



Space Applications to Advance Innovation On Circular Cities

6th October 2020

15:00 CEST

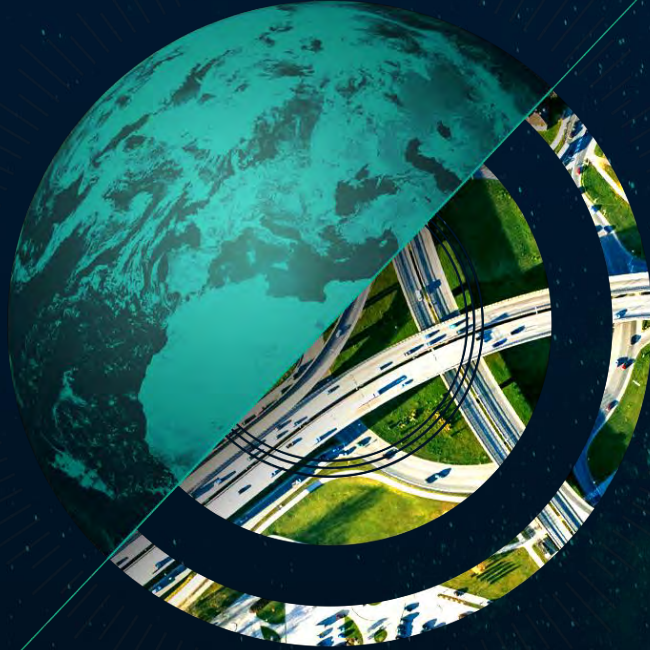
Davide Coppola (ESA)
Giulia Manzetti (ESA)
Sergio Gambacorta (ENEL X)

ESA UNCLASSIFIED



European Space Agency





Davide Coppola



WELCOME TO THE WEBINAR!

Before we start...

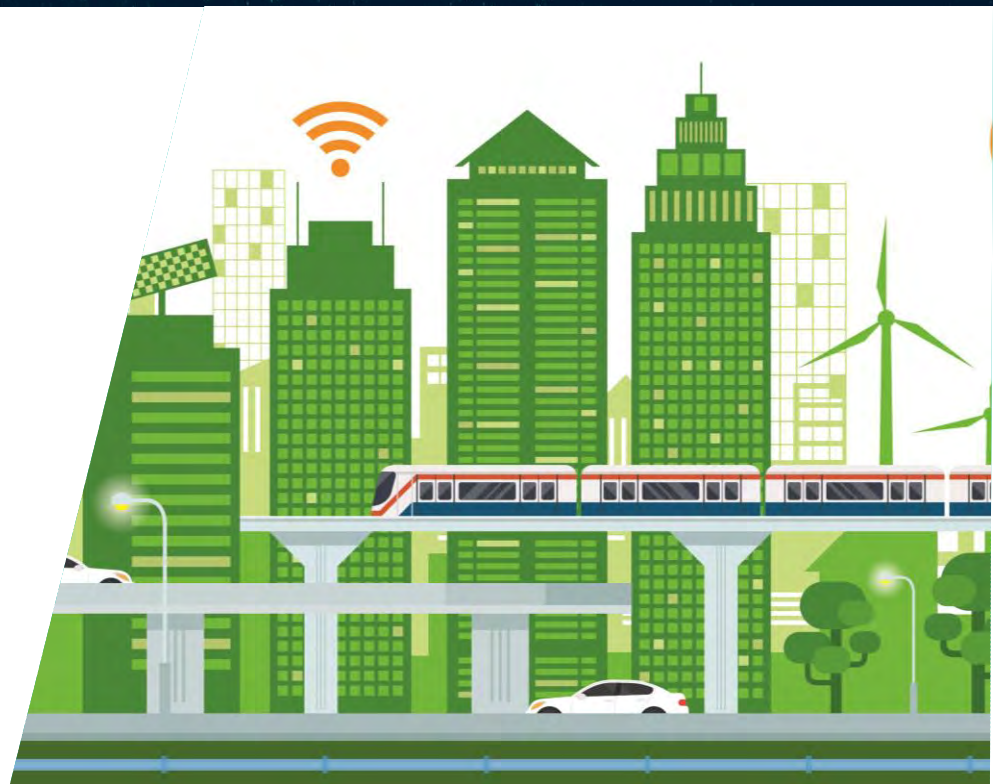
- Due to the number of attendees, please **keep your microphones muted** at all times and switch off the webcam function
- You can use the **conversation function** anytime to submit your questions. They will be addressed during the Q&A at the end of the webinar





AGENDA

- **ESA introduction**
- **“Space Applications to Advance Innovation on Circular Cities” Announcement of Opportunity**
 - Objectives
 - Areas of interest
 - Value of Space
- **Guest speaker**
 - Sergio Gambacorta - ENEL X
- **Open Questions & Answers session**





THE EUROPEAN SPACE AGENCY

Purpose of ESA

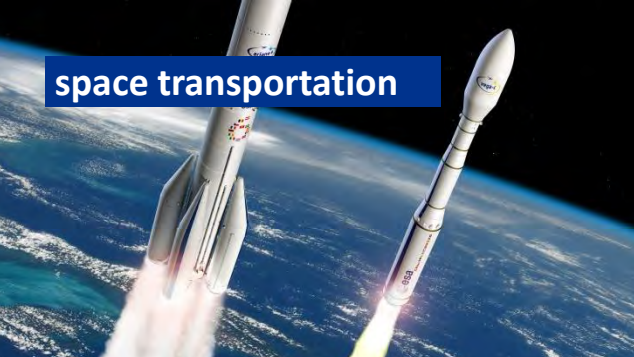
To provide for and promote, for exclusively peaceful purposes, cooperation among European states in space research and technology and their space applications.

