MILAN SMART CITY

ASCIMER

ASSESSING SMART CITY INITIATIVES FOR THE MEDITERRANEAN REGION

FACING THE CHALLENGES OF A NEW ERA: SMART CITY PROJECTS

16th and 17th of July, 2014

La Granja, Segovia

POLITÉCNICA

European Investment Bank · Institute

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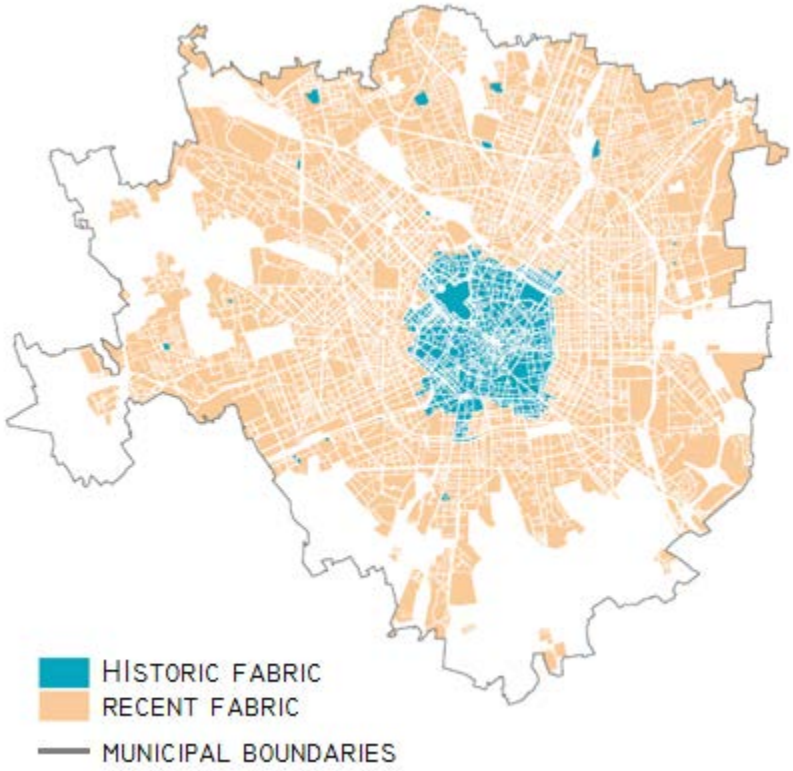
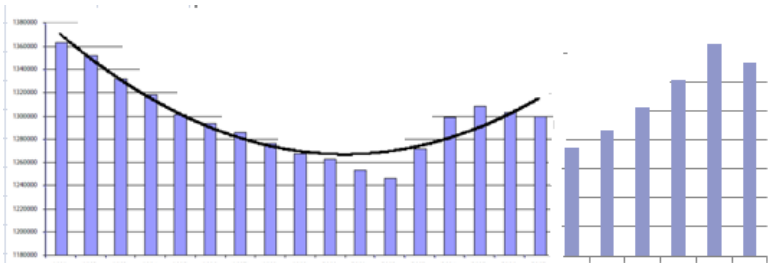
INTRODUCTION



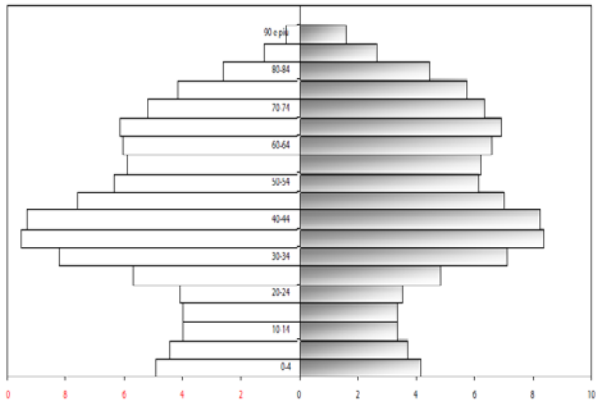
- **SOCIOECONOMIC, DEMOGRAPHIC AND URBAN CHATACTERISTICS**

  - N° of inhabitants (2013/31/12) **1.353.882**
  - City extension **182 kmq (181,765,533 mq)**
  - Population density **7,439 in/kmq**
  - GDP/ per capita income **36,362 euros (provincial datum 2013)**
  - Employment rate **(15-64) 75.2 (M 79.0 F 71.3)**
  - Expenditure in R&D **<1% of municipality budget (2013) <14,600,000 euros**
  - Main economic activities **active companies 74,136 workers 1,044,157 (2011 Census Data)**
  - % of people at risk of poverty or social exclusion **29.9% (Italian datum ISTAT 2012) – 24.8 (Milan 2007/2008)**
  - ICT baseline (Internet acces, free WIFI,...) **375,000 km fiber Open WiFi : 500 access point (**fixed broadband 99% of homes, Next Generation Access at least 30 Mbps download available to 21% homes - Households with a broadband subscription - in % of households 68% - Internet users going on-line weekly 56%) - Italian Data**)**

