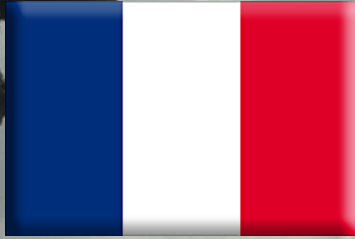




ROMA CAPITALE



# Visit of French Delegation on ITS

## Mobility Masterplan, Jubilee of Mercy and ITS role in Rome

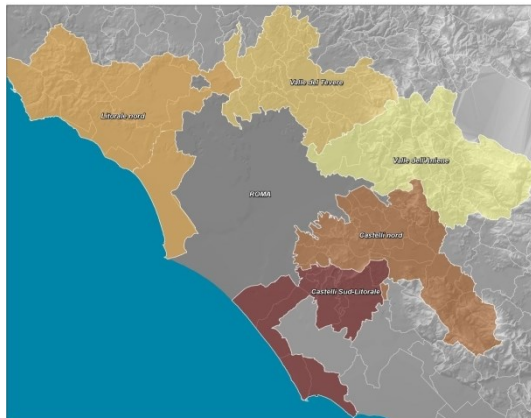
Rome, December 2<sup>nd</sup>, 2015



Ing. Fabio Nussio  
International Co-operation  
Mobility Agency of the City of Rome

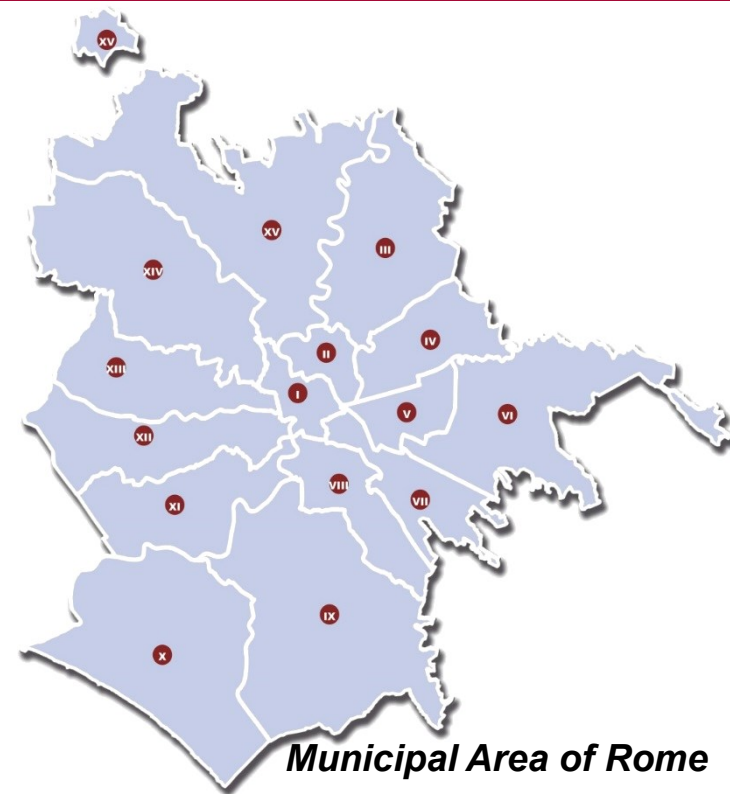


## The city of Rome and its mobility



**Metropolitan City of Rome**

Municipal Area	1.285 skm
Population	
Metr. Area	4.400.000
City residents	2.900.000
Road Network	km 5.000
Main road network	km. 800
<b>Vehicles</b>	2.650.000
cars	1.890.000
2 wheels	600.000
goods delivery	160.000
Daily Trips	5.500.000
Peak-hour Trips	670.000



**Municipal Area of Rome**

### Main City characteristics

- Historic and cultural heritage
- Narrow roads
- Inner presence of the Vatican City
- Attitude for private vehicles
- Tourism (>23 millions per year)
- High air pollution levels





## RETE AUTOBUS URBANI

estensione rete  
in km  
**2.060**

utenza:  
passeggeri giorno  
**789.000**



## RETE AUTOBUS REGIONALI

estensione rete  
in km  
**1.847**

utenza:  
passeggeri giorno  
**167.000**



## RETE METROPOLITANA

estensione rete  
in km  
**41**

utenza:  
passeggeri giorno  
**713.000**



## RETE TRAMVIARIA

estensione rete  
in km  
**39**

utenza:  
passeggeri giorno  
**90.000**

## RETE FERROVIARIA URBANA E REGIONALE

estensione rete  
in km  
**872**

utenza:  
passeggeri giorno  
**547.000**

AREA METROPOLITANA DI ROMA CAPITALE: GIORNO FERIALE MEDIO

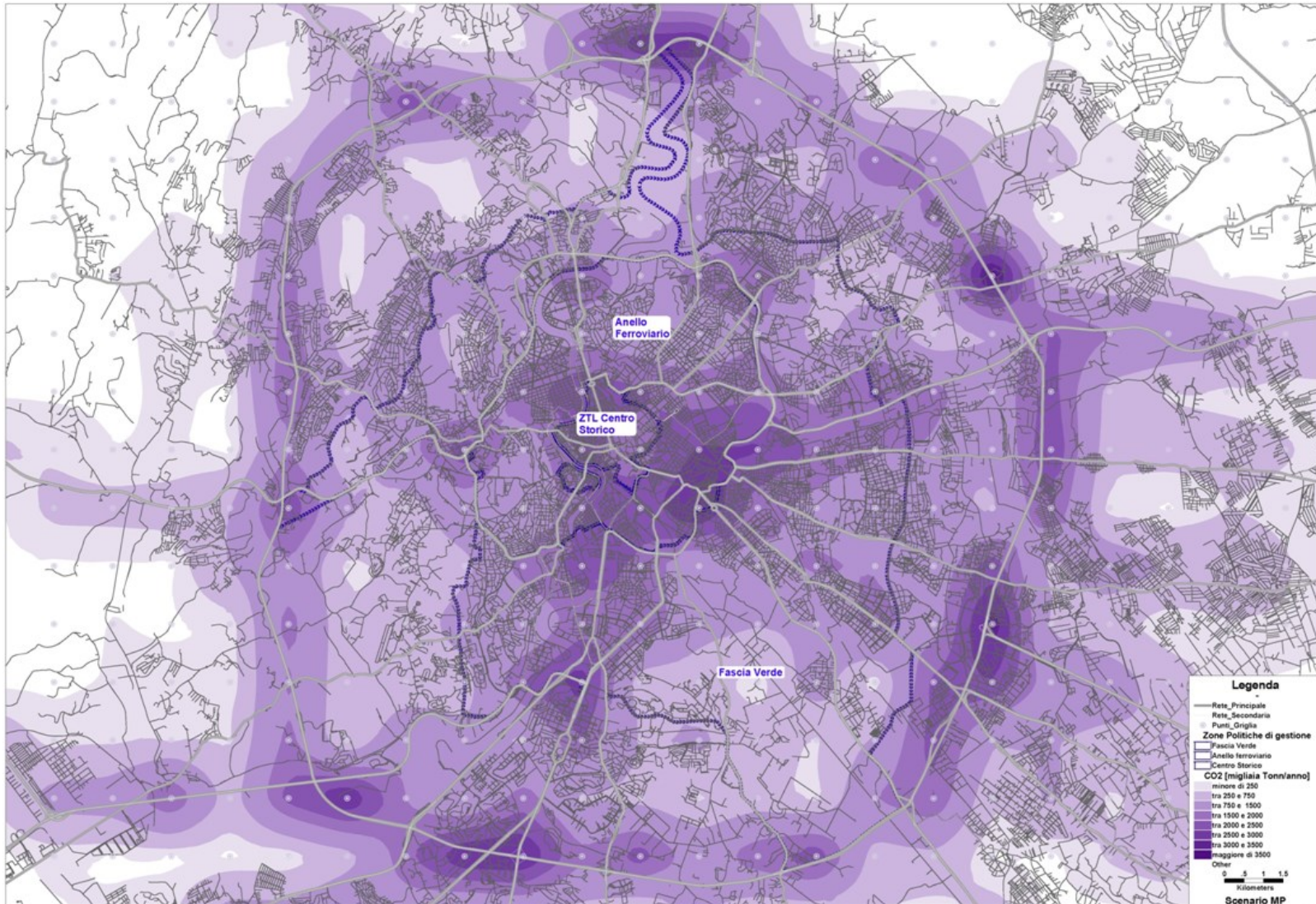
**TOTALE RETE** 4.859 2.306.000

**EFFICIENZA**  
DELLE RETE DI T.P.L. **21,3 %**





## CO2 emission map (tons/y) from mobility in Rome - 2012







## New mobility Masterplan

### GENERAL GOALS

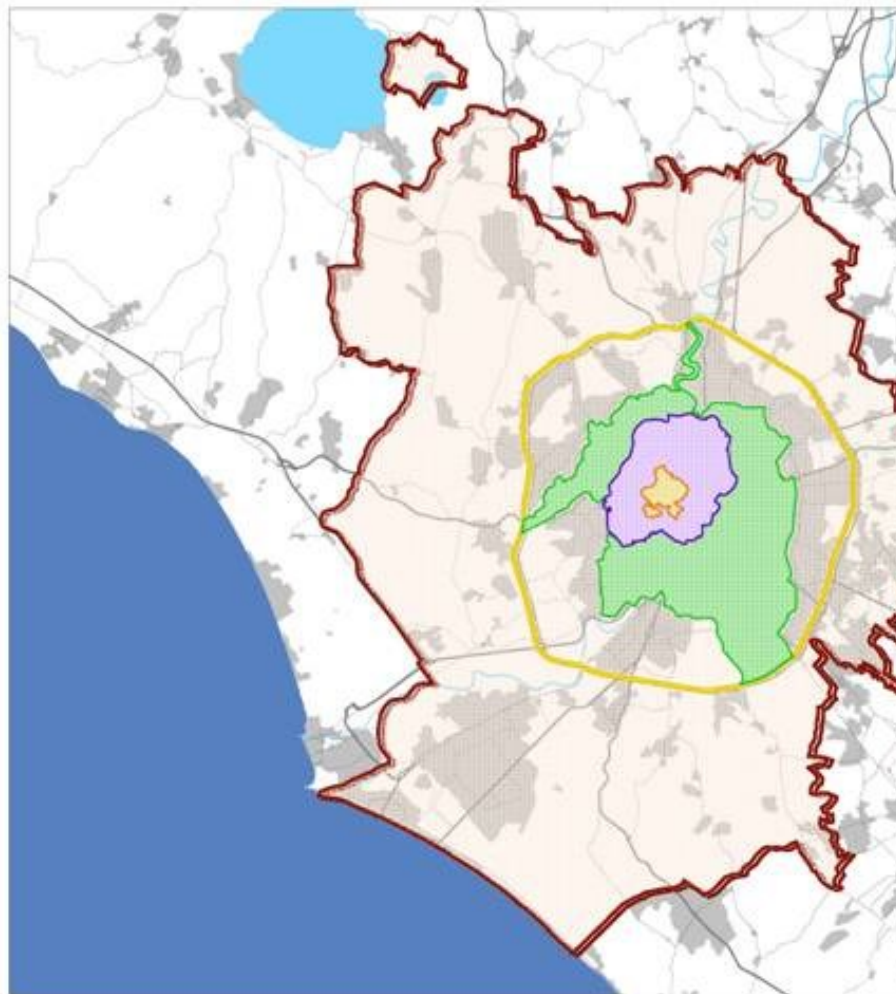
**Reconnect the city, reduce** private vehicles, recover **public spaces**, improve the **environment** and **quality of life** with limited financial resources

### EXPECTED OUTCOMES

- Increase by **20%** public transport speed and users;
- **Reduce by 50% road fatalities** by 2020
- Increase bicycle use within 2 years from current 0.6% to 2% (daily), and **within 5 years** to 4% (in town) and to **10% in the city center**;
- Increase car and bike sharing systems
- Reduce access of private vehicles to city center



