

### **Pre-Commercial procurement procedures for the experimentation of 5G technology for the development of S3 domains in the Abruzzo Region: the case study of the city of L'Aquila**

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**Innovation Public Procurements Workshop, 28th March 2018 Ancona**



## PRE-COMMERCIAL PROCUREMENT: WHAT IS IT? 1/2

Pre-commercial procurements are procurements for the conclusion of R&D contracts and are activated before the marketing of a given product.

Furthermore they are characterized by

- the **sharing of risks and benefits** between the public customer and the companies under market conditions;
- **co-financing** by the participating companies
- **competitive development by phases.**

## PRE-COMMERCIAL PROCUREMENT: WHAT IS IT? 2/2

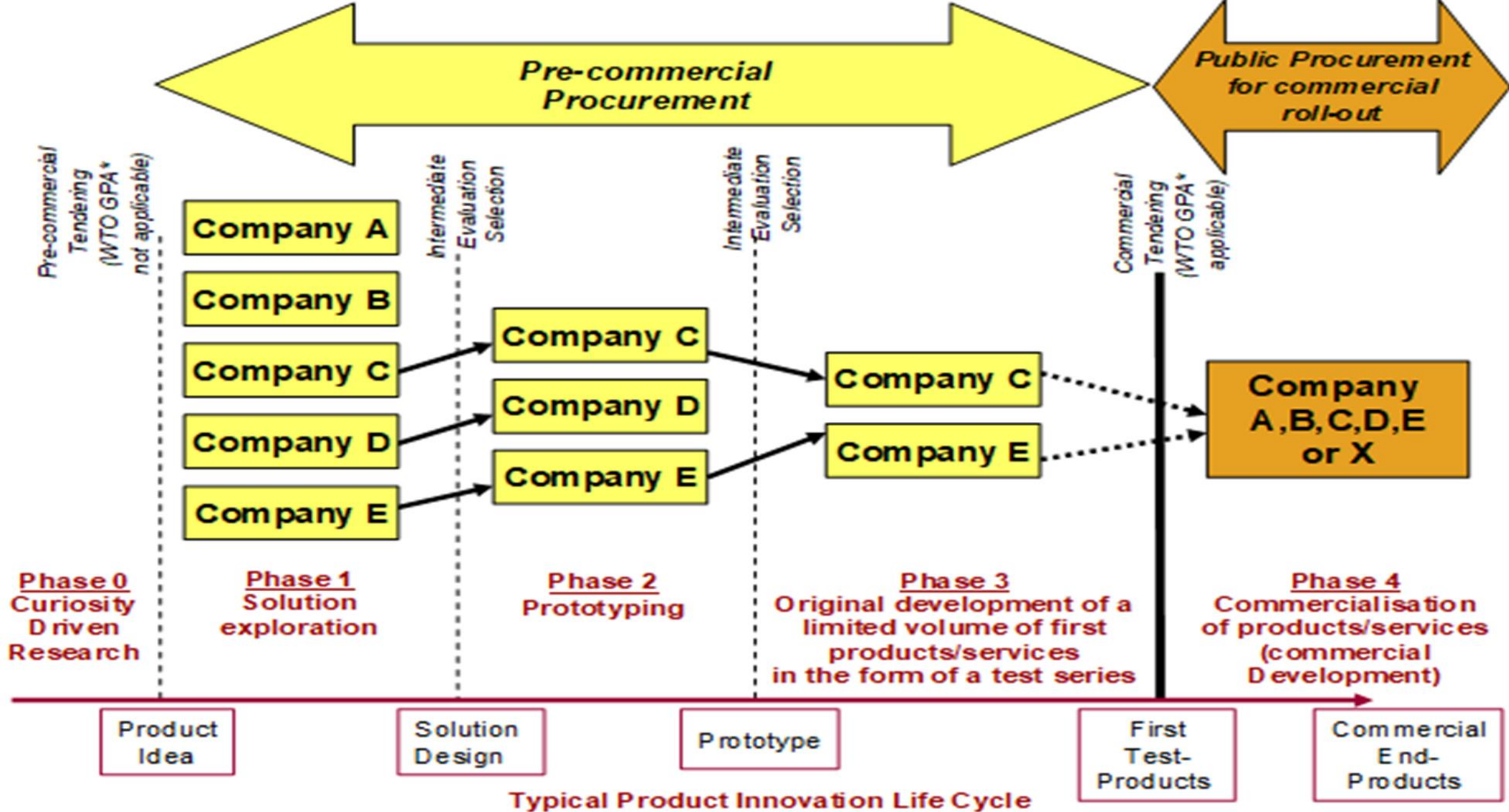
In the pre-commercial procurements, the research and development phase is separated from the deployment of commercial volumes of end-products phase. **PCP is excluded from the procurement directives**, and the European Commission developed a specific guidance to Member States in 2007 concerning how to develop PCP procedures:

