



CIUDAD 2020

A New Model of Smart and Sustainable City



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Ciudad 2020 Project Coordinator*

Ciudad 2020 – Global Figures

- Type of Project: **R&D Project**
- Duration: **39 months**
- Start Date: **October 2011**
- Budget: **€16,4M**
- Funding: **€13,8M**
- Funding Authority: **CDTI**
- RTO Subcontracting: **€2,3M**





Ciudad 2020 – Consortium

Spanish Industry, SMEs and Cities

SMEs

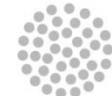


TEKIA
INGENIEROS



iSOCO
enabling the networked economy

Industry



indra



ferrovial

FAGOR

Fagor Electrónica

Atos

Cities



Zaragoza
AYUNTAMIENTO



Ayuntamiento
de Santander

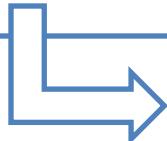
Universities & Research Centers



Universidad
de Alcalá



BARCELONA CENTRO DIGITAL TECNOLÓGICO
bDigital



Grupo De Aplicación De Telecom. Visuales (G@TV)

Centro De Domótica Integral (CEDINT)

Centro De Investigación Del Transporte (Transyt)

Grupo De Sistemas Inteligentes (GSI)

Grupo De Ingeniería Ontológica (OEG)

