MALAGA CASE STUDY ON SMART MOBILITY PROJECTS













FACING THE CHALLENGES OF A NEW ERA: SMART CITY PROJECTS

16th and 17th of July, 2014 La Granja, Segovia





1. INTRODUCTION









SOCIOECONOMIC, DEMOGRAPHIC & URBAN CHARACTERISTICS:

Capital of the "Costa del Sol"

Population: 575.322

Urban surface: 7.151 Ha

Population density: 80,5 hab/Ha



- GDP (Province): 20.241 milions €
- Per capita inccome: 12.928 €/hab (80% of Spain average income 2011)
- Unemployment rate: 35% (2012, province)
- Expenditure in R&D: 1.480.460.000 €
 177 € / hab (2012 Andalusia Region)
- Main economic activities (2010):
 Services (expecially Tourism): 77,6%
 Real Estate: 12,4%

1. INTRODUCTION











SOCIOECONOMIC, DEMOGRAPHIC & URBAN CHARACTERISTICS:

- Gini relation (2011, city): 0,32
- % of people at risk of poverty / social exclusion: 22,58%



ICT baseline

- Fast Internet (ADSL/Optical): 98%
- Houses connected to internet: 67,7 %
- Population using internet: 70,3 % (Province)











Malaga Agenda 21 (1995 - 2005 - 2015 - 2025 ...):

Territory and City Configuration, Natural Resources Management, Social Cohesion & Economic Development, Participation and Governance







Malaga Strategic Plan (1994, 2004, 2014) Urban revitalization, Culture, Coast, Knowledge Malaga Action Plan
For Sustainable Energy
(2011 - 2020)
EU 20-20-20 strategy
accomplishment
(cross-cutting)

Malaga Sustainable Urban Mobility Plan Reduction of traffic congestion and CO2 emissions originated from traffic









Territory and City Configuration



Urban revitalization

OBJECTIVES (URBAN PLANNING):

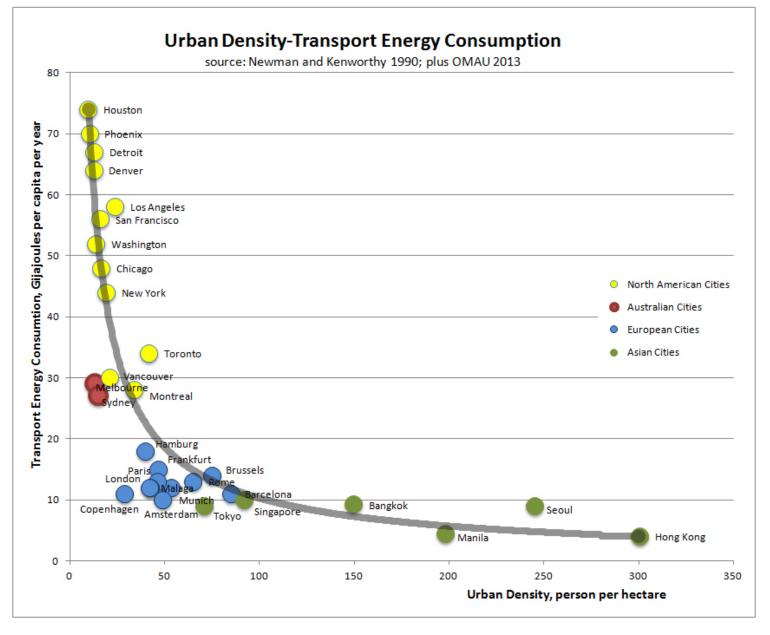
- To reduce the echological footprint of the city
- To overcome and correct the urban sprawl, by increasing the city density and complexity
- Avoid new soil consumption
- Regenerate the consolidated city surface

Problem	Indicators	current	optimum
Urban sprawl / motorized	Population density		
	(hab/Ha)	80	120
	City compactness		
	(Houses/Ha)	39	45
	City complexity		
mobility	(diversity ratio)	3,3	4
dependency	Proximity to basic		
	services (>500m)	83	100
Accesible			
Housing	% of social housing	5,1	30