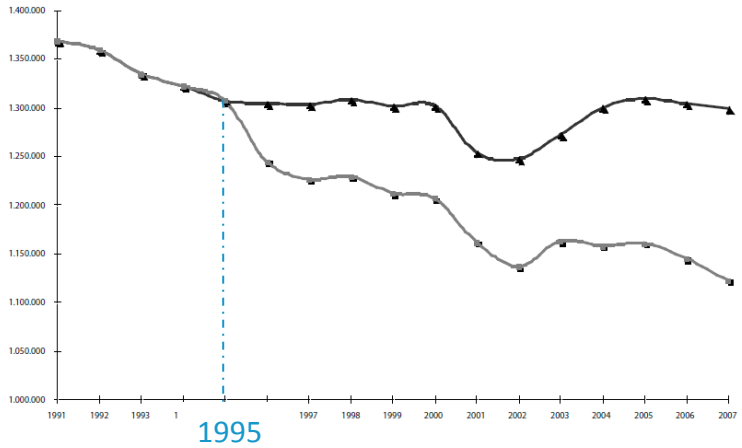
Demographic



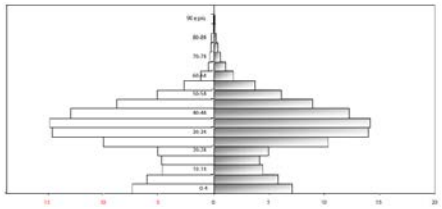
Inhabitants trend 1991-2013



Total inhabitants by gender and age

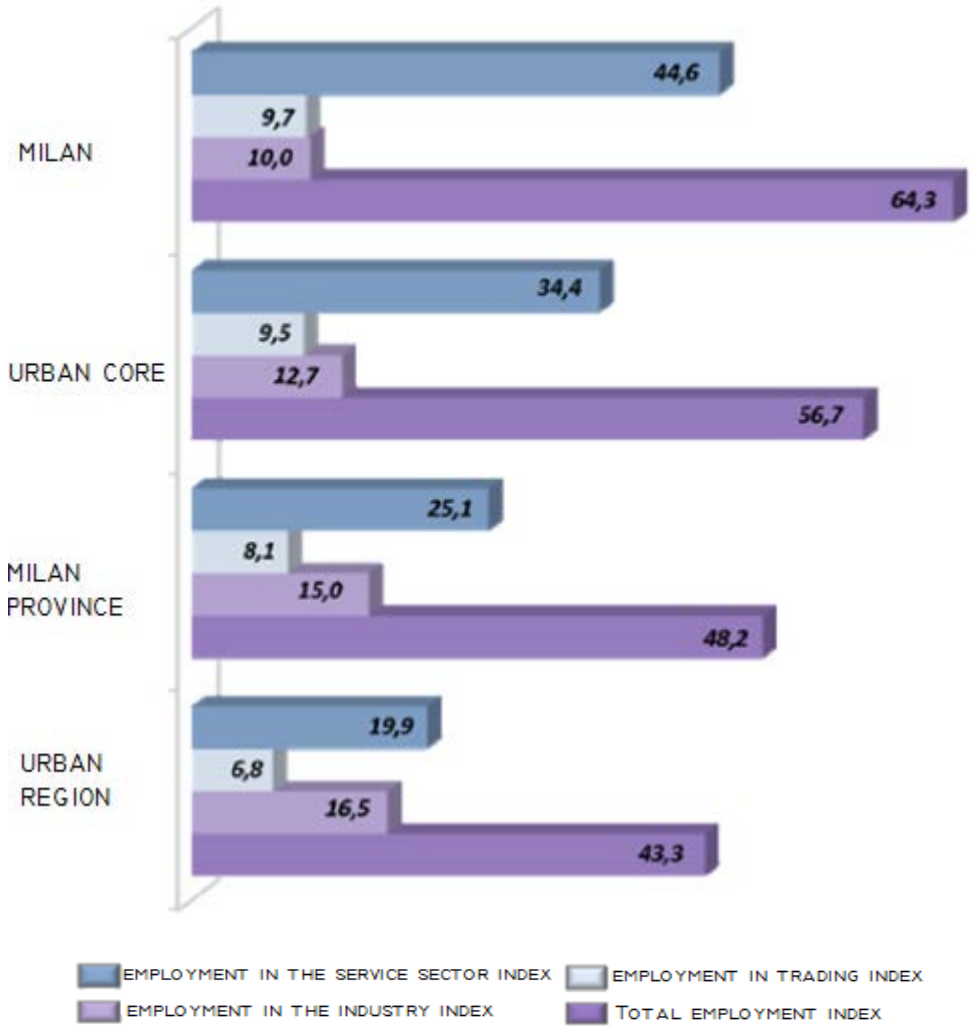


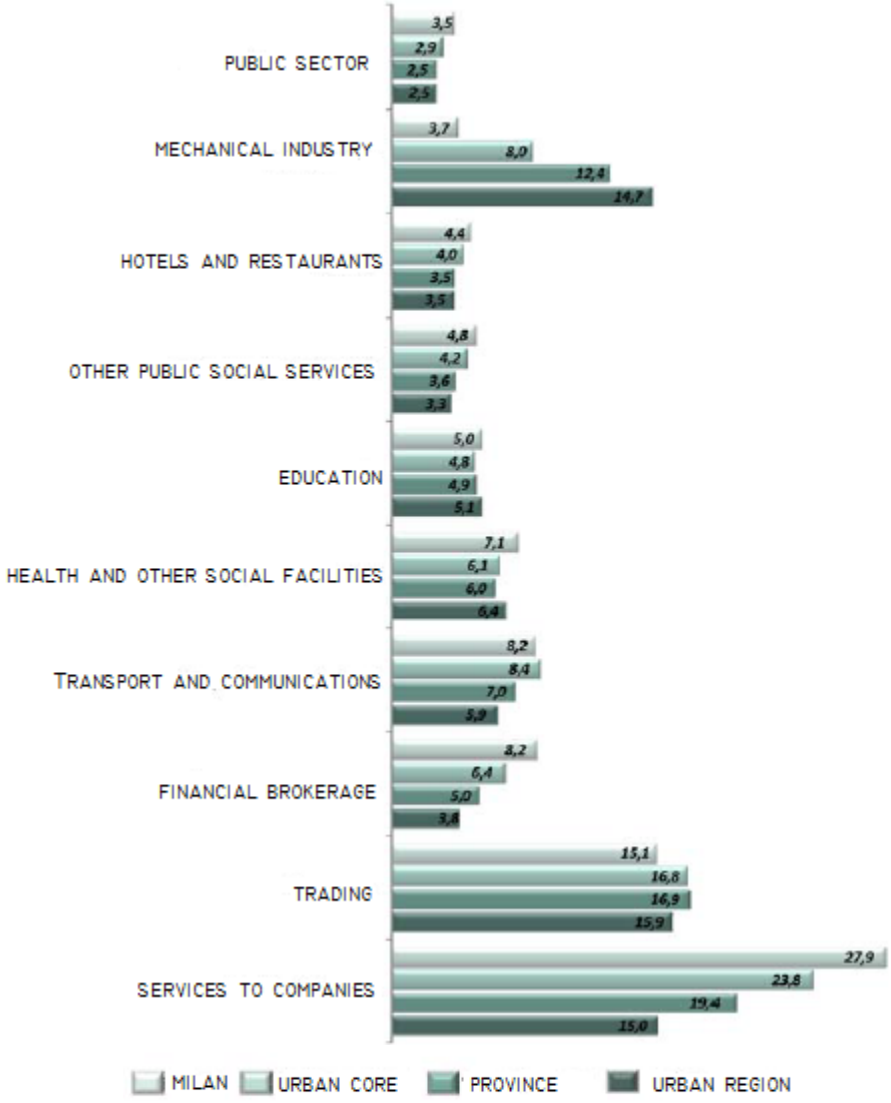
Inhabitants trend 1991-2007 with and without foreign people



Foreign inhabitants by gender and age

Main Activities





Weaknesses

- The progressive redistribution of population and economic activities from the center to the periphery, to less dense areas, has helped to expand the scale and intensity of the processes of territorial development
- A weakening of the role of Milan on the international stage (related to several factors: the existence of diseconomies associated with a lower quality of life, the search for housing types more sparse, the weakening of the consolidated local community ties,…)
- The urban congestion
- The poor ability to innovate in the Milan traditional practices of living and produce
- The restructuring of local population and workers has led to a strengthening of the polymorphic Milanese urban region image

MAIN CITY CHALLENGES

• PROJECT/PROBLEM	• INDICATORS
ENVIRONMENT	
Energy Efficiency Improvement Plan	Emissions: SO2, CO2, PM10, Nox Oil saving, Money saving
'Milano Blu' : portal service with much new information on the water tap	Quality parameters of the water (pH, TDS, water hardness, conductivity, calcium, magnesium, ammonium,…)
Trees in parks and along roads	Number of trees
MOBILITY	
'C Area' Congestion charge area Increase the network of bike-charing Enhancement of surface lines and the frequency of the underground lines	Management cost, delay minutes of each route, number of crashes