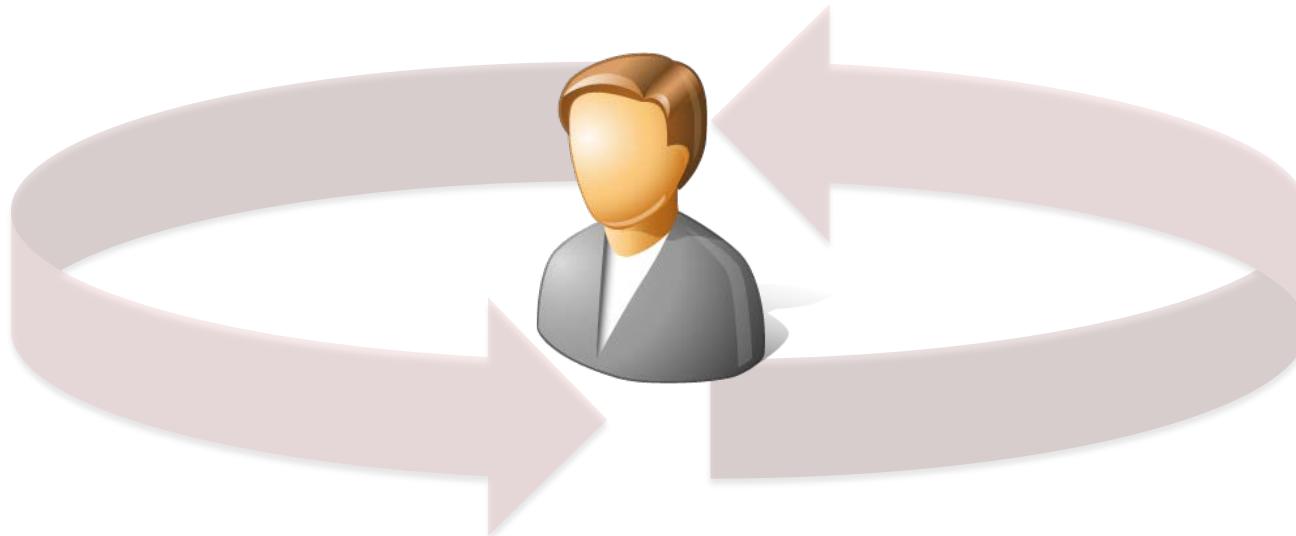


Centro para el Desarrollo
Tecnológico Industrial



Citizen in the Center of the Services

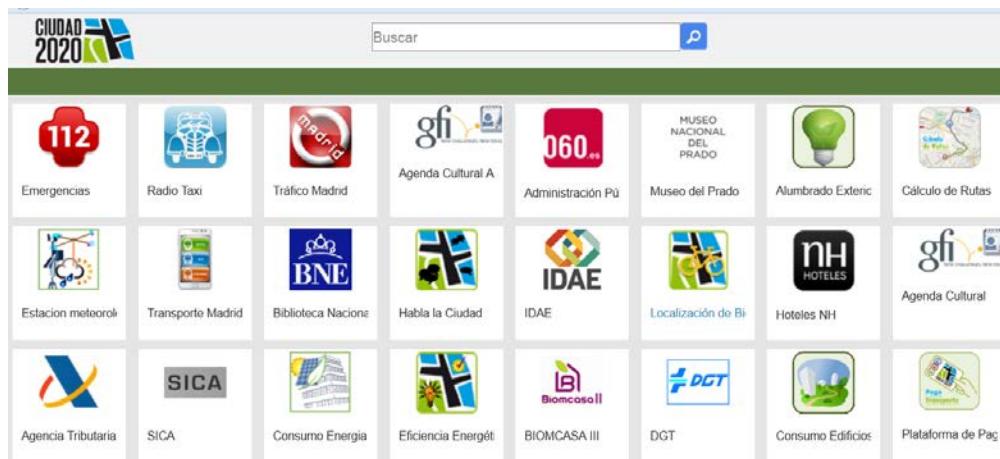
New Model of Smart and Sustainable City



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Citizen in the Center of the Services



Ciudad 2020 Market Places –
Ciudad 2020 mobile and web application as well as other third parties applications are offered from the market



**Open Data
Recommendation
Context Awareness
Big Data**

.....

Citizen as a sensor in the city of the future

Citizen Sensor



Mobile Phone



Citizen's events



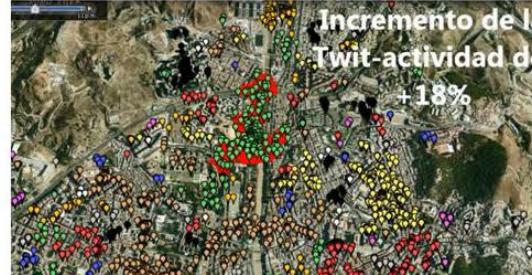
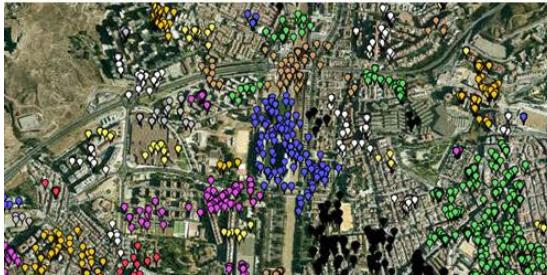
Social networks



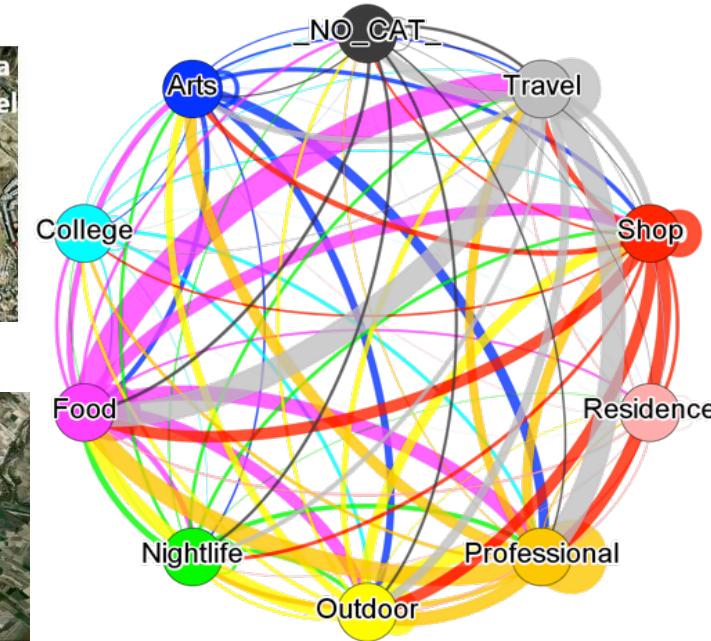
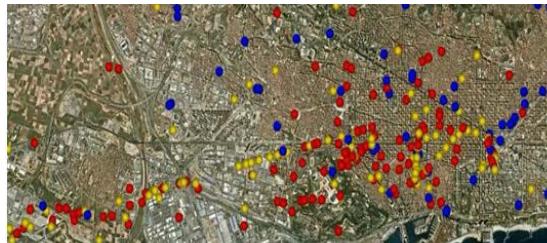
Social Media Platforms as Sensors for Smart Mobility

- Ciudad 2020 obtain mobility information related to the urban behaviour of citizens from Social Media platforms
- Twitter and FourSquare are used as a social sensor for hot spots identification, mobility patterns and unforeseen events detection.
- These platforms are used to complete mobility information from other “conventional” IT systems in real-time in any area of the city

