTION
7. URBAN LANDSCAPE AND OVERCROWDING
8. EXPERIENCE AND OVERCROWDING

01 UNDERSTANDING OVERCROWDING

02 OVERCROWDING PLANNING

03 ZONING OVERCROWDING

04 GOVERNING OVERCROWDING

05 TECHNOLOGY AT THE SERVICE OF PEOPLE

06 FROM MEASUREMENT TO ACTION

07 URBAN LANDSCAPE AND OVERCROWDING

08 EXPERIENCE AND OVERCROWDING



01 UNDERSTANDING OVERCROWDING

The first step is to develop tools to parameterise overcrowding. Understanding overcrowding entails a process beyond obtaining data. In this respect, Real Time Data monitoring involves a practice that enables stakeholders involved in decision making, local operators and inhabitants to decide how to address overcrowding at that time.

The application of technology may involve administrations taking management steps, for operators to adjust their resources and for residents to adapt their experience. The capacity measures in Turó de la Rovira are enabling the City Council of Barcelona to adjust the cleaning and security services to the influx points of the area.



HOW DO NEW TECHNOLOGIES HELP US?

New technologies represent an efficient tool for visualising overcrowding, either in real time or by means of measurements that enable us to see trends. In Florence, the DATA SCIENCE FOR SOCIAL GOOD EUROPE 2017 project offers us an original way of visualising the movement of people between different tourist resources.



02 OVERCROWDING PLANNING

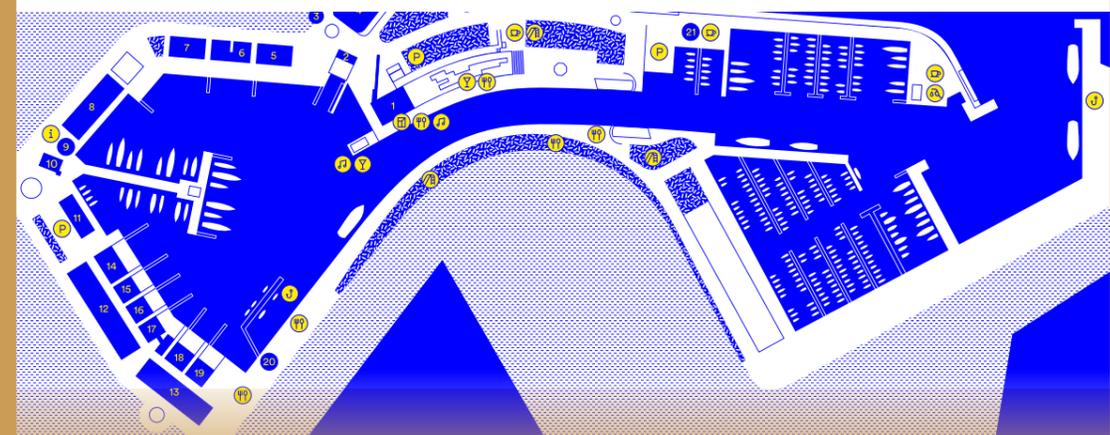
Planning for overcrowding is deployed on two fronts: time and space. In this respect, it is interesting to understand the patterns of when overcrowding happens and where problems arise from the overcrowding of a tourist destination. This planning requires evaluating the load capacity of tourist destinations as a key stage. The present study shows how places of international interest and those suffering from overcrowding do not yet have an assessment that defines the manageable limits for residents, the urban space, operators and the administration.

As it has been defined in the present study, planning transcends the field of tourism management and requires a comprehensive approach from areas such as urban planning, mobility and heritage management.



HOW DO NEW TECHNOLOGIES HELP US?

New technologies may produce quantitative data on a complex phenomenon such as that of overcrowding. In the case of the Marina of Valencia, they are carrying out an interesting process of reinterpreting the port area so that the population may take ownership of the place from a functional and symbolic point of view. Regarding qualitative on-site assessments, public turnout parameterisations are added in order to improve the experience and the functioning of the space.



03 ZONING OVERCROWDING

Tourism is deployed in the area with different intensities. The present study demonstrates that the visitors' experience is often concentrated in very specific places. This tourist overcrowding in certain places is an opportunity to improve the overcrowding planning by means of "zoning" strategies that enable specific measures to be defined for each field and to define the different load capacities. This regional differentiation makes it possible to prioritise urban areas to focus the use of new technologies and make public investments more efficient.

Often times, overcrowding draws a kind of "neural network" in the area with greater or less connectivity among nuclei from different entities. This diagnosis can make it possible to design alternative scenarios to improve the tourist experience.