Facts and figures

- Over 50 years of experience
- 22 Member States
- 8 sites across Europe and a spaceport in French Guiana
- Over 80 satellites designed, tested and operated in flight



space transportation



science



human spaceflight



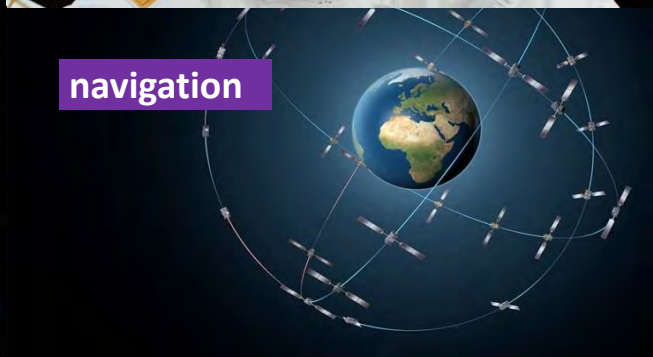
earth observation



telecommunications
and applications



navigation



exploration



operations



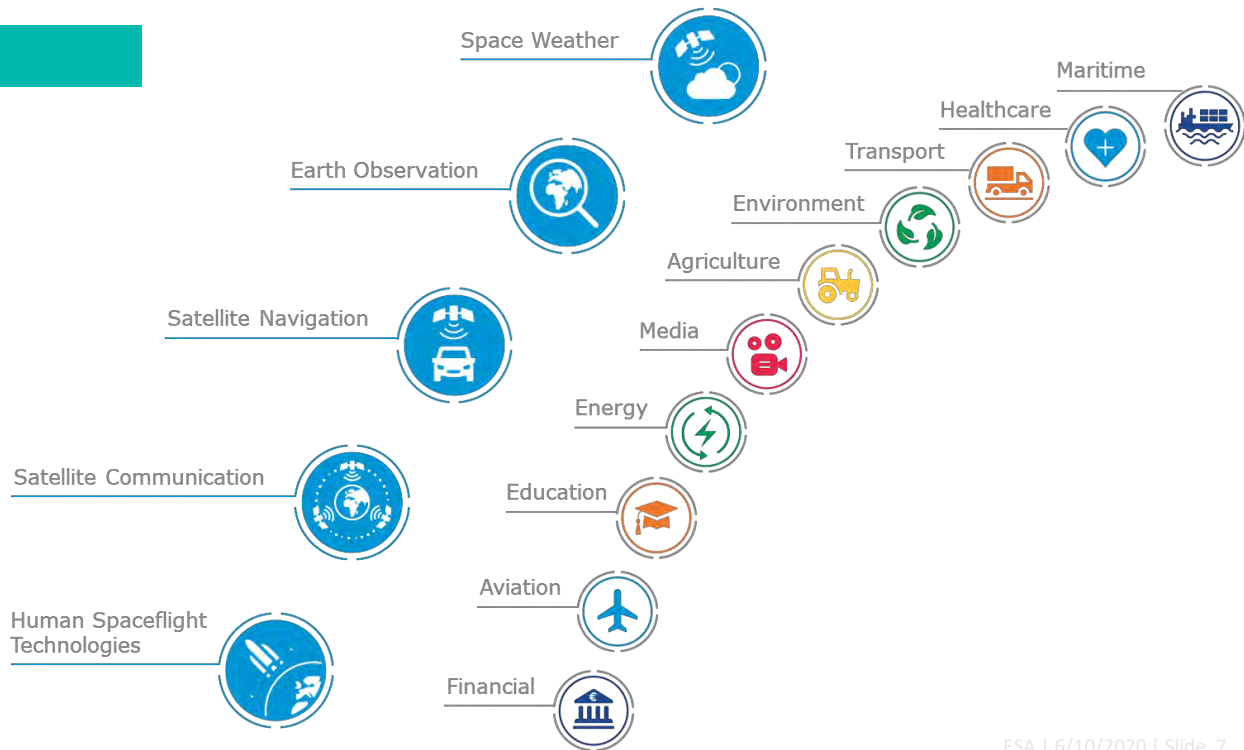
technology





ESA SPACE SOLUTIONS

Could you be leveraging Space technology and data for the benefit of life on Earth?





WHAT ESA OFFERS



Zero-Equity
Funding
(€60k-€3M+)



Tailored Project
Management
Support



Access to
Our Network
& Partners



Use of the
ESA Brand for
Credibility



ESA-ENEL PARTNERSHIP

16 December 2019

Enel and the European Space Agency together to foster space applications in energy



Rome, December 16th, 2019 – Enel and the European Space Agency (ESA) are cooperating to promote the development of space-applications in support of energy security as well as economic and environmental sustainability. Through this cooperation, in the first half of 2020, Enel and ESA will be launching a joint initiative related to circular economy and aimed at fostering the development of innovative services combining space data and other technology to monitor public lighting, building efficiency and traffic flows, seeking to improve mobility and environmental sustainability in cities.

