



**XXIV<sup>th</sup> World  
Road Congress  
Mexico 2011**  
Mexico City 2011.

**M.Crispino, P.Giannattasio, V.Nicolosi**  
**IMPROVED EFFICIENCY IN ROAD ASSET  
MANAGEMENT THROUGH LEVEL OF  
SERVICE BASED CONTRACTS**  
***EXPERIENCES IN ITALY***

Speakers:

- **P.Giannattasio**, former full professor,  
University of Naples, Italy - [giannatt@unina.it](mailto:giannatt@unina.it)  
;
- **M.Crispino**, full professor, Politecnico di  
Milano, Italy - [maurizio.crispino@polimi.it](mailto:maurizio.crispino@polimi.it)

## WHAT IS A GLOBAL LoS-BASED CONTRACT?

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**A legally agreement stating the terms and conditions for provision of road management services between the Agency and an external service contractor, based on the achieving of fixed levels of service.**

It includes:

- **planning activity**
- **maintenance & rehabilitation**
- **surveillance / emergency operations**
- **winter service**



## WHAT IS A GLOBAL LoS-BASED CONTRACT?

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- The Agency does specify **only performance of services**.
- Performance has to be aligned with the **goals**.



## WHY HAS IT BEEN USED IN ITALY?

**Local road Authorities in Italy have to tackle the following main issues:**

- reduction of **fun**ds for road maintenance;
- limited technical **staff**;
- increasing demand for greater **efficiency**;
- increased **length** of the road network;
- complicated **administrative procedures**;
- civil and criminal responsibility due to road **accidents**



## WHY HAS IT BEEN USED IN ITALY?

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The need to improve efficiency and to reduce costs has lead some local road Authorities to outsource the road asset management service using LoS-Based contracts

### Advantages:

- **cost savings**;
- greater **certainty of costs**;
- **reduction of Agency staff**;
- increased **customer satisfaction**;
- **stable multi-year financing** of maintenance.



# WHAT ARE THE MAIN ISSUES IN THE IMPLEMENTATION AND EXECUTION STAGES ?

Road agencies that adopted a LoS-BC approach met with some difficulties.

## Difficulties:

- lack of knowledge about Asset **inventory** and **conditions**;
- selection and definition of **performance indicators**;
- methodology **to evaluate** performance indicators;
- **pre-qualification** of bidders;
- **restrictions** in **legal and regulatory framework**;
- identification of **risks** and allocation to the parties.



## MAIN CHALLENGES

**Main challenges that road Agencies have to face when introducing LoS-BC:**

- Establishing a « **partnering** » **relationship** between Agency and contractor – **change in the mindset.**
- Need to acquire a **new set of skills and expertise.**
- Identification and clear definition of **level of service.**



## EXPERIENCES IN ITALY

### Road network **and its management**

- Most of Italian motorways (5.700 km) operate under **concession.**
- Others (1.000 km) and the national highways (23.700 km) through **traditional maintenance contracts.**
- Regional (about 155.000 km) and urban network: a large part, at the moment, by traditional contracts, but many authorities are moving towards **LoS-BCs**





## EXPERIENCES IN ITALY

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### Provinces of Florence and Naples

Speaker Pietro Giannattasio

(more details can be found in the **Italian Report of the National Committee which is available at the Italian stand**).

- City of Rome

Speaker Maurizio Crispino.

One of the greatest LoS – BCs (around 570 Million Euros)



# EXPERIENCE OF THE PROVINCE OF FLORENCE



# EXPERIENCE OF THE PROVINCE OF FLORENCE

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## Global LoS-based contract

- In 2004 Province of Florence entrusted the **management of 346 km** to an external contractor by a LoS-BC.
- Duration of the contract: **6 years.**



# EXPERIENCE OF THE PROVINCE OF FLORENCE

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## Services requested

- All maintenance services concerning infrastructure asset (pavement, road marking, etc.);
- Call Center, Information system, Road Monitoring;
- Emergency services, Winter services;
- Rubbish removal;
- Advertising management



# EXPERIENCE OF THE PROVINCE OF FLORENCE

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## New Global LoS-based contract

