

RITS-Net

Final Conference

Rome, 4 December 2014

Name



RITS-net

Regions for Intelligent Transport Solutions



European Union

European Regional Development Fund

Introduction

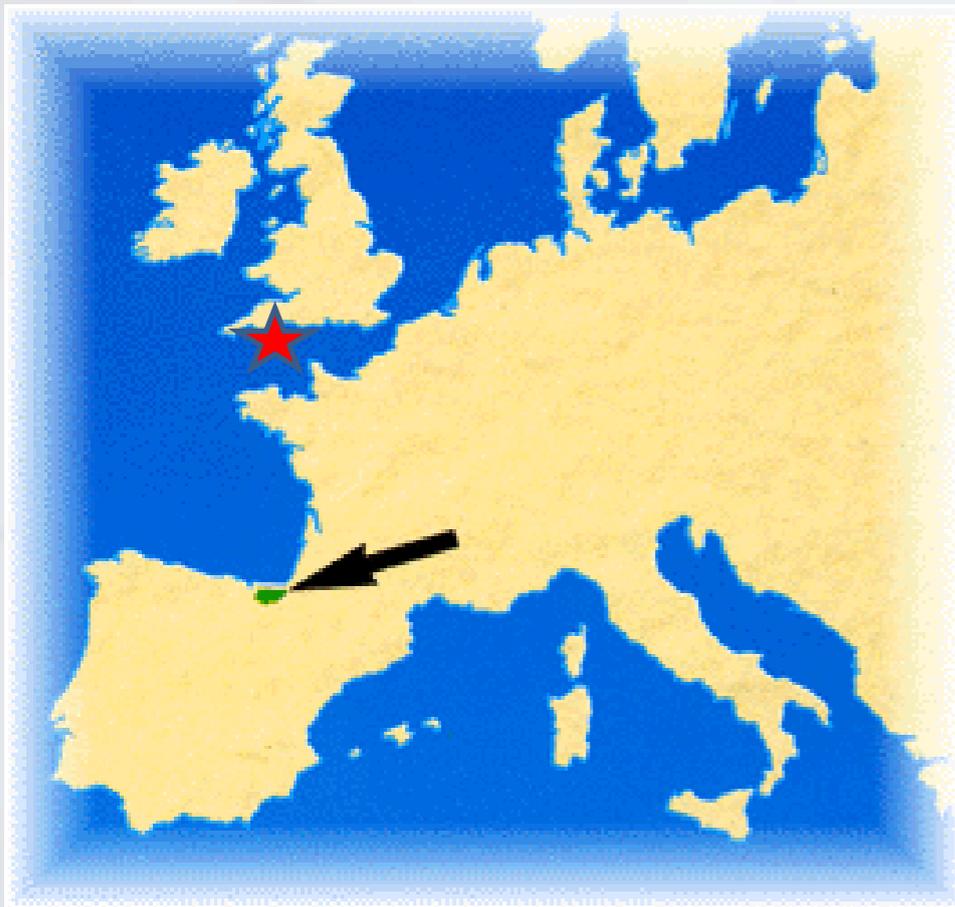
- Overview of the Region/Main figures

Brief description of the main city: **DONOSTIA – SAN SEBASTIAN**

European Capital of Culture 2016!

Just over the border with
France

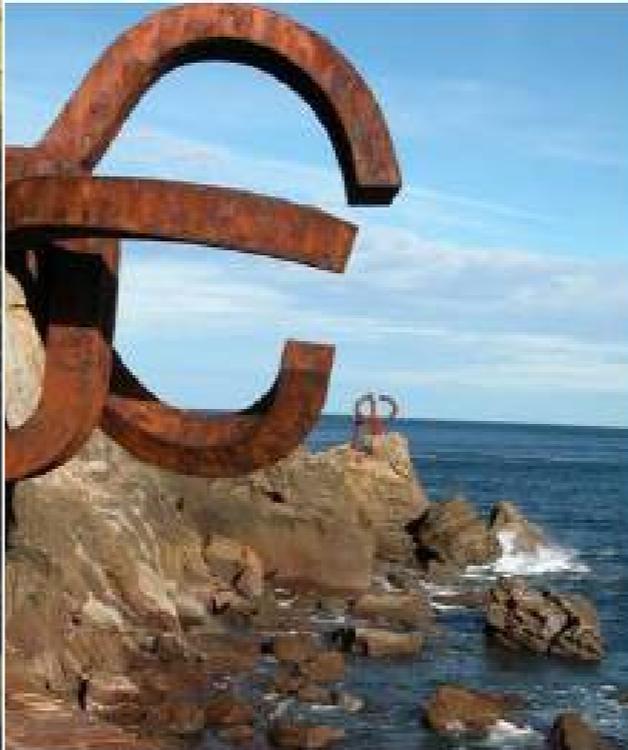
- Capital of Gipuzkoa (Basque Country, Spain)
- Population: 186.000 Inhab.
- Metropolitan Area: 400.000 Inhab.
- Eurocity: 500.000 inhab.

