

# Webinar: Integrated Digital Solutions for the Energy Sector



Asimina Syriou  
Energy Lead  
Business Applications - Space Solutions  
Directorate of Commercialisation, Industry and Competitiveness

In collaboration with:  
ESA 5G/6G (NTN) Programme Office  
Directorate of Connectivity and Secure Communications

## EUROPE'S GATEWAY TO SPACE

### WHAT

23 Member States, 5000 employees

### WHY

Exploration and use of space for exclusively peaceful purposes

### WHERE

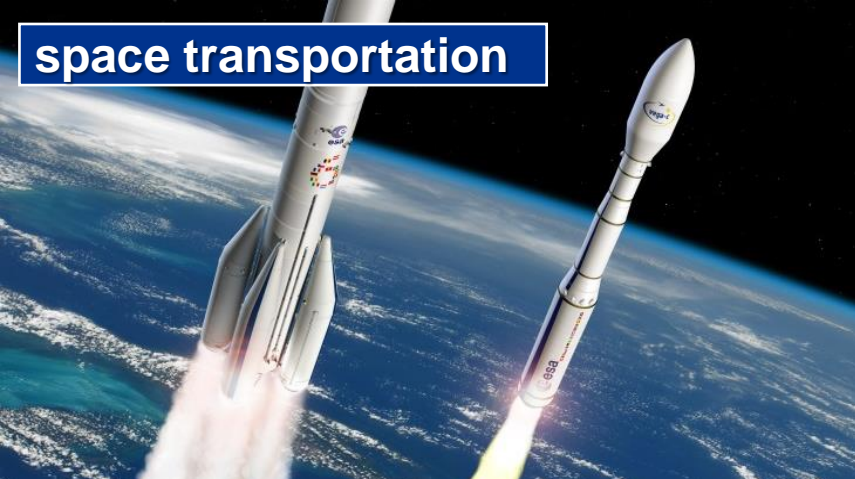
HQ in Paris, 7 sites across Europe and a spaceport in French Guiana

### HOW MUCH

€6.49 billion = €12 per European per year



space transportation



science



human spaceflight



earth observation



telecommunications  
and applications



navigation



exploration



operations



technology



# What is ESA Space Solutions?

Directorate of Commercialisation, Industry and Competitiveness

<https://business.esa.int/>

Our aim is to work together to make your idea commercially viable, with:



Zero-Equity  
Funding  
(€50K-€2M+)



Tailored Project  
Management  
Support



Access to our  
Network and  
Partners



Use of ESA  
Brand for  
Credibility



# A variety of markets and space technology

ESA Business Applications and Space Solutions, work across various markets/verticals.

We advocate for space technology (SatCom, SatEO, SatNav, etc.) and complementary tech (IoT, AI/ML, Robotics, blockchain, etc.).



# What is ESA 5G/6G (NTN) Programme Office?

Directorate of Connectivity and Secure Communications

<https://connectivity.esa.int/esa-5g6g-hub>



An overview by **Fabrizio De Paolis** - 5G/6G Implementation Manager

# ESA's 5G/6G NTN Office – Impact on the Energy Sector



Integrated Digital Solution for the Energy Sector  
12<sup>th</sup> February 2025

Fabrizio De Paolis  
5G/6G Implementation Manager





# On the way to 6G



6G IOL

Spectrum

Orchestration

3D Networks

Automotive

Next Generation Mobility

Standardization

5G Future Releases

Energy

Joint Communication & Sensing (JCAS)

Sustainability

XR & Industrial Metaverse

# 6G and Space – Impact on the Energy Sector



Seamless Connectivity for Renewable Energy through ground and space



Comm-Aware Data Models



Cell Load Balancing



Security & Trust Models



Edge Compute Smart Grids



Powerline Comms & Monitoring



AI-Based Solutions (pricing, scheduling, optimization)



