New technology and Innovations in the Measurement tools used to evaluate tourism performance.

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Is the territorial/regional dimension important?

Is there a link between innovation and regional growth?

Diversification of destinations

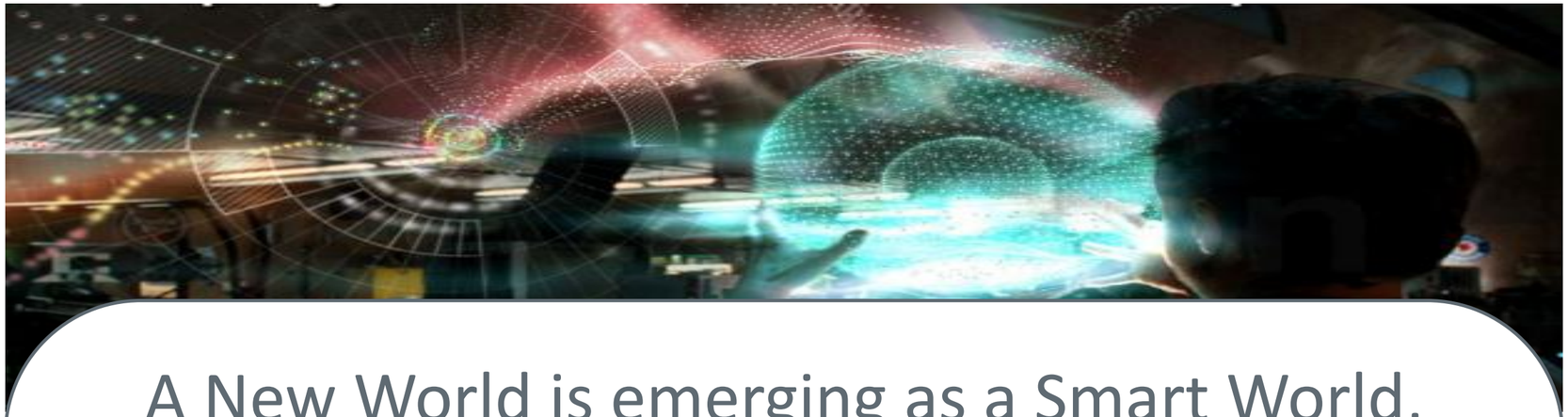
Rank	1950	Share	1970	Share	1990	Share	2010	Share
1	United States		Italy		France		France	
2	Canada		Canada		United States		United States	
3	Italy	71%	France	43%	Spain	39%	China	31%
4	France		Spain		Italy		Spain	
5	Switzerland		United States		Austria		Italy	
6	Ireland		Austria		Mexico		United Kingdom	
7	Austria		Germany		Germany		Turkey	
8	Spain	17%	Switzerland	22%	United Kingdom	18%	Germany	14%
9	Germany		Yugoslavia		Canada		Malaysia	
10	United Kingdom		United Kingdom		China		Mexico	
11	Norway		Hungary		Greece		Austria	
12	Argentina		Czechoslovakia		Portugal		Ukraine	
13	Mexico	9%	Belgium	10%	Switzerland	9%	Hong Kong (China)	11%
14	Netherlands		Bulgaria		Yugoslav SFR		Russian Federation	
15	Denmark		Romania		Malaysia		Canada	
	Others	3%	Others	25%	Others	34%	Others	44%
Total	25 million		166 million		436 million		940 million	

CONTEXT:

TECHNOLOGY-MEDIATED LIFEWORLD

CONTEXT

TECHNOLOGY-MEDIATED LIFEWORLD



A New World is emerging as a Smart World, converging the Cyber, Social, and Physical Domains

Business and destinations need the wholly new development principles, policies, processes, and objectives: sustainable world strategies, comprehensive planning, integrated models, and globally effective solutions.

CONTEXT:

TECHNOLOGY-MEDIATED LIFEWORLD

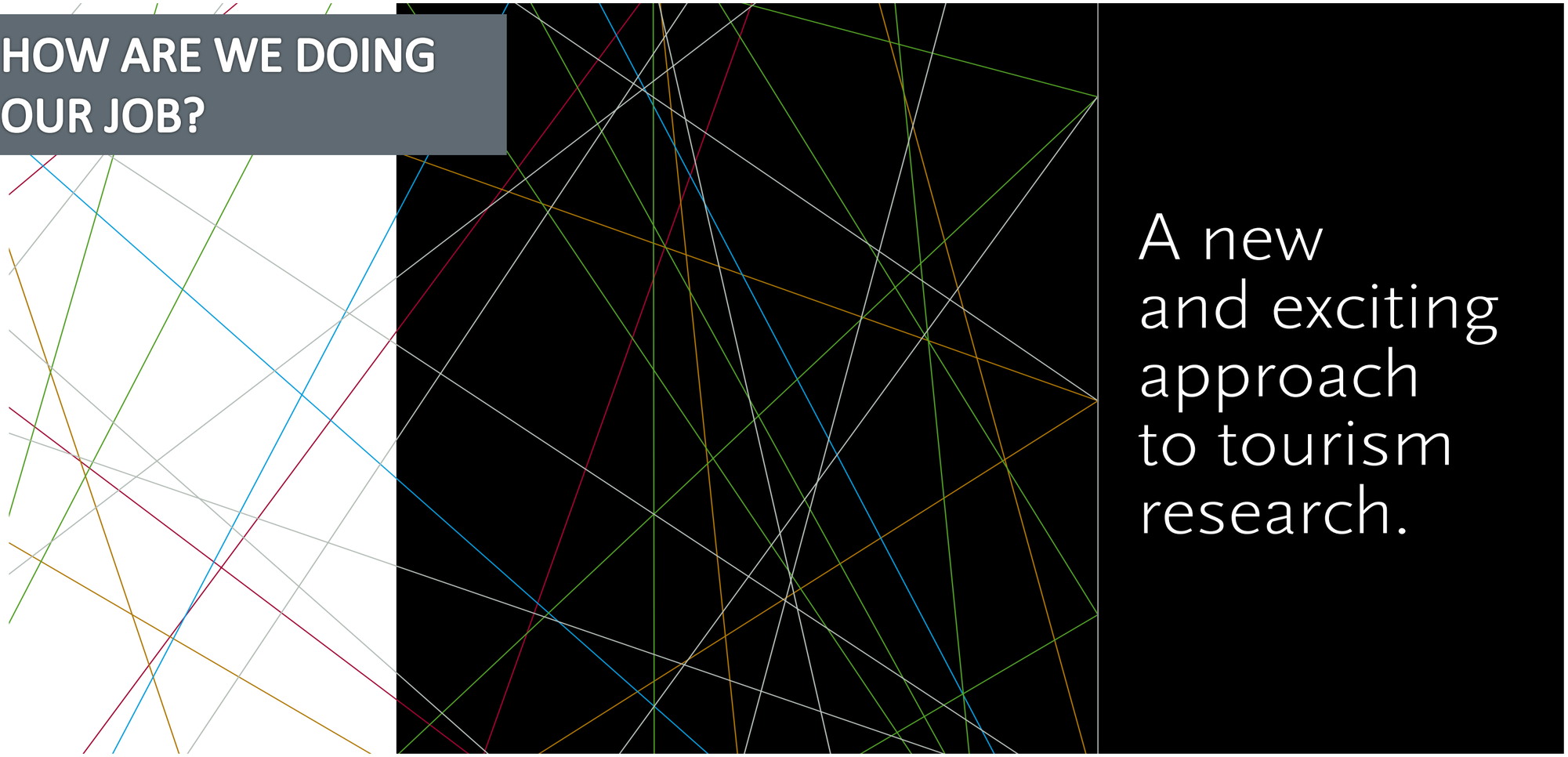
SMART CITIES

HOW ARE WE DOING OUR JOB

KNOWLEDGE INTO ACTION

"Innovations are not just the results of scientific work in a laboratory-like environment…this is the exception rather than the rule…the causality between science and innovation has proven weaker than expected…innovation emerge increasingly in practice-based processes based on the ability to interact and build networks with other innovation agents" (V. Haarmaakopi et al 2008)

HOW ARE WE DOING OUR JOB?



A new and exciting approach to tourism research.

MEASUREMENT
Tourist flows

Tourist movement research is a complex **process** of **understanding physical movement** (Xia et al., 2011).

Its link to the decisions tourists make about where, how, and what pace and time to move from one attraction to the next

MEASUREMENT: why

The question of mobility is of immense importance in tourism research.

A key output of the system of tourism statistics is statistical information on tourism flows, i.e. number of trips and nights spent away by visitors outside their usual environment.

You cannot manage what you cannot measure

MEASUREMENT

- Measurement tools are strongly linked to technological development
- The depth of the measurement depends on the available technology
  - **Macro Level (1980-2000)**
    - Examines a **discrete** secuence of movement among tourist locations, locations which can be some distance apart
  - **Micro Level (2000-until now)**
    - Movement is seen as a **continuous** process
    - The sequence of movements can be represented accurately as a collection of spatial points

MEASUREMENT

Yet the current methods used to collect data on spatial and temporal activities are limited in accuracy and validity. Recent developments in the field of digital tracking technologies have produced a range of widely available systems, including land-based tracking, satellite navigation, and hybrid systems.

