GRUPPO TELECOM ITALIA

Conferenza Nazionale AMFM GIS Italia 2015

La città e le infrastrutture del sottosuolo

Soluzioni ICT di smart city

Telecom Italia initiatives

1/7/2015

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L'impegno di Telecom Italia per la Smart City

From the City to the "Connected City" and from the Citizens to the "Connected *(to the city)* Citizens"

Telecom Italia is committed on all these services with commercial offering and/or innovation activities

Mobility

- **Intelligent Transport Systems**
- **Integration of Public & Private Transportation**
- **Car Sharing**
- **Safety**
- **….**

Health

- **Digital Health record**
- **Telemedicine**
- **Tele-rehabilitation**
- **Wellness-Fitness**
- **….**

Quality of Life

- **Citizen participation and participatory sensing**
- **Smart Education**
- **Smart Government**
- **Safecity**
- **Social & sharing**
- **Tourism**
- **Intelligent building**
- **….**

Energy and Green

- **Energy Efficiency**
- **Smart Grid**
- **Pollution Reduction**
- **Electric vehicles**
- **Water management**
- **Waste cycle optimization**
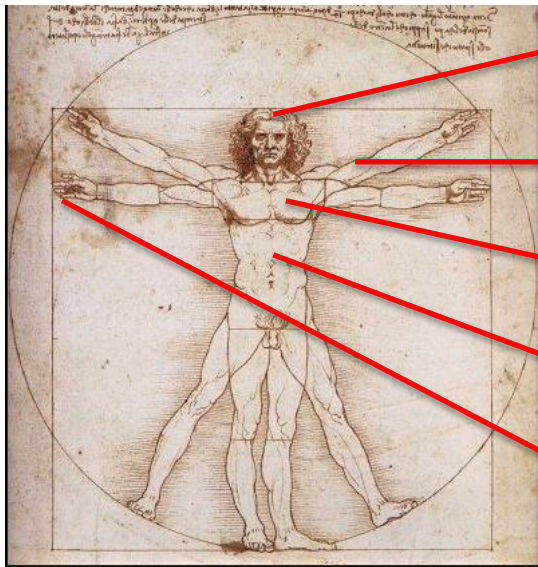- **Smart Lighting**
- **Eco Buildings**
- **…..**

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Una metafora: come la città o un'area può diventare intelligente

ICT is the fundamental Enabler for the Smart City -> Telecom Italia is hardly working on Smart City development for this reason!