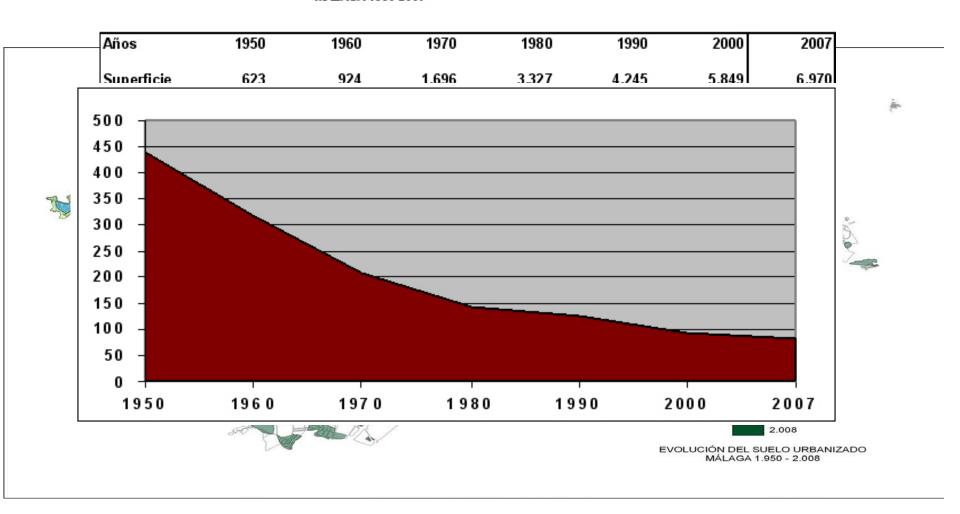
3. INDICATORS







EVOLUCION DEL SUELO URBANIZADO MALAGA 1950-2007







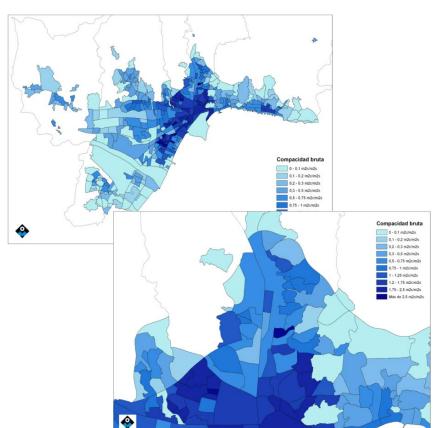




Territory and City Configuration



Urban revitalization













Territory and City Configuration



Urban revitalization Culture, Coast

Il Plan Estratégico de Málaga





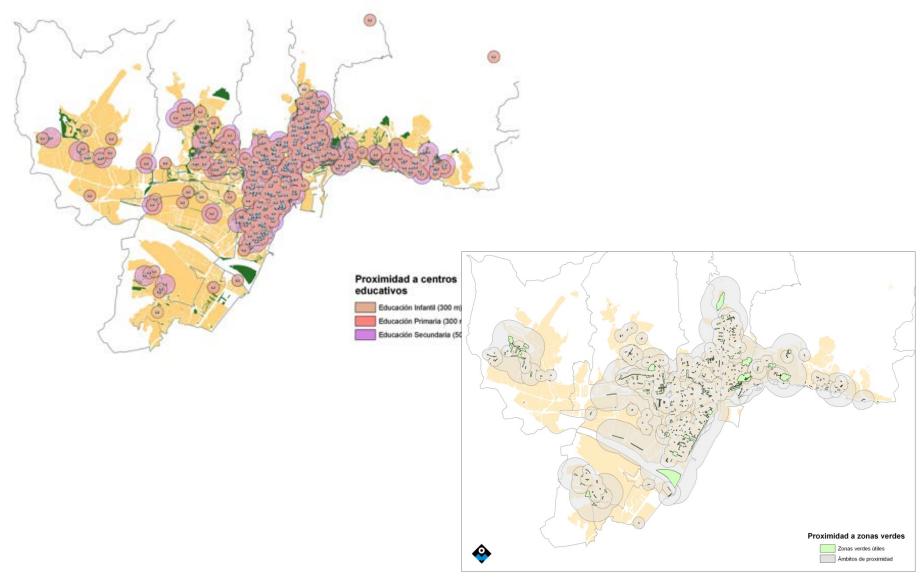


Z. IVIAIN CHALLES

















Territory and City Configuration



Malaga Sustainable Urban Mobility Plan

OBJECTIVES (MOBILITY):

- To reduce traffic congestions and emissions derived by traffic
- To increase the weight of Public Transport, cycling and walking in the city modal split
- Private vehicle use dissuasion strategies
- Strategies for public transport, cycling and walking promotion

URBAN INDICATORS:

