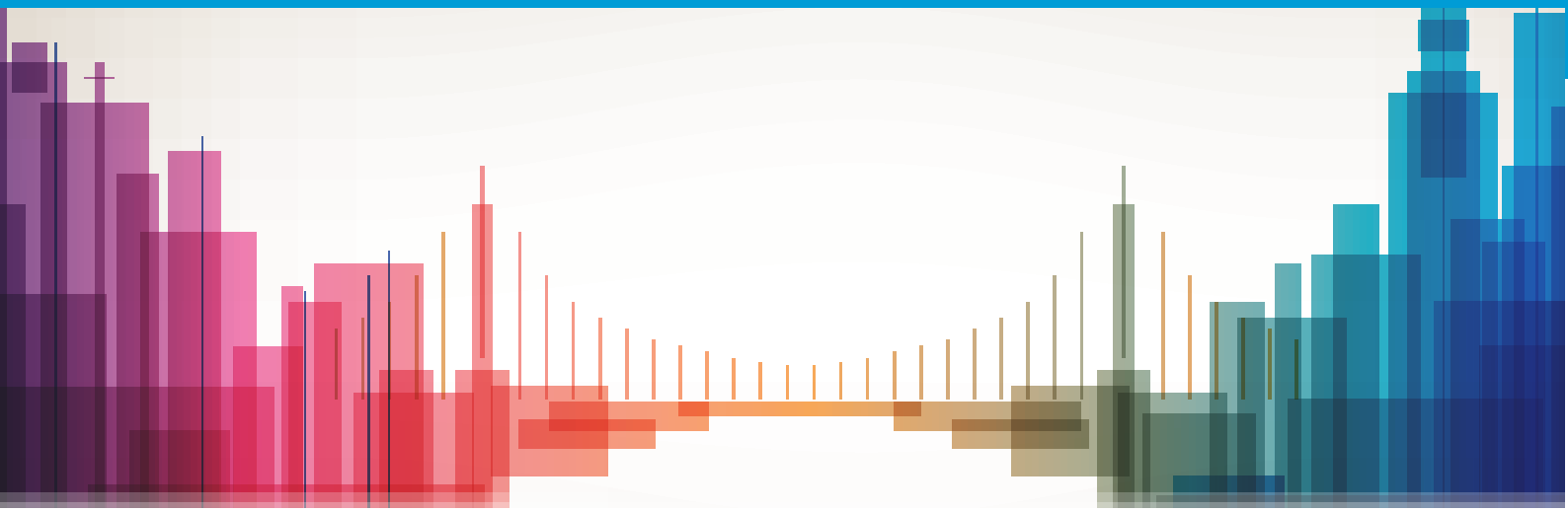
Building smart destination platforms: A guide for governments and cities



Convention on Biological Diversity

United Nations ECLAC

Food and Agriculture Organization of the United Nations

ITU

UN-HABITAT

UNDP

United Nations Economic Commission for Africa

UNECE

UNIDO

unesco

UN environment programme

UNEP FINANCE INITIATIVE

United Nations Framework Convention on Climate Change

unitar United Nations Institute for Training and Research

UNFPA

United Nations Department of Economic and Social Affairs

UNJSPF United Nations Joint Staff Pension Fund

UN Office 4 PARTNERSHIPS

UNU EGOV

UN Tourism

WORLD METEOROLOGICAL ORGANIZATION


Yakimanskaya Embankment
Patriarshiy Bridge
Bolshaya Polyanka Street
Kadashyovskaya Embankment
Bolshaya Yakimanka Street
NORTH
Free Wi-Fi hotspot

Building smart destination platforms: A guide for governments and cities

Foreword

This publication was developed within the framework of the United for Smart Sustainable Cities (U4SSC) initiative.

Acknowledgements

The development of this deliverable was led and coordinated by Sandra Carvão (UN Tourism) and Ezequiel García (SEGITTUR).

The co-leaders would like to thank the following contributing individuals: Lorena Villar and Antonio López de Ávila (UN Tourism), Beatriz De Esteban (SEGITTUR), Javier Llavador and Arianna Gnecco (FJ Intelligence), Daniel Da Silva (Globaldit), Hani Han (Incheon Tourism Organization), Kassia Monteiro (Agência Brasileira de Engenharia Turística), Kobayashi Hirokazu (Kokugakuin University), Andrea Marrucci (Comune di San Gimignano), Mattia Fanetti (Comune di San Gimignano), Abdulaziz Alsultan (Saudi Tourism Authority), and Carol Hay (Saudi Tourism Authority).

The authors wish to thank the U4SSC management team: Okan Geray (U4SSC Chair), Ramy Ahmed Fathy, Giampiero Bambagioni, Paolo Gemma, Wendy Teresa Goico Campagna, Tania Marcos and Emily Royall (U4SSC Vice-Chairs) for their assistance and contributions.

The authors also extend gratitude to the contributing organizations along with their representatives: Oliver Hillel from the Convention on Biological Diversity (CBD), Lucy Winchester and Vera Kiss from the Economic Commission for Latin America and the Caribbean (ECLAC), Nevena Alexandrova from the Food and Agriculture Organization (FAO), Cristina Bueti from the International Telecommunication Union (ITU), Deniz Susar from United Nations Department of Economic and Social Affairs (UNDESA), Iryna Usava from the United Nations Development Programme (UNDP), James Murombedzi from the United Nations Economic Commission for Africa (UNECA), Dario Liguti and Tea Aulavuo from the United Nations Economic Commission for Europe (UNECE), Guilherme Canela from the Regional Bureau for Sciences in Latin America and the Caribbean of the United Nations Educational, Scientific and Cultural Organization (UNESCO), Gulnara Roll and Mrityunjay Sharma from United Nations Environment Programme (UNEP), Matthew Ulterino from the United Nations Environment Programme Finance Initiative (UNEP-FI), Motsomi Maletjane from the United Nations Framework Convention for Climate Change (UNFCCC), Soren Thomassen from United Nations Population Fund (UNFPA), Aline Machado da Matta and Isabel Wetzel from the United Nations Human Settlements Programme (UN-Habitat), Katarina Barunica Spoljaric and Nicholas Dehod from the United Nations Industrial Development Organization (UNIDO), Ebru Canan-Sokullu from the United Nations Institute for Training and Research (UNITAR), Dino Cataldo Dell'Accio from United Nations Joint Staff Pension Fund (UNJSPF), William Kennedy from the United Nations Office for Partnerships (UNOP), Soumaya Ben Dhaou from the United Nations University – Operating Unit on Policy-Driven Electronic Governance (UNU-EGOV), Roberta Boscolo from World Meteorological Organization (WMO) and Sandra Carvao from the World Tourism Organization (UN Tourism).

Disclaimer

The opinions expressed in this publication are those of the authors and do not necessarily represent the views of their respective organizations or U4SSC members. In line with the U4SSC principles, this report does not promote the adoption and use of Smart City technology. It advocates for policies encouraging responsible use of information and communications technologies (ICTs) that contribute to the economic, environmental and social sustainability as well as the advancement of the 2030 Agenda for Sustainable Development and the Pact for the Future and its Global Digital Compact.

ISBN

978-92-61-43321-5 (electronic version)
978-92-61-43331-4 (EPUB version)



This work is licensed to the public through a Creative Commons Attribution-Non-Commercial-Share Alike 3.0 IGO license (CC BY-NC-SA 3.0 IGO).

For more information, please visit https://creativecommons.org/licenses/by-nc-sa/3.0/igo/

© CBD, ECLAC, FAO, ITU, UNDESA, UNDP, UNECA, UNECE, UNESCO, UNEP, UNEP-FI, UNFCCC, UN-Habitat, UNIDO, UNITAR, UNOP, UNU-EGOV, WMO and UN Tourism.

Contents

Abbreviations and acronyms vi

Executive summary vii

1 Introduction 1
- 1.1 Overview of Smart Destination Platforms (SDP) 1
- 1.2 Objective of this guide 2
- 1.3 Vision and scope 4

2 Context and objectives 5
- 2.1 Definition of a Smart Destination 5
- 2.2 Key elements of Smart Destination Governance 8

3 Governance and collaboration models 13
- 3.1 Governance framework for Smart Destinations 13
- 3.2 Coordination mechanisms 15

4 Platform architecture, data management, and services 18
- 4.1 Integrated platform architecture for Smart Destinations 18
- 4.2 Digital Services of a Smart Destination Platform 20
- 4.3 Data infrastructure and management 22
- 4.4 Data spaces: knowledge, sharing, and experimentation 25
- 4.5 Data security and privacy 27

5 Roadmap for digital transformation of Smart Destination Platforms 29
- 5.1 Phases of the digital transformation of a destination through an SDP 29
- 5.2 Indicators for measuring platform impact 40
- 5.3 Strategic recommendations and conclusion 44

References 46

List of figures

Figures

Figure 1: Overview of Smart Destination Platforms (SDP)....2
Figure 2: Smart Destination Platform (SDP) governance model....17
Figure 3: Interaction model of actors involved in an SDP....21
Figure 4: Layer-based infrastructure model....25
Figure 5: Phases of the digital transformation of a destination through an SDP....36

Abbreviations and acronyms

Abbreviation	Full form
AI	Artificial Intelligence
API	Application Programing Interface
CEP	Complex Event Processing
DMO	Destination Management Organization
DSBA	Data Spaces Business Alliance
DSSC	Digital Sovereignty Steering Committee
ETL	Extract, Transform, Load
GIS	Geographic Information System
IDSA	International Data Spaces Association
INSTO	International Network of Sustainable Tourism Observatories
IoT	Internet of Things
ISO	International Organization for Standardization
IT	Information Technology
KPI	Key Performance Indicator
M2M	Machine-to-Machine
MSME	Micro, Small and Medium-sized Enterprises
NFC	Near Field Communication
NGSI	Next Generation Service Interfaces
OWL	Web Ontology Language
PPCP	Public-Private Community Partnership
PPP	Public-Private Partnerships
RBAC	Role-Based Access Control
RDF	Resource Description Framework
REST	Representational State Transfer
SCADA	Supervisory Control and Data Acquisition
SDG	Sustainable Development Goal
SDP	Smart Destination Platform
SEGITTUR	State Commercial Company for the Administration of Innovation and Technologies
SF-MST	Statistical Framework for Measuring the Sustainability of Tourism
SLA	Service Level Agreement
SME	Small and medium-sized enterprises
SSO	Single Sign-On
TIP	Toolkit of Indicators for Tourism
U4SSC	United for Smart Sustainable Cities
UN Tourism	World Tourism Organization

Executive summary

Tourism destinations face increasing pressure to manage growth sustainably, respond to climate, economic and social shocks, and ensure that tourism delivers tangible value for residents as well as visitors. Tourism is not a standalone sector but part of a wider urban/local system that intersects with multiple other areas such as housing, mobility, public services, local economies and daily community life. In this context, coordinated digital transformation has become a practical necessity.

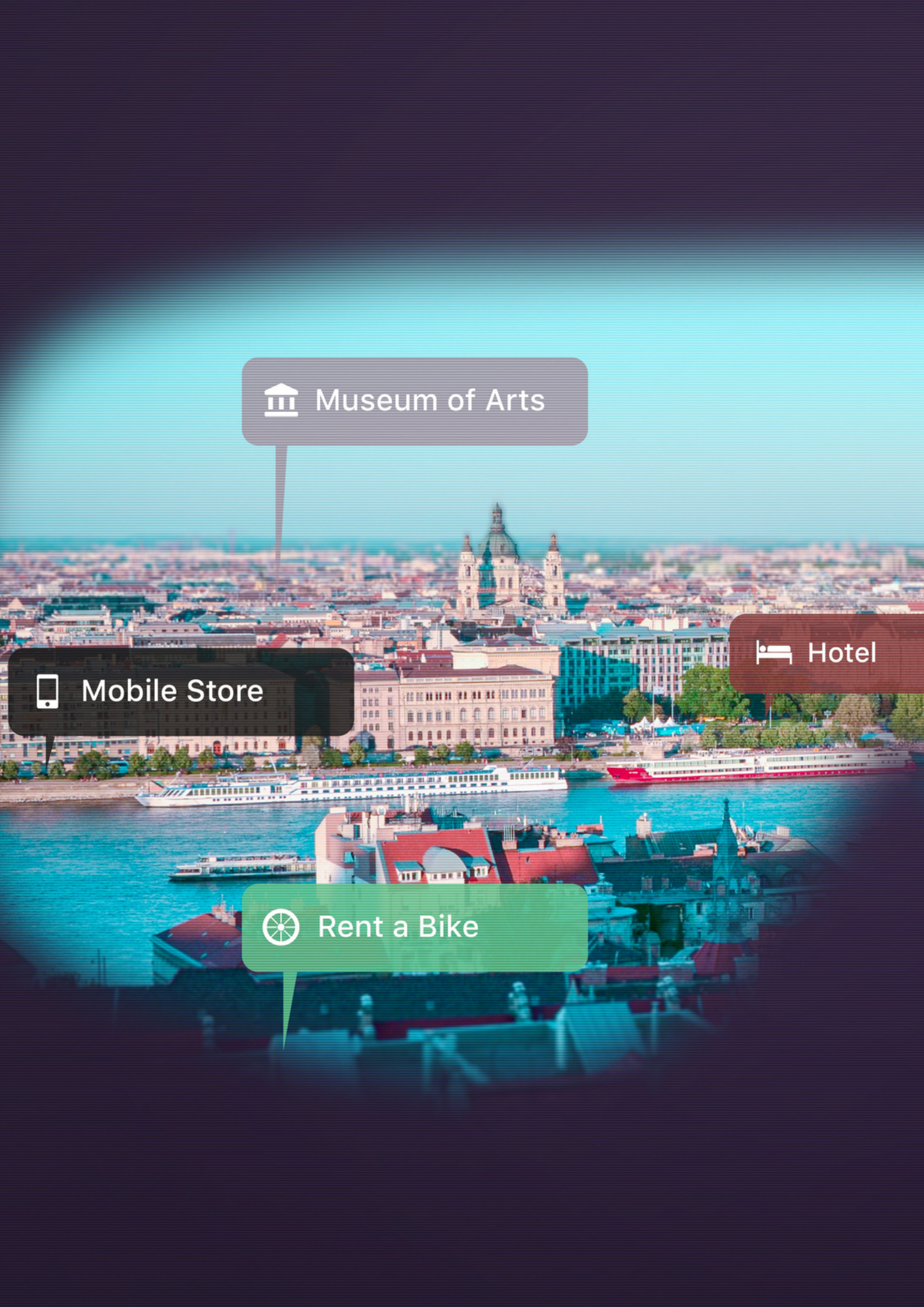
Smart Destination Platforms (SDPs) provide shared digital infrastructure that enables city and regional governments and destination authorities to plan, manage and monitor tourism in an integrated and transparent way.