MAIN CITY CHALLENGES

• PROJECT/PROBLEM	• INDICATORS
SOCIAL /ECONOMIC POLICY	
Geoschool	
Calls for funding: digital business (Ict), coworking,…	
OccupaMi, Welcome talent Business,…	6.5 million euros (2012)
Apps for Milan (BikeMi, PuliAmo,…)	

The Italian way to S.C.

- **The Smart Cities & Communities, represented one of the six working groups of the Italian Digital Agenda launched in order to boost the digital rate of the Italian economy**
- **The Agency for Digital Italy (AGID) coordinates actions to promote innovation in the field of information and communication technologies in public administration**
- **Inside of the Agenda was established the Working Group for the Smart City, which operates in close connection with the Observatory of ANCI (National Association of Italian Municipalities)**

- ***'The social innovation is the real Italian way to Smart City, in the sense that the promotion of actions and applications that favor social inclusion in urban areas is our priority'* - President Observatory Smart City ANCI**

THE MILAN S.C. PROCESS

The process started in late 2011

- **2013 - 2014: Time schedule**

- **1.1 Internal analysis**
  - Survey of the started or planned 'smart' projects
- **2.1 External analysis**
  - Activation stakeholders involvement
- **1.2 Internal analysis**
  - Identification of sources within the programming documents
  - Setting goals
  - Setting master plan
- **2.2 External analysis**
  - Follow up thematic groups
  - Funding analysis, Benchmarking
- **3. Strategic overview**
- **4. KPI System**

- **Themes**

- **Smart Governance**
- **Smart Living**
- **Smart People**
- **Smart Mobility**
- **Smart Economy**
- **Smart Environment**
- **+**
- **EXPO**