**Communication of the European Commission 14.12.2007 COM(2007)**

**799** *“Pre-commercial Procurement: Driving innovation to ensure sustainable high quality public services in Europe”*



# REPRESENTATION OF THE PRE-COMMERCIAL PROCUREMENT IN THE COMMUNICATION OF THE EUROPEAN COMMISSION COM (2007) 799



PHASE 1: has the objective to **verify** the technical, economic and organizational **feasibility** of the proposals of different companies



PHASE 2: (**prototyping**) aims to verify if the main **characteristics of the prototype** correspond to the functional and efficacy **requirements indicated by the public authorities** for the expected solution



PHASE 3: **initial development of a first set of products** validated through field experiments: aims to verify and compare the efficiency of different solutions in real operational situations of the public service



This scheme is not mandatory, but it is only a suggestion:

in cases where the state of the art is more advanced, the pre-commercial procurement procedure can start with the **development of prototypes** or **even with the first phase of product development.**



**In march 2017, the Italian Ministry of Economic Development published the Public tender for the acquisition of project proposals for pre-commercial 5G experimentations in the spectrum portion of 3.7 – 3.8. GHz**



In this public call, **applications could be submitted:**

**by companies authorized to provide electronic communications networks and services accessible to the public, in partnership** with at least one of the entities of each of the following categories:

- universities, institutions and research centers;
- companies at national or international level with specific skills in the field of the services subject of the experimentation.

Furthermore, **public administrations, small and medium-sized enterprises, start-ups, trade associations and other private entities** may also be part of the aggregation, in a minority share.

In any case, the **lead partner** must be identified in **one or more communication operators**.



The projects must be implemented within a period of **four years** in the following geographical areas:

**Area 1 - Milan - metropolitan area**

**Area 2 - Prato and L'Aquila**

**Area 3 - Bari and Matera**

The procedure was divided in **3 phases**:

**phase 1**: presentation of **preliminary** project proposals (deadline 15th May 2017)

**phase 2**: selection of the **best project proposals** for each of the experimentation target areas (deadline 14th July 2017)

**phase 3**: **negotiated procedure**, presentation of **definitive project proposals**, **release of provisional permits** for experimentations by the competent Department of the Ministry (deadline 31st July 2017)







# A Telecommunication Ecosystem

## Main industrial assets in ICT

- **A NEW ARRIVAL: ZTE innovation** center in L'Aquila
- **Leonardo:** avionics, cybersecurity and professional communications
- **Thales Alenia Space:** design and integration of sub-systems for space segments
- **Telespazio:** Fucino space center with Galileo Control Center
- **Reiss Romoli:** professional education and consultancy
- **ELITAL:** PMI developing satellite antennas and aerospace products

## Industrial assets in microelectronics and silicon

- **Micron:** design center for solid state storage devices
- **Lfoundry:** foundry services