Problem	Indicators	current	optimum
	Modal Split (%)		
Private	Car	34,9	20
motorized	motorbike	6,2	10
mobility	public transport	11,2	20
dependency	cycling	0,4	10
	walking	45,9	45
Road	Traffic intensity (n°		
congestion	vehicles / day)	846.259	700.000
Sustainable transport accessibility	proximity to bus stops		
	(500 m) %	93,7	100
	proximity to bike		
	lanes (500 m) %	32,8	100









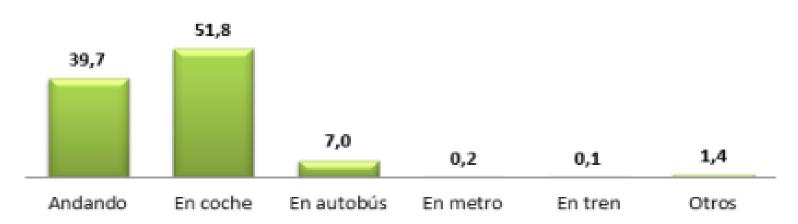
Territory and City Configuration



Malaga Sustainable Urban Mobility Plan

MEDIO UTILIZADO PARA IR AL COLEGIO

(%) DATOS GLOBALES











Territory and City Configuration



Malaga Sustainable Urban Mobility Plan

















Natural Resources Management



Malaga Action Plan For Sustainable Energy

OBJECTIVES:

- To adotp at a local level the EU 20-20-20 Strategy
- Design and implementation of the Action Plan for Sustainable Energy in Málaga

URBAN INDICATORS:

Problem	Indicators	current	optimum
	n° of days with bad		
	air quality (O3, SO2,		
	Nox, CO, PM10)	50	20
Air quality		2.651.730	
	CO2 emissions (t)	,00	2.000.000
	Energy consumption		
Energy	(TEP/hab)	1,4	1,1
dependency	Renewable energy		
	over total (%)	1,08	20
Water	Water consumption		
availability	(I/hab/day)	142	100





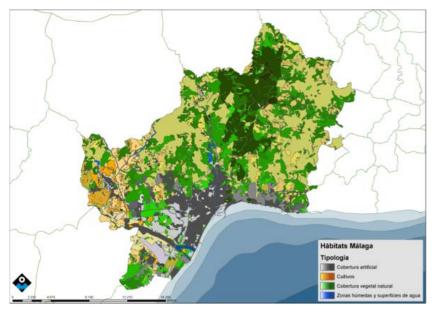


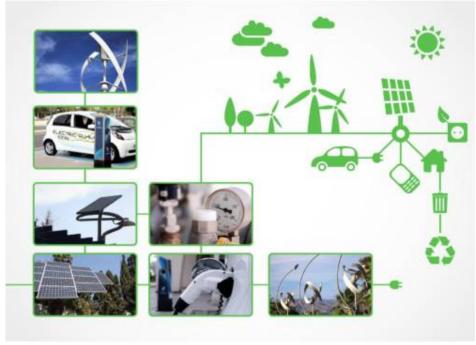


Natural Resources Management



Malaga Action Plan For Sustainable Energy













Social Cohesion & Economic Development



Knowledge

Il Plan Estratégico de Málaga

ECONOMIC:

- To reduce the dependency on tourism and real estate sectors
- To reduce unemployment rate by increasing the number of skilled jobs/knowledge based companies
- To convert Málaga in a City of Knowledge
- To become a EU benchmark in technological projects based on ICT / Smart City solutions (planning, transport and mobility, municipal services)

URBAN INDICATORS:

Problem	Indicators	current	optimum
	unemployment rate		
Unemployment	(%)	35	10
Dependency on tourism and real estate	GAD Services	77,60	70
	GAD Industry	6,30	15
	GAD Real Estate	12,4	10
	GAD Agriculture	3,7	5
Social exclusion	Gini Index	31,5	30
	Population at risk of		
	poverty (%)	22,58	15









Social Cohesion & Economic Development



Knowledge



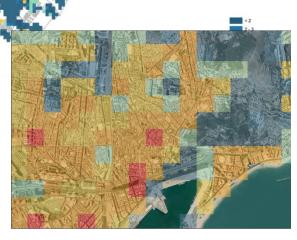
























Governance and participation







OBJECTIVES:

- To increase citizenship commitment towards the achievement of city sustainability objectives
- To encourage bottomup decision making processes
- To introduce a participative and collaborative culture in local politics and policy making

URBAN INDICATORS:

Problem	Indicators	current	optimum
/ citizenship	participative budget		
	(% / total)	0	5
	environmental		
	awareness actions	37,00	50
Municipal	Women in key roles		
equality	(%)	23,4	40