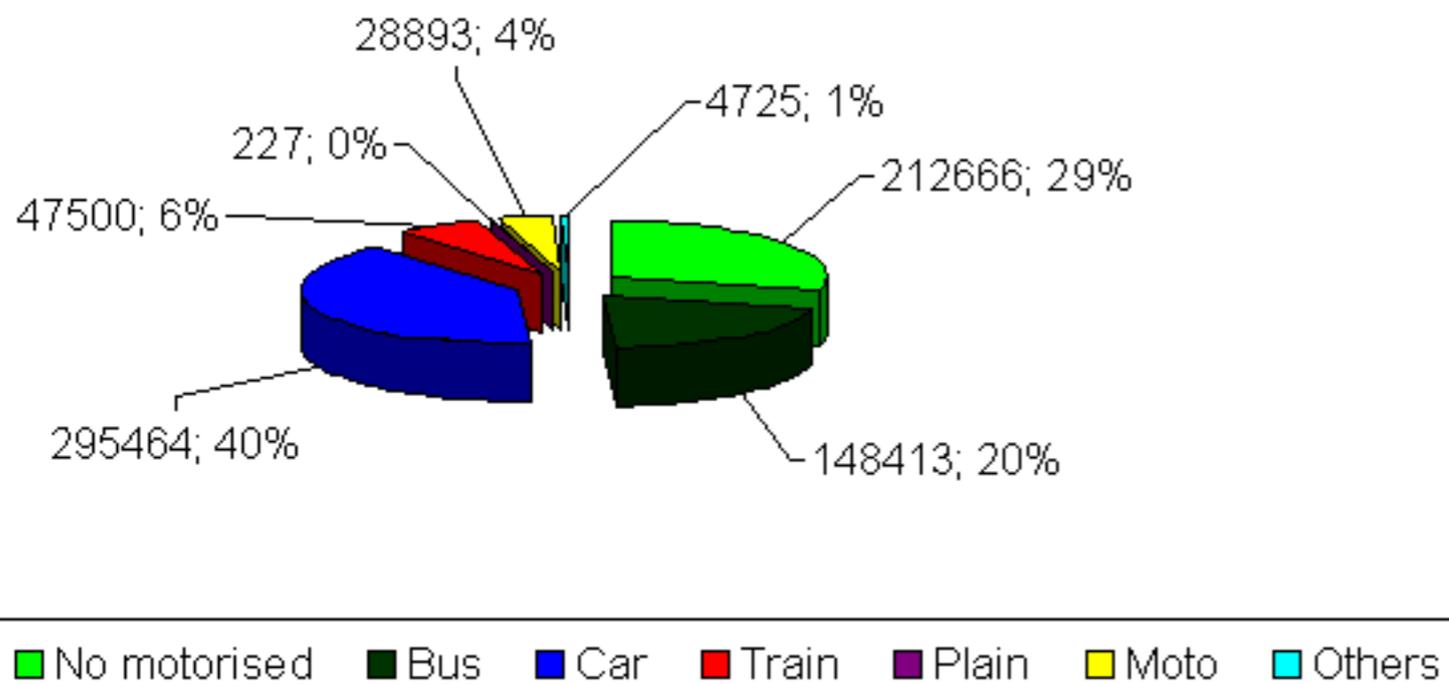
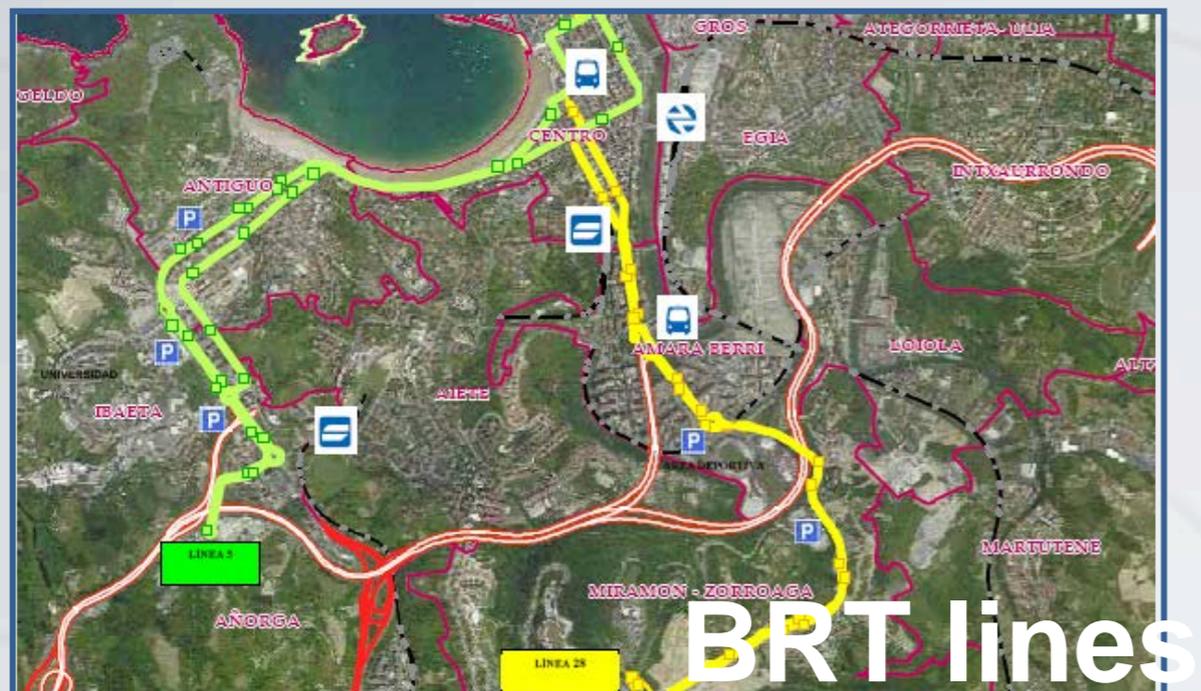