An SDP integrates data from public services, businesses, sensors and user interactions into an interoperable platform that supports informed, real-time decision making, improves visitor experiences and strengthens accountability to residents. When designed as public value infrastructure, SDPs help destinations move away from fragmented digital initiatives towards a whole-of-destination approach aligned with urban planning and development, and corresponding sustainability goals.

Produced under the United for Smart Sustainable Cities (U4SSC) initiative, this guide provides governments and cities with a practical framework for designing and implementing Smart Destination Platforms at different levels of institutional and digital maturity. It sets out governance models, technical reference architectures, data-sharing approaches and phased implementation pathways that place people, inclusion and sustainability at the centre. The guide emphasizes public-private-community collaboration, open and interoperable standards, strong data governance, and alignment with global frameworks such as the Sustainable Development Goals, in particular SDG 11 on sustainable cities and communities.

The guide should be read alongside the companion publication "Smart Tourism in Action: How Cities Are Managing Destinations with Data", which showcases real-world applications from destinations worldwide. While the use-case report illustrates what destinations are already doing in practice, this guide focuses on the governance, architecture, institutional arrangements and foundational systems needed to replicate and scale those experiences responsibly.

Ultimately, Smart Destination Platforms are both technological solutions as well as strategic governance instruments. By investing in people-centred, standards-based and interoperable digital infrastructure, cities can manage tourism as a core component of urban systems that supports sustainability, resilience, inclusive economic development improving quality of life for residents and local communities in the digital age.


Museum of Arts
Hotel
Mobile Store
Rent a Bike

1 Introduction

1.1 Overview of Smart Destination Platforms (SDP)

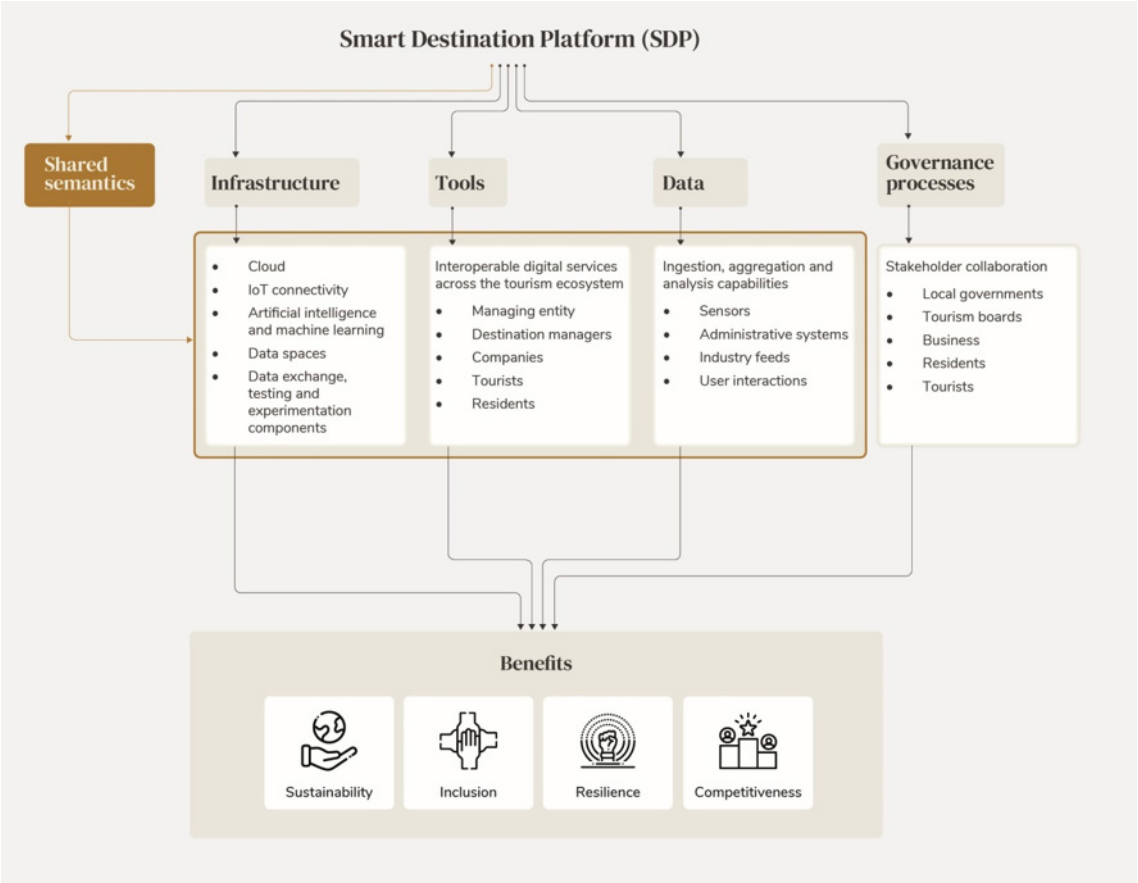
Tourism destinations face growing challenges emerging from fast-moving shifts in demand, climate and environmental risks, the need to work towards inclusion and community wellbeing, and increasing pressures on housing, public services, natural resources and urban infrastructure. Today, the digitalization of the tourism sector is no longer optional: it can, in fact, be a path to competitiveness, sustainability and resilience, provided it is guided by strong governance and public-interest objectives.

Smart Destination Platforms (SDPs) offer a shared digital backbone for this transformation. They consolidate data, tools and governance processes so that destinations can plan and manage tourism in a coordinated, evidence-based way, thereby improving visitor experience while safeguarding residents' quality of life and local ecosystems. Consistent with UN-Habitat's people-centred smart cities approach, SDPs are conceived not as technology projects, but as governance instruments that support inclusive, transparent and accountable decision-making.

A Smart Destination Platform (SDP) is a centralized, interoperable digital infrastructure that aggregates data, integrates systems and orchestrates services across the tourism ecosystem. It moves destinations from isolated initiatives to a systematic whole-of-destination model grounded in real-time insights. This is achieved by continuously collecting and processing information from sensors, administrative systems, industry feeds and user interactions; by harmonizing it through shared semantics; by generating relevant analysis forecasting and optimization; and by activating it via alerts, playbooks, and Application Programming Interfaces (APIs) that power visitor services and business operations. By applying established data principles, such as openness, interoperability and re-use, SDPs enable data to be transformed into practical insights that support planning, regulation, service management and stakeholder coordination.

Importantly, SDPs must be adaptable to different levels of institutional and digital maturity. Many destinations, particularly in emerging and secondary cities, may begin with limited data availability or technical capacity. This guide, therefore, emphasizes phased development, capacity building and incremental integration rather than high-complexity solutions from the outset.

Figure 1: Overview of Smart Destination Platforms (SDP)



(Source: SEGITTUR)

1.2 Objective of this guide

The objective of this guide is to provide a globally relevant, adaptable framework for developing and implementing Smart Destination Platforms (SDPs). In an interconnected tourism sector, destinations must adopt digital solutions that advance sustainability, efficiency, stakeholder engagement, enhanced visitor experiences and residents' quality of life, while addressing inequality, accessibility and the digital divide.

Developed under U4SSC, the guide forms part of a broader effort to support cities and territories in leveraging digitalization to achieve sustainable urban development. It contributes to transformation across four pillars – sustainability, inclusion, resilience and competitiveness, with a strong focus on institutional capacity development and public value creation.

Drawing on international expertise, it defines governance elements, reference architectures and data-sharing approaches, showcases global best practices, and summarizes the current state of practice in smart destination management. It also offers a practical 12–24-month implementation roadmap and guidance on the required infrastructure, applications and data, taking into account differing local capacities and resource constraints.

By following the framework outlined in this guide, destinations will be equipped to:

- **Promote sustainable tourism policies and practices** that align with their sustainability goals. Smart Destination Platforms can be effective tools in minimizing environmental impact, promoting cultural heritage preservation and supporting local communities by integrating sustainability into every aspect of tourism planning and management (e.g. visitor flow management, resource monitoring, smart mobility coordination).
- **Facilitate responsible digital transformation** by clarifying governance, institutional and technical foundations required to implement an SDP in line with public interest objectives.
- **Encourage collaboration** among national and local governments, tourism boards, businesses, residents and visitors through public-private community partnerships.
- **Define and describe key components** such as data spaces, data exchange mechanisms, testing and experimentation environments, which are fundamental for a well-functioning Smart Destination Platform.
- **Propose a set of indicators to measure the platform's impact** on tourism, resilience and quality of life, providing a clear basis for evaluation and continuous improvements.
- **Provide shared data services and market intelligence to local businesses**, particularly micro, small and medium-sized enterprises (MSMEs), enabling them to better understand visitor behaviour, adapt offerings and strengthen competitiveness.

To facilitate practical use, the guide identifies which sections are most relevant to different audiences, including policy-makers, destination managers, technical teams and partners, recognizing that responsibilities and interests differ across stakeholder groups.

Policymakers and city/regional governments

Use this guide for setting policy vision and objectives, aligning them with the SDGs, defining and validating governance models.

→ Read first: Sections 1–3; Section 5

Destination Management Organizations (DMOs)/Managing entity

Use this for tourism and operational planning and management, governance, service catalogue design, stakeholder engagement, KPI framework.

→ Read first: Section 3 (Governance & Coordination); Section 4.2 (Digital Services); Section 5.1 (Phases of the digital transformation); Section 5.3 (Indicators)

Technical teams / CIO Office / IT Providers / Platform operators

Use this for architecture choices, interoperability, semantic models, IAM/consent/security controls.

→ Read first: Sections 4.1–4.5 (Architecture, Data, Security & Privacy)

Businesses (tourism operators, attractions, mobility, hospitality)

Use this for market intelligence, onboarding to platform services, data-driven product/service design.

→ Read first: Section 4.2 (Digital Services); Section 5.1 (Steps 2-4)

→ **Residents & civil society organizations**

→ Use this for participating in planning, monitoring impacts, accessing localized information and services.

→ Read first: Section 2.1 (Accessibility & Inclusion); Section 3 (Participation channels); Section 4.2 (Resident Services); Section 4.5 (Data Rights)

National/regional agencies & funders: Use this for policy harmonization, funding alignment, cross-destination interoperability and evaluation.

→ Read first: Section 3 (Multilevel Governance); Sections 4.1-4.4 (Standards & Data Spaces); Section 5 (Roadmap & Indicators)

Academia, Research & Innovation Hubs: Use this for co-creation, testing/validation, independent evaluation, skills and capacity development.

→ Read first: Section 3 (PPCP Spotlight); Section 4.4 (Data Spaces & Experimentation); Section 5.1 (Step 4)

1.3 Vision and scope

This guide on Smart Destination Platforms (SDPs) adopts a people-centred and integrated vision of digital transformation, aligned with global sustainability agendas, urban development priorities and sustainable tourism objectives. It situates tourism as a core component of urban systems that interacts with mobility, housing, public services, environment and local economies, rather than a standalone sector.

The guide aligns in particular with the Sustainable Development Goals (SDGs), especially SDG 11 on making cities and human settlements inclusive, safe, resilient and sustainable. It also supports SDG 8 (decent work and economic growth), SDG 7 (affordable and clean energy), SDG 12 (responsible consumption and production), SDG 13 (climate action), SDGs 14 and 15 (life below water and on land), and SDG 17 (partnerships for the goals). This approach reflects the people-centred smart cities framework, in which digital platforms are tools to improve everyday life, reduce inequalities and strengthen local governance capacity.