## Further relevant institutions:

- **Gran Sasso national INFN labs**
- **GSSI (Gran Sasso Science Institute)**

# Italian 5G Trial

Milano

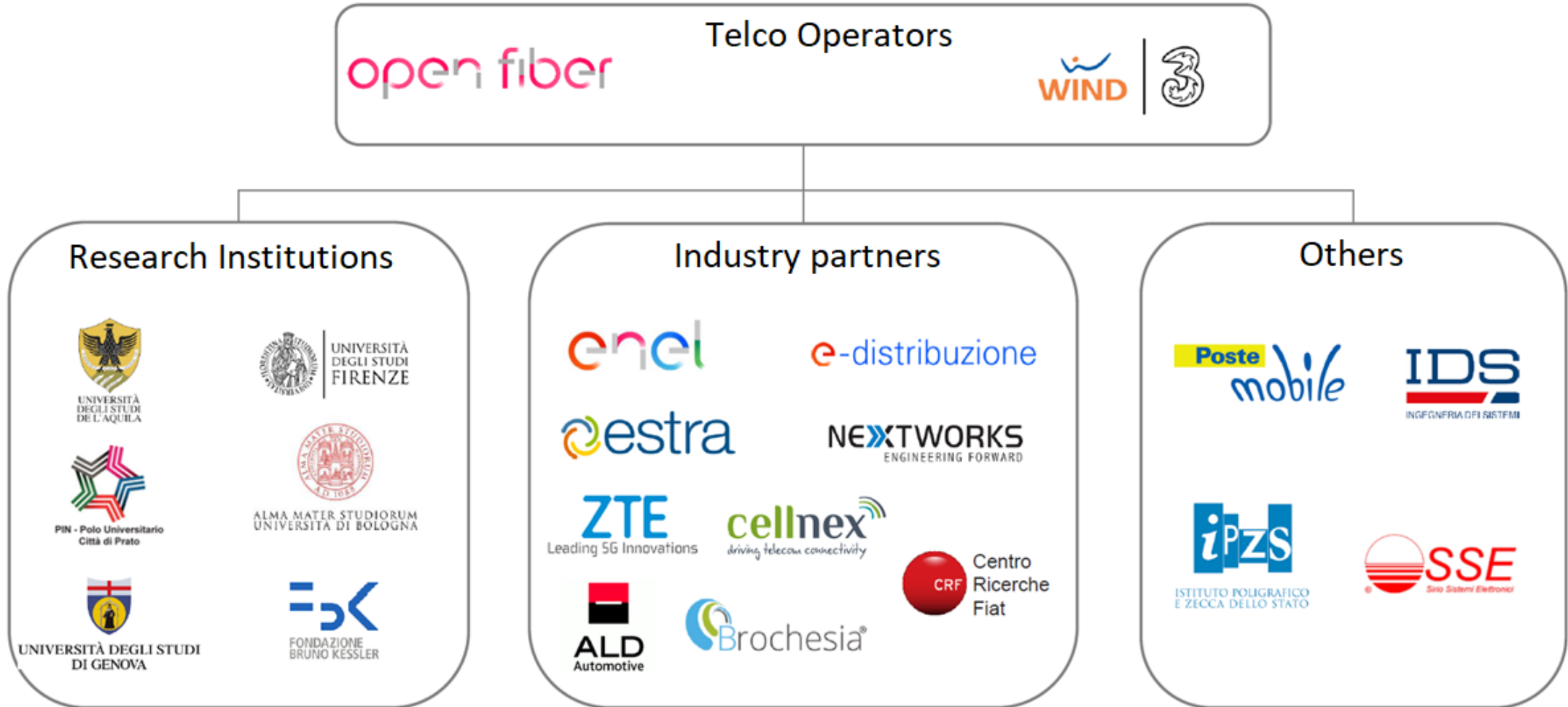
Prato

L'Aquila

Bari  
Matera



# Consortium





Univaq – ZTE partnership



# Our 5G vision: a unifying connectivity fabric

5G

## Enhanced mobile broadband

- Multi-Gbps data rates
- Extreme capacity