Area of the municipality: 6.002,72 Ha.
Urban Area: 34%
Rural Area: 66%



- Gipuzkoa: 1989 km²
- 704.000 inhabitants
- 88 municipalities
 - 32 municipalities with less than 1.000 inhabitants
 - 25 municipalities between 1.000 - 5.000 inhabitants
 - 25 municipalities between 5.000 y 20.000
 - 5 municipalities between 20.000 y 65.000
 - 1 with more than 150.000 inhabitants





Motorization rate

420 cars / 1000 inhabitants
which means 75.811 cars

Total Modal share:

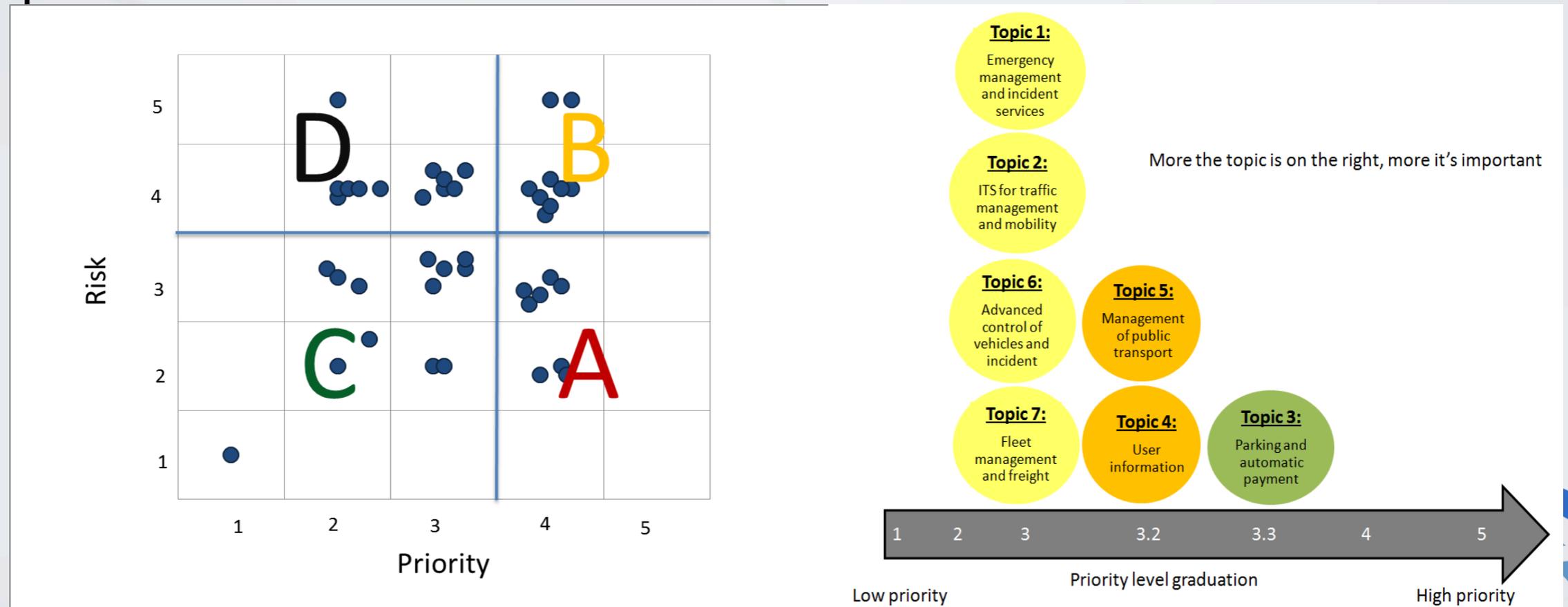
Walking and cycling	29%
Public transport	21%
Car	40%
Train	6%
Motorcycle	4%

Transport challenges

- **Modal split:** The use of private car is intense in metropolitan trips.
- **not enough coordination** among transport operators and authorities
- **E ticketing** is spread 100% but different and non-compatible e-ticketing systems.
- In **rural areas** the use of public transport is very low
- **Congestion** in the access of San Sebastian in rush hours.
- **Freight transport:** Gipuzkoa suffers from massive international freight transport as Gipuzkoa is located in the French-Spanish border and there are just two ways to go through the Pyrenees. Therefore, bottlenecks are common in the border and nearby

Transport Priority Measures

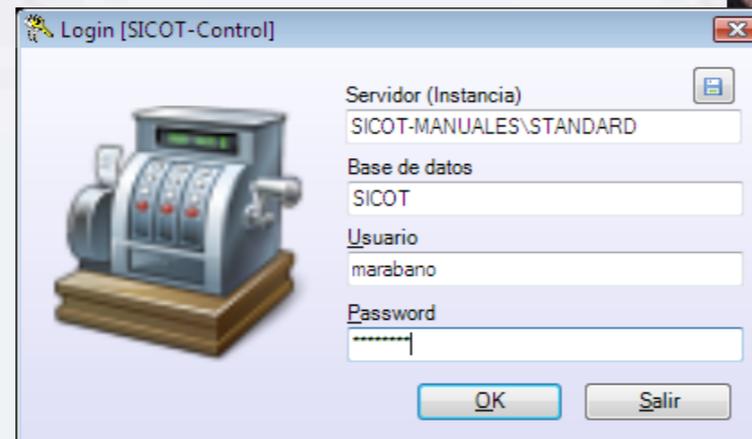
- Topic 4: User information
- Topic 3: Automatic ticketing
- Topic 5: Management of public transport
- Topic 6: Advanced control of vehicles and incident



