Why? This template helps destinations understand the difference between data, information and knowledge and the i**mportance of Knowledge Transfer (KT)** to become smart**.** Data is the most valuable resource in the tourism industry, but it needs to be processed, structured or contextualised to become information. Once the information is understood and meaningful to humans, it becomes knowledge. **Transferring Knowledge** is critical for the sustainability and competitiveness of destinations since tourism is intensive in information, which means that many data sources and owners should foster co-decision-making opportunities among stakeholders. However, there is a low willingness to share data if risks are perceived and if there is a lack of a shared vision.
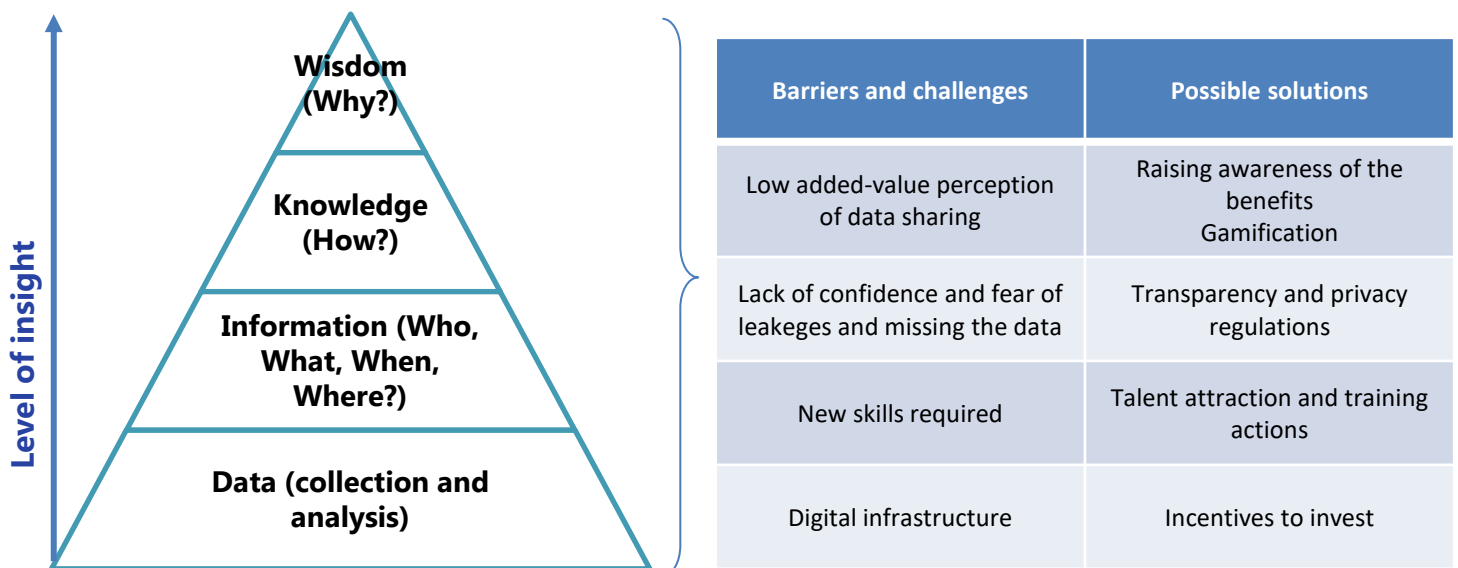
How? Swapping from a reactive to a proactive approach. Transferring the correct data in the proper format to the right stakeholders at the appropriate time to make better decisions is a challenge. All stakeholders should be accountable for cooperating and being dynamically linked through a digital platform (information system). **DMOs should assume three roles as leaders in KT**: as **data miners** to collect, merge and analyse datasets from stakeholders; as **hubs** to gather and disseminate knowledge among destination stakeholders; as **boundary spanners** to connect the destination network with the external world.

Tips and Guidelines

- Raising awareness of the **benefits of sharing data** between stakeholders is critical to overcoming the barriers to data sharing (fear of leakages, fear of misusing the data and lack of confidence). **Transparency and privacy regulation** are keys to generating trust and ensuring willingness in open data environments.

- **Data collection**. It is essential to identify the data sources and define the data users of the platforms and their specific needs. DMOs have to set up and provide an open data environment for the different stakeholders and how they can send, extract and retrieve data from it. Raw data must be anonymised and integrated into a data lake, so investing in digital infrastructure is necessary. (More information available in Pillar 2 factsheet).