The scope of this guide includes:

- **Alignment with the SDGs**: Ensuring SDPs support the 2030 Agenda by integrating economic, social and environmental considerations into tourism destination planning, monitoring and management.
- **Framework for digital transformation**: Providing a scalable and adaptable framework that helps destinations improve operational efficiency and coordination while prioritizing accessibility, openness and interoperability.
- **Tourism ecosystem engagement and shared services**: Fostering collaboration among Destination Management Organizations (DMOs), public authorities, businesses, residents and international partners through secure data sharing, shared services and participatory governance mechanisms.
- Throughout the guide, particular attention is given to the role of SDPs in smaller cities, emerging destinations and resource-constrained contexts, emphasizing phased implementation, institutional strengthening and long-term sustainability over short-term technological sophistication.

2 Context and objectives

2.1 Definition of a Smart Destination

Tourism destinations around the world are increasingly faced with challenges, including evolving traveler expectations, environmental pressures, rapid technological advancements and the need for sustainable practices. Many destinations have limited resources and fragmented governance structures, and face the challenge of balancing tourism growth with long-term social, economic and environmental goals.

These challenges highlight the critical importance of transitioning towards Smart Destinations, which can address these complexities through integrated, technology-driven solutions.

"A Smart Tourist Destination refers to a tourism ecosystem that prioritizes five core pillars: governance, innovation, technology, sustainability, and accessibility."

Of these, governance, innovation, technology and sustainability are broadly recognized across regions as core pillars, while the way additional dimensions – such as accessibility, inclusivity or security – are incorporated may vary depending on each destination's institutional context.

The implementation of this model involves collaboration across public and private stakeholders, establishing a unified approach to identifying objectives and needs, prioritizing actions, and fostering continuous improvement in tourism management. The goal is to increase competitiveness by optimizing existing resources creating opportunities and aligning tourism strategies with the long-term socio-economic and environmental needs of the destination. Furthermore, Smart Destinations strive to ensure sustainable development, accessibility for all, and improved quality of life for residents, while enhancing the visitor experience.[1,2,3,4]

It is important to distinguish between a Smart Destination and a Smart Destination Platform (SDP). While the Smart Destination is the overarching model or governance framework that guides the transformation of a territory towards sustainability and innovation in tourism, the Smart Destination Platform is the digital infrastructure that enables this transformation by collecting, integrating and leveraging data to inform decisions, manage services and foster collaboration across stakeholders.

In essence, the SDP is a foundational tool that supports the strategic objectives of a Smart Destination, rather than a standalone technological solution.

	Smart Destination	Smart Destination Platform
What it is	A strategic model for transforming tourism through sustainability, technology, innovation and governance.	The digital tool that enables and supports this transformation.
Main role	Defines vision, policies and collaborative frameworks.	Integrates data and services to support decision-making and operations.
Focus	Governance, inclusion, sustainability and stakeholder engagement.	Technology, interoperability, data sharing, and service delivery.
Who is involved	Governments, residents, businesses, tourists, NGOs.	Platform managers, IT teams, data providers, service operators.
Example output	Sustainable tourism strategy co-created with stakeholders.	Real-time dashboard monitoring tourist flows and service usage.
Main role	Defines vision, policies and collaborative frameworks.	Integrates data and services to support decision-making and operations.

The key characteristics of a Smart Destination include:

- **Technology integration**: Advanced digital tools – including connected sensors and IoT, AI-driven analytics, geospatial systems, digital twins and interoperable platforms, are employed

1 https://www.destinosinteligentes.es/que-es/
2 https://www.destinosinteligentes.es/metodologia-dti/
3 https://www.destinosinteligentes.es/que-es-dti/
4 https://www.segittur.es/en/smart-tourism-destinations/dti-projects/smart-destinations/

to optimize resources and enhance tourism services. These technologies must be integrated into a data-driven architecture that aligns tourism-related services with the broader ecosystem of public services available to residents and visitors alike. By connecting tourism services with essential public infrastructure, such as transportation, traffic, waste management, water supply and public safety, destinations can ensure a seamless experience for visitors, while also improving service efficiency while the quality of life for residents, creating a unified and efficient service ecosystem that benefits all stakeholders. Importantly, the sophistication of technology should be proportionate to local capacity, ensuring that destinations with limited resources are not excluded from the smart destination transition.

- **Governance**: Transparent, inclusive and accountable governance mechanisms are fundamental to Smart Destinations. A coordinated approach involving public authorities, the private sector and residents or community representatives ensures that tourism policies reflect shared priorities and are grounded in public interest. This public-private-community (PPCP) model fosters inclusivity, accountability, and a shared vision for sustainable tourism development.
- **Innovation**: Smart Destinations promote innovation not only through new technologies, but also through new ways of working, sharing data and co-creating solutions. Innovation is not limited to technology, and includes experimentation with governance models, regulatory approaches and service delivery mechanisms that support sustainable tourism outcomes.
- **Sustainability**: Economic, social and environmental sustainability is embedded across all Smart Destination policies and actions. This enables destinations to monitor, anticipate and reduce impacts, preserve natural and cultural heritage, and support local economies. This includes managing tourism-related externalities such as congestion, environmental stress, housing pressure or unequal distribution of benefits.
- **Accessibility**: Accessible Tourism is a form of tourism that involves a collaborative process among stakeholders, which enables people with specific access requirements, including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed tourism products, services and environments. Ensuring accessibility to all visitors and residents, with or without disability, is a fundamental principle in Smart Destinations. Data and feedback obtained from end-users can play a role in identifying accessibility gaps and informing inclusive design and service delivery.
- **Inclusion**: Smart Destinations strive to involve local communities in the tourism value chain, ensuring that residents benefit from tourism activities and have a say in their development. This approach emphasizes social inclusion by promoting the empowerment of women, youth, and marginalized groups, thereby fostering equitable opportunities. Data collection and analysis can help measure tourism's impact on the community, create active listening and engagement mechanisms, and ensure that tourism contributes to the well-being of all community members.
- **Enhanced experiences**: By utilizing data and smart technologies, Smart Destinations deliver personalized, context-aware and engaging experiences for tourists before, during and after their visit, while also improving public services and spaces for residents. Data enable real-time insights, responsiveness, tailored communication, and the design of value-added services that

meet user expectations while maximizing economic benefits for business and minimizing the local impact

This integrated and governance-led approach ensures that Smart Destinations respond to evolving demands while prioritizing community well-being and long-term sustainability.

2.2 Key elements of Smart Destination Governance

Smart Destinations require continuous adaptation and innovation governance to ensure effective management and smooth implementation of new technologies and innovations. The governance model must focus not only on data management but also on creating an enabling environment that fosters the integration of diverse stakeholders within the tourism ecosystem. It involves the establishment of transparent, inclusive and participatory mechanisms, underpinned by a data-driven approach, working to progress the sustainable development of tourism. At the same time, effective governance plays a critical role in ensuring that technology remains a means to an end rather than an end in itself. This means placing sustainability in its three dimensions, economic, social and environmental, at the core of digital transformation.

Governance frameworks help define the purpose of technological innovation, guide ethical decision-making, and ensure that investments in digital tools are aligned with public interest while defining the role and contribution of all stakeholders. In this way, technology is not deployed for its novelty or complexity, but for its capacity to deliver tangible, positive outcomes across the tourism value chain and the broader destination ecosystem.

Data management and coordination

A central function of Smart Destination governance is the coordinated management of data to support informed and transparent decision-making. To this end, a designated institutional function or coordination mechanism should be established with a clear mandate to oversee data-related activities across tourism ecosystem and related urban systems.

This function should address ethical, technical, legal, political and social aspects of data use, while ensuring alignment with destination priorities and regulatory frameworks. This role is particularly important in contexts where institutional capacity is limited, and where support for skills development and coordination is needed

Key responsibilities include:

- Evaluating current and future data needs in relation to defined policy objectives.
- Coordinating data management strategies and standards.
- Monitoring compliance with data governance policies.
- Addressing ethical, legal and social implications of data use.

- Promoting data quality, interoperability, and transparency.

Data governance models

In this context, Smart Destinations require the creation of a data-sharing culture among stakeholders to support effective decision-making and optimize resource management. Data sharing should be guided by the identification of specific use cases that clearly demonstrate how data can address particular challenges within the tourism ecosystem. To facilitate this, data-sharing platforms can be developed in either centralized or decentralized models, depending on the level of trust required among stakeholders. For use cases in which trust is not a barrier, a centralized platform – such as a data lake – can streamline data collection and access. Alternatively, decentralized platforms can serve as neutral hubs, promoting the creation of federated and sovereign data spaces that incorporate trust mechanisms to ensure stakeholder confidence in the data-sharing process.

Standards and interoperability

The implementation of these data-sharing platforms should align with the best international practices and leverage standards developed by international standards organizations (e.g., the International Telecommunication Union) or global initiatives such as the Data Spaces Business Alliance (DSBA), International Data Spaces Association (IDSA), FIWARE, and the Digital Sovereignty Steering Committee (DSSC). These organizations emphasize the importance of open, interoperable standards, which enable seamless data integration and compatibility across platforms. Additionally, regulatory frameworks must prioritize privacy and confidentiality, mandating the controlled opening of specific data sets, particularly those related to public services and sustainability, while ensuring compliance with data protection laws.

Bridging the SME gap

By adopting such structured and trusted data-sharing mechanisms, Smart Destinations can foster a collaborative environment that benefits all stakeholders – from government entities to businesses and residents, while also helping to reduce the gap between the advanced data capabilities of large corporations and the more limited resources of SMEs. While major tourism operators and digital platforms typically have direct access to real-time data, advanced analytics, and proprietary digital tools, many SMEs lack the infrastructure and the technical capacity to compete in a data-driven marketplace. Through shared digital infrastructures, open standards, and equitable access to key datasets – particularly those generated by public services, Smart Destination Platforms can level the playing field, enabling SMEs to make data-informed decisions, personalize offerings, and improve their operational efficiency. In doing so, SDPs foster a more inclusive digital ecosystem in which innovation and competitiveness are not limited to the most resourced actors but distributed across the entire tourism value chain.

Collaborative frameworks and stakeholder engagement

A fundamental element of governance in Smart Destinations is fostering stakeholder collaboration. Effective governance must go beyond traditional public-private partnerships (PPPs) within the tourism sector by incorporating a broader range of actors, including innovation labs, research centres, accelerators, incubators, technology companies, academia, and the private sector outside of tourism. This cross-sectoral collaboration enhances the innovation ecosystem, creating synergies and economies of scale that benefit the entire destination.

Sectorial sandboxes, or controlled environments for testing innovations, can be established to address specific tourism-related challenges such as developing common data standards or integrating diverse data sources. These sandboxes allow public and private entities to collaborate on pilot projects that can later be scaled up to the destination level.

For Smart Destinations to succeed, stakeholders must understand the opportunities provided by smart tourism solutions and be committed to cooperating on shared goals. Governance frameworks must encourage smooth collaboration, data sharing, and the establishment of common objectives with clear definitions of responsibilities for all actors involved. They must also have clearly defined and transparent roles and responsibilities, as well as a framework by which the various administrations need to coordinate and collaborate at the horizontal (same destination) and vertical levels (national/regional/local).

Public participation and policy integration

Another key feature of Smart Destination governance is the involvement of local communities in decision-making processes. Participatory governance models ensure that tourism development aligns with the needs and aspirations of local residents, thereby enhancing social acceptance and support, as well as ensuring tourism benefits in the community. Residents must be seen as active contributors to the design and management of tourism.

Digital tools should complement, and not replace, offline participation mechanisms to avoid excluding groups with limited digital access.

To encourage public participation, governance models should focus on engaging all territories within the tourism ecosystem, establishing networks and collaborative ecosystems across destinations. This approach allows for a more inclusive representation of diverse areas – municipalities, provinces and regions, where tourism activities take place. By fostering inter-destination cooperation, these networks enable stakeholders from different areas to share insights, best practices and challenges, creating a unified vision that strengthens each destination's governance and operational capacity.

To further enhance participation, open data policies should be implemented, making data collected by public authorities available for re-use by private businesses and civil society. This openness fosters transparency and allows the broader public to engage in decision-making, thereby enhancing

accountability. Public representatives should also be consulted, through data innovations, about their vision on the impacts and the future of tourism development.

In addition, modern governance models must leverage digital tools for interaction, ensuring that the actions of public administrations are fully transparent and that citizens have access to decision-making processes. The digitalization and virtualization of public administrative procedures should aim not just to reduce reliance on physical documentation but also to promote authentic accessibility and knowledge sharing.

Creating a smart tourism ecosystem

Smart Destination governance should reflect a systemic perspective, aligning tourism planning and management with broader urban development strategies and public services such as those seen in smart cities. This systemic approach aligns tourism governance with people-centred smart city and sustainable urban development policies, reinforcing policy coherence and long-term resilience.

To support this, governance frameworks should:

- **Ensure public-public, public-private, public-private-community partnerships and coordination** in the context of whole-of-government approach and vertical coordination.
- **Transparency of data collection and sharing**, as well as full compliance with applicable regulatory frameworks.
- **Ensure the interoperability of digital platforms and tools**, allowing seamless data exchange between different actors within the tourism ecosystem.
- **Encourage public value creation** through improved public services, increased transparency, enhanced data access and fostering a culture of cooperation. Public value can be categorized into operational, policy and social, emphasizing the importance of a strong, holistic and transparent tourism governance structure, where data, and, whenever possible, key KPIs, are made publicly available.
- **Promote transparency and data access**, ensuring that data, especially key performance indicators (KPIs), are defined in a coordinated manner and made publicly available. This openness enhances accountability, supports informed decision-making, and allows tourism stakeholders, including residents, businesses and government entities, to track measure impact, progress and align efforts with sustainable development goals and their application in their destination.

