→ FUNDING & SUPPORT FOR

KICK-START

ARTIFICIAL INTELLIGENCE FOR INFRASTRUCTURE

Opportunity opens:
September 2nd 2019

Opportunity closes:
October 11th 2019

JOIN OUR WEBINARS

ARTIFICIAL INTELLIGENCE

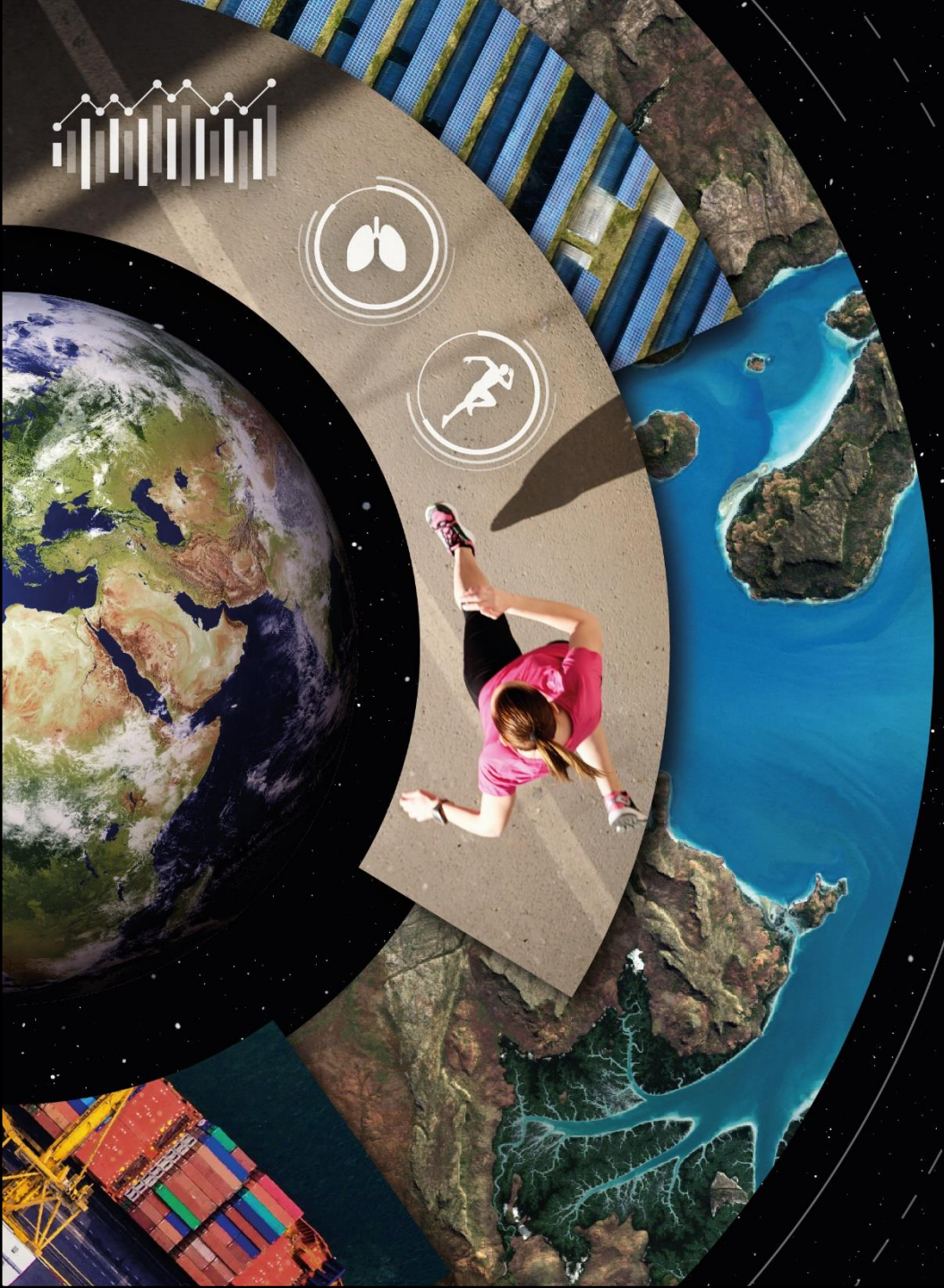
AUGUST 28TH 2019 11:00 (CEST)

esa

→ ARTIFICIAL INTELLIGENCE

FUNDING UP TO €60K PER ACTIVITY

esa space solutions | business applications



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European Space Agency

→ 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

→ WELCOME TO THE WEBINAR! BEFORE WE START . . .