- **Data analysis.** Once the architecture of the open data environment is ready, raw data can be accessed and analysed to provide a different level of insight from business intelligence to data science. Static reports can be valuable channels for sharing information with stakeholders. Still, there are more possibilities for DMOS to become proactive, using semantic data and programming languages to generate models for machine learning which will allow predictive analytics.

- **Sharing information**. Specialised software and open-source platforms can be used to create **dashboards to visualise and interpret data** (e.g. Tableau, Data Studio or Power BI). For instance, Snap4city is for setting dashboards and IoT applications. Finally, an open data environment needs a frontend to distribute insights among stakeholders in different channels (websites, apps, customer relationship management software, etc.)

- Access to **external knowledge**. Regular knowledge transfer events between stakeholders can be held to increase their inclination to share data. Developing tourism research information systems (e.g. SICTUR) and dissemination catalogues of IT solutions for smart destinations can foster cooperation between universities, companies and destinations.

The pathway to knowledge transfer through the Data, Information, Knowledge and Widsom (DIKW) model

The graph represents the barriers of KT that destinations might face and the possible solutions to overcome them.

Level of insight

- Wisdom (Why?)
- Knowledge (How?)
- Information (Who, What, When, Where?)
- Data (collection and analysis)

Barriers and challenges	Possible solutions
Low added-value perception of data sharing	Raising awareness of the benefits Gamification
Lack of confidence and fear of leakeges and missing the data	Transparency and privacy regulations
New skills required	Talent attraction and training actions
Digital infrastructure	Incentives to invest

Link with other Smart Tourism Pillars: Before this factsheet, the "**Data management and technological solutions**" (pillar 2) provided examples of how to be a data-driven destination. The "**Human Capital & Skills**" (pillar 3) explained how the destinations, depending on the maturity stage, could need to deploy new skills to improve data-oriented decision-making. After this document, "**Ecosystem Management & Partnership**" (pillar 5) focuses on the need for DMOs to move from being marketing organisations to leading destination management organisations able to solve conflicts and encourage stakeholder cooperation. Tips and guidelines can be found consulting the Toolkit for Tourism Destinations and other supporting materials available in the digital library of the Smart Tourism Destinations project website.
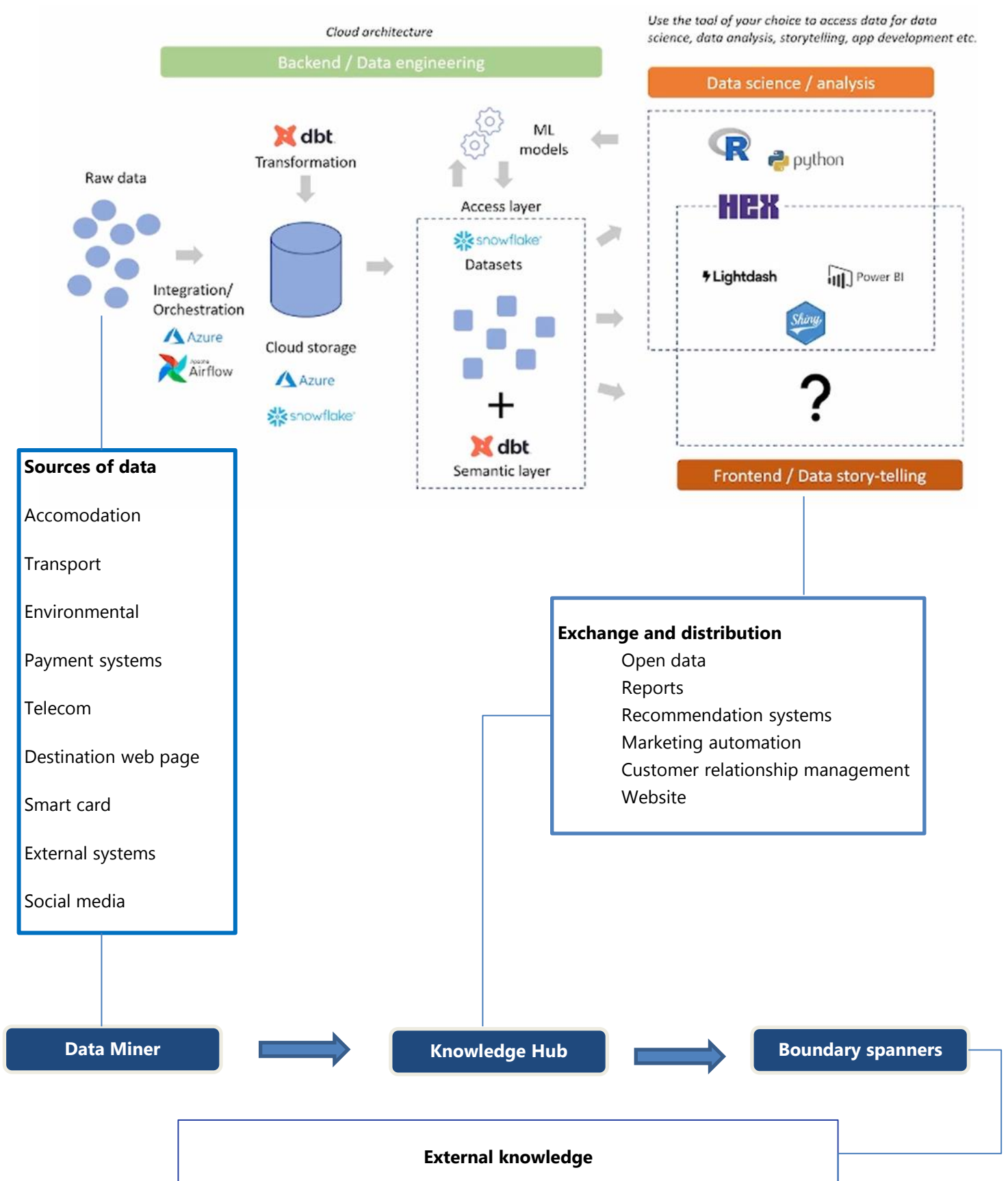
Instructions: This template can help destinations build their roadmap to External Knowledge Transfer as data miners, data hubs or boundary spanners. Three activities in priority areas can be implemented independently of smart tourism readiness and maturity. The tables below provide concise layouts for identifying types of data sources and potential stakeholders that can be involved.