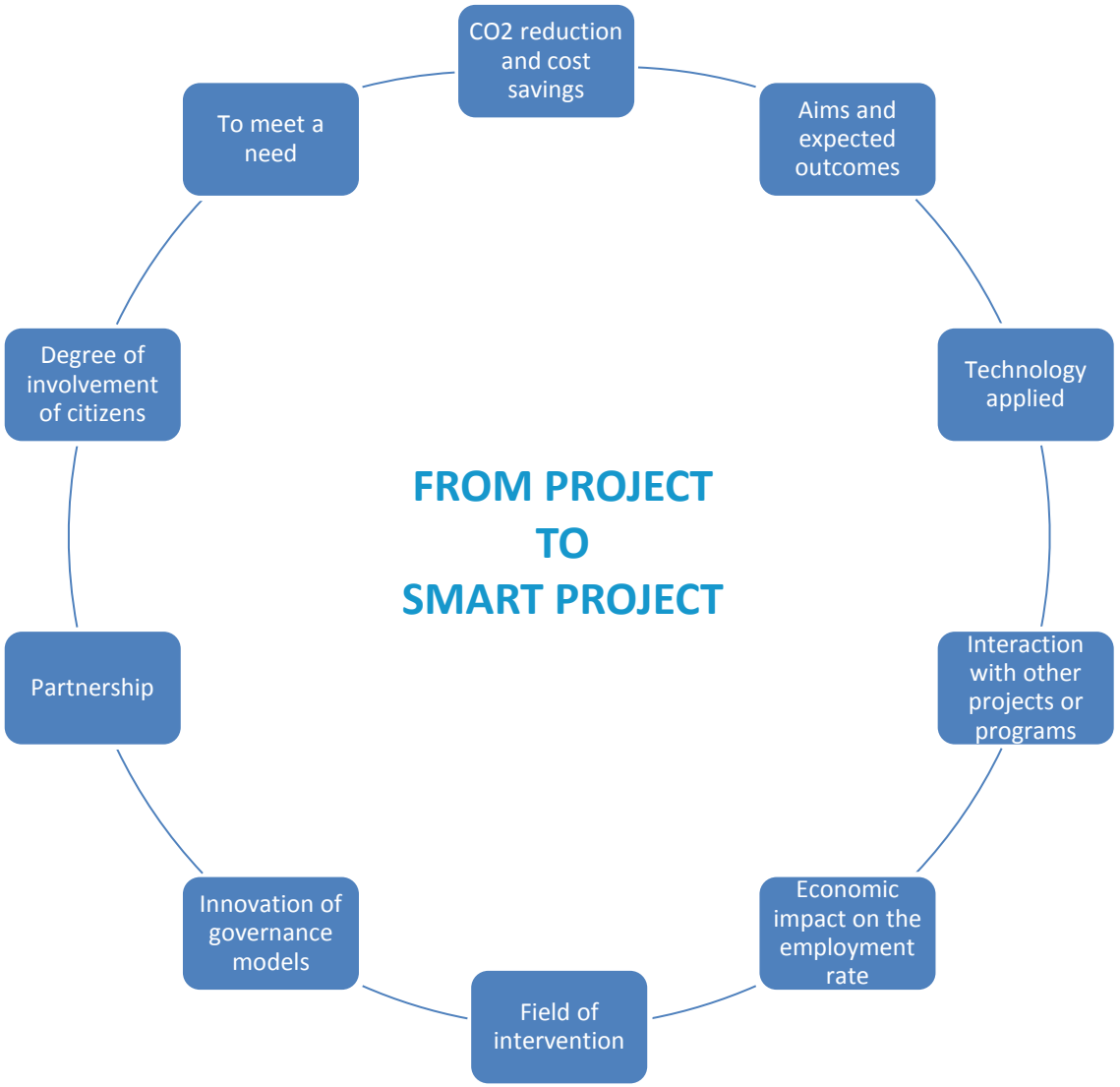
- **Players**

- **Public Bodies**
- **Companies**
- **University and Research Institutions**
- **Citizens and Third Sector**
- **Financial Sector**

Other important items

- **Public Hearing: verso Milano Smart City** April 2013
- **Milano + Expo = Smart City** May 2013
- **Agreement protocol between the cities of Milan, Turin and Genoa to share solutions** May 2013
- **Milan is part of the Smart Cities National Observatory by the National Association of Italian Municipalities (ANCI)**
- **Agreement protocol between the cities of Milan and L'Aquila**
- **Partnership with Invitalia S.p.a. (Ministry of Economy and Finance Agency) to create a Smart City Incubator for firms that operate in the field of Smart City** (Start of work december 2013)
- **POR FESR 2007-2013 Projects: SCUOLA , SPAC3, SIMULATOR, CITIES WISE-NET, OPTI-LOG - OPTImal and sustainable LOGistics in urban areas** (Total budget 27000000 euros)
- **Call MIUR "Smart Cities and Communities and Social Innovation" 5 PROJECTS RECEIVED THE SUPPORT OF THE CITY OF MILAN, ADMITTED TO THE EXECUTIVE PLANNING AND FUNDING -** The list of eligible projects february 2014

Smart Project Criteria



Main Fields

- **18 central departments, AMAT , ATM, A2A, AMSA**

- **Digital city**
- **Mobility**
- **Environment**
- **Social inclusion and cohesion**
- **Citizen facilities**
- **Culture and attractiveness**