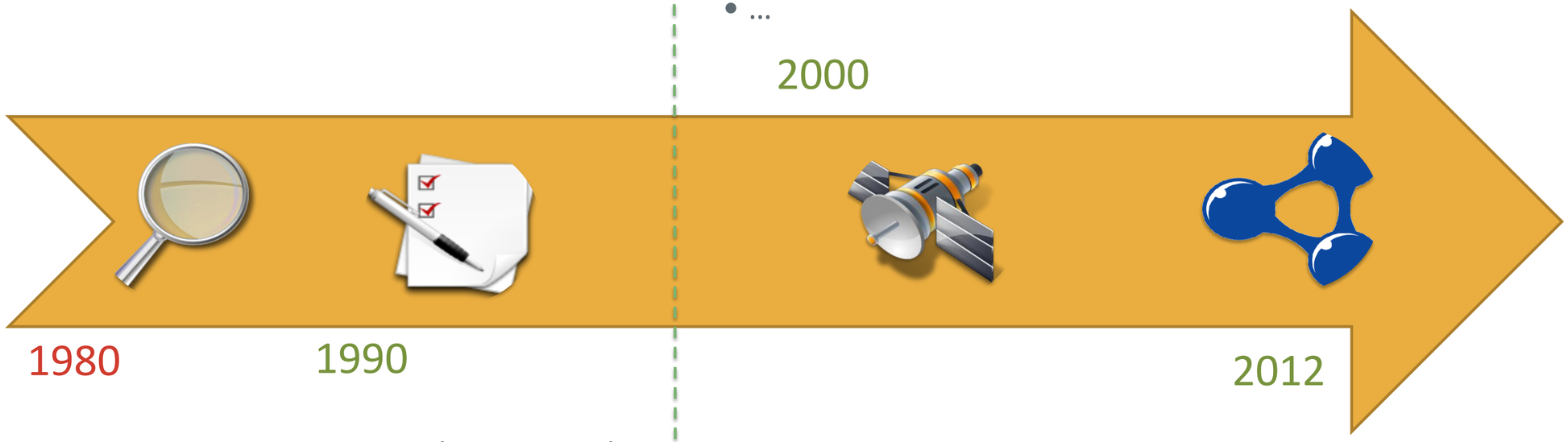
TOURIST MOBILITY: Literature Review

Observational methods

- Hartman 1988

Tracking Technologies

- McKercher 2004
- Lau and McKercher 2007
- Shoval 2007
- Shoval 2011
- Shoval and Isaacson 2012
- …



No Observacional Methods

- Pearce 1988
- Debagger 1991
- Fenell 1996
- Thornton 1997

Open Data

- New Paradigm

TOURIST MOBILITY: Literature Review

Observational methods

- Hartman 1988

1980 1990

No Observacional Methods

- Pearce 1988
- Debagger 1991
- Fenell 1996
- Thornton 1997

Traditional Techniques

- Research focused primarily on the flow of visitors between destinations
- Macro level
- Few subnational information
- Space-time diaries
  - Systematic recording of space and time
  - Requires the individual active participation in the data capture process.
  - **Subjective process**

TOURIST MOBILITY: Literature Review

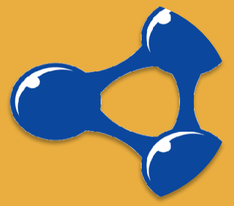
New Technologies

- ***The technology advances in the field of digital systems, such as GPS tracking devices, have opened a new research field within the tourism discipline.***
- Micro level
- GPS devices, combined with space-time analysis techniques facilitates a **better understanding** of the **visitors' behaviour** diversity.
- **Open Data** will help to identify the context of each point.

Tracking Technologies

- McKercher 2004
- Lau and McKercher 2007
- Shoval 2007
- Shoval 2011
- Shoval and Isaacson 2012
- …

2000



2012

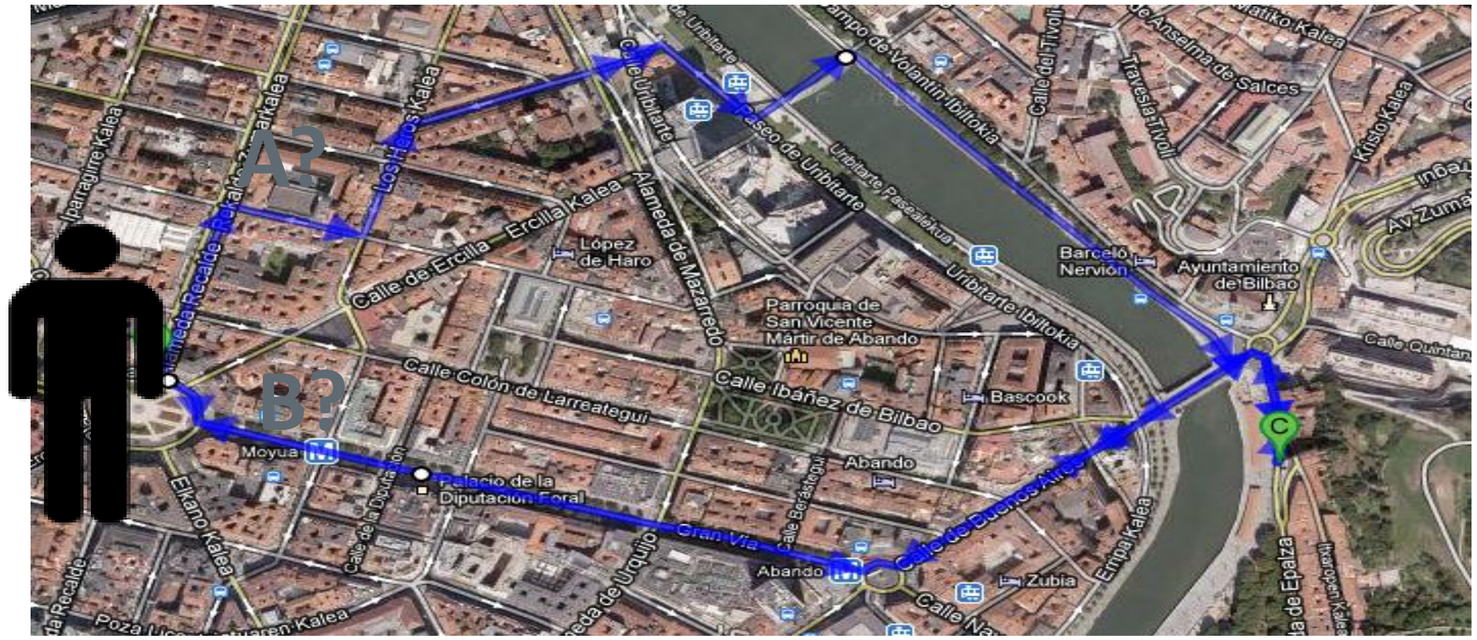
Open Data

- New Paradigm

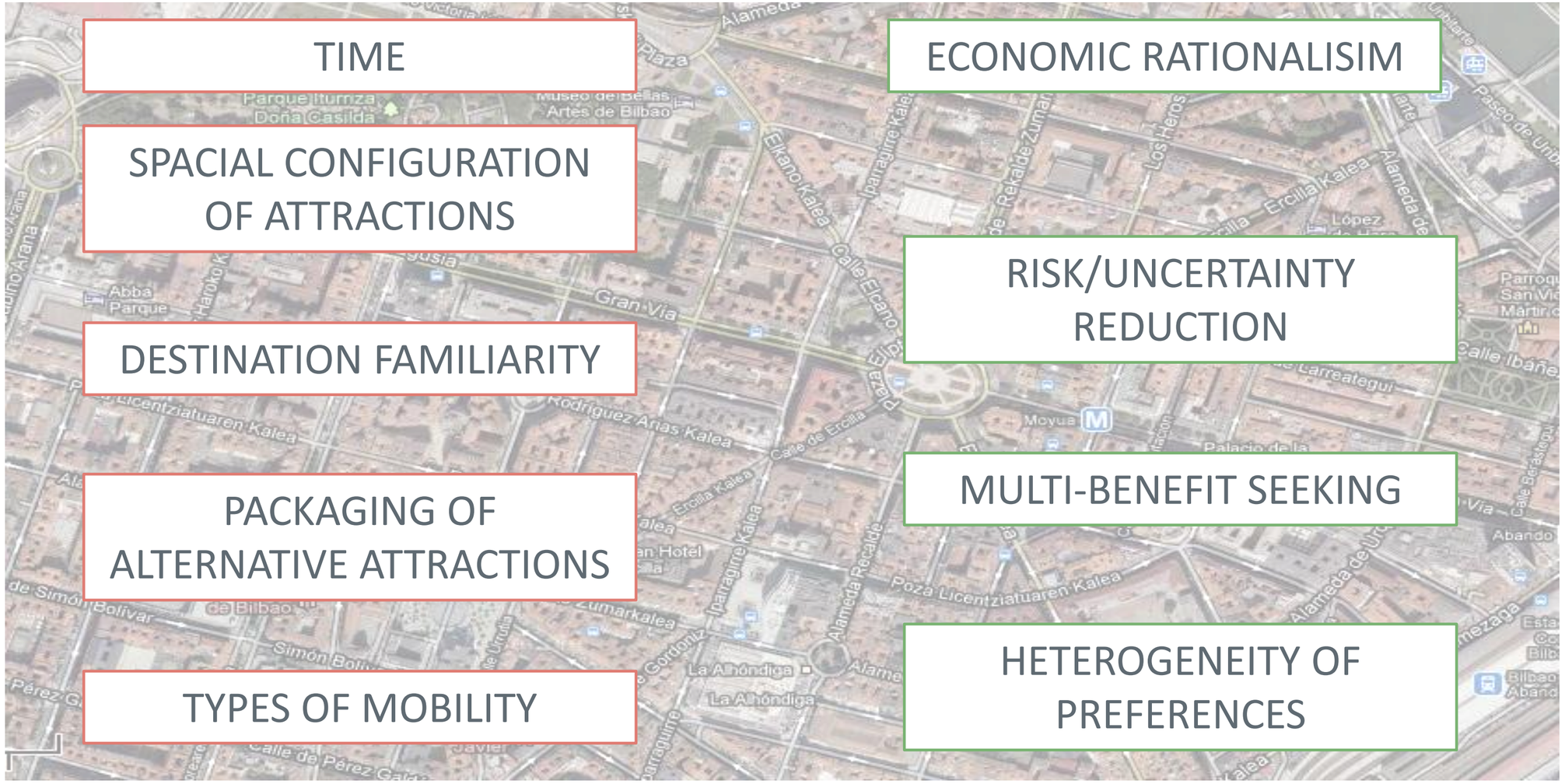
MEASUREMENT
Tourist flows

The other major research stream concentrates on MODELLING tourist **wayfinding decision-making process**