6G Communication Protocols & Standards

# ECSAT 5G/6G Hub – overview

5G Engineering Lab

5G Demonstrations & Applications

Collaborative place

Events & Showcases



700+ visitors

# ECSAT 5G/6G Hub: Lab environment

## 5G Vodafone MPN terrestrial network

- Carrier grade
- 300 Mbps indoor / outdoor

## GEO and LEO satellite links Satellite connectivity simulator

## Automated configuration switching

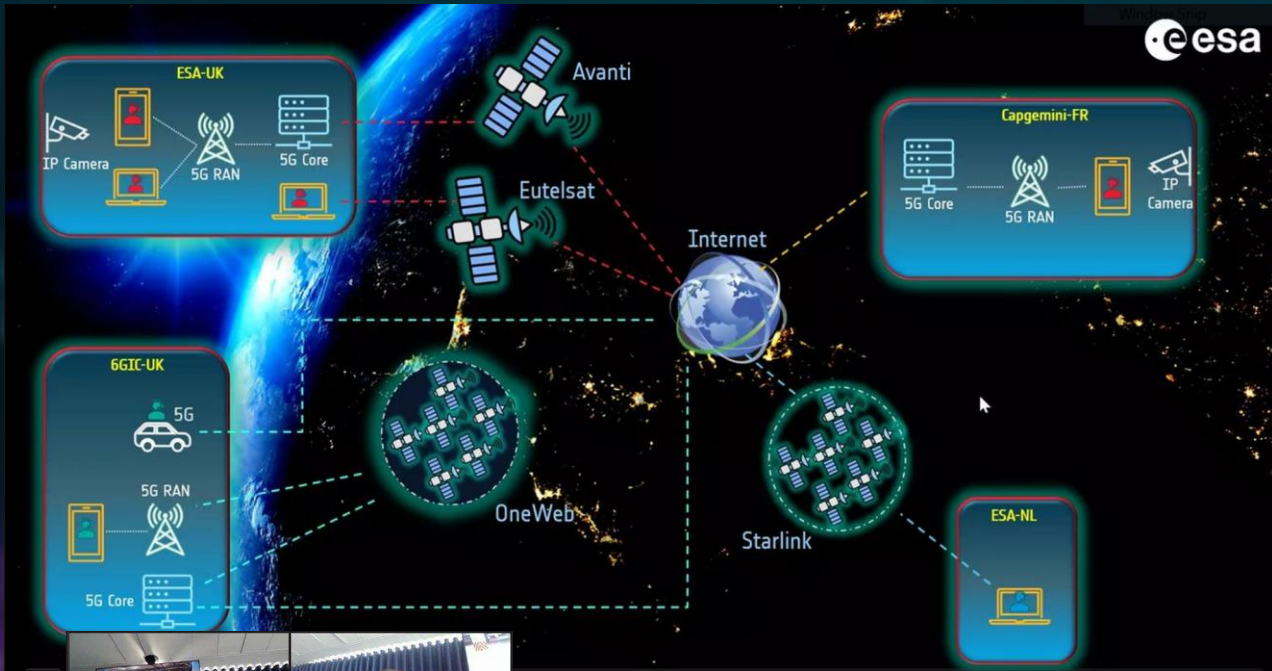
## MEC and Edge compute functionality

## Spatial computing

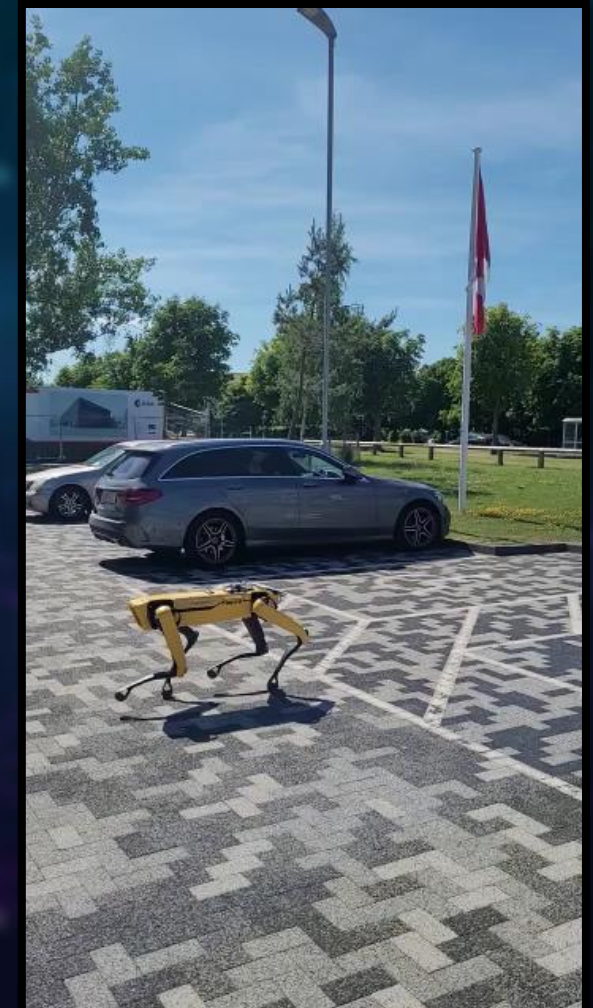
- XR (MR/AR/VR)



# ECSAT 5G/6G Hub: examples of collaborative activities



**Multi-orbit link  
(LEO / GEO /  
Terrestrial 5G)  
between ESTEC –  
ECSAT - Univ  
Surrey - Capgemini**



**Robodog controlled via GEO at ECSAT  
with UK Atomic Energy Authority**

Thank you



Fabrizio De Paolis  
5G/6G Implementation Manager

Fabrizio.De.Paolis@esa.int



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→ THE EUROPEAN SPACE AGENCY

# ESA Thematic Call

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<https://business.esa.int/funding/call-for-proposals-non-competitive/integrated-digital-solutions-for-energy-sector>

# Integrated Digital Solutions for the Energy Sector



## Fixed Call for Proposals (CfP):

The call aims to support the development of sustainable space-based services to advance resilience and sustainability in the energy sector.

**With a focus on** digital transformation, the call encourages innovative solutions that integrate digital tools such as IoT, AI, blockchain, AR/VR, and digital twins.

These solutions aim to optimise electricity grid management, enable predictive maintenance, support energy storage, improve construction logistics, and streamline renewable energy management.



## With support from: DENA, E.DSO, Enel Group, EPRI, EirGrid

<https://business.esa.int/energy-task-force>



## Important info:

- Funding: up to 50% (80% for SMEs) of development costs
- No IP or equity retention
- Open to Feasibility Studies and Demonstration Projects
- Opening date: **13 February 2025**
- Closing date: **02 May 2025**



<https://business.esa.int/funding/call-for-proposals-non-competitive/integrated-digital-solutions-for-energy-sector>



# Guest Speaker Anika Lange



Expert, Digital Technologies,  
German Energy Agency – Deutsche Energie-Agentur GmbH (DENA)

The background features a vibrant, abstract design with swirling light trails in shades of pink, orange, yellow, and green. A silhouette of a person in a suit is visible in the center, standing amidst the light trails. The overall aesthetic is modern and digital.