- Uniformity
- Deep awareness



Mobile devices



Networking

## Mission-critical services

- Ultra-low latency
- High reliability
- High availability
- Strong security



Automotive



Robotics



Health

## Massive Internet of Things

- Low cost
- Ultra-low energy
- Deep coverage
- High density



Wearables



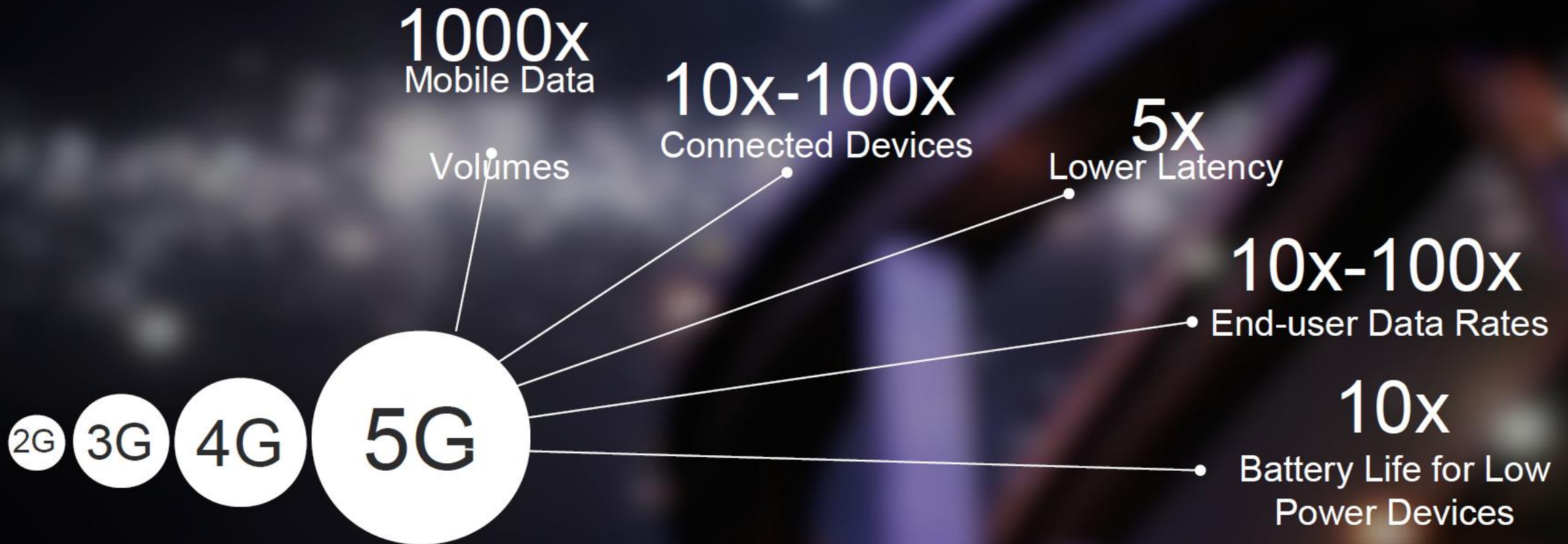
Smart cities



Smart homes