The cooperation was announced during today's "Space for Innovation Impact" event, promoted by ESA, and held at the premises of ASI, the Italian Space Agency.



Giulia Manzetti



Space Applications to Advance Innovation on Circular Cities

Planned ESA's co-funded Announcement of Opportunity



Space Applications to Advance Innovation on Circular Cities

ESA Space Solutions is planning on issuing an Announcement of Opportunity for feasibility studies to investigate the technical feasibility and economic viability of space based applications to advance innovation on circular cities, and define a roadmap for services implementation and demonstration.

- Announcement of Opportunity planned to be issued in November 2020
- ESA will bear up to 50% (up to 80% for SMEs) of the acceptable cost of the activity, up to a max estimated cost of €120,000





ESA TENDERING PROCESS

The tendering process follows a two steps approach:

- The first step requires the submission of a (light) **Outline Proposal**
- The Tenderers whose Outline Proposal is positively evaluated, will be invited to prepare a **Full Proposal**





OBJECTIVES

- Demonstrate **technical feasibility** of the proposed services, and establish a **mock-up / prototype**
- Assess the **economic, societal and environmental benefits** of the proposed services
- Define **business plan and models** for service operations
- Define a **roadmap** for services **implementation and demonstration** (potentially through a follow-up ESA co-funded demonstration project)
- Secure support from **users** and potential **customers** for potential follow-on and commercial stage





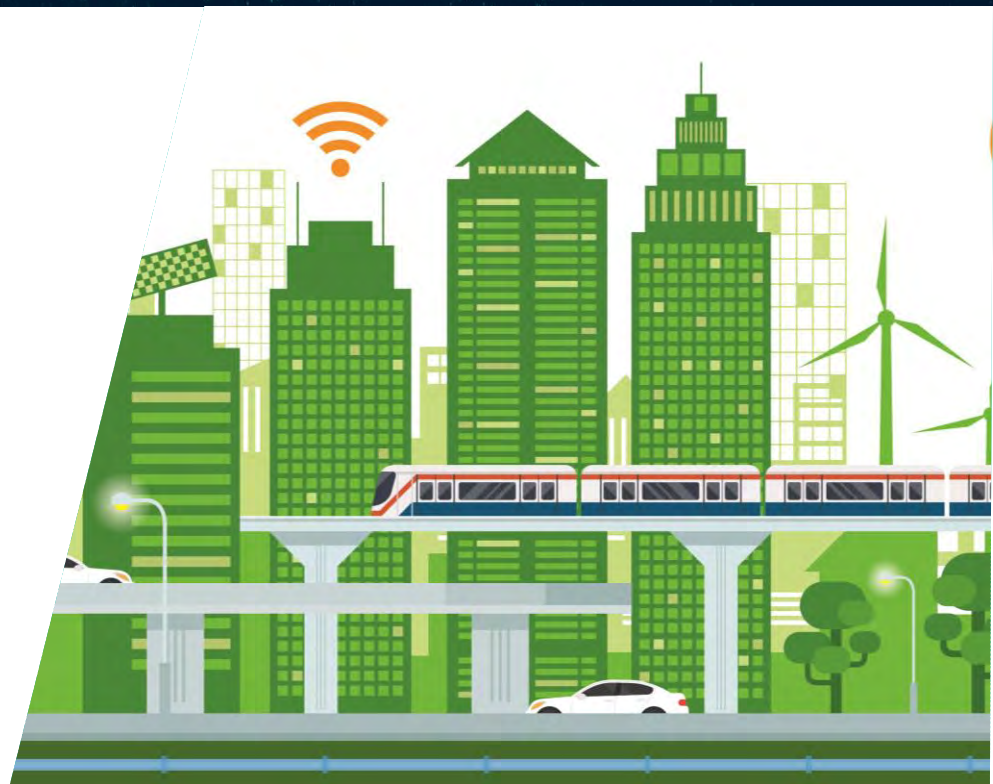
AREAS OF INTEREST



Public transport transition towards zero carbon emissions and service optimization



Dynamic mapping system of infrastructures



VALUE OF SPACE



Satellite Navigation

- Tracking and tracing vehicles;
- Tracking and tracing freights;
- Navigating autonomous vehicles and drones;
- Geo-referencing sensor data related e.g. to infrastructure condition.



Satellite Communications

- Enabling M2M communication e.g. for predictive maintenance of transport infrastructure and vehicles;
- Providing broadcast/multicast to distribute updated messages to all vehicles;
- Enabling emergency communications and alert services in areas not covered by the terrestrial communication infrastructure.



Earth Observation

- Providing imagery for the maps required by the traffic management;
- Providing infrastructures and ground condition information.



Sergio Gambacorta
Head of Smart City - Enel X

Building sustainable cities

A blurred city street scene at sunset. The sun is low on the horizon, creating a bright, golden flare that illuminates the street and buildings. Pedestrians and cars are visible, but they are out of focus, suggesting a sense of movement and activity. The overall atmosphere is warm and vibrant. The text 'Building sustainable cities' is overlaid on the left side of the image in a large, white, sans-serif font.