- Wayfinding can be described as the process of using spatial and environmental information to find our way in the built environment



MODELLING TOURIST FLOWS: Factors



eGIStour

Aquarium de San Sebastián
Isla de Santa Klara
San Sebastián
Paseo Nuevo
Paseo de Igeldo
Igeldo Pasealekua
Brunet Kalea
Zubimusu Parkea
Miramar Parkea
Koritza Pasealekua
Paseo de Arriola
Arriola Pasealekua
Calle de Urnieta
Av de Tolosa
Calle de Zarauz
Calle del Palacio
Calle de la Escolta Real
Paseo de Herriz
Herriz Pasealekua
Doktor Marañon Pasealekua
Calle de Munto
Paseo de Lugaritz
Aieteko Lorategiak
Izostegi Pasealekua
Paseo de Izostegi
Basoerdi Parkea
Amara Kalea
San Roke Kalea
Melodi Parkea
Berio Kirol Parkea
Berio Pasealekua
Calle de Isidro Ansorena
Ibaeta
Kristina Enea Parkea
Amaiur Parkea
Instituto Oncológico
Calle de Miracruz
Calle de Iztuela
Calle de Mundaiz
Calle de Egia
Ametzagaña Kalea
Alkolea Kalea
Calle de Zabaleta
Calle de Segundo Izpizua
Calle Gran Vía
Egiako Galtzara
Ategorrieta
Paseo del Urumea
Av de Barcelona
A-8
E-80

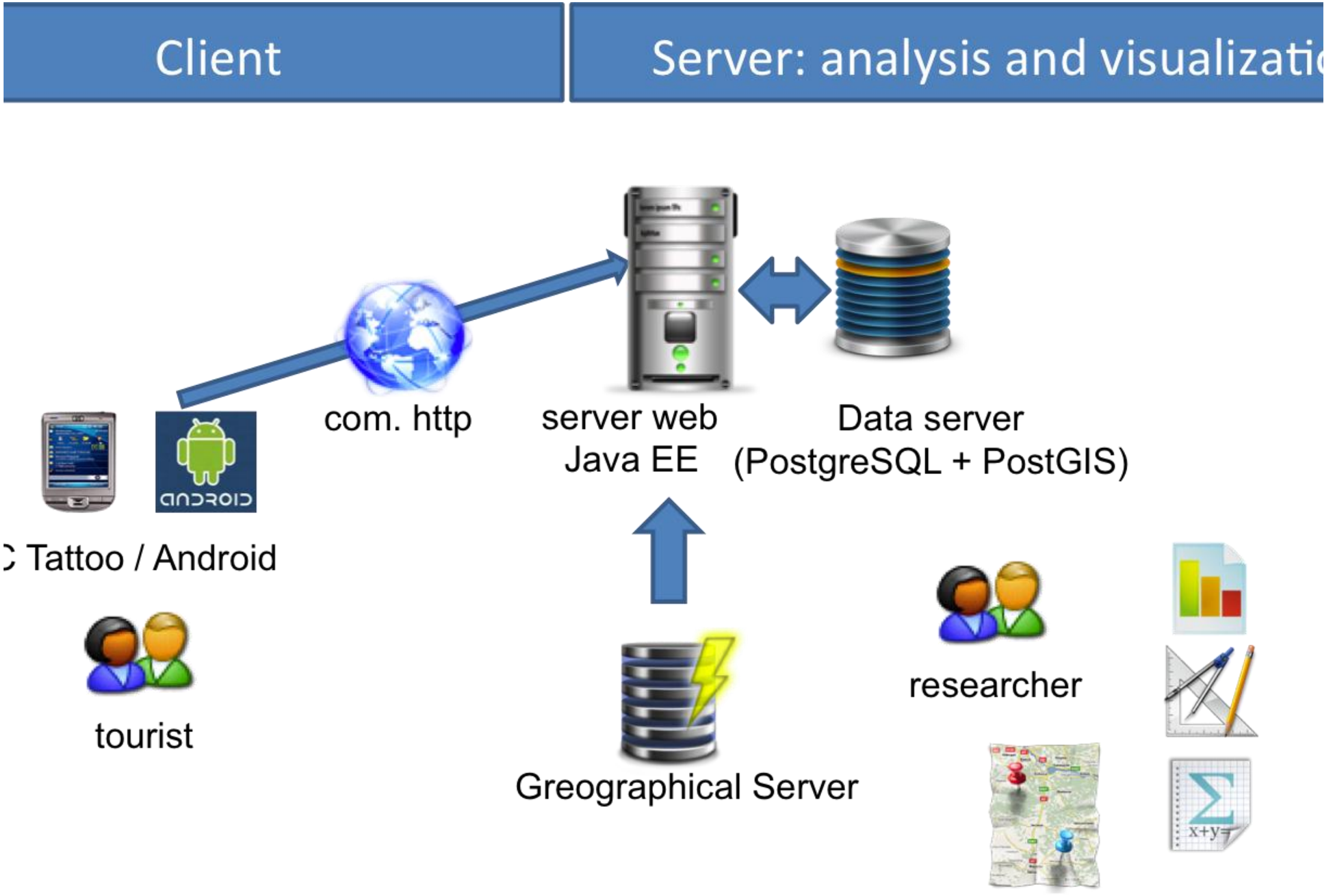
MEASURMENT: eGIStour

It is a system for measurement, analysis and monitoring of visitor flows.

This SUPPORT us

- Understanding the space-time activity of the visitors in the destination
- Identifying the scale of “destination” based on the real mobility
- Recognizing the most and less frequented places
- Recognizing back spot
- Analyzing the differences on the behavior depending on the type of visitor (typologies, segmentation)

eGIStour: architecture



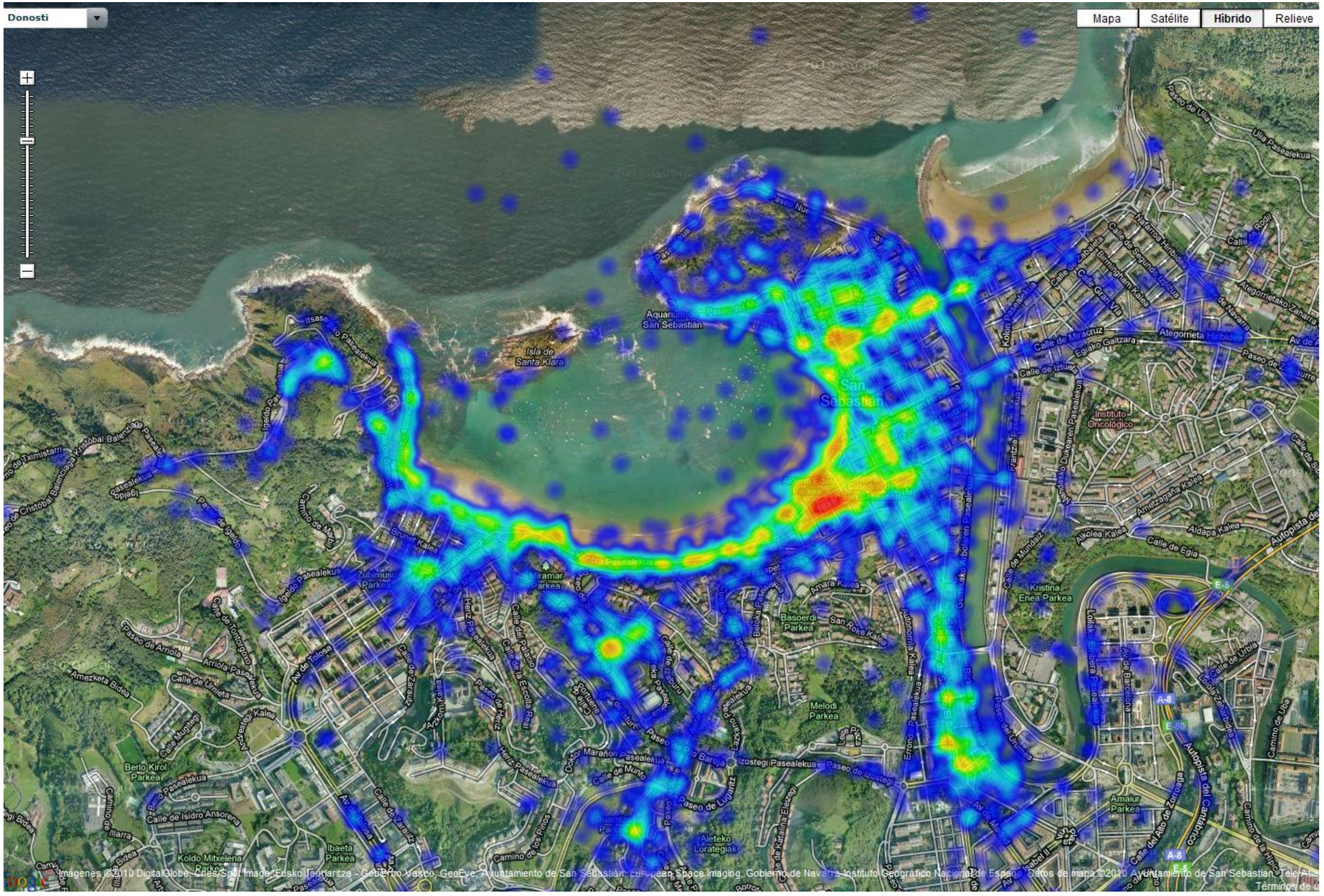
Prepare data

- Assign each variable data type (numeric, categorical, date, etc.) most suitable for analysis.
- Detection of outliers, outside the range of expected values. For example, excessive speeds, etc..