Hot spots identification & Unexpected events



Urban Mobility patterns



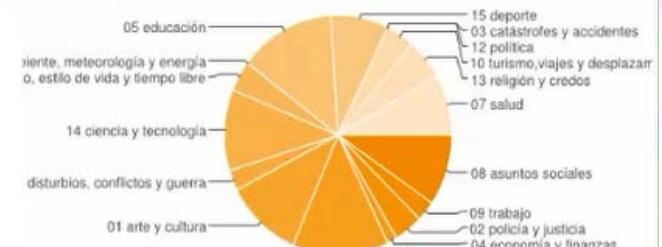
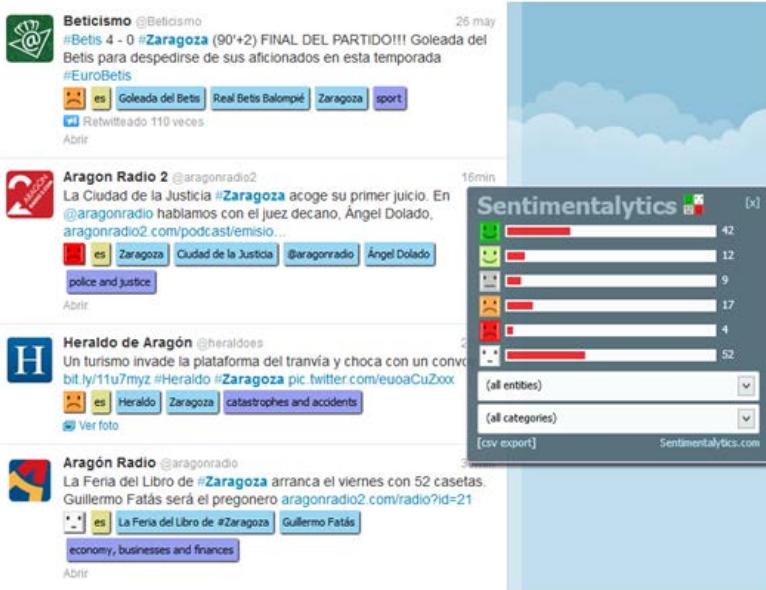
Mobile Apps and Infrastructure as Sensors for Smart Services

- Ciudad 2020 obtains environmental information as well as other information from specific apps that allow citizens to be mobile sensors
- Applications can provide other information such as location, timestamp, etc



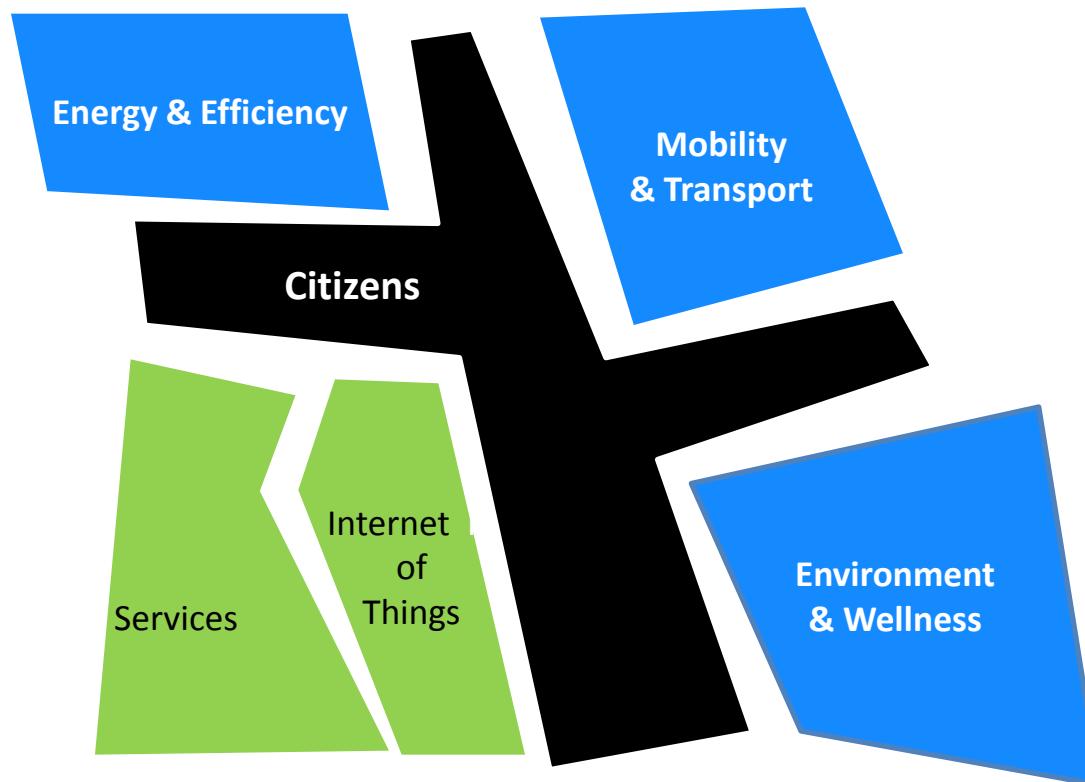
Social Media as Sensors for Smart Society