Public value can be divided into four core categories:

- **Operational value**: Improving the efficiency of public services and ensuring optimal use of resources.

- **Policy value**: Enhancing informed policymaking, accountability and transparency, ensuring democratic and transparent data sharing and processes within tourism governance.
- **Social value**: Supporting inclusivity, quality of life, and active citizen participation in the governance process.
- **Economic value**: Enabling equitable economic development by empowering local businesses, especially micro, small and medium-sized enterprises (MSMEs), through improved access to data, financing mechanisms, digital tools, and capacity-building opportunities.

By leveraging the collective strengths of all stakeholders, Smart Destination governance can create a synergistic environment that fosters sustainable, inclusive, innovative and resilient tourism development.

Challenges in governance

One of the main challenges in Smart Destination governance is ensuring smooth cooperation between stakeholders, particularly in terms of data sharing and commonality of intents. This requires a shared governance model that builds on trust, shared goals, and a clear understanding of roles and responsibilities among all parties involved. To support this, it is essential to establish formal and informal spaces for ongoing dialogue, knowledge exchange and joint reflection, allowing stakeholders to align priorities. By addressing these challenges, Smart Destinations can foster an engaged and active smart tourism ecosystem that contributes to their ongoing success and resilience.

Additionally, governance models should include systematic mechanisms to incorporate residents' perspectives into destination management. This includes capturing data on tourism-related externalities, such as overcrowding, noise, mobility disruption, or housing stress, and using these insights to inform public policies that prioritize quality of life.

Challenges that need to be addressed include:

- Defining clear common vision, goals, key performance indicators and benefits.
- Building trust and cooperation among stakeholders.
- Establishing governance, regulatory, and data-sharing frameworks that prioritize privacy but encourage cooperation and openness where necessary.
- Ensuring that public-private partnerships are focused on long-term sustainable development.
- Creating regular opportunities for dialogue, co-creation, and knowledge-sharing among all actors in the ecosystem.
- Ensuring the engagement of all stakeholders, supported by updated, transparent and open communication on results and progress.

3 Governance and collaboration models

3.1 Governance framework for Smart Destinations

Modern governance of destinations such as political and social decision-making at the local level increasingly requires making informed decisions that reflect the demands of citizens and international sustainability standards. Adequate data and information management frameworks are essential to good governance in Smart Destinations, reinforcing the rationale behind key discretionary decisions, which include:

- Smart urban planning and design modifications.
- Fostering active citizen participation.
- Reducing the digital divide.
- Integrating municipal services with regional or national entities.
- Utilizing public data for business innovation.

For Smart Destinations to provide an appropriate technological infrastructure, they require effective local governance. This infrastructure must enable the auditing and efficient management of services to benefit all stakeholders. Furthermore, Smart Destinations must recognize their role in supporting various economic sectors besides tourism. When approached as a critical component of a Smart Sustainable Destination strategy, tourism not only contributes to cost-efficiency and improvements in residents' quality of life but also generates new opportunities for income and employment, so enhancing local prosperity.

While public participation is largely considered best practice, it is crucial to recognize that participation of all people is a governance obligation and rights-based inclusion strategy. This is especially relevant for groups at risk of exclusion, for example informal workers, residents of informal settlements, women, youth, older persons, persons with disabilities, as well as communities affected by congestion or displacement. Any SDP must explicitly include these community groups, with a clear justification as to why, and strategies must also elaborate how exclusion risks are mitigated – for example by offline tools, intermediaries, or community organizations.

Capacity building is an additional element within the Smart Destination governance function and design, and clear strategies must be developed on how institutions, particularly local governments, are strengthened. This means assigning responsibility for skills development, data literacy and change management, and recognizing that governance failure is more likely than technical failure in SDPs, thus requiring detailed attention.

In Smart Destination governance, the promotion of open innovation plays a key role. Collaborative governance models can facilitate this by integrating public private and community stakeholders into the decision-making process. Open innovation builds on an ecosystem that fosters knowledge-

sharing, joint problem-solving and the co-creation of solutions. Such governance models might include creating innovation hubs or networks that connect public agencies, private enterprises, research institutions and local communities. These hubs can serve as platforms for developing and testing innovative ideas, ensuring dynamic and adaptive tourism strategies.

Additionally, adopting public-private-community partnerships (PPCPs) can help bridge the gap between different sectors and actors. These partnerships allow stakeholders to pool resources, share risks and align objectives towards common goals such as sustainability, resilience and inclusivity. For instance, public authorities should provide regulatory frameworks and infrastructure acting as a custodian of public interest, private entities can contribute technological expertise and investment, and local communities can ensure that developments align with their social and cultural values. By leveraging these collaborative approaches, Smart Destinations can create a governance model and structure that not only addresses immediate challenges but also fosters long-term innovation and sustainable growth.

Additionally, SDPs must be governed as part of citywide smart city and digital governance frameworks, ensuring coherence with housing, land-use, transport, environment and basic service policies.

Spotlight: Public-Private-Community Partnerships (PPCPs) in Smart Destination Governance

PPCPs are a cornerstone of effective Smart Destination governance. These partnerships foster cross-sector collaboration by bringing together public institutions, private enterprises, and community stakeholders to jointly design, implement and sustain tourism strategies.

- Public authorities provide infrastructure, regulatory frameworks, and long-term policy direction ensuring public interest orientation. Public authorities should integrate tourism, housing, land-use, mobility, and other urban planning domains, ensuring that data support sustainable planning and management of the sector and its impacts.
- Private entities contribute investment, technological innovation, and operational agility, instrumental in advancing long-term economic prosperity and job creation.
- Local communities ensure that tourism development aligns with their social and cultural values, and community well-being.
- Through PPCPs, stakeholders can:
- Share risks and resources, promoting sustainability.
- Co-create tourism services that are innovative, inclusive and locally relevant.
- Build trust and accountability, improving governance transparency and responsiveness.

By leveraging PPCPs, Smart Destinations not only address challenges but also strengthen long-term social cohesion, innovation capacity, and sustainable growth.

This participatory and multistakeholder approach ensures that governance is inclusive and transparent, enabling Smart Destinations to respond effectively to the evolving demands of the global tourism industry.

3.2 Coordination mechanisms

For a smart destination, governance is key. Consequently, ensuring that the necessary human resources and management and governance bodies, tools and processes are in place to guarantee the correct evaluation of the available information, the appropriate decision-making process, and the essential two-way communication with local tourism companies and citizens, is an essential objective.

It is necessary to define collaboration mechanisms with the management entity that promotes and manages the infrastructure, applications and data that make up the Smart Destination Platforms.

Generally, destinations have bodies that hold the leadership of their tourism governance structure (generally Destination Management Organizations (DMOs). The establishment of a multilevel governance model must rely heavily on these bodies, helping Smart Destination Platforms' services to permeate the entire tourism ecosystem and its stakeholders.

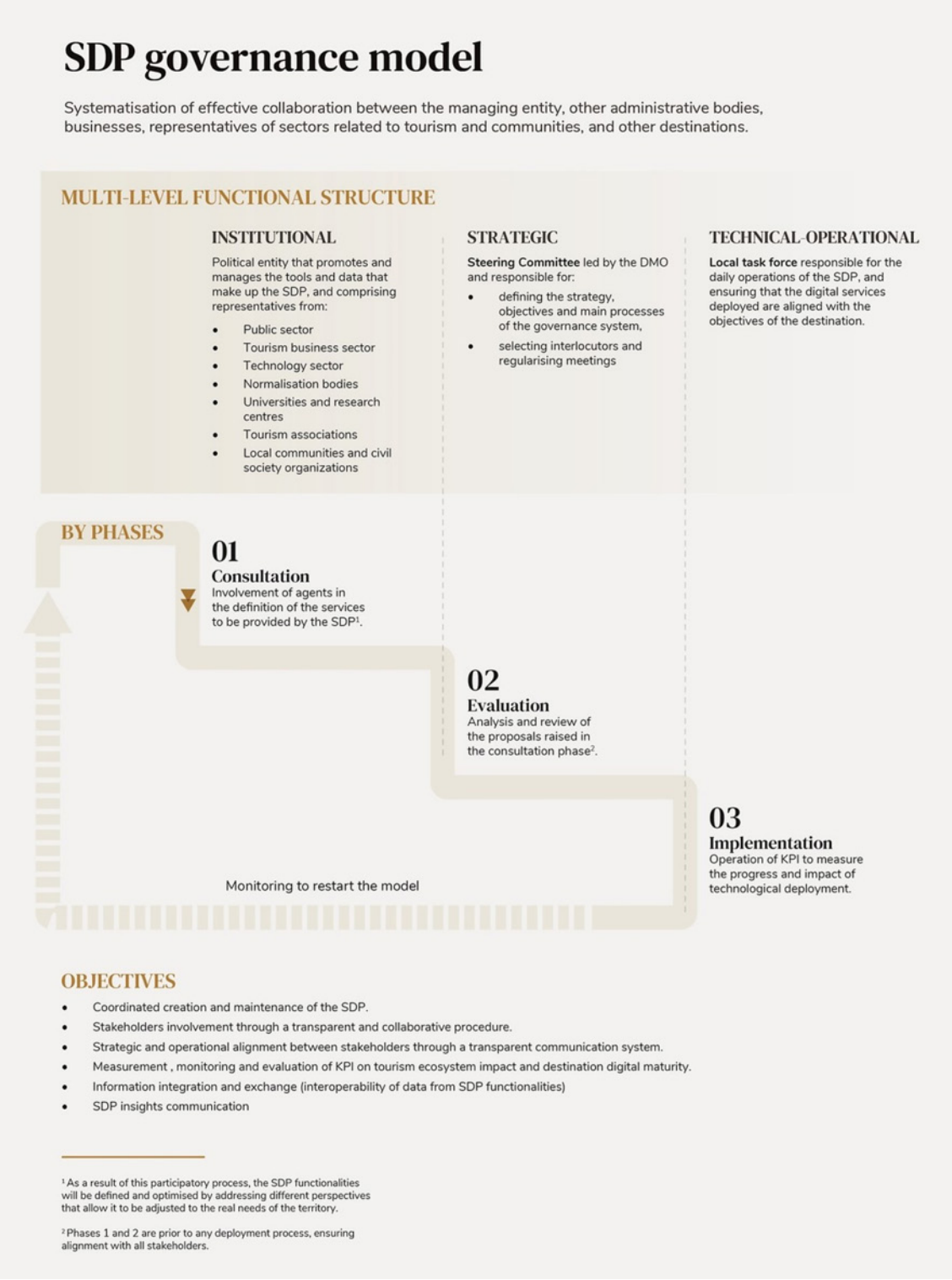
The governance model must, therefore, define a multilevel structure, processes and relationships with the actors involved, identifying their responsibilities and roles.

To this end, the following objectives are suggested:

- To strengthen the work of the planning and managing entity through coordination between key actors for the creation, continuity and maintenance of the SDP.
- To involve stakeholders linked to the tourism activity in destinations, establishing a transparent and collaborative procedure involving experts and representatives of tourism-related sectors, as well as other relevant sectors, and relevant public and private entities.
- To implement a transparent and two-way communication system between the public administration, the DMO and the managing entity, municipal departments, businesses, representatives of the tourism sector and other stakeholders involved, such as community representatives, facilitating interaction and joint work among all stakeholders, thereby ensuring strategic and operational alignment.
- To define key performance indicators, and develop systems for their measurement, monitoring and evaluating their impact on the tourism ecosystem and on the digital maturity of the destination.
- To integrate and exchange information, ensuring the interoperability of the data generated by the SDP functionalities, so that they are reflected to the destination in the form of tourism intelligence that favours decision-making at a local level.
- To communicate and share insights and data emerging from the SDP.

For the achievement of these objectives, it is advisable to define a multilevel functional structure of the governance model:

Figure 2: Smart Destination Platform (SDP) governance model



(Source: SEGITTUR)

4 Platform architecture, data management, and services

4.1 Integrated platform architecture for Smart Destinations

Smart destination platforms must include features that facilitate connectivity, security, the integrated management of systems, and data processing with the aim of supporting public decision-making, accountability and equitable service delivery.

To ensure homogeneity with other destination platforms, they must be aligned with international standards, such as Recommendation ITU-T Y.4200 "Requirements for the interoperability of smart city platforms" or Recommendation ITU-T Y.4201 "High-level requirements and reference framework of smart city platforms", which describe the following characteristics:

Interoperability: Ability to support, integrate and communicate with different technologies, devices and information capture mechanisms, and communication standards, as well as other internal and/or external information systems. Capacity for the integration of new data sources and new services, capable of evolving easily for the incorporation of new intelligent services.

Horizontality: Ability to support different application areas, so that the simultaneous implementation of multiple services in the same infrastructure is possible.

Performance: Ability of the system to handle, efficiently and in real time many devices, services and processes.

Security: System guarantees in terms of security, privacy and trust.

Scalability and modularity: It must be designed using a modular and scalable architecture, preferably using existing functional blocks on the market, from open sources and widely supported by the community of developers and platforms, so that it can easily incorporate new functional modules that may be required in the future (horizontal scalability), as well as scalable in terms of the number of elements (e.g., devices, computing and storage capacity, users, profiles) that may be required (vertical scalability).