The Sensing – Actuating Paradigm

Sensing

Actuating
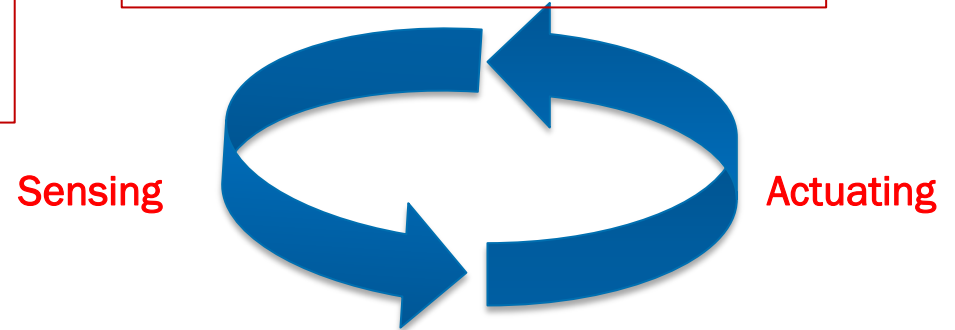
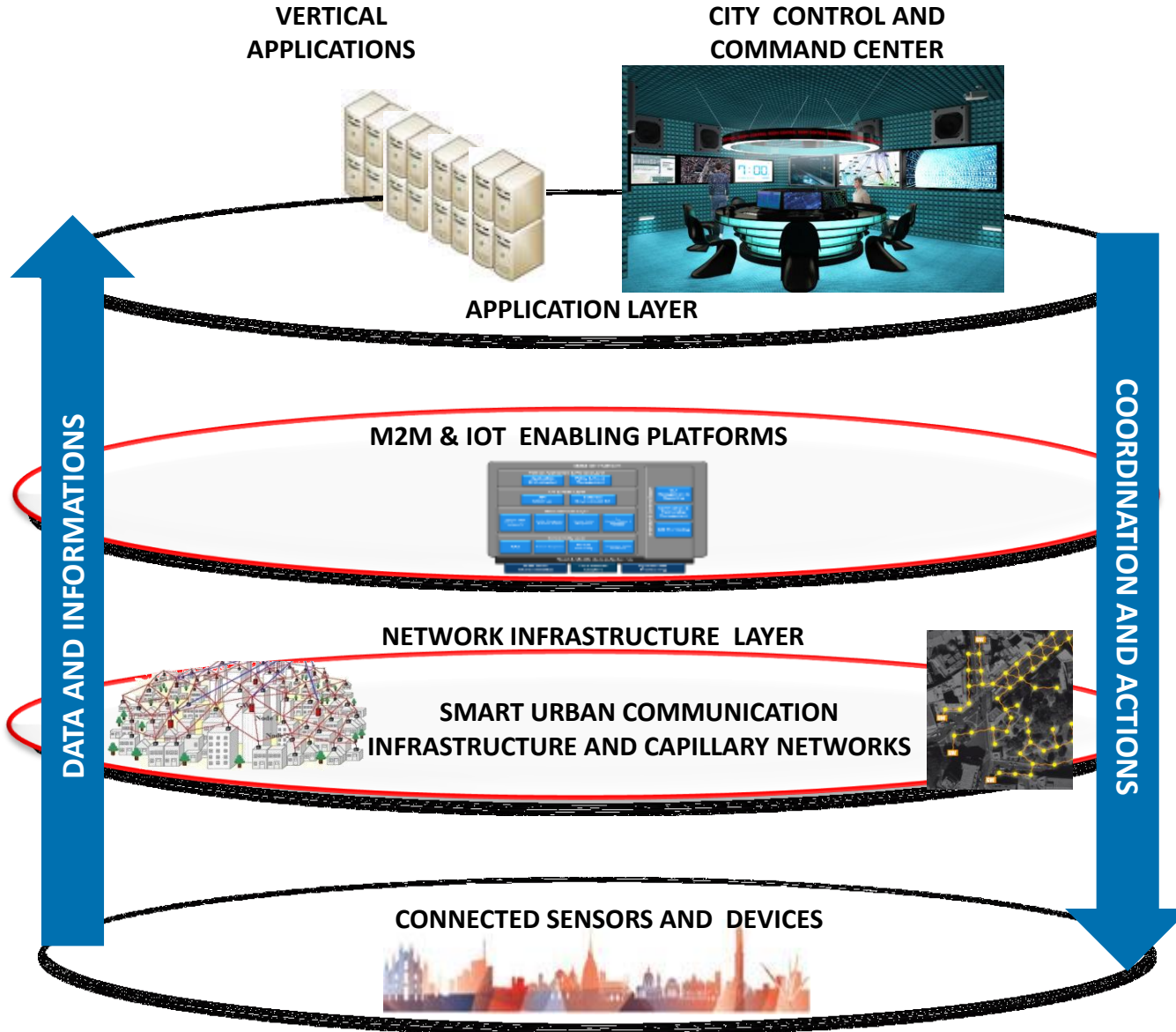The City as the Human being