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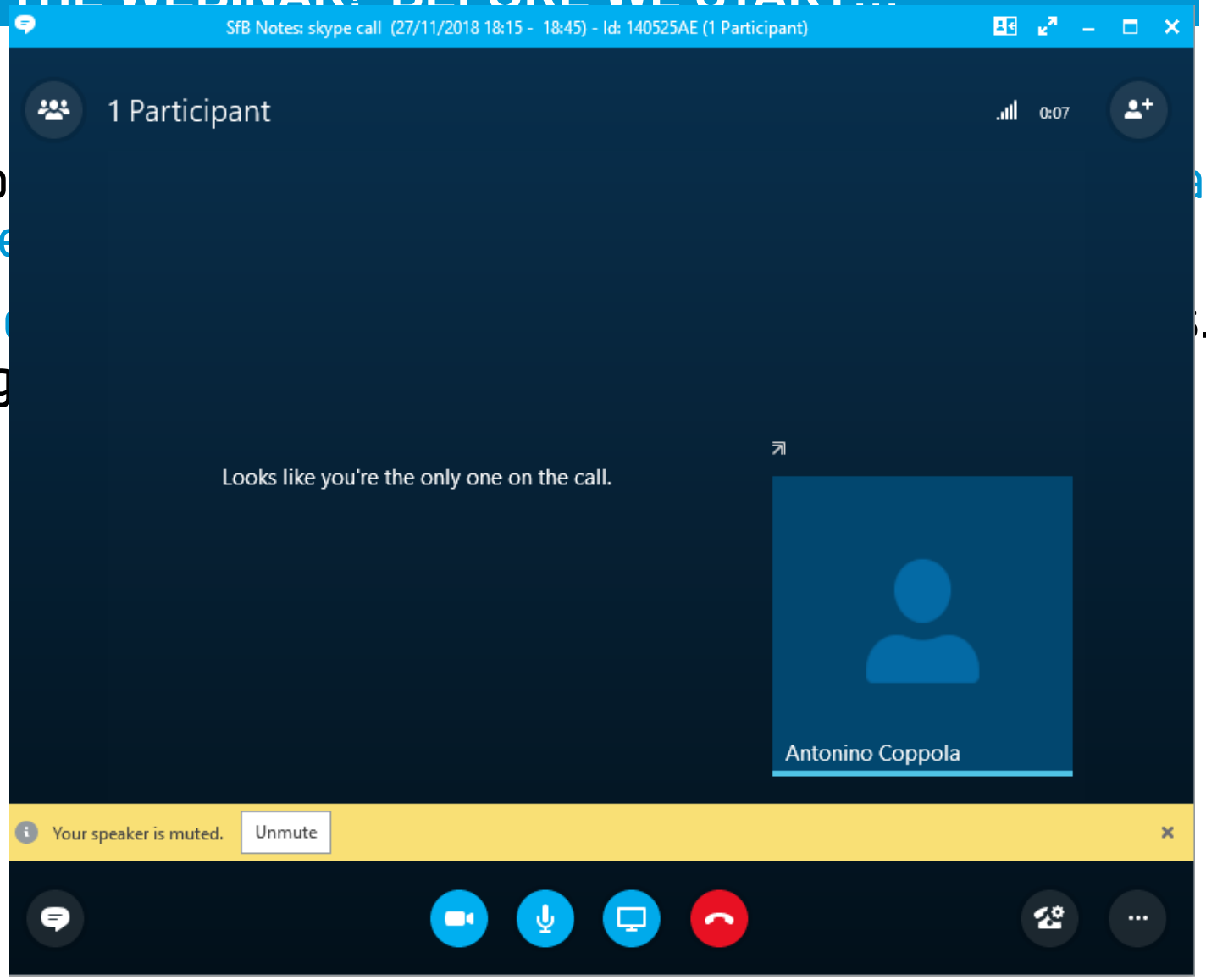
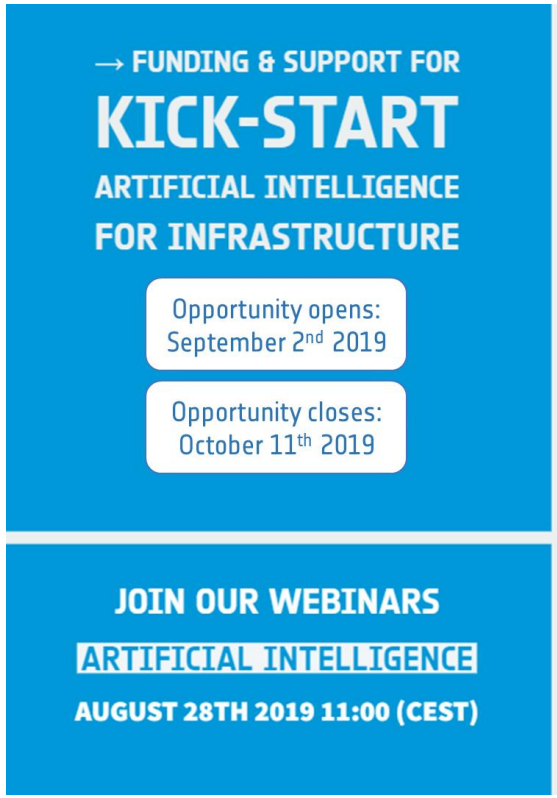
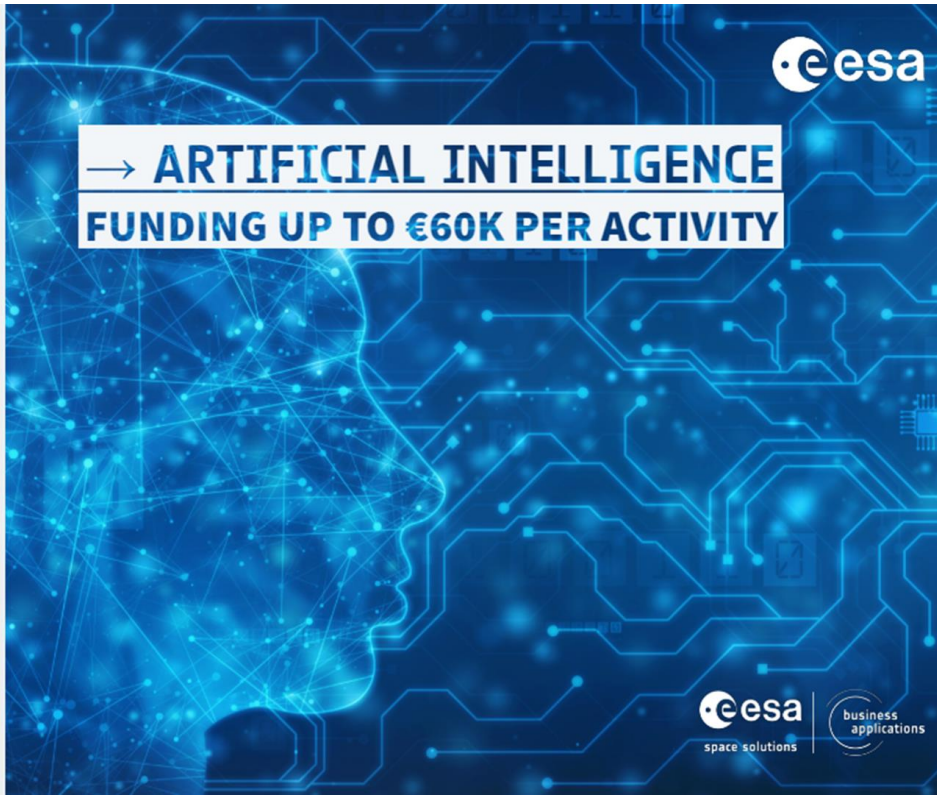