Main ITS applications in Use

Smart ticketing & Fare integration for public transport

Integrated fare system	
AVL system: 100% fleet equipped	✓
E-ticketing: urban, metropolitan and rail 100%	✓
Clearing issues	✓
Internet booking and ticketing	✓
Payment with mobile devices	Pilot project – In progress ✗



Main ITS applications in Use

Smart ticketing & Fare integration for public transport

Transport authority issues cards



Selling of cards, tickets, top up



Travel



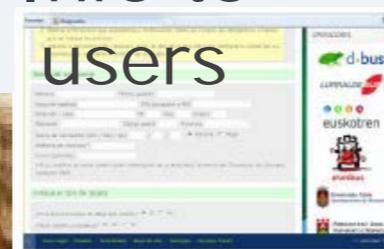
Control centre



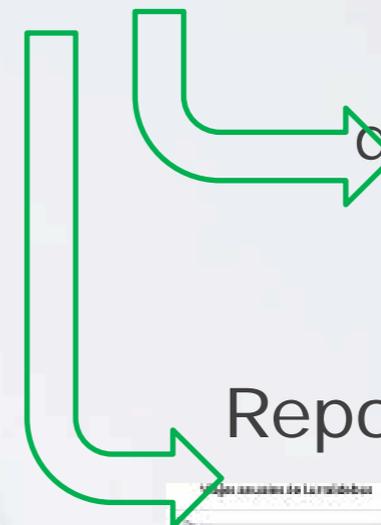
Info to users



CONTACT CENTER



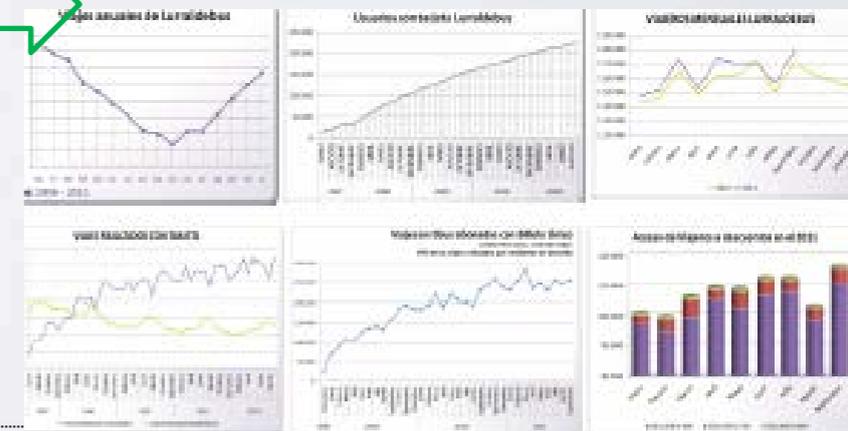
WEB



Income distribution



Reports of travellers



Main ITS applications in Use

- Progressively, interoperability schemes were adopted among administration and operators.
- Clearing process in back office, compensation among operators, transfer compensations, due to changes in the revenue off all operators minimum revenues guaranteed
- More than 85% of total trips done with e-card
- Interoperability among all operators (16 companies)
- About 60 million trips per years with integrated fares system. (700.000 inhabitants in Gipuzkoa)