- Ciudad 2020 analyze the flow of tweets in a geographic area to know what users are talking about, and if it is something relevant (a car crash that provokes traffic jams, a fire, a music festival...)
- Ciudad 2020 also collect the citizens' thinking or opinion with respect to policies taken by the local authority (for example, the policy of reducing consumption on air-conditioning in public transport).





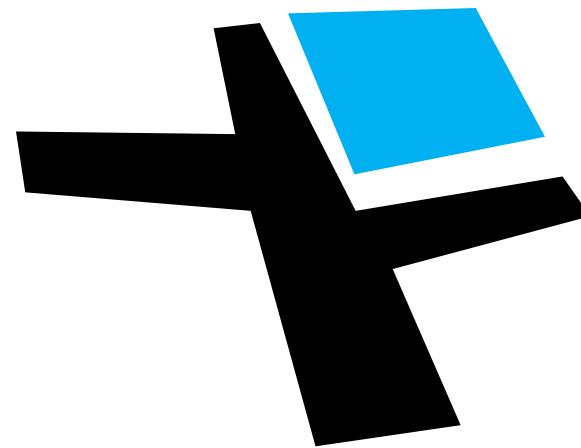
Ciudad 2020 – Domains





CIUDAD2020: HACIA UN NUEVO MODELO DE CIUDAD INTELIGENTE SOSTENIBLE

Transport & Mobility



Smart Parking

| Tiempo perdido buscando aparcamiento | | |
|--------------------------------------|-------------|-------------|
| | Madrid | Barcelona |
| Desplazamientos / día en coche | 2.342.041 | 1.809.000 |
| Tiempo perdido por día (horas) | 117.102 | 90.450 |
| Tiempo perdido por año (horas) | 35.130.608 | 27.135.000 |
| Coste año (€) | 347.793.014 | 268.636.500 |

| Gasto de energía | | |
|------------------------|---------------|---------------|
| | Madrid | Barcelona |
| Usuarios afectados | 2.342.041 | 1.809.000 |
| Km más al día | 6.245.441 | 4.824.000 |
| Km más al año | 1.873.632.400 | 1.447.200.000 |
| Coste generado año (€) | 187.363.240 | 144.720.000 |

| Gasto por contaminantes | | |
|---------------------------|---------------|---------------|
| | Madrid | Barcelona |
| Kilómetro año | 1.873.632.400 | 1.447.200.000 |
| Coste emisiones (€ / año) | | |
| NO _x | 2.971.581 | 2.295.259 |
| PM _{2.5} | 5.635.287 | 4.352.714 |
| CO ₂ | 17.621.513 | 13.610.916 |
| Total | 26.228.380 | 20.258.890 |

Fuente: RACC: Criterios de movilidad: el estacionamiento urbano en superficie

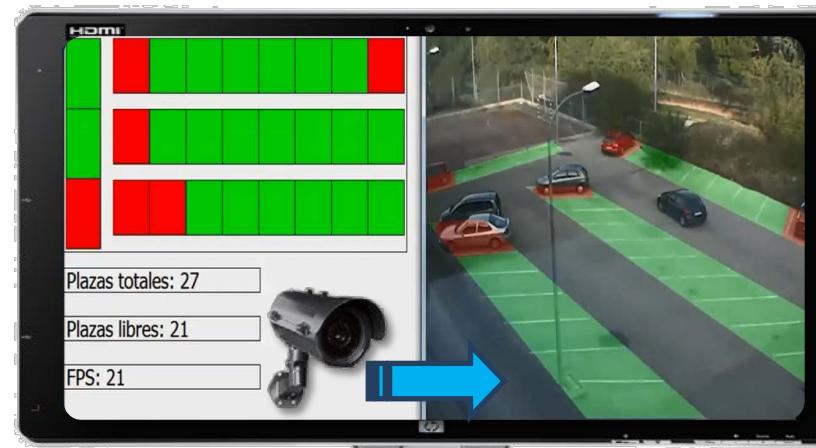


Parking information



Image Processing-based solution

WSN-based solution



Intermodaliy – Door-to-Door Solutions

- Integrated solution for personalised transport planning to enable faster, smoother travel using different modes, optimize traffic streams, minimise energy consumption and traffic congestion