Decarbonisation



Renewables will account for 78% of new generating capacity by 2050

Electrification



Global electricity demand will increase by 60% by 2040

Digitalisation



Investment in digital technology will increase by 55% by 2025 (excluding fossil fuel)

New customer needs

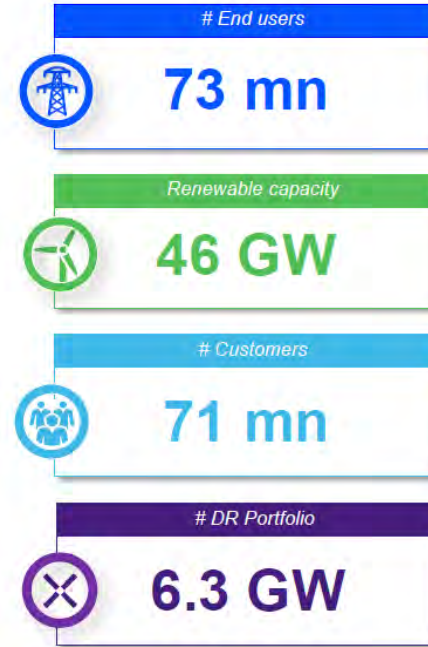
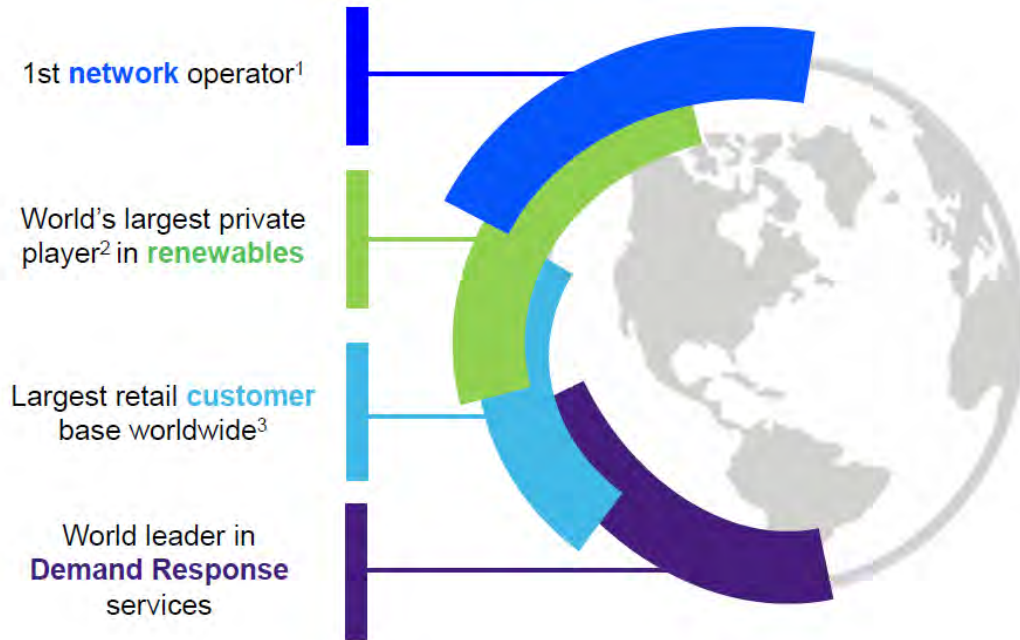


Customers require increasingly tailored services for a recurring engagement

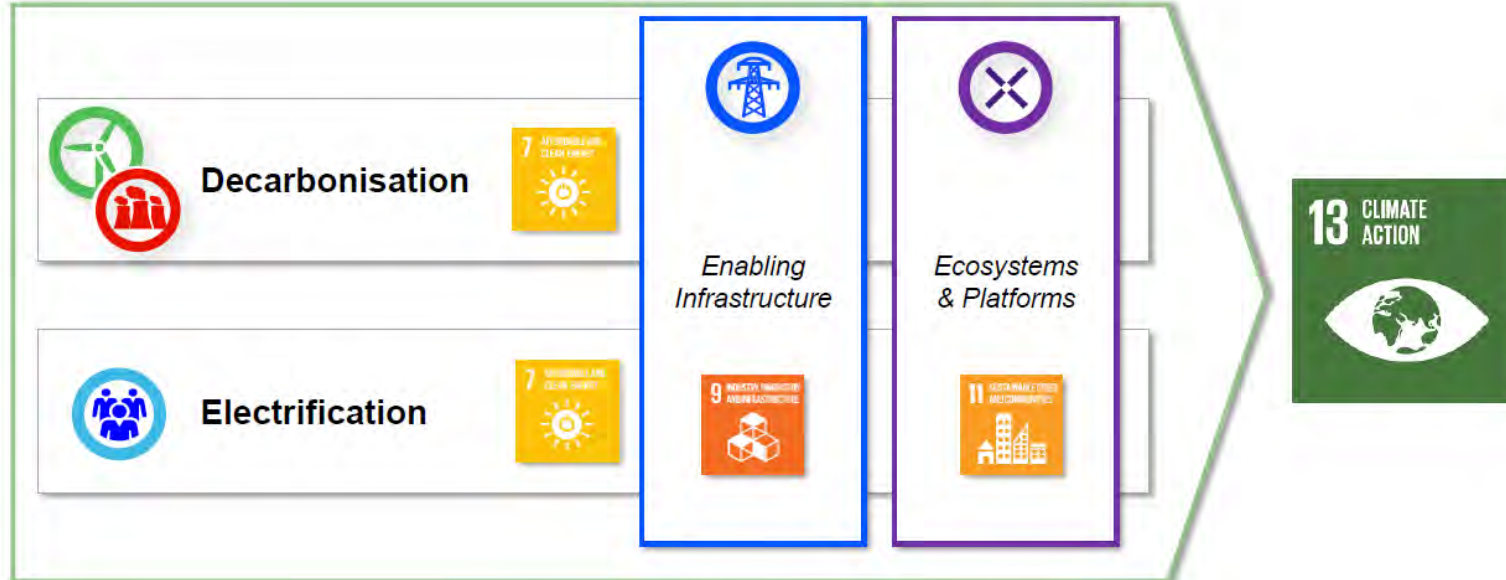
A deep transformation triggered by global trends and digital technology