The Brain: the Control Centers

The Muscles: the actuators
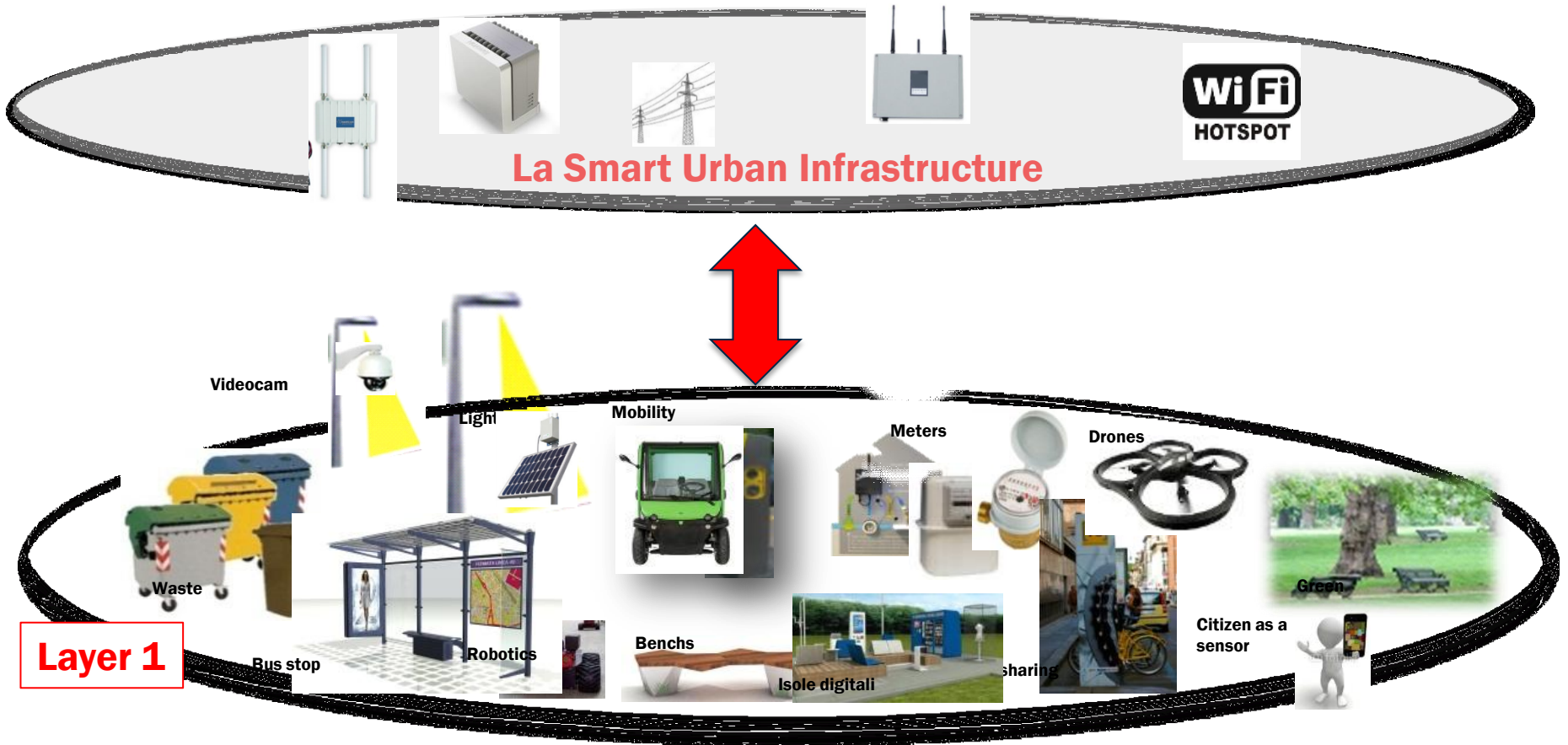
The Heart: the Network Platforms (Cloud and M2M)

The Nervous System: Smart Urban Communication Infrastructure

The Sense Organs: smart sensors

La piattaforma ICT di riferimento di Telecom Italia

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VERTICAL APPLICATIONS

CITY CONTROL AND COMMAND CENTER

APPLICATION LAYER

NGN 4G AND FIBER

DATA AND INFORMATIONS

M2M & IOT ENABLING PLATFORMS

NETWORK INFRASTRUCTURE LAYER

SMART URBAN COMMUNICATION INFRASTRUCTURE AND CAPILLARY NETWORKS

COORDINATION AND ACTIONS

CLOUD

CONNECTED SENSORS AND DEVICES

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Gli Smart devices e sensors nell'OAL: gli organi di senso e i muscoli della Smart City!!

La Smart Urban Infrastructure

Layer 1

Videocam · Light · Mobility · Meters · Drones · Waste · Bus stop · Robotics · Benchs · Isole digitali · sharing · Citizen as a sensor · Green
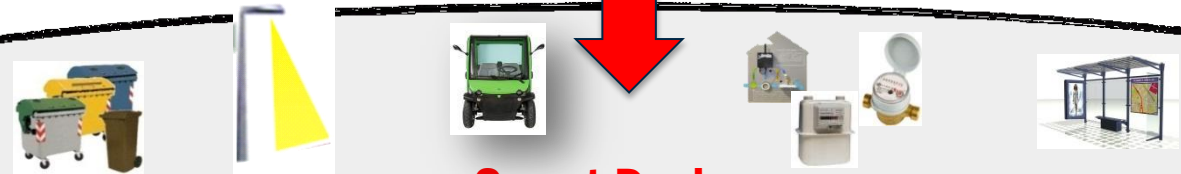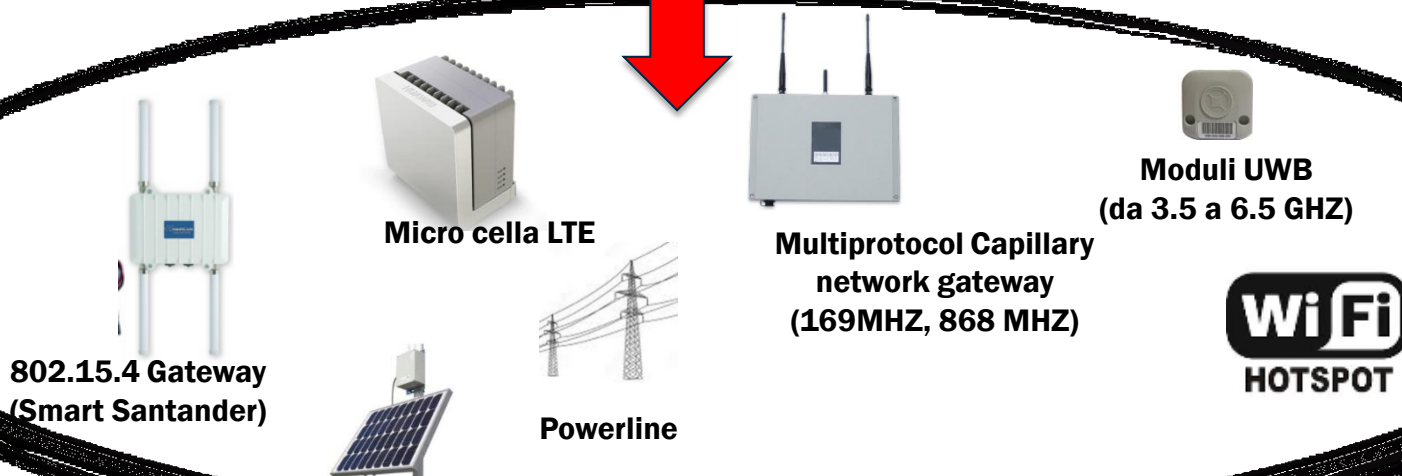
I Nodi di rete della Smart Urban Infrastructure dell'OAL: i nervi della Smart City !!