Green Mobility

- Ciudad 2020 provide incentive schemes by giving priority in urban areas for the use of collective transport as well as incentives for sharing vehicles or for using green vehicles





| ID usuario | Km recorridos | Coste ambiental | Perfil Verde de Movilidad | Puntos acumulados |
|------------|---------------|-----------------|---------------------------|-------------------|
| ID87209 | 20 34 5 2 | 42 | ★★★ | 120 |
| ID25578 | 13 15 20 16 | 21 | ★★★ | 279 |
| ID67334 | 5 45 0 12 | 30 | ★☆★ | 186 |

Advanced Urban Monitoring

Smart Urban



Smart Intersection

Tweet - Traffic



#quecadatrasm #Daniensnanendefesta #hevuelto
 #fb #pilares2012 #garamonatope
 #Padia #esloquehay #PlazadeToros
 #teriadezaragoza #fiesta #familia #maria #hijas
 #party #ktrio #taata #gintonic
 #gin #resaca #elcharoviejo
 #Inter #pilar4 #dialekipilar
 #fatal #Pilares2012 #zaragoza #Juanmagan
 #napoles #12O #cachirulo
 #guapes #Hispanidad #ofrenda
 #saragozzainfesta #muymuybleennn
 #teletransportacion #villarato
 #amigas #pilares12

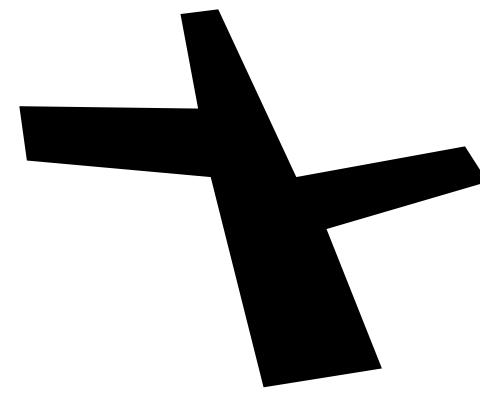
Mobility and Transport Management Tools

- Ciudad 2020 define an integrated and transport management tool (Centro Intermodal Virtual) to achieve a Sustainable Urban Mobility





CIUDAD2020: HACIA UN NUEVO MODELO DE CIUDAD INTELIGENTE SOSTENIBLE



Energy Services and Tools

Smart Lighting



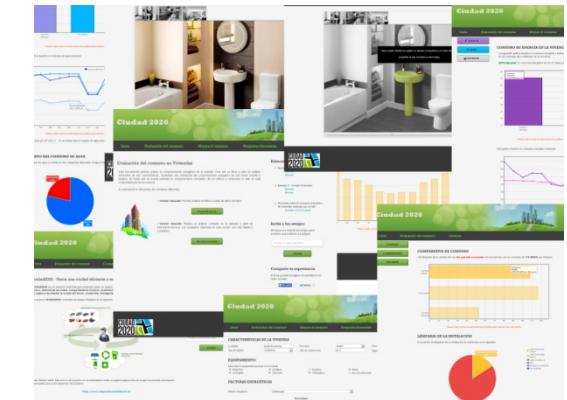
Smart Building



Simulation and Monitoring Tools



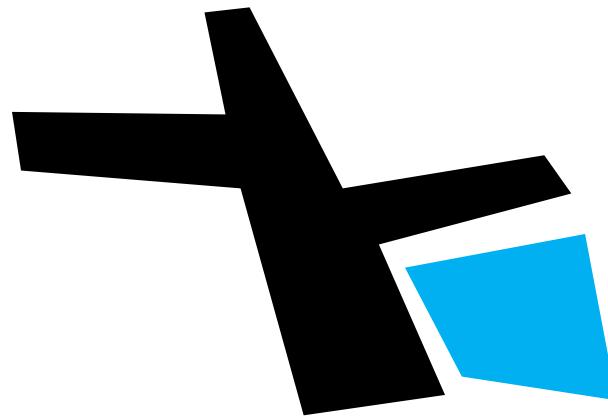
This screenshot shows a user interface for a lighting model simulation. It includes a sidebar with navigation links like "CEDINT", "Ubicación", "LISTAS DE DATOS", "DATOS DE PROYECTO", and "USAR PROYECTO". The main area displays a form for "Luminaria 1" with fields for "Tipo de Lámpara" (VNP), "Número de Lámparas" (1), "Potencia de la Lámpara" (80 W), "Número de Lámparas" (80), "Número del Balasto" (1), "Tipos de Balasto" (Descendente), and "Peso Lumínoso". Below the form is a section titled "Modelo Energético de Alumbrado Exterior" with a lightbulb icon and a "EVALUAR" button.



