

Smart Solutions for Visitor Registration and Environmental User Fee Collection



GOBIERNO
DE ESPAÑA

MINISTERIO
DE ASUNTOS ECONÓMICOS
Y TRANSFORMACIÓN DIGITAL


Initial considerations

- How many people are visiting?
- How can we track them/register their visits now, and in the future?
- How can we collect a fee for environmental conservation?
- How can we centralize this data for environmental conservation and sustainable tourism development?
- How can we enforce registration and fee payment?

Agenda

- I. Introducing Visitor Registration Systems (VRS)
- I. Introducing Environmental Usage Fees (EUF)
- I. Smart solutions for VRS and EUF

Questions! - www.menti.com

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Tourism is capturing registration data....



Airports



Marinas



Accommodations

...but not centralized at the destination level.

Defining Visitor Registration Systems (VRS)

- A **Visitor Registration System (VRS)** is a digital or manual process used to record and manage information about visitors to a particular destination, event, or facility. In the context of tourism, it helps in managing tourist inflow, ensuring security, and enhancing the overall visitor experience.

Goal of capturing registrations and environmental fees

Data: capture reality

Number of visitors.

Demographic Information

Visit Information

Environmental Fee

Analysis: Compile and understand

Visitor Flows captured

Key sites visited

Average length of stay

Purpose of visit

Accommodation

Policy Outputs: Create data-driven sustainable tourism development policies

Tourism Carrying Capacity (TCC) defined.

Special investment zones created.

Protected areas & restrictions expanded.

Programs: Pilots and program implementation

Technology adoption

Capacity development

Pilots

Trade engagement

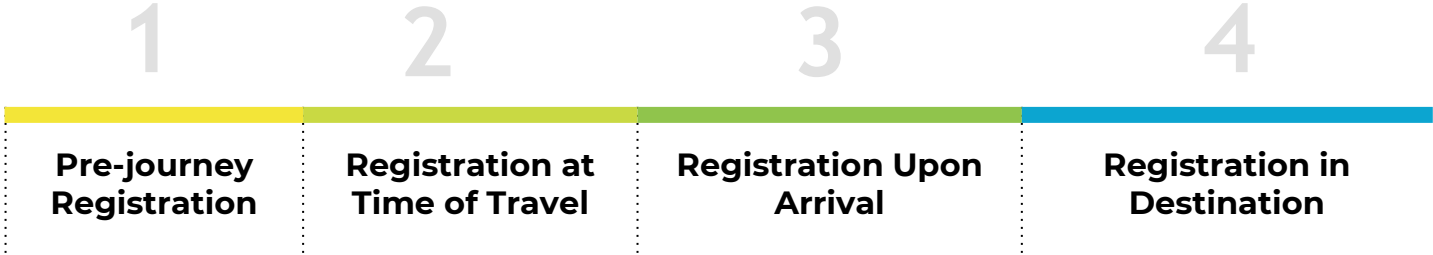
Tourism Carrying Capacity (TCC)

- **Tourism Carrying Capacity (TCC):** The maximum number of people that may visit a tourist destination at the same time, without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction.

Purpose of Visitor Registration Systems (VRS)

- **Problem:** Ecologically sensitive and/or culturally significant tourist destinations often face challenges in managing visitor numbers, ensuring safety, and providing quality experiences.
- **Purpose:** VRS help record visitor data, track visitor numbers, manage access to ensure that the destination is not overcrowded, and maintain environmental and cultural integrity. VRS assist with calculating and enforcing policies and restrictions based on the tourism carrying capacity.

Potential Points of Registration



Source: [Brooks/McCormack 2020](#)



Drivers of Visitor Registration Systems (VRS)

- **Visitor Management:** Manage & control visitor numbers. Helps in protecting sensitive ecosystems by controlling access.
- **Data Collection and Analysis:** Provides valuable insights into visitor demographics, behaviors, and preferences beyond hotel data (day trippers, etc.)
- **Environmental Conservation:** Promotes sustainable tourism practices by monitoring and managing visitor impact on the environment.
- **Security and Safety:** Facilitates the identification of visitors for enhanced security and aids in emergency response and management.
- **Economic Benefits:** Can be a source of revenue generation through fees and taxes.
- **Policy Development:** Supports the formulation of data-driven policies and regulations for tourism management.