Governance and









4. SC INITIATIVES







SMARTCITYMALAGA:

- First framework project on smartcity solutions in Malaga
- Reccommendations and baseline for future / further development of smart city projects in Málaga
- Affecting:
 - Energy & environment
 - Transport & Mobility
- But also:
 - Urban development and planning
 - Public services and utilities





NECESSARY LINK TO THE ACHIEVEMENT OF URBAN INDICATORS MAIN GOALS































PRIVATE - PUBLIC INITIATIVE



- Private bodies:
 - ENDESA (Lead Partner), Isotrol, Mansel, Conacon MC2, Omeca (SMEs)
- Public bodies:
 - Malaga City Council Malaga Transport Company, CIRCE Foundation (University of Zaragoza), University of Malaga, AICIA (Andalusian Association for research & industrial cooperation)

OBJECTIVE:

to double the range of electric buses without affecting operating times

MAIN ACTIVITY:

 To develop wireless en-route charging for electric buses in Malaga, including a triple technology: conventional static, static wireless and dynamic wireless charging

PREVIOUS SIMILAR PROJECTS:

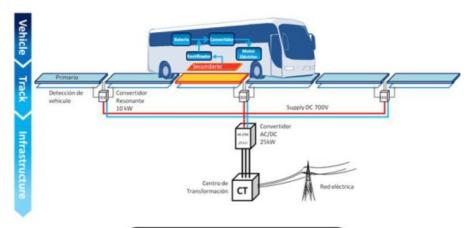
- first pilot project for wireless electric recharge / dynamic induction in PT

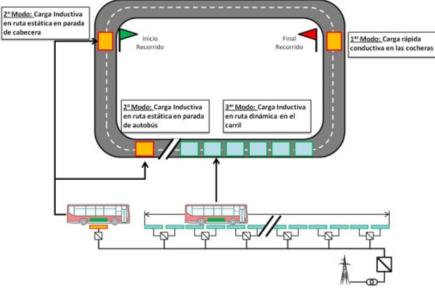






- Main objective: Inductive charging of a 100% electric bus
- Three kind of electric charge:
 - Standard (overnight recharging)
 - Static induction
 - Dynamic induction
- R&D:
 - Installation of a new engine to implement the three kind of electric charge.
 - Faraday cage













Video: Victoria Project

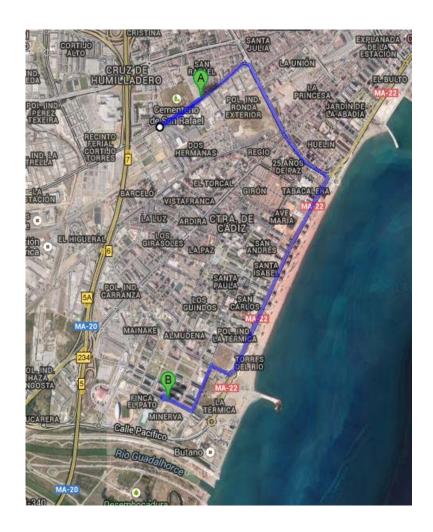








- Bus Line n° 16
- Route: 10 km
- Line will be operative in December 2014











FUNDING:

 EU ERDF (FEDER Interconnecta Andalusia 2013) + national government (centre for industrial and technological development CDTi) + Analusian Regional Government

BUDGET:

- 3,7 millions - DURATION: 21 months

EXTENSION AREA:

single neighborhood (bus line 16)

DEVELOPMENT STATE:

Under pilot implementation

PROJECT IMPACTS:

- Indicators: wifi recharge reliability average BUS authonomy (before/after)
- Potential beneficiaries: all population / bus lines in Málaga















PUBLIC - PRIVATE INITIATIVE

- Private bodies:
 - ENDESA (Lead Partner), Mitsubishi, Hitachi, Ayesa, Telefonica I+D



- Public bodies:
 - Malaga City Council, Japanese Government (NEDO New Energy and Industrial Technology Development Organization), spanish government (CDTi, Centre for industrial and technological development)
- SMEs
 - Alphabet (carsharing & mobility services), ASAC, Safamotor, Mansel, MMCE

OBJECTIVE:

 to give to all Malaga citizens the opportunity of having at hand a free emissions in Malaga metropolitan area.