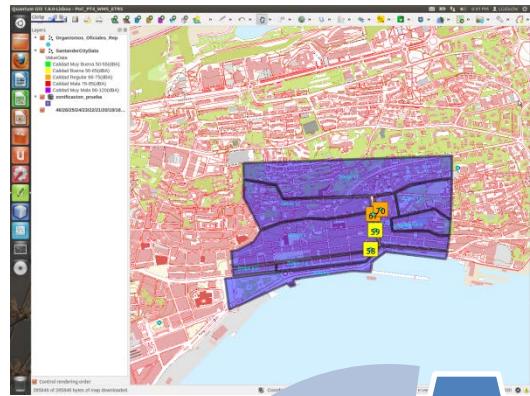


CIUDAD2020: HACIA UN NUEVO MODELO DE CIUDAD INTELIGENTE SOSTENIBLE

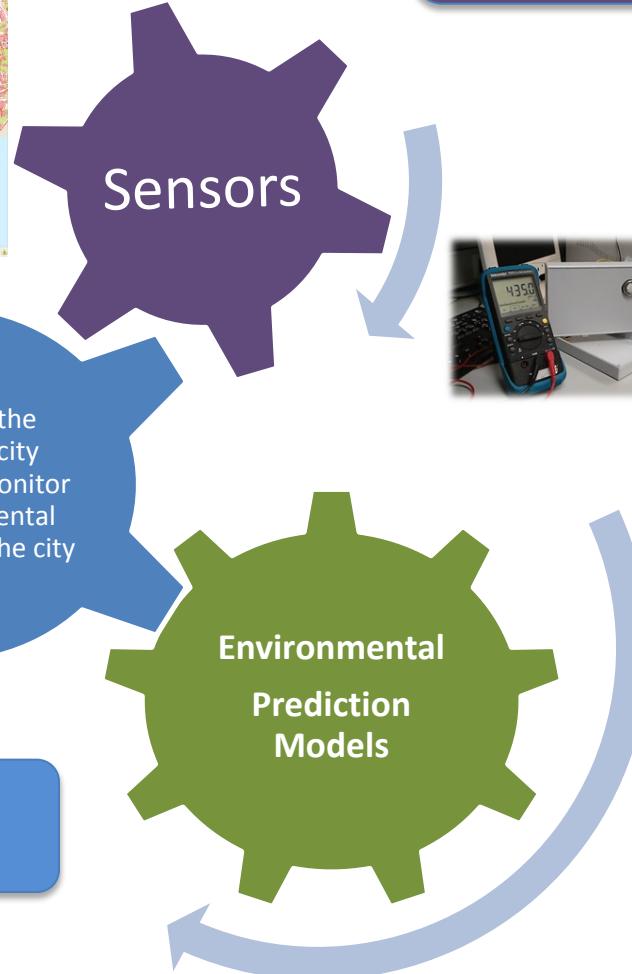
Sustainability and Wellness



Environmental and Wellness Services



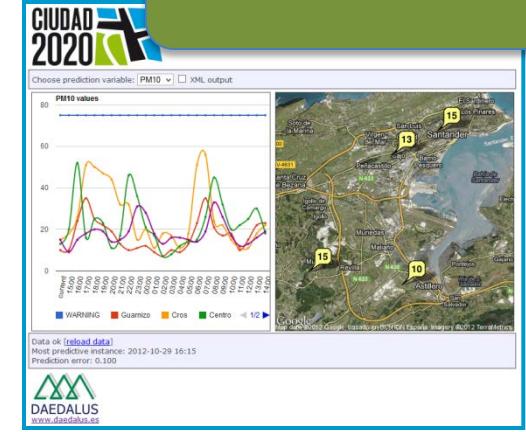
Monitoring Systems



Development of WSN Monitoring CO₂, NO₂,



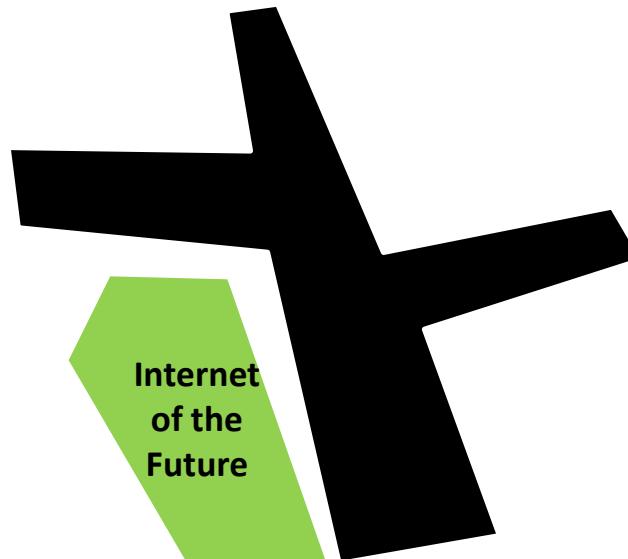