dena

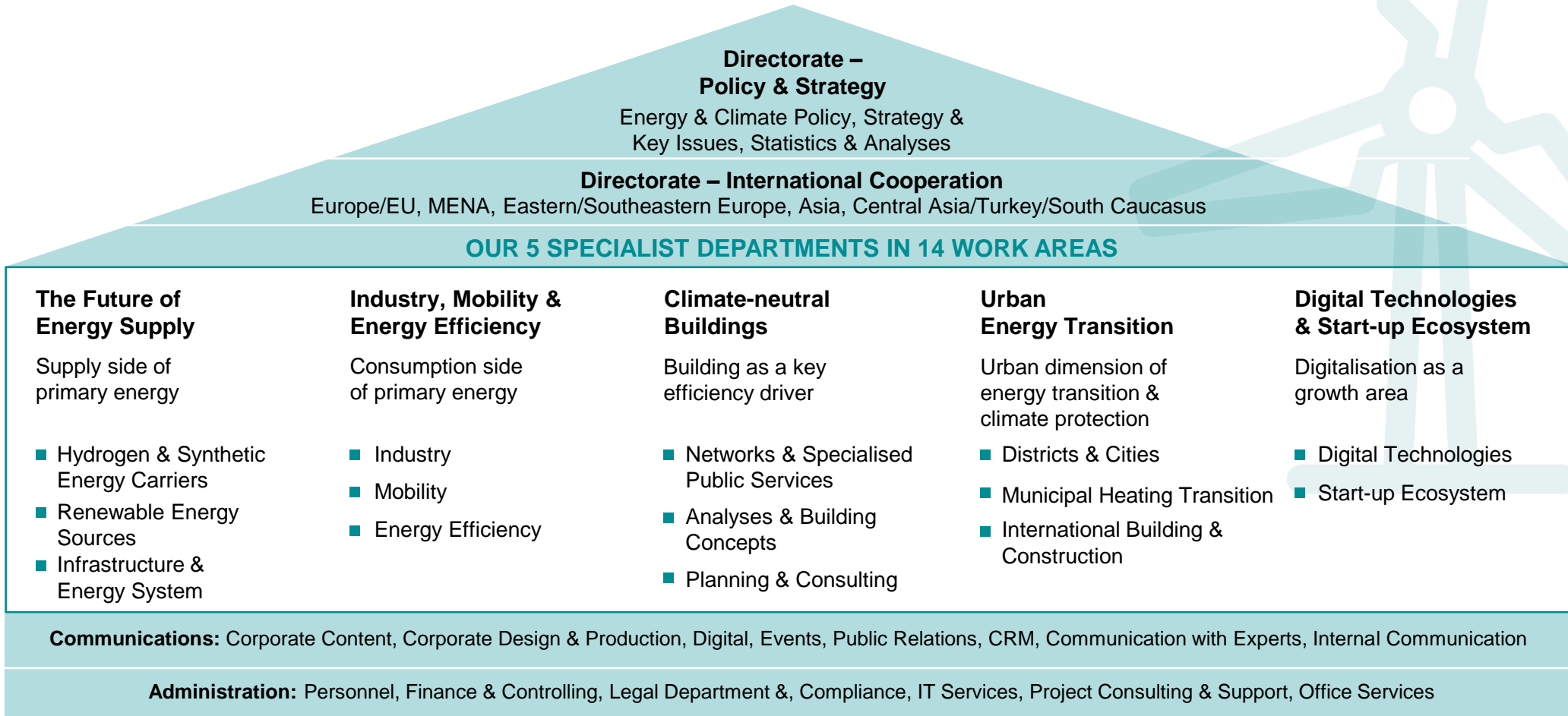
German Energy Agency

Webinar: Integrated Digital Solutions for the Energy Sector

# German Energy Agency and current challenges in the energy sector



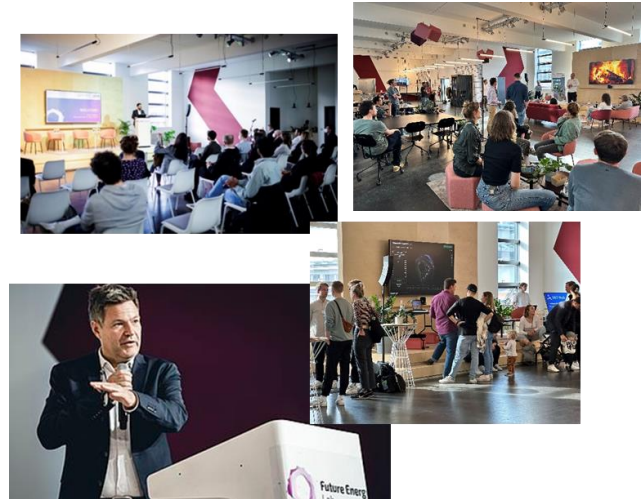
# Our house for energy transition and climate protection



# The Future Energy Lab



- Strengthening the **dialogue** between **policymakers** and **businesses**.
- The **energy** and **digital** sectors are **joining forces** through practical trials.
- Established players** benefit from the innovative strength of **start-ups**.
- Involving **experts** and the **public** through the **Future Energy Lab**.



Scaling network effects.