Telecom Italia data Comm networks 4G - NGAN

Layer 2
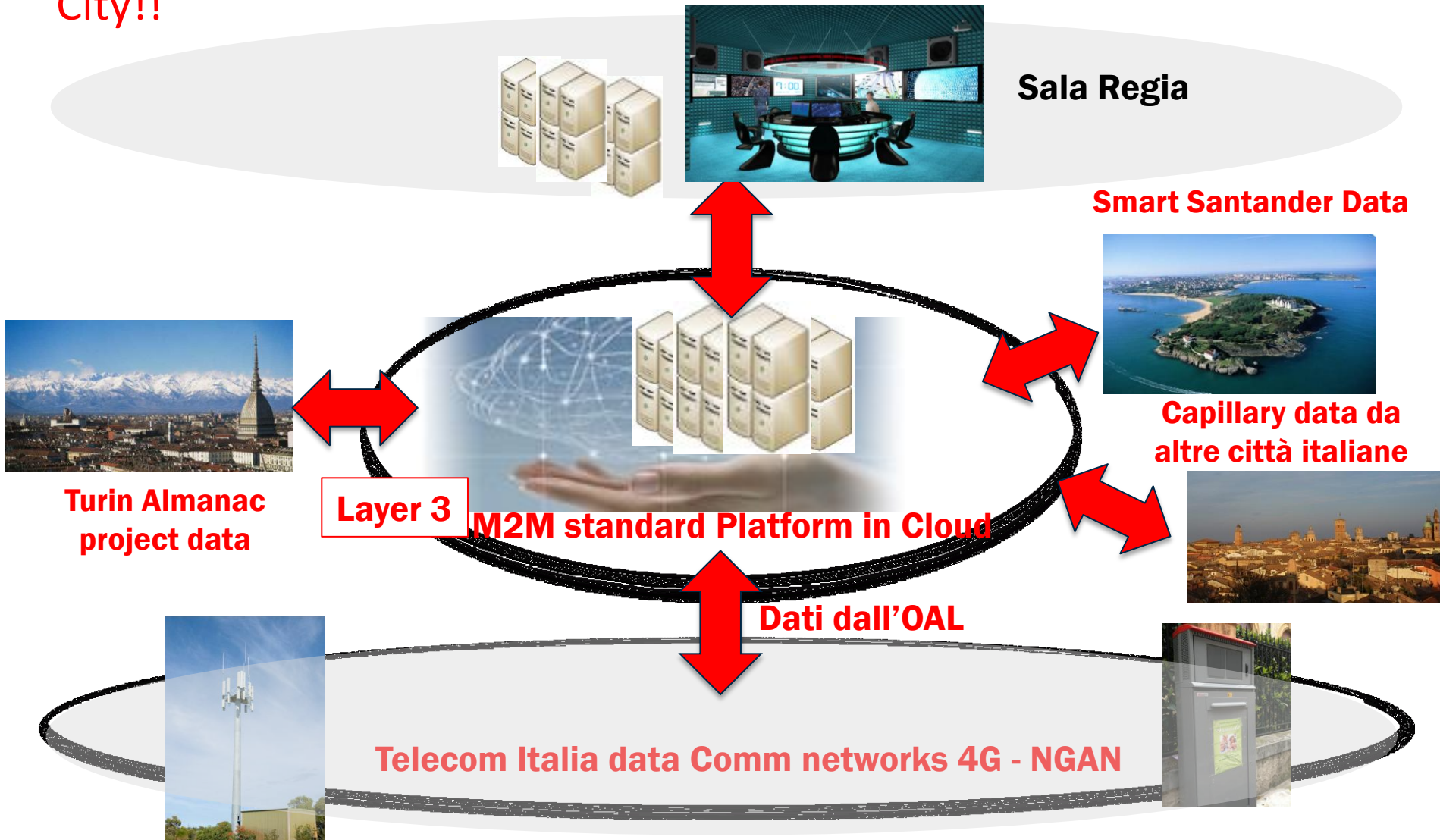
Micro cella LTE

Moduli UWB (da 3.5 a 6.5 GHZ)