Enel X

We are part of a worldwide leading energy company



1. By number of end users. Publicly owned operators not included
2. By installed capacity. It includes managed capacity for 3.4 GW
3. Including customers of free and regulated power and gas markets



Enel X

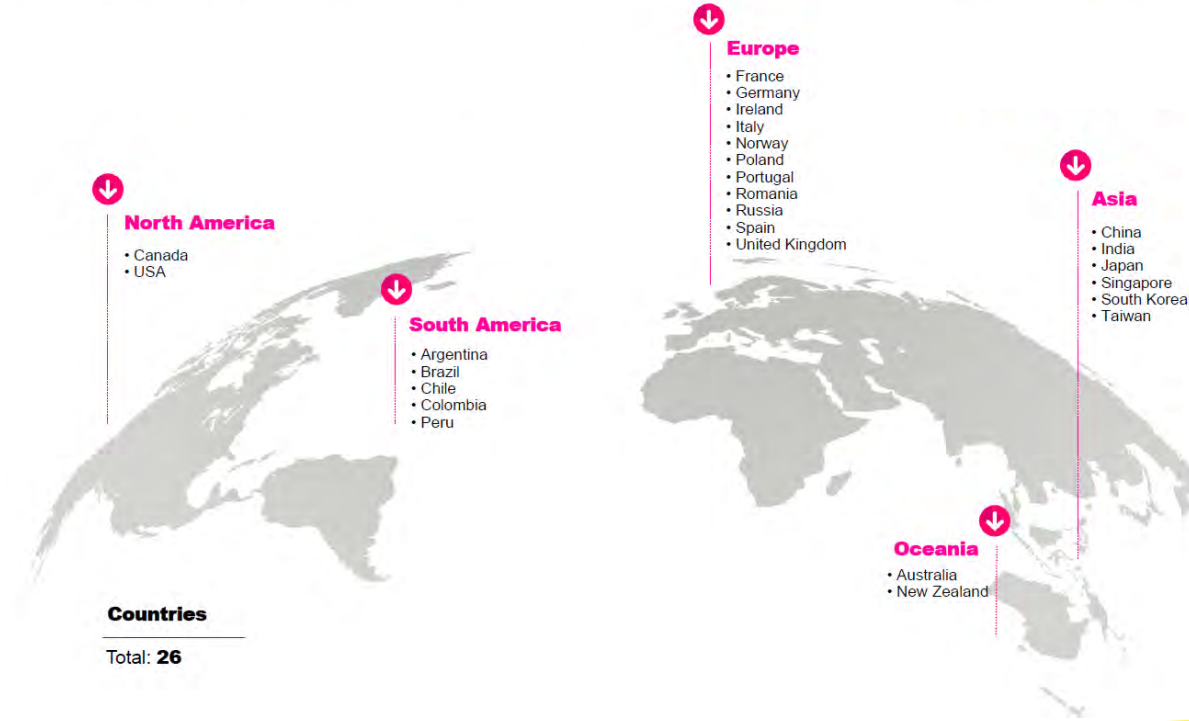
Strategic Objectives

- ✘ Support customers to **electrify their energy uses**
- ✘ Assist customers in **decarbonizing** and **use energy more efficiently**
- ✘ **Extract new value** from Enel's assets, through the offering of new products and services



Enel X Innovability Goal

“Activate and execute innovative and sustainable solutions to position Enel X at the forefront of business and technological frontiers, focusing on customer centricity.”





