



Japan-Portugal  
Cooperation Seminar on Smart Communities

# SMART MOBILITY – SMART COMMUNITIES

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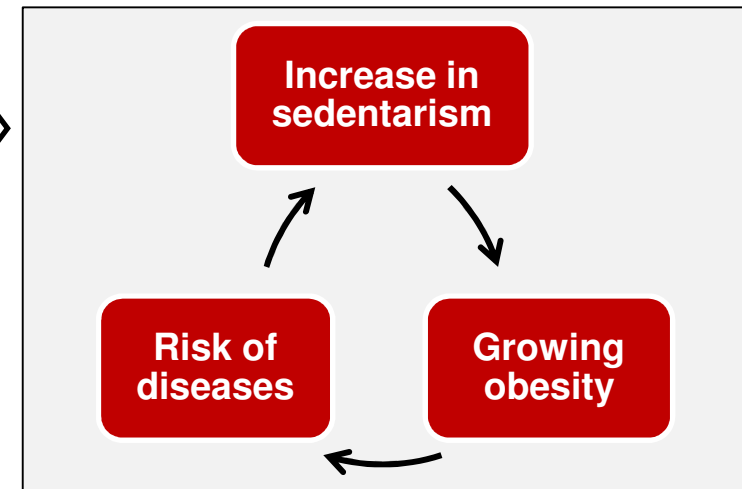
# 1. Which problems ?

## Urban (de)Structuring

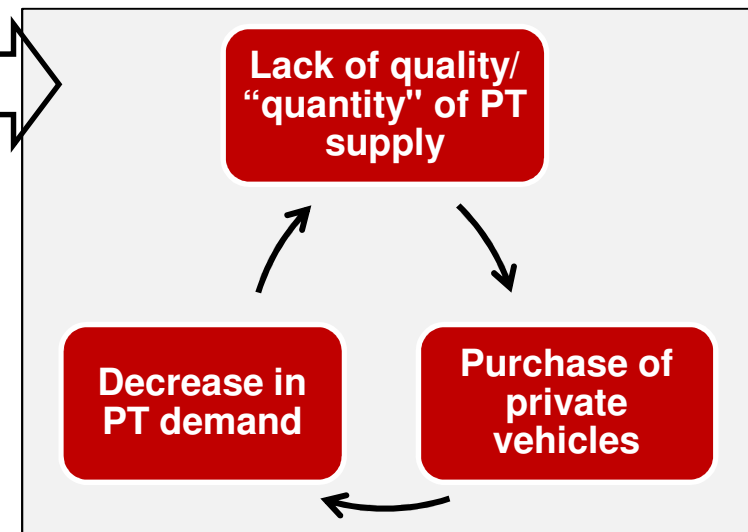
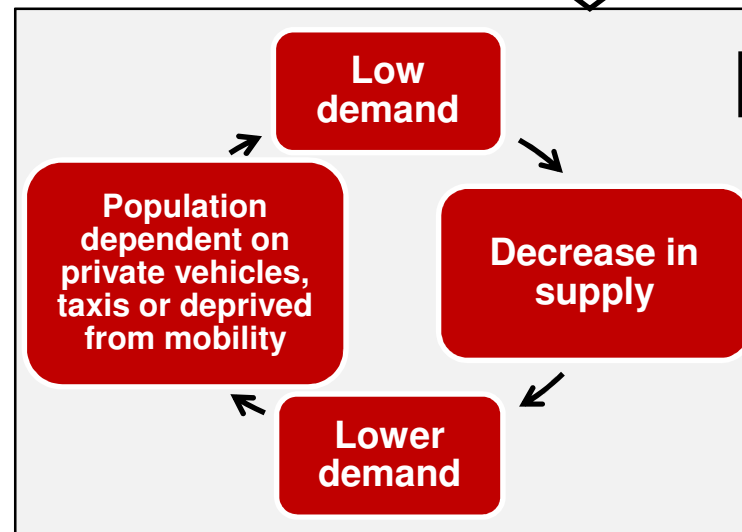
- **Dominant features of urban development:**
  - Peripherization / discontinuity /urban disconnection
  - Excentric location of equipments and services on urban outskirts – lower cost land
  - Monofunctional new centralities
  - Predominance of new urbanization versus rehabilitation
  - Decline of centres where urban tissue is more compact and where public transport and walking are viable
  - Increasing distance of displacements