Challenges of Non-Digital Visitor Registration Systems (VRS)

- **Data Accuracy and Integrity:** Prone to human error and difficult to keep consistent over time.
- **Efficiency and Productivity:** Time-consuming manual process lacking automation
- **Data Storage and Retrieval:** Physical storage is cumbersome and difficult to retrieve insights.
- **Security and Privacy:** Physical storage easy to steal, lose, or damage.
- **Visitor Experience:** Manual registration is inconvenient and leads to longer wait times.
- **Data Analysis and Insights:** Difficult to compile and analyzing insights and no real-time data.
- **Environmental Impact:** Paper-based processes contribute to waste.
- **Compliance and Reporting:** Difficulty ensuring compliance with legal/regulatory requirements.
- **Scalability:** Resource intensive to scale (i.e., more people).

Defining Environmental Usage Fee (EUF)

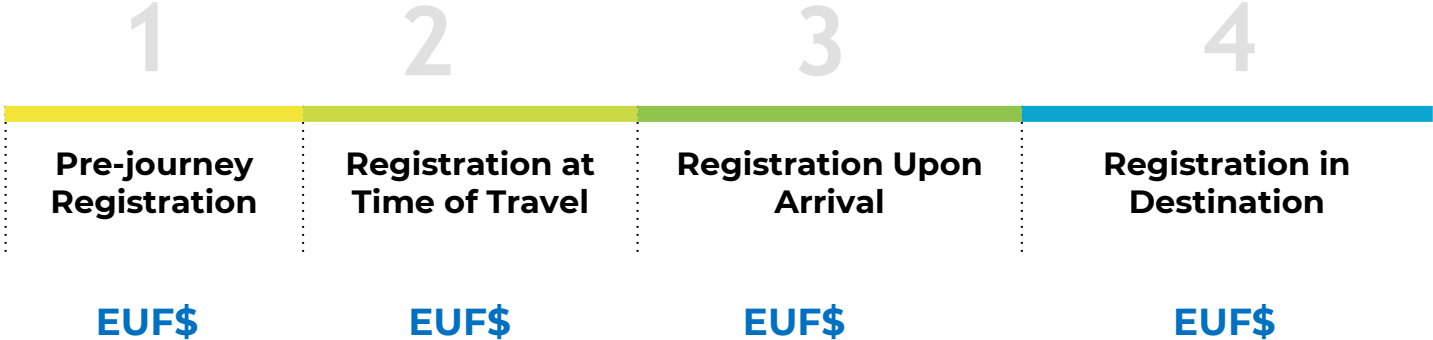
- An **Environmental Usage Fee (EUF)** is a charge imposed on visitors or businesses catering to visitors in natural destinations to generate revenue for the preservation, conservation, and maintenance of the environment. It is often applied in ecologically sensitive areas, including national parks, protected areas, and islands known for their natural beauty.

Purpose of Environmental Usage Fees (EUF)

- **Problem solved by EUF:** EUFs address financial and resource constraints faced by many natural destinations in maintaining and preserving their ecosystems. Tourism, while beneficial for the local economy, often leads to environmental degradation due to pollution, waste, and the overuse of natural resources.

The EUFs provides a funding mechanism to mitigate these impacts, supporting initiatives like waste management, habitat restoration, and conservation programs.

Potential Points of Registration



Potential Points of EUF Collection

Source: [Brooks/McCormack 2020](#)

VRS & EUF Case Studies

Destination	Pre-journey	Time of Travel	Upon Arrival	In Destination	Digitized Process
Boracay, Philippines	Registration (COVID)	Registration & EUF			Registration
Batanes, Philippines	Registration at website		Collection by PTO, DENR	Collection by Municipality	Registration
Mabini Batangas, Philippines			Collection at transport terminals and port		X
Volcanoes National Park, Rwanda	Registration & EUF				X
Galapagos Islands	Registration	Registration & EUF			Registration
Jeju, Republic of Korea	Registration & EUF (proposed)		EUF (proposed)		Registration & EUF

Boracay, Philippines

Registration and EUF payment at the time of travel.

Problem: Protect island and marine ecosystem from overtourism

Solution: Establish carrying capacity of 6,405 people per day and charge EUF (300 PHP per foreigner) and terminal fee (100 PHP) to tourist during transit.