## The starting point: bands of increasing restriction zones



Municipality Area – 1285 km<sup>2</sup>  
“Blue Label” Emission Check  
(all vehicles and PTWs)

External Ring (GRA) – 344 km<sup>2</sup>  
Tourist Coaches Regulation

Green Belt – 154 km<sup>2</sup>  
Pollution emergencies,  
Multi-modal interchanges, Park&ride

Rail Ring – 48.4 km<sup>2</sup>  
Emission restrictions, Pay parking schemes

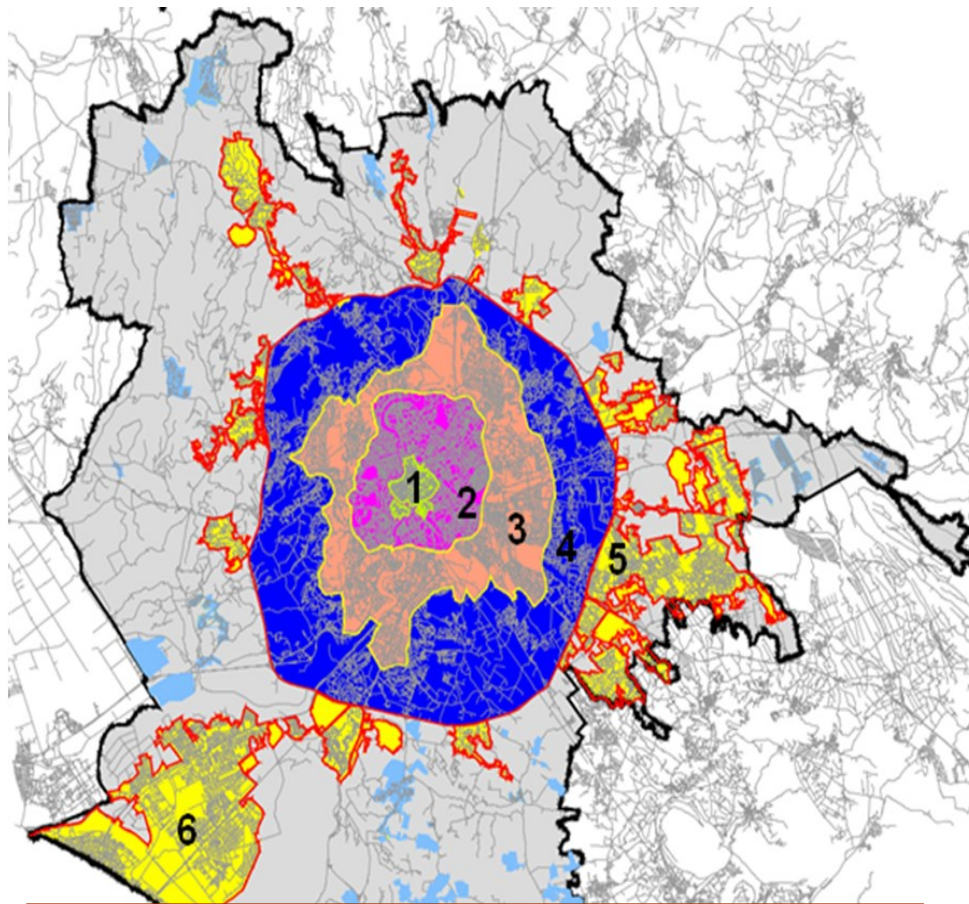
LTZ – 5.5 km<sup>2</sup>  
Stop to all vehicles (except permit holders)

Pedestrian – 1/2 km<sup>2</sup>  
Zero Emission Area (walking & electric)





## The new mobility model: 6-zones with different characteristics



Different urban fabrics characteristics and density of each zone

**require**

**different mobility organizations**

In each area **specific objectives and prevalent actions** to recover balance among all modes and healthy quality of life are proposed

**In the outer zones**, priority is the balance between the use of PT and private mobility.

Use of PT on penetration lines and interchanging with cycling, **park & ride on main TP nodes**.

**In Zone 6**, PT services for commuters and a better connection with sea resources, local soft mobility and environmental islands,



## Main line extensions (km)

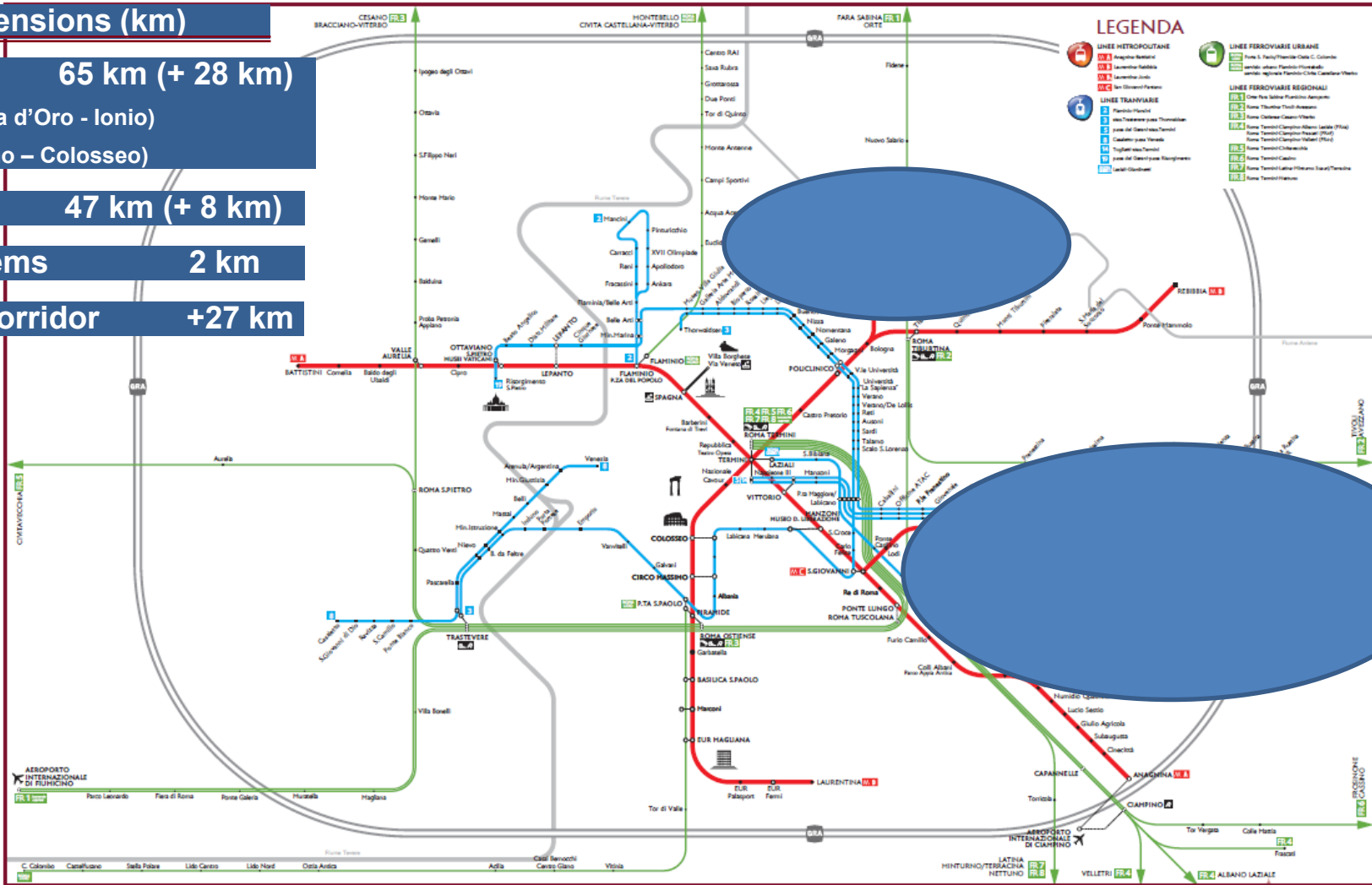
**Metro** 65 km (+ 28 km)

- Line B1 (Conca d'Oro - Iorio)
- Line C (Pantano - Colosseo)

**Tramway** 47 km (+ 8 km)

**Cable Systems** 2 km

**Urban PT Corridor** +27 km



**Modal share of  
the PT network (short -term):**

**25,8 %**





## Line B1: working in a complicate environment



### B1 Extension

- Length: 3,9 km
- -1,5% city PM10, -4.500 ton CO2
- 9 million hours saved/yr.
- Open 6/2012 up to Conca D'Oro
- Cost: 0,51 Billion €

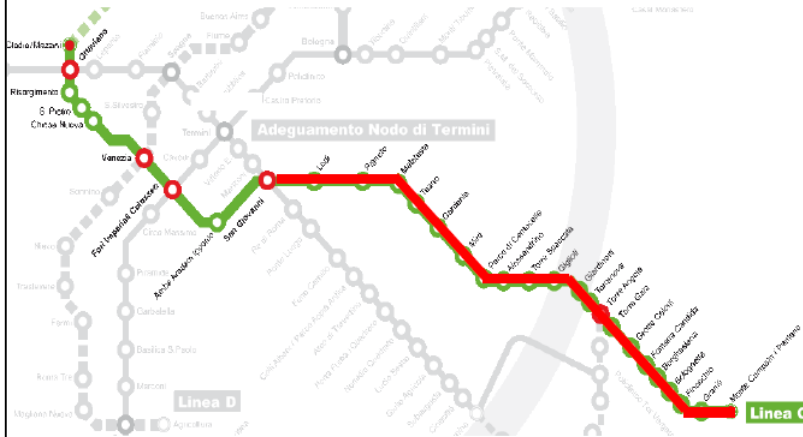
**Opening of Iorio station:  
April 21, 2015**





## Mass Rapid Transport System Expansion: Line C – from south to centre

### Line C



**Work in progress from Montecompatri-Pantano terminal to S. Giovanni Station**

Contract:  
Contractor:

General Contractor  
Metro C S.p.A.  
(Astaldi Spa - Vianini Lavori Spa -  
Consorzio Cooperative Costruzioni -  
Ansaldo Trasporti Sistemi Ferroviari Spa  
- CMB)

**Montecompatri-Pantano/S. Giovanni  
(T7-T6A-T5-T4): 1° phase – works in progress**

Length: **km 18,5** (10,8 Km underground)

Stations: **22** (11 underground)

Start: **feb-2007**

Scheduled end:

- Montecompatri-Pantano/Centocelle: **2013**
- Montecompatri-Pantano/Lodi: **2014**
- Montecompatri-Pantano/S. Giovanni: **2015**