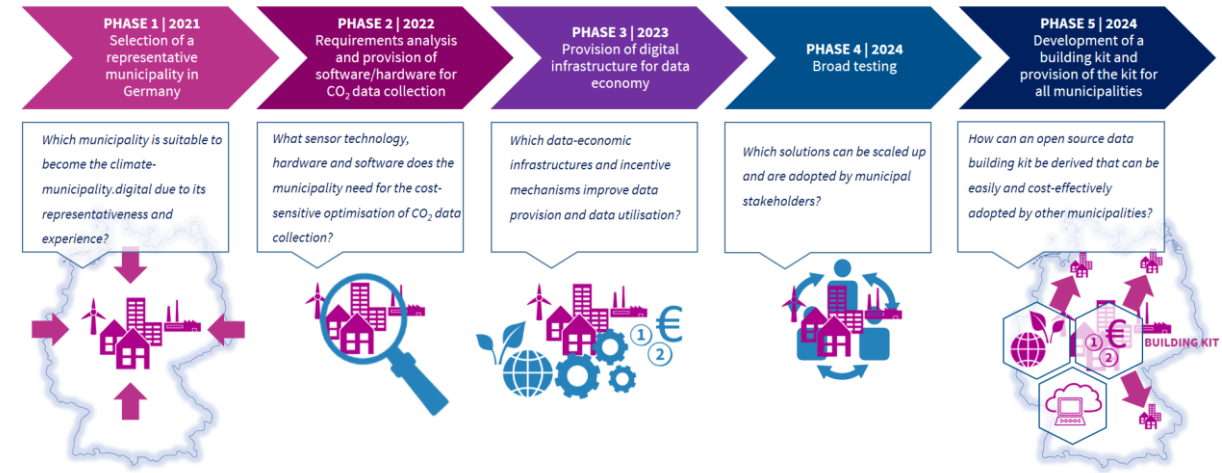


# climate-municipality.digital (Hagen)

The real-life laboratory in Western Germany to demonstrate the benefits of digitalization for municipal climate protection and the energy transition.

- Equip Hagen with software and hardware (sensors)
  - e.g. early detection of forest fires
  - Traffic monitoring
- Data transmission via LoRaWan
- Goal: “Real-time” data on CO<sub>2</sub>-Emissions to derive measures in time
- Can satellite technologies and satellite data improve the process?

Climate-Municipality.digital – the 5 project phases

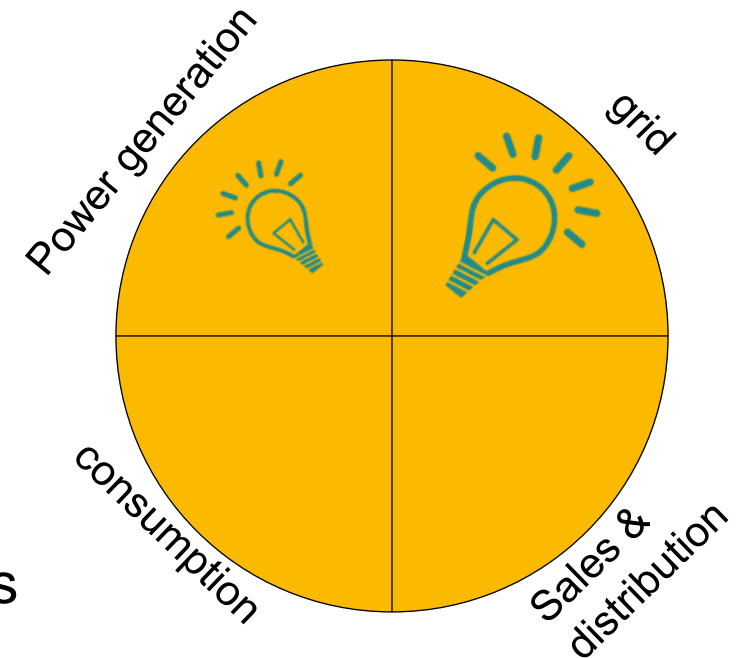


# Infrastructure and applications

## Challenges we face in the energy sector

- **Digitalisation**
  - cybersecurity
  - „real-time“ data transfer for different applications
  - Connection of smart metering systems (basements)
- **Infrastructure**
  - Grid planning and forecasting
  - Finding of potential locations for renewable energy plants

## Biggest potential for space-based technologies





**Thank you for  
your attention.**

Ansprechpartner

**dena**  
German Energy Agency

# Guest Speaker Fabio Ronsivalle



Senior Innovation Manager,  
Enel Group



# Enel leadership



*Global Presence*

**28 Countries**  
of which 6 Core

*World's largest player in renewables<sup>1</sup>*

**~65 GW**  
**installed capacity<sup>1</sup>**

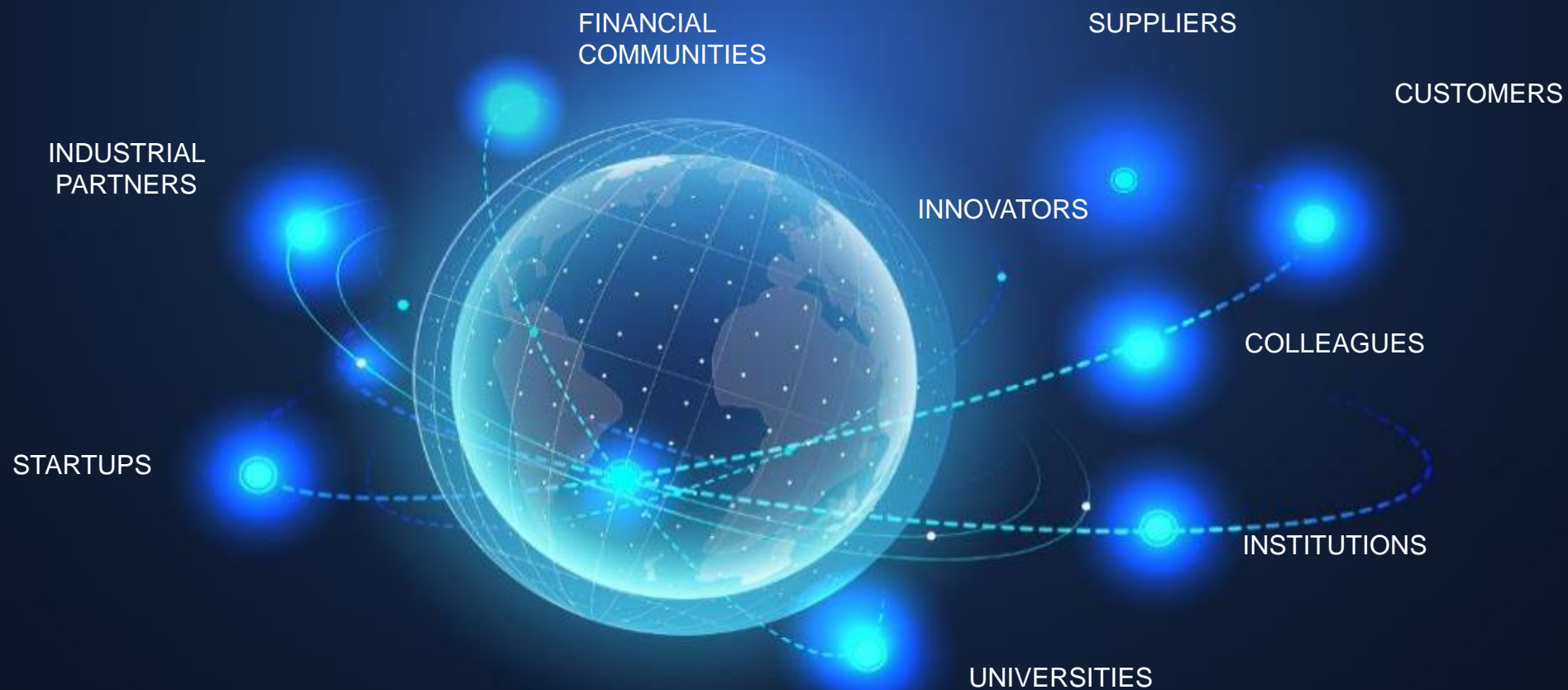
*1<sup>st</sup> network operator<sup>2</sup>*