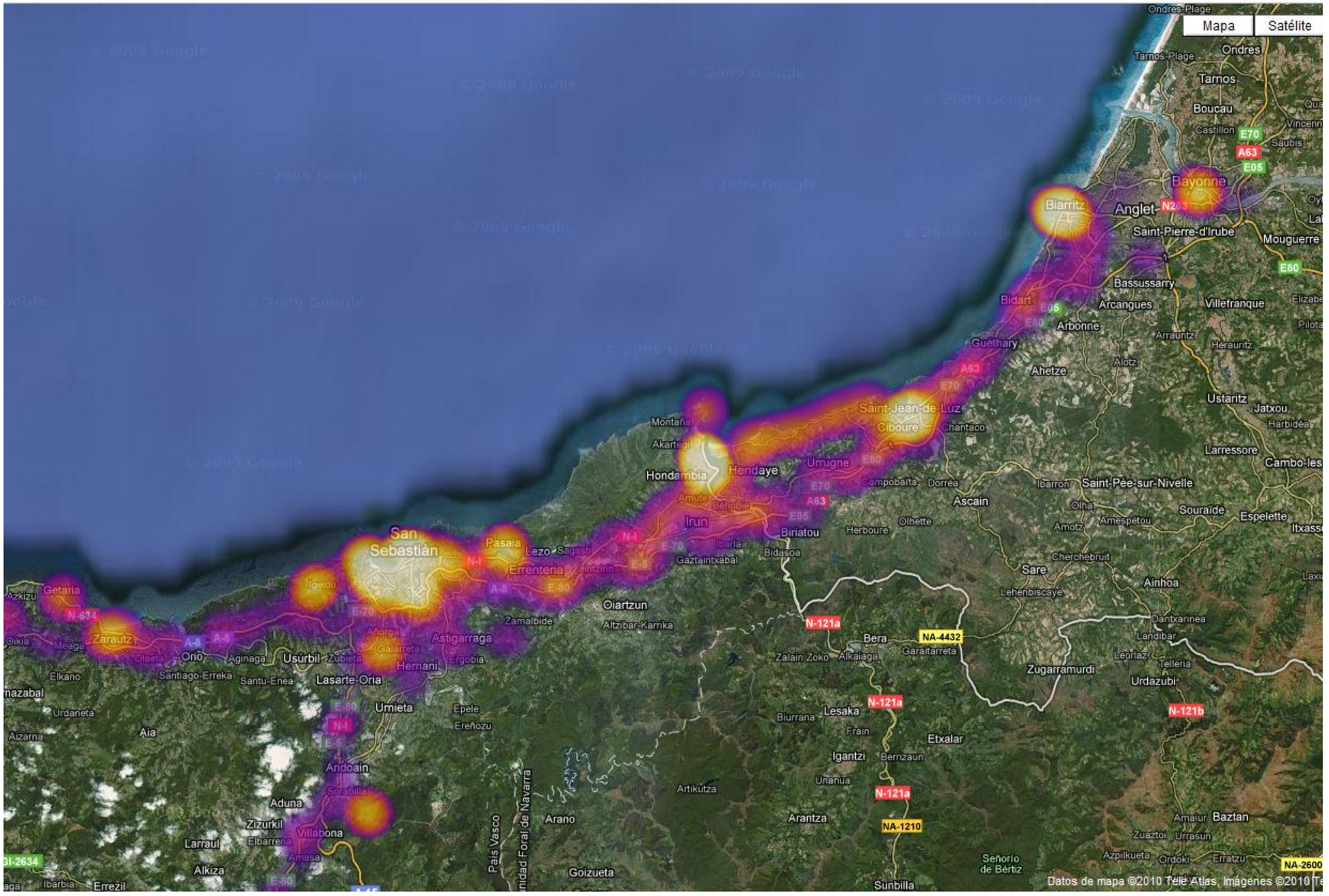
Obtain new variables

- Calculation of **times**, distances, speeds between tracking points
- Calculating new **categorical variables**: time zone, mode of transport, are outside or inside the destination

