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Deloitte Insights –
Smart Tourism

In the era of mass traveling and digital innovation, traditional tourism has undergone a significant transformation, giving rise to the concept of smart tourism. Enabled by cutting-edge technologies such as artificial intelligence (AI), the Internet of Things (IoT), and data analytics, prioritising sustainability and accessibility and building upon destinations' cultural heritage, smart tourism has revolutionised the way we explore, experience, and engage with destinations.

Smart tourism is a concept that involves the use of technology and innovative solutions to enhance the overall tourism experience. It facilitates access to tourism and hospitality products, services, spaces, and experiences, making tourism more digital, sustainable, accessible, and fully leveraging a destination´s cultural heritage and creativity.

By integrating sustainability, digitalisation, accessibility, and cultural heritage, smart tourism is reshaping the future of travel in a way that is more responsible, inclusive, and enriching. This article explores the current challenges of the tourism industry and the potential solutions to these issues. In addition, it will also showcase Deloitte's new smart platform, Synergy™ and how it can be an asset for tourism. At the end of the eminence piece, specific use cases will demonstrate, how Destination Management Organisations (DMOs) can make a destination more sustainable and accessible for everyone, exploiting new technologies and building on the destination's cultural heritage.

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1. The challenges of EU´s tourism industry

Tourism plays a vital role in the European Union's (EU) economy with wide-ranging impact on economic growth, employment, and social development: in 2019, before the COVID-19 pandemic, tourism generated 9.5% of the total Gross Domestic Product (GDP) and was responsible for 22.6 million jobs.[1] Out of 3.2 million tourism enterprises, 80% were micro or small and medium enterprises – a share that in some countries can reach 98%.[2] In 2019, tourism's total contribution to GDP was over 15% in some countries like Croatia, Greece, and Portugal.[3]

The COVID-19 outbreak has paralysed the EU tourism sector, putting its ecosystem under unprecedented pressure. Causing a massive fall in international demand, amid widespread lockdowns and travel restrictions put in place by countries to contain the spread of the virus. As shown in the EU Annual Single Market Report, the COVID-19 crisis strongly affected tourism, its turnover and employment levels. Sectors such as accommodation, air travel, other international travel, trade fairs and cultural events were especially impacted — there was a drop of roughly 70% in revenues in 2020, up to 11 million jobs were at risk, and tourism services were at the bottom of the business confidence indicator at the beginning of 2021. **Nevertheless, this paved the path to learn from experience regarding resilience and sustainability, while benefiting from rising digital opportunities and innovation.**

Despite the rebound observed in tourism in 2022 and confirmed in 2023, which exceeded expectations in many countries, the EU tourism industry continues to face some challenges:

Safety & Security

'Safety, security, and peace' are the main conditions for the normal operation of tourism businesses.[4] Tourism is one of the most vulnerable industries to crises and other unexpected events. Recent events such as the COVID-19 pandemic, the Russian aggression, terrorist attacks and other natural and geopolitical events have highlighted the growing concerns of tourists for travelling. **The uncertainty and feeling of insecurity erode traveller confidence**, whether the risk is real or perceived, and pose a serious threat to EU´s tourism activity, which can be translated into a decline in demand and expenditure.

Technology

Technological advancements have **transformed the way people travel and access tourism services, leading to increased competition, and changing consumer behaviour**. Tourists have now access to more information, reviews, and price comparisons empowering them to be more discerning and value conscious in their choices.

Technology has also brought concerns about **cybersecurity and data privacy**. The tourism industry collects a lot of personal information about travellers, increasing the risk of this information being stolen or misused.

Technology requires significant investment in infrastructure and training. **The EU tourism ecosystem is mostly composed by small and medium enterprises (SMEs), which presents a challenge for technology adoption** (mostly advanced technologies) as these businesses lack the financial resources and the necessary skills and knowledge to do it,[5] which can limit their ability to compete in the market.

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[1] Travel & Tourism Economic Impact | World Travel & Tourism Council (WTTC)
[2] Structural Business Statistics | Eurostat
[3] Travel & Tourism Economic Impact | World Travel & Tourism Council (WTTC)
[4] Health-Related Crises in Tourism Destination Management: A Systematic Review | Celeste Vong, Paulo Rita and Nuno António
[5] Scenarios towards co-creation of transition pathway for tourism for a more resilient, innovative and sustainable ecosystem | European Commission

Sustainability

Tourism is responsible for roughly 8% of the world's carbon emissions[6] and its industry can have significant environmental, social, and cultural impact on destinations.

The United Nations World Tourism Organisation (UNWTO) defines sustainable tourism as "tourism that full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities".[7] A long path has still to be paved to have an industry that meets these requirements. Also, among the industry, there is still a lack of awareness of the tangible benefits of 'greening' the tourism ecosystem and of the sufficient skills and resources to develop business innovations around sustainability objectives and demand.[8]

Creating a sustainable environment, protecting resources and reducing the footprint are of critical importance to the EU tourism ecosystem. Tourism is a climate-sensitive sector, affected by a wide range of environmental factors. Climate defines the length and quality of tourism seasons and plays a major role in destination choice and tourist spending. It affects environmental resources that are critical attractions for tourism, such as snow conditions, wildlife productivity and biodiversity, water levels and quality.