e-City

Smart lighting

E-Bus

Digital Platform



e-Industries

Demand Response

Battery Energy Storage

Distributed Energy

Customer Insights



e-Home

Onsite generation

Home Assistance

Smart devices



e-Mobility

Public charging operator

Intelligent Charging Solution

JuiceNet Suite



Financial services

Payments

PayTech Factory

Microloans



Ultra broadband

Fiber to the business

Fiber to the home

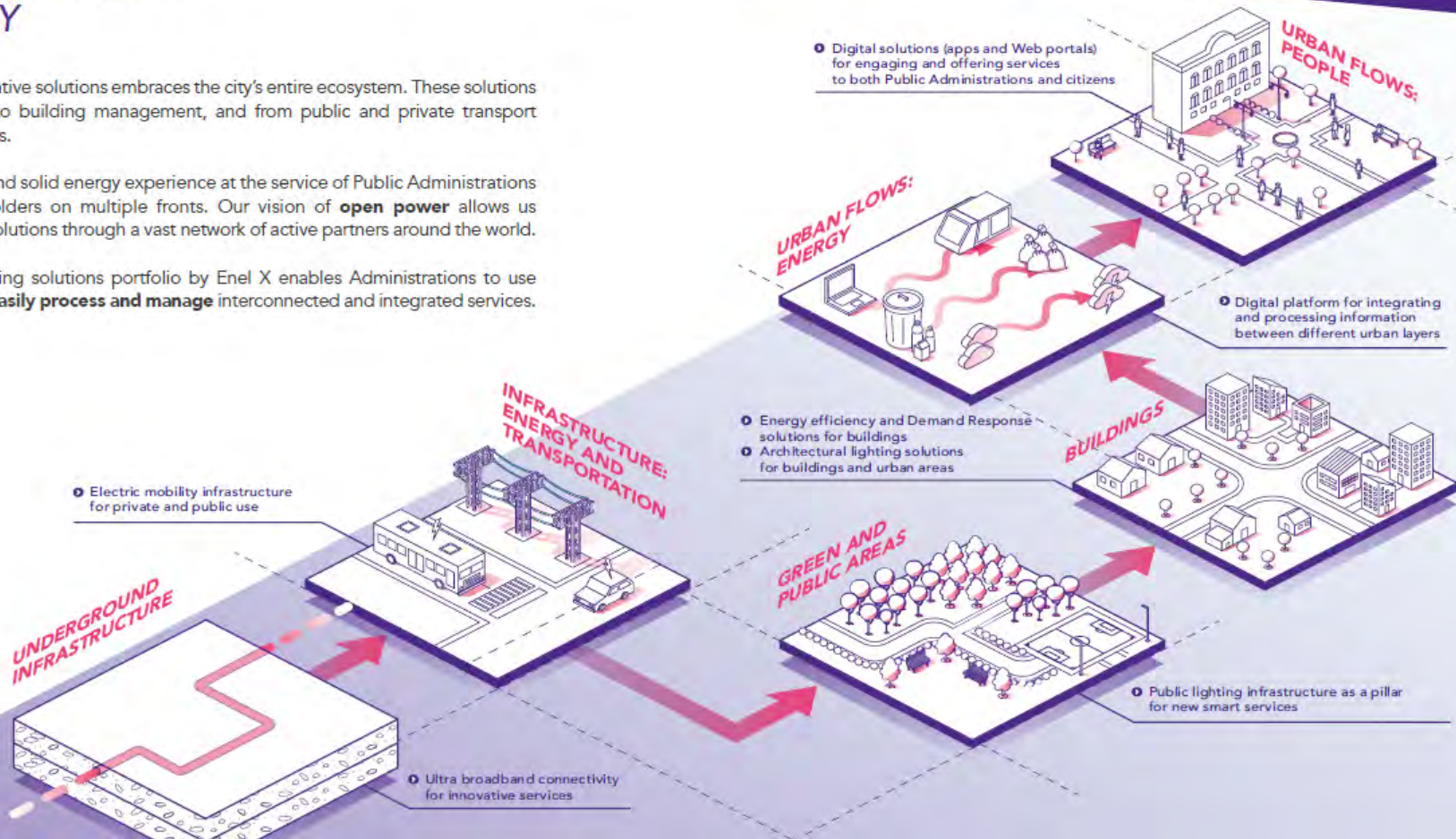
Fiber to the tower

THE ROLE OF ENEL X IN THE CITY

Enel X's range of innovative solutions embraces the city's entire ecosystem. These solutions extend from lighting to building management, and from public and private transport to mobility and logistics.