Investment: **1.818 million euro**

## Opening of the southern part of C Line ( up to piazza Lodi):

## Completed June 29, 2015!

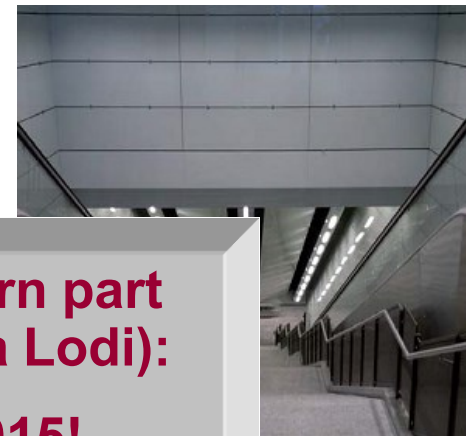
Scheduled end: **2020**

Investment: **792 million euro**

**Venezia/Ottaviano (T2)**

Length: **km 3,5**

Stations: **3**







## New metro and existing background:







# ROMA CAPITALE



**Piazza Venezia survey**

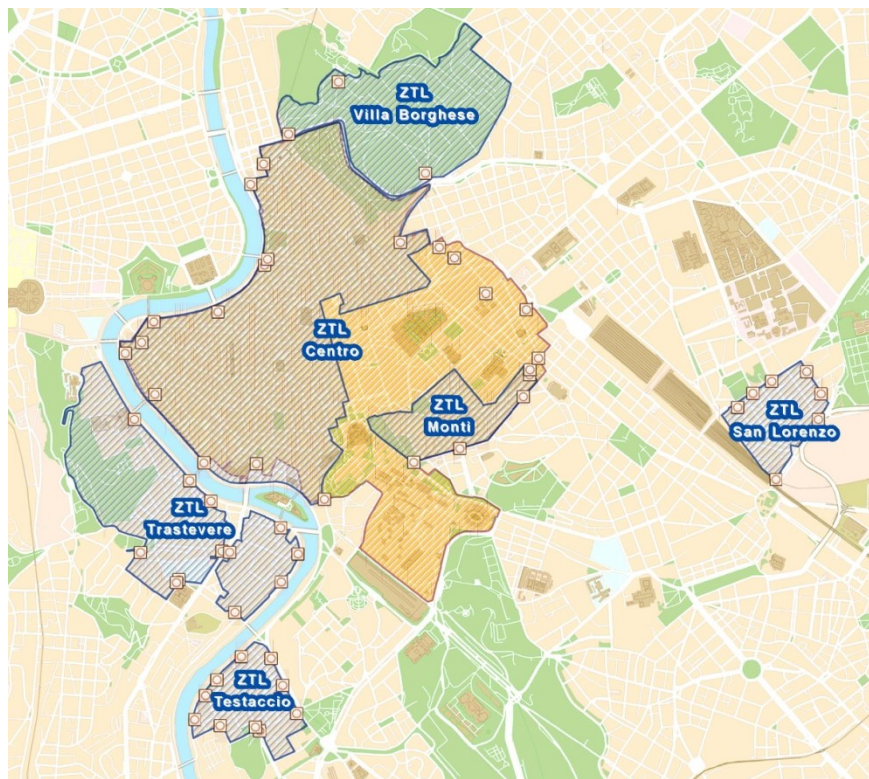




**Fori Imperiali:  
preserving our heritage!**



## LTZs & Access control: electronic Gates



### LTZ Historic Center

Mon. to Fri. 6.30 am - 6 pm

Sat. 2 pm - 6 pm

Fri. & Sat. 11 pm - 3 am

### LTZ Trastevere

Mon. to Fri. 6.30-10 am

Fri. & Sat. 9,30pm-3am

### LTZ Villa Borghese

Mon. to Sun. 0 -24

### LTZ San Lorenzo

From Wed. to Sat. 9.30 pm - 3 am  
(May to July & September- October)

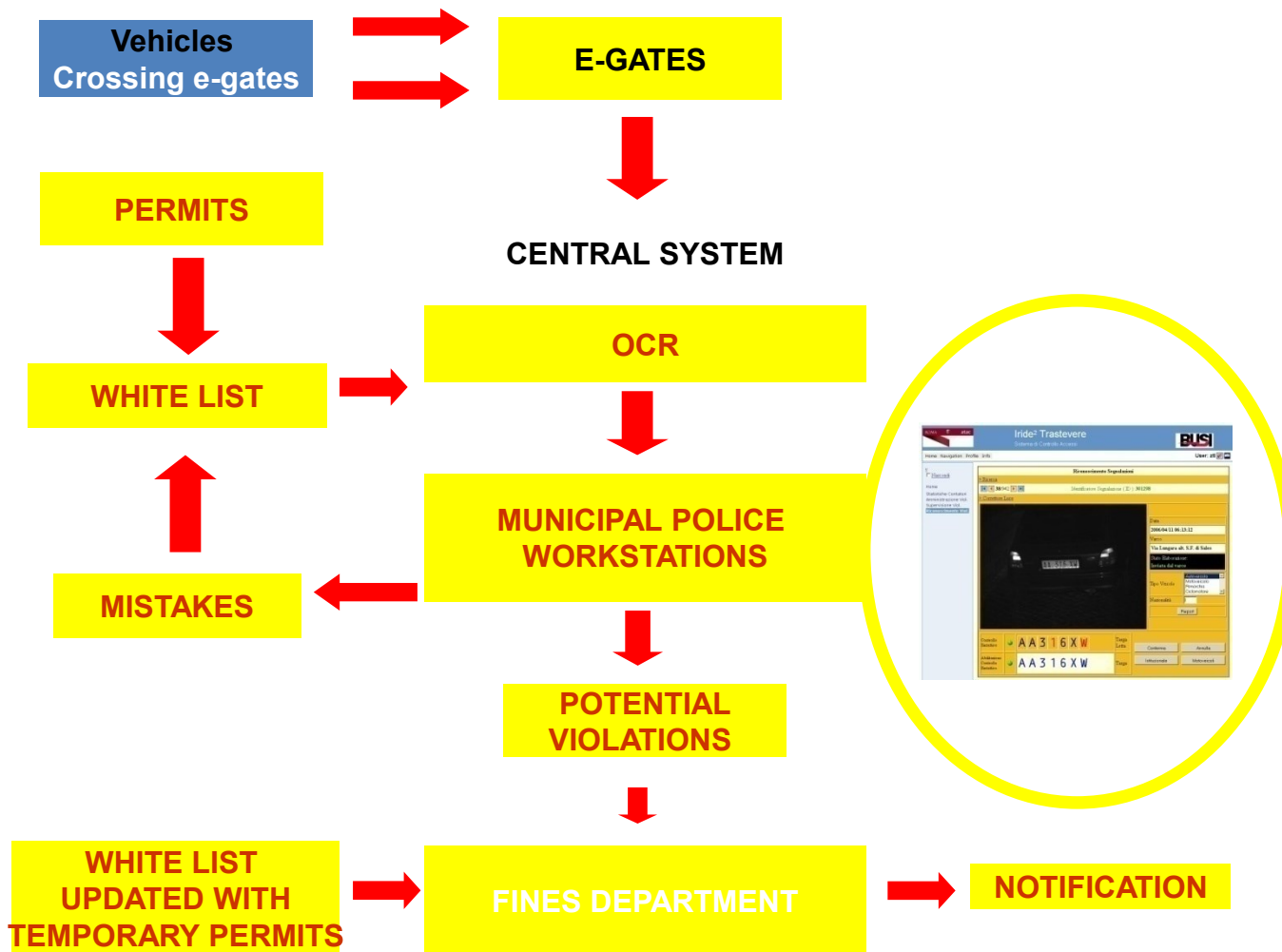
Fri. & Sat. 9,30pm-3am  
(November - April)

### LTZ Testaccio

Fri. & Sat. 9,30pm-3am



## The Enforcement process: logical scheme





## LTZ – e gates Municipal Police interface

ROMA

atac

### Iride<sup>2</sup> Trastevere

Sistema di Controllo Accessi

**Automatic plate number recognition process (Municipal Police user interface)**

Home
Navigation
Profile
Info

▼

☐ Nascondi

Home

Statistiche Contatori

Amministrazione Viol.

Supervisione Viol.

Riconoscimento Viol.

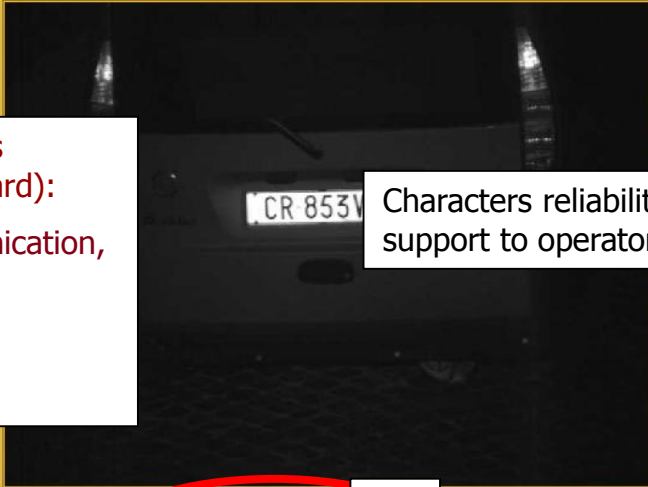
#### Riconoscimento Segnalazioni

> Ricerca

◀
▶
3/787
▶
▶

Identificatore Segnalazione (ID): 198922

> Correttore Luce



Data

2006/04/04 00:48:06

Varco

XX - Lungara alt. S.F. di Sales

Elaborazione:

ta dal varco

Tipo Veicolo

Autoveicolo  
Motoveicolo  
Rimorchio  
Ciclomotore

Nazionalità

Report

Controllo Sintattico

●

CR 853

Targa Letta

Abilitazione Controllo Sintattico

●

CR 853

Targa

Conferma

Istituzionale

Annulla

Motoveicoli

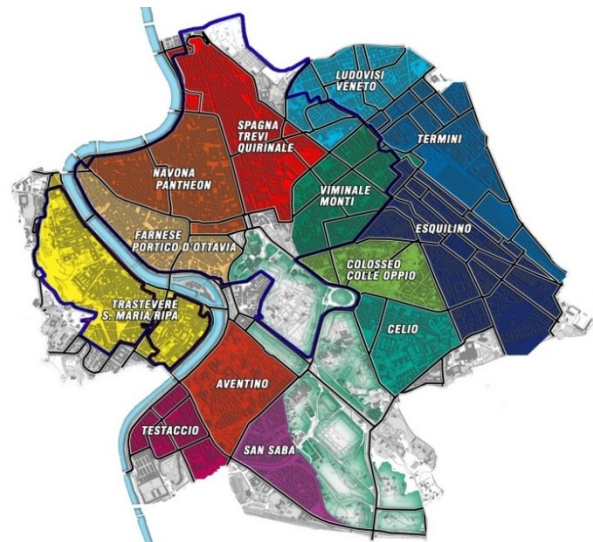
UNI certified processes  
(organization of standard):

Management (communication,  
classification,...)

Images authentication

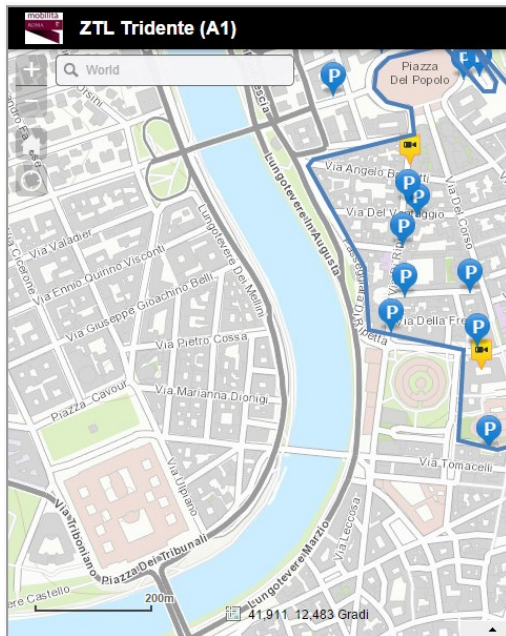
Filing system

Characters reliability:  
support to operators

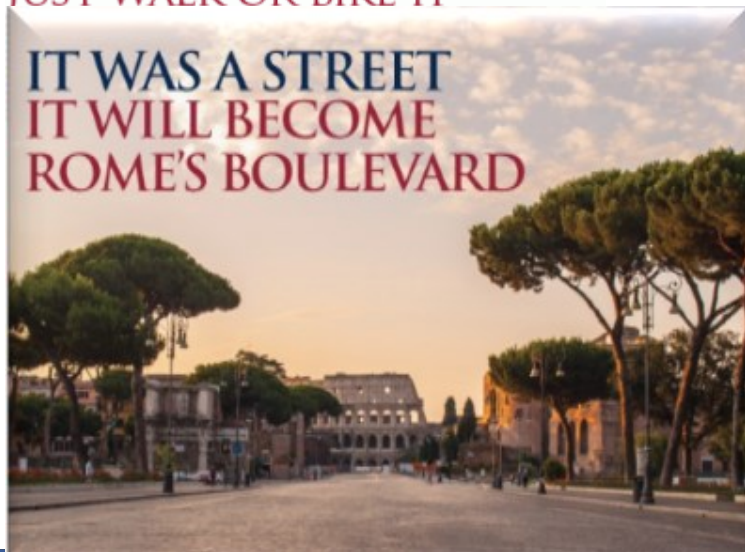


### Tridente environmental island

1. Closed from-to: 6.30 am – 7 pm (mon-fri) 10am – 7 pm (sat)
2. 4 new e-gates to be made operational next months
3. Closed also to PTW !!