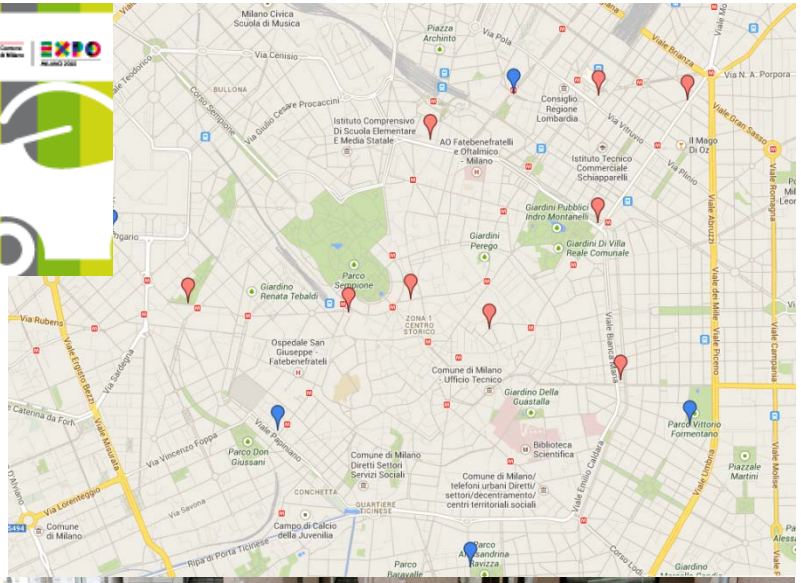
- **63 Projects**

Smart Mobility 1

- **Action against Congestion**
  - **C AREA** - since January 16th, 2012 replacing the previous Ecopass (pollution charge)
  - **GuidaMi Car Sharing (**adheres to the national 'Io Guido')
  - **Traffic light PREFERENCE: To facilitate the buses in their preferential path**
- **Info Mobility**
  - **DIGITAL ISLANDS - EXPO** (ongoing implementation, private sponsorship)
  - **INFOPALINE** (AVM and WiFi technology used)
  - **Addressing the parking (App)**
  - **MOBILITY PORTAL : improvement of the service GiroMilano and INFOALERT through shared information in real time**

ISOLE DIGITALI

- Wifi
- Reloading the private device
- Info Tourism, Culture, Mobility
- Smart Lighting
- Smart cameras
- Electric vehicles in sharing
- Charge power of private vehicles



Smart Mobility 2

- **Soft Mobility/electrical**
  - **BikeMi Bike sharing and Cyclemobility portal**
  - **City Mobil 2 (Cities Demonstrating Cybernetic Mobility) : research on pilot automated urban transport** (EU Funding 83.496,39 euros)
  - **ELECTRIC CITY MOVERS**
  - **TIDE ((Transport Innovation Deployment for Europe) : testing automated transport by road – EXPO** (EU Funding 69.109,25 euros)

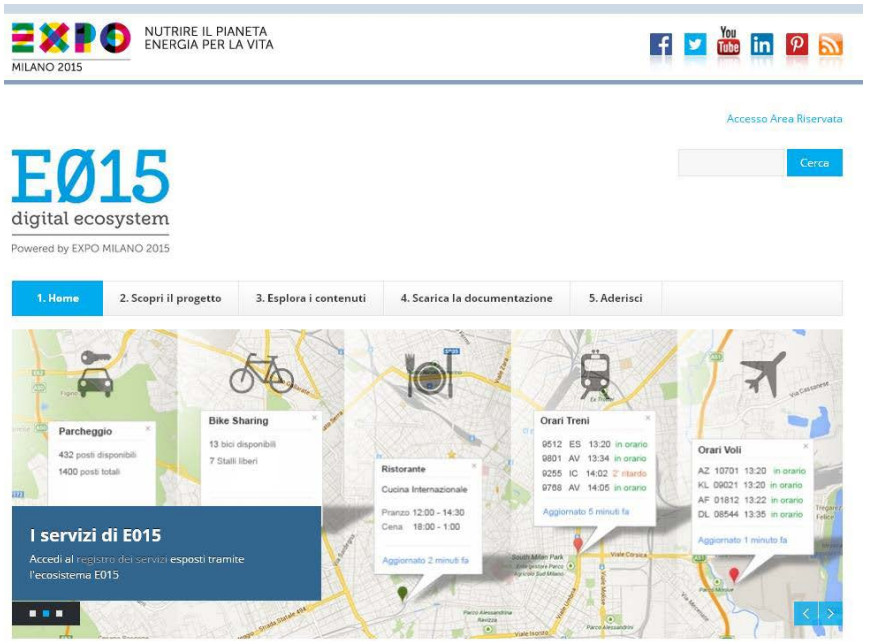
- **Logistics:**
  - **CONVERSE: Control of heavy vehicles used to transport goods for supply to construction sites** (Environment Ministry funding)
  - **FREVUE:(Validating Freight Electric Vehicles In Urban Europe** (EU Funding 619.547,00 euros)
  - **LOADING AND UNLOADING AREAS: controlling access to a specific area of the city**
  - **Dangerous Goods**

Smart Economy

- **Ticketing & Payment via NFC (Near Field Communication)**
- **Doing business (Simplify procedures for production activities opening, closing or modification – online)**
- **Iride (Transparency of the preparatory inquiry related to production activities)**
- **E015 Digital Ecosystem (Legacy EXPO: E015)**

The E015 ecosystem is a project B to B and is an evolution of open data, called Open Services
The E015 Digital Ecosystem project aims to create an environment for sharing data and services by promoting cooperation and integration between companies, government agencies and universities

www.e015.expo2015.org



Smart Environment

- **Smart Spaces** (EU Funding 250.900,00 euros)
- **EU GUGLE** EU Funding – 250.900,00 euros (It affects only one area of Milan)
- **Smart trash**
- **SMART IP (remote control efficient public lighting Project)**
- **DOMO GRID (Educate the consumer and reduce the demand for energy)**
- **Plan for District Heating**

Smart Living

- **MET (Museo esteso nel territorio - Open territory Museum)** Free App
- **Musei.net**
- **MiTo** (Protocol between Milan and Turin for the integration of museum networks)
- **Media Library On Line (MLOL)** (National Network of 2500 Libraries)
- **Library online**
- **DigitaMi**
- **Events App**
- **App Guida Milano**
- **Mobile QR Code**
- **Tourism Portal**