Operational continuity or availability, resilience and recovery capacity: It must be robust, having the ability to cope with setbacks and failures that may occur while remaining operational (at the functional, load-handling, and performance levels) through the appropriate procedure for recovery and error handling, generating the corresponding logs and informing users of a possible situation of temporary unavailability of the system, allowing redundancy, backups, rapid lifting of microservices or virtual machines, and so on.

Flexibility: Ability of the platform to work with different intelligent services of the destinations.

Extensibility: Ability of the platform to be extended to support new needs, allowing, *inter alia*, the integration of new data sources, the incorporation of new services to the intelligent services layer,

modules, plugins, connectors, protocols and APIs, so that it not only supports current services and data sources, but does not limit the use of the platform in the future.

Semantic interoperability: It should adopt the formats and representation models defined for the "tourism" domain (objects, classes, attributes and relationships) that allow standardized interoperability between platforms and, therefore, between destinations, with common semantics, and should be able to adopt, in a managed manner, the different evolutions of the tourism sector's ontology network.

Semantic interoperability is essential to ensure that data originating from different systems, sources and stakeholders – such as accommodation registries, event calendars, mobility services or environmental monitoring systems – can be understood, interpreted and processed in a consistent way. This is especially critical in the tourism domain, where actors operate with heterogeneous vocabularies, legacy systems and data structures. For example, aligning data on "occupancy" across municipal lodging platforms and private booking engines requires not just technical connection, but common meaning. Technically, semantic interoperability translates into the use of shared data models, ontologies, controlled vocabularies, and metadata standards that enable automated reasoning and machine-to-machine understanding. Within the Recommendation ITU-T Y.4201 reference model, semantic interoperability must be embedded in the Knowledge Layer, where information is contextualized and enriched, as well as in the Interoperability Layer, where integration rules and protocols are defined. Relevant standards and frameworks that can support semantic interoperability in tourism include UNE 178503 (on Smart Destination semantics),[5] W3C's RDF and OWL,[6,7] schema.org,[8] the SEGITTUR Tourism Ontology,[9] and the UNWTO's Tourism Data Vocabulary within Tourism Statistics Database.[10]

Data lifecycle management, governance, analytics, and big data capabilities: The platform is capable of integrating high volumes of data generated from multiple heterogeneous sources. It supports the formal definition and management of datasets, including their ingestion frequency, resolution, retention policies, availability levels, reporting requirements, and controlled provision to end users (applications or users).

Based on open standards: This simplifies integration with other platforms and the development of applications on the platform that can be re-usable and portable between different platforms.

Integral: The platform must work as a whole, not as decoupled pieces that are not ready to work together.

Operable and manageable: The platform must be easy to manage, operate, maintain and install.

5 https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma?c=N0068062
6 https://www.w3.org/RDF/
7 https://www.w3.org/TR/owl2-syntax/
8 https://schema.org/
9 https://www.segittur.es/wp-content/uploads/2023/09/Ontologias_documento-de-divulgacion.pdf
10 https://www.untourism.int/tourism-statistics/tourism-statistics-database

Accessible and usable: The platform must incorporate the necessary elements so that the highest percentage of users can make use of the applications and tools made available to them.

4.2 Digital Services of a Smart Destination Platform

Regardless of the size and scope of destinations, Smart Destination Platforms should define a series of digital services that can be useful for tourist ecosystems.

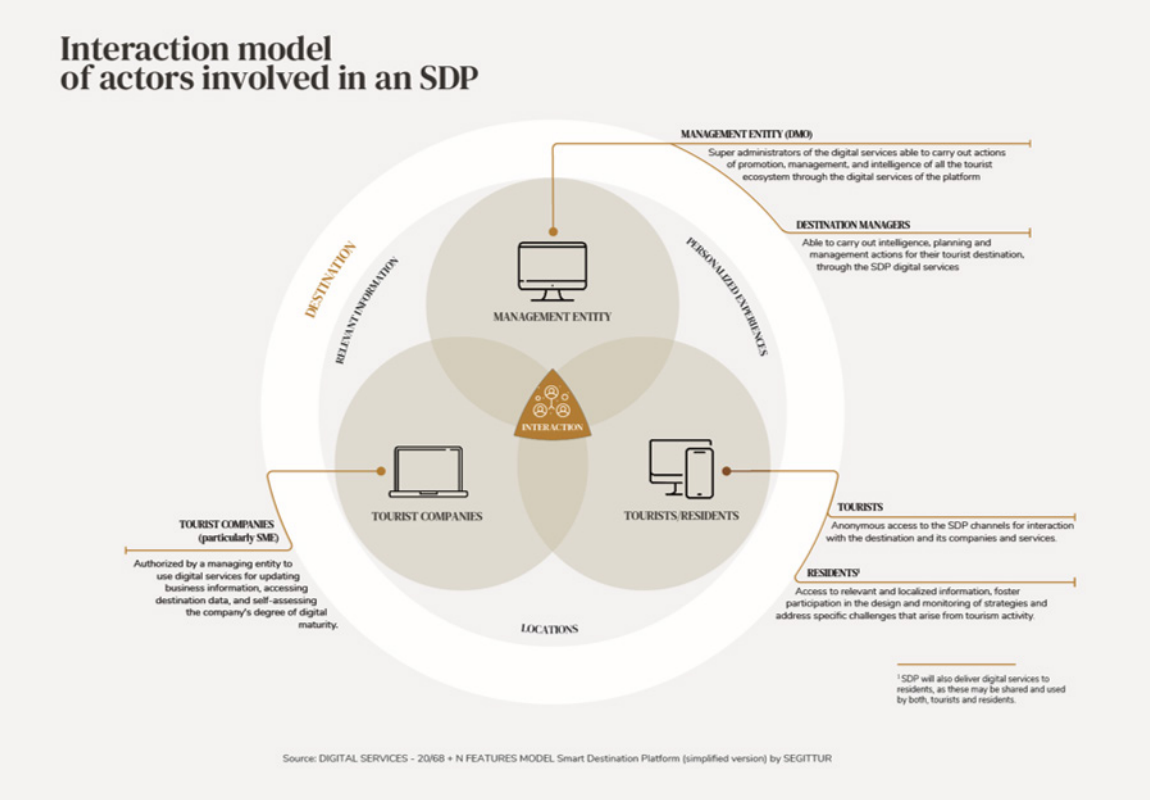
Although residents are often considered indirectly within tourism planning frameworks, Smart Destination Platforms must explicitly recognize them as primary users and beneficiaries of the platform's digital services. To this end, SDPs should integrate features that enable residents to:

- Monitor tourism impact in real time (e.g., levels of congestion in key areas, waste management pressures, air quality or noise pollution).
- Submit feedback or report issues directly linked to tourism flows such as overcrowding, illegal short-term rentals, or accessibility concerns.
- Access transparency dashboards that display how tourism revenues are reinvested in public services and infrastructure.
- Participate in consultation processes or co-creation initiatives for public policy design.

For example, a platform might provide a resident dashboard showing tourist density forecasts, local event calendars, or alerts related to urban services affected by high visitor volumes. By aligning these services with public interest, SDPs can support evidence-based policymaking that mitigates tourism-related externalities, fosters community well-being, and ensures that tourism development remains socially sustainable.

In addition to resident-facing features, Smart Destination Platforms should define clear access, permissions, and typical interactions for each user group represented in the interaction model:

Figure 3: Interaction model of actors involved in an SDP



(Source: DIGITAL SERVICES – 20/68 + N FEATURES MODEL Smart Destination Platform (simplified version))

For these users, digital services will comprise a knowledge infrastructure that supports the homogeneous digital transformation of the tourism ecosystem. Clear access tiers – anonymous, registered individual, verified organization – should be enforced through role-based access control (RBAC), with audit trails and, where possible, single sign-on (SSO) using OAuth2/OpenID Connect.

Consequently, digital services should address a planned evolution process of their technological and analytical capabilities, spanning from the digitization of the value proposition to the analysis of data and the creation of projections that allow for simulations and scenarios.

This guide proposes the following levels as a reference path towards the digital maturity of the tourist ecosystem:

1. **Establishment of a strong digital core that will serve as the foundation for all destination planning, management and communication activities**: This is achieved through the implementation of professional portals and content management systems, which improve operational efficiency and end-user experience. The aim should be to create an interconnected digital ecosystem that optimizes the experience of tourism professionals and visitors alike. Digital services that enable the coordinated management and promotion of the destination along with platforms and systems that allow the collection, analysis and dissemination of relevant information are convenient.

2. **Activation of digital services specifically designed to reach tourist source markets**: Mobile apps, online booking modules and in-destination feedback tools are key elements to attract and satisfy visitors.

   The objective should be to foster a seamless and frictionless tourism experience through digital services that ensure a smooth, informative and enriching tourist interaction, and to enhance the involvement of the local community and tourism companies in the promotion and development of the destination.

3. **Data and intelligence for strategic decision making and predictive planning**: The use of dashboards, advanced analytics and data repositories are essential to understand trends, forecast future demand and proactively adapt the tourism offer, as well as relevant polices. Deployment of digital services enables simulations and the understanding of the present through the development of data mining systems that integrate and analyse information from multiple sources, thus becoming the core of tourism intelligence and allowing information sharing among entities.

It should be noted that, while presented in this order, effective destination planning actually relies on the inverse sequence: data intelligence (3) depends on the digital interaction with tourists enabled by specific services (2), which in turn require a solid foundation of digital content and systems (1). This highlights that destination planning is the crucial end for Smart Destination Platforms; and yet, its success ultimately rests on high-quality digital content and meaningful tourist interactions that feed the intelligence layer.

Between levels two and three, it is advisable to deploy additional services to sensor spaces and improve tourist interaction. The data collected from these tools is a valuable input for level three digital services.

Furthermore, additional services aimed at continuous improvement and adaptation to changes and emerging needs should be considered to ensure that the ecosystem can keep up with the changing expectations of tourists and residents.

This digital maturity approach is suggested, in order to build upon established infrastructure and capabilities with digital services that enable incremental and manageable progress, thereby ensuring that ecosystems can adapt to digitization without compromising the existing operations or the quality of the tourism experience.

4.3 Data infrastructure and management

It is necessary for Smart Destination Platforms to have a layer-based infrastructure, similar to that described in the international standard ITU-T Y.4201 High-level requirements and reference framework of smart city platforms and shown below in Figure 4, in which the following capabilities are provided:

Acquisition Layer:

a) Integrate information from different data sources (integrated and interoperable data collection systems), which may include:

- Sensors, actuators, gateways and devices such as traffic lights, buildings, weather stations.
- Personal mobile devices, vehicles or digital devices.
- Social networks.
- Other information technology (IT) systems such as SCADA (Supervisory Control and Data Acquisition) or vertical domain management solutions.

b) Provide information to data/knowledge functions independently of devices and normalize acquired data according to semantic processing.

c) Acquisition functions are independent of network information and control.

They must support:

- Independent end-to-end services to access devices.
- Communication interfaces, APIs, and open standard protocols.
- Security and surveillance.
- Discovery and access to IoT/machine-to-machine (M2M) applications.
- Device and application identification and naming.
- Management aspects (including remote management of entities).

Knowledge Layer:

Will have capabilities to collect, process, manage and use information. It will allow:

a) The integration of information from external systems and computer systems.

b) Access to all information (historical and real time).

c) Make available data received from the Acquisition and Interoperability Layer, allowing storage, processing and retrieval, and being able to provide this information in the Service Layer.

d) Support for real-time processing of data received from the Acquisition and Interoperability Layer through modules with complex event processing engines (CEP), rules engines.

e) Support for batch handling of incoming data using Extract, Transform Load (ETL).

f) Support for analytical data processing through business intelligence tools, and so on.

g) Support for Geographic Information System (GIS) data processing to enable geolocation, and spatial queries.

h) Data access security, to control which user/role/profile accesses which data.

i) User identification mechanisms: the Knowledge Layer should incorporate user identification mechanisms that enable authentication and authorization based on predefined profiles, roles or permissions. These mechanisms are essential to ensure the security and confidentiality of the managed information, allowing for granular control over who can access, modify or manage specific datasets. Identity management should be integrated with the platform's security systems and may rely on open standards and interoperable solutions to facilitate implementation and maintenance.

It is recommended that the Knowledge Layer includes components that enable semantic data processing, normalizing the information to a tourism ontology, including data management and analysis.

Interoperability Layer:

It must have the necessary interfaces, APIs, and communication chains to offer smart destinations the provision of information, data, and services; for this, it will allow:

- Interconnection between applications and platforms.
- Access to the platform by external services.
- Publication of an open data portal that can be used from the service support functions.
- Creation of services within the support functions.
- Secure access to APIs, interfaces, etc.

APIs should follow the general trend of representational state transfer (REST) APIs. In addition, standards such as Next Generation Service Interfaces (NGSI) may also be considered. APIs are recommended to support different modes of data access, including push (subscription and notification) and pull (request and response). It is also recommended to support geo-referenced queries. Information moved and received through this interoperability layer should, to the extent possible, use tourism semantics and ontology. A tourism ontology is, therefore, recommended as a prerequisite for the implementation of Smart Destination Platforms, serving as a common semantic framework to ensure consistent data exchange and interpretation across layers and services.