EGISTOUR - visualization



Visitors moving to Bayonne



Mobility pattern of visitors hosted at accomodations in Donosti

Mobility pattern of visitors hosted at accomodations in Bilbao

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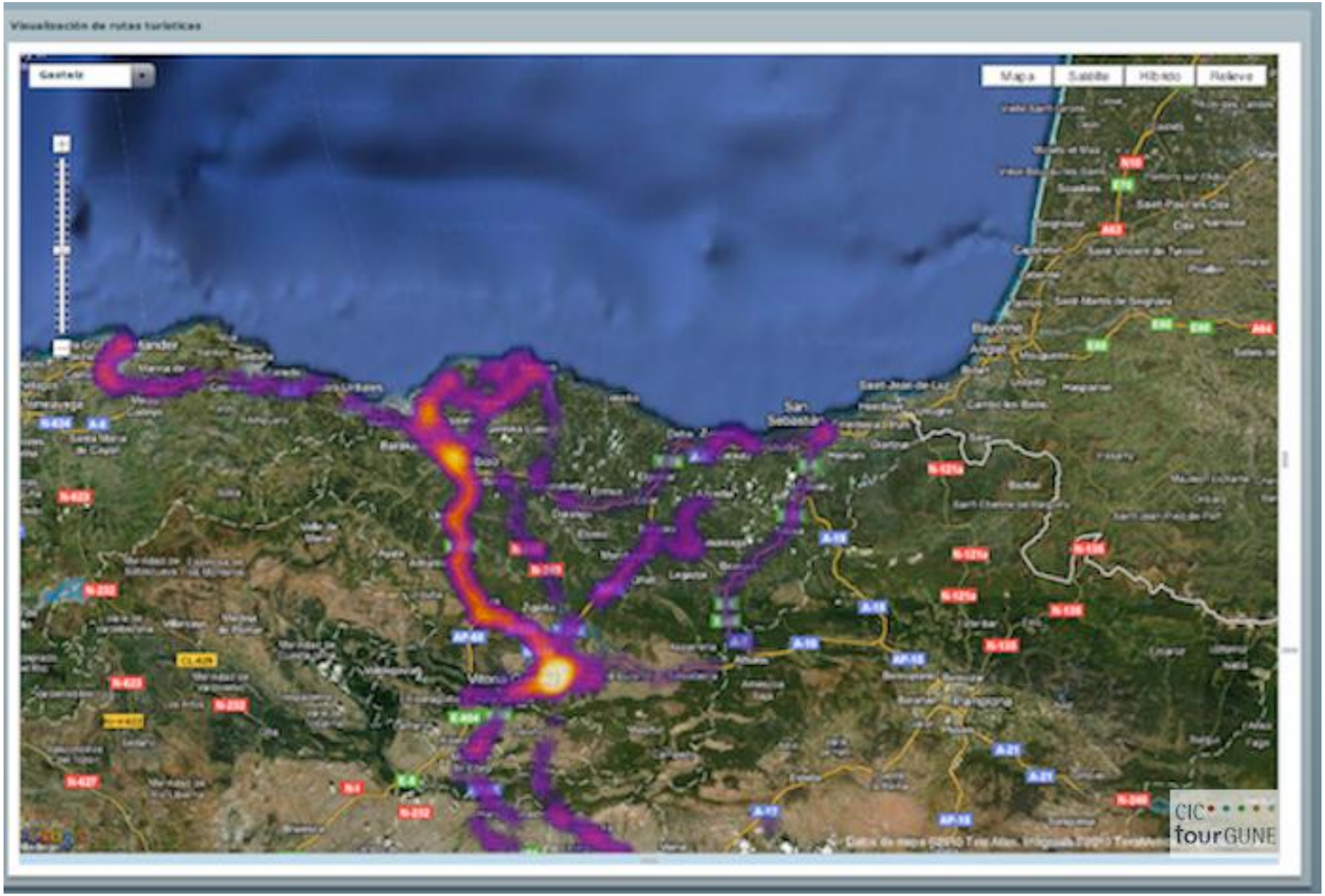