Smart People

- **LIA (Libro Italiano Accessibile – Affordable Italian Book) - Società italiana editori**
- **Autoprestito RFID (Library Self Checking)**
- **ReadIt (App) - Open App competition by the Lombardy Region** (The application has been developed by young researchers of the Politecnico of Milan)
- **My Neighborhood -** EU funding 80.400,00 euros (Quarto Oggiaro)
- **Informal networks Mapping**
- **Crowdfunding (to raise funds for social initiatives)**
- **IMMIGRATION CENTER**
- **Social Identity card**
- **Social points (unique access to social services, both physically and online)**
- **UNI Real (set by the City of Milan to facilitate the matching of supply and demand for student residential)**
- **Ambrogio (reporting inefficiency and problems to the neighborhood policeman)**
- **Multa semplice (Fine simple)**
- **Open WiFi Milano**
- **Elderly more involved and more secure**

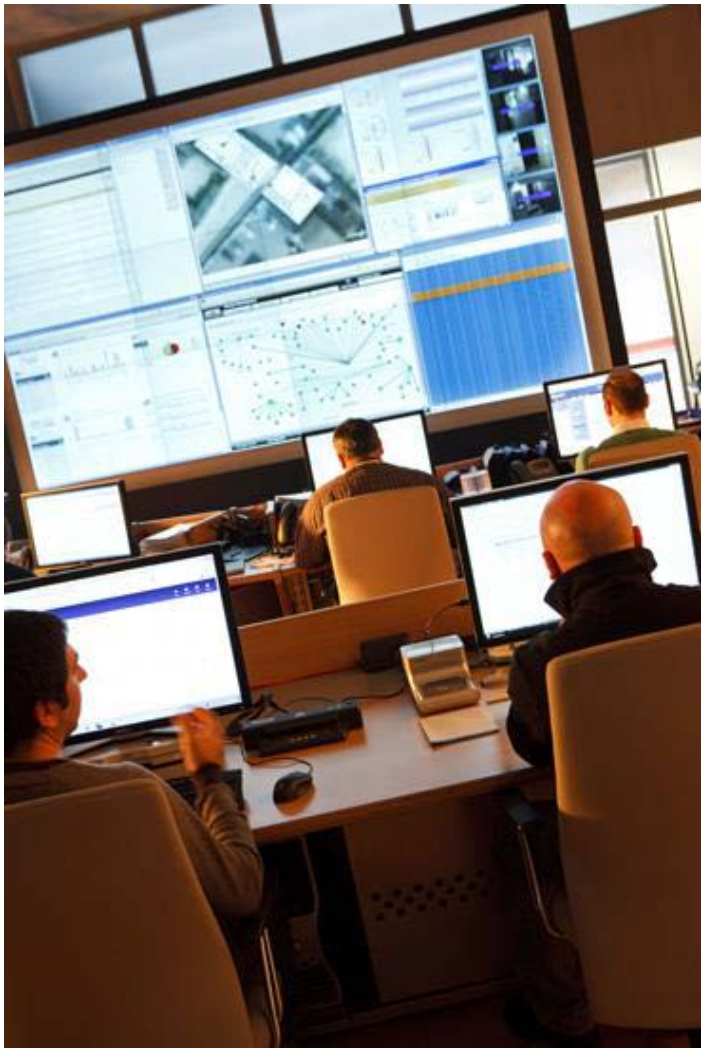
Smart Governance

- **Smart Ciber (EXPO)**
- **Welfare Institutions Networking (75% not in charge to the Municiplity)**
- **Semplifica-Mi (cooperation between Court Offices and the Municipality) –** Lombardy region funding 210.000,00 euros
- **Caronte (Charon)**
- **Icaro (Icarus) -** Lombardy region funding 55.000,00 euros
- **GeoSchool (**activated**)**
- **Urban Time Planning (**ongoing**)**
- **Genitori in video (Parents on Video) (**Municipality and Microsoft Italy**)**
- **PUMS (Sustainable Urban Mobility Planning)**
- **PUGSS (Urban Underground Facilities Planning)**
- **PGT (Urban Planning) e NIL (Local Identity Unit)**
- **OPEN DATA (**from october 2012, ongoing implementation)
- **New Institutional Portal**
- **MOC (Main Operation Center) – legacy EXPO**

MOC (Main Operation Centre)

- One central command and control for prefettura, questura, carabinieri, polizia and guardia di finanza.

- Operating platform managed by the main partner of EXPO



Milan S.C. Model

- **Horizontality (see project selection criteria)**
- **Participation**
- **Bring existing projects to the smart vision**
- **Focusing on citizens (selection of flagship projects in this manner)**
- **EXPO (Smart Disctrict)**

Few Project Sheets

- C Area
- City Mobil 2
- TIDE
- E015
- SMART SPACES
- EU GUGLE
- Smart Ciber

C Area

- The city of Milan, one of the most car-dependent in Europe, is also among the few to have introduced a road pricing measure
- The dubious effectiveness of Ecopass in reducing PM10 levels has had two consequences: First, the scheme was upgraded to a congestion charge in 2012, following the results of a city-wide referendum in which 79.1% of voters demanded both an upgrade and an extension of the Ecopass area. This was in stark contrast with the experience of other cities, where voters have rejected charging schemes, for instance in Edinburgh or Manchester in the UK. Even in Stockholm, another reference for the introduction of road charging, the voters approved the local congestion charge with a mere 51%
- Second, the new city administration has recently implemented a monitoring system for Black Carbon, a new PM metric that is more suitable to prove the effectiveness of traffic restrictions
- Milan therefore is the only city which can boast two types of road pricing measures, pollution charge and congestion charge, making Milan a reference point for those cities aiming to implement solutions for sustainable mobility and traffic regulation policies