Multiprotocol Capillary network gateway (169MHZ, 868 MHZ)

802.15.4 Gateway (Smart Santander)

Powerline

WiFi HOTSPOT

Smart Devices

La Future Internet Network Platform dell'OAL: il cuore della Smart City!!

Sala Regia

Smart Santander Data

Turin Almanac project data

Layer 3

M2M standard Platform in Cloud

Capillary data da altre città italiane

Dati dall'OAL
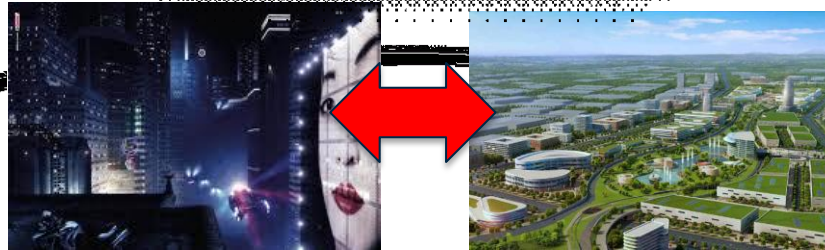
Telecom Italia data Comm networks 4G - NGAN

La sala regia della città: Il cervello della Smart City

La sala regia della città

From the City to the "Connected City" and from the Citizens to the "Connected *(to the city)* Citizens"

IoT and Smart Urban Infrastructure

Layer 4

Life and Health: Smart Utilities (smart water, smart gas, smart waste), Citizen participations and participatory sensing, Safecity
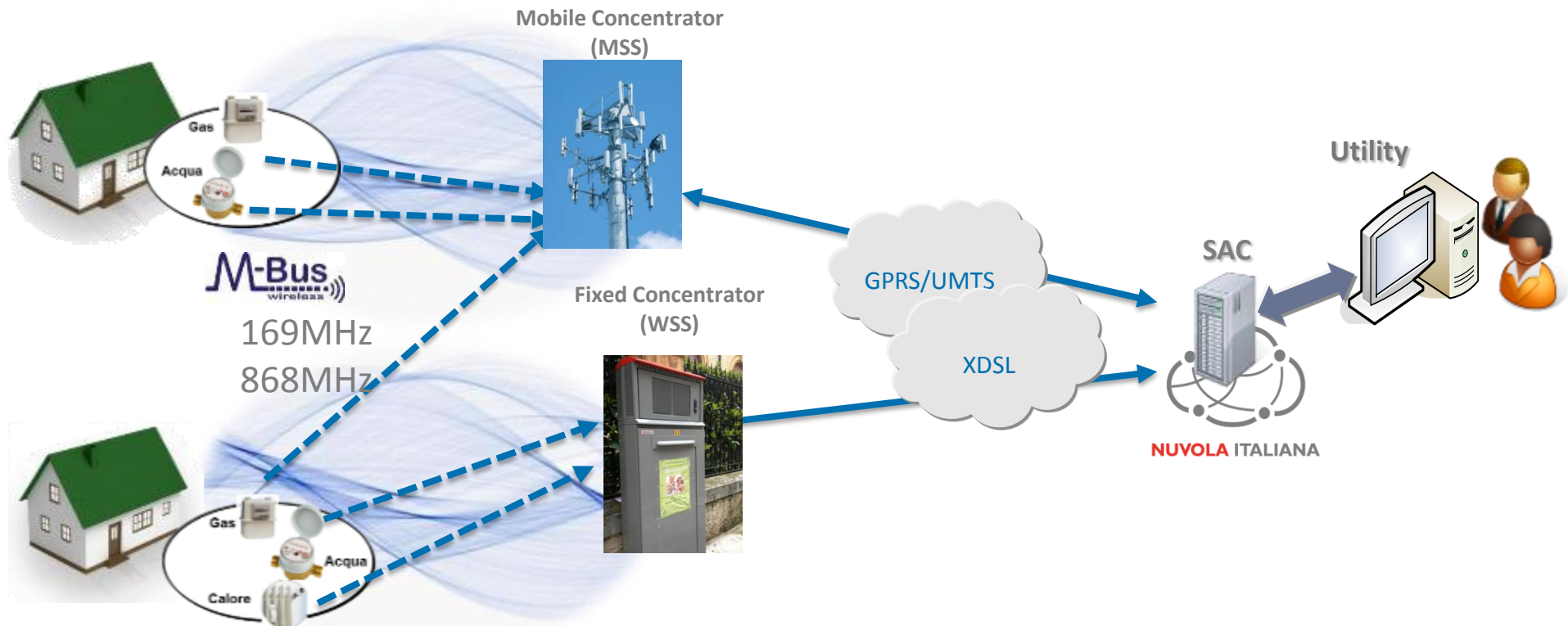
Smart Mobility: Electric vehicles and Bikes