On board equipment

EQUIPAMIENTO EMBARCADO



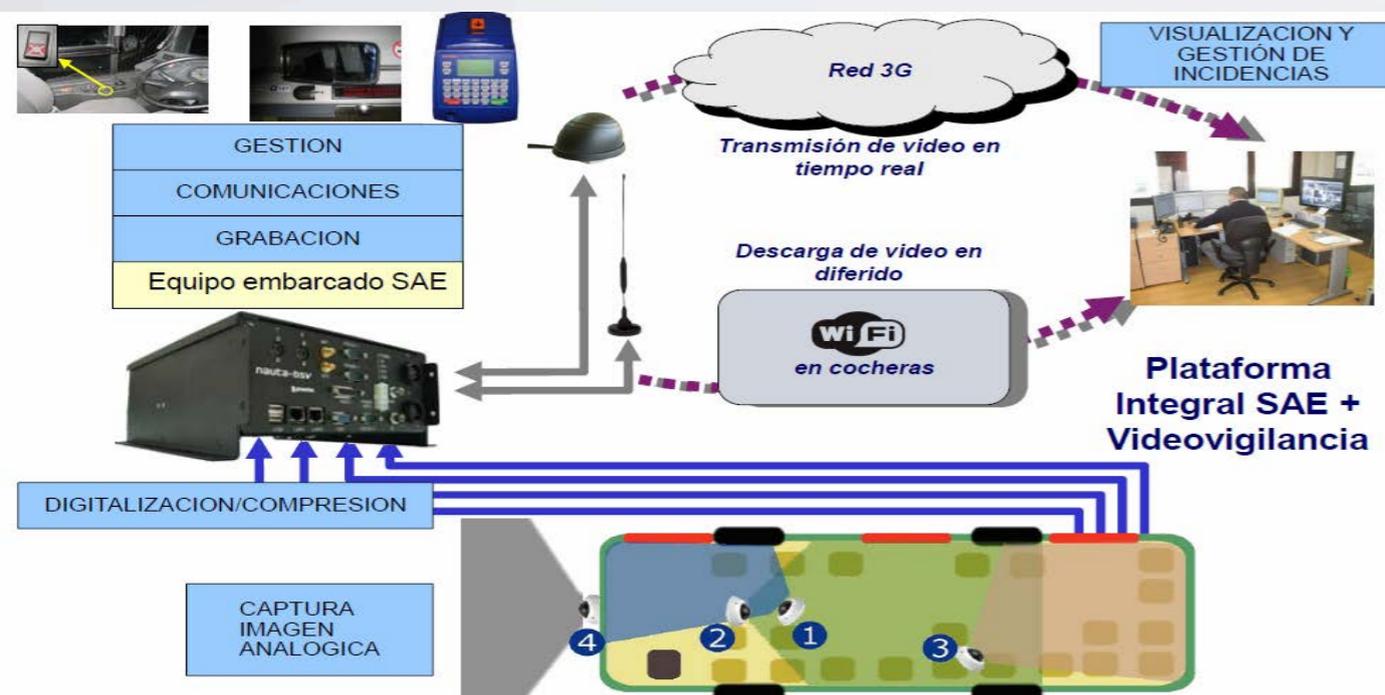
Other equipment



Main ITS applications in Use

Video surveillance

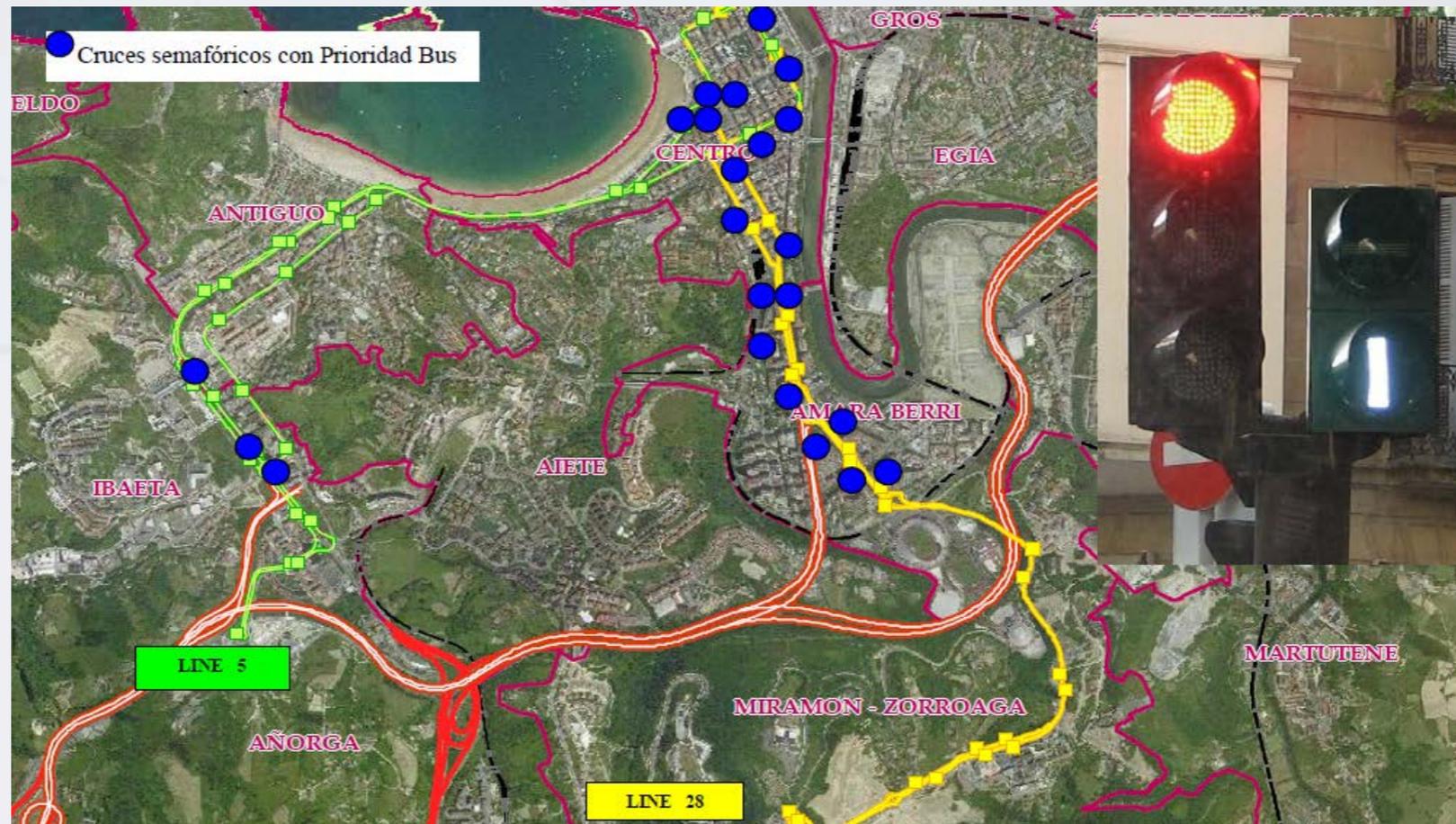
- Prevent acts of vandalism, attempted theft and incidents on board.
- Make recordings on board, with the possibility of generating real-time alerts to any incident and viewing real-time remote images inside the vehicle.
- Identify the exact location where an incident is occurring
- manage the intervention of the emergency services and law enforcement.
- Real-time information on traffic conditions in city.



Main ITS applications in Use

Traffic signal priority

- Integration between traffic light system and bus AVL (optical fiber communications, GPRS and 3G)
- Bus Priority System is automatically activated only when buses have delays.