HOW DO NEW TECHNOLOGIES HELP US?

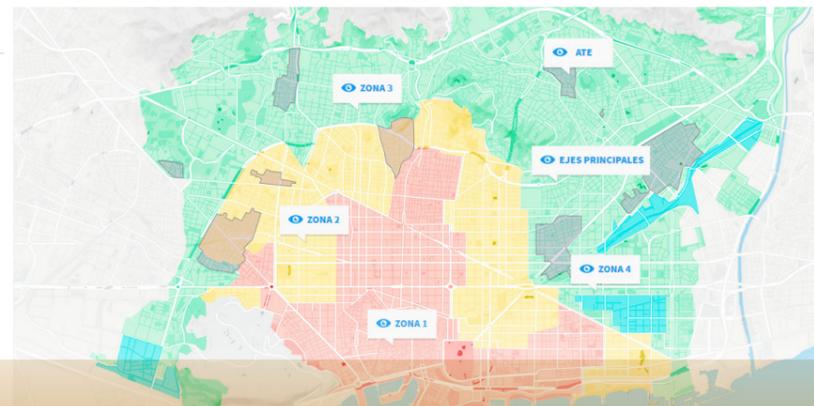
In Barcelona the Special Tourist Accommodation Plan (PEUAT) regulates the installation of tourist accommodation establishments, as well as youth hostels, temporary accommodation collective residences and housing for tourist use. There is a tech team that, helped by new technologies, is carrying out surveillance work on housing for tourist use (HTU). By means of Big Data handling and technical inspection this challenge is addressed in Barcelona.

PEUAT | Plan Especial Urbanístico de Alojamiento Turístico

LAS ZONAS

El PEUAT es un instrumento urbanístico para ordenar y controlar la implantación de alojamientos turísticos en la ciudad y garantizar los derechos fundamentales de los ciudadanos.

Aparte de las condiciones comunes en el ámbito de ciudad, el PEUAT distingue cuatro zonas específicas con regulación propia. Cada una de estas se caracteriza por la distribución de los alojamientos en su territorio, la proporción entre el número de plazas que ofrecen y la población residente actual, la relación y las condiciones en que se dan determinados usos, la incidencia de las actividades en el espacio público y la presencia de puntos de interés turístico.



04 GOVERNING OVERCROWDING

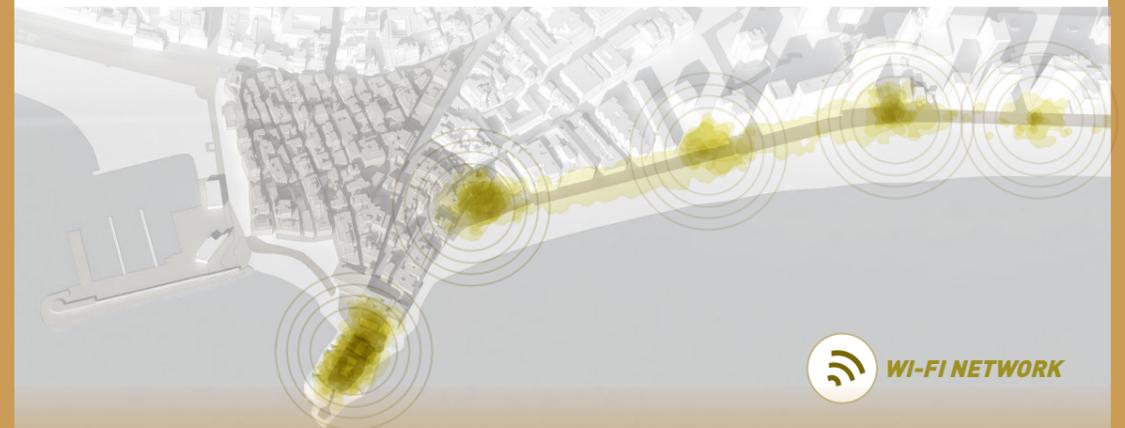
One of the challenges for governments of tourist destinations is the overlap of joint policies of urban planning, mobility and tourist management as it regards to the social and business fabric. The implementation of actions that have emerged from the diagnosis of the situation, from the planning and zoning of the overcrowding require a road map.

As in the case of Florence, The Region of Tuscany, the Florence Metropolitan Area (which includes 42 municipalities, one of them Florence) and the city of Florence itself work in coordination to develop policies that improve tourism management.



HOW DO NEW TECHNOLOGIES HELP US?