→ AGENDA

- Introduction
  - What ESA offers
- Space and AI for Infrastructure
- AI for Utilities: ENEL Experience
- Kick-start Activity essentials
  - Introduction to a Kick-start Activity
  - How to Apply
- Q&A





FUEL FOR YOUR BUSINESS

Can you leverage Space technology and data for the benefit of life on Earth?

→ OUR OFFER

We'll work together to make your idea commercially viable, with:

Zero-Equity Funding (€60k-€3M+)

Tailored Project Management Support

Access to Our Network & Partners

Use of the ESA Brand for Credibility

→ AI ESA KICK START CALL

- The European Space Agency is offering **technical support** and **funding** to companies developing innovative and **commercial products** and services combining **Artificial Intelligence with space technology**.

- To find out more: https://business.esa.int/funding/invitation-to-tender/artificial-intelligence-kick-start

→ AI KICK START: EXAMPLES OF AREAS OF INTEREST

Retail : customer behaviour, customer journeys and shopping experiences, etc.

Electric Utility: match energy supply to energy demand, energy renewable prediction, understand energy thefts, etc.

Social good: AI to make an impact on issues faced by societies.

Healthcare : Leveraging aggregated medical and social data to better manage costs, forecasting, etc.

Manufacturing, Transport and Logistics: supply and demand planning, sales lead identification and price optimization, etc.

→ THE POWER OF SPACE AND AI

Satellite Navigation

- Positioning and guidance
- Goods tracing and tracking
- geo-localisation for social media and internet data

Earth Observation

- To monitor urban areas to detect traffic for improved urban planning and routing.
- To map terrain features near power towers.
- Specialised meteorological data obtained from EO satellites can help in renewable energy prediction
- To establish weather patterns to optimise fuel consumption on planes and in the automated docking of ships.

Satellite Communication

- To transfer data to and from remote locations where there is no terrestrial network, or where terrestrial networks are not yet operative.
- Reliable communication infrastructure for different data speed, latency, and traffic needs. Satcom-supported Virtual Reality (VR) or Augmented Reality (AR) technologies .

Additional technology: UAVs can be used as a complementary solution for monitoring purposes complementing EO images and in-situ sensors.