Smart Energy: Smart Lighting

Smart Commerce: M-wallet etc.

M2M standard platform in cloud

# Un esempio di Smart Urban Infrastructure: Smart Metering and Capillary Networks

MAIN OBJECTIVES

→ Development of a **new access network** for Smart Metering and IoT sensors
→ Re-use of Telecom Italia **fixed and mobile assets** for hosting the new network element (Concentrator)
→ Adoption of standard RF and protocols to achieve a **multi service network** for utilities (gas, water, waste etc.) enabling the smart urban communication infrastructure of a smart city
→ Commercial Project in partnership with an italian Utility involving 4 italian cities.

Strategie copertura Asset TI – Mobile + Fissa

Si prevede una strategia «*Dual Layer*»: si parte con la pianificazione da Rete Mobile (MACRO), stimando la % di copertura Outdoor e Indoor sui territori di interesse. Successivamente si passa alla pianificazione da Rete Fissa (MICRO) ad integrazione/complemento della precedente, per aumentare sia la percentuale di copertura sia la resilienza e la capillarità della copertura complessiva ottenendo una stima finale delle due coperture congiunte.
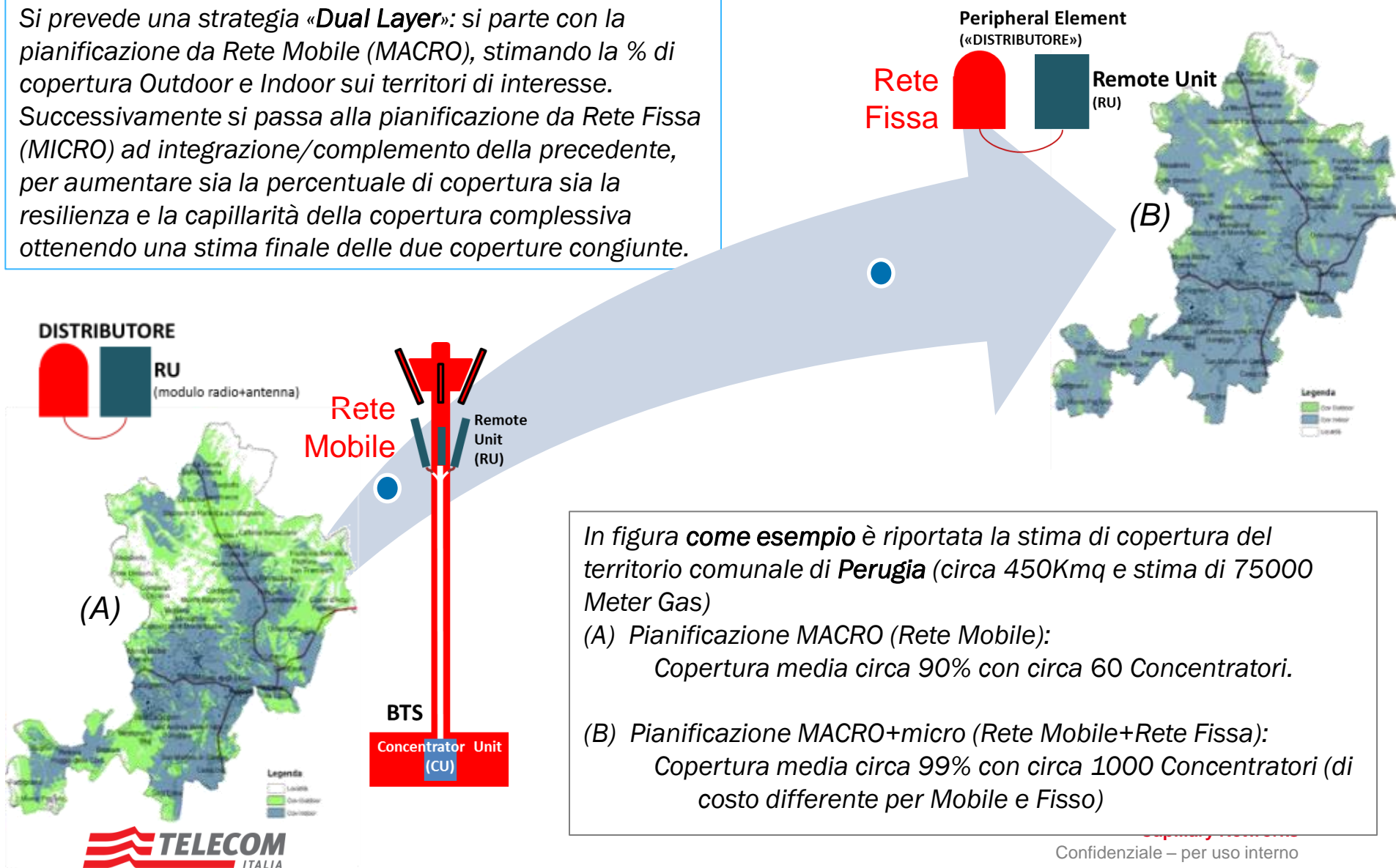
In figura **come esempio** è riportata la stima di copertura del territorio comunale di **Perugia** (circa 450Kmq e stima di 75000 Meter Gas)