Predictive Models





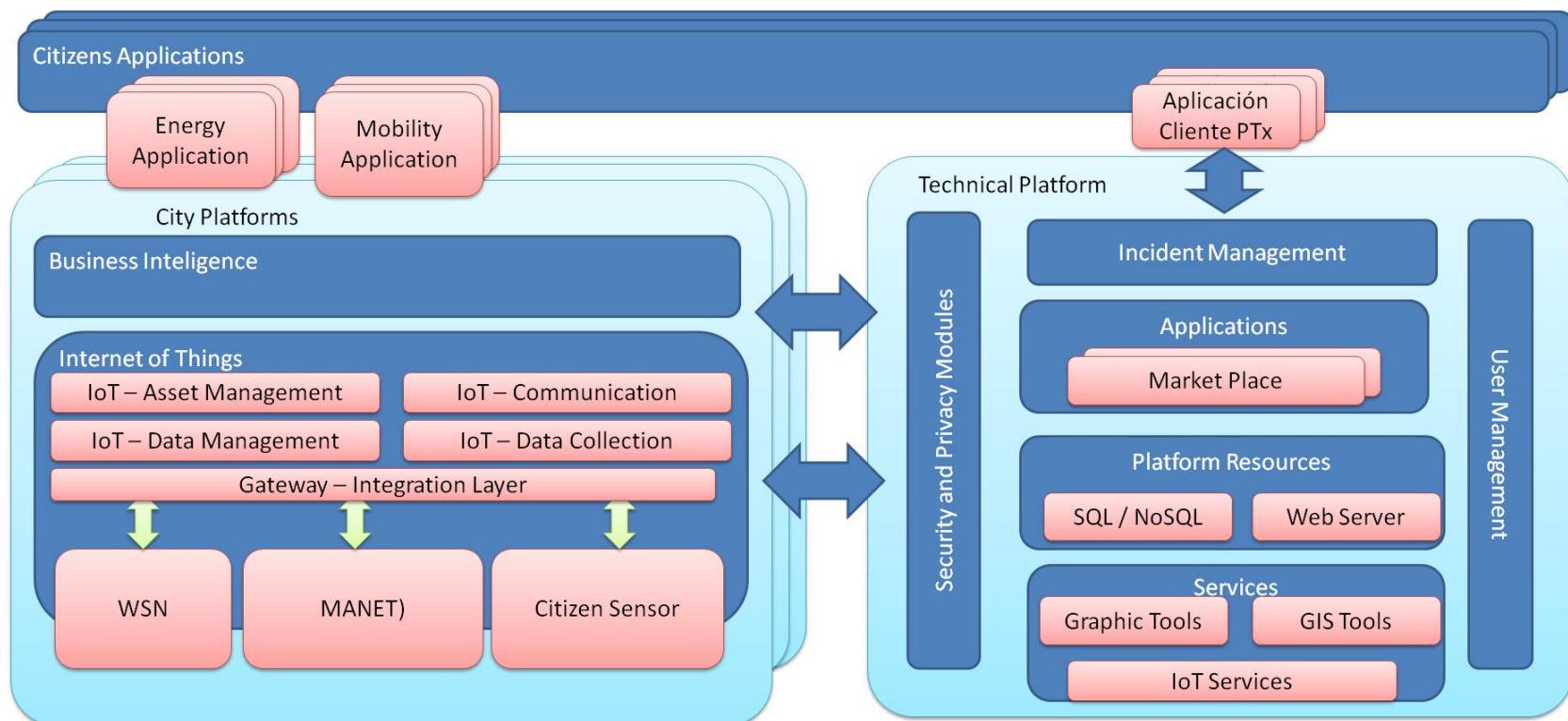
Smart City Platform

**The city connected to the
Internet of the Future**



Ciudad 2020 Platform

- Technology cloud-based platform that integrates data and services
- Accessible and scalable deployment of a communications network, to develop, integrate, distribute, adapt and personalize services