AI FOR UTILITIES: THE ENEL EXPERIENCE

Guest Speakers: Giampiero Montagna and Lourdes Garcia

European Space Agency

ESA-ENEL Webinar

28-08-2019

We are a leader in the new energy world

1st **network** operator[1]

World's largest private player[2] in **renewables**

Largest retail **customer** base worldwide[1]

73 mn end users

43 GW capacity[2]

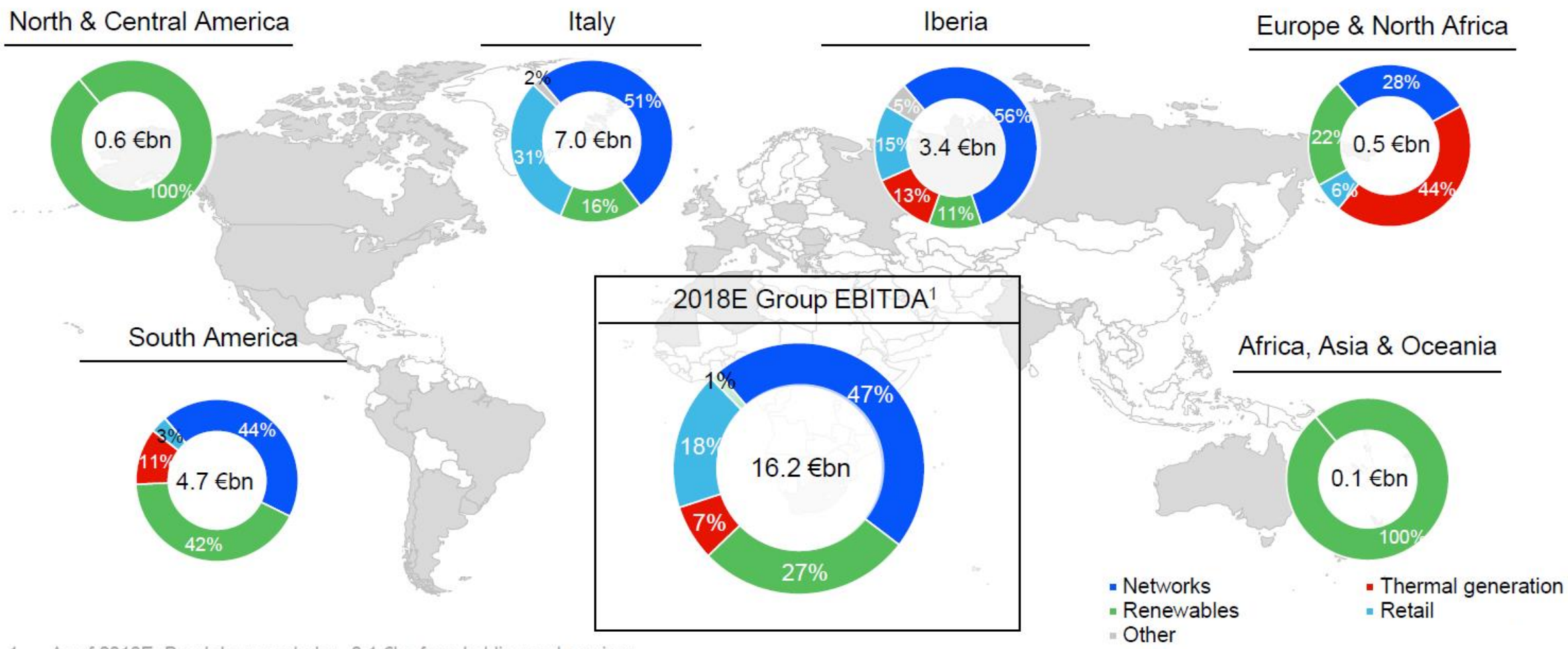
46.5 GW capacity[3]

5.7 GW demand response

~ 64 mn customers[4]

1. By number of customers. Publicly owned operators not included
2. By installed capacity. Includes managed capacity for 4.2 GW
3. It includes nuclear
4. Includes customers of free and regulated power and gas markets

Our business model is well diversified and provides long term visibility



1. As of 2018E. Breakdown excludes -0.1 €bn from holding and services
Presence with operating assets or through Enel X

AI Infrastructure: Enel experience

Deep learning and artificial intelligence techniques allows to turn satellite imagery into value-added business outcomes to support industrial companies in their manage and decision making processes

Enel is already using Space technology and AI to develop new services, addressing:

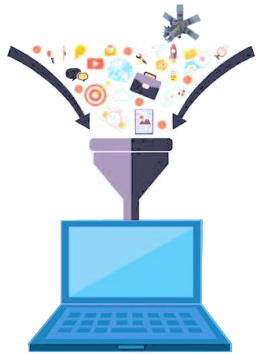
- Non Technical Losses analysis
- Impact of the network outages based on meteorological forecasts
- Recognition of all network components
- Partial discharges identification