**~70 mn end users**

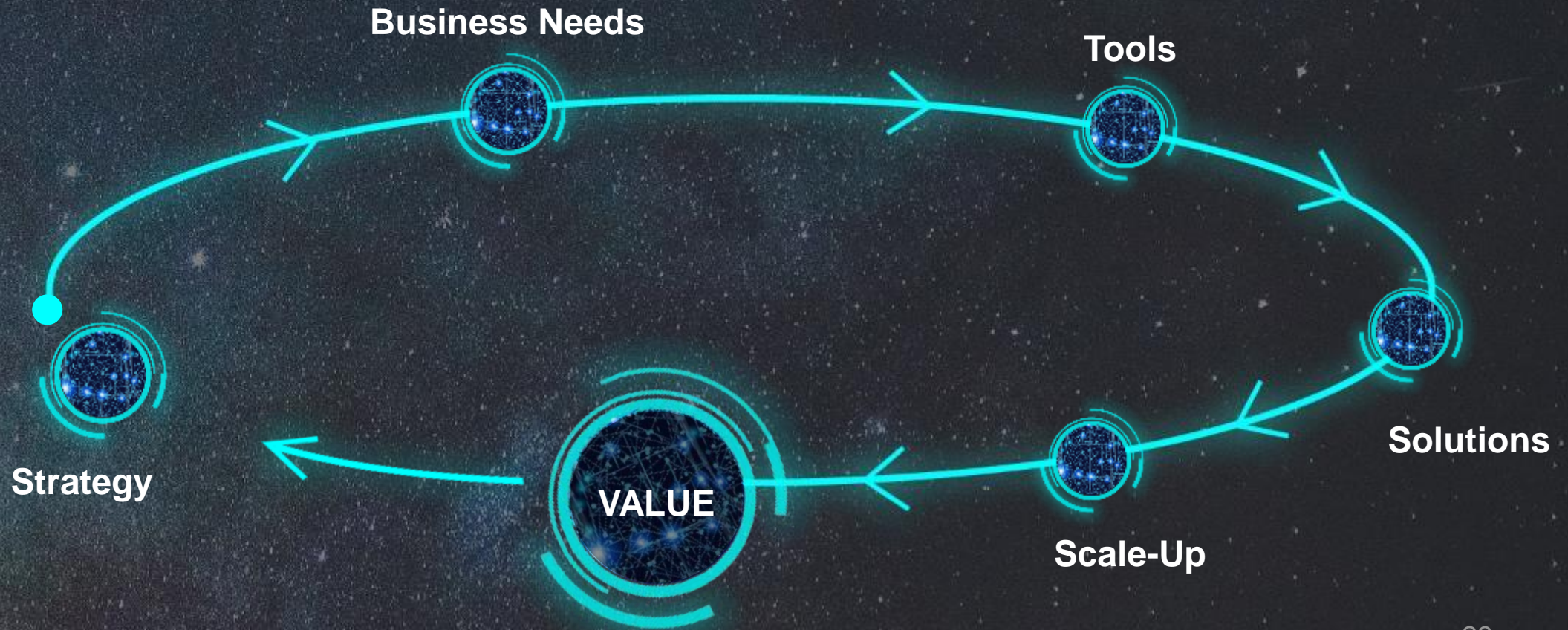
*Largest retail customer base worldwide<sup>2,3</sup>*

**~ 55 mn customers**

# We leverage Internal and External stakeholders



Enel innovation creates value through a scalable process that enables achievement of the goals outlined in the strategic plan



# USE Case: Leak detection on canals



Open **canals in hydroelectric plants** (tens or even hundreds of kilometers) may have **under-surface cracks** which cause water leaks very difficult to detect before significant damages are done to the surrounding areas.

**Manually inspecting of canals can take weeks** and is unlikely to provide a complete assessment of leaking. Moreover, most of cracks can develop underwater with no possibility to be observed without draining the canals.

**Actual approach:**



**Area of interest:** Near Hydro Power plant

**Inspection frequency:** weekly, monthly

**Source:** Freely satellite data

**Item of interest:** Leak underground

**Area of interest:** Global



**Using free satellite imagery** and other types of remotely sensed data, such as ground surface temperature, vegetation water stress and soil moisture information, it is possible to develop deep learning algorithms to identify areas along canals that are abnormal compared to normal.