Process:

- Register and pay EUF at Caticlan Jetty Port
- Show screenshot of online arrival form or fill out paper registration form and pay EUF and terminal fee at port
- During COVID-19 pre-registration was required, done online, and generated QR code



Boracay Online Registration Form

Boracay Online Registration Form



Batanes Protected Landscape & Seascape

Problem: Protect cultural and natural heritage from visitor impacts.

Solution:

1. Visitor registration done through lodging and encoded to the system by PTO
2. Charge the ff. fees
 - a. Integrated Protected Area Fund (P50/pax/entry)– collected by the Department of Environment and Natural Resources (DENR)
 - b. Ecotourism Fee (350/pax/entry – collected by Provincial Tourism Office
 - c. Environmental Fee (P50 to 220/pax/entry – collected by Municipalities



Photos by Chen Mencias

Process:

1. Upon arrival at airport visitors go to Provincial Tourism Office to pay and register (if not yet registered)
2. DENR gets list from PTO and collects their fees from accommodation facilities
3. Municipalities collect their fees at a booth near the entry point

Mabini, Batangas

Problem: Protect marine and terrestrial resources from visitor impacts

Solution: Collect the ff fees

1. SCUBA diving fee (P150/day/diver)
2. Free diving fee (P150/pax/day)
3. Environmental Fee for mainstream tourists P50.00/pax/day

Process:

Collection done manually at terminals and ports. Boat operators get a copy of the stubs of their passengers and shown during random inspection by checkers.



Photo by Chen Mencias

Digitizing Visitor Registration Systems (VRS)

- **Efficiency & Cost Reduction:** Optimizes the use of resources, including staff and materials, to reduce operational costs associated with manual processes.
- **Data Accuracy and Integrity:** Ensures accuracy with automated data capture and validation and maintains data integrity via consistency across the system.
- **Security and Privacy:** Enhances data security with encryption and access controls while facilitating compliance with data privacy regulations.
- **Real-Time Data Access:** Provides real-time data for immediate decision-making by allowing easy access to data.
- **Improved Visitor Experience:** Convenient and seamless registration process

Digitizing Visitor Registration Systems (VRS)

- **Data Analysis:** Facilitates advanced data analytics for insights and trends while simplifying reporting with automated and customizable reports.
- **Environmental Benefits:** Promotes a paperless environment.
- **Compliance and Accountability:** Provides audit trails for accountability and transparency.
- **Scalability and Flexibility:** Easily scales to accommodate varying visitor numbers and needs and easily adapts to changing requirements and scenarios.
- **Crisis and Emergency Response:** Enhances response to emergencies with accurate and accessible real-time data.

Digital Technologies for Visitor Registration Systems (VRS)

- **Secured cloud-based webforms:** Custom built as well as platformed-based (Google Forms).
- **App-based registration:** Use of custom built destination tourism app for registration
- **Payment portal:** Custom built or platform e-payment system.

Expanded Digitized Case Study: Galapagos

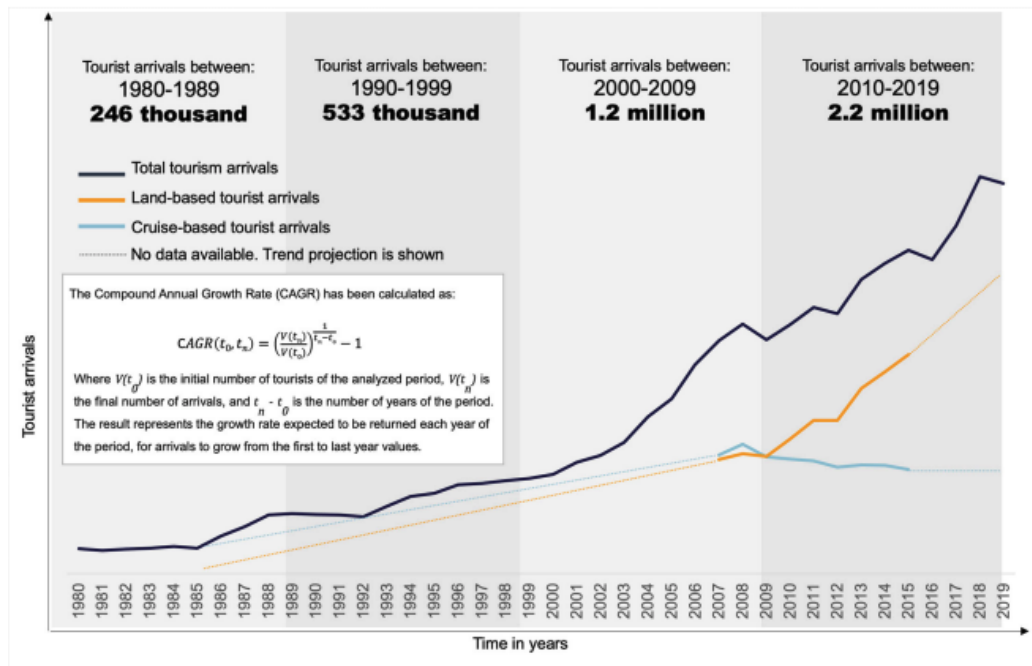
Problem: The Galapagos islands were struggling with the environmental impact caused by the increasing number of tourist and an imperfect understanding of arrivals.