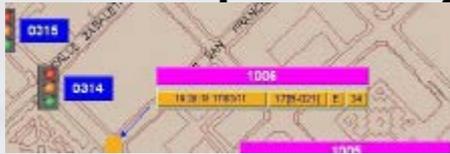


Main ITS applications in Use

Traffic signal pre

- Located in 80 traffic light crosses

- Orange: bus priority request



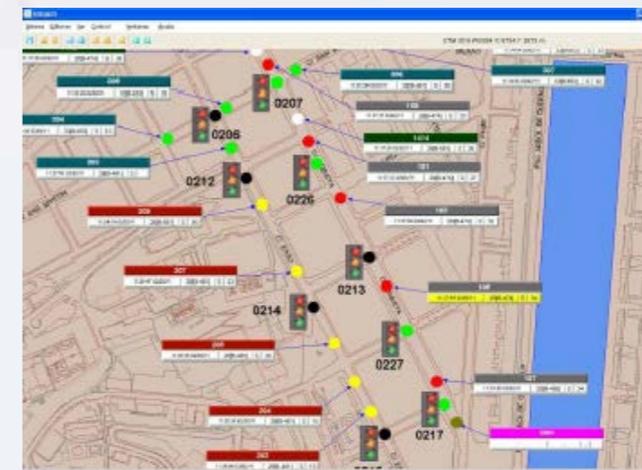
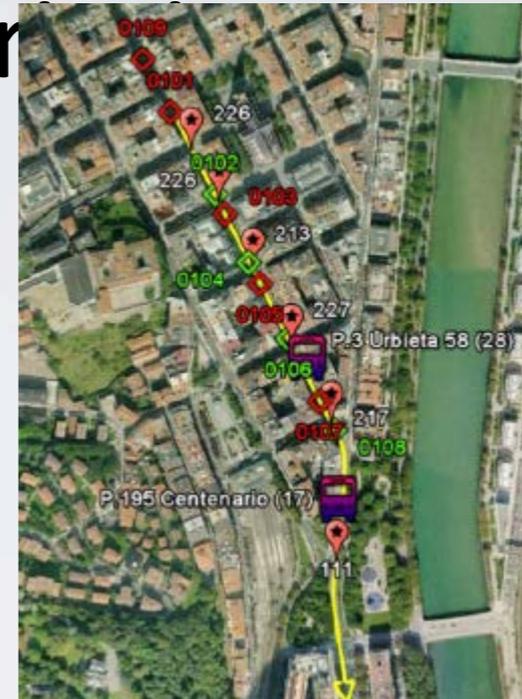
- Yellow: no priority over bus



- Blue: bus pass with priority given



- White: last time the bus passed



Main ITS applications in Use

Monitoring of fleet: All bus fleet of the region is equipped with AVL systems

http://www.youtube.com/watch?v=cVT_oWyxxvul



ITS for future implementation

TOPIC	MEASURES
Topic 3 Parking and automatic payment	3.1-Smart ticketing – Interoperability in all Basque regions 3.2- Public transport payment by mobile phone (also MUGI smart card) 3.3- Smart services on street parking
Topic 4 User information	4.1-Accurate real time information, that means also smart bus stations 4.2-All mobility alternatives included in ONE application or web service 4.3-Open data server for applications–based traveler information
Topic 5 Management of public transport	5.1-Advanced priority systems for public transport 5.2-Optimization of public transport fleet
Topic 6 Advanced control of vehicles an incidents	6.1-Select an intercity area for cooperative systems laboratory 6.2-Smart systems for safe, efficient and ecological driving
Topic 7 Fleet management and freight	7.1-ITS for dangerous goods management 7.2-ITS for urban freight logistics 7.3-ITS for Road Freight Management, in Gipuzkoa transeuropean corridor.

ITS for future implementation

Measure	3.1: Smart ticketing - Interoperability in all Basque region
RITS net topic	3
User needs	<ul style="list-style-type: none"> • One transport card for all transport services • Same fare for same distance done in different public services
Cost	Depending on the contactless technology used, the machinery should be adapted or changed.
Time horizon	Fare integration takes more time than technology integration
Key stakeholders involved	<ul style="list-style-type: none"> • Transport service providers • Transport Managers authorities • Technology providers
Crucial factors	<ul style="list-style-type: none"> • Technology cost • Transport service providers attitude • The communication system the contact less transport card is using

- contactless technology used in each region is different, although all of them belong to Mifare family, Mifare Classic and Desfire compatibility it is not easy/cheap to solve.
- Interoperability in smartcards among the Basque region will be explain in the feasibility study

ITS for future implementation

Measure	3.2: Public transport payment by mobile phone (Also MUGI smart card)
RITS next topic	3
User needs	<ul style="list-style-type: none"> • Mobile phone with NFC technology useful in all public transports without restrictions • Apart from payment, the mobile should work as a personal transport personal card
Cost	<ul style="list-style-type: none"> • Cost depend on the technology already existing for contact less transport cards, if it is compatible or not. • Identification and validation machines should be adapted or changed
Time horizon	Depending on the card used for the payment the horizon will be different: mobile phone as a VISA, mobile phone as a transport card...
Key stakeholders involved	<ul style="list-style-type: none"> • Bank entity • Mobile phone operator • Thrush Security Management • Mobile phone providers • Security chip manufacturer • Payment Gateway • Service providers • User
Crucial factors	The communication systems that the actual contact less transport card uses



ITS for future implementation

Measure	3.3: Smart services on street parking
RITS net topic	3
User needs	<ul style="list-style-type: none"> • Information about where to park and the costs involved; • Knowing who to address in case of problems or to obtain information; • Ensure accessibility for people with permanent or temporary impairments
Cost	<ul style="list-style-type: none"> • Costs depend on the measure implemented. If the objective is to reduce traffic, parking policy can be a low-cost measure in comparison with other measures (e.g. road pricing); • Enforcement, although ensuring revenues, comes at a cost.
Time horizon	<ul style="list-style-type: none"> • Quick implementation comparing with other measures
Key stakeholders involved	<ul style="list-style-type: none"> • Businesses that own and manage parking facilities; • Local authorities; • Neighborhood associations and individual residents; • Local police may be involved in enforcement activities; • Private companies often provide parking management equipment and services.
Crucial factors	Parking strategies and plans should be linked to transport and urban planning in general

- The biggest advantage of this measure is that the local authority is the only crucial and necessary stakeholder to become street parking services on smart services. The big difference with the actual managing, is that cities, residents, vehicles and drivers needs and behaviors should be manage according to innovative sustainable politics and technologies.