- Though some faults were observed **in 2004 contract**, the approach was considered effective.
- In 2010 the Authority decided to go ahead, bearing in mind the problems tackled:
  - **Some more activities were added**, as the management of accidents, road access, green (trees, roadsides, etc).
  - **More attention was paid to goal specifications.**



# EXPERIENCE OF THE PROVINCE OF FLORENCE

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## Goal specifications

- Road Safety
- Comfort
- Efficiency (structures, equipment)
- Fruition
- Protection of public safety
- Asset value



## EXPERIENCE OF THE PROVINCE OF FLORENCE

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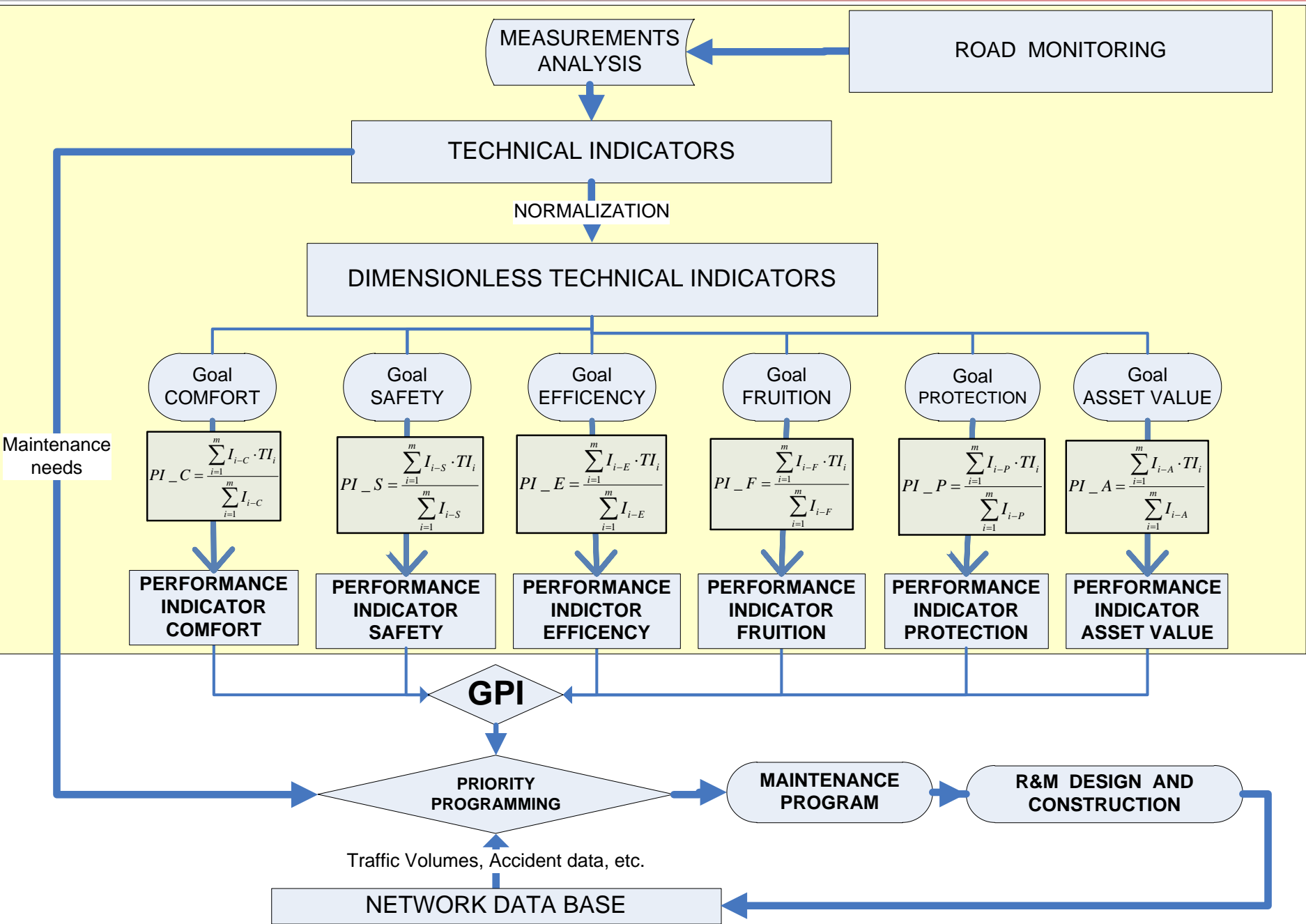
The performance indicators to be used and the criteria for planning intervention were left to the Contractor.