Workforce

Due to the pandemic, many tourism workers were furloughed or laid off, leading some to transition to other industries or exit the labour force. As a result, **the EU tourism industry is currently experiencing a shortage of staff** as demand for workers continues to increase while the supply remains limited.

To maintain its position as the world's top destination[9] and advance the green and digital transition, the EU tourism industry must address the challenge of attracting and retaining talent, while rethinking operations and integrating technology.

Markets, and other competition

Competition from other markets is yet another concern for EU tourist destinations. As more countries around the globe are stepping up their efforts to become accessible to tourists, more offers become available. Although the EU is expected to maintain its market position as the top receiving destination in the next decade, it will meet severe challenges on the way, as its share is forecasted to fall from 60 % in 1995 to 41 % in 2030. [10]

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[6] Carbon Footprint of Tourism | Sustainable Travel International
[7] Sustainable development | UNWTO
[8] Scenarios towards co-creation of transition pathway for tourism for a more resilient, innovative and sustainable ecosystem | European Commission
[9] Policy overview (europa.eu)
[10] Major challenges for EU tourism and policy responses | ERPS

2. Smart tourism

Smart tourism is a responsible and innovative approach to mitigate the impact of EU´s tourism ecosystem challenges and redefine touristic experience and service delivery.

As destinations continue to evolve towards a more **customer-centric approach**, increasingly focused on environmental, economic and social **sustainability**, it is evinced the need to **accelerate the green and digital transition** further and increase the **resilience of the tourism ecosystem. Smart tourism plays a key role in this transition**, augmenting the competitiveness, attractiveness and authenticity of destinations, improving the management of destinations and tourism businesses (mostly SMEs), enhancing the satisfaction and experience of tourists and residents, and contributing to the sustainable development of tourism.

Smart tourism, following a holistic approach that considers and connects destinations, tourists, residents and local businesses, **responds to the new challenges and demands in a fast-changing sector**, including the evolution of digital tools, products and services; equal opportunity and access for all visitors; sustainable development; increased competitiveness; resilience; and support to creative industries, local talent and heritage. Smart tourism is built upon four main pillars: **accessibility, sustainability, digitalisation and cultural heritage.**
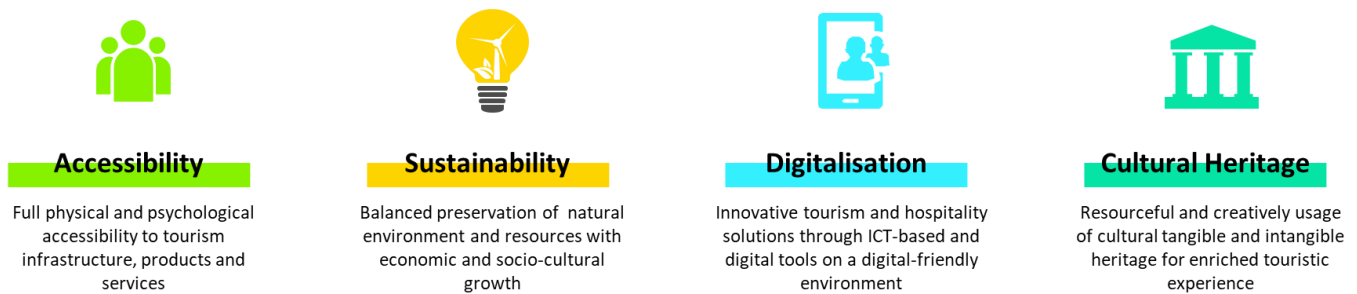
Accessibility	**Sustainability**	**Digitalisation**	**Cultural Heritage**
Full physical and psychological accessibility to tourism infrastructure, products and services	Balanced preservation of natural environment and resources with economic and socio-cultural growth	Innovative tourism and hospitality solutions through ICT-based and digital tools on a digital-friendly environment	Resourceful and creatively usage of cultural tangible and intangible heritage for enriched touristic experience

Figure 1 - Smart tourism pillars

Accessibility

The accessibility pillar focuses on ensuring destinations are **physically and psychologically accessible** to travellers with special access needs, regardless of their age, social or economic situation and whether they have disabilities or not, by **removing not only the physical barriers, but also social and cultural.** The concept of accessibility is closely linked to the **availability of trusted and reliable information** and, to mobility and the extent and strength of the transportation network.

Destinations and tourism ecosystem stakeholders can enhance their accessibility by:

- developing a strong transport system in and around the destination;
- designing solutions to make them easily reachable through different means of transportation;
- providing accessible infrastructure, products and services;
- offering inclusive tourism experiences that cater to a wide range of needs and preferences, including products or services that are multilingual and digitally available;
- providing reliable and available information to tourists regarding accessibility;
- promoting awareness and understanding of accessibility issues among tourism stakeholders.

Enhancing a destination's accessibility is more than just social responsibility, as **improved accessibility can result in an increased number of visitors, increased revenues, better quality of life in local communities, thus boosting the competitiveness of European tourism**. Consequently, accessibility should be considered an essential component of any responsible and sustainable tourism policy and strategy. By prioritising accessibility and ensuring that it is integrated into all aspects of tourism planning and management, destinations can create a more inclusive and welcoming environment for tourists, while also reaping the economic and social benefits of improved accessibility.

Sustainability

The sustainability pillar focuses on **preserving and enhancing the natural environment and resources while maintaining economic and socio-cultural development in a balanced way**. It aims at reducing tourism seasonality, involving local community and businesses, contributing to local employment and diversification of local economies.