← Unified design for all spectrum types and bands from below 1GHz to mmWave →

# Evolution Towards 2020





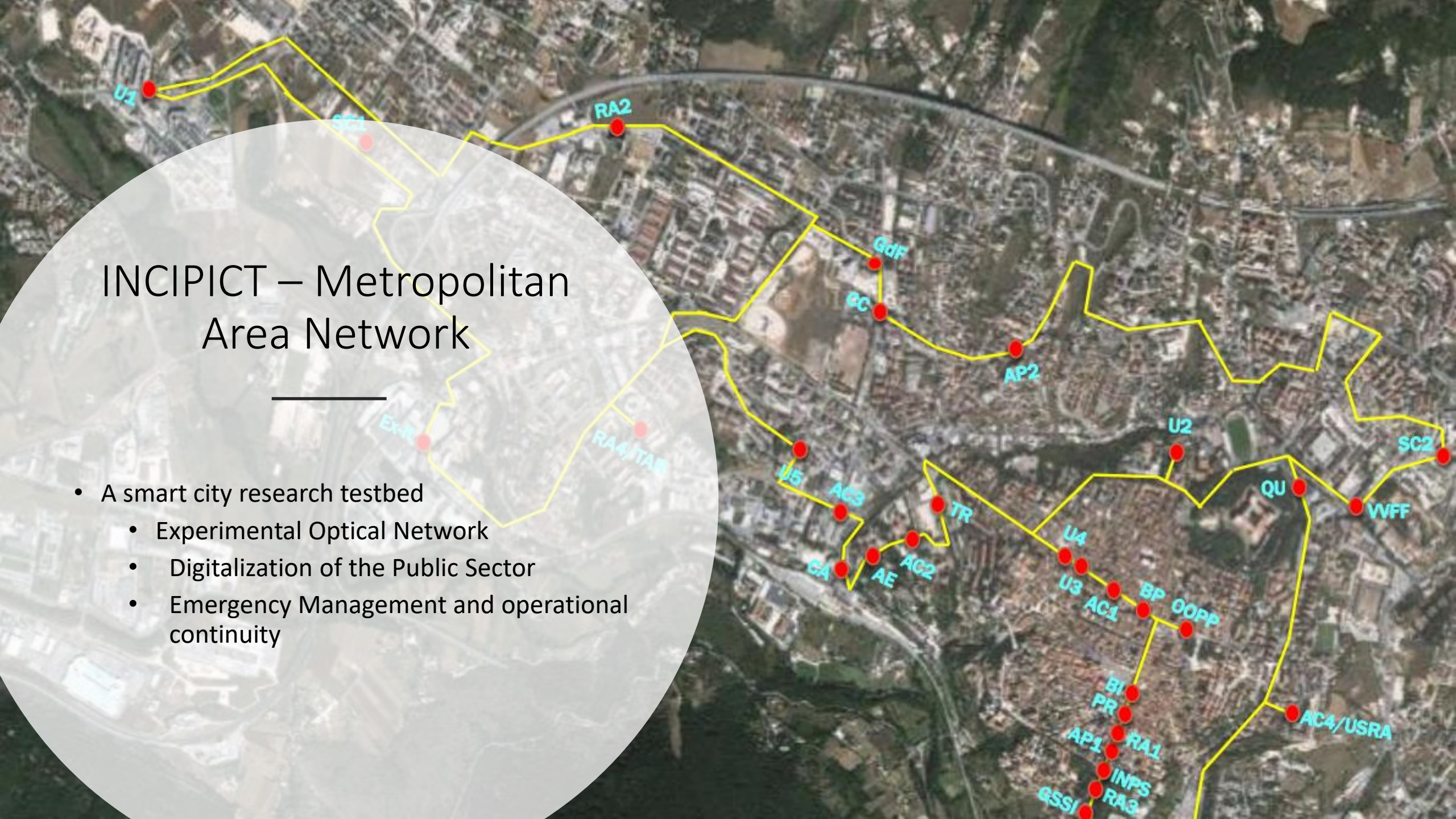


L'Aquila  
A testbed for 5G



# INCIPICT – Metropolitan Area Network

- A smart city research testbed
  - Experimental Optical Network
  - Digitalization of the Public Sector
  - Emergency Management and operational continuity