Expanded Digitized Case Study: Galapagos

Context:

- 1978: Declared a Natural World Heritage Site by UNESCO
- 1987: Biosphere Reserve
- 2007: Ecuadorian government declares the Galapagos Islands under emergency status
- 2007: UNESCO added the islands to the List of Natural Heritages in Danger and set recommendations to monitor tourism and its impacts



Expanded Digitized Case Study: Galapagos

Approach:

- Series of permanent policies reforms launched including Galapagos Tourism Observatory (2011)
- Dual focus on protected and populated areas
- Tracking quantifiable ecological, physical, social and managerial indicators
- Subdivided the territory and instituted strict caps on travelers based on and using registration controls
- Began collecting EUF.

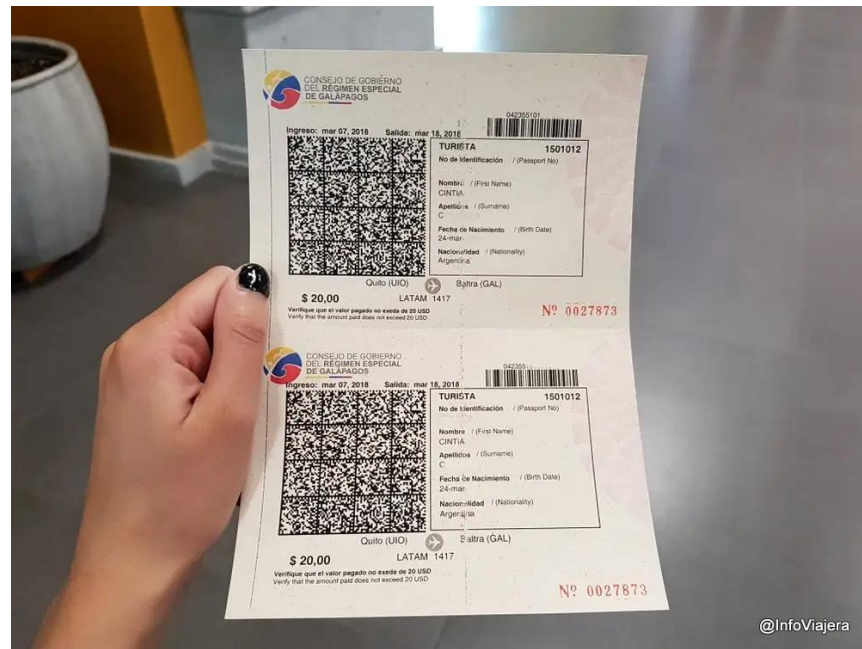


Expanded Digitized Case Study: Galapagos

Solution: Electronic, web-based registration form with “Transit Control Card” (TCT) EUF fee (\$20).

Process:

- Visitors fill out an easy to use online form to register their visit.
- Once they arrive, they pay for and pick up their TCT at their port of arrival (\$20).



Prior Registration Form to issue the TCT

Enter all the information necessary to pre-register your data prior to entering the Galapagos Islands.
Fields marked with (*) are required.

Transportation to Galapagos

* Conveyance:	<input type="text" value="Maritime"/>	* Airline/Ship:	<input type="text" value="Seleccione un item"/>
* Origin:	<input type="text" value="Seleccione un item"/>	* Destination:	<input type="text" value="Seleccione un item"/>
* Flight/ship number:	<input type="text"/>		

Lodging

Please enter each of the reservations generated for your trip to Galapagos. If you are staying in several places, please add all the necessary reservations.