Destinations and tourism ecosystem stakeholders can enhance their sustainability by:

- reducing carbon emissions and other environmental impacts -water, energy, waste - using renewable energy, sustainable transportation, and eco-friendly practices;
- supporting local communities and promoting inclusive tourism practices that benefit local residents and businesses;
- encouraging sustainable tourism entrepreneurship, such as the development of eco-friendly tourism accommodations and activities that support local communities;
- protecting and preserving natural and cultural heritage sites and promoting responsible tourism behaviour among visitors;
- promoting sustainable practices, raising awareness to tourism over consumption;
- targeting segment groups that create more value, while causing lower impacts on the destination;
- designing services/products that aim at taking pressure out of the most visited sites, reduce seasonality and increase the length of stay.

Digitalisation

The digitalisation pillar focus on developing **innovative tourism and hospitality information, products, services, spaces and experiences that are tailored to the preferences of tourists through the use of digital tools and information and communication technology (ICT) -based solutions.** Through big data and data-driven solutions, this pillar also aims to **facilitate well-informed decision-making** and **enhanced planning, management and operations** of destinations and tourism businesses.

Destinations and tourism ecosystem stakeholders can enhance their digitalisation by:

- developing a strong network of Wi-Fi hotspots, enabling tourists to always be connected;
- using sensors to collect data about tourist activity/flows, weather and environmental data and transports;
- developing digital platforms and mobile applications that provide visitors with real-time and context-aware tourism services and information;
- adopting technologies such as artificial intelligence and augmented and virtual reality to personalise the visitor experience and enhance the quality of tourism services;
- using *Big Data* and data analytics to extract value from the interactions of tourists with the destination, its offering and services to improve destination management and marketing, as well as to develop sustainable tourism policies;
- developing open platforms for data sharing amongst tourism businesses and tourists;
- supporting tourism businesses in the development and making use of digital skills and tools to accelerate and facilitate the entry of SMEs into the data economy.

Overall, leveraging digital technologies and innovation, destinations and tourism businesses will **enhance tourists´ experience and service hyper personalisation** by facilitating digital accessibility and information for specific target groups, **improve destination management and competitiveness** leading to a more efficient use of resources and enhanced sustainability, and **support sustainable tourism development** by helping local businesses to grow. Integrating digitalisation in tourism businesses will enhance operational efficiency by automating tasks and services, thereby alleviating staffing shortages.

Digitalisation is also a crucial element in bolstering the resilience of the tourism industry, increasing its crisis management capacity, and ensuring the safety of travellers, as demonstrated, for example, during the COVID-19 pandemic through the creation of tools that instilled consumer confidence and facilitated the restart of tourism, such as the COVID digital certificate or the Re-open EU platform.

Cultural Heritage & Creativity

The cultural heritage & creativity pillar focuses on **preserving and promoting the cultural heritage**, both tangible - as monuments and museums - and intangible – as the symbolical, historic and artistic values and traditions - **as well as local potential and creative assets of a destination** to enhance the authenticity and attractiveness of a destination and enrich tourism experience.

Destinations and tourism ecosystem stakeholders can enhance their cultural heritage & creativity by:

- developing tourism products and services in collaboration with the cultural and creative industries that showcase its history, art, and cultural heritage;
- promoting creative tourism experiences that offer visitors the opportunity to engage with local artists and artisans, participate in traditional crafts and cultural activities, and sample local gastronomy;
- celebrating cultural tourism events such as festivals, exhibitions, and performances that celebrate the cultural heritage and creativity of a destination.

The cultural heritage of a destination is a significant factor in tourism, as visitors are often drawn to visiting unique tangible heritage and immersing themselves in the local culture. Emphasising a destination's cultural heritage and creativity can **enrich the tourism experience** by providing exclusive and authentic opportunities that cannot be found elsewhere.

By preserving and promoting their cultural heritage, destinations can also **enhance their unique selling proposition and increase competitiveness**, while also **encouraging community involvement** from residents and local businesses.

3. EU's role in tourism and smart tourism

Tourism and smart tourism are important pillars of several **legislative** and **strategic initiatives** ongoing at an EU level, in particular in the fields related to accessibility, sustainability, digitalisation and cultural heritage. These initiatives can be evaluated both across Europe and against other geographies' initiatives and awards.

Tourism is a supporting competence of the EU.[11] Overall, the European Union's competences on tourism are underpinned by Article 195 of the Treaty on the Functioning of the European Union,[12] which states that the "Union shall complement the action of the Member States in the tourism sector, in particular by promoting the competitiveness of Union undertakings in that sector". Therefore, EU action on tourism focuses on **support and coordination** among Member States through publishing guidelines, granting funding, and establishing awards and platforms for stakeholders collaboration.

The main initiatives at EU level on tourism focus on **facilitating the green and digital transition** of the industry while strengthening tourism development and increase cities' attractiveness. In 2022 the Commission published the strategy "**Tourism transition pathway**",[13] aimed at facilitating the implementation of a more green and digital ecosystem for all relevant stakeholders such as businesses, public authorities, and social partners. Furthermore, in the same year the Commission published the "**European tourism agenda 2030**":[14] among other priority areas, the agenda highlights the key topic of the twin transition in tourism.

Financing virtuous initiatives is a tool that the EU is leveraging to assist the industry in the green and digital transition and to foster economic development. Overall, COSME/SMP (EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises) is one of the largest European funding schemes for tourism. It addresses different and specific areas of tourism (coastal and maritime tourism, sustainable tourism, cultural tourism, accessible tourism, and low season tourism) with the objective to develop products and services of the industry.[15] Additionally, stakeholders can benefit from a wide range of different EU funds available (the *Guide on EU funding for tourism* lists 17 different schemes).[16]

EU initiatives on tourism extend to the **nomination of awards and other outreach activities.** The most prominent example is the set-up of the **Smart Tourism** initiative, established in the context of the European tourism agenda 2030 and financed under the COSME Programme.[17] Under this initiative, two awards for cities were launched:

- **European Capital of Smart Tourism** (first launched in 2019): establishment of best practices in the categories of culture and heritage, sustainability, innovation, and accessibility;
- **European Green Pioneer of Smart Tourism** (launched in 2023): spotlight on smaller cities that have successfully implemented sustainable and green transition- based tourism practices.

The European Green Pioneer of Smart Tourism is the successor of the European Destinations of Excellence (EDEN) competition. Other **outreach activities** include the European Tourism Days and the European Tourism Forum. Lastly, the EU launched **tools** to support businesses such as the Tourism Business Portal and the Inventory of digital tools and practices.

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[11] See Article 6 of TFEU. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A12016E006. An EU's supporting competence implies that binding legislation at EU level cannot enforce harmonisation of regulation among Member States.
[12] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A12016E195
[13] https://single-market-economy.ec.europa.eu/sectors/tourism/eu-tourism-transition/tourism-transition-pathway_en
[14] https://data.consilium.europa.eu/doc/document/ST-15441-2022-INIT/en/pdf.
[15] https://single-market-economy.ec.europa.eu/sectors/tourism/eu-funding-and-businesses/funded-projects_en
[16] https://single-market-economy.ec.europa.eu/sectors/tourism/eu-funding-and-businesses/funding-guide_en
[17] https://single-market-economy.ec.europa.eu/smes/cosme_en

In terms of stakeholder management, the Commission launched a call in the framework of the **Transition Pathway for Tourism** to collect **pledges from the EU tourism community.** Pledges submitted by around 300 organisations concerned different topics, ranging from policy and governance to the green and digital transition, to skills and resilience and more general stakeholder support.[18]

The remaining of the chapter focuses more in detail on EU support initiatives on **smart tourism**, with an emphasis on each of the **four smart tourism policy categories** (accessibility, sustainability, digitalisation and cultural heritage). Overall, it is difficult to **evaluate** the direct benefits that the initiative of European Capital of Smart Tourism brought to the awarded cities from 2019 onwards. This might be due to the rather recent establishment of the award, as well as the heavy disruptions caused by the COVID-19 pandemic on the tourism industry. Nonetheless, the European Union remains a **pioneer** of smart tourism in the world, being the sole region that developed a comprehensive and structured framework on smart tourism. The approach to smart tourism from other regions around the world addresses only targeted cities and remains limited to local examples.

The sections below will outline the regulatory landscape at an EU level on the topic and illustrate the awards available at both a **Union** and at a **global** level for each smart tourism category. A global best practice is then illustrated for comparison purposes.

Accessibility

The European accessibility act[19] is the main piece of legislation at a EU level addressing accessibility. The directive aims to enhance the functioning of the internal market for accessible products and services by removing barriers created by divergent rules in Member States. This directive applies to all sectors and is a forward-thinking guideline for cities' smart tourism initiatives, as both businesses and persons with special needs benefit from it.[20]

Tourism businesses will benefit from costs reduction, as well as from more market opportunities for their accessible products and services. On the other side, persons with disabilities and elderly people will benefit from more accessible services in the tourism industry at more competitive prices, fewer barriers when accessing transport, and more jobs available where accessibility expertise is needed.

The UNWTO and the EU have launched several awards and events, published numerous guides and studies to promote accessible tourism:

- The *UNWTO Inclusive Recovery Guide* - Sociocultural Impacts of COVID-19, Issue I: Persons with Disabilities, suggests measures for the whole tourism value chain to build back better, becoming more accessible and more competitive.[21]
- "*Reopening Tourism for Travellers with Disabilities*" provides recommendations for destinations and service providers to accommodate customers with disabilities and specific access requirements, including seniors.[22]
- The "*Access City Award*" recognises a city's willingness, ability and efforts to become more accessible.[23]
- The "*Accessible Tourism Destination*"[24] (ATD) award was launched in 2019 by UNWTO and the ONCE Foundation, to recognise and promote accessible tourism destinations. The ATD is an annual UNWTO distinction based on an Expert Committee evaluation, which acknowledges destinations enabling a seamless experience for any tourist, regardless of their abilities.
- The "*European excellence awards for accessible tourism*" is a prize to acknowledge the efforts of private enterprises and public authorities who have increased the accessibility of their services and facilities to tourists with special needs.[25]

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[18] https://ec.europa.eu/docsroom/documents/54074
[19] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019L0882
[20] https://ec.europa.eu/social/main.jsp?catId=1202
[21] https://www.e-unwto.org/doi/book/10.18111/9789284422296
[22] https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2020-08/REOPENING.pdf
[23] https://ec.europa.eu/social/main.jsp?catId=1141
[24] https://www.unwto.org/unwto-and-fundacion-once-deliver-international-recognition-of-accessible-tourist-destinations-at-fitur
[25] https://single-market-economy.ec.europa.eu/sectors/tourism/offer/accessible-tourism_en

Thrissur (Kerala, India) is an example of city being fully accessible for tourists. Through the city's funding schemes 'Barrier free Tourism' and the 'Green Carpet' Scheme, the city developed infrastructure such as ramps, accessible toilets, lactation rooms, Braille pamphlets, signage, touch-screen kiosks, audio and sign aids, wheelchairs and walking aids.[26] The UN acknowledged the efforts made to shape an accessible city for all, and mentioned Thrissur as the 'Emerging Global Destination' in the Accessible Destination Awards 2019.

Sustainability

Sustainability is a priority for the EU. The "European Green Deal"[27] is the main EU response to the current climate challenges by setting net emissions of greenhouse gases by 2050. The tourism industry will also have to comply and contribute to climate-neutrality through the greening of its processes and activities.

The EU is supporting the industry through official communications and more stringent regulatory approaches. The Communication on "Next steps for a sustainable European future"[28] commits to a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Furthermore, the "Agenda for a sustainable and competitive European tourism"[29] lays the foundations for a competitive yet sustainable tourism industry through the following principles:

- During planning and development, the (long-term) impacts of tourism should be taken into account by respecting the character, resources and needs of host communities and destinations;
- Widespread and committed participation in decision-making and practical implementation through evidence-based actions.

In terms of initiatives that foster sustainable solutions in cities, some of these include:

- The *European Commission's (European) Green Capital Award*[30] is given each year to a city which is leading the way in environmentally friendly urban living. The Award encourages cities to commit to ambitious goals for further environmental improvement.
- The *European Green Leaf Award*[31] was created in 2015 in the footprints of the European Green Capital Award. The Award was established with the aim to recognise the sustainable efforts of small cities (from 20,000 to 99,999 inhabitants).
- The *EUROPEANMOBILITYWEEK Award*[32] celebrates local authorities and municipalities that have excelled in raising awareness about sustainable urban mobility during the main event week.
- The *EU Cities for Fair and Ethical Trade Award*[33] celebrates EU cities that champion more sustainable trade, consumption and production. Through knowledge-sharing and networking opportunities, the Award helps to connect cities.
- The *Joint Programme on Smart Cities*[34] aims to develop new scientific methods, concepts and tools designed to support European cities in their transformation into smart cities. The key focus is on the large-scale integration of renewable energies and enhanced energy efficiency.

Singapore is known internationally as a sustainable destination.[35] The construction "Gardens by the Bay" is made of concrete supertrees that embed vertical gardens, rainwater collecting pipes, and solar panels since 2012. More recently, in 2019 the city greened its main airport Changi by installing a garden complete with a hedge maze, a canopy bridge, and the world's tallest indoor waterfall.

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[26] https://www.indiatimes.com/news/india/kerala-tourisms-efforts-to-make-the-state-disabled-friendly-gets-praises-from-un-world-tourism-organization-504862.html

[27] https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN

[28] https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:52016DC0739

[29] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52007DC0621

[30] https://environment.ec.europa.eu/topics/urban-environment/european-green-capital-award_en

[31] https://environment.ec.europa.eu/topics/urban-environment/european-green-leaf-award_en

[32] https://mobilityweek.eu/europeanmobiltyweek-award/

[33] https://mobilityweek.eu/europeanmobiltyweek-award/

[34] https://smart-cities-marketplace.ec.europa.eu/node/3187

[35] https://www.lonelyplanet.com/articles/sustainable-tourism-sights

Digitalisation

The "European Strategy for Data"[36] recognises data as an essential resource for economic growth, competitiveness, innovation, job creation and societal progress in general. In line with the European Strategy for Data, the Commission published the Data Act,[37] which is a key pillar of the European strategy for data. Its main objective consist in making Europe a leader in the data economy to benefit the European economy and society.

In tourism, the Digital tourism network aims to discuss common challenges and opportunities of the EU tourism industry's digital transformation and exchange good practices for boosting the innovation capacity of tourism entrepreneurs, especially SMEs. Through the tourism business portal, it is possible to improve the establishment, management, promotion, and expansion of businesses, as it includes plenty of articles, tutorials, online tools, and links to best practices to help entrepreneurs.

In the area of digitalisation, several initiatives take place to foster innovation and digitalisation in cities. These include:

- The *European Capital of Innovation Awards (iCapital)*[38] is an annual recognition prize awarded to the European cities that best promote innovation in their communities.
- The *Intelligent Cities Challenge (ICC)[39]* is a European Commission initiative that supports 136 cities in using cutting-edge technologies to lead an intelligent, green and socially responsible recovery.

Ljubljana (Slovenia) is a virtuous example in leveraging digitalisation in the tourism industry.[40] To attract more Chinese tourists, the Tourist Information Centre of the city implemented an option to pay through the popular Chinese paying app "Alipay", in order to facilitate economic transactions for both locals and travellers.

Cultural heritage

The European Framework for Action on Cultural Heritage (2018)[41] reflects the common set-up for heritage-related activities at European level, building on the European Year of Cultural Heritage 2018 to capture and scale-up its success to ensure a lasting impact. The Framework establishes a set of four principles of continued action for Europe's cultural heritage:

- Holistic
- Mainstreaming/integrated
- Evidence-based policy making
- Multi-stakeholder

The Cultural Heritage in Action is one of the actions of the European Framework for Action on Cultural Heritage of the European Commission.[42] Since 2020, Cultural Heritage in Action empowers cities and regions to strengthen their cultural heritage policies and initiatives and enhance innovative solutions to preserve cultural heritage assets.

Two main awards across the EU identify the best cultural heritage-related implemented measures.

- The *European Heritage Awards/Europa Nostra Awards[43]* were launched in 2002 by the European Commission and have been run by Europa Nostra ever since. The award is structured around categories: 1) Conservation and adaptive reuse; 2) Research; 3) Education, training and skills; 4) Citizen's engagement and awareness-raising; 5) Heritage champions.
- The *European Heritage Label Awards*[44] is received by 12 sites that have played a significant role in the history and culture of Europe and the building of the European Union. The European Heritage Label aspires to develop and enrich people's comprehension and awareness of the European cultural heritage, and to create an inclusive, diverse environment for young people to exchange cultural elements and discussions.

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[36] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0066
[37] https://digital-strategy.ec.europa.eu/en/policies/data-act
[38] https://eic.ec.europa.eu/eic-funding-opportunities/eic-prizes/european-capital-innovation-awards_en#about
[39] https://culture.ec.europa.eu/policies/selected-themes/cultural-heritage
[40] https://smart-tourism-capital.ec.europa.eu/system/files/2022-05/Best%20Practice%20Report_2022_Update.pdf
[41] https://culture.ec.europa.eu/policies/selected-themes/cultural-heritage
[42] https://culturalheritageinaction.eu/
[43] https://www.europeanheritageawards.eu/
[44] https://culture.ec.europa.eu/event/european-heritage-label-award-ceremony

Braga (Portugal) was recognised by UNESCO as a Creative City of Media Arts.[45] The best practice case arises from the establishment of a cultural centre "gnration", which aims at fostering culture and creativity through a program based on the two pillars of contemporary music on one side and art and technology on the other side; activities can range from performances, exhibitions, or education initiatives. The centre is recognised to have generated culture and creativity in the city both through these activities, but also in terms of creation and redevelopment of cultural spaces and hubs.

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[45] https://smart-tourism-capital.ec.europa.eu/system/files/2022-05/Best%20Practice%20Report_2022_Update.pdf

4. Introducing Deloitte Synergy^{TM}

The concept of Synergy™

Synergy[46] is a cloud-based solution, created by Deloitte Portugal to help companies and cities to leverage their high volume of data to make predictive insights and data-driven decisions.

The aim for introducing Synergy is to present invaluable insights into the utilisation of technology within the smart tourism industry, how to enable digital transformation and how to facilitate revenue growth.

The solution

The solution is flexible, agile, scalable, modular and it is designed to address the different needs of an integrated infrastructure management. It is built upon four pillars:

1. **The platform** contains the city operator user interface, allowing the visualisation of the reported incidents, perform root cause analysis and escalate issues for resolution. This platform can be highly beneficial, especially for skiing destinations such as Zermatt, that attract a high number of visitors and necessitate prompt response in case of any emergency.
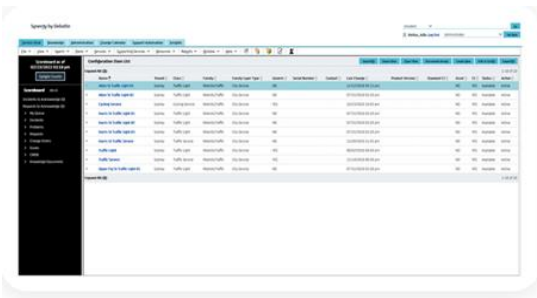
Figure 2– Synergy SaaS Platform

2. **The command center** is the core of the solution, it provides centralised command for all operations. A command center could be useful for a tourist attraction like the city of Bruges. The available data collected from different sources could be centralised, situational awareness would be enhanced, emergency management would improve, traffic and resource allocation could be optimised. Overall, it would enable shorter response time and provide the city's governance with a comprehensive overview of all operations in one centralised location.

Figure 3 – Synergy command center

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[46] https://www2.deloitte.com/pt/pt/pages/public-sector/solutions/synergy.html

3. **The executive dashboard** is useful for managing a popular tourist attraction like Lake Blade. It would enable operators to monitor incidents and issues, to make data-driven decisions, to optimise resources, and to enhance cost efficiency.
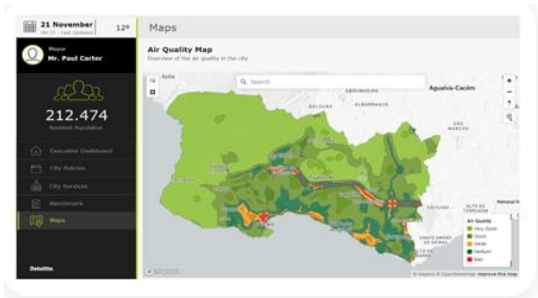

Figure 4 – Synergy executive dashboard

4. **The digital twin** enables a visual analysis of the resources' dependencies. The different integrated applications such as a mobility app, allow the citizen or the tourist to report issues and events that need to be solved regarding public transportation.

Figure 5 – Synergy digital twin

How we can utilise Synergy™ in the tourism industry

Synergy as a flexible, scalable, customisable solution offers a wide variety of use cases. It can be applied to meet the specific requirements of a million-habitant city administration, it is proven to be a useful service in case of building facility management, and it has great potential in the digital transformation of tourist destinations. Overall, it can be a useful service for the tourism businesses.

Smart governance provides a framework for effective planning, management, and development of smart tourism. By embracing smart governance principles, destinations can leverage technology and innovation to enhance the visitor experience, optimise resource utilisation, and achieve long-term success in the smart tourism industry. Deloitte Synergy designed Cascais Command Centre's (C3) operational model, by developing new processes and a new management model, which included centralised, integrated, and correlated data analysis from each of its 12 vertical city domains. The integration affected the life of 200.000+ citizens and 730.000+ tourists.

Smart mobility has a vital role in enhancing smart tourism by providing seamless connectivity, improving accessibility, offering real-time information and navigation, integrating transportation modes, promoting sustainability, and enabling data-driven decision making. As an example, Deloitte Synergy designed for Lisbon the concept of a micro-mobility management platform based on the data shared by the city's micro-mobility operators. This platform aims to regulate the usage of shared mobility assets, to minimise their impact on public spaces, while also improving their usage in combination with other sustainable mobility modes.

Smart buildings and venues offer numerous advantages for the smart tourism industry, including energy efficiency, enhanced visitor comfort, safety and security, personalised services, seamless connectivity, and efficient operations and maintenance. These benefits contribute to an improved visitor experience and can lead to cost reduction. For instance, smart venues like museums or historical sites and smart buildings such as Tourism Information Offices leverage technology and data to provide visitors with interactive, personalised, and digital experiences. By implementing digital solutions like smart surveillance, digital media signage, smart entry systems, parking and accessibility management, and water management, companies in the tourism industry can

enhance the visitor experience, improve operational efficiency, and reduce costs. By integrating all the data generated by these digital solutions into the Synergy platform, companies can gain valuable insights for decision-making. This data-driven approach allows companies and organisations to better understand visitor behaviour, preferences, and patterns, enabling targeted marketing strategies and improved service offerings. Deloitte Synergy helps companies in creating and implementing an orchestrated smart vision. They help facilitate the procurement of suitable technologies and ensure future integration with third-party stakeholders. This partnership ensures that companies can effectively leverage smart technologies and achieve their smart tourism objectives.

5. Smart tourism use cases

Examining use cases helps us understand smart tourism applications and benefits through all four dimensions. In this chapter, we present a selected batch of best practices by European cities, that are fine examples of how the future of tourism looks like.

We researched more than 200 European destinations that are known examples of smart tourism practices. The categorised findings were narrowed down to 9 use cases, which are selected on the basis on their innovativeness and scalability.

Accessibility

BREDA | The Dutch city, whose rich historical traditions date back to the time when it was an important centre during the Holy Roman Empire, has a comprehensive strategy to support the mobility of people with disabilities.

The city implemented measures to serve the needs of various groups: cobble stones have been removed from the historic centre area around the church and the marketplace, to make it accessible for elderly people and wheelchair users. Some hotels, like the Merlinde also have accessible rooms with suitable bathroom equipment and wardrobes. There is a city-wide system of pavement ramps and guiding lines for the blind: portable threshold ramps are an often sight in front of stores. All bus stops and lines are accessible and bus drivers have been trained for awareness towards passengers with disability.

The city welcomes a large number of visitors in the bi-annual ParaGames, a European sports tournament for disabled people. The comprehensive approach resulted in winning the 2019 European Access City Award and is also the 2020 winner of European Capital of Smart tourism's Accessibility category.[47] [48]

BORDEAUX | Since 2020, the Bordeaux Tourist Office has partnered with the association 'Vacances et Familles' to support the holidays of low-income families. After all the purchases made on the official website of the tourist office, buyers are provided with an option to make a donation to the local branch of 'Vacances et Familles'. This donation is used for two purposes: on one hand low-income families in Bordeaux metropolitan area to financially support their holidays, and on the other, it supports low-income families that come for holidays in the area. [49]

Digitalisation

SEVILLE | Seville, one of the winners of European Capital of Smart Tourism has advanced digital solutions to apply in the field of tourism.

The city maintains an open data portal which houses 465 datasets with information on transport, culture and leisure, urbanism, since 2016. Based on these data, an Urban Open Data Portal tracks Seville's contribution to SDGs and a Smart Tourism System that integrates, publishes, and extracts significant information from the tourist destination.

Seville also has projects for tourist flow measurement, which ultimately aims to predictively manage these flows using AI technology. These information makes designing accessible routes between neighbourhoods possible, which is available for users through the Seville Accessible App.[50] [51]

[47] https://www.theguardian.com/cities/2019/may/28/people-arent-disabled-their-city-is-inside-europes-most-accessible-city
[48] https://smart-tourism-capital.ec.europa.eu/breda-category-winner-accessibility_en
[49] Présentation PowerPoint (bordeaux-tourisme.com)
[50] https://seville-smarttourismcapital.eu/digitalisation/
[51] https://smart-tourism-capital.ec.europa.eu/seville-winner-2023-competition_en

VENICE | Venice has implemented an intelligent system to oversee the influx of individuals by utilising sensors, cameras, and mobile phone data. Strategically positioned sensors at key intersections and squares allow for the detection of pedestrian movement. Likewise, cameras provide real-time visual information on crowd size and movement. Additionally, mobile phone data facilitates the tracking of individuals' movements and provides supplementary details, such as their origin. This comprehensive monitoring system enables the city to evaluate historical and current flows while also enabling the modeling of physical phenomena like crowds in specific areas and specific times. All the gathered data is presented in a dedicated control room equipped with smart technology. The control room integrates data from other monitoring systems, such as sensors that monitor water levels to anticipate the occurrence of "acqua alta" (high water) or cameras that identify and penalise speeding vessels. The establishment of the smart control room project commenced in 2018 through a collaborative effort between the public and private sectors, with funding received from the European Union and the Municipality itself, promoting innovation.

Sustainability

WERFENWENG | Werfenweng has been actively engaged in promoting sustainable tourism development since the mid-1990s. They have successfully created and marketed a unique "eco-friendly vacation package" known as the "Gentle transportation holidays," which is offered through a marketable bonus card called the SAMO-Card. All the amenities and services included in this bonus card are provided free of charge. Visitors are encouraged to travel to the destination without a private vehicle, as they can avail themselves of various transportation options, including public transportation and individual transport arrangements. Specially trained hosts extend a warm invitation to guests to immerse themselves in sustainable practices during their vacation, offering guided hiking expeditions, specialised bus sightseeing tours, complimentary outdoor sports equipment, electric bicycles, mountain bikes, and even a fleet of electric cars at their disposal. Additionally, a local store has been established to showcase regional delicacies. The entire energy required to power the vehicles and services is generated from solar energy. The local residents are actively involved in this environmentally friendly initiative and can also benefit from the unique transportation services available.[52]

ANTALYA | Antalya Metropolitan Municipality carries out the "Adaptive Junction System" at 40 intersections in the city to save fuel, and to relieve the flow of urban traffic especially in peak tourist seasons. In the adaptive junction system, the traffic data is instantly processed using artificial intelligence technology and the duration of traffic lights are determined automatically. Thanks to this technology, in 2020, an average of 25% time and approximately 6 million liras fuel savings and considerable amount of CO_2 gas reduction were achieved.[53]

Cultural Heritage and Creativity

NAPLES | The Rione Sanità is a historic district in Naples that has a rich cultural heritage, including catacombs from the Hellenistic and Christian eras. The San Gennaro and San Gaudiso catacombs are two of the most important early Christian cemeteries in the city and are located under the Basilica of Santa Maria della Sanità. After years of neglect, the Vatican entrusted the catacombs, which are private property, to La Paranza social cooperative, which reopened them to the public. This transformation from degradation to the recovery of a remarkable, hidden heritage empowered young people, created a safer environment in the Rione Sanità, and revitalised the entire district. Through heritage, the cooperative was able to create a sustainable tourism model that supports local communities and protects the environment.[54]

PALERMO | Palermo has launched a campaign to promote tourism and culture through experiential tourism, with the aim of increasing awareness of local resources and practical experiences in the city. Several projects have been implemented to achieve this goal, including the "Girocavallo" project, which offers three music and theatrical walks in the Zen, Brancaccio, and Danisinni neighborhoods. Tourists are involved in reading passages, painting, and dancing, followed by a street food tasting. Another project, "Chef for a day - The cuisine of the Monsù - A food and cooking tour from the Piazze della Grascia to the elegant 18th-century mansions of the Piana dei Colli," includes seven coach tours with step-by-step routes, within individual locations in search of ingredients to prepare an 18th-century menu, a cooking show in teams, and a tasting of the Monsù lunch. These projects are examples of how experiential tourism can be used to promote sustainable tourism practices and contribute to the long-term sustainability of the tourism industry. By promoting sustainable tourism practices, Palermo can support the local economy, preserve cultural heritage, and create added tourist value for the sites.[55]

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[52] https://sustainablelabels.eu/wp-content/uploads/2021/07/3_Sustainable-tourism-products_K.-Mentil-1.pdf
[53] https://smart-tourism-capital.ec.europa.eu/system/files/2023-02/BestPractices_2023.pdf#page=36
[54] https://culturalheritageinaction.eu/the-catacombs-of-naples/
[55] https://www.citiesforum2023.eu/docs/Urban/EAA%20Report%20Sustainable%20Tourism.pdf

CORK | Cork's City Council has developed the 'Culture and Creativity Strategy 2018-2022' to protect and promote the city's biodiversity, which is intrinsically linked to culture and heritage. The biodiversity must be safeguarded as it is considered an integral part of the natural, built, cultural, and archaeological heritage. Cork's maritime heritage continues to be a defining feature of the city, which was known as the Venice of the North in the 18th century. In June 2022, over 50 events were planned in 15 stunning locations throughout the City and Harbour as part of the Cork Harbour Festival, which celebrates Cork's connection with the water, its river, and harbor. These events are an example of how cultural tourism can be used to promote sustainable tourism practices and contribute to the long-term sustainability of the tourism industry. By promoting sustainable tourism practices, Cork can support the local economy, preserve cultural heritage, and create added tourist value for the sites.[56]

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[56] https://smart-tourism-capital.ec.europa.eu/system/files/2023-02/BestPractices_2023.pdf#page=70

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