In Benidorm (Alicante) in 2010 the body Benidorm Tourism Foundation of the Region of Valencia was founded, known by its commercial name "Visit Benidorm", consisting of a mixed public-private entity. In it, private stakeholders and administrations are represented. As a Smart Tourist Destination, they are sharing monitoring information by Wi-Fi networks as an example of good practices of public-private coordination.





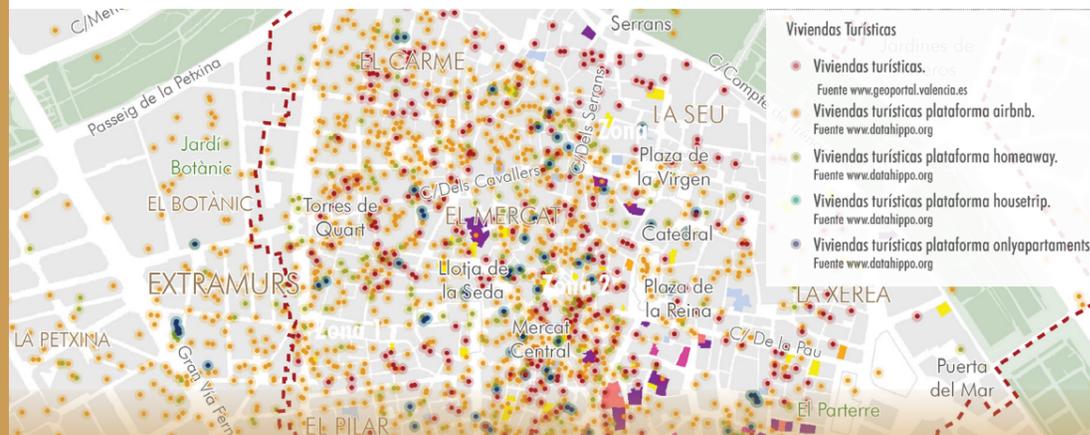
05 TECHNOLOGY AT THE SERVICE OF PEOPLE

Unlike other types of tourist destinations, heritage cities are first and foremost neighbourhoods where people live. Tourist overcrowding poses an exacerbation of the effects of tertiarisation of the neighbourhoods of the heritage city. This phenomenon is causing a series of effects that transform the place. Traditional or neighbourhood business is being sidelined by activities linked to leisure and tourism. The massive emergence of tourist housing commercialised via online portals may create coexistence problems, greater competition for occupying the public space is caused and the housing market is affected by increasing prices. The use of technology in management should complement a social approach to the problem. We see how cities such as Venice lose residents while places such as the Ciutat Vella neighbourhoods have stagnated. In the same way, the application of new technologies poses regulatory challenges such as the preservation of privacy



HOW DO NEW TECHNOLOGIES HELP US?

In the Ciutat Vella de Valencia Special Plan perception surveys and workshops with residents were carried out. The detection of existing imbalances in the processes of transforming the urban landscapes is enough reason to correct this vulnerability from urban planning. By means of Open-Data applications and regional analysis, the process of tertiarisation was shown.



06 FROM MEASUREMENT TO ACTION

The present study shows that the application of new technologies for managing the overcrowding of urban heritage tourist destinations are in the developmental stage and under consideration in the majority of cases. This occurs in first-rate destinations such as Amsterdam, Florence or Barcelona.

The definition of protocols for action requires an implementation phase that makes it possible to obtain the phenomenological patterns (of behaviour).

Of the experiments currently underway, we can see how increasingly accurate data are needed to define the guidelines for action in the framework of the governance of the tourist destination. The visitor segmentation or duration of the stay are data of great interest in order to understand the tourist experience.



HOW DO NEW TECHNOLOGIES HELP US?

Florence, as it regards to decongesting tourist flows, is creating a new system that will inform tourists about the level of overcrowding the areas of the city, through Wi-Fi on their smart phones in real time. Universal signage (traffic lights: green/yellow/red) will orient them during their stay, also proposing alternative routes, with invitations to visit lesser known or less crowded museums and exhibitions at that time.

This will all be possible thanks to the installation of sensors, throughout a series of strategic points of the city, which will make it possible to track attendance; but also thanks to the collaboration of telephone companies able to analyse data anonymously.