[Add Accommodation](#) [Delete Accommodation](#)

ACCOMMODATION TYPE	ISLAND	ACCOMMODATION PLACE	DATE OF ADMISSION	DEPARTURE DATE	NUMBER OF DAYS
* Entrance to Galapagos:	<input type="text" value="20/10/2023"/>	* Departure from Galapagos:	<input type="text" value="20/10/2023"/>		Total Days: <input type="text" value="0"/>

* Personal information

* Document type:	<input type="text" value="Seleccione un item"/>
* Document number:	<input type="text"/> Look for
* Category:	<input type="text"/>
* Complete names:	<input type="text"/>
* Last name:	<input type="text"/>
Mother's last name:	<input type="text"/>
* Birthdate:	<input type="text"/> (dd/mm/yyyy) example: 01/23/1989
* Civil status:	<input type="text" value="Seleccione un item"/>
* Gender:	<input type="text" value="Male"/>
* Country of residence:	<input type="text" value="Ninguno"/>
Postal Code:	<input type="text"/>
* Nationality:	<input type="text" value="Ninguno"/>
Studies:	<input type="text" value="Primary"/>
* Email:	<input type="text"/>
* Confirmation Email:	<input type="text"/>

Focusing on Data

3. DATA & OUTPUTS



Data created or leveraged by smart tourism and the goods, services, or products it produces (Outputs).

Data Type

Data Use/Outputs

Personal information

Source market / segments identified; Demographics identified; Safety & security enhanced; etc.

Transportation

Inbound/outbound routes optimized; Arrival/departure services enhanced; Carbon footprint controlled; etc.

Arrival/Departure Location

Tour routes and island transportation optimized.

Accommodations

Tourism flows identified; Products enhanced; Safety & security enhanced.

Expanded Digitized Case Study: Galapagos

Outputs:

- 'Carrying capacity' limits for different sites and visitor restrictions set.
- National Park Authority ability to restrict the number of tourists who can register to visit a site created.
- Capacity to plan, track, and restrict boat routes created..
- Urban development zones that can be controlled and attract investment based on known tourism flows established.

Analysis: Galapagos

Analysis:

- **Technology:**
 - Simple web forms, hosted by DMO, that link to computers in the airport via the cloud
 - Ability to print “cards” (paper) with QR codes and other information
- **Policy:** More complex as needed to align stakeholders and define limits
- **Enforcement:**
 - Tightly controlled park entry
 - Requires coordination of many stakeholders to ensure registration is promoted and enforced before, during, and after journey.
- **Fee transparency:** Galapagos publishes distribution of fees received.

Expanded Case Study: Jeju

- Travelers from more than 100 countries can visit Jeju Island without a visa.
- However, Most visa-exempt visitors now need a South Korea ETA (K-ETA) to travel to Jeju Island. Find out what you need to visit Jeju Island on this page.



Expanded Case Study: Jeju

- Korea Electronic Travel Authorization (K-ETA)
- Passport holders from around 90 countries need a K-ETA to travel to South Korea visa-free.
- 100% Online
- 10.000 KRW fee (~\$9 USD)



Expanded Case Study: Jeju



Step 1: Fill out the K-ETA application form.

- Basic personal information
- Passport data
- Contact details
- Travel information



Step 2: Review and submit your application

- Check your information is correct
- Pay the K-ETA processing fee
- Click submit to send your request



Step 3: Receive your K-ETA by email

- Standard processing takes 1-2 days
- Print a copy of your K-ETA
- Get ready to travel to Korea!

Analysis: Jeju

Analysis:

- **Technology:**
 - “Simple” web form and payment processing hosted by Ministry of Justice
 - Stores applications and allows retrieval of application status
- **A+ User Experience:**
 - Although simple, the K-ETA is expertly executed.
 - Clear explanations and navigation.
 - Employs all best practices for UX and UI.
- **EUF:** Jeju is considering implementing an EUF beginning in 2024.
 - 8,170KRW (\$6.20) per day + plus 1,500KRW per night of stay
 - Estimated contribution to local government: 141 billion KRW in 2024 (\$104 million), and 167 billion KRW (\$123 million) by the third year.