## Consequences on sustainable mobility

- **Predominance of car travel** (energy consumption; increase in CO<sub>2</sub>, noise, congestion, accidents )
- **Loss of weight of “walking”**
- Competition of IT generates **Public Transport with no economies of scale** and promotes the purchase of vehicles



**Vicious Cycles of Mobility**



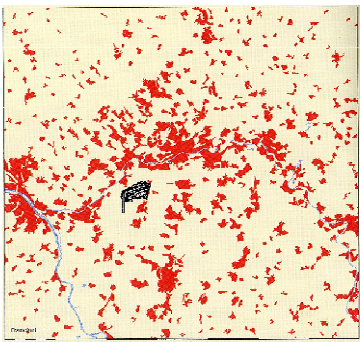
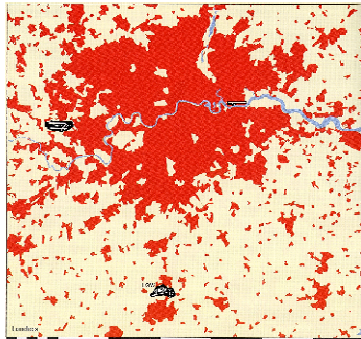
## Poor quality of urban life

- Deterioration of urban public spaces – excessive public space taken by roads and parking
- **High volume of traffic** in main urban routes, **high speeds**, congestion, pollution, accidents
- Common problems – **lack of parking spaces, circulation of vehicles looking for parking, double and disorderly parking, chaotic loading and unloading operations**
- In areas of greater demand **parking is frequently not expensive** which favours the use of IT
- **Waste of space – street taken from pedestrians and other modes; unsafe environment** specially for the **most vulnerable**
- **Unqualified walking solutions:**
  - Narrow sidewalks, blocked by cars and “urban garbage”
  - Pedestrian’s routes discontinuity and lack of comfort
- **Lack of alternative, non-polluting, silent and cheaper transport solutions, such as bicycles**

# 1. Which answers?

## Portuguese situation – priority questions - 2020

*Where do changes in cities take place?*



1. To develop **centrality networks** articulated with accessibility conditions;
2. To **control urban sprawl** (“oil stains”) by structuring fragmented urban territories;
3. To structure and integrate **low density occupation areas** (rural, peri-urban and touristic areas) into the transportation networks by articulating them with centrality networks;
4. To densify urban use in areas of **(potential) high accessibility**;
5. To recuperate **“proximity urbanism ”**
6. To promote a **sustainable mobility**

• **Planning, Urban Management and Public Space Design**  
 • **Planning and Mobility Management**  
**are the keys to these challenges**

## Sustainable Mobility

Sustainable mobility is a **concept** which assumes that to citizens, either living in cities, towns or villages, are offered conditions that provide **journeys** which are / have:

- Safe
- Comfortable
- Acceptable journey and waiting times
- Accessible costs
- Energy efficient and with reduced environmental impacts

To put in place this concept, in our country, IMTT has developed **the “Mobility Package”**.

### What is the Portuguese Mobility Package?

**A set of documents which support planning and mobility management**



# The components of the Mobility Package

- I. NATIONAL DIRECTIVES ON SUSTAINABLE MOBILITY AND TRANSPORT**
- II. GUIDELINES FOR ACCESSIBILITY, MOBILITY AND TRANSPORT ISSUES IN LAND USE PLANNING AND MANAGEMENT INSTRUMENTS**
- III. SUSTAINABLE MOBILITY AND TRANSPORT PLANS GUIDE**
- IV. SET OF BROCHURES FOR TECHNICAL SUPPORT ON SUSTAINABLE MOBILITY**
- V. GUIDE TO COMPANY'S (and large and medium-sized trips generators/attractors) MOBILITY PLANS**

## THE *DIRECTIVES*

The *Directives* provide guidance / principles for mobility policies (“policy oriented”) and aim at establishing:

1

Guiding principles to be followed

2

Goals and targets to be reached

3

Instruments / plans / programs for its implementation and corresponding contents

4

Territorial coverage and obligatoriness

5

Development, approval and public participation processes

6

Duration of the instruments

7

Conditions applicable to monitoring and revision

# Eleven Guidelines

## Guidelines

1

To define and ensure adequate levels of **ACCESSIBILITY** offered **TO ALL CITIZENS** by the transport system

2

To establish an **EFFICIENT CONFIGURATION** of the accessibility system

3

**ECONOMIC SUSTAINABILITY** as a guarantee of “offer stability”

4

To improve citizen’s quality of life by **REDUCING THE NEGATIVE IMPACTS** of mobility (social, environmental and economic)

5

To create **GOOD CONDITIONS FOR NON-MOTORIZED MODES**, particularly for pedestrians

6

To promote a **RATIONAL USE** of motorized individual transport modes

7

To ensure **GOOD QUALITY PUBLIC TRANSPORT SERVICES** endowed with technical characteristics which meet the demand

8

Integration of **TRANSPORT AND LAND USE POLICIES**

9

To promote **PHYSICAL, FARE, LOGICAL AND INSTITUTIONAL INTEGRATION** of the different components of the mobility system

10

To **IMPROVE INFORMATION** available to citizens on the transport system and mobility

11

To ensure **PUBLIC PARTICIPATION** in decision-making processes associated with mobility

## Promotion of urban renewal

- **Restructure the centrality / proximity models**
- **Selectively** (and strategically) **locate new areas of trip attraction** (hospitals, universities, business, services, shopping centres, PT interchange ...)
- **Making lively streets** (day and night) and implement policies regarding the localization of facilities in neighbourhoods



*Lisbon suburban area*



*Lagoas Business Park  
(Oeiras)*



*Pedestrians  
in public space*



*Fórum Aveiro  
Inner city  
(a good practice)*

## Promotion of Smart Mobility

**Intelligent Mobility in the “Mobility Package”** bases itself on achieving the **balance of modal share and the reduction of impacts from present motorization patterns**, through **four main goals**:

- **Limit and rationalize the use of individual transport**
- **Promote and generalize innovative and sustainable energy sources and powering systems**
  - **Promote the use of public transport**
  - **Increase the use of soft modes**

- ❑ Smart management of parking
- ❑ Smart management of traffic flows
- ❑ Strengthening of Public Transport quality
- ❑ Mix of integrated transport means, modes, services and systems, enhanced by new technologies and information / communication systems
- ❑ New organization of society (work and lifestyles)
- ❑ Engagement of institutional players and other sectors of activity (transport, energy, telecommunications..)
- ❑ Information and participation of citizens

## Smart management of parking

**Use parking policies (rates, fares and duration) to:**

- reduce the use of IT, especially where there is PT offer
- Improve the quality of urban life in cities



- **A car needs at least 20m<sup>2</sup> to park or circulate**
- **The parking invoice can reach 20% of the monthly cost with rented facilities**

# Smart management of traffic flows



*woonerf* in Rijswijk, Netherlands Example

- Use traffic calming solutions such as 30 km Zones, Residential / Home Zones, Coexistence and meeting Zones
- Traffic volume and speed reduction
- Improve conditions for soft modes – walking and cycling
- Change behaviours
- Control urban space design



Example of traffic calming road signs

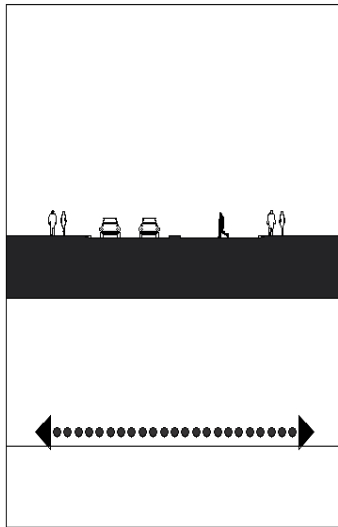
# Promotion of Soft Modes (I)

- Requalify public space
- Ensure continuity (safety and comfort) to pedestrians and bikers
- Promote mixed use pedestrian streets
- Eliminate barriers