Non Technical Losses analysis

In the field of electricity distribution, commercial losses, including those caused by fraud, cause the distribution companies losses for several million euros and Enel already uses sophisticated techniques and systems to identify such situations

The approach is to combine:

- satellite image of an area with high resolution using deep learning and artificial intelligence
- find correlations between Non Technical Losses and heterogeneous data to be applied on a real world digital model built upon data sources

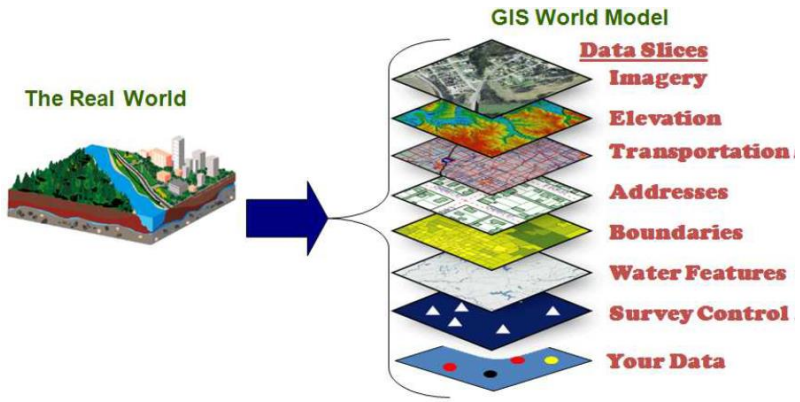


Geospatial Non Technical Losses Finder

Geo localization of NTL by means of geospatial information mash-up, satellite imaging and machine learning

Accurate localization at level of building of non technical losses:

- Better and earlier NTL issues detection including direct connections
- Explore an innovative approach to NTL detection
- Improve energy recovery effectiveness

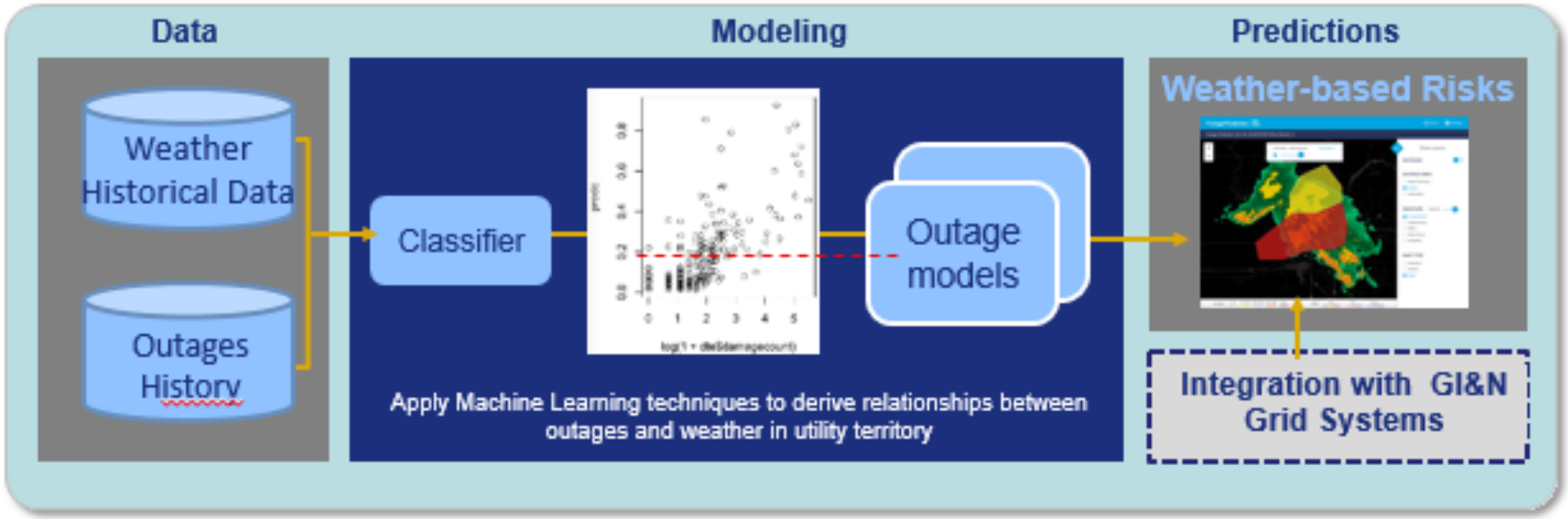


Outage Response Assistant

Weather causes ~60% of all power outages and 87% of major outages.