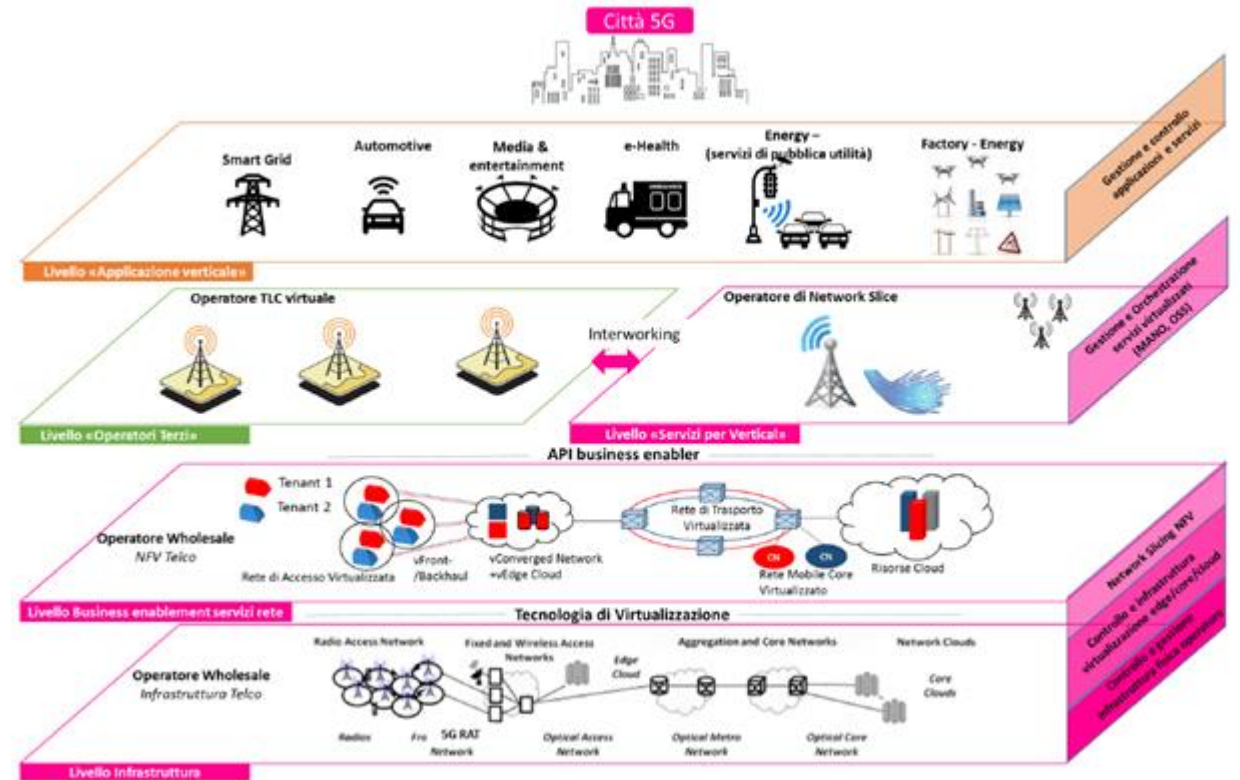






# 5G Trial Timeline

- 5G network technological solutions in 3.7–3.8 GHz spectrum
- Innovative services
- 4 years experimentation
  - 2020-2021 precommercial



# Use Cases

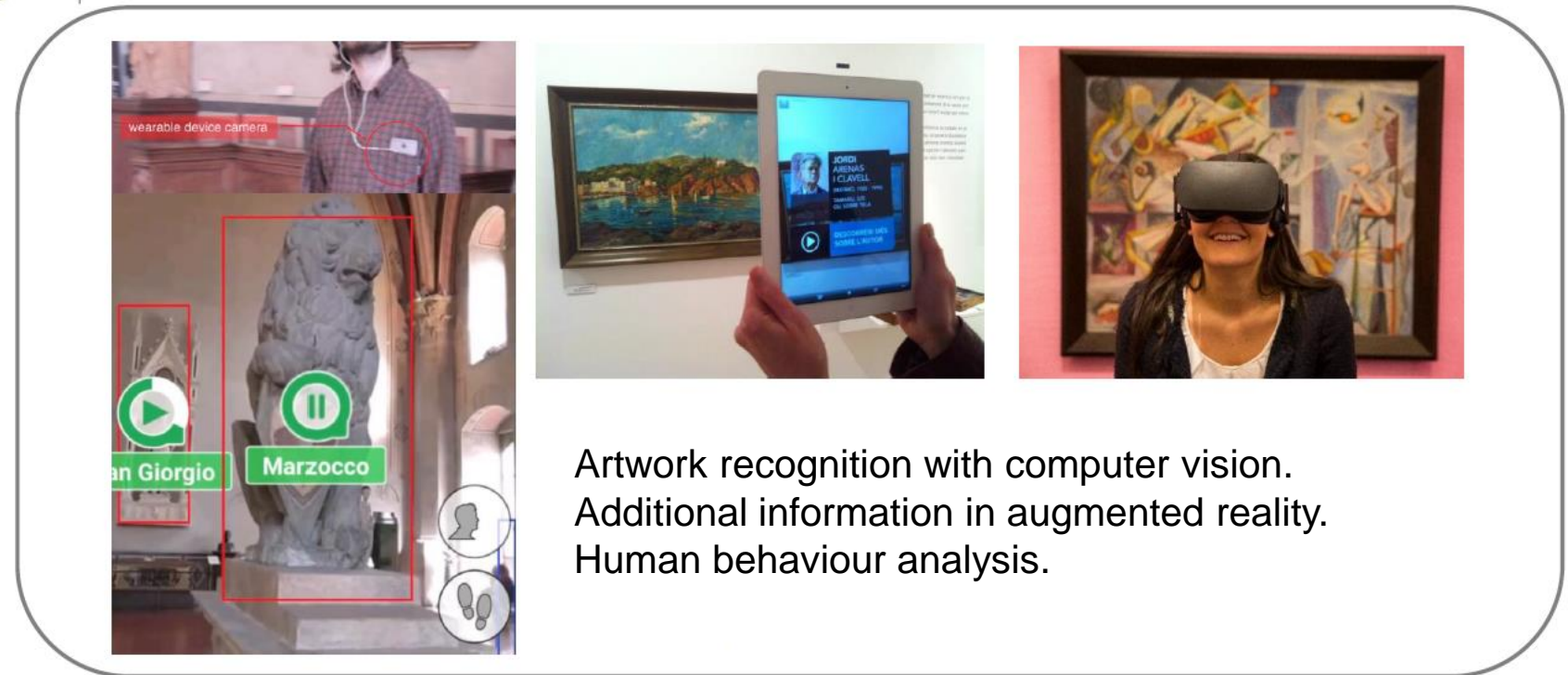
- ICT for Cultural Heritage
- Structural monitoring of buildings and infrastructures
- Intelligent Transport Systems
  