- *City of Milan – Winner of the 2014 Transport Achievement Award by OCSE*

Area C: features

- **Area C is a road pricing measure launched by the Municipality of Milan to improve life conditions of those who live, work, study and visit the city. It was introduced on January 16, 2012, following a referendum in December 2012 that approved the measure with 79.1% of the vote. In March 2013 the Municipal Board has confirmed AREA C as a permanent and strategic measure**
- **Area C is the restricted traffic zone in the Milan's center. The area subject to the congestion charge is called Cerchia dei Bastioni, a Limited Traffic Zone (LTZ) of 8.2km2, 4.5% of the whole territory of the Municipality of Milan. The access is limited on Monday, Tuesday, Wednesday and Friday from 7.30 to 19.30, and Thursday from 7.30 to 18. Cars entering Area C are detected by a system of 43 electronic gates (of which 7 are reserved for public transport vehicles), equipped with ANPR (Automatic Number Plate Recognition) technology**
- **The entrance ticket costs €5.00. Mopeds, motorcycles, electric cars, vehicles for disabled people, vehicles for public utility services, vehicles for public transport services, taxi, hybrid*, methane powered*, lpg* and biofuel* cars are exempted from the charge (*until 31/12/2016. From 01/01/2017 they will pay). Residents have 40 free accesses per year and pay a reduced rate of €2.00 from the 41st access**

The overall goals

- **Decreasing vehicular access to the Area C**
- **Decreasing traffic congestion**
- **Reducing travelling time of private transport**
- **Improving public transport networks**
- **Decreasing the demand for public space occupation for on-street parking**
- **Reducing road accidents**
- **Reducing pollutant emissions caused by traffic**
- **Reducing the health risk related to the air pollution**
- **Increasing the share of sustainable modes of travel**
- **Improving the quality and the attractiveness of the urban center**
- **Raising funds for the development of soft mobility infrastructures: cycle lanes, pedestrian zones, *30kph* zones**

Effects

- Decreasing vehicular access to the Area C: Daily vehicles entrance in Area C: 92 175. Reduction (first 24 months compared with 2011 Ecopass, the previous pollution charge Scheme): -36 723
- Decreasing traffic congestion: -28%
- Reducing travelling time of private transport: Variation of the speed of vehicles: +1.5 km/h in the Area C, +0.3 km/h throughout the city
- Improving public transport networks: Increase of public transport speed during peak hours: +6.9% for buses and +4.1% for tram
- Decreasing the demand for public space occupation for on-street parking: -10%
- Reducing road accidents: -23.8% (-26.3 % with injured; out of Area C: 10 -11% - 2012 compared with 2011)
- Reducing pollutant emissions caused by traffic; Less emissions of pollutants: Total PM10 -18% ; Exhaust PM10 -10%; Ammonia -42%; Nitrogen Oxides -18%; Carbon Dioxide -35%
- Reducing the health risk related to the air pollution: Less Black Carbon (BC): -52% (Sept 2013) and -32% (Oct 2013) of BC concentration inside Area C compared to the outside Area C stations
- Increasing the share of sustainable modes of travel: Less pollutant vehicles: - 49% (-2 400 pollutant vehicles entering every day the Area C) and More cleaner vehicles + 6.1 % (from 9.6% to 16.6% of the total vehicles)
- Improving the quality and the attractiveness of the urban center: reuse of the parking spaces no more utilised to enhance sharing mobility systems (car sharing, bike sharing)
- Raising funds for the development of soft mobility infrastructures: cycle lanes, pedestrian zones, 30kph zones: During the first year the incomes from Area C have been reinvested in projects for sustainable mobility: 10 million € for the strengthening of public transport in order to improve its frequency and 3 million € for the development of 2nd phase of bike-sharing system

City Mobil 2

- **Financed by EU FUND (VII Framework Program) - 83.496,39 euros**
- **The project started in september 2012, has a term of 36 months**
- **Led by the Research Center for Transportation and Logistics at the University La Sapienza of Rome, while the partners are among 43 local authorities, universities, research institutes and private companies in the industry**
- **The specific goals**
  - Examine the local transport plans of the cities and in particular the Urban Mobility Plan (PUM) for the introduction of innovative technologies in transport systems;
  - Evaluate, through declared preference surveys, focus groups, surveys on the modal split, the impact that the introduction of innovative transportation systems can have on the modal split of mobility;
  - Assess the costs and benefits of introducing innovative transportation systems as part of the urban public transport;
  - Choose an area for the operation and prepare a proposal for a demonstration in a position to compete with other cities
- **The actions**
  - Planning and definition of the legal framework for establishing the legal conditions for the development of the project
  - Acquisition and data organization from databases of public and private organizations active in the field of urban transport
  - Proposal for a preliminary draft of the demonstration through the selection of a site in which to test the automated transport system, and also by defining the basic parameters of the service, as well as the general layout of the demonstration
  - Transport planning and cost - benefit analysis of the new system for users
  - Design a demonstration part of the system of urban public transport;
  - Choose an area for the operation and prepare a proposal for a demonstration in a position to compete with other cities
- **The results**
  - Get a demonstrated feasibility, in terms of financial and economic
  - Obtain a measure of users' intentions regarding the use of the car and a gradual reduction in the possession of car in the long run
  - Obtain a level of safety for road transport similar to that of rail transport