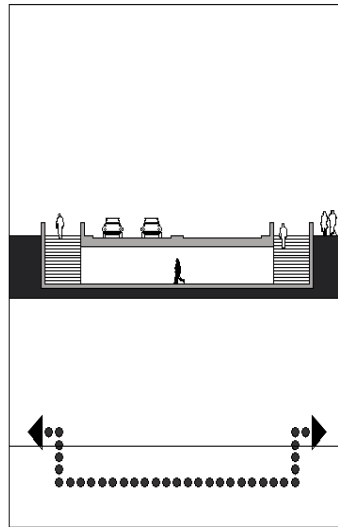
walking

a) Atravessamento de nível



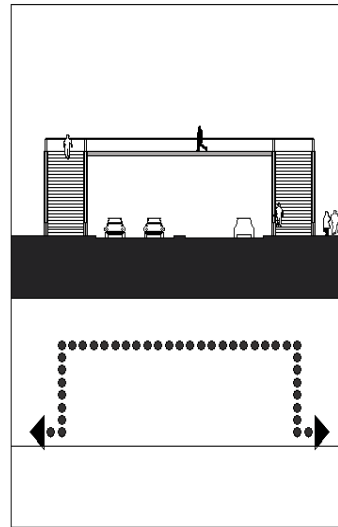
Esforço dispendido: 1x

b) Atravessamento subterrâneo



Esforço dispendido: 8x

c) Atravessamento aéreo



Esforço dispendido: 8x



cycling



# Promotion of Soft Modes (II)

- Promote cycling not only in leisure trips, but in **(daily) short-distance trips**
- Ensure intermodality **Bicycle + public transport**
- Create facilities and services for cyclists (next to interfaces, workplaces .....

First solution to consider



Last solution to consider

## Planning - the hierarchy of decision

- Reduction of motorized traffic
- Speed reduction
- Intersection / crossing and traffic management
- Redistribution of motorized vehicles space
- Implementation of Cycle paths/ lanes
- Conversion of footpaths into shared space between pedestrians and cyclists

Coexistence



Visual separation



Physical separation



# Delivery and urban services

- Organize urban freight distribution (micro-urban logistics)
- Use smaller, lighter and more specialized vehicles in urban services



*Local urban delivery*



*Security services*



*Garden maintenance*



*Post delivery*

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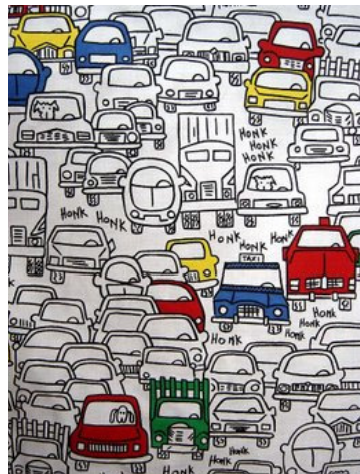
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# Mix and combination of Transport Means and Modes

“transport has to use less and cleaner energy“  
*In Transport White Paper (EC – 2011)*

## TARGET – White Paper Reduction of 60% of GHG by 2050

1. Reduce in **50%** the number. of conventional fuel vehicles in urban transport, **by 2030**;
2. Phasing out of these vehicles from urban environment **by 2050**



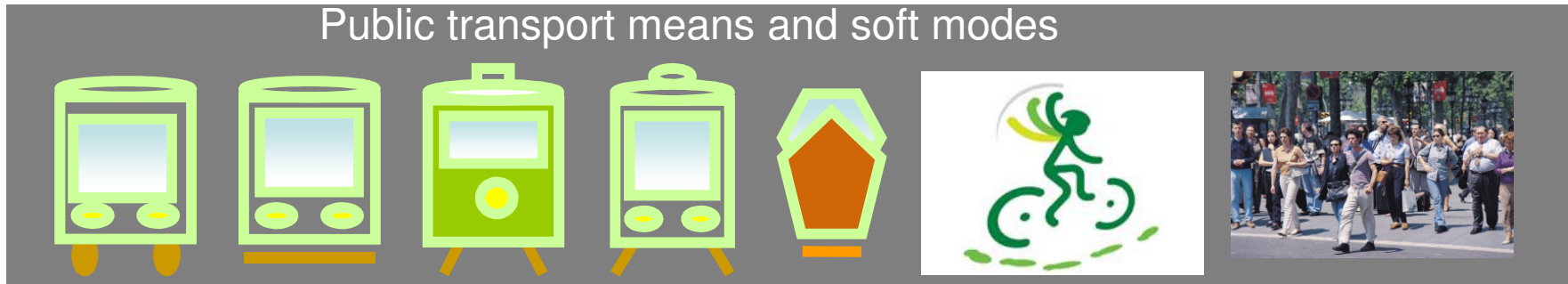
## Large scale expansion of green vehicles