- Smart Agriculture
- E-Health
- Smart Security

# ICT FOR CULTURAL HERITAGE

## PRATO, L'AQUILA



- Cultural heritage valorization through Virtual Reality and Augmented Reality
- Augmented Reality system for dynamically customized guided tours. Contextual adaptation with the utilization of computer vision techniques
- Virtual Reality systems for virtual guided tours and high resolution expositions



Artwork recognition with computer vision.  
Additional information in augmented reality.  
Human behaviour analysis.

**Use Case LEADER**

**Involved partners**

**Other actors**



# STRUCTURAL MONITORING OF BUILDINGS AND INFRASTRUCTURES

## L'AQUILA



Monitoring system for damages and movements of constructions through drone and sensor networks

- Realtime monitoring of «health condition» of buildings
- Rapid and preventive action
- Increased safety
- Cost optimization



### Drones

Video Recordings & Video Analytics



### Sensors

Accelerometres, Crackmeters, Temperature, GPS, weather

#### Existing Buildings



#### Yards



#### Damages



#### Infrastructures



Use Case LEADER



Involved partners



Other actors



# SMART AGRICULTURE – L'AQUILA



Innovative solutions for agri-food and precision agriculture, food supply chain trackability. Blockchain application, certification systems, drones utilization

- Made in Italy protection
- Quality guarantee
- Authenticity of products and production

Precision agriculture

Tracking

Use Case LEADER

Involved partners

Other actors



# E-HEALTH – L'AQUILA

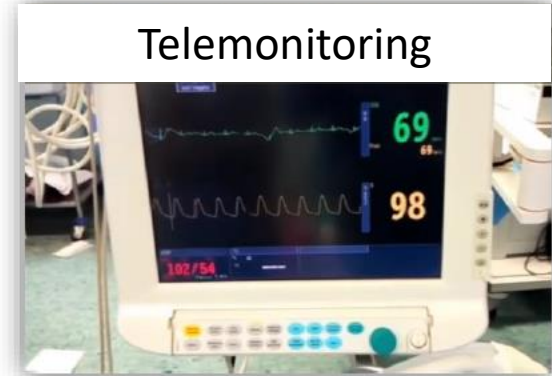


Integrated system of telemedicine, telemedical consult through smartglasses, telemonitoring of patients, medical devices, drugs delivery

- Rapid and efficient remote intervention
- Patient satisfaction
- Cost reduction
- Cure accessibility



Telemedicine with smart glasses



Telemonitoring



Drug delivery

Use Case LEADER



Involved partners



UNIVERSITÀ DEGLI STUDI FIRENZE



Leading 5G Innovations



ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

Other actors



# SMART SECURITY FOR THE SMART CITY – L'AQUILA



Law enforcement solutions for Police and Private Security through the utilization of smart glasses and drones equipped with high resolution cameras.