Intelligent services layer

This layer of the infrastructure will allow the tourist value applications and digital services to be made use of by having:

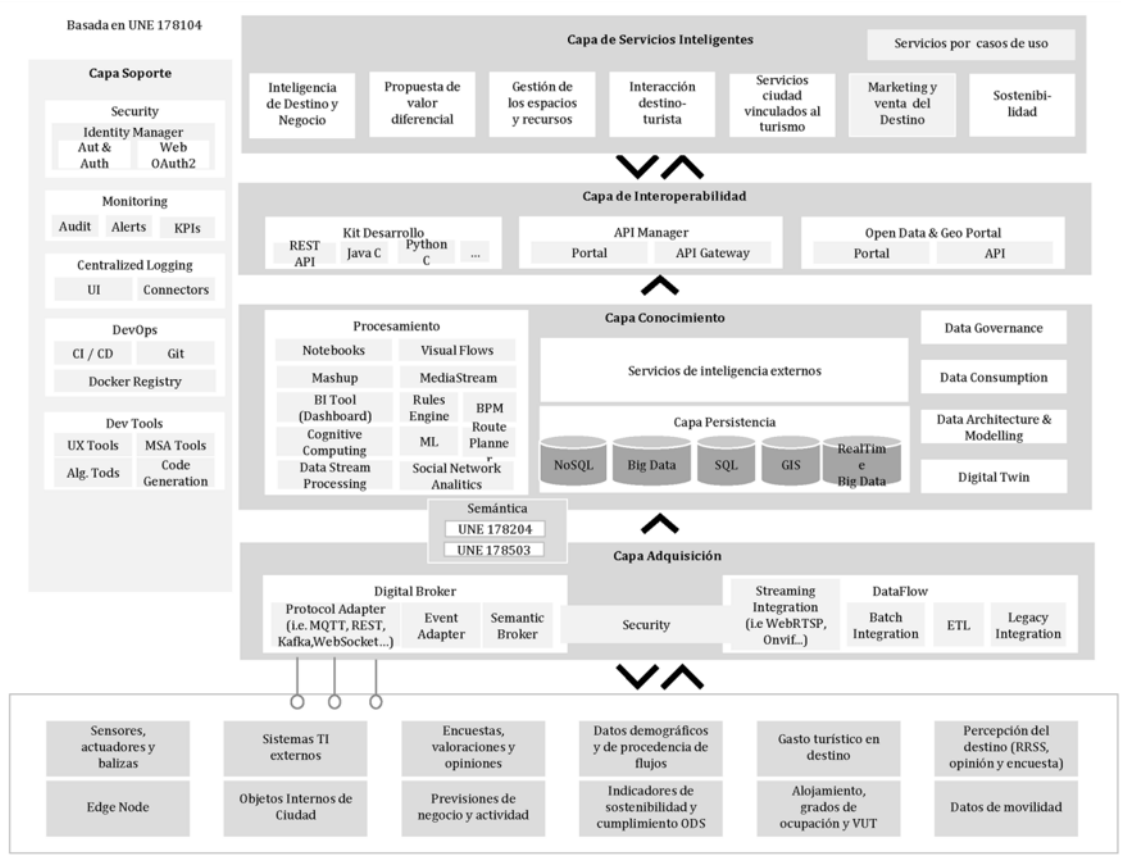
a) Support for digital services and external applications.

b) Management centres are deployed according to user profiles and permissions.

c) Integrated maintenance contract management application, including Service Level Agreements (SLAs) based on actual data.

The developed services will access data from other services such as data from the Knowledge Layer, through functionalities of the Interoperability Layer, as well as the Knowledge Layer.

Figure 4: Layer-based infrastructure model



(Source: SEGITTUR, own elaboration. UNE 178511:2023, Guide for the implementation of the Smart Destination Platform layer model)

4.4 Data spaces: knowledge, sharing, and experimentation

Existing Data Spaces initiatives from international organizations such as International Data Space Association (IDSA) and Gaia-X would also enrich the IT Architecture Layer since these organizations provide standards for a data exchange reference architecture, including a governance model and adoption strategy that ensure vital issues such as trust, security and sovereignty.

This interoperability mechanism, which allows resource and data sharing, consists of a multilevel reference architecture that begins at a bottom level, but allows the merger of different data

spaces of the same sector of activity to give place to an industrial data space. From this level, the generation of improved services that either increase sales or reduce costs is easier through a collaborative process. This kind of structure allows certain sectors like tourism to make a better case for implementing such interoperability mechanisms given not only their shared public and private nature, but also their multisector reach, constituting an improved resource- and data-sharing method that tackles a great current challenge for digital transformation.

To support implementation, the following checklist outlines essential elements for building a trusted data space in Smart Destinations:

Category	Action Point
1. Governance	☐ Define clear roles and responsibilities for data owners, users and stewards.
	☐ Establish a multistakeholder governance body (public-private-community) for oversight and strategy.
2. Legal & Ethical	☐ Ensure compliance with data protection regulations (e.g., GDPR, national laws).
	☐ Incorporate privacy-by-design principles into platform and service architecture.
3. Interoperability	☐ Adopt open standards and tourism-specific ontologies (e.g., UNE 178503, SEGITTUR, schema.org).
	☐ Enable semantic interoperability to ensure consistent data interpretation across systems.
4. Data Sovereignty	☐ Define clear rules on data access, ownership and re-use.
	☐ Ensure mechanisms for local data control and sovereignty, especially for sensitive or personal data.
5. Security & Trust	☐ Implement encryption, access controls, and identity management protocols.
	☐ Define breach-response procedures and conduct regular audits.
6. Technical Architecture	☐ Establish layered architecture (acquisition, knowledge, interoperability, intelligent services).
	☐ Support real-time and batch data processing, with modular and scalable infrastructure.
7. Data Sharing & Access	☐ Design APIs and data exchange interfaces that support secure, controlled sharing across actors.
	☐ Set up consent management systems and user-facing dashboards for transparency.
8. Community Engagement	☐ Involve residents and local stakeholders in co-design and validation of use cases.
	☐ Ensure data spaces benefit local communities and enable inclusive participation.

4.5 Data security and privacy

Smart Destination Platforms must prioritize the implementation of strong cybersecurity protocols and ethical data governance to ensure the responsible use of information. Beyond technical robustness, building user trust requires platforms to demonstrate transparency, accountability and respect for individuals' data rights.

To align with existing regulations on personal data protection, platforms should adopt a proactive and preventive approach. This includes integrating all relevant legal and ethical requirements into the design of systems and services, so ensuring that personal data are processed lawfully, fairly and for clearly defined purposes. Platforms must also provide users with accessible mechanisms to exercise their rights – such as access, rectification or deletion of data, and establish internal procedures to manage risks, breaches and third-party access.

By adhering to these principles and continuously reviewing compliance strategies, SDPs not only fulfill regulatory obligations but also strengthen public confidence in data-driven innovation.

Legal framework and principles

Globally, data privacy is a fundamental right supported by various legal frameworks and international agreements. These frameworks emphasize the importance of protecting personal data, ensuring informed consent, minimizing data collection, and implementing robust security measures to safeguard individual rights and privacy.

Key principles to guide SDPs in data privacy include:

- **Privacy by design and default:** Embedding privacy considerations into platform development, ensuring privacy settings are enabled by default.
- **Data minimization:** Collecting only data necessary for specific purposes, in order to reduce exposure to privacy risks.
- **Transparency and consent:** Clearly informing users about data collection practices and providing mechanisms to obtain their consent.

Efforts across the globe aim to balance the free flow of information with stringent privacy protection, ensuring that data-driven innovation does not compromise individual rights. The adoption of international standards helps create a harmonized approach to managing data security and privacy.

Challenges in data privacy

The exponential growth of data, driven by IoT devices, digital platforms, and real-time services, has led to challenges in managing consent, anonymizing data and preventing misuse. For example:

- **Profiling and behavioural analysis:** Techniques like data mining reveal patterns of behaviour such as travel habits or energy consumption, raising concerns about intrusive profiling without explicit consent.
- **Anonymization and dissociation:** Ensuring that personal data cannot be linked back to identifiable individuals is a technical and operational challenge.

The development of Smart Cities adds further complexity by processing diverse information types, including geolocation, traffic, energy consumption, and environmental data. Much of this falls under data protection laws, requiring informed consent for collection and use. Balancing efficiency and privacy remain a core challenge.

Best practices for data security and privacy in SDPs

To address these challenges, SDPs can adopt the following best practices:

1. **Data encryption:** Employ advanced encryption techniques to protect data during transmission and storage, ensuring unauthorized entities cannot access it.
2. **Anonymization and pseudonymization:** Utilize methods to remove or obfuscate personal identifiers, enabling data analysis while safeguarding individual identities.
3. **Consent management:** Implement systems to collect, track, and manage user consent efficiently, ensuring compliance with regulations.
4. **Secure data sharing:** Establish controlled access mechanisms such as federated data spaces, for safe and trusted sharing among stakeholders.
5. **User-centric privacy controls:** Provide users with the ability to view, modify, and delete their data, reinforcing their control over personal information.

Regular audits and compliance checks: Conduct periodic reviews to ensure adherence to data protection laws and industry standards.

Ethical considerations in data management

While legal compliance is essential, ethical considerations are equally important for fostering trust and public acceptance. SDPs should ensure that:

- Data are used to benefit communities, enhancing quality of life and supporting sustainable development.

- Transparency is maintained in data processing practices to avoid deceptive or manipulative activities.
- Mechanisms are in place to mitigate unintended consequences such as bias in AI algorithms.

The role of government and private sectors must also be clearly defined. Legislation should facilitate innovation without compromising fundamental rights. For example, profiling – such as using Near Field Communication (NFC) technology for travel habits or energy consumption data for lifestyle insights – must be regulated to ensure it is conducted with user consent or anonymized for public interest purposes.

5 Roadmap for digital transformation of Smart Destination Platforms

5.1 Phases of the digital transformation of a destination through an SDP

The digital transformation of a Smart Destination requires a structured, multiphased approach to ensure that all aspects of the destination's operations are integrated and aligned with the overarching goal of becoming a smart, sustainable and competitive tourism destination. This guide is designed to provide a comprehensive framework for the digital transformation of prospective Smart Destination Platforms, offering a structured, step-by-step approach to facilitate the process. Figure 5, below, summarizes the entire process.

Nevertheless, prior to initiating the digital transformation process, the destination will establish a clear governance structure and define the objectives of the development. The purpose of the platform will be explicitly set to ensure its effectiveness. As a first step, the questions to be addressed by the platform shall be identified, and the data required to provide answers to those questions shall be defined. With this foundation, destinations are better equipped for their digital transformation.

STEP 0 – Governance and Institutional Readiness

Destinations should begin by establishing the institutional conditions required for the successful implementation of a Smart Destination Platform. This foundational step is critical, as institutions are the true drivers of transformation. A Smart Destination Platform should therefore not be understood merely as a technological solution, but as an instrument to strengthen destination governance, enhance evidence-based decision-making and support coordinated action across the tourism ecosystem.

This requires ensuring that the institutions responsible for the platform have the necessary capacities, mandates and coordination mechanisms to lead, manage and sustain it over time. Governance should therefore be placed at the core of the roadmap, as it determines how the platform will be

owned, operated, used and embedded within the destination's broader strategic and institutional framework.

STEP 1 – Situational analysis and strategic framing

The digital transformation journey of a destination should begin with a comprehensive situational analysis such as a SWOT analysis, to identify the internal strengths and weaknesses, as well as external opportunities and threats related to digitalization in tourism. This initial assessment allows the destination to understand its baseline and strategic position to define clear goals and priorities for the development of a Smart Destination Platform (SDP). Once these objectives are clearly set, the destination should identify the specific challenges and questions the platform is intended to address, for the tool to be truly effective. Defining these questions, along with the indicators and the data required to answer them, should be the preliminary step. Such goals and needs should be co-created as indicated above when discussing the governance of SDPs. With clear goals and data needs established, the subsequent phases of the digital transformation can be aligned to meet these objectives, so ensuring a more focused and purposeful implementation.

The situational analysis should also assess the social impact of tourism on residents, including their perception of tourism-related changes and their level of acceptance of the move towards digital transformation. Understanding local sentiment, potential areas of friction, and quality-of-life indicators enables destinations to define goals that are socially inclusive and responsive to community needs.

STEP 2 – Diagnostic and stakeholder readiness assessment

Once strategic priorities are outlined, a more technical diagnostic assessment should be conducted to evaluate the current digital landscape. This includes identifying existing technologies, reviewing data infrastructure, assessing digital maturity levels, and mapping available datasets. Equally important is evaluating the readiness of key stakeholders such as public authorities, businesses, and local communities, to participate in and benefit from the transformation. This phase ensures the implementation strategies are grounded in realistic capabilities, highlighting gaps and opportunities for capacity building and technological integration.

Pain points:

- Lack of baseline data or outdated diagnostics
- Misalignment between tourism strategy and digital vision
- Low resident trust in digital initiatives

Success factors:

- Co-creation with local stakeholders from the start
- Alignment with long-term sustainability and inclusion goals
- Early identification of community tensions or "red zones"

Lessons learned:

Begin with social listening and map *both* digital and social readiness. Digital transformation is as much about culture as it is about technology.