# Guest Speaker Anne-Lise Laurain



European Innovation Lead,  
Electric Power Research Institute (EPRI)

# Integrated Digital Solutions for Energy Sector

Anne-Lise Laurain



February 2025

# Who Are We?

## EPRI Europe

Is a subsidiary of EPRI International Inc., which is in turn a subsidiary of EPRI.— founded in 1972 in the US, working with 450+ utility and industry members across 45 countries



**2019**

Founded in Ireland as a non-profit organization.



**Objectivity,  
Independence,  
and  
collaborative**

Conducts objective and independent energy and environmental research, development and demonstration projects in Europe, for the benefit of the public.

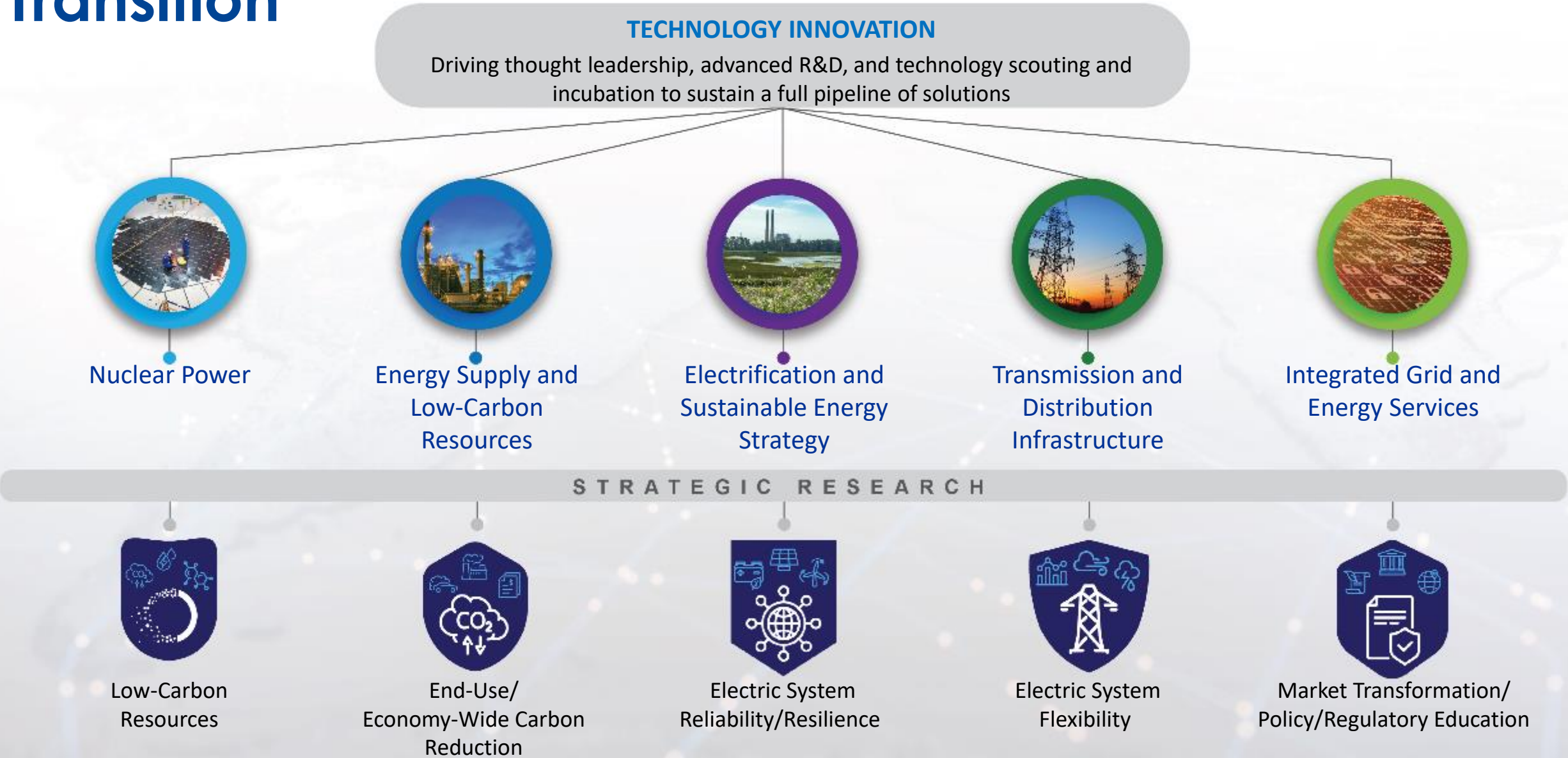
**+ 40 leading experts**

Supporting collaborative projects organized through EPRI.

Leading and participating in European regional projects and collaboratives.



# Research Addressing the Full Scope of the Energy Transition





# EPRI's Use-cases



## Management and Optimisation

- **Wildfire Detection and Response:** Utilising AI to improve wildfire risk evaluation and early-stage detection, thereby enhancing grid resilience and safety.
- **Congestion Management:** Applying AI to manage grid congestion, ensuring efficient energy distribution and preventing bottlenecks.

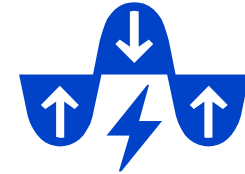
Use-case #1



## Predictive Maintenance and Asset Management

- **Equipment Failure Prediction:** Implementing AI to predict equipment failures, allowing for proactive maintenance and reducing downtime.
- **Asset Performance Optimisation:** Using AI to monitor and optimise the performance of energy assets, extending their operational life and efficiency.