TIDE

- TIDE - Transport Innovation Deployment for Europe
- Financed by EU FUND (VII Framework Program) - 69.109,25 euros
- The project started in October 2012, has a term of 36 months
- As leader Polis Association (Brussels), while the partners are: the Research Institute of WSP (Sweden), University of Southampton (England), Fraunhofer IAO (Germany), University of Gdansk (Poland), Eurocities (Belgium), Wuppertal Institut (Germany), City of Donosta-San Sebastian (Spain), City of Reading (England), the City of Rotterdam (Netherlands), Municipality of Budapest (Hungary)
- The specific goals
- Stimulate discussion and exchange of experiences on innovations in transportation in five different subject areas
  Create a network of experts with regard to 15 innovative concepts
  Improve existing methodologies for the transferability of experiences and integrate them all into a system that can be used by cities and regions
  Provide to those who work in the cities and regions, a guide on how to implement successful with the concepts related to transferability
  Working with the city on deployment scenarios
  Encourage decisions about implementing innovations by promoting educational events and exchange
  Strengthening a European level the discussion on improving the conditions for policy and research in the field of innovations on urban transport
  Increasing awareness of the need for integrated approaches
  Make a contribution to better understand the costs and benefits, as well as the impact of innovations on urban transport

TIDE Actions and Results

- **The actions**
  To link together the stakeholders to create opportunities to network
  Disseminate knowledge and provide guidance
  Focus on what's really going to provide concrete help
  Create five different thematic clusters to ensure that the work has targeted a goal as much as possible and exchange among experts is as specific as possible
  Use an approach on four different levels - first level: the city part of each cluster; second level: 10 sample cities; third level; 50 cities to transfer the methodology; fourth level, hundreds of cities in which to promote it
  Select the innovative concepts based on the contributions of cities and regions
  Streamline and improve current methods of transferability
  Involve experts and connect to other initiatives
- **The results**
  The TIDE project aims at the following results, broken down by each of the five thematic clusters:
  1. New models of financing and pricing
  - Creation of a network of multi-modal information to travelers based on a server with open data;
  - Creating a user friendly interface to the information for travelers
  2. Increase non-motorized transport
  - Creation of a scheme of parking for bicycles in the city center and other major destinations;
  - Convert an artery of traffic in a way for people
  3. A network management and to enhance the advanced traffic information to travelers
  - Creation of a network of multi-modal information to travelers based on a server with open data;
  - Creating a user friendly interface to the information for travelers
  4. Advanced electric vehicles
  - Design of electric and hybrid vehicles to transport heavy
  - Creation of a thousand points for charging of electric vehicles passenger
  5. Organization of public transport
  - Integration of institutional framework for public transport in Budapest
  - Introducing innovative elements in tendering for the provision of bus

E015

- The E015 ecosystem is a project B to B and is an evolution of open data, called Open Services
- A partnership between the Expo 2015 SpA and the business system represented by Confindustria, the Chamber of Commerce of Milan, Confcommercio, Assolombarda and Trade Union, with the technical and scientific coordination of CEFRIEL - Politecnico of Milan
- Main Goal
- The E015 Digital Ecosystem project aims to create an environment for sharing data and services by promoting cooperation and integration between companies, government agencies and universities

SMART SPACES

- **Financed by EU FUND (VII Framework Program) - 39.084,80 euros**
- **The project started in January 2012, has a term of 36 months**
- **The leader is the Società Empirica and active partners are universities, companies and institutions capable of ensuring a multidisciplinary and integrated approach to the issue of energy management**
- **Main goals**
- **The development of a decision support system in the field of energy and the creation of a service for energy management in public buildings**

EU GUGLE

- **EU GUGLE "European cities serving as Green Urban Gate towards Leadership in sustainable Energy"**
- **Financed by EU FUND (VII Framework Program) – 250.900,00 euros**
- **The project started in October 2012, has a term of 60 months**
- **It is coordinated by CENER, Spain's National Centre for Renewable Energies and the project consortium contains members from Spain, Finland, Austria, Italy, Germany, Slovakia, Belgium, Turkey and Sweden**
- **Main goal**
- **The EU-GUGLE project aims to demonstrate the feasibility of nearly-zero energy building renovation models in view of triggering large-scale, Europe-wide replication in smart cities and communities by 2020**
- **Taking on the challenge of sustainable renovation in urban areas, the cities of Vienna (AT), Aachen (DE), Milan (IT), Sestao (ES), Tampere (FI) and Bratislava (SK) have committed to renovating a total of 226,000m² of living space during the 5 years of the project, with the objective of achieving 40 to 80% primary energy savings per pilot district while increasing the share of renewable energy sources by 25% by 2018. Gothenburg (SE) and Gaziantep (TR) will take part in the 5-year project as associated cities and will be expected to start smart renovation activities during project's lifetime**
- **Related just to a district and a building stock**
  - Surface: 21 kmq (district 4)
  - Population: 152 300 inhabitants, 7 250 inhabitants/kmq
  - Surface to be renovated: ≈ 35,000m²
  - Type of buildings: Both residential buildings and public buildings.
  - Primary energy savings target: up to 82%.

Smart Ciber

- Smart Ciber - System of Maps Assessing Risk of Terrorism against Critical Infrastructures in Big Events Rallies
- Financed by EU FUND (CIPS Program) - 167.656,93 euros
- The project started in March 2012, has a term of 36 months
- The City of Milan, as the applicant organization, is flanked by four national and international partners: University Cattolica del Sacro Cuore (UCSC), Municipality of Varna, Municipality of Budapest and Safety Region Rotterdam area. In addition, as associated partners participate in the project Lombardy Region , A2A, ATM, AMSA, Ferrovie Nord, Ferrovie dello Stato, SEA, MM, UNICRI
- Main goal
- The union and the sharing of experiences of the different partners allows for the development of a shared model of risk assessment through the creation of an integrated map of risk and the construction of risk indices (thus ensuring a scientific basis to the project) – Safety and Security for Citizens