**FORI PEDONALI**  
JUST WALK OR BIKE IT

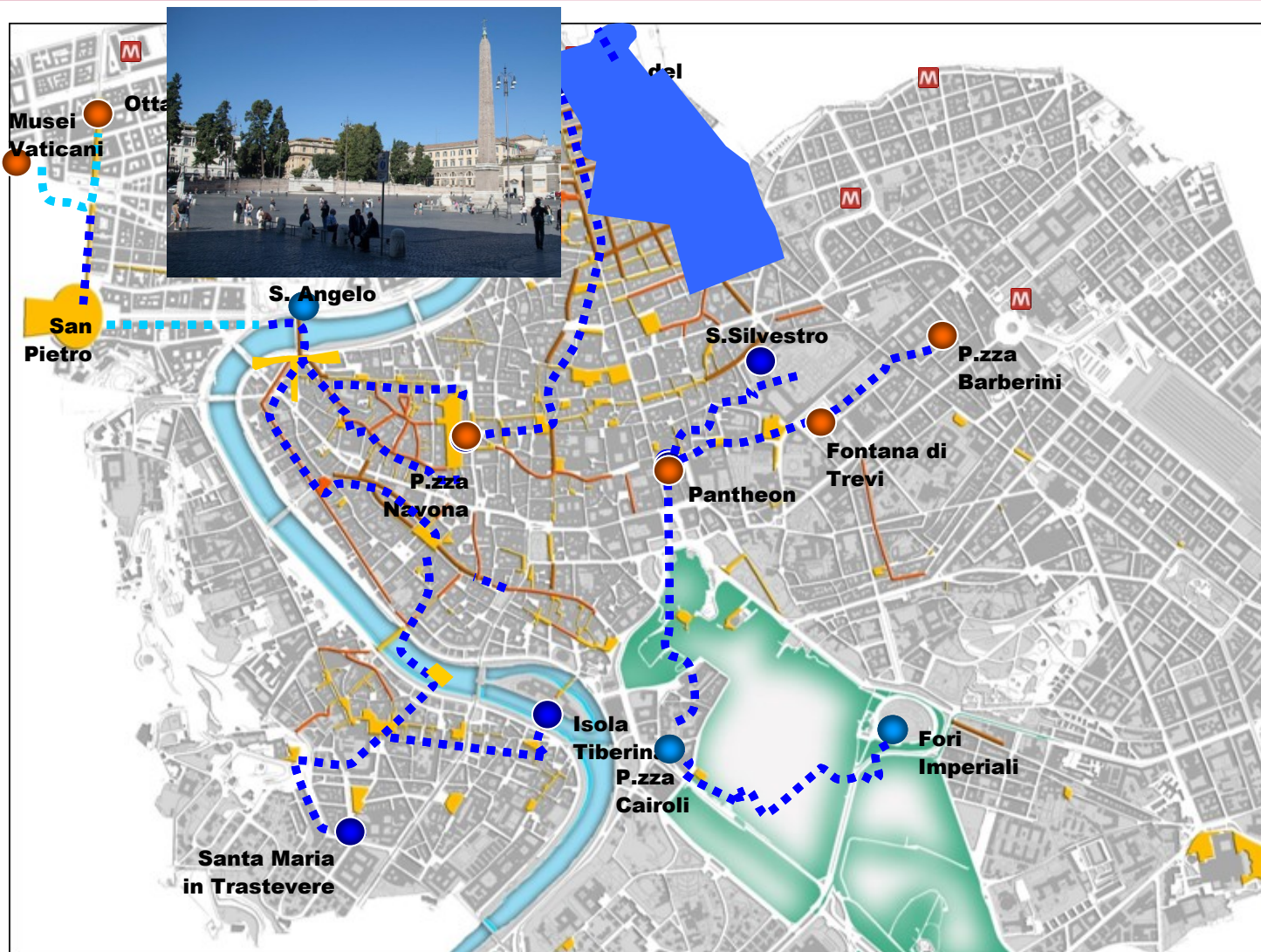


**IT WAS A STREET  
IT WILL BECOME  
ROME'S BOULEVARD**





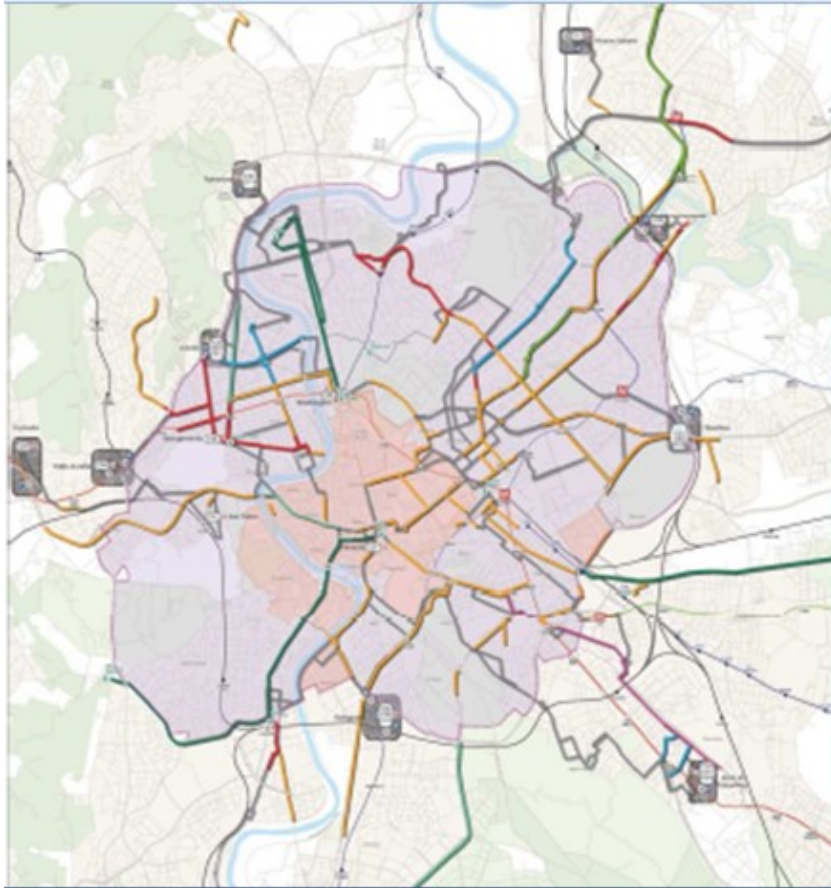
1. Review of access & parking regulation
2. Increase car and bike sharing systems
3. Introduce electric and hybrid vehicles.
4. Create environmental islands, pedestrian areas and pathways







## Rail Ring zone: PT reorganization and CC scheme



- **Rail Ring zone (700,000 inh.):** revised rules to limit private traffic.
- **Rationalization of PT:** more integrated with Metro, Tram and Railways nodes. Reducing and optimizing stops and lines with multiple steps program.



- Promotion of car sharing, car pooling, bike sharing and electric mobility in a **multi-modal approach**;
- **New LTZ concept:** by 2017 rewarding system for non-pollutant drivers with **congestion charging concept**.



## Car-sharing: fixed and free-flow schemes

- **Car sharing fixed scheme:** managed by Mobility Agency, working in 4 central districts. Annual fee, fixed places, return to same place, low hourly costs.
- **Car sharing free-flow scheme:** working in 35 sq km of the city, free places, leave where you want, higher costs (per minute).
- Managed by two Private Operators: **Car2go** (with Smart, operating from March), **Enjoy** (with FCA 500 started in June 2014)

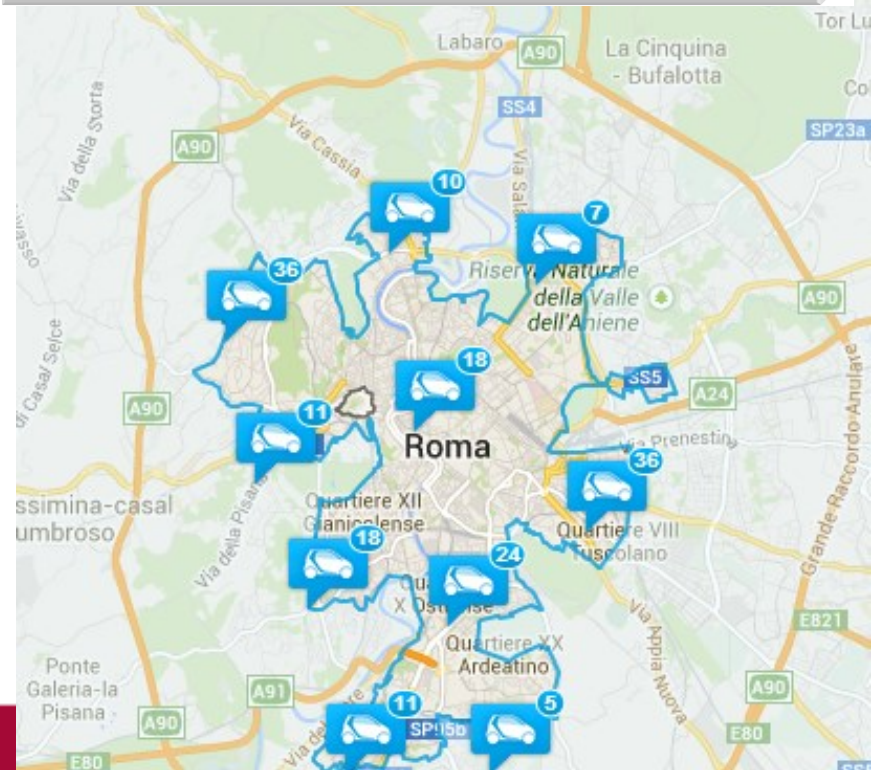


**Up to 1500 shared vehicles in 18 months !!**

**> 100.000 registered users.**



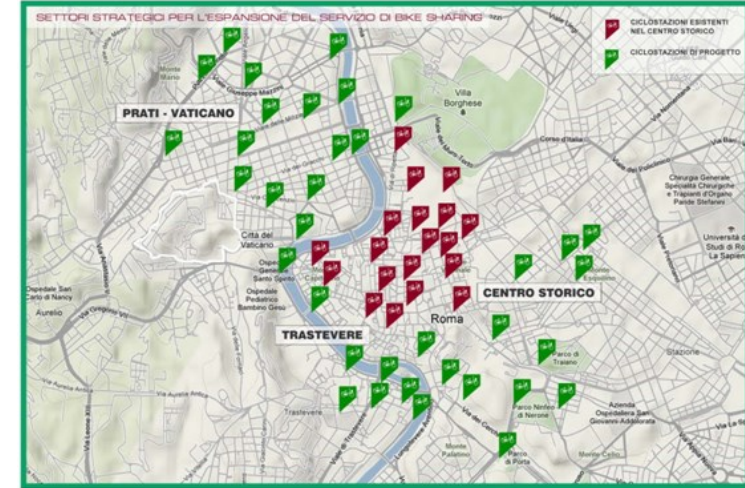
**CAR2GO** ISCRIVITI GRATUITAMENTE  
E riceverai 30 minuti GRATUITI!!  
Offerta valida fino al 15.04.2014







- **New bike-sharing scheme:** re-launch of the system with more stations, financed by new advertising installations – to be soon open. Bike availability with open data app.
- **Call for Tender** for scooter-sharing scheme, following the “roman attitude” towards this historic way of moving

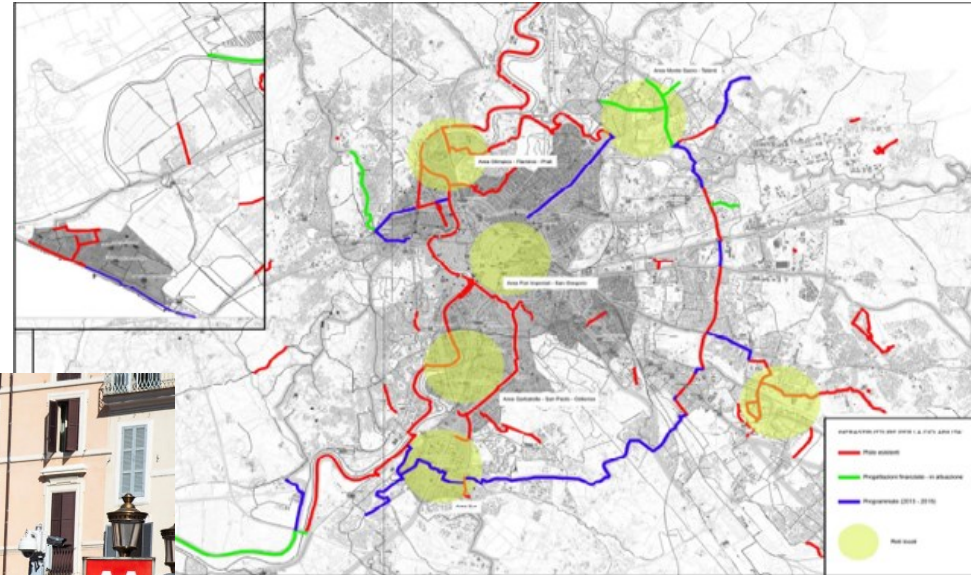


### Strong impulse to sharing modes

- Promotion of multimodality and “active mobility”
- Scooter-sharing to limit purchase and travelling of old scooters within the city
- Revitalisation of bike-sharing scheme to be integrated with cycling plan.