What do all of these have in common?

Destination	Pre-journey	Time of Travel	Upon Arrival	Registration	Digitized Process
Volcanoes National Park, Rwanda	Registration & EUF				X
Boracay, Philippines					Registration
Galapagos Islands					Registration
Jeju, Republic of Korea			EUF (proposed)		Registration & EUF



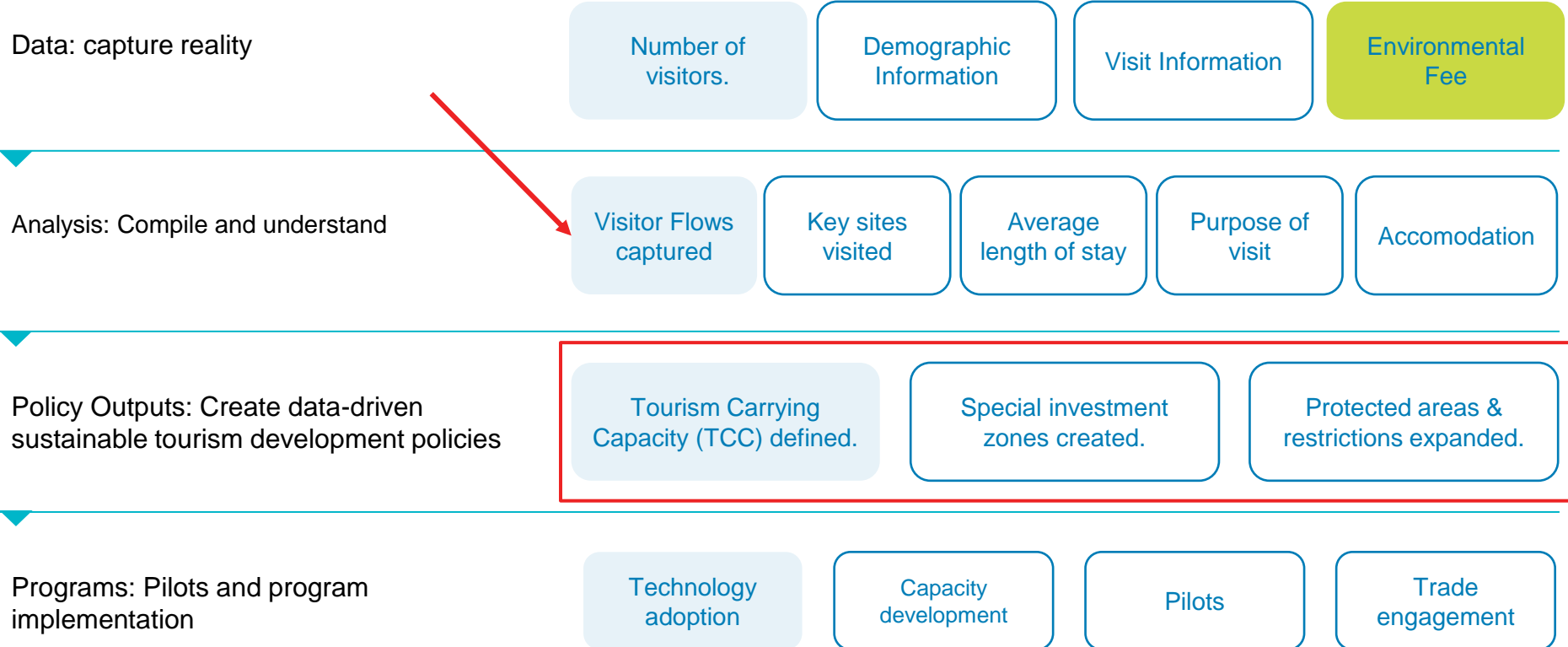
What about unrestricted access?



The Samal Island–Davao City (SIDC) Connector

- How does this change the ability to implement a VRS or collect a EUF?

Remember the Goal of capturing registrations and environmental fees



Technologies to achieve same goal of visitor flows

Emerging “new data” types assist with tracking visitor flows:

- Mobile positioning Data (MPD)
- Automated License Plate Readers (ALPRs)
- Wifi sensors & IoT Sensors (thermal, counting cameras, etc.)