MAIN ACTIVITY:

- to make easier to Malaga citizens, companies and particulars, access to electric mobility, through all-included flat-rate renting formulas

PREVIOUS SIMILAR PROJECTS:

- first large scale demonstration project at EU level. Previous: SmartCityMalaga







Main objectives:

- Demonstrate the smart community-related technologies.
- Prepare for the largescale introduction nextgeneration vehicles.
- Establishment of a new infrastructure including EV management systems and EV charging facilities.
- A significant reduction in CO2 emissions.









Vehicles:

- 160 Mitsubishi i-Miev.
- Inctroduction of 40 Nissan Leaf in april 2014.
- Different type of users: public administration, fleets, companies, and citizens.
- Different type of use: free run, shuttle, milk run, etc...















- Standard Charge:
 - Every user has a standard charging point in their home or headquarter.





- Quick Charge:
 - 9 stations with 23 chargers.











- Vehicle to Grid (V2G) Charge:
 - 6 points of charge: the biggest network in the world.
 - Vehicle-to-grid (V2G): EVs communicate with the power grid to sell demand response services by delivering electricity into the grid.













Video: ZEM2ALL project









- Figures after one year of operation (december 2013):
 - More than one million kilometers travelled.
 - The 160 e-vehicles included in the programme have avoided the emission of 72 tonnes of CO2 into the atmosphere compared to using conventional combustion-engine vehicles.
 - Users recharged their vehicles over 25,000 times at the charging points.









FUNDING:

- Innovation Programme Japan-Spain (JSIP), between NEDO (75%) and CDTi (25%)(national ministries of industry and technology)

BUDGET:

- 60 millions - DURATION: 42 months (May 2015 - December 2015)

EXTENSION AREA:

Malaga and its coast metropolitan area (Fuengirola and Marbella)

DEVELOPMENT STATE:

Under implementation

PROJECT IMPACTS:

- Indicators: average n° of kilometers per vehicle / CO2 emissions saved / n° of rechargings carried out / cost benefit analysis economic viability
- Potential beneficiaries: all population in Málaga metropolitan area

7. PR: PARK MANAGER















PRIVATE - PUBLIC INITIATIVE



- Private bodies:
 - ParkHelp Spain
- Public bodies:
 - Malaga City Council (Municipal Parking Society and Municipal Energy Agency)

OBJECTIVE:

 to drastically reduce the parking time and congestion due to parking search, in metered parking areas, by providing citizens with the location of available parking areas.

MAIN ACTIVITY:

- Installation of sensors in all the metered parking areas of Malaga, together with a management tool, panels and an app to identify and pay parking.

PREVIOUS SIMILAR PROJECTS:

- SmartSantander, 400 parking sensors, developed together with Telefonica I+D







1. Sensors



 Blue spaces sensorized

2. Informative Panels



- key places of traffic flow .
- Automatic update

Guidance System



 Allows the location of the available parking spaces, reducing parking search time and optimizing parking management.

4. Infopark



 Information on parking availability through app.

5. ParkAgent



allows
 parking
 agents go to
 the spaces
 under
 penalty .

3. ParkManager





 The parking operator have information about parking occupancy and spaces under penalty.









- Main objectives:
 - Reduction in time spent searching for parking
 - 10% decrease in the number of vehicles looking for parking spaces
 - a significant reduction in CO2 emissions to the atmosphere (21.6 Kg. CO2 per vehicle and year)



 The system consists of 2229 parking lots with sensors and 60 panels in different restricted time parking areas of the city centre.









- The Smart Parking System APP:
 - Allows every kind of payments.
 - Helps to find parking in a quicker and more efficient way.



















FUNDING:

Cooperation agreement between ParkHelp and Malaga City Council

BUDGET:

- 0,5 millions (approximately) - DURATION: 24 months

EXTENSION AREA:

- All the metered open air parking areas of the city (2.229). Number of vehicles in Malaga: around 250.000 (city); 750.000 (Province)

DEVELOPMENT STATE:

Under pilot implementation

PROJECT IMPACTS:

 Indicators: traffic intensity-congestion levels / reliability of the system / estimation of CO2 emissions and fuel consumption reduction









CitySens







PUBLIC INITIATIVE



- Public bodies:
 - Malaga City Council, Malaga Municipal Transport Company (EMT)
- Private bodies:
 - EDP Ingenieria (local ICT SME)

OBJECTIVE:

 To obtain a complete and cost effective air quality map of the city of Malaga, linked to traffic control and management

MAIN ACTIVITY:

 To install mobile air quality sensors on top of four buses of the municipal transport company fleet, comparing their data with the ones provided by the regional government fixed stations

PREVIOUS SIMILAR PROJECTS:

- Previous similar projects: Rotterdam (OpenSense), Technical University of Braunschweig (EMMA), Santander mobile monitoring and city sensing (not specified yet).