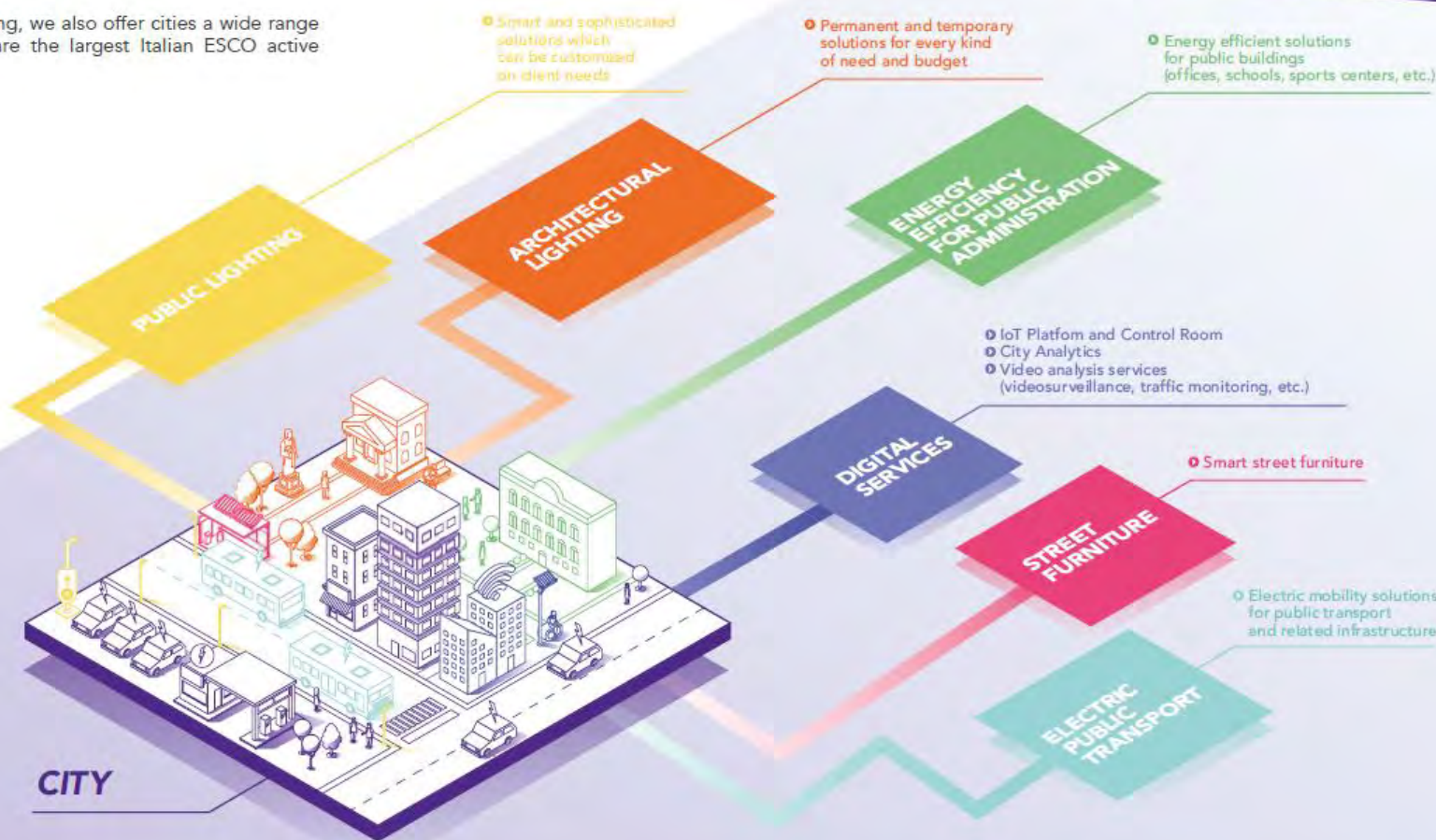
We place Enel's long and solid energy experience at the service of Public Administrations and all urban stakeholders on multiple fronts. Our vision of **open power** allows us to offer cutting-edge solutions through a vast network of active partners around the world.

Further, the wide-ranging solutions portfolio by Enel X enables Administrations to use a single interface and **easily process and manage** interconnected and integrated services.



THE ENEL X OFFER

Beyond efficient public lighting, we also offer cities a wide range of innovative services. We are the largest Italian ESCO active in over 3,000 municipalities.

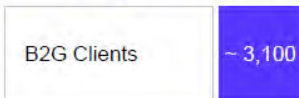




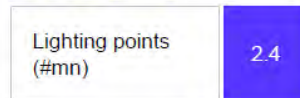
e-City offers to public administrations and municipalities integrated services and connectivity solutions, like the smart lighting services, public electric transportation and the wholesale offer of fiber optic services. Our aim is to become the key infrastructural city player, being the one-stop solution provider for multiple energy related and digital services across the different layers composing the urban context.

Key figures*

Total e-City



Public Lighting



e-Bus



* 2019 closing figures

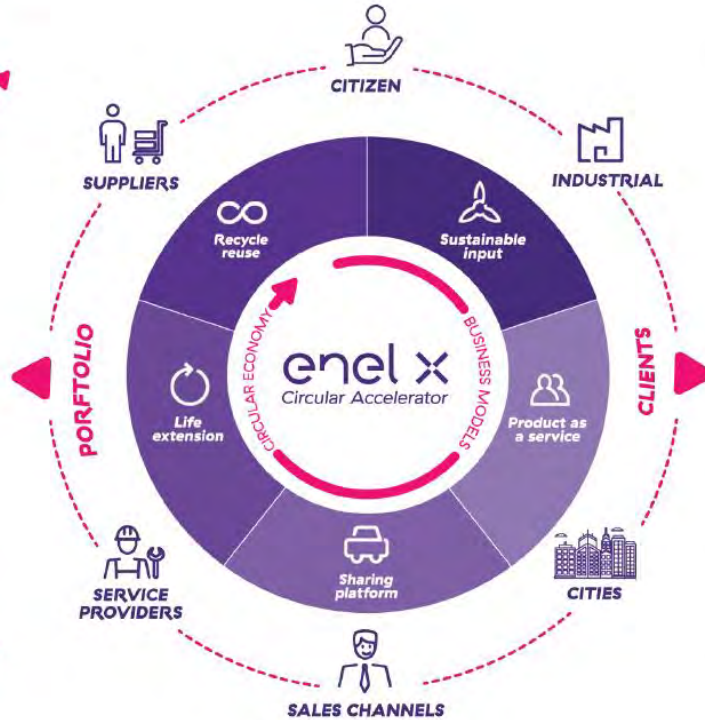


Enel X – ESA challenge

Space applications to advance innovation on circular cities



CIRCULAR ECONOMY SCORING



CIRCULAR ECONOMY REPORT

- 1 Energy Circularity Site Assessment**
Icons: bar chart, line graph, pie chart
- 2 Roadmap for improvements**
Icons: battery, solar panel, lightbulb, car, wrench
- 3 Energy Circularity Sensitivity and Monitoring**
Icons: pulse line, bar chart

Enel X

The challenge!