(A) Pianificazione MACRO (Rete Mobile):
   Copertura media circa 90% con circa 60 Concentratori.

(B) Pianificazione MACRO+micro (Rete Mobile+Rete Fissa):
   Copertura media circa 99% con circa 1000 Concentratori (di costo differente per Mobile e Fisso)
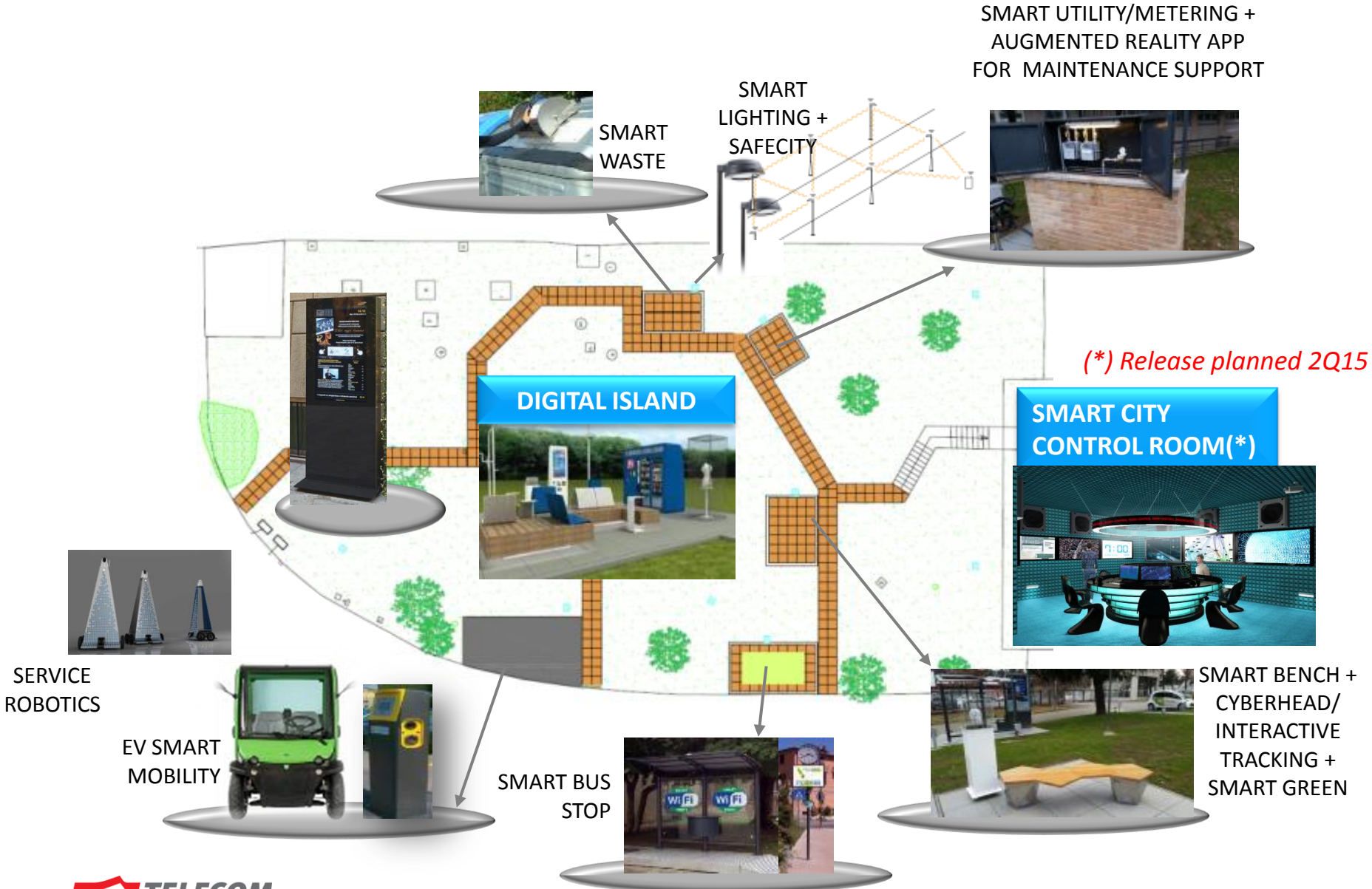
Alcune installazioni