KNOWLEDGE TRANSFER EVENTS (data miner & data hub)

Raising awareness of the benefits of sharing data between stakeholders is critical to overcoming the barriers to data sharing. In this table, destinations can find the type of data sources, their providers and the specific goals that might be achieved in KT events. To correctly fill out the table, it must be done column by column.

Sources of data		Stakeholder involved		Periodicity of event		Goal	
Devices and sensors data	☐	Phone operators companies	☐	Annually	☐	Foster partnerships and innovation	☐
Transaction data	☐	Credit card companies	☐	Semestral	☐	Identification of data holders	☐
						Identification of solutions for data collection	☐
Public datasets	☐	Governments and DMOs	☐	Monthly	☐	Solutions of data processing and analysis	☐
Private business datasets	☐	Tourism private service providers	☐			Solutions for data exchange	☐

SCIENTIFIC TOURISM RESEARCH INFORMATION SYSTEM (boundary spanners)

In this table, destinations can find stakeholders associated with research, development and innovation in the smart tourism ecosystem. The first column shows the data type found in a scientific research information system. To correctly fill out the table, it must be done column by column.

Data		Stakeholder involved		Knowledge transfer services	
Scientific production (journal article, proceedings, book, chapter, patent...)	☐	Universities	☐	Identification of solutions for data collection	☐
Researcher (line of research, scientific production...)	☐	Tourism Research Centres	☐	Identification of solutions for data processing and analysis	☐
				Identification of solutions for data exchange	☐
Research group (line of research, scientific production, knowledge transfer services...)	☐	Innovation labs and Sciences parks	☐	Skills training and advice programmes	☐

CATALOGUE OF TECHNOLOGICAL SOLUTIONS FOR SMART TOURIST DESTINATIONS

This table shows the type of content that a catalogue of technological solutions for smart destinations should include. The main objective is to facilitate access to destination managers to solutions/services that can help them to improve their competitiveness in different tasks such as data collection, data processing, data analysis and information and knowledge sharing. The solutions can be categorised according to the scope of the application. Each solution of the catalogue should include the information requirements of the last column.

Type of solution	Scope of application	Information
Tourism CRM	Governance	Provider details (description and contact details)
Semantic analysis		
Active listening / Online reputation		
Natural language processing	Innovation	Description of the solution
Sensors		
AI		
IoT (Internt of Things) / Wearables	Technology	Background or previous experience of provider
Mobility / Transport		
Security / Blockchain / Capacity control		
Efficient energy management	Sustainability	Date and version of the solution
Data analytics systems (Big data/ BI)		
Sales/booking platforms		
Website development		
Virtual environments: videomapping/virutal reality/augmented reality	Accessibility	
Drones		
App development		
2D/3D modeling/Typhlological mockups		