- **Working tables** with City Boroughs and associations
- **Selected about 80 Km of track paths**, some already in final design or implementation.







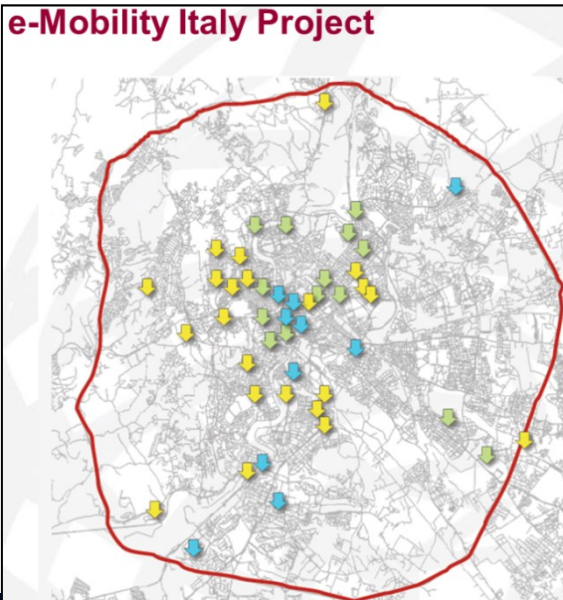
### Public recharging network: City Of Rome - ACEA - ENEL

**Common charging standard** and a **common business model** to allow vehicle charging and the payment, in any charging point.

Rome, is then increasing its charging network:

- ENEL implemented **115 charging points**;
- ACEA has planned to implement other 200 charging points

#### e-Mobility Italy Project



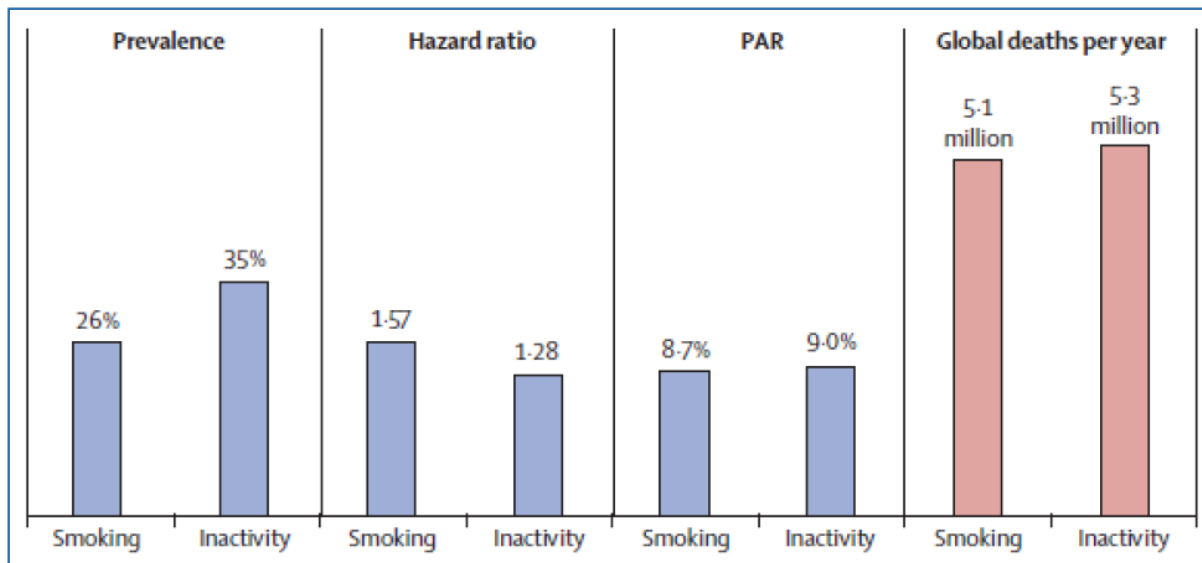
### Public fleets

- A first group of **14 Citroen C0** was incorporated in 2013 into the **Municipal Police** fleet in routinely operation
- Rome has **50 e-bus PT fleet** operating in the inner centre with high operational cost but saving the Rome heritage.
- 5 Blue e-bus for FreeRomaPass



## Active travel Concept

WHO says *"Physical Inactivity: a risk factor comparable to smoking...Regular walking and cycling reduces mortality by ca. 10 %"*  
And, beyond health, reduce congestion, improve road safety, air quality and noise, improved accessibility and quality of urban life



Lancet, 2012  
[http://dx.doi.org/10.1016/S0140-6736\(12\)61031-9](http://dx.doi.org/10.1016/S0140-6736(12)61031-9)

**Figure: Comparison of global burden between smoking and physical inactivity**

Prevalence of smoking, population attributable risk (PAR), and global deaths for smoking were obtained from WHO.<sup>7</sup> Hazard ratio for all-cause mortality of smoking was obtained from meta-analysis studies.<sup>8,9</sup> All inactivity data were obtained from Lee and colleagues.<sup>5</sup>





## FOCUS on:

- Transport and health by promoting active mobility in cities (i.e. walking and cycling) including in combination with public transport use);
- Recruitment of 2.000 volunteers for longitudinal study;
- baseline questionnaire and every 2 weeks follow-ups.



**Bike it.  
Walk it.  
Live it.**

Connecting transport and health to create happier, more physically active, sustainable communities.



Physical Activity through Sustainable

Trans  
the

<http://www.pastaproject.eu/>

14 partners and 7 case-study cities (14,000 participants):

Vienna, Zurich, Antwerp, Barcelona, Örebro, Rome, London



University of Natural Resources  
and Life Sciences, Vienna



Universität  
Zürich



vito  
vision on technology



World Health  
Organization  
REGIONAL OFFICE FOR  
Europe



CREAL



Trivector Traffic



Imperial College  
London



cep



Newham London



mobilità  
ROMA



TU



POLIS



I.C.L.E.I.  
Local  
Governments  
for Sustainability



Gesundheit Österreich  
Forschungs- und Planungs GmbH



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no 60204-3.



# Mobility Center of Rome

The Center then puts together a series of subsystems, each dedicated to the performance of specific functions of monitoring and / or regulation of traffic flows.



## Infomobility

Variable message signs (VMS)	66
UTT (Urban Travel Times)	51
Electronic poles of bus stop muoversiaroma.it - mobile	300



## Sanctioning & fining

E-gates for Limited Traffic Zones & Pre-signalling signs	47
E-gates for PT bus lanes	17
Fotored	1
Vistared	10
Velox	4
Safety Tutor	2



## Monitoring, Controlling & Management

Video surveillance cameras	45
Traffic Measurement Stations	130
Traffic lights	1376





## • UTT – Urban Travel Times

Monitoring system measuring travel times of private traffic in the urban context. It assess **the level of service** offered by the transportation network, identify problems due to the occurrence of abnormal situations (accidents, events). Information on the state of the traffic on the routes monitored **is transferred in real time** (through different dissemination channels), allowing users to change their routes as a function of the current level of network congestion

### Current status

- Over **130 Km** monitored
- Travel time of more than 40 sectors
- **15 routes** monitored
- Data update every **5 minutes**
- Messages posted on VMs & [www.muoversiaroma.it](http://www.muoversiaroma.it)

## UTT (Urban Travel Times): How does it work ?

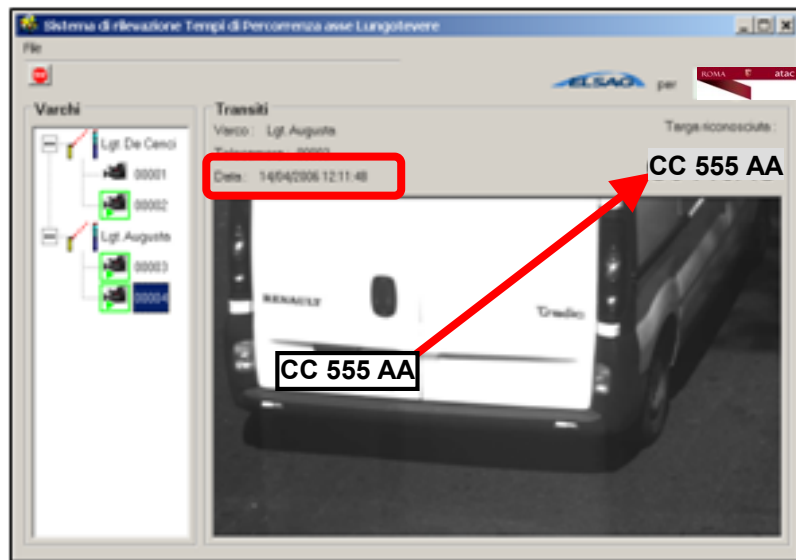
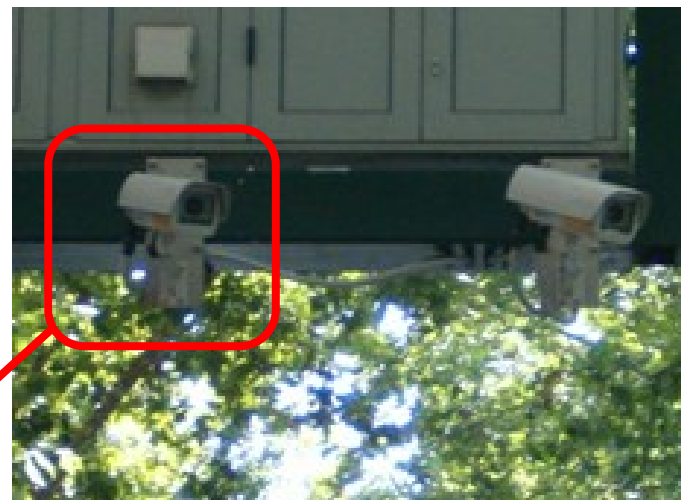


PLATE RECOGNISED  
AND TIME RECORDED  
AT THE ENTRY SECTION

Targa: CC 555 AA  
14-apr-06 11:50:39

PLATE RECOGNISED  
AND TIME RECORDED  
AT THE EXIT SECTION

Targa: CC 555 AA  
14-apr-06 12:11:48

**TRAVEL  
TIME  
21 mins  
9 secs**





## • AVM – Automatic Vehicle Monitoring

The AVM system, installed on Atac and RomaTPL fleets and bus, allows real-time capture of key figures relating to public transportation, including the location of the coming bus.