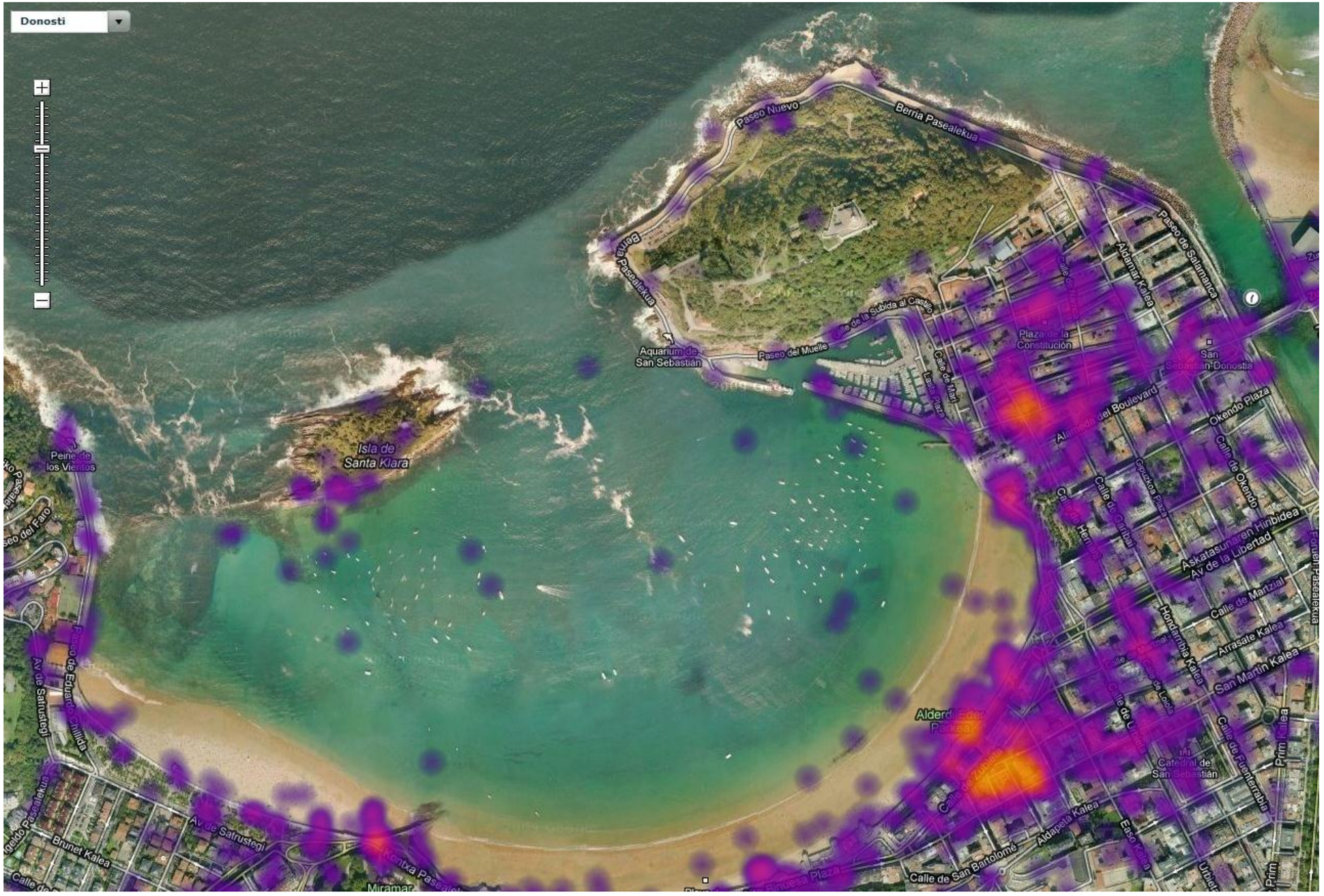
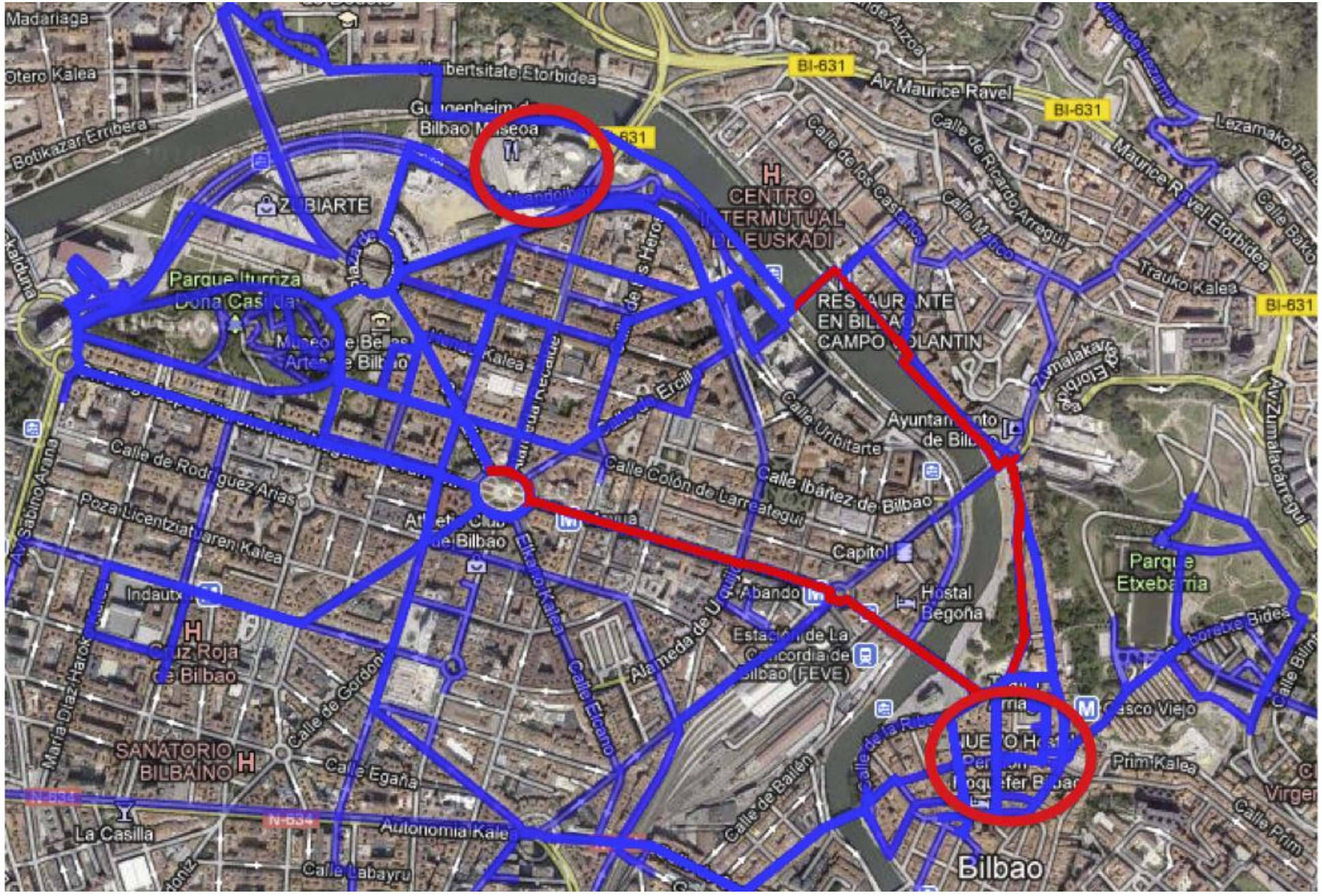
Mobility pattern of visitors hosted at accomodations in Vitoria-Gasteiz



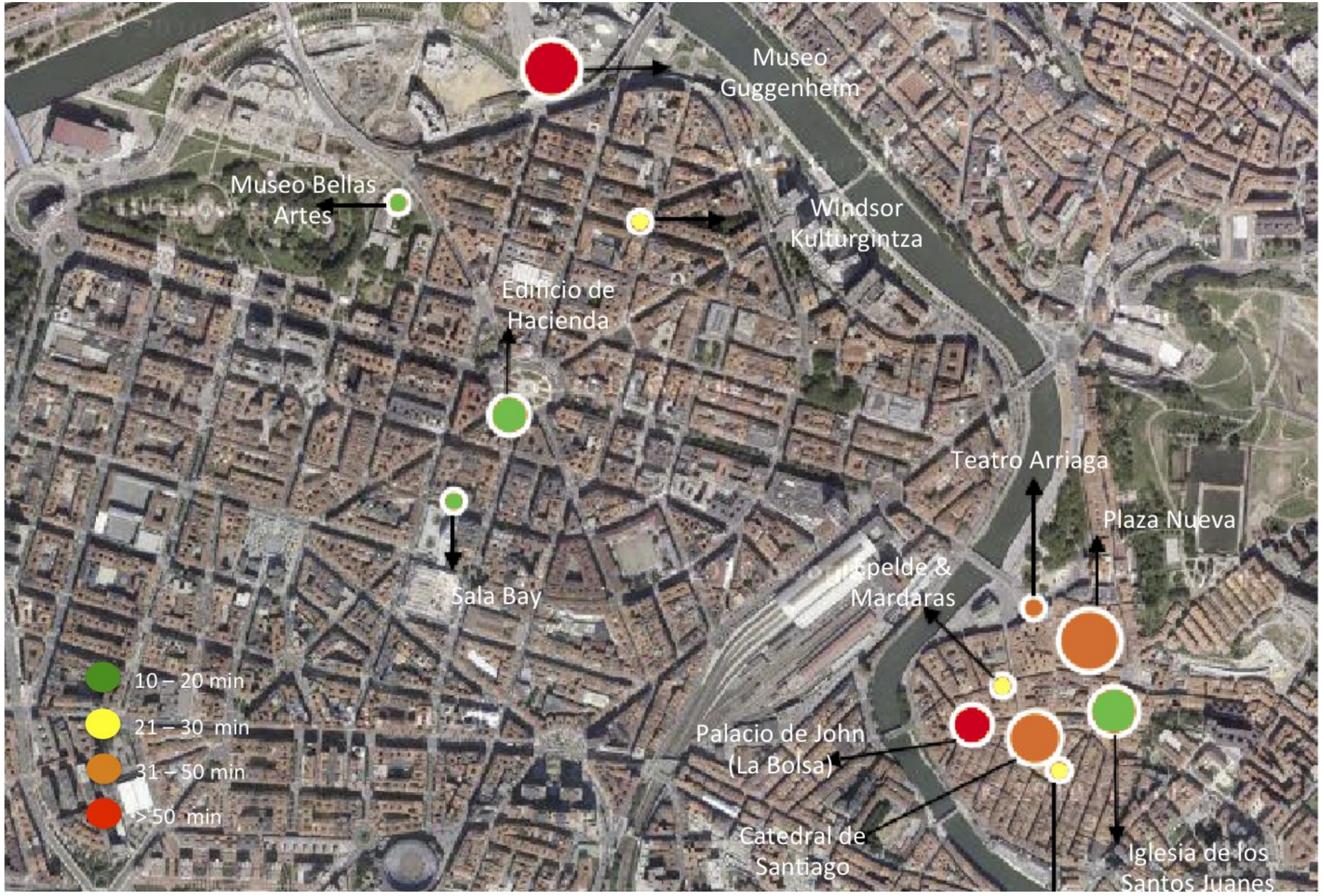
Visualización GIS: Donostia-San Sebastian