ITS for future implementation

Measure	4.3: Open data server for applications-based traveller information
User needs	<ul style="list-style-type: none"> Local authorities are looking for innovative ways to disseminate traveller information <ul style="list-style-type: none"> – covering different modes of transport; – covering private and public transport; – utilising the traffic information collected in a better way; – helping to address traffic management strategies; Travellers need timely, accurate information on different aspects of their journey (e.g. real time bus arrival time, incidents/accidents, congestion levels, etc.); Apps developers need easy access to accurate and reliable traffic data.
Cost	<ul style="list-style-type: none"> Modest capital investment needed to set up; Support costs typical of other data management applications.
Time horizon	Planning of scheme and preparation of materials within a few months
Key stakeholders involved	<ul style="list-style-type: none"> Local authorities Transport managers Apps developers General public
Crucial factors	<ul style="list-style-type: none"> Commitment for open data server provision; Clear policy about the provision and use of data; Cost effectiveness; Enthusiastic apps developers; Apps users.

- Traffic management, public transport management, road infrastructure management parking management are run separately.
- Efficient mobility management involves taking all them into account.
- By this action, all mobility data will be available for developers & other authorities



ITS for future implementation

Measure	5.1: Advanced priority system for public transport
User needs	<ul style="list-style-type: none"> Local authorities seeking innovative ways to help public transport as a sustainable mode of transport to: <ul style="list-style-type: none"> – contribute to reducing traffic congestion; – improve accessibility; – reduce air pollution; – encourage modal shift from cars to public transport; Public transport passengers need a timely and regular service to avoid extra waiting time; Traffic signal managers looking for efficient ways of giving public transport priority with minimal impact on general traffic.
Cost	<ul style="list-style-type: none"> A comparatively medium–cost measure that can be expanded from a route–based scheme to a city–wide scheme; Mainly capital cost of AVL system.
Time horizon	Planning of scheme and preparation of materials within a couple of years.
Key stakeholders involved	<ul style="list-style-type: none"> Local authorities; Public transport operators; Traffic controller; Public transport passengers; Society.
Crucial factors	<ul style="list-style-type: none"> Properly designed and installed system; Skills needed to maintain the benefits from the system; Cooperation between road and public transport operators and authorities.

- The Bus Traffic Light prioritization actually only works in Donostia city and in some critical streets. Further deployment could be done extending the measure to other streets and to other municipalities, specially in the metropolitan area of San Sebastian.

ITS for future implementation

Measure	6.1: Mark out an intercity area for cooperative systems laboratory
User needs	The road user could be a C-ITS part if his car has only the required technology for cooperative communications. But it is not mandatory to be an active part in the measure.
Cost	The definition of the area doesn't carry any cost.
Time horizon	In short time the C-ITS area can be determined, as normally pilots are already done in those roads, but without laboratory area category
Key stakeholders involved	<ul style="list-style-type: none"> • Road operators • Road authorities • Cities affected • Car manufacturers • Technology providers • Technological center
Crucial factors	Defined area should be interesting for all the involved agents.

- Actually technology providers are already testing their C-ITS technology in Gipuzkoa intercity area, but just as individual pilots' experiences, not as a real live laboratory category. Therefore, the idea is to define an area in the region that according to the stakeholders involved it is useful to test C-ITS technology.

ITS for future implementation

Measure	7.1: ITS for dangerous goods management
User needs	The agents involved need to know in real time dangerous goods features and tracking.
Cost	The investment to know dangerous goods position, it not so expensive. Another point is to produce an open data platform related to dangerous goods.
Time horizon	Short – middle time horizon, as the requested technology already exists.
Key stakeholders involved	<ul style="list-style-type: none"> • Competent authority/authorities (road, rail...) • Police enforcement • Firefighters • Technology provider
Crucial factors	Competent authority attitude

- Gipuzkoa region, is a border region, it is located in the European Atlantic corridor, where commodities are transported from the South of Europe to the North and vice versa.
- Control & monitoirzation of hazardous goods would help emergency services

Feasibility Study

1.- Scope of the study

- In each of the three provinces there is a contactless card. Each of them can be used in different transport operators in the province. In this way, solves many of the needs of citizens in their daily mobility.
- However, these cards cannot be used in the other two provinces. In these cases, users have to pay cash or have / buy the card the territory to which it goes.



Feasibility Study

2.- Problem to solve

- Although each province maintains its own differentiated pricing policies, **it is proposed that each of the cards can be used in any of the three provinces.**
 - No raises a fare integration, understood as a homogenization of tariffs zone breaks, discounts etc..
- The intention at an early stage, is that the **cards can validate any of the three provinces, with rates that the operator or own mode of transport.**
- Barik cards issued: 600.000
- Mugi cards issued: 450.000
- Bat cards issued: 300.000

Feasibility Study

3.- Stakeholders

- 4 principals:
 - Basque government
 - Bizkaia Transport Authority (CTB)
 - Gipuzkoa Transport Authority (ATTG)
 - Euskotren: (In Araba province there is not a Transport Authority as understood in the other 2 provinces) this public company is in charge of the contactless card and the revenue control.
- Others: All transport operators, Gipuzkoa, Bizkaia and Araba Councils, city councils, system integrators etc.