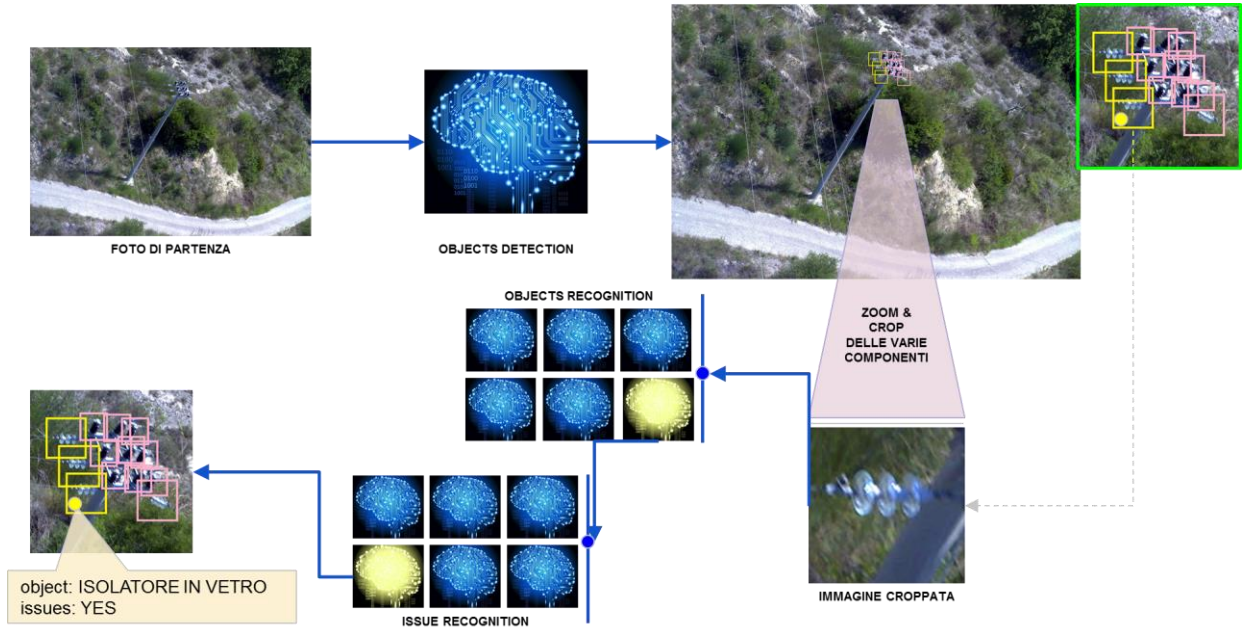
Outage Response Assistance is an initiative with the aim to predict the impact of the network/on the power distribution service of the outages based meteorological forecasts.

The Solution must allow to foresee and plan the activities in order to improve emergency crew mobilization, power reserve sizing and automation system efficiency.



Smart maintenance through images recognition

Digital Asset Capturing is an initiative with the aim to replace human analyses in the recognition of all network components (including geolocation) from photos of helicopter inspections. The main application is in on-site maintenance by automatic detection of critical issues on the network (smart maintenance).



Reduce OPEX to replace human analyses in the recognition of all network components (including geolocation) from photos of helicopter inspections

Partial discharges identification on lines and substations

Occurrence of “Partial discharges”, a localized dielectric breakdown under high voltage stress, is one of the main causes of device deterioration. Partial discharges within solid insulation are often not visible.

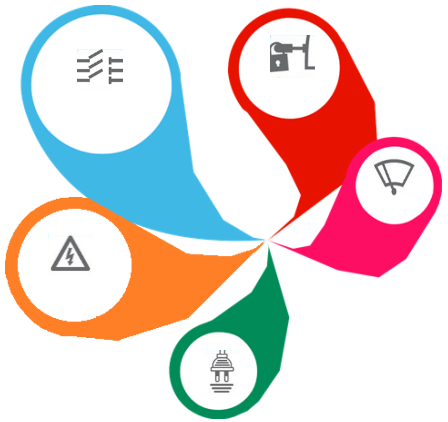
It is needed an algorithm capable of using the information coming from the specific sensors to evaluate the remaining useful lifetime of network components in order to efficiently plan their maintenance:

- algorithm capable of correlating the partial discharge data (i.e. frequency, intensity, in relationship with the type of monitored network device and historical data), collected by the chosen sensor system, to failure probability and estimated lifetime

AI Infrastructure: enabling new frontiers

- **Enabling Predictive maintenance**: feed AI to optimize maintenance
  - cost saving
  - prevent unexpected failures

- **Safety First**: machine vision and deep learning for preventing safety
  - Artificial Intelligence can help to prevent risks
  - zero accident target



AI AND SPACE FOR INFRASTRUCTURE: HOW TO APPLY

European Space Agency

AI kick start

6 months duration

up to **€60K ESA funding** (75% ESA co-funding)

Develop business case for commercially viable services

- **Customer Engagement**
- **Technical Feasibility Assessment**
- **Commercial Viability Assessment**

→ AI KICKSTART TIMING

There are 4 AI Themes. Each theme has a different proposal submission deadline.