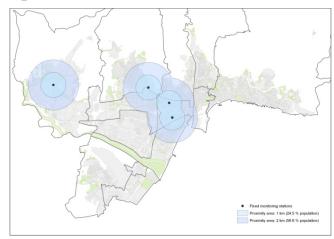




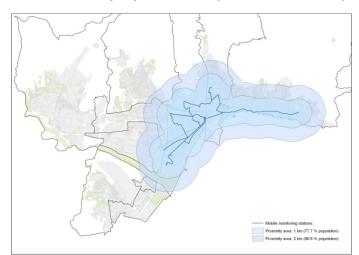


Main objectives:

- To obtain a complete map of air quality in Malaga
- To provide further tools for decision makers in traffic management policies
- To obtain cheaper / more cost effective tools for air quality monitoring
- To accomplish EU and national regulations on air quality monitoring at local level



Current map of air quality in Malaga (fixed stations): 24,5% of total population (1 Km radium)



Air quality map in Malaga after the project implementation (mobile sensors): 77,7%

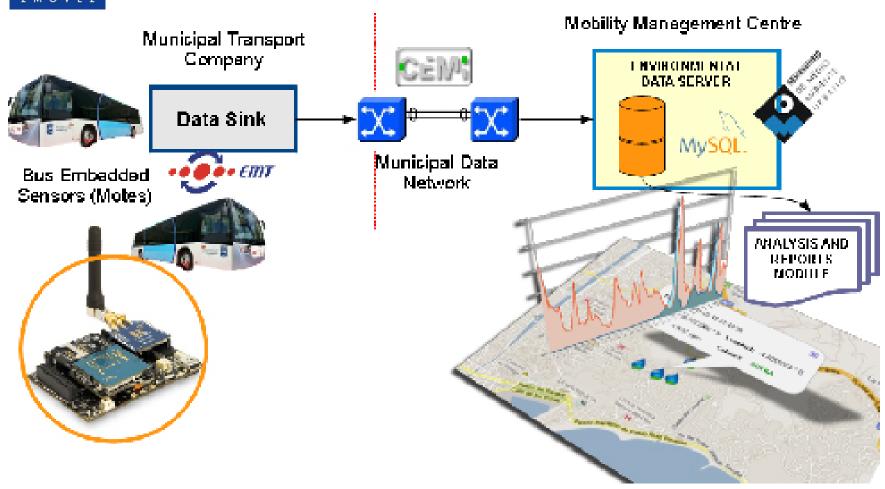








General scheme of CitySens project







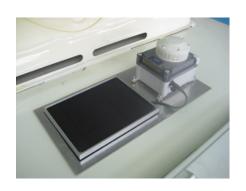


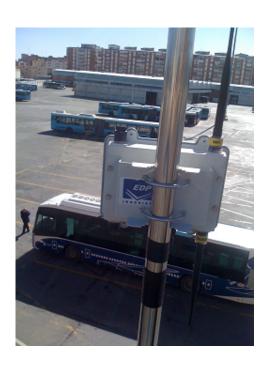


- Current status:
 - Sensors installed and resistance trials carried out
 - Wireless communications established
 - First reliability trials and comparisons with fixed stations: needed change of sensors



















FUNDING:

- EU FP7 Civitas Plus II Programme, 2MOVE2 Project (Project partners: Stuttgart, Tel Aviv, Brno, Malaga)

BUDGET:

- 270 K€ - DURATION: 48 months (november 2012, october 2016)

EXTENSION AREA:

- 4 sensors installed in the main city bus lines (managing to cover the majorority of city surface)

DEVELOPMENT STATE:

Under pilot implementation

PROJECT IMPACTS:

- Indicators: NOx, CO, Ozone (Not PM), sensors reliability, cost benefit analysis
- Potential beneficiaries: all population / bus lines in Málaga

9. CONSLUSIONS









Clean vehicles / R&D
Public transport





Clean vehicles / DEMO
Private motorized mobility





Traffic Congestion / DEMO





Environment - Holistic approach / R&D Air pollution









Thank you!





Filippo Maria Contenti Malaga City Council EU Projects - Urban Environment Observatory (OMAU)

Mail: programaseuropeos8@malaga.eu

Tel: +34 951 928 837