Use-Case #2



## Energy Efficiency and Demand Response

- **Energy Consumption Forecasting:** Employing AI to predict energy consumption patterns, facilitating better demand response strategies and energy efficiency measures.
- **Optimising Energy Generation and Demand:** Utilising AI to balance energy generation with demand, improving overall system efficiency.

Use-Case #3

# EPRI's Use-cases



## Integration of Renewable Energy Sources

- **Renewable Energy Forecasting:** Applying AI to forecast the availability of renewable energy sources, aiding in their integration into the grid.
- **Distributed Energy Resources (DER) Integration:** Using AI to manage and integrate DERs, enhancing grid flexibility and reliability.

Use-case #4



## Cybersecurity

- **Threat Detection and Response:** Implementing AI to detect and respond to cybersecurity threats, safeguarding critical energy infrastructure.

Use-Case #5



## Customer Engagement and Service

- **Improving Customer Service:** Utilising AI to enhance customer service interactions, providing more efficient and personalised experiences

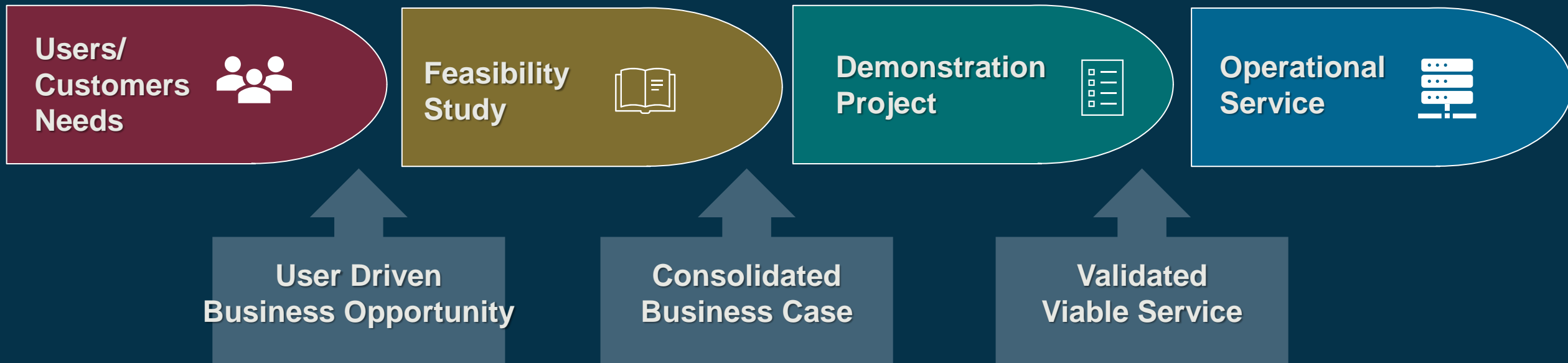
Use-Case #6



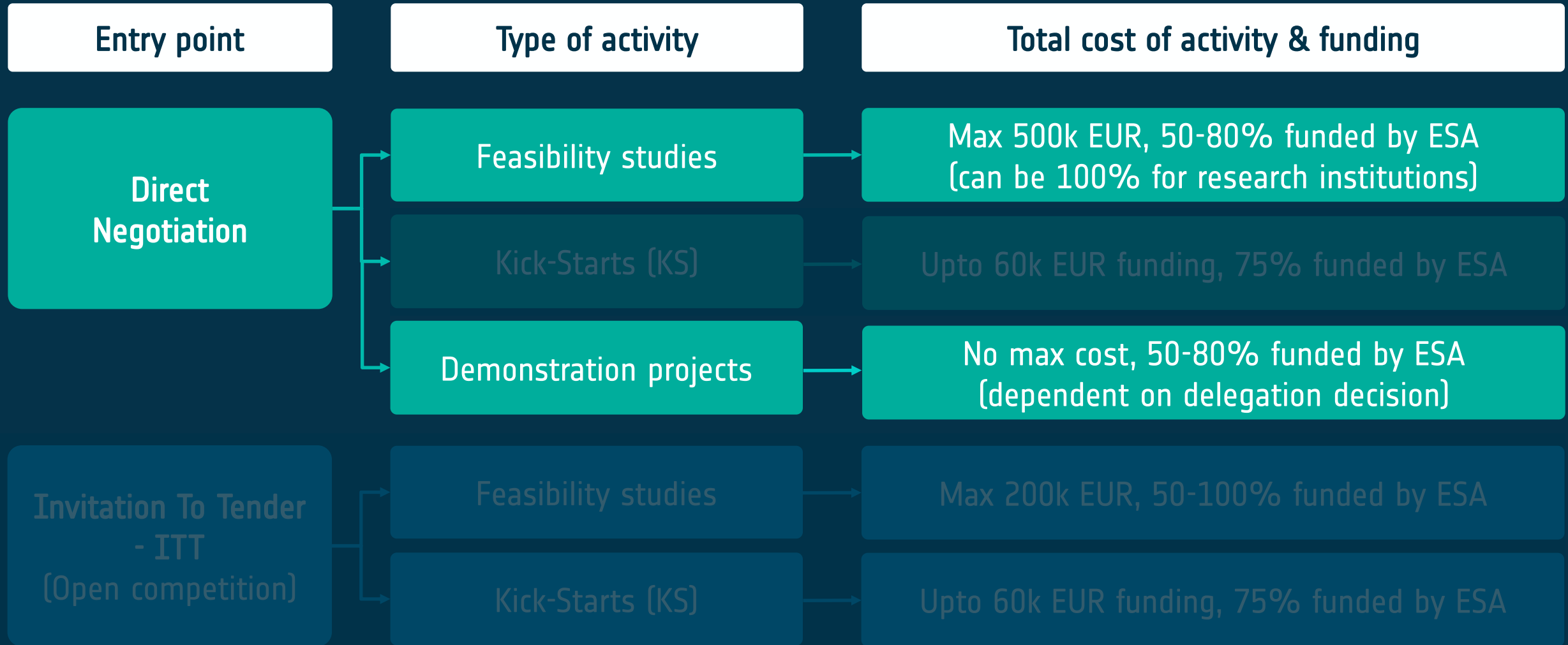
**TOGETHER...SHAPING THE FUTURE OF ENERGY®**