**EV:** Light duty vehicles (cars, two-wheels); Heavy duty vehicles (passenger and freight transport)

Individual use, private fleets and public service fleets; urban services (waste collection, delivery vans)



## Public transport means and soft modes



# Mix and combination of Transport Means, Modes + Services and Systems



Parking for carpoolers



- Carpooling
- Carsharing
- Bikesharing



- Eco-driving
- Vehicle-to-vehicle communications
- Vehicle-to-infrastructure communications
- Traffic Management
- Parking Management (supply/demand)



- Small urban buses
- Flexible Transport solutions
- Demand Responsive Transport (DRT)
  - Shared taxi

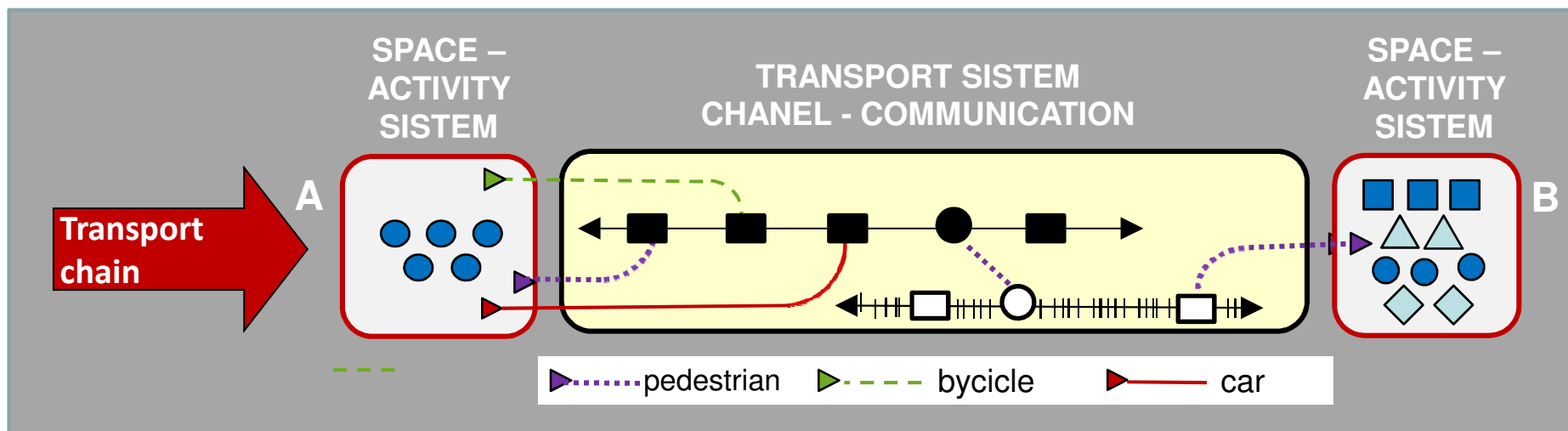
**Linha Azul**



# Integrated management (I)

## Intermodal and multi - modal travels

- Requires the establishment of conditions **promoting optimized transport / mobility networks**
- Calls for **ITS**, as a way of optimizing mobility, and the concept of “**Seamless Travelling**”, that is to say a 'free-from-disturbance' journey from origin to destination, enabled by a proper **physical / spatial, scheduling, pricing and information integration.**