- Efficient management and collaboration between police officers
- Rapid and preventive safety actions
- Increased safety for citizens and officers



**Use Case LEADER**

**Involved partners**

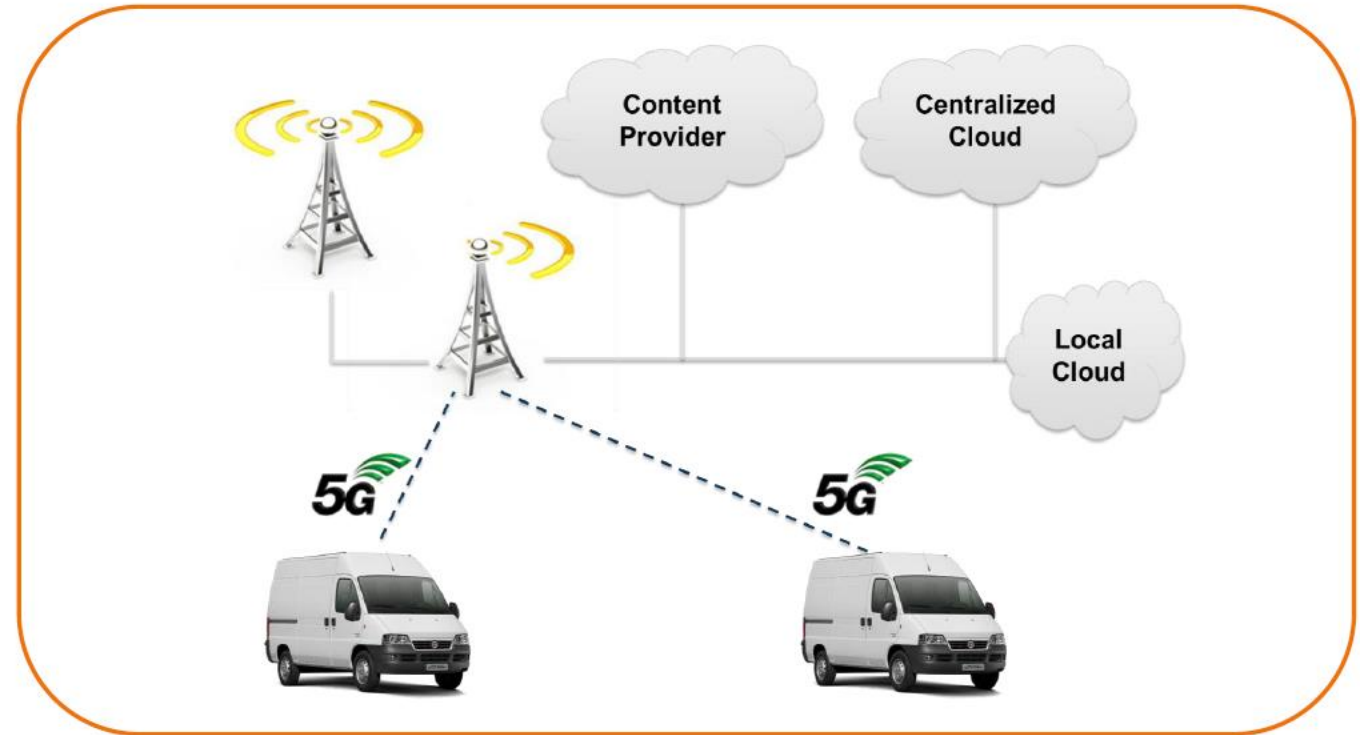
**Other actors**



# INTELLIGENT TRANSPORT SYSTEMS – L'AQUILA

Advanced solutions for transport systems with vehicles connected to 5G network. Enabling of vehicle2vehicle and vehicle2infrastructure interactions. Fleet management (e.g. rescue, emergency, special transports) in emergency and ordinary situations

- Efficient, effective and safe fleet management
- Safety of vehicles, drivers and pedestrians
- Enhanced driving comfort
- Traffic and pollution reduction



Use Case LEADER



Involved partners



Other actors





# THANK YOU FOR YOUR ATTENTION!

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