The AVM data is feeding in an automatic way both the electronic poles on roads and traffic service operated by Rome Mobility Services, including

[www.muoversiaroma.it](http://www.muoversiaroma.it)

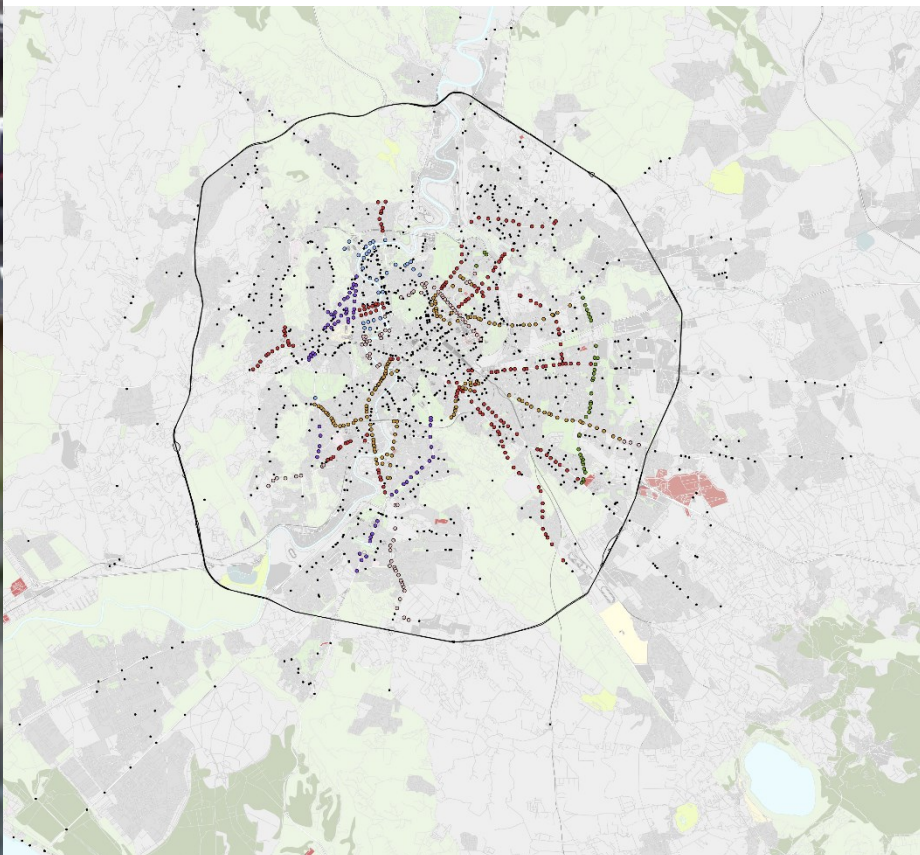
Information to the citizen through **300 electronic poles**: the Mobility Service Centre sends to the poles electronic information on traffic and road conditions, which alternate on the display to the estimated times of arrival of the bus

**To date about 2.600** equipped bus



## Traffic signals in Rome

Complex systems can implement control strategies for dynamic and static traffic light on the real traffic conditions



### Current status

<b>Traffic signals</b>	<b>1.530</b>
Non centralized	1.003
Synchronized	159
Under UTC	527
with LED lights	315





## UTC Systems in Rome

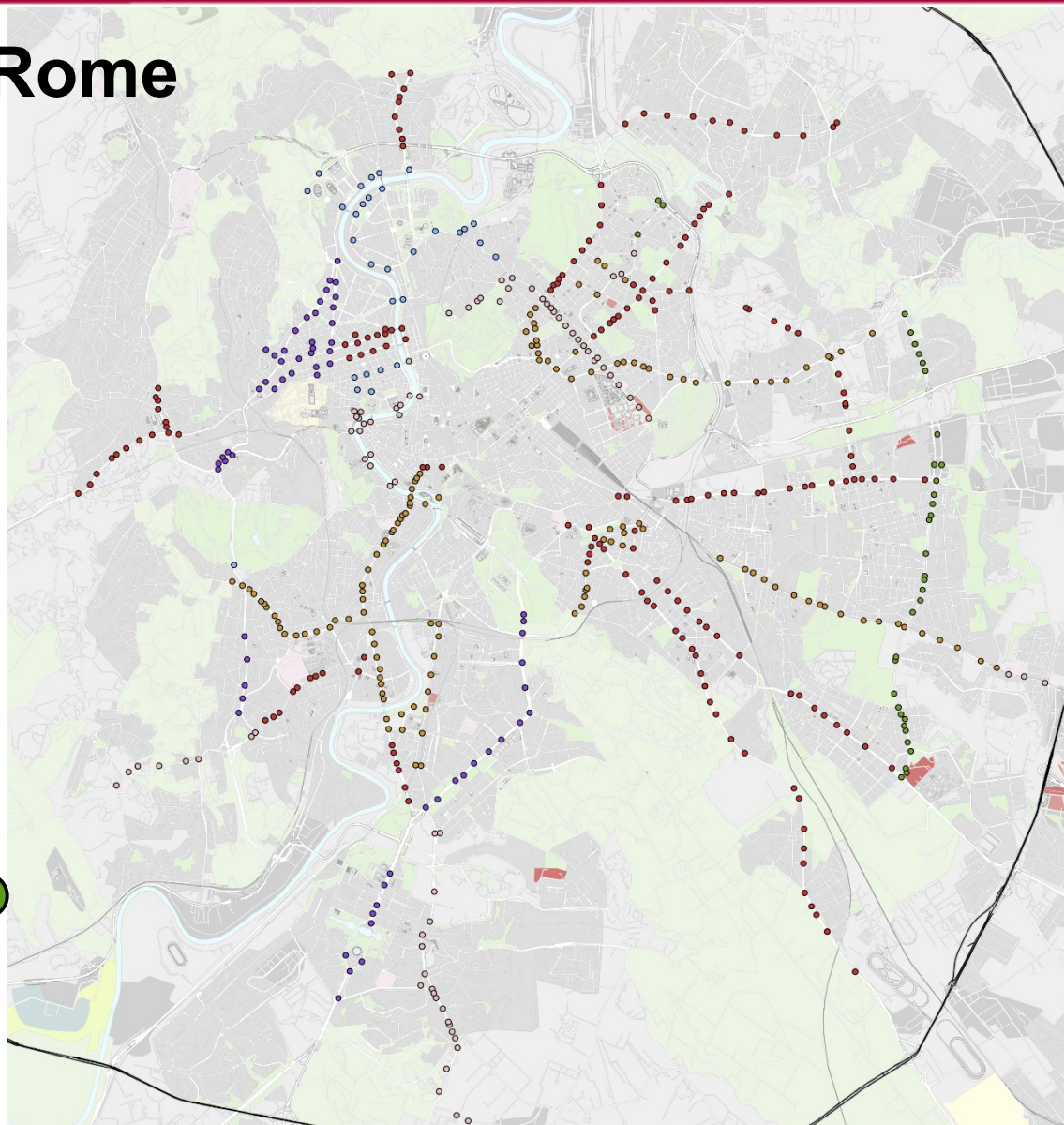
**527 Traffic Signals  
under UTC**

**317 Omnia** ●  
**Utopia** ●

**93 Sigma** ●  
**Sigma +** ●

**81 TMacs** ●

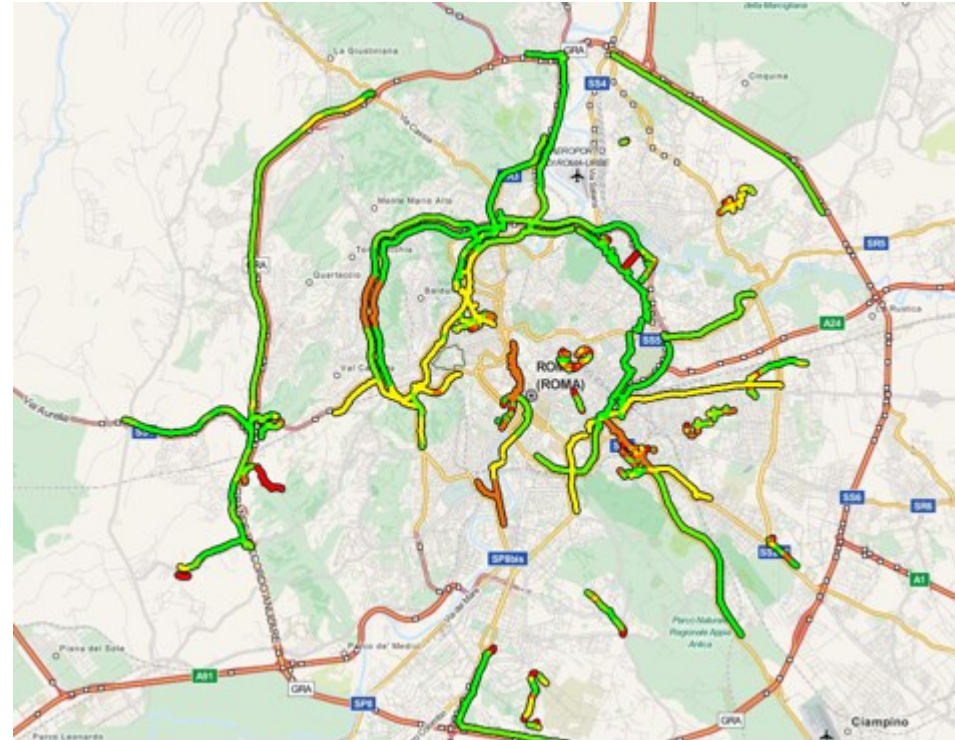
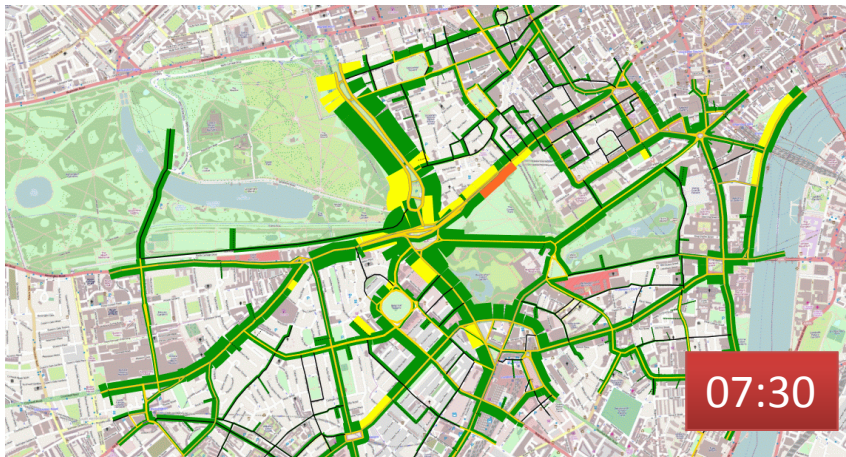
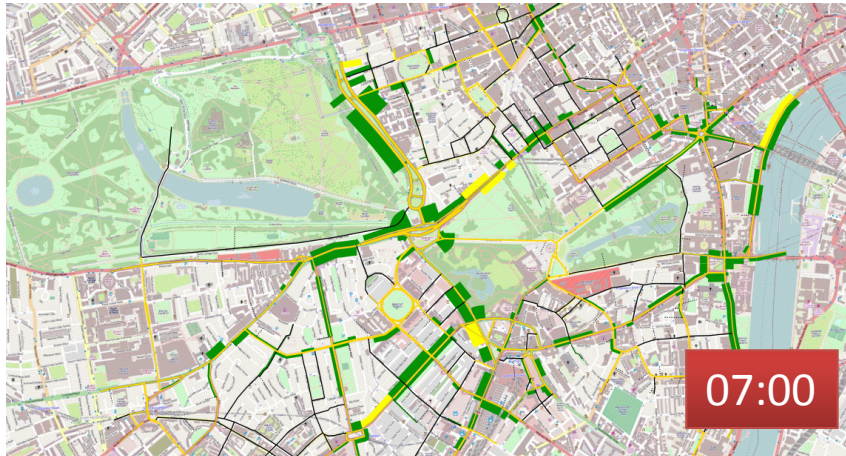
**36 Road Manager** ●