07 URBAN LANDSCAPE AND OVERCROWDING

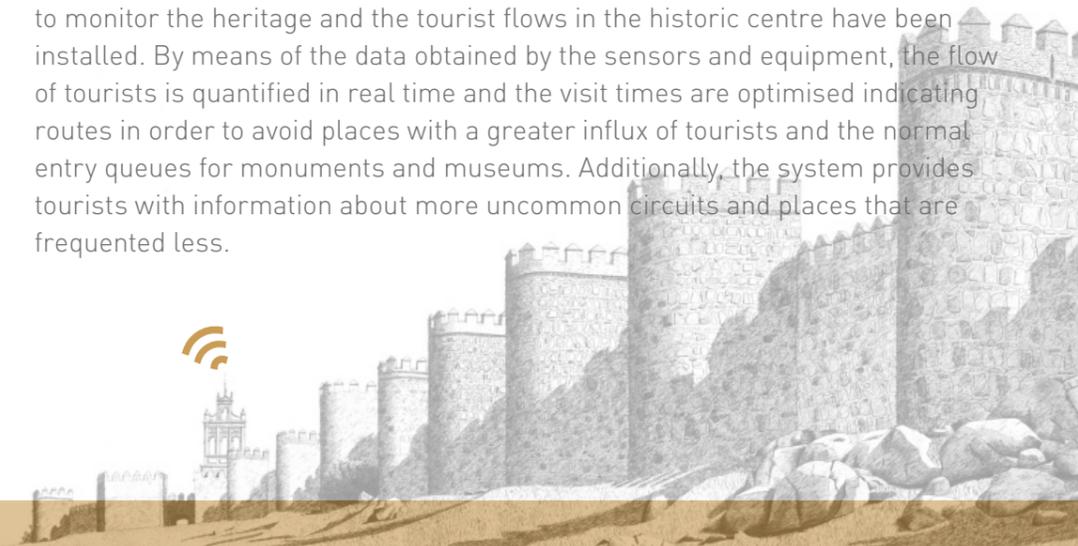
Overcrowding due to tourism in urban environments deeply transforms the landscape. The content of the city doesn't substantially change, but the contents do, the ways of inhabiting the urban space, its function and therefore its significance, the character of the place is altered.

In October 2017 Amsterdam prohibited shops targeted at tourists. Amsterdam announced the prohibition of any new store targeted at tourists such as bike rental shops, souvenir shops or others. This measure involves a business categorisation that may be applied in more places in order to prevent overcrowding and the alteration of the urban landscape's character.



HOW DO NEW TECHNOLOGIES HELP US?

Smart Heritage City (SHCITY) is a project from the Interreg Sudoe programme that will address the innovative challenge of creating a single open code tool to manage historic urban centres and facilitate the decision making work of competent authorities. In Avila, as a pilot experiment, 230 sensors and equipment to monitor the heritage and the tourist flows in the historic centre have been installed. By means of the data obtained by the sensors and equipment, the flow of tourists is quantified in real time and the visit times are optimised indicating routes in order to avoid places with a greater influx of tourists and the normal entry queues for monuments and museums. Additionally, the system provides tourists with information about more uncommon circuits and places that are frequented less.



08 EXPERIENCE AND OVERCROWDING

The sense of requalification of a tourist destination, in other words, the ultimate aim of its renovation or improvement, is in many cases to create a memorable visitor experience, a visit that can be remembered and transmitted. In this sense, understanding the phenomenon helps us to visualised the quality perceived by the visitor in order to preserve those aspects that contribute to an interesting interrelation between the urban space and the visitor.

The qualitative and quantitative analysis of the experience in the destination is an approach that allows us to refine the diagnosis. Therefore, new technologies should go hand in hand with on-site studies of observation and consultation with those people that are experiencing the destination.



HOW DO NEW TECHNOLOGIES HELP US?

The Uffizi Gallery in Florence, with 3.4 million annual visitors, is developing a system based in Big Data in order to prevent waiting and generate "sustainable tourism". By means of an algorithm that collects scientific information, the experience of the tourist resource and city in general has improved.





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Carole Duserre. Técnico en la Marina de Valencia.
Leire Bilbao. Gerente Fundación Visit Benidorm.

BARCELONA

Xavier Suñol. Director Turismo del Ayuntamiento de Barcelona.

OCCITANIA

Magali FERRAND. Directrice Déléguee. Direction du Tourisme et du Thermalisme/ Site de Montpellier

FLORENCE

Alessandro Monti. Senior Project Manager. EU Project ManagerFondazione per la Ricerca e l'Innovazione promossa da Università di Firenze.

Andrea Giordani y Carlotta Viviani. Tourist and Economic Promotion Office - City of Florence.

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Lavrentios Vassiliadis. Departamento de Planificación de Estrategia de Turismo. Región de Grecia Occidental

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Daniel van Motman

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FACING THE **OVERTOURISM** CHALLENGE
IN CULTURAL AND NATURAL HERITAGE SITES
USING **OPEN/BIG DATA**



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