Pain points:

- Siloed data systems across government agencies
- Uneven digital capacity among SMEs or local government teams
- Resistance to change from traditional tourism operators

Success factors:

- Use maturity models to assess digital infrastructure, human capacity and interoperability gaps
- Include "soft infrastructure" such as training and communication protocols in the diagnostic

Lessons learned:

An accurate readiness assessment avoids over-promising and under-delivering. Build the strategy on the terrain, not in abstraction.

STEP 3 - Strategy development

With the insights gained from the previous phases, the destination can move on to defining a clear, actionable digital transformation strategy. This strategy must be closely aligned with the broader tourism vision and objectives, including the Sustainable Development Goals, with the ultimate objective of enhancing visitor and resident wellbeing. The strategy should identify how the Smart Destination Platform will contribute to assess and monitor destination objectives, as well as solving specific destination challenges, leveraging technologies such as IoT, artificial intelligence, data analytics and cloud computing. It should also outline a stakeholder engagement plan, ensuring meaningful participation from public and private actors through a participatory approach.

At this stage, the governance structure outlined earlier should be operationalized, with clear roles, responsibilities and coordination mechanisms defined to support platform implementation and evolution.

To maximize the early value of the platform, destinations should consider a prioritization framework for functionality deployment, balancing strategic objectives with operational feasibility. This may include identifying "quick wins" with high visibility or immediate impact, alongside foundational services required for long-term scalability – such as data integration layers, citizen feedback tools, or mobility dashboards.

Pain points:

- Overambitious digital strategies with unclear operational roadmaps
- Difficulty aligning multiple stakeholders' interests and timelines
- Lack of consensus on governance responsibilities

Success factors:

- A phased roadmap with clear "quick wins" and scalable modules
- Stakeholder engagement plan with defined responsibilities, incentives, and communication flows
- Use of a prioritization matrix (impact vs feasibility) for selecting services

Lessons learned:

Start small but think long term. Strategies fail when they try to solve everything at once. Balance ambition with implementation capacity.

STEP 4 - Implementation

The implementation phase marks the stage at which the strategic plan is operationalized and executed. This phase involves the deployment of digital tools, systems and platforms necessary to create a Smart Destination Platform. Key components include the installation of IoT devices for data collection, the development of digital interfaces for visitors and residents, and the integration of data-sharing platforms that allow for collaboration between public and private stakeholders. In this phase, SDP managers must ensure interoperability between different systems and seamless data flows across platforms. This requires careful coordination between technology providers and the destination's governing bodies.

Pain points:

- Integration difficulties between legacy systems and new platforms
- Procurement delays or lack of qualified tech vendors
- Insufficient testing or user onboarding before launch

Success factors:

- Agile implementation using pilots or sandbox environments
- Dedicated cross-functional implementation team (tech, tourism, data)
- Clear SLAs with tech providers and performance baselines

Lessons learned:

Interoperability is a process, not a plug-and-play solution. Budget for iterations, integration and training.

STEP 5 - Monitoring and evaluation

Once the SDP is operational, continuous monitoring and evaluation are needed to measure its effectiveness and impact. This phase involves the use of performance metrics to track progress against the goals set during the strategy development phase. Data analytics tools can be used to monitor visitor and resident satisfaction, environmental, cultural and social impact, and economic performance in real time. Regular evaluations should be conducted to assess whether the platform is meeting its objectives and to identify any areas where improvements can be made.

Pain points:

- KPIs not aligned with original goals or lacking clear ownership
- Poor data quality or inconsistent reporting mechanisms
- Limited capacity for interpreting and acting on insights

Success factors:

- Use dashboards to visualize and communicate progress to all stakeholders
- Define baseline metrics *before* implementation begins
- Include **quantitative** and **qualitative** indicators

Lessons learned:

Measurement should be built into the platform – **not bolted on afterwards**. If you cannot measure it, you cannot optimize it.

STEP 6 - Continuous optimization

The final phase of digital transformation is continuous optimization. This involves the ongoing refinement of the Smart Destination Platform to ensure it remains aligned with the changing needs of the tourism sector, residents and visitors. As new technologies emerge and the destination's needs evolve, the SDP must be flexible enough to incorporate these changes. Continuous optimization also involves the regular updating of digital tools and systems to ensure that they are performing efficiently and effectively. In this phase, feedback from stakeholders allows Smart Destinations to identify opportunities for improvement and ensures the platform continues to deliver value over time.

Pain points:

- Platform stagnation once launched ("set and forget" syndrome)
- Changing leadership or lack of funding for long-term platform maintenance
- Technology outpacing the platform's architecture

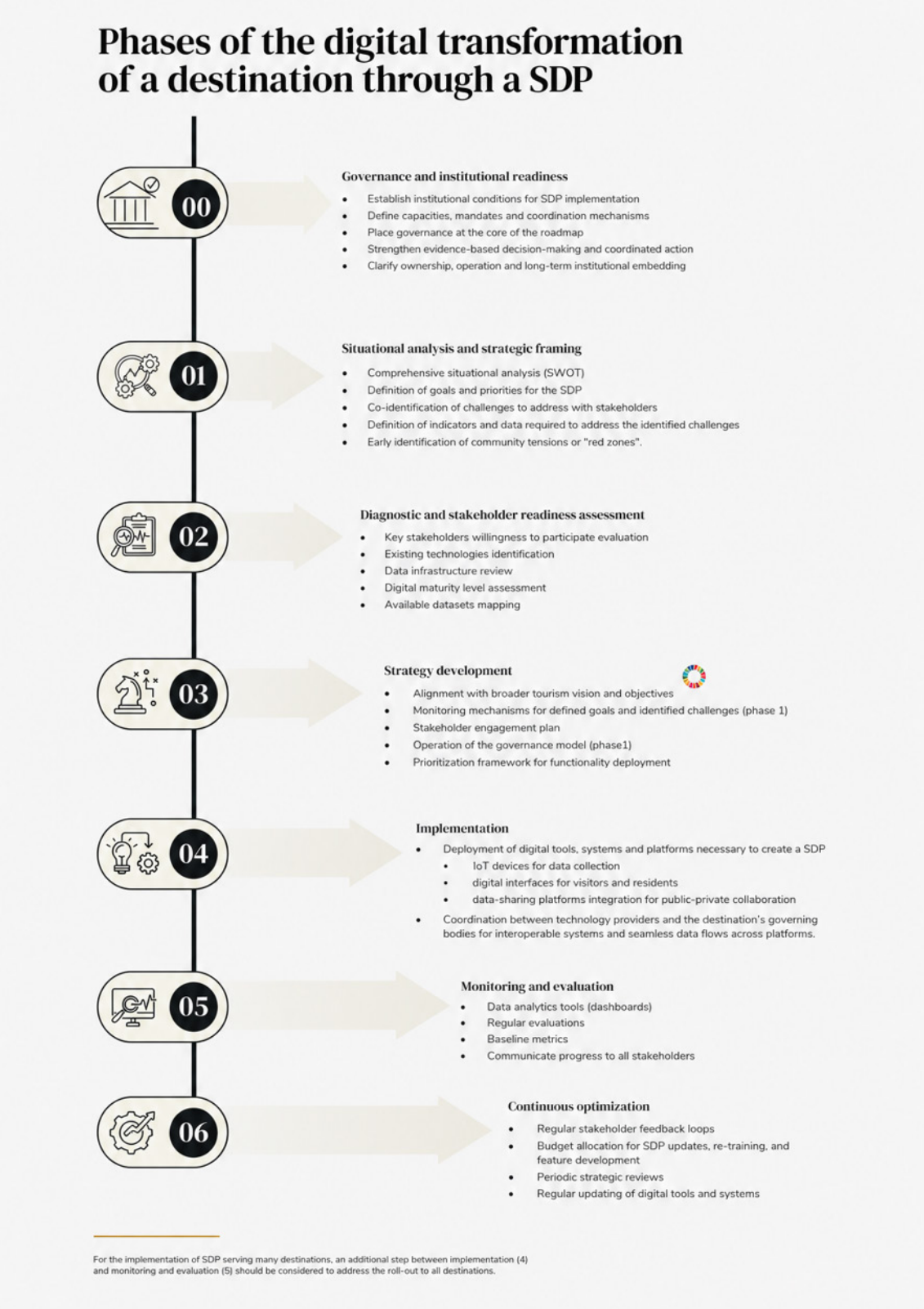
Success factors:

- Regular stakeholder feedback loops, including, tourists, residents and SMEs
- Budget allocation for platform updates, re-training, and feature development
- Periodic strategic reviews (e.g., every 12–18 months)

Lessons learned:

The platform should evolve with the territory. Optimization is not about perfection but about *staying relevant*.

Figure 5: Phases of the digital transformation of a destination through an SDP



(Source: SEGITTUR, own elaboration)

Evaluation of digital maturity

In the digital transformation of a tourism destination, a thorough evaluation of its digital maturity must be carried out. This process assesses the destination's readiness to adopt and integrate digital technologies, while identifying the most critical areas for improvement and development. Digital maturity evaluations serve as a baseline for strategic planning as they ensure that destinations can successfully navigate the complexities of the digital transformation process.

A key component of this evaluation is assessing various dimensions of the Smart Destination Platform to gain insights into areas that need improvement for optimal performance and digital readiness.

Furthermore, aligning digital maturity assessments with the KPI framework outlined in the following section can help destinations identify measurable gaps and track progress over time. This ensures that strategic planning is directly linked to performance monitoring, reinforcing accountability and adaptive decision-making. Ultimately, digital maturity should be understood as an institutional, not purely technological, capacity: a destination with simple tools but strong governance may be more "digitally mature" than one with advanced systems but weak institutions.

Culture of innovation

A fundamental dimension of digital maturity assessment is a destination's readiness to embrace a culture of innovation and digital transformation. This involves evaluating how open the destination is to adopt new technologies, processes and innovative solutions. It also measures the destination's ability to foster experimentation and innovative thinking among stakeholders. A high level of innovation readiness indicates a flexible and proactive approach to change, which supports the successful implementation of smart solutions and competitiveness in an evolving industry.

Connectivity

A Smart Destination Platform should assess its connectivity infrastructure, including the robustness of its technological system and the capacity for effective data management and sharing. Connectivity assessments examine the presence of advanced technologies such as Internet of Things (IoT) devices and cloud-based platforms, and the ability to integrate and analyse data from multiple sources. Effective connectivity and data management are key drivers for informed decision-making, so ensuring seamless operations across the destination, and improving visitor and resident experiences.

Customer

The key focus of the digital transformation lies in delivering enhanced experiences to visitors and residents, who are central to the destination's value proposition. This dimension evaluates the destination's ability to design and deliver meaningful, personalized experiences that cater

to varied customer preferences. It also considers the customer involvement in co-creating value, fostering a sense of engagement and building long-term relationships. This may result in tailoring services based on feedback and data analytics with the aim of improving customer satisfaction and encouraging repeat visits.

In addition to end users, local businesses should also be recognized as key customers and users of the Smart Destination Platform. Through access to strategic data, digital tools and shared services, businesses – particularly SMEs – can optimize operations, personalize offerings and better engage with their target markets. Including the business community within the customer dimension of the SDP ensures that the platform not only enhances the visitor experience but also strengthens the competitiveness and digital maturity of the local tourism ecosystem as a whole.

A complementary dimension of maturity assessment should evaluate the destination's capacity to engage residents as active stakeholders. This includes monitoring satisfaction levels, participation in governance processes, and the extent to which community-generated data are integrated into strategic planning. Resident-centric maturity is key to fostering a balanced and socially sustainable digital ecosystem.

In this context, a variety of methodologies, frameworks and tools can be employed to guide destinations through the assessment process, each providing insights into current digital capabilities and highlighting potential challenges that may arise during the transformation.

Self-assessment tools

Many destinations begin their digital maturity evaluation leveraging self-assessment tools. These tools guide destinations through a series of questions related to technological infrastructure, data management practices, stakeholder involvement and governance frameworks. This self-assessment approach results in localized and customized indicators with the aim of providing destination management organizations (DMOs) and local authorities with tailored feedback and guidance on where to focus their digital transformation efforts. In addition, a well-designed self-assessment tool for Smart Destinations can facilitate benchmarking against other destinations and monitor progress over time.

External audits and benchmarking

For a more in-depth evaluation, destinations may consider commissioning audits conducted by independent experts. These tools provide a comprehensive assessment of a destination's digital capabilities, offering an objective and structured analysis. Moreover, benchmarking against other destinations enables comparisons that help identify best practices and areas needing improvement. This comparative approach provides a broader understanding of how a destination performs relative to global peers.

International framework compliance

A comprehensive approach to digital maturity should consider alignment with international frameworks. For instance, the certification for Sustainable Smart Destinations is guided primarily by ISO 37106 and ITU-T Y. 4903, which provide guidance for implementing smart city operating models aligned with the Sustainable Development Goals. This certification allows destinations to demonstrate their progress in integrating digital technologies with sustainable tourism practices, while enhancing their global credibility and competitiveness.

Additionally, the United for Smart Sustainable Cities (U4SSC) initiative[11] offers key performance indicators (KPIs) specifically designed to align with the Sustainable Development Goals (SDGs).[12] These indicators propose a way to measure the economic, social and environmental impacts of digital transformation in tourism, offering a clear framework for destinations to evaluate their progress. Integrating these and other internationally recognized frameworks such as the Statistical Framework for Measuring the Sustainability of Tourism (SF-MST)[13] **endorsed by the United Nations Statistical Commission** and/or the UN Tourism Toolkit of Indicators for Projects[14] into the assessment process ensures that a destination's digital transformation is in line with global best practices and tourism sustainability standards.