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Alcune installazioni

Antenna for 169 MHZ

Alcune installazioni

TELECOM
ITALIA

OPENAIRLAB - The Smart City Lab in Turin

SMART UTILITY/METERING +
AUGMENTED REALITY APP
FOR MAINTENANCE SUPPORT

SMART WASTE

SMART LIGHTING + SAFECITY

(*) Release planned 2Q15

DIGITAL ISLAND

SMART CITY CONTROL ROOM(*)

SERVICE ROBOTICS

EV SMART MOBILITY

SMART BUS STOP

SMART BENCH + CYBERHEAD/ INTERACTIVE TRACKING + SMART GREEN
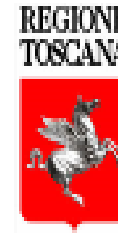
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Back Up Slide

Some example of Telecom Italia Projects on Smart City

Smart Mobility in Turin and Milan

Safecity EC funded Project
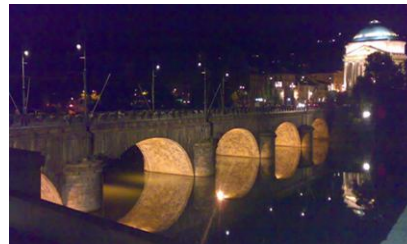
Tuscany E-Health ICT Lab

E-Call EC funded Project

Turin Smart City Master Plan

Maseltov Smart Inclusion for immigrants EC funded Project

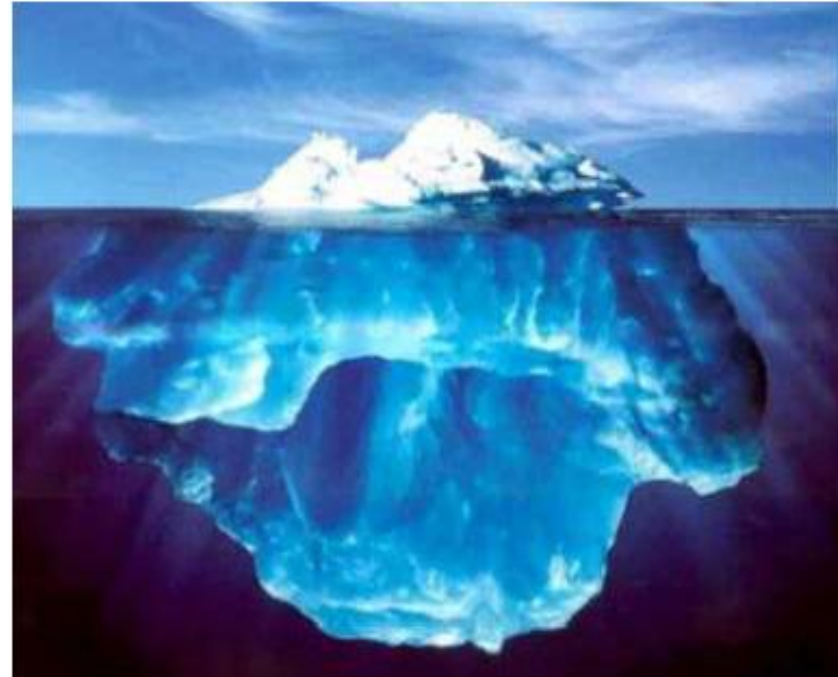**IoT and Smart Utility EC funded Project**

Florence Smart City

Some Number!

Examples for a city* of 1 million people		
Smart metering	600.000 meters	$120 million opportunity
Electric vehicle charging infrastructure	45.000 electric vehicles	$225 million opportunity
Remote patient monitoring (diabetes)	70.000 people w/ diabetes	$14 million opportunity
Smart retail establishments	4.000 stores	$200 million opportunity
Smart bank branches	3.200 PTMs	$160 million opportunity

Total Worldwide ICT Opportunity ≈ $200 Billion

Source IDC Report Boston 2013