Scope

Promoting the development of **space-applications** in support of energy security as well as economic and environmental sustainability, launching a joint initiative related to circular economy and aimed at fostering the development of **innovative services combining space data and other technology** to monitor public lighting, building efficiency and traffic flows, seeking to **improve mobility and environmental sustainability in cities**.

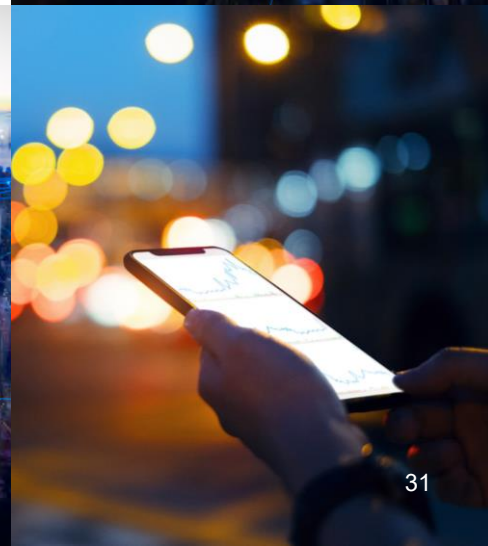
The **high-level objectives** are to assess the **technical and business feasibility of using space assets to advance business innovation in circular cities** addressing:

“**Domain 1:** Public transport transition towards zero carbon emissions & service optimization”

or

“**Domain 2:** Dynamic mapping system of infrastructures”,

and propose a roadmap for potential pilots that would start in 2021.



Domain 1: Public transport transition towards zero carbon emissions & service optimization

Example of Application areas:

- ✘ Decision support system, which by analysing the state of infrastructures, traffic / mobility flows and public transport KPIs, gives precise indications for optimizing the service in a logic of multimodality with an eye also to the topic of electrification of fleets (buses, municipal fleets, car sharing). In essence, a functional tool for the drafting of Urban Sustainable Mobility Plan of public transport companies.
- ✘ Public transport services enhancement leveraging on citizen participation and existing infrastructures upgrade through digitalization
- ✘ Mobility as a service (MaaS) and Mobility-on-demand solutions, Smart mobility services in freight and logistics – with particular focus on electrification
- ✘ Big and open data / Data governance to address effective policies



Domain 2: Dynamic mapping system of infrastructures

Example of Application areas:

- ✘ Punctual mapping system of infrastructures (light points, parking, PV, charging stations, building ...) with dynamic detection over a time horizon (i.e. 2 views daily) in order to possibly target not only mapping but also monitoring and predictive maintenance.
- ✘ Identification of the relevant KPIs for each infrastructure (i.e. Luminance conditions, LED vs SAP technology detection on light points).
- ✘ Simulation tools able to qualify through the remote sensing / data analysis relevant synergies in public services and infrastructures planning and maintenance with main goal to increase services effectiveness and improve citizen quality of life.
- ✘ Solution able to leverage on advanced technologies, such as new sensing and communication technologies, open data, Internet of Things and Artificial Intelligence to offer new and exciting opportunities to cities to put in place modern city ecosystems that care for the citizens, the economy and the environment.

DELIVERABLES

The applications and/or services covered by the feasibility study shall:

- ✘ Deliver measurable socio/environment/economic impact
- ✘ Be scalable from cities to regional geographies while limiting and ideally not requiring the installation of ad hoc hardware components / sensors;
- ✘ Bring technical and business innovation;
- ✘ Operational benefits to users and potential customers (reduction of intervention time, etc.) proving economic viability
- ✘ Have a technology readiness level so that they can operationalized in 6- 12 months
- ✘ Compliant with relevant regulations and respect privacy of individuals



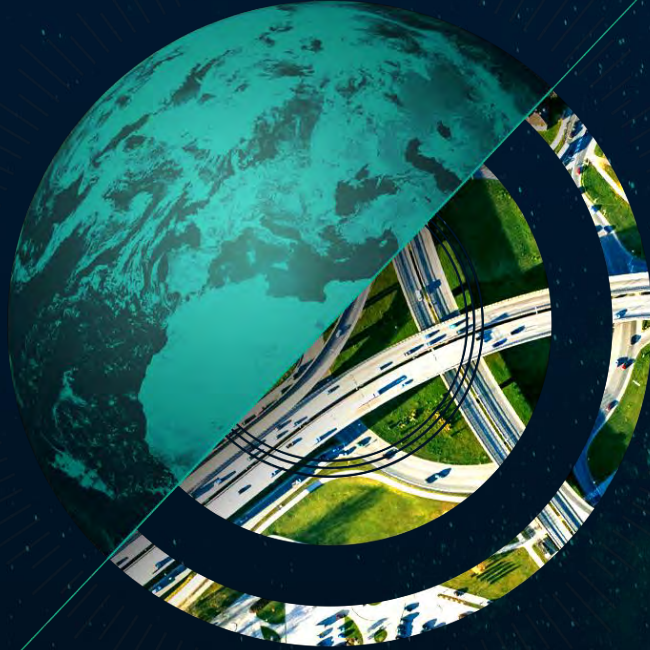
enel x

Thank you!



OPEN QUESTIONS & ANSWERS SESSION





→ THANK YOU!

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