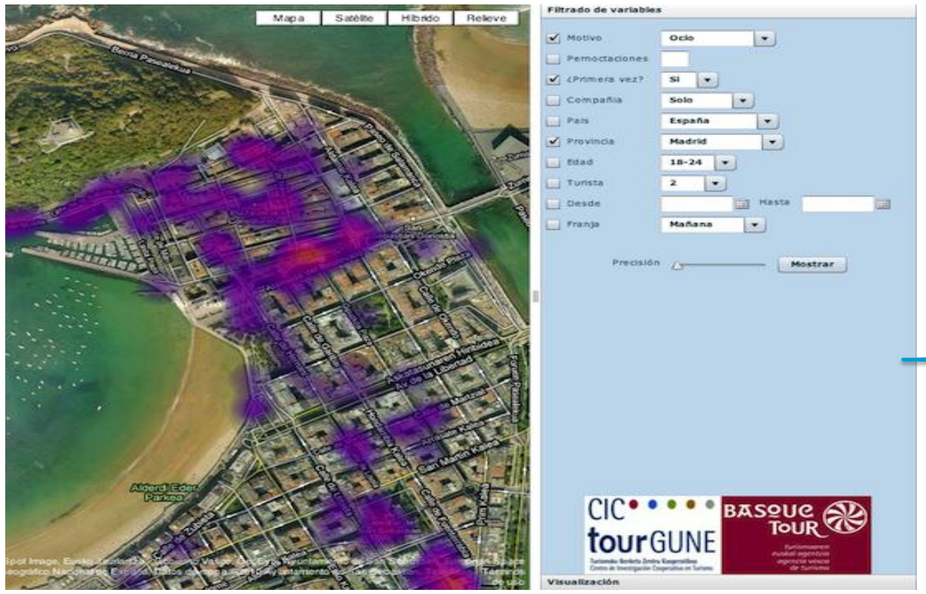
PILOT – 2010 SUMMER

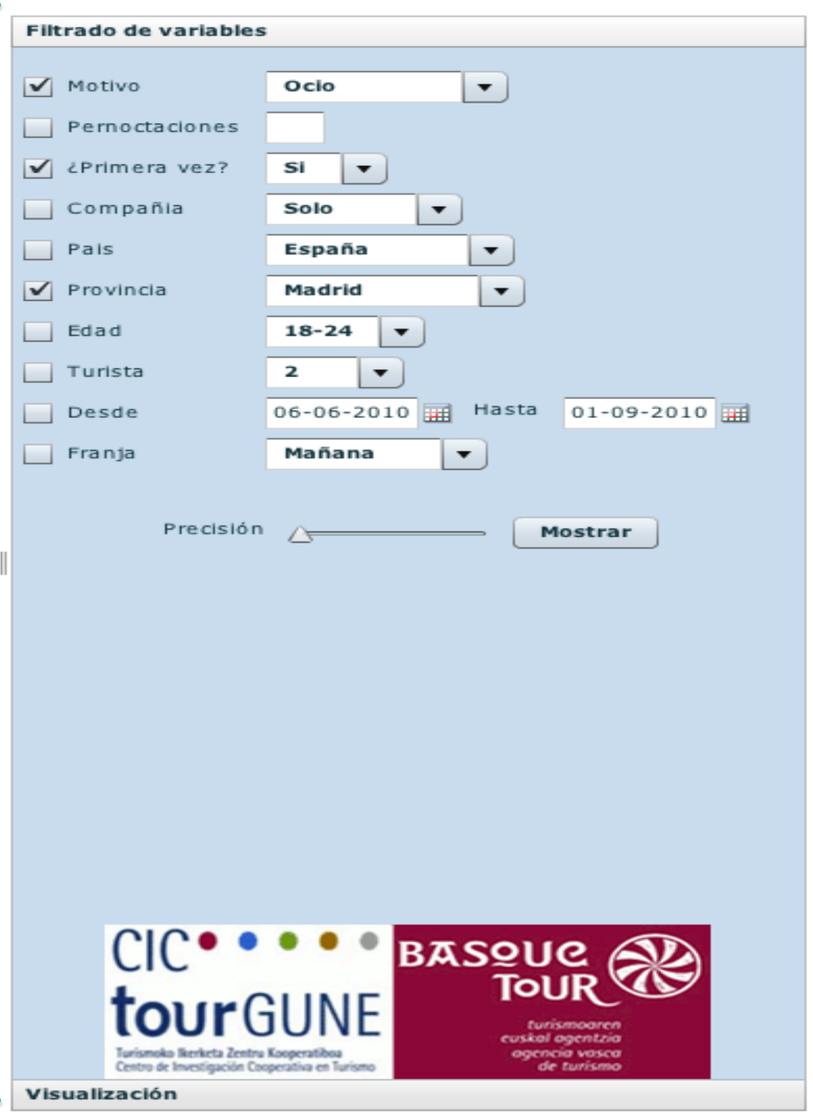


PILOT – 2010 SUMMER



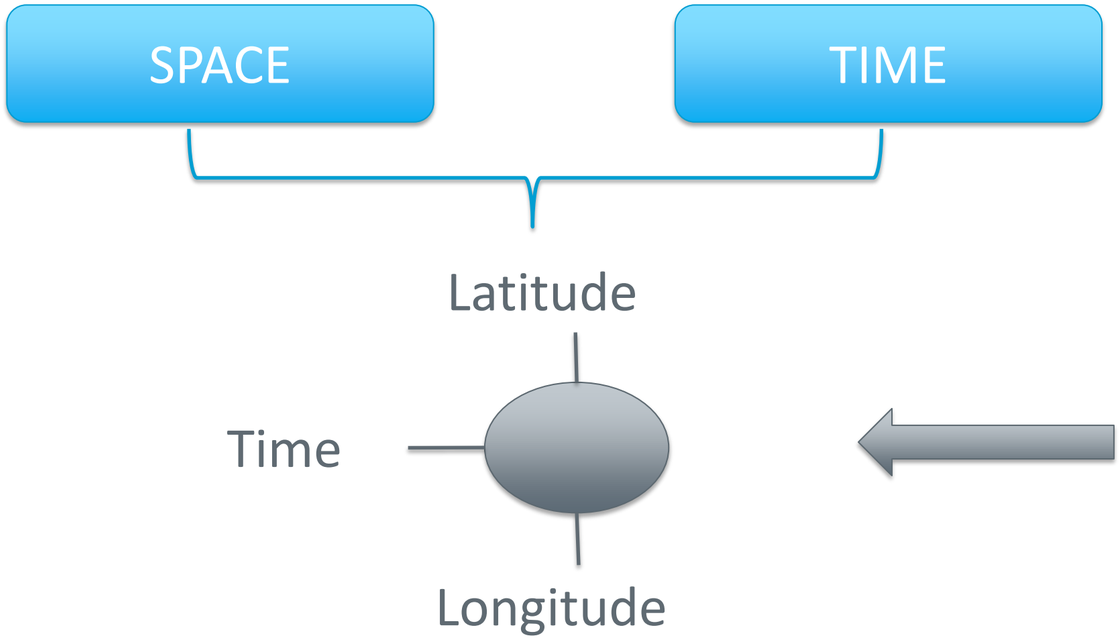
EGISTOUR : empowering stakeholders



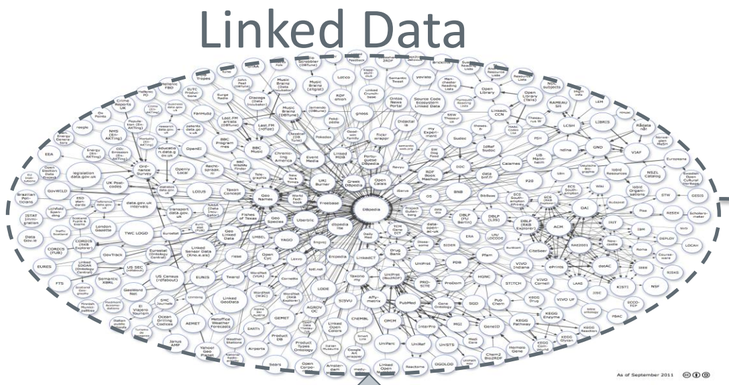


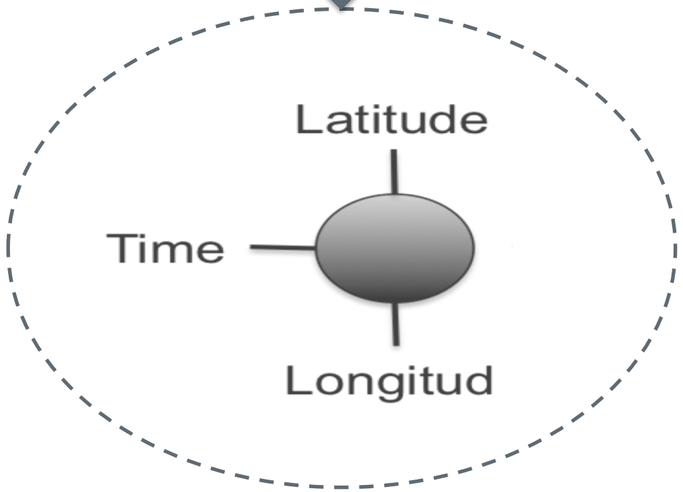
Multi-destination

eGIStour:
OpenData



eGIStour: OpenData

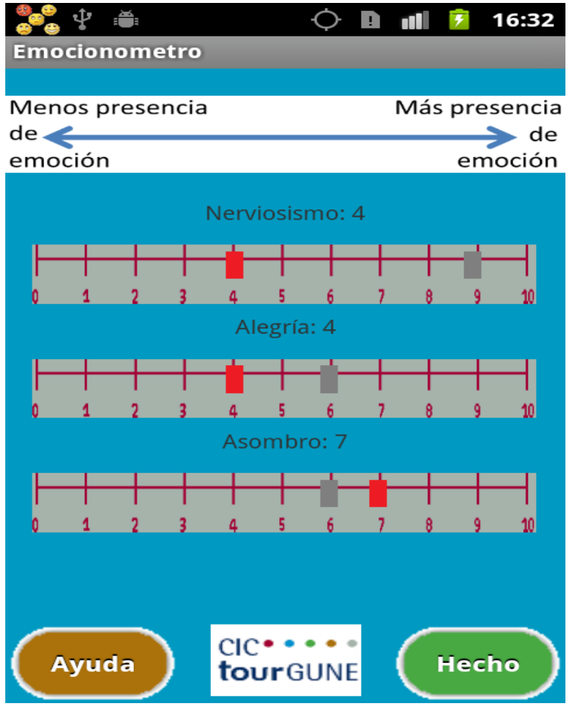




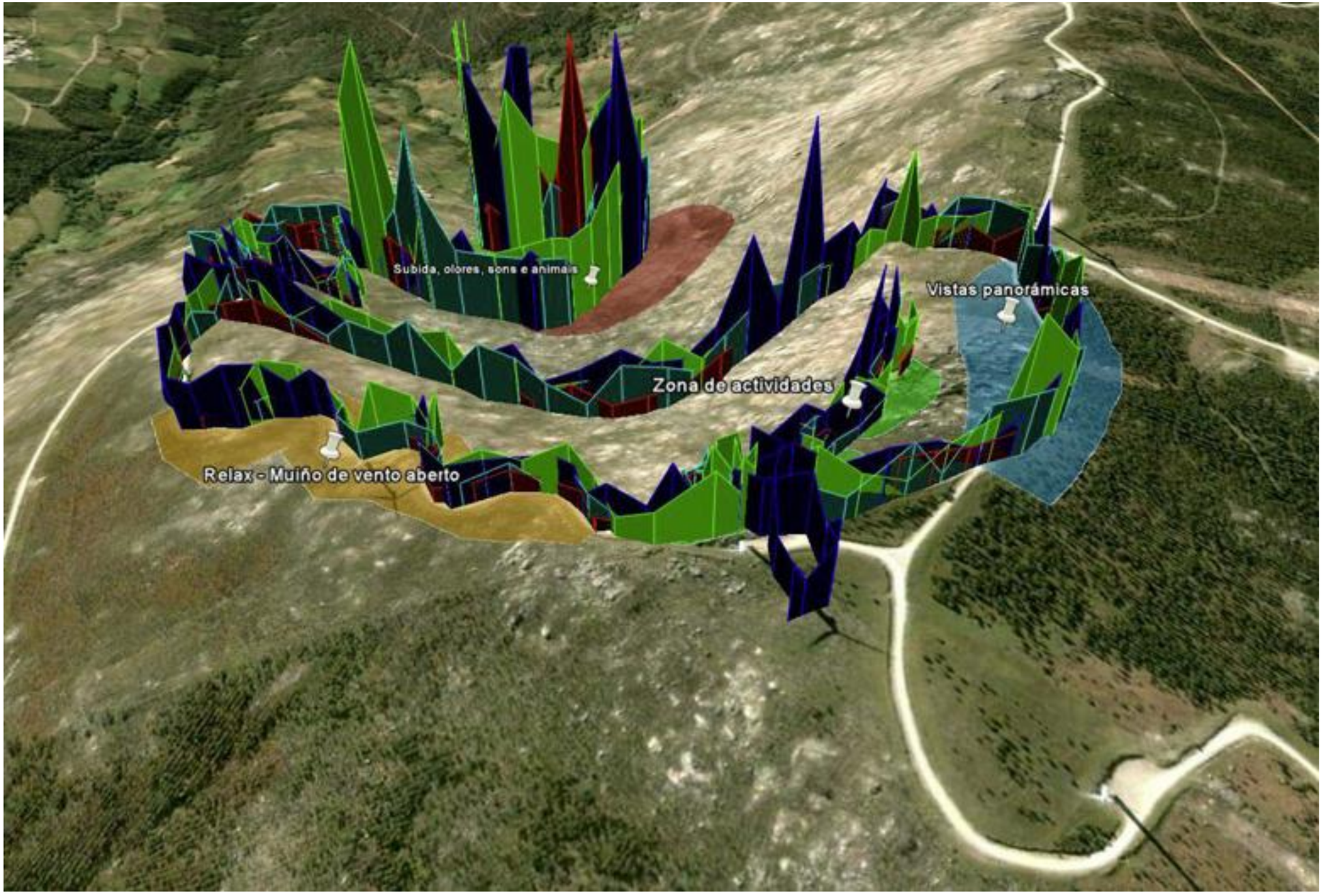
Open Data will help to identify the context of each point.

- SPACE
- TIME
- CONTEXT

MEASURIN EMOTIONS: “emotionmeter”