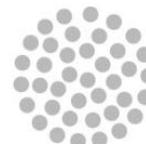
Ciudad 2020 – Industrial Impact in Spanish Industry

Defining & Promoting a new model of Smart City





Ciudad 2020 – Impact - Indra



indra

**Collaboration with
Universities &
Research Centers**



BARCELONA CENTRO DIGITAL TECNOLÓGICO
bdiigital TECNIO



**Urban Platform
Smart Cities Solution**



Smart Building Smart Energy Smart Transport Smart Mobility



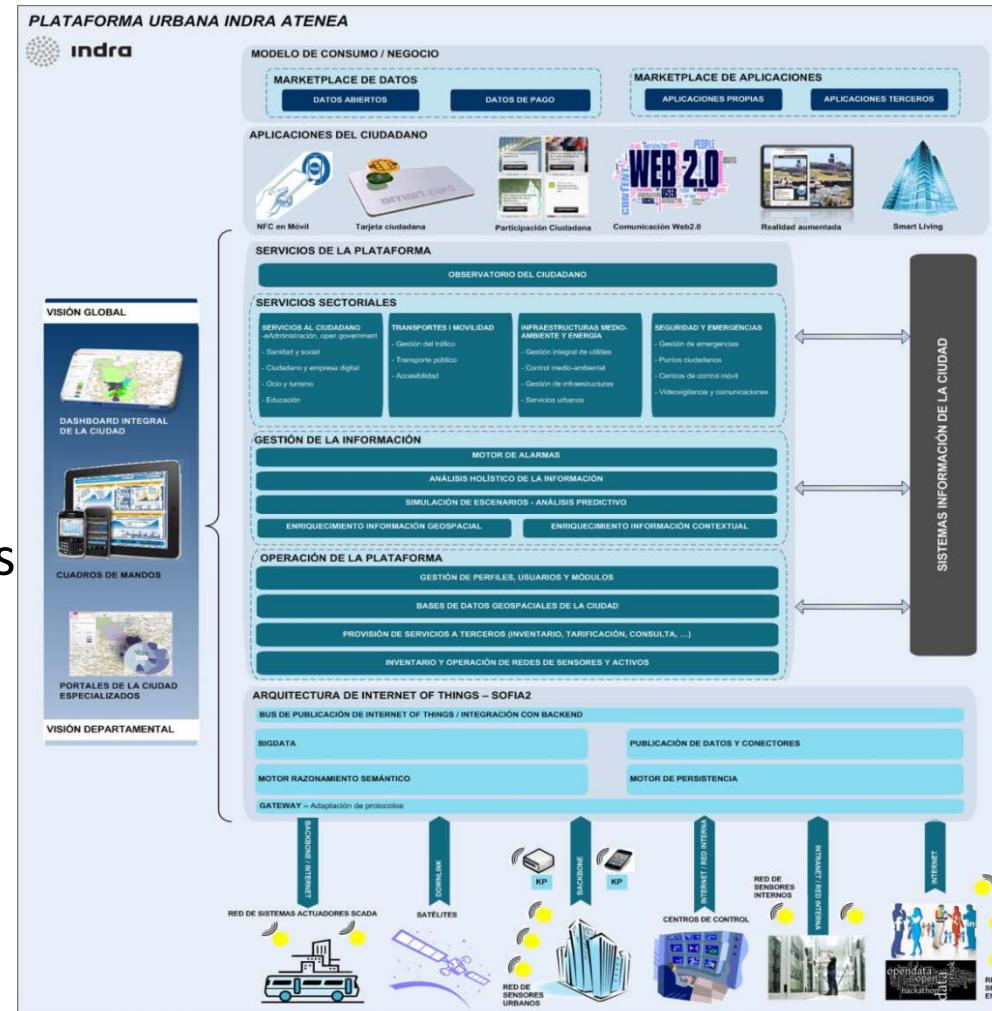
Urban Interoperability Platform (UOIP)

- Integrate and manage all services and solutions comprising at city ecosystem
- Service integration middleware uses SOFÍA, an Open & European R&D project
- Platform brings together Indra's expertise in city solutions designed to interconnect different information systems

Medellín, Colombia



International Award 2012





Questions



www.innprontaciudad2020.es



Thank you!