## Data fusion and forecasting – work in progress !



Images courtesy from providers during test phases





## New multi-modal personal travel: new AM choices !!

**Linea, fermata o indirizzo** **CERCA**

Da: Via Cola di Rienzo

A: Via Della Stazione Ostiense, Roma

**CERCA** **RITORNO**

**COME: BIKE AND RIDE**

Opzioni avanzate

Percorso trovato

**RIEPILOGO**

**Durata spostamento:** 29 minuti  
**Distanza percorsa:** 5.8 km  
**Di cui a piedi:** 350 metri

**INDICAZIONI**

- 13:06** Via Cola Di Rienzo
- In bici**  
450 metri (2 minuti)
- 13:10** Via Cicerone
- A piedi**  
50 metri (meno di 1 minuto)
- 13:10** Fermata Cicerone/Cavour (70259)
- Linea 30**  
direz. Laurentina (MB)  
In arrivo dopo meno di 1 minuto  
Per 9 fermate (22 minuti)
- Fermata**  
Staz. Ostiense (FS) (70788)

**ORA PRESENTI SULLA MAPPA**

- ☐ Fermate trovate
- ☒ Percorso trovato

### New features:

- Open data portal:** already operational at <http://www.agenziamobilita.roma.it/it/servizi/open-data/>. + 30 apps developed + dev. community

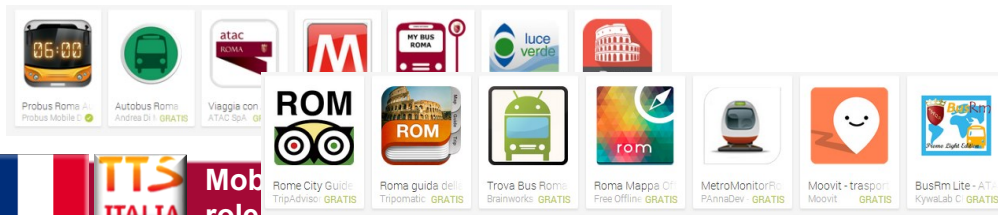
### In the coming years:

- Data ware-house:** integration among different databases and with TEN-T corridor operators
- Location-aware services and mobile ticketing,** both for PT and parking lots.
- Open Data & Co-operation:** new projects with EU and int. actors, adapt to standards (DATEX II, REST/JSON), crowdsourcing



# The open data portal

- **Contents:**
  - Static dataset both geographical and numerical
  - A real time API for both public and private transport
  - A selection of tools for webmasters
  - All the source code of our apps and services
- **About 30M access to our real time API per month**
- **Support to the developer community**
- **30+ apps developed or enhanced in only 6 months**



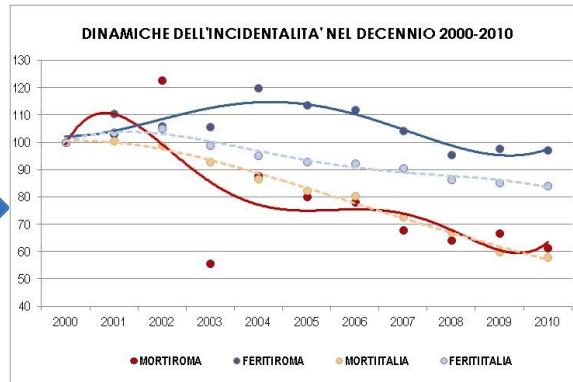
- <http://www.agenziamobilita.roma.it/it/servizi/open-data/>
- (Italian only, we'll provide English translation)





## The Monitoring Centre for Road Safety

- The Centre goal is increasing road safety levels, with **integrated Mobility information layer** dedicated to road safety and linked to other Mobility Agency ITS Systems
- Data collection and management, assessment and monitoring of interventions, planning and design activities, production of reports
- Development of **traffic projects to improve junctions/roads/areas safety**, according to yearly available resources
- Designs and tests of **innovative measures** (infrastructural, signalling, etc ...)
- Implementation of a “**Shared Procedure**” among all subjects and operators in order to increase road safety.





## The Road Safety Monitoring Centre & Information system







## Jubilee of Mercy in Rome: from December 8, 2015





## Jubilee of Mercy in Rome: the new “Smart City”

- Better integration with the Regional Railway system, increase PT efficiency and maintenance, short-term actions for active travel and sharing mobility;
- **Actions** not only centered on the Jubilee events, but for "re-stitching the suburbs" and draining traffic;
- some months of civil works in the city centre and on main infrastructures.

**Please be patient for a better city!**



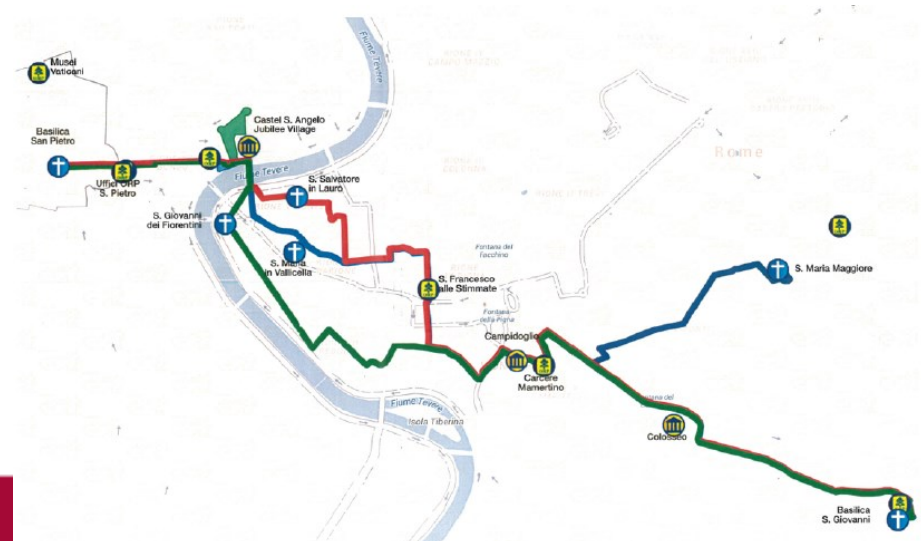




## Jubilee of Mercy in Rome: from December 8, 2015

*Short terms (end 2015) intervention plan to improve mobility and pollution conditions in order to facilitate the reception of pilgrims coming in Rome.*

- Strengthening the **mobility network** (roads, subways, junctions of the railway system and of tramways with requalification of surrounding zones, **starting from Termini**.
- Increase PT efficiency and maintenance, rearrange spaces** near main PT & railway nodes, **exchange bus parking areas** outside the center, new **pedestrian and bike paths**.







# Jubilee of Mercy in Rome: pedestrian projects

## LEGENDA

- Percorso pedonale A - Stazione Metropolitana "Ottaviano"
- Percorso pedonale B - Stazione Treno "San Pietro"
- Percorso pedonale C - Terminali Giardinetti
- Percorso pedonale D - Chiesa di San Giovanni Battista dei Fiorentini - Santo Spirito in Bassa Chiesa della Misericordia
- Percorso pedonale E - Chiesa di San Salvatore in Lauro
- Percorso pedonale F - Chiesa di S. Maria in Vallicella - Chiesa Nuova
- Percorso pedonale G - Parcheggio Bus Turistici Ligo Cardinal Micara
- Percorso pedonale H - "Via Papalis"
- Percorso pedonale I - Chiesa di Santa Maria Maggiore - Carcere Mamertino
- Aree Pedonali
- Percorso pedonale alternativo
- Percorso pedonale coperto (sottopassaggi e/o percorsi interni)



M LEPANTO

TAVOLA 1

ICARIO

## LEGENDA

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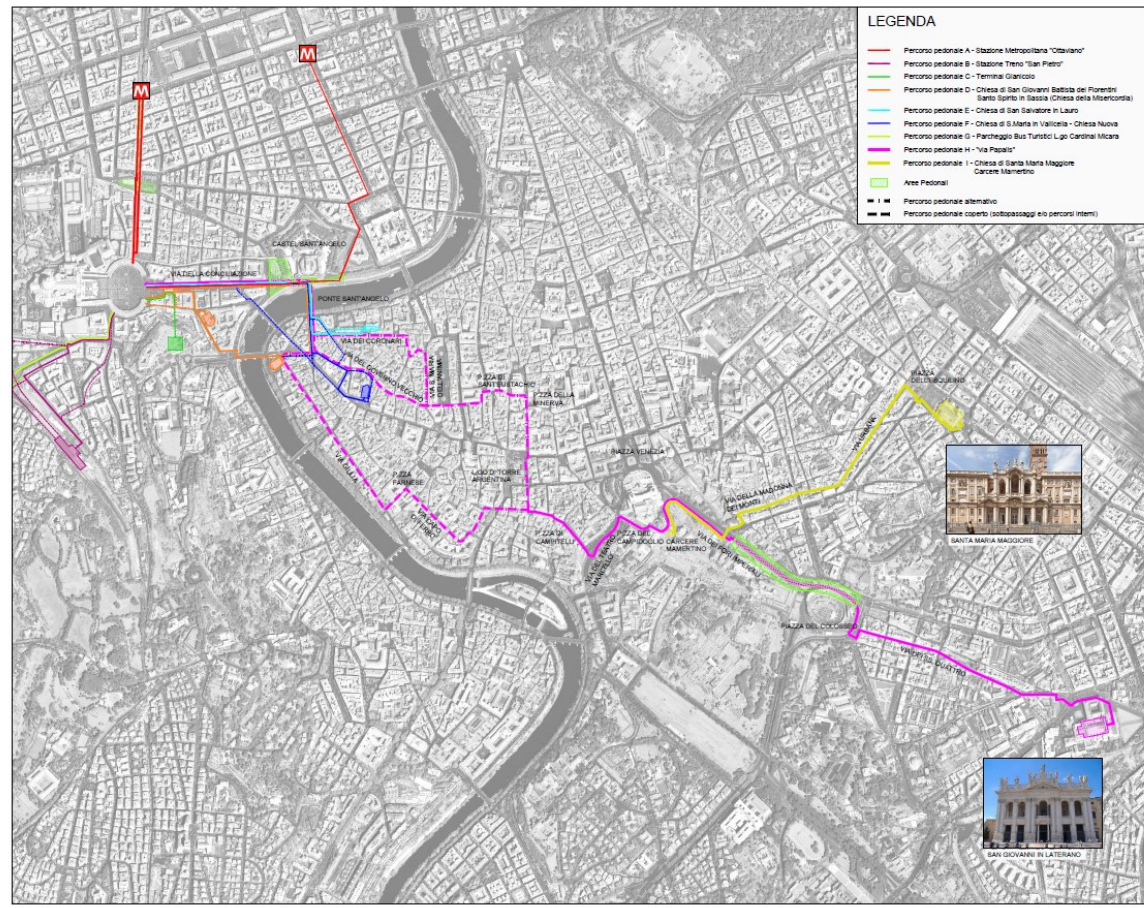
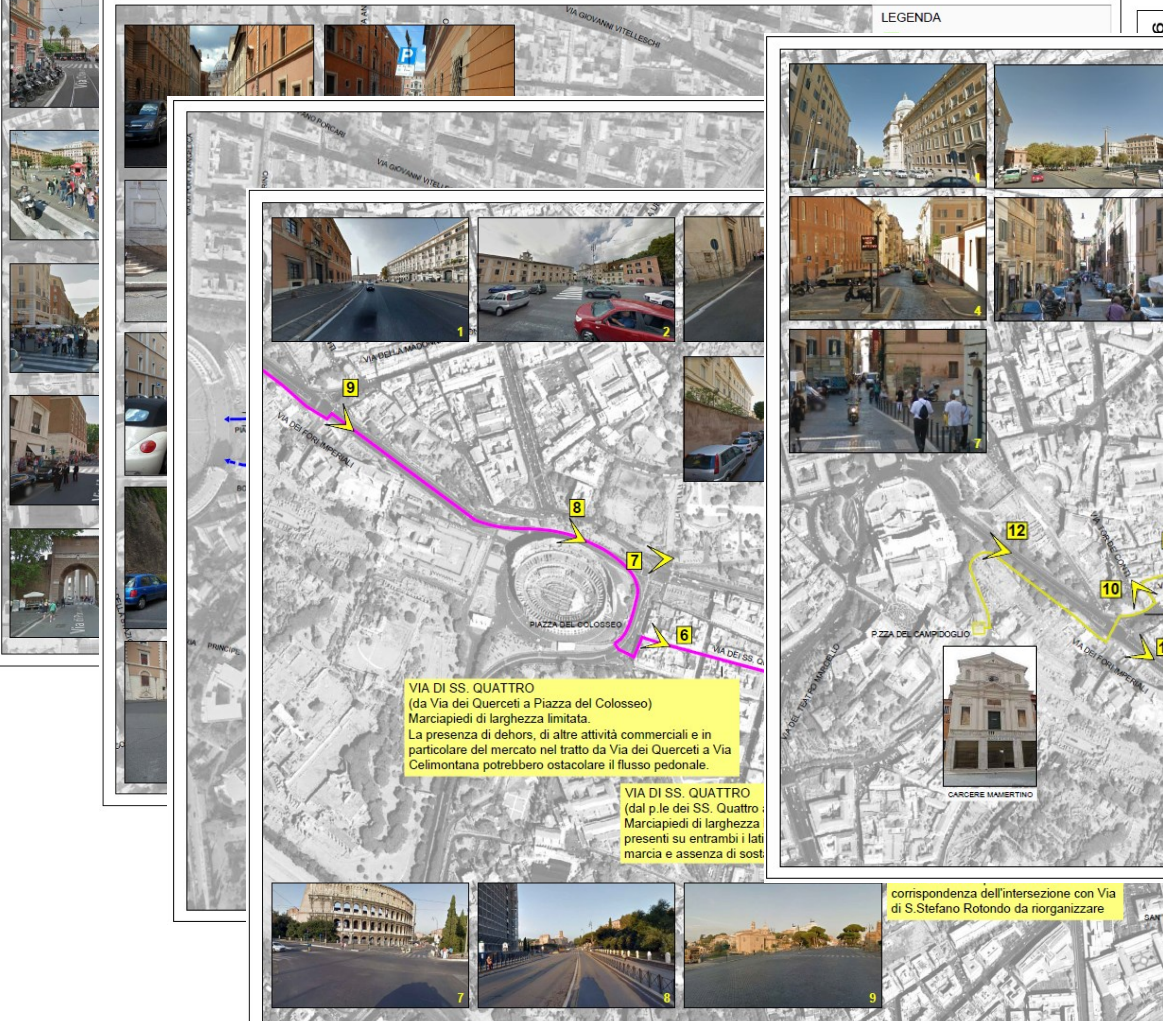