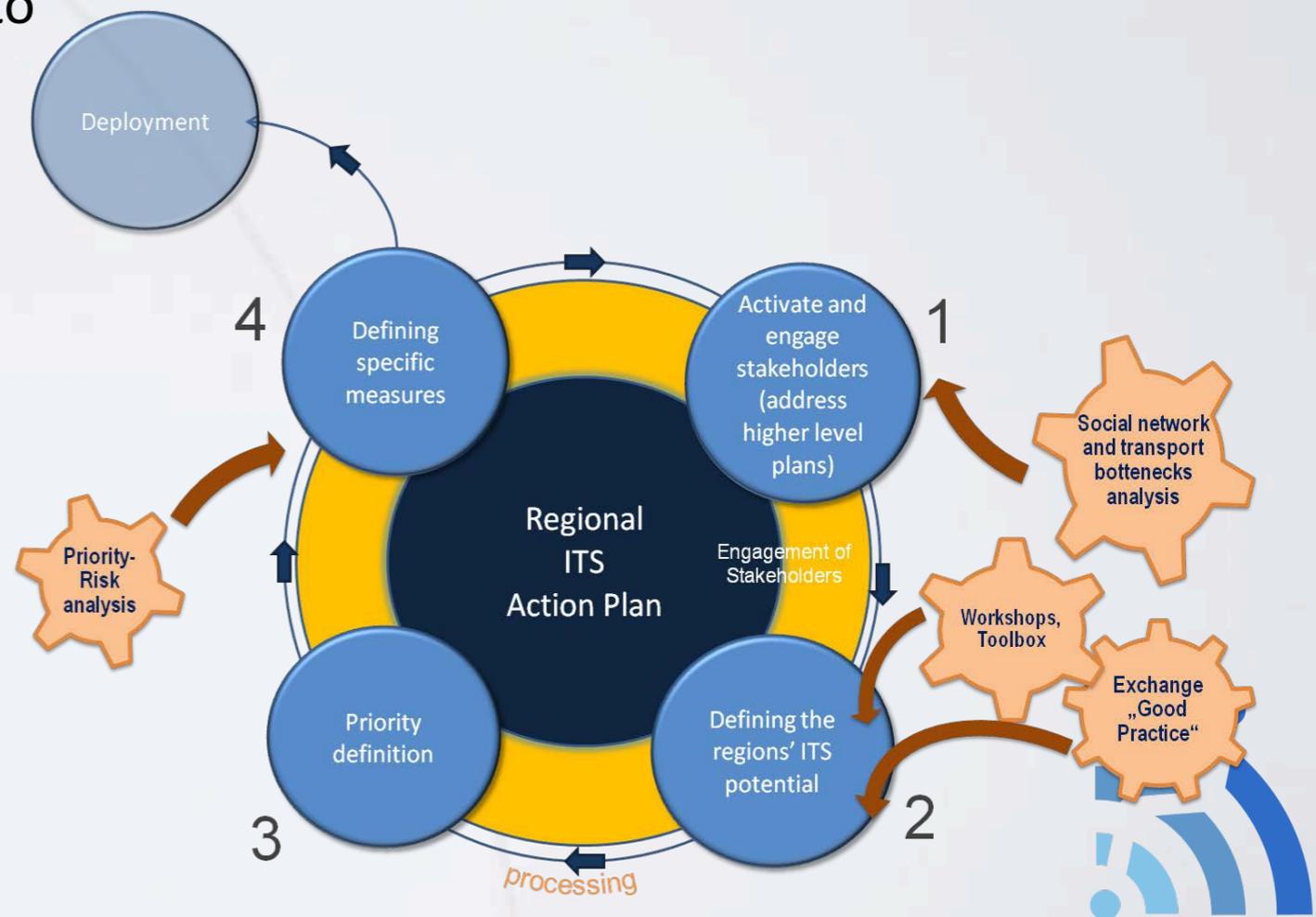
Feasibility Study

4.- Phases of the project

- **1 -. Cards Analysis.** Functionally types of supported cards, features, profiles, titles, discounts, etc. .. Technically: Type IC technology, EFT Shape implement the desired operations on the guest card.
- **2 - Communication Equipment-card.** Needed to program processes corresponding to the guest card.
- **3 - Equipment agent / operator:** Required modify the previous program, file, shipping, etc..
- **4 - Equip-System Communication Central Operator.** Needed to analyze the capacity for modification of the protocol of communications of the equipment to the central system operator to raise the required information from a guest card.
- **5 - Central Systems Operator.** Need to modify the programming to process card transactions.
- **6 - Central Communication Systems - Compensation System:** Required analyze the capacity for modification of the protocol to process card transactions
- **7 - Clearing Systems.** Need to modify the programming to process card transactions.
- **8 - Communication between Clearing Systems.** A fully developed In order to exchange the invited cards with the clearing system of origin, need to develop solutions.

Lessons learnt

- Addressing stakeholders
 - Involve stakeholders from the beginning: **key issue**
 - Identify them
 - Create a working group
- Priorization of objectives
 - Define requirements: costs, benefits to whom, time horizon
- Definition of measures
 - Priorization
 - Try to make first the actions that can be done in short time so that results and benefits are visible from the beginning
- Others
 - Skills of the staff
 - Providers expertise



Thank you for your attention!

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