# Activity Implementation - Steps

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# BASS Funding Schemes

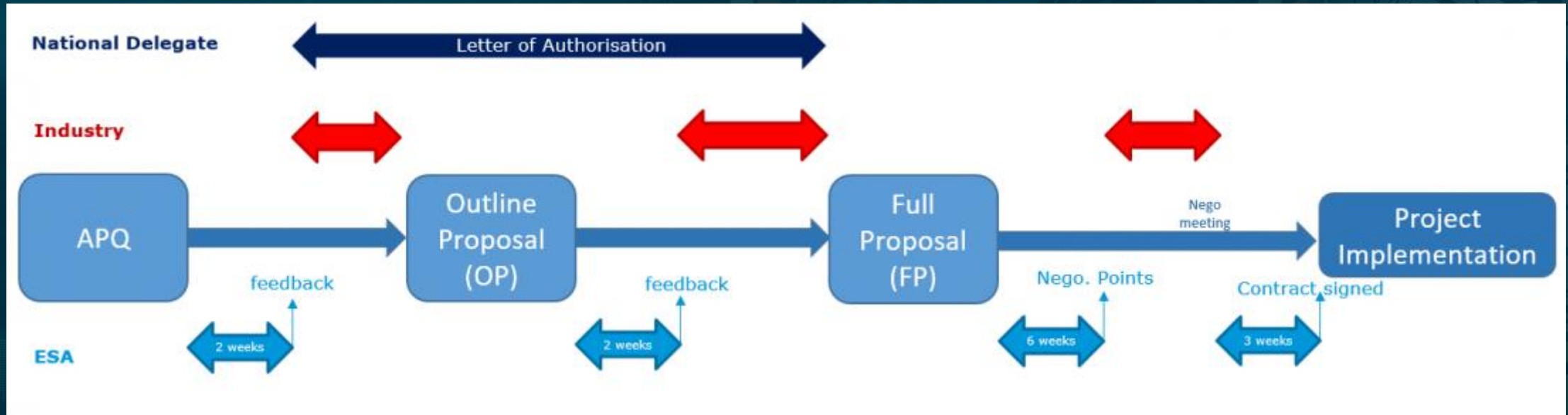


**IPRs remain with companies**



# How to Apply?

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<https://business.esa.int/proposal-guide/direct-negotiation>

- Incremental procurement approach: **APQ is the starting point**  
Max 8-page document with a standard template to present **WHAT, WHY, HOW**
- **Standard templates** for proposals and deliverables before and during activity implementation
- **Ambassador Platform** available to guide companies in the process



# APQ – Activity Pitch Questionnaire

1. (WHO) Company Background Information.
2. (WHAT) do you want to offer your customers and what is the added value?
3. (WHY) Who are the target beneficiaries addressed by your offer, and what are their pains and gains
4. (HOW) do you intend to implement (OPTIONAL) APQ+ for fast-track application

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### ACTIVITY PITCH QUESTIONNAIRE (APQ)

ESA-TIAA-PO-2017-1054 - V. 3.19

The Activity Pitch Questionnaire (APQ) allows you to present your business idea in a reduced, standardised pitch. It helps ESA to quickly take informed decisions on next steps, pointing you to the most appropriate activity stream in case the APQ is considered acceptable (e.g., additional preparatory work, training, teaming up with some other partners, go ahead targeting a Feasibility Study or a Demonstration Project).

Gated and incremental approach: The submission process is based on the following three stages: the Activity Pitch Questionnaire (this form), the Outline Proposal, and the Full Proposal. In case the APQ is accepted by ESA, the answers to the questions of this APQ will be directly integrated in the Outline Proposal and extended as needed. In a similar way, the elements of the Outline Proposal, if accepted by ESA, can be directly integrated in the Full Proposal.

**Prepare your pitch:**

- Make sure you use the LATEST VERSION of the [APQ template](#).
- Explanations of terminology used here can be found in the document [Terminology used in ESA Business Applications](#).
- Some explanations on how to prepare the APQ are available in the presentation [ESA Business Applications - Guidelines for APQ Preparation](#).
- Choose the appropriate Open or Thematic Call. For further details, visit [ESA Opportunities for Open Calls](#).

Call:  Activity:

*"Please be aware, it's important to ensure you have selected the right options."*

**Submit your pitch:**

- Contact your National Delegation<sup>1</sup> as specific rules may apply depending on your country.
- Please note that for a given idea, ONLY ONE APQ submission is possible (no subsequent submission of revised APQ Form(s) is allowed).
- The APQ has a validity of ONE YEAR: in case of no draft of Outline Proposal is submitted within one year from the date of the APQ submission, the APQ will be considered by ESA as withdrawn.
- Your APQ shall be submitted using the [online web form submitter](#) accessible at [APQ Submit](#)

Please note that only PDF formats are accepted.

**Activity Pitch Process:**

Upon submission of your Activity Pitch Questionnaire:

- ESA may provide this Activity Pitch Questionnaire to and discuss it with the National Delegations of the countries of your consortium.
- ESA will assess your pitch.
- ESA will provide written feedback typically within 10 working days from the date of the APQ submission.

<sup>1</sup> Contact details of the National Delegations can be found under: <https://business.esa.int/national-delegations>

For Greek entities, please note that Greece does not support non-competitive bids, therefore