Performance indicators proposed:

- **Performance Indicators** PI, related to the goals, obtained as linear combination of technical indicators (e.g. IRI, etc.);
- **Global Performance Indicator** GPI, obtained as linear combination of the PI, weighted in relation to the importance of the goals (e.g. safety may have a weight greater than comfort).



# EXPERIENCE OF THE PROVINCE OF FLORENCE





# EXPERIENCE OF THE PROVINCE OF FLORENCE

## Maintenance program

It is defined by **maximizing the objective function** OF:

$$OF = f [AADT(t), AADTmax(t), GPI(t), GPIDo\_nothing(t), T]$$

where, in the year  $t$ :

$AADT(t)$  is the average annual daily traffic per lane,

$AADTmax(t)$  is the max. value in the network per lane,

$GPI(t)$  is the global perform. indic. in case of intervention,

$GPIDo\_nothing(t)$  is the glob.perform.indic.for do-nothing.

$T$  is the duration of the period of analysis.



# EXPERIENCE OF THE PROVINCE OF NAPLES



# EXPERIENCE OF THE PROVINCE OF NAPLES

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## Specification of the LoS-based contract

- Specification quite similar to that of the Province of Florence.
- **Part** of the network concerned: 300 km
- Period: 9 years



# EXPERIENCE OF THE PROVINCE OF NAPLES

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## Services requested

- All maintenance services concerning infrastructure asset (pavement, road marking, etc.);
- Call Center, Information system, Road Monitoring;
- Emergency services, Winter services;
- Advertising management;
- Administrative and legal services;
- Engineering services.



# EXPERIENCE OF THE PROVINCE OF NAPLES

## Goal specifications

- Safety (reduced accident rates of mortality, injuries and damages)
- Quality of service (comfort, travel times, traffic);
- Environmental impacts (reduction of noise, vibration, pollution)
- Value of the network (added value of the infrastructure compared to its initial value established by the contract)



# EXPERIENCE OF THE PROVINCE OF NAPLES

## Critical issues on the administrative procedures

- Administrative issues, related to the legislation framework.
- In Italy, law provides for two categories in order to pre-qualify the bidders:
  - 1. construction** (predominance of construction activities)
  - 2. services** (predominance of service activities)
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# EXPERIENCE OF THE PROVINCE OF NAPLES

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## Category adopted by Province of Naples

**“Services”**, as the service activities were considered strategically predominant even if they were not costly prevalent.

**But the Supervisory Authority on Public Contracts didn't approve the procedure**



# EXPERIENCE OF THE PROVINCE OF NAPLES

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## Updating of regulation about public contracts

An updating of regulation about public contracts is strongly needed, in order to give the opportunity to the Authority to consider the GSC as **service** contract instead of a **construction** contract.





# EXPERIENCE OF THE PROVINCE OF NAPLES

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And now presentation continues with Prof. Crispino