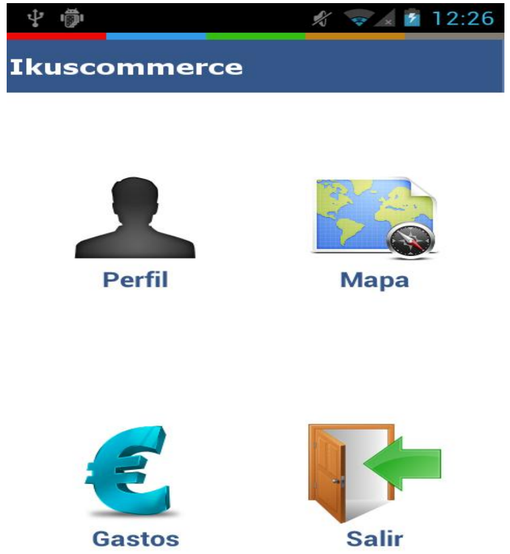
MEASURING EMOTIONS: visualization

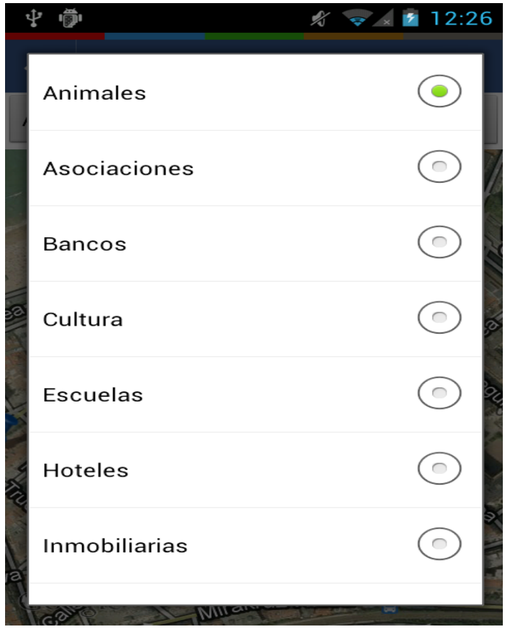


iKUScommerce

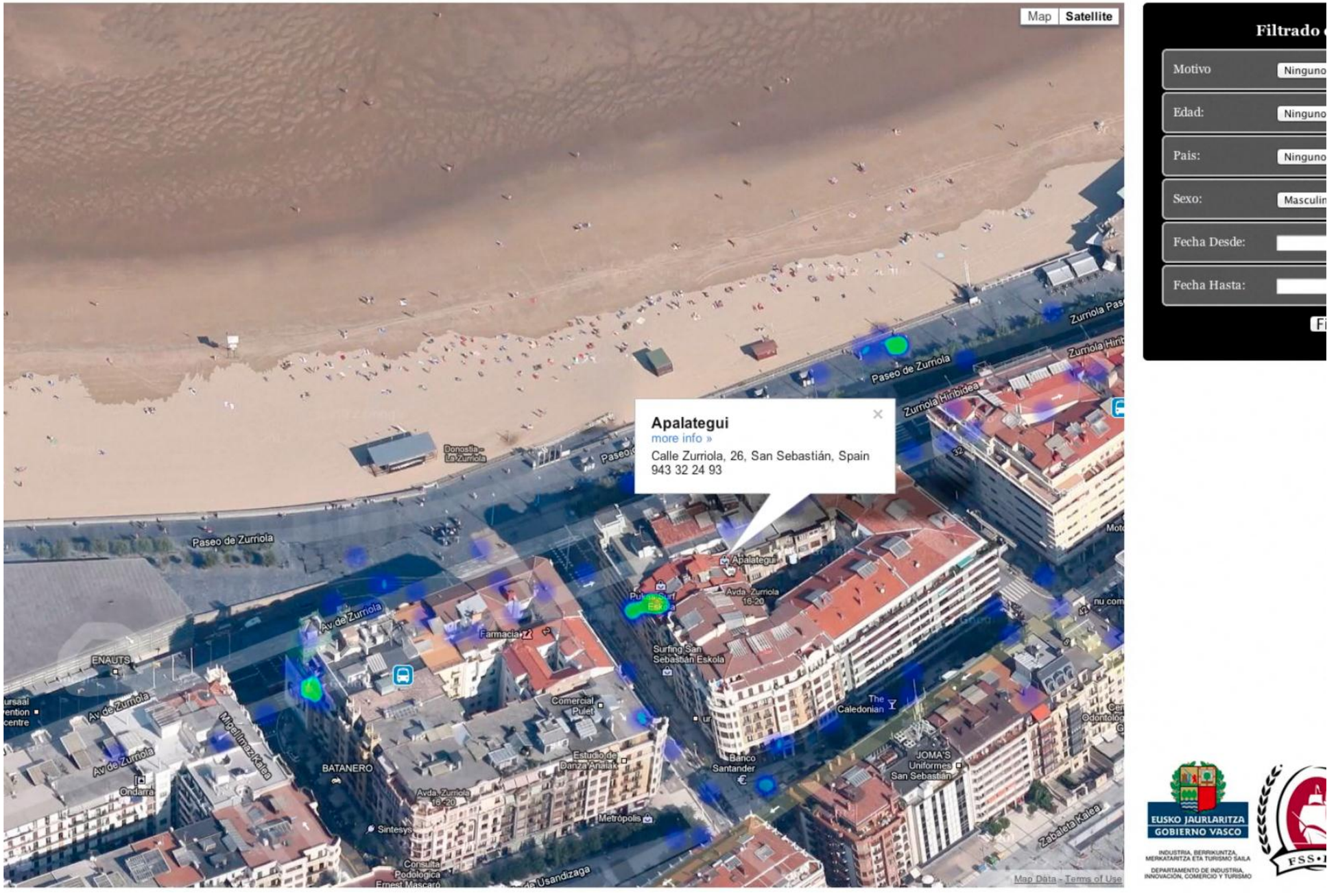
- iKUScommerce encompasses the measurement, analysis and modeling of consumer flows
- **Understand the phenomenon of the consumer mobility** from an innovative approach
- Spatio-temporal data relating to **demographic profiles and mobility patterns**
- Identify **purchase itineraries**

iKUScommerce: Mobile Application





iKUScommerce: web application



IMPLICATIONS

OPPORTUNITIES

- Improve overall quality data
- reduction of data entry error,
- reduction of recall bias (esp. for short trips or same-day visits),
- more consistency and harmonisation because of the use of algorithms
- Improved timeliness
- less collecting and processing time: near real-time results
- Reduction of burden on respondents and administrations
- It can be an additional source of information for the system of tourism statistics (quick indicators)
- Additional indicators to cover existing gaps: flows of non-residents not staying at rented accommodations (VFR, …)

IMPLICATIONS

OPPORTUNITIES

- Information previously not available
- Movement patterns of tourists within a geographical area, detailed regional/destination level,
- Event visits (very small areas),
- Repeat visits (currently, longitudinal or panel data from surveys is very seldom available), etc.
- prediction of tourists moving from one attraction to another or the
- route they may choose to follow
- outcomes of the transition probability matrix to estimate the number of tourists
- Decide on the placement of pathways
- Estimates to make de “ecosystem or value-chain” more efficient

PERSONAL CONTEXT BASED INFORMATION AND SERVICES

m-Commerce
m-Marketing

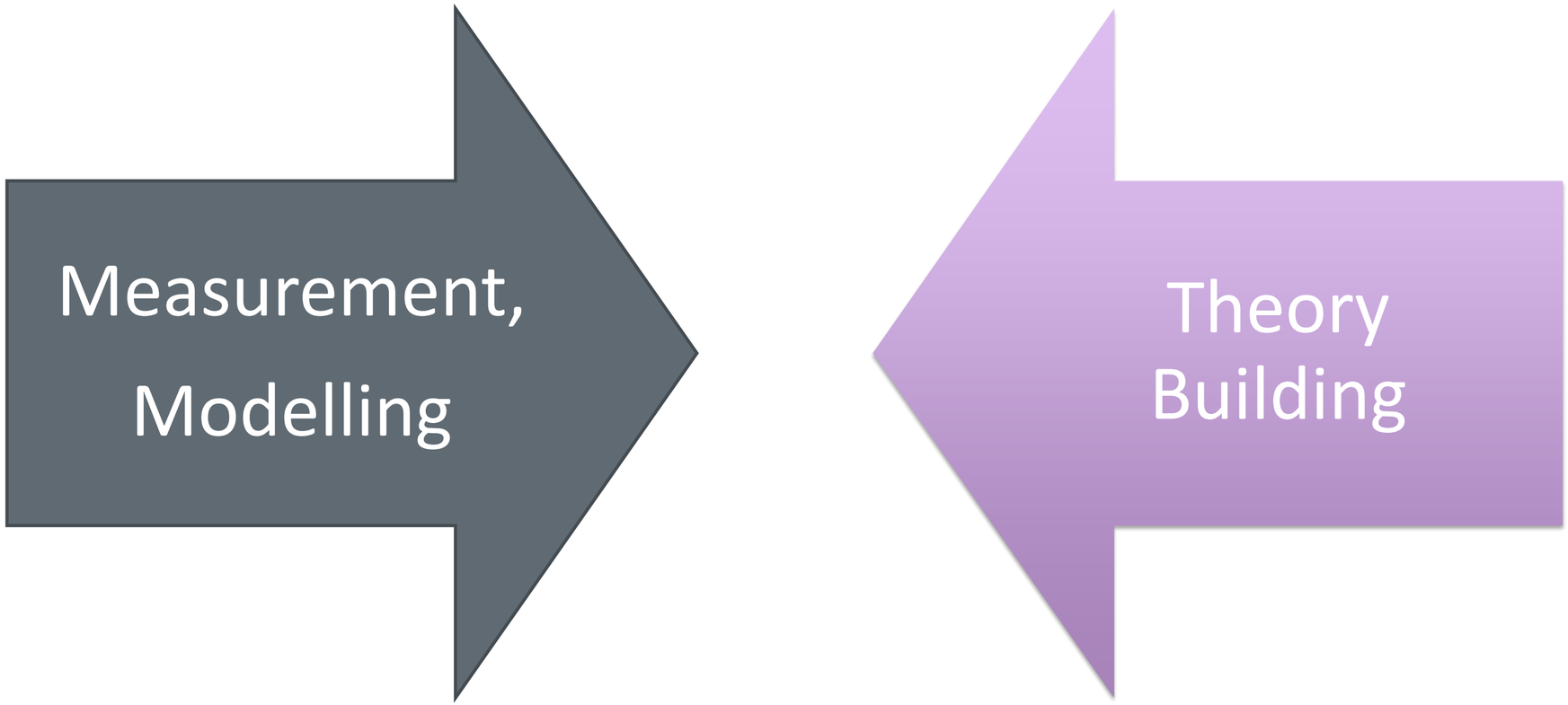
PERSONAL CONTEXT BASED INFORMATION AND SERVICES

m-Commerce
m-Marketing

PERSONAL CONTEXT BASED INFORMATION AND SERVICES

m-Commerce
m-Marketing

MEASUREMENT AND THEORY IN TOURISM



MEASUREMENT AND THEORY IN TOURISM

The need to understand how we have worked to convert latent constructs into meaningful measures through rigorous, objective procedures and practices.

We have to figured out how to define the kind of fundamental quantities.

MEASUREMENT AND THEORY IN TOURISM

The theory within Physical Sciences

- Strong theories
- Measurement can often be used to confirm, reject, or refine theories
- Theory is often viewed as a necessary precursor for measurement

The theory within Social Sciences

- Not clear whether it is the theory that is faulty, or the measures, or both
- Lack of strong theory in the social sciences likely plays into the lack of well-accepted common metrics

SUMMING

Measures are social constructs and the process of gaining standardization around measures is very much a social process.

Scientific approach and tecnology should play a central role in the development of standards

I hope I have generated some thoughts we might kick around in further discussions as we seek to understand common ways to address tourism as a discipline

Moving forward…

SMATER DESTINATIONS
COLLECTIVE INTELLIGENCE

NEW UNDESTRANDING
NEW APPROACHES:
Measurment and modelling of mobilities

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