TAVOLA 2

Percorsi pedonali per l'accessibilità dell'area di San Pietro in Vaticano  
INQUADRAMENTO GENERALE DEI PERCORSI PEDONALI "Via Papalis"

MUNICIPIO I







## Open data, ITS: smart city for the Jubilee

For the **Jubilee (closing in November 2016)** and following is expected to:

- Extend the **Open data concept**, **data standardisation** according emerging EU Regulations, new Priority Zones and link with EU Corridors
- Support the implementation of a “**personal mobility assistant**”;
- **ITS** to support the *city governance*, and the protection of “*environmental Islands*” and optimisation with LED lamps of the traffic light network and its use as **Internet of Things** on Rome territory
- **Integration of information** between transport modes and transport operators, integration of the information coming from the social networks.





## New multi-modal personal travel: new AM choices !!

Da: Via Cola di Rienzo  
 A: Via Della Stazione Ostiense, Roma

CERCA >    RITORNO >

**COME: BIKE AND RIDE**

▶ Opzioni avanzate  
 ▼ Percorso trovato

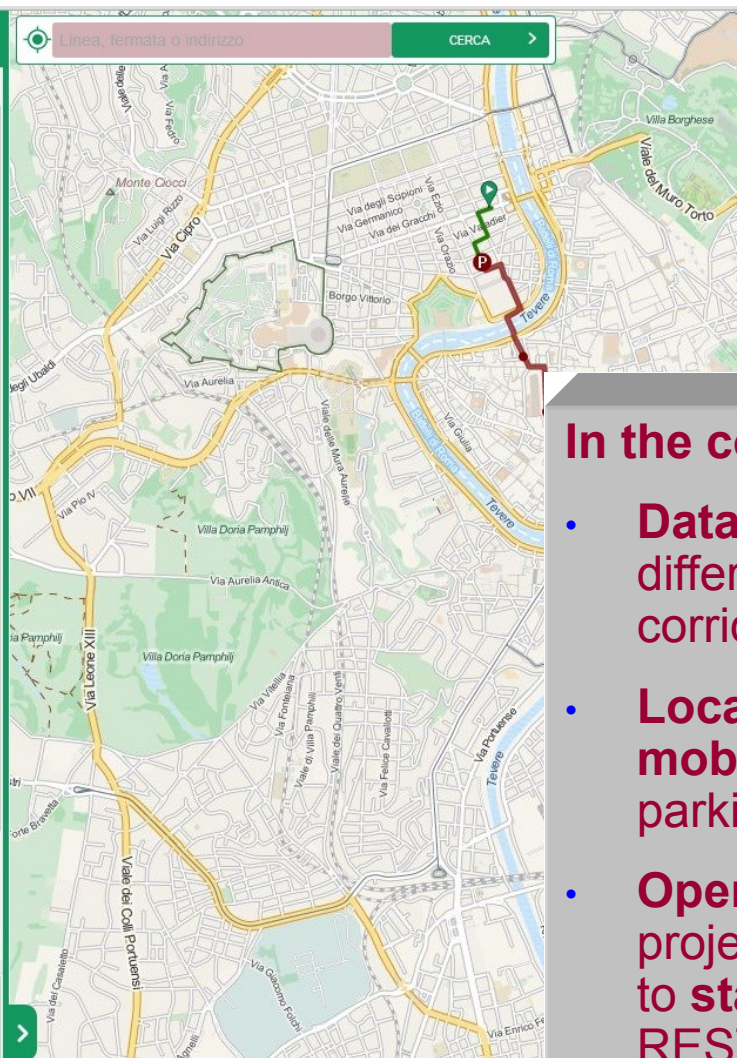
**RIEPILOGO**

**Durata spostamento:** 29 minuti  
**Distanza percorsa:** 5.8 km  
**Di cui a piedi:** 350 metri

**INDICAZIONI**

13:06 Via Cola Di Rienzo  
 In bici  
 450 metri (2 minuti)  
 13:10 Via Cicerone  
 A piedi  
 50 metri (meno di 1 minuto)  
 13:10 Fermata  
 Cicerone/Cavour (70259)  
 Linea 30 X  
 direz. Laurentina (MB)  
 In arrivo dopo meno di 1 minuto  
 Per 9 fermate (22 minuti)  
 Fermata  
 Staz. Ostiense (FS) (70788)

**ORA PRESENTI SULLA MAPPA**  
☐ Fermate trovate  
☒ Percorso trovato



### In the coming years:

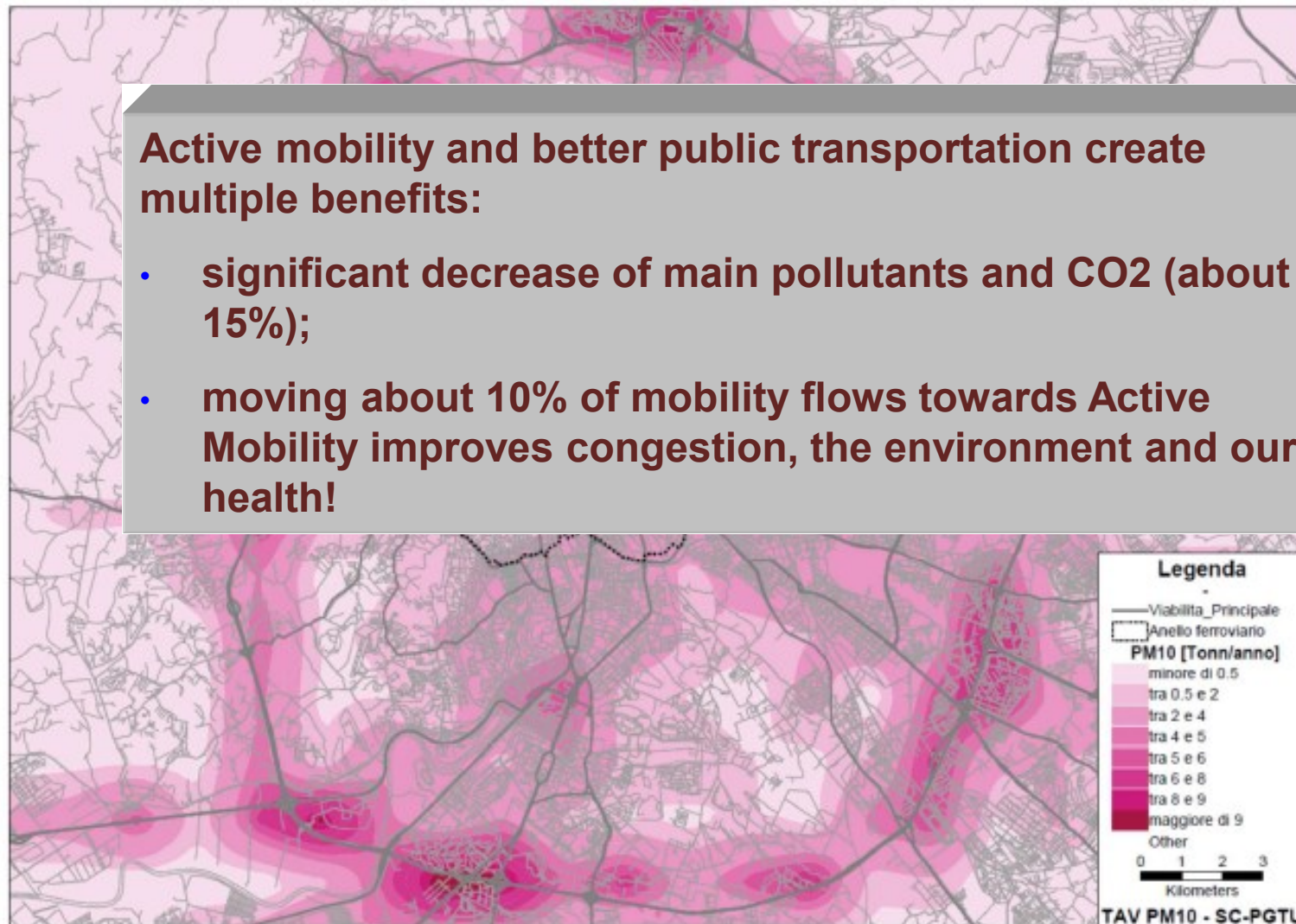
- **Data ware-house:** integration among different databases and with TEN-T corridor operators
- **Location-aware services and mobile ticketing,** both for PT and parking lots.
- **Open Data & Co-operation:** new projects with EU and int. actors, adapt to standards (DATEX II, REST/JSON), crowdsourcing



## Effect of the Mobility Masterplan on environment: PM10

**Active mobility and better public transportation create multiple benefits:**

- significant decrease of main pollutants and CO2 (about 15%);
- moving about 10% of mobility flows towards Active Mobility improves congestion, the environment and our health!







ROMA CAPITALE



**Thank you for  
your attention!**



**Fabio Nussio, Donatella Ciraolo**

**International Co-operation**

**Antonio Falvo, Sandro Francalanci, Marco Cagnoli**

**Mobility Centre and ITS**

**Mobility Agency of the City of Rome**

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**Visit of French Delegation**

**Mobility Masterplan, Jubilee of Mercy and ITS role in Rome**