## Integrated management (II)

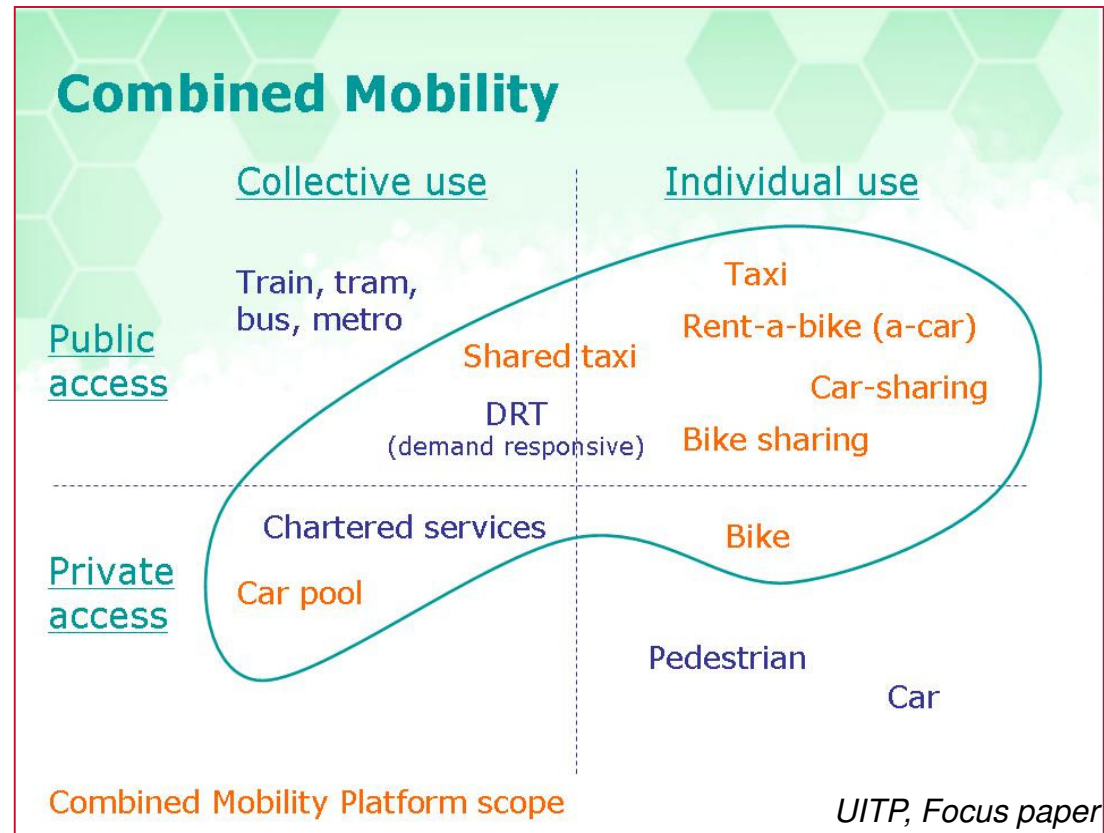
- **Combined Mobility - New concept of modern mobility organization**

It combines classic transport services with previously determined itinerary, schedule and stopping points with innovative and flexible transport services, thus ensuring a thorough and coherent mobility supply

“Combined mobility” derives from the recognition that some cities are “open” 24 hours a day, 7 days a week, to meet citizens’ needs.

It assumes a key concept, “modal switch”, which allows customers to choose between modes of transport (or combination of modes) on a daily basis according to the most suitable solution in view of their agenda.

Organization and management is based on ITS and on the concept of **intelligent mobility integrated platform**.



## A new organisation of society (work and lifestyles)



- Flexible schedules
- Video-conference
- Telework



- Online and real time information
- Journey planners
- Electronic booking and payment systems
- Parking and traffic management guidance



## Mobility Management

- Mobility Management (MM) is a concept to promote sustainable transport and manage the demand for car use by changing **travelers' attitudes and behavior**.
- At the core of Mobility Management are **“soft” measures** like information and communication, organizing services and coordinating activities of different partners.
- “Soft” measures most often **enhance the effectiveness of “hard” measures** within urban transport (e.g., new tram lines, new roads and new bike lanes).
- Mobility Management measures (in contrast to “hard” measures) **do not necessarily require large financial investments** and may have a high benefit-cost ratio.
- Typically, **MM measures are rarely isolated**, instead they often come as a bundle of measures, i.e. information campaigns combined with infrastructure, pricing policy or regulations.