Lithuania: Mobile Positioning Data for Tourism Flows

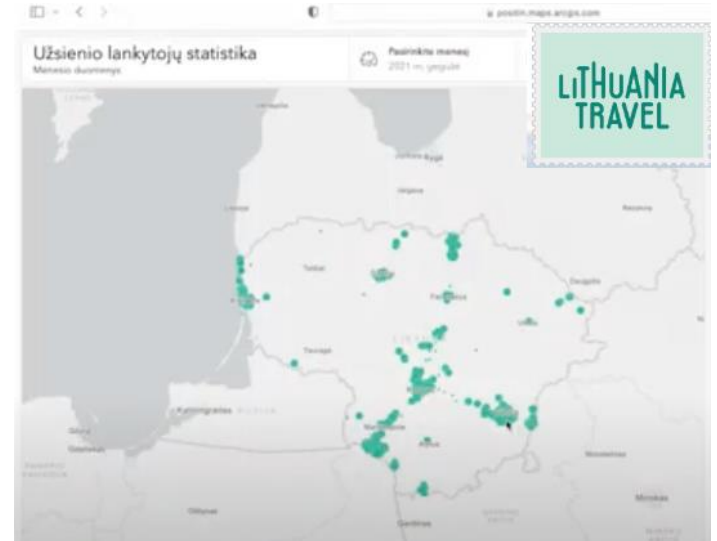
Smart Tourism for Official Tourism Statistics

Problem: Lithuania Travel based official statistics on accommodation reports. Unable to capture real time data or day-trip visitors.

Solution: Partner with three companies to build a MPD dashboard that tracks tourist movements at the county/municipal level and tourism object levels.

Results:

- All counties and municipalities covered
- Able to generate destination-based tourism mobility data to inform policy and event planning
- Pilot completed in 2021



Automatic License Plate Readers (ALPRs)

Smart technology for analyzing bridge traffic

Context: Completed in 2018, the Hong Kong–Zhuhai–Macau Bridge (HZMB) is a 55km bridge connecting Hong Kong, China, Zhu Hai, Macau, China, and mainland PRC.

Solution: Partner with Alibaba Cloud to launch ALPRs to capture traffic flows to sort commuters, day visitors, and overnight visitors.

Results:

- Algorithms to sort different visitor segments developed.
- Detailed tourism flows established.
- No EUF (bridge collects toll)



Heridata: 6 connected Mediterranean Destinations

Smart technology for enhancing tourism flows in 6 cultural and heritage destinations

Context: Identify solutions using new technologies and big data to reduce the negative impacts of tourism on cultural and natural heritage sites.

Solution: Defined a set of indicators to collect data about real-time tourism flows and centralize to an online platform for analysis

Results:

- Measure flows using wifi and IoT sensors
- 6 pilots concluded the contribute to official destination management



Pros & Cons of automated systems

- **Pros:**
 - Automated
 - Big data/many data points
 - Potential for real-time updates
 - Constant stream of updated data
 - Complements official data
- **Cons:**
 - Expensive
 - Technical
 - Data security and data privacy concerns

Summary

- - I. VRS and EUF are increasingly common and possible for ecologically and socially conscious island destinations around the world, especially those with restricted access.

- - I. The digital technology to implement VRS and EUF is relatively simple and straightforward, but implementation and enforcement are barriers to adoption.

- - I. When destination access becomes less restricted (ex: a new bridge), cutting edge digital technology such as mobile positioning data (MPD), automatic license plate readers (ALPRs), and sensors can supplement other forms of data collection to estimate visitors.

Melbourne, Australia: Smart Bins

Smart Tech for Waste Management



Melbourne, Australia: Smart Bins

Smart Tech for Waste Management

Process	Technology		Data	Outputs
<i>How is the data captured? When?</i>	<i>Hardware</i>	<i>Software</i>	<i>What information is being captured</i>	<i>How the data is being used? What impacts?</i>



Australian Government
Parks Australia



Uluru-Kata Tjuta Park Passes



Official Statistics using Mobile Positioning Data (MPD)



Palau Visitors Authority

Pristine Paradise Palau Registration



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Uluru-Kata Tjuta Park Passes

Process	Technology		Data	Outputs
<i>How is the data captured? When?</i>	<i>Hardware</i>	<i>Software</i>	<i>What information is being captured</i>	<i>How the data and/or EUF is being used</i>