Thank you for your attention



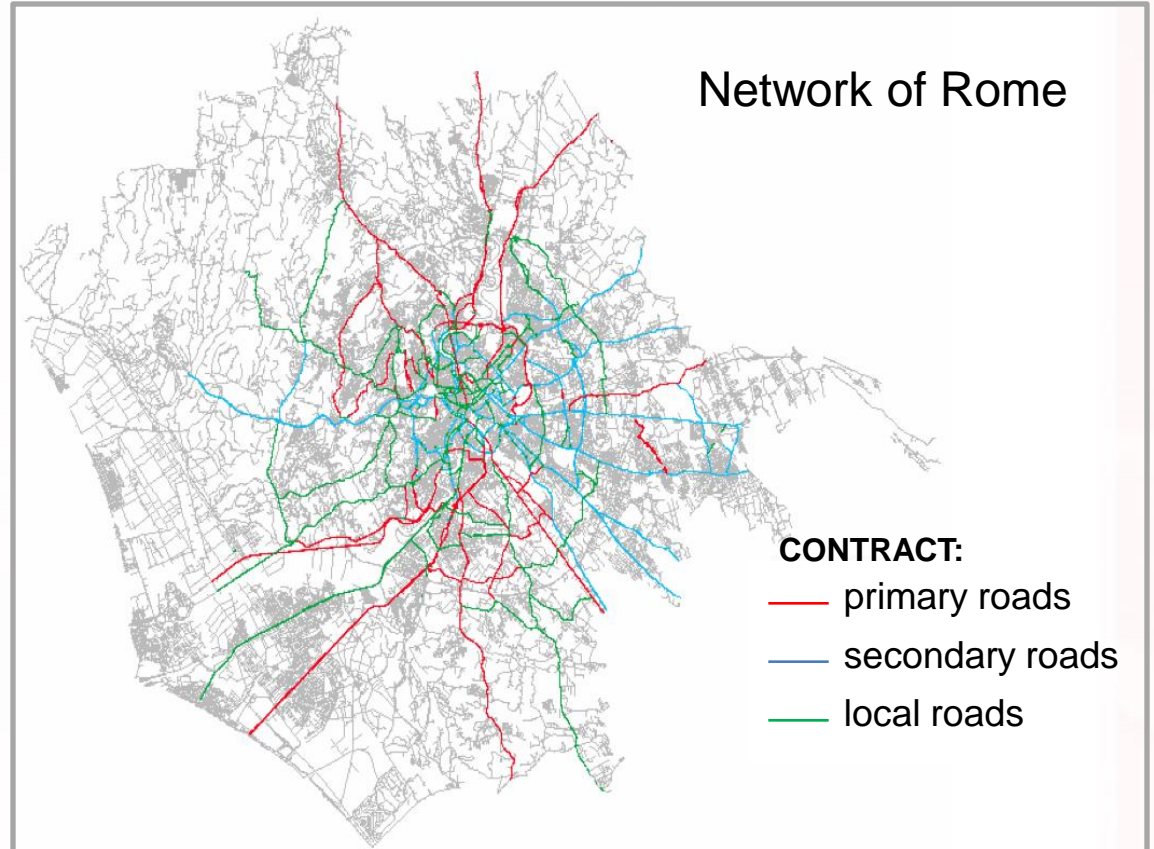
# EXPERIENCE OF THE CITY OF ROME

## Concession:

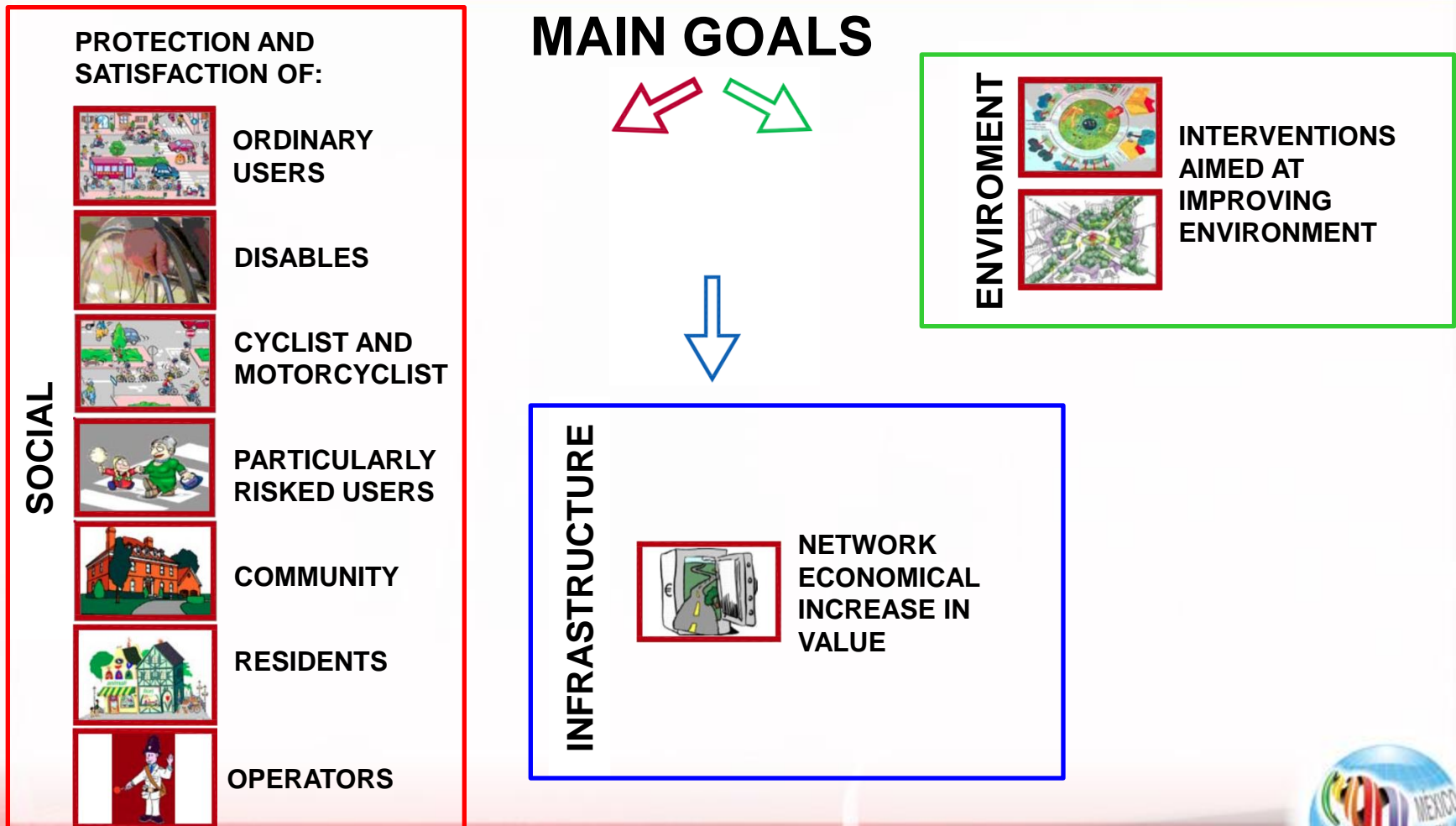
Road Length: 740 Km

Pavement Surface: 11.8  
Million m<sup>2</sup>

Period: 9 years



# EXPERIENCE OF THE CITY OF ROME



## EXPERIENCE OF THE CITY OF ROME

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### SIGNIFICANT PERFORMANCE OF GLOBAL LoS/BASED CONTRACT

- 7.5 million m<sup>2</sup> rehabilitation on pavements during the first 3 years
- teams H24 for “first action”, ready in place in max 20 minutes
- ordinary maintenance teams H24 ready in place in 1,20h
- H24 checking, THE WHOLE network checked every day!

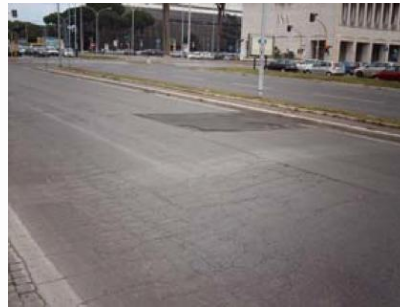


# EXPERIENCE OF THE CITY OF ROME

## SOME EXAMPLES OF CRITICAL SITUATIONS ON THE NETWORK AT THE BEGINNING OF GLOBAL SERVICE PERIOD



POTHOLES



CRACKING



PATCH AND UNEVENNESS



DEFORMED SAFETY BARRIER



PAVEMENT MARKING NOT PRESENT



SIDEWALK NOT PRESENT



# EXPERIENCE OF THE CITY OF ROME

## Critical issues

- **Very high liability and indemnity** costs (road accidents and emergencies) for contractor not considered by the Agency for the tender
- **Responsibility for road accidents** given to contractor from the beginning of the concession period without the possibility to improve safety of road
- **Delay between preliminary survey and starting of global service** done by the road authority causes many difficulties to the contractor



# CONCLUSIONS

## LoS- BCs

- **An effective tool able to overcome** criticalities of public roads management (lack of skills, splitting of contracts, etc.)
- **Some important issues (beginning period responsibilities, optimal duration, indicators, etc)** must be strongly improved
- **In perspective, a tool able to arise growing and growing interest.**