*(EPOMM – European Platform on Mobility Management)*

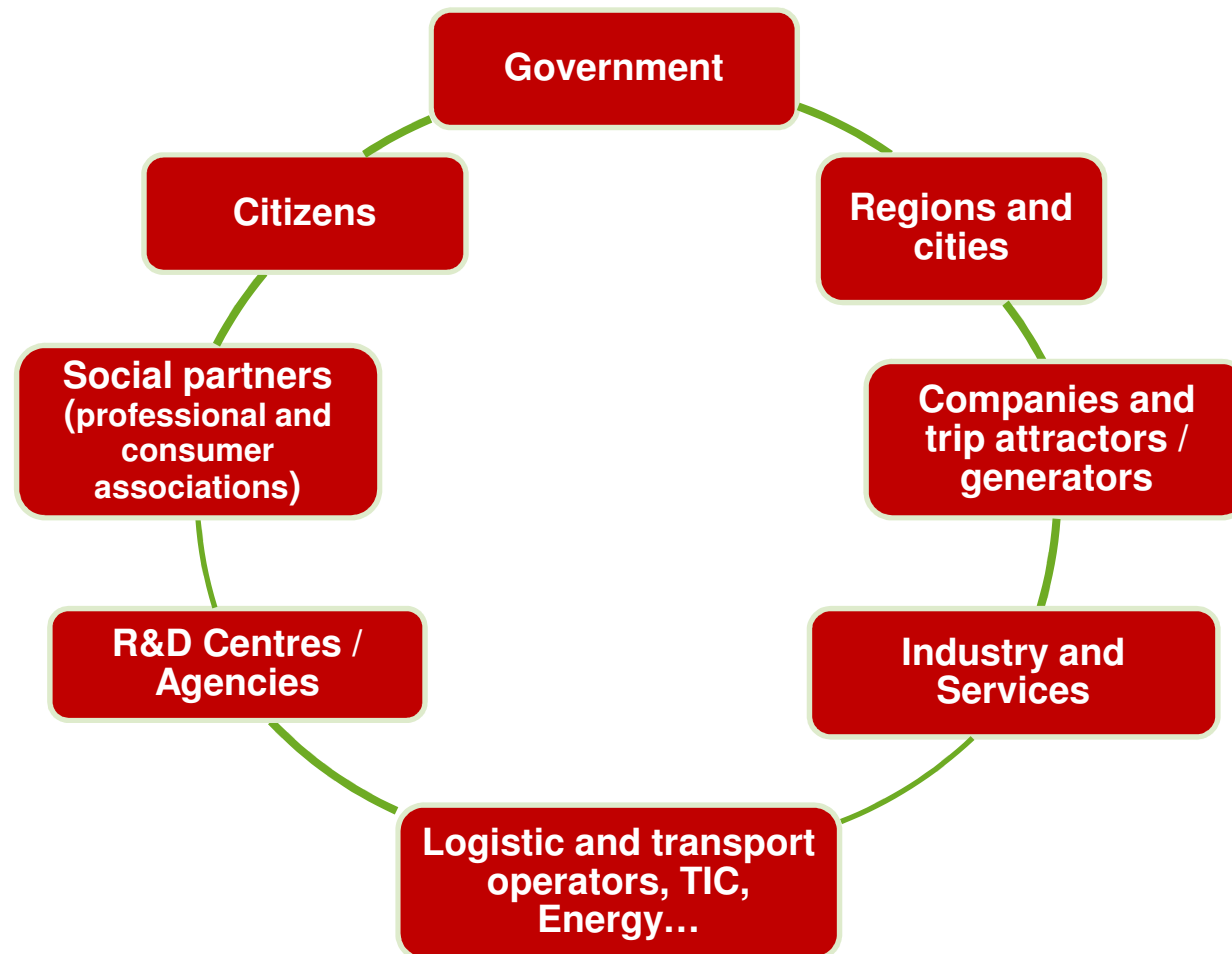


# Smart Mobility Challenge

## Involvement of Players and Society

**Engaged and pro-active players** – from business sector and other sectors of activity (transport, energy, telecommunications..)

**Informed and engaged citizens**



## Final remarks

- **Right to mobility** is presently recognised as a **citizenship right** which requires, in return, a **balance between individual behaviours and collective interests**.
- **It is necessary to change the paradigm of city governance.** Such shift undoubtedly implies the update of technical skills, but it depends, above all, on **gaining politicians and citizens for a “New culture of mobility”**.



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