1. ~~AI for consumer goods , business and industrial services~~

2. ~~AI for Social Impact~~

3. **AI for Infrastructure**

   Submit proposals between *2nd September and 11th October 2019*

4. **AI for Environment and natural resources**

   Submit proposals between 14th October and 29th November 2019

AI Kick Start

AI for Infrastructure

Your idea must use **space technology and AI** to develop new services for ‘infrastructure’, addressing:

- Electric utilities
- Manufacturing, transport and logistics
- Automotive
- Aviation
- Security and Surveillance
- Others related to infrastructure industry

AI Kick Start

Interested in applying?

Submit a proposal explaining your idea between

2nd September and 11th October 2019

AI Kick Start

How to Apply

Visit https://business.esa.int/funding/invitation-to-tender/artificial-intelligence-kick-start for full details.

1. **Register** online via https://esastar-emr.sso.esa.int
2. **Download** the official **documentation** on EMITS AO9889
3. **Create** 'Bidder Restricted Area' in ESA-STAR
4. **Write your proposal**
5. Request a **Letter of Authorization** from your National Delegation. Contact details here: https://business.esa.int/national-delegations
6. **Submit** your proposal by 11th October 2019

Any issues with ESA STAR contact esait.service.desk@esa.int.

→ HOW TO APPLY 2/2

The Letter of Invitation to Call for Proposals is issued on EMITS (http://emits.sso.esa.int/emits/owa/emits.main) and includes :

- **Cover letter**
- **Appendix 1:**
  Activity Description
- **Appendix 2:**
  Draft Contract
- **Appendix 3:**
  Tendering Conditions for Express Procurement Procedure - EXPRO/TC
- **Appendix 4:**
  Proposal Template

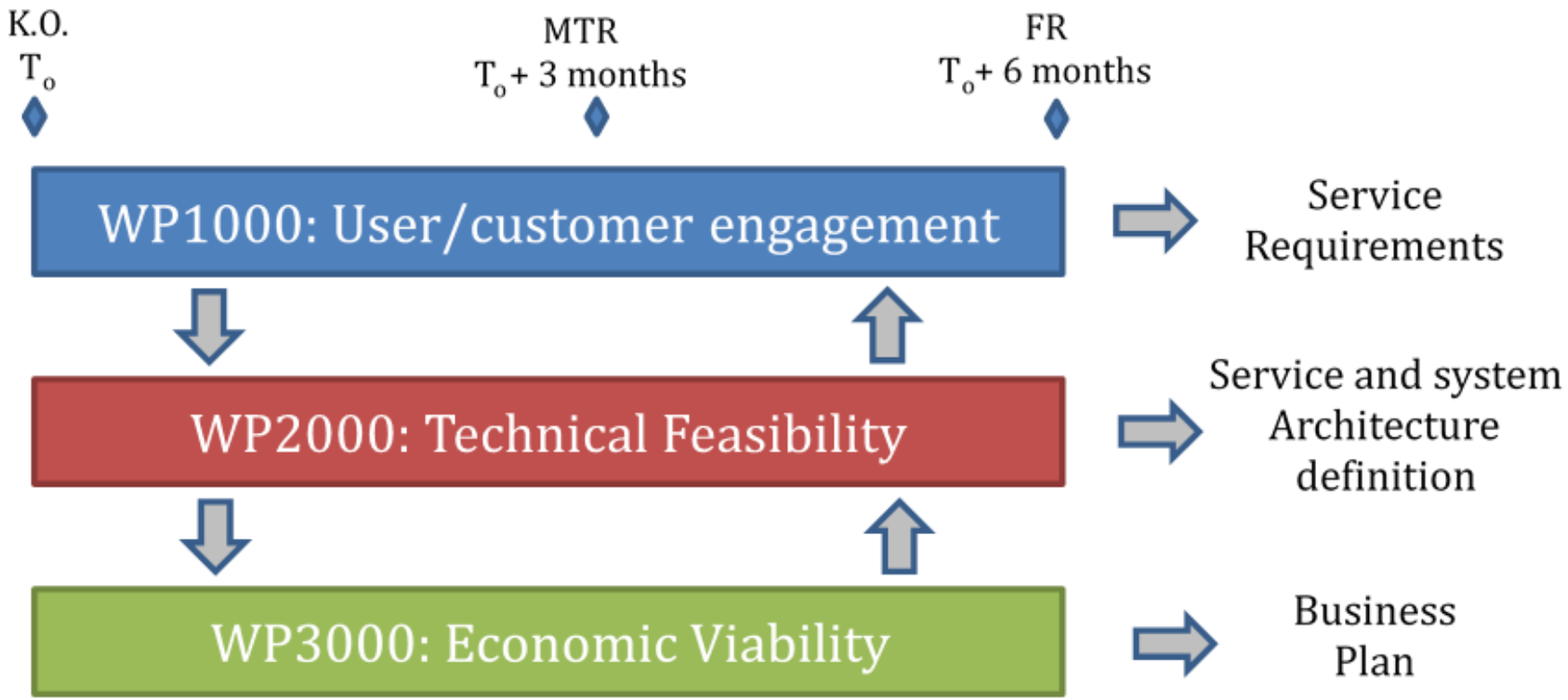
→ THE PROPOSAL TEMPLATE

Your Proposal shall include the following information:

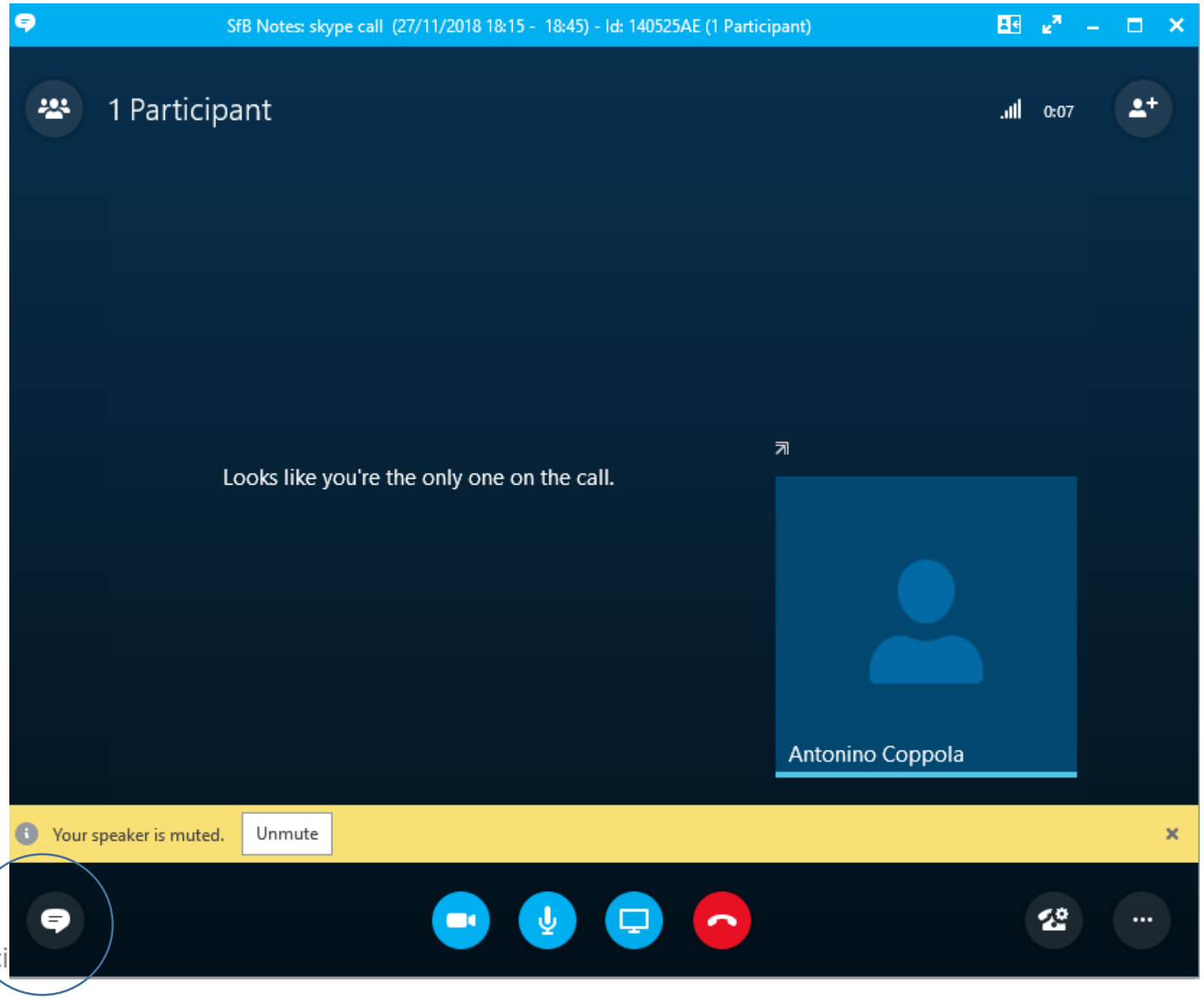
1) Executive Summary (max 1 page)
2) Business Potential (max 5 pages)
3) Technical Concept (max 5 pages)
4) Team and Resources (max 3 pages)
5) Management (max 4 pages)
6) Financials (max 2 pages)

Kick-Start Activity

→ Study Tasks



OPEN QUESTIONS & ANSWERS SESSION



→ THANK YOU FOR PARTICIPATING

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