Strategic planning based on digital maturity levels

Once the digital maturity evaluation is complete, the results serve as a baseline for strategic planning. Destinations with higher levels of digital maturity[15] may focus on optimizing their existing platforms and exploring more advanced technologies. In contrast, those with lower maturity levels might prioritize foundational investments such as strengthening infrastructure or enhancing stakeholder engagement. This tailored approach ensures that investments in services and technologies are feasible and impactful, thereby reducing the risk of underutilization or implementation failure. It also enables destinations to build a robust digital foundation before scaling towards more complex service layers, aligning the deployment of tools with their evolving governance, operational and technical capacities. Importantly, digital maturity is not solely about technological availability, it must also account for the presence, accessibility and quality of data. In many cases, destinations may have implemented advanced digital tools, but lack the mechanisms to collect, structure, or share relevant data, significantly limiting the functionality and value of the Smart Destination Platform. Therefore, the strategic planning process must consider not only the rollout of technologies but also the establishment of data governance protocols and the activation of reliable data flows across the tourism ecosystem. Regardless of the maturity level, this evaluation process ensures that each

11 https://u4ssc.itu.int/
12 https://unece.org/housing-and-land-management/publications/collection-methodology-key-performance-indicators-smart
13 https://www.untourism.int/tourism-statistics/statistical-framework-for-measuring-the-sustainability-of-tourism
14 https://tourism4sdgs.org/tips_indicators/
15 https://app.gen5.digital/tracker/concepts

step of the digital transformation aligns with the destination's current capabilities and long-term objectives.

5.2 Indicators for measuring platform impact

The relevance and success of the Smart Destination Platform depend on its full alignment with the destination's goals. To adequately develop the platform a comprehensive set of Key Performance Indicators (KPIs) for the destination should be developed. These indicators should encompass a range of economic, social, cultural, environmental and technological dimensions, providing a framework for the SDP to monitor the impact of the tourism sector on the destination and the broader community.

5.2.1 Contribution of the Smart Destination Platform (SDP) to the Sustainable Development Goals (SDGs)

Smart Destination Platforms can foster sustainable practices, bolster economic resilience and promote inclusiveness, while addressing global challenges such as climate change, resource efficiency and social equity. Therefore, SDPs can be transformative instruments for aligning tourism development with the Sustainable Development Goals (SDGs). By leveraging digital tools and smart management approaches, SDPs address the interconnected economic, social and environmental dimensions of sustainability.

SDG	Target	Focus	Examples of alignment
SDG 8 – Decent Work and Economic Growth	8.9	Sustainable tourism for inclusive growth and job creation	• Platforms for SMEs to highlight local products and services • Digital upskilling programmes for tourism workers
SDG 8	8.3	Entrepreneurship and innovation	• Digital marketplaces connecting artisans with tourists • Grants/incentives for community-driven tourism projects
SDG 11 – Sustainable Cities and Communities	11.4	Heritage protection through data-driven management	• Digital twins for conservation and predictive maintenance of historic sites • Smart scheduling tools to prevent crowding at popular attractions
SDG 11	11.b	Climate resilience through monitoring	• Real-time environmental sensors tracking air quality and waste levels • Sensors/mobile data to manage tourist concentration in peak periods and vulnerable areas

SDG	Target	Focus	Examples of alignment
SDG 12 – Responsible Consumption and Production	12.b	Monitoring tourism's sustainability impacts	• Real-time dashboards tracking resource efficiency and waste management • Platforms for managing and reporting carbon-neutral initiatives
SDG 12	12.7	Sustainable procurement practices	• Digital procurement systems scoring products/services on sustainability indicators • Guidelines for eco-certified suppliers and green practices
SDG 14 – Life Below Water	14.7	Sustainable marine tourism while preserving ecosystems	• Geolocation/booking data to monitor flows to sensitive marine areas • Alerts and in-app educational content on marine conservation • Monitoring eco-certified diving and marine excursions
SDG 17 – Partnerships for the Goals	17.16 / 17.17	Multistakeholder partnerships for sustainable tourism	• Digital systems coordinating visitor flows across sites/seasons with input from authorities, transport providers, businesses, visitors and residents • Multistakeholder alliances prioritizing sustainable suppliers, green infrastructure and climate-resilient investments

Indicators for measuring SDPs' contribution to sustainability dimensions

To measure the effectiveness of SDPs in contributing to the three dimensions of sustainability and the SDGs, a set of Key Performance Indicators (KPIs) is essential. These indicators are inspired from existing frameworks like the Achieving the SDGs through Tourism: Toolkit of Indicators for Projects (TIPs) and Measuring the Sustainability of Tourism Framework (MST).

1. **Economic KPIs**

   - **Growth of MSMEs**: Number of MSMEs with significant increases in revenue and employment generation as a result of the SDP.
   - **Better distribution of tourism benefits:** Share of tourism revenue or business opportunities reaching local MSMEs, communities and less-visited areas of the destination as a result of the use of the SPD.
   - **Number of tourism products and services** developed and launched through the SDP.
   - **Adoption rates**: Percentage of local tourism businesses using the SDP.

2. **Social KPIs**

   - **Community engagement**: Proportion of residents participating in tourism planning processes through the SPD.
   - **Accessibility of services**: Percentage of tourism services with universal accessibility included in the SDP.
   - **Cultural heritage preservation**: Number of cultural sites benefiting from the SPD in terms of improved planning and management.
   - **Women empowerment:** Number of women owned businesses in the platform (SPD)
   - **Resident well-being and perception**: Use of the SPD to better measure and monitor the perceived quality of life, satisfaction with tourism-related services, support for tourism development, or the proportion of residents reporting positive social and economic impacts from tourism. Collecting this data periodically – via digital surveys, participatory platforms, or observatories – enables decision-makers to adjust policies based on real-time community feedback and reinforces public trust in data-driven governance.
   - **Resident digital inclusion**: Percentage of residents actively using or accessing digital services provided by the SPD such as mobility information, incident reporting tools, community dashboards, or participation apps. This indicator reflects the platform's capacity to bridge the digital divide and deliver tangible public value to local communities.

3. **Environmental KPIs**

   - **Resource efficiency:** Integration of data sources on water and energy consumption to support resource efficiency targets in the SDP.
   - **Carbon neutrality:** Integration of data sources (accommodation, mobility, energy use and visitor flows.) for carbon calculations in the SDP. **Waste management**: the SDP supports the creation and/or revision of a legislative framework for tourism waste management plans.

Indicators for measuring SDP's technological performance

1. **Technological KPIs**

   - **Interoperability**: Number of data systems integrated with the SDP.
   - **Real-time insights**: Frequency of actionable insights provided by data analytics tools.

Implementation framework for SDG integration

SDPs enable SDG integration through four interconnected layers, underpinned by data as a transversal enabler:

Governance layer

- Embed SDG goals and targets into participatory governance models.
- Define clear responsibilities for stakeholders in public-private-community partnerships.

Technological layer

- Deploy AI-powered tools for real-time scenario analysis and decision-making.
- Integrate IoT-enabled monitoring systems for tracking resource use and environmental impacts.

Operational layer

- Develop resource tracking systems for energy and water usage.
- Establish sustainability scoring systems to encourage eco-friendly business practices.

Engagement layer

- Foster interactive experiences encouraging tourists to participate in sustainability efforts.
- Implement gamified tools rewarding environmentally conscious behaviour.
- Support resident participation through localized feedback tools and public data visualizations, empowering communities to co-create and monitor destination policies aligned with the SDGs.

Data as a transversal enabler

Data underpins all four layers above, forming the backbone of effective SDG implementation and monitoring within SDPs:

- *Real-time monitoring:* leveraging IoT sensors and geospatial mapping to track environmental and social impacts.
- *Standardized metrics:* aligning with global sustainability frameworks such as the Statistical Framework for Measuring the Sustainability of Tourism (SF-MST).
- *Transparency:* undertaking voluntary reviews to report progress on SDG contributions.

Strategic benefits of SDG integration

By embedding SDG principles into their design and operation, SDPs enable destinations to:

1. **Enhance global competitiveness:** by leveraging technology and data to monitor sustainable performance, improve visitor experience and promote efficient resource management.

2. **Unlock funding opportunities:** gaining access to grants and partnerships aligned with SDG priorities.
3. **Ensure long-term resilience:** creating adaptive systems to address challenges such as climate change and economic shifts.
4. **Build stakeholder trust:** fostering accountability and collaboration through measurable contributions to the SDGs.
5. **Foster inclusive tourism governance:** through participatory, innovative tools that engage public authorities, the private sector and local communities in co-creating tourism policies.
6. **Foster inclusiveness:** ensuring that tourism benefits are equitably distributed and that marginalized groups are included in tourism-related opportunities

It is of vital importance that the indicators for measuring the SDP contribution to the SGDs are aligned with established international frameworks such as the Statistical Framework for Measuring the Sustainability of Tourism (SF-MST),[16] the UN Tourism International Network of Sustainable Tourism Observatories (INSTO),[17] and the Achieving the SDGs through Tourism: Toolkit of Indicators for Projects (TIPs).[18] By aligning with these frameworks, destinations can ensure that their KPIs are standardized, allowing for consistent and meaningful comparisons over time and across different regions. The definition of these indicators, as well as the identification of available data for their measurement and monitoring is at the start of the platform design.

5.3 Strategic recommendations and conclusion

Smart Destination Platforms succeed when treated as public-value infrastructure rather than standalone IT projects. The following recommendations translate the guide's principles into an operating approach that aligns governance, architecture, services, trust and measurement, with a clear bias towards early, visible benefits and continuous learning. In practice, this means establishing a stable cadence for decisions, building on open and interoperable foundations, delivering user-centric services for residents, visitors, and businesses, and managing performance transparently to sustain momentum over time.

Implementing a Smart Destination Platform means turning the guide's principles into a public-value repeatable operating model. This requires strategic alignment of governance structures, data management and service delivery with sustainability and resilience objectives. The initial priority should be the consolidation of a governance model built on clear decision-making authority, structured stakeholder engagement, and transparent communication processes.

On the technical front, build on the layered architecture and design for semantic and systems interoperability from day one. Stand up the Acquisition, Knowledge, Interoperability, and Intelligent

[16] https://unstats.un.org/UNSDWebsite/statcom/session_55/documents/BG-4a-SF-MST-E.pdf
[17] https://www.unwto.org/sustainable-development/unwto-international-network-of-sustainable-tourism-observatories
[18] https://www.e-unwto.org/doi/epdf/10.18111/9789284424344

Services layers on open standards, adopt tourism ontologies, and prepare for federated Data Spaces. This lets data from sensors, public systems, private operators, and users be ingested, harmonized, analysed and activated across use cases for the public good and private interest – without locking into vendors.

Value becomes visible only when services are designed for the platform's user groups. The managing entity (DMOs) should publish a living service catalogue that clarifies roles and permissions for destination managers, companies – especially SMEs – residents and tourists, and then sequence delivery to balance early wins with long-term scalability.

Trust is an operational requirement. Embed privacy by design/default, identity and access management, encryption in transit and at rest, consent management, clear controller/processor roles, and rehearsed incident response. Normalize open datasets of public interest, while routing sensitive exchanges through governed sharing mechanisms or sector data spaces to balance transparency with sovereignty.

Performance management closes the loop. Indicators should mirror strategy and SDG linkages across economic, social, environmental dimensions and technological performance. Institutionalize a "monitor–learn–act" cycle: review dashboard trends with stakeholders, capture lessons, adjust services and policies, and communicate results in plain language. This turns the platform from a data repository into a driver of coordinated action, inclusive governance and sustainable destination management.

An actionable path emerges from this alignment. First, formalize governance, confirm priority use cases and KPIs, define data needs, and publish an initial service catalogue with a security baseline. Next, bring the core platform layers online with initial integrations, pilot a domain data space (e.g., mobility or accommodations), and launch a small set of high-visibility services for residents, SMEs, and visitors. Then, scale successful pilots, expand integrations via APIs, fully embed privacy and consent operations, and publish a public impact report with an updated roadmap.

Smart Destination Platforms are ultimately instruments of good governance. Coupling inclusive collaboration with standards-based architecture, trusted data sharing, and disciplined measurement converts information into coordinated decisions that enhance visitor experience, protect resident quality of life, and advance sustainability. The path is practical: start with shared priorities, deliver visible benefits early, build an interoperable core, and learn continuously – so SDPs become durable public asset at the heart of a smarter, more sustainable tourism ecosystem.

References

Sociedad Mercantil Estatal para la Gestión de la Innovación y las Tecnologías Turísticas, S.A.M.P. (2023), available at: https://www.segittur.es/wp-content/uploads/2023/02/23112023-Resumen-Servicios-Comunes.pdf

Content reproduced under license from the Spanish Association for Standardization (UNE).



For more information,
please contact: u4ssc@itu.int
Website: https://u4ssc.itu.int/

ISBN 978-92-61-43321-5

Published in Switzerland
Geneva, 2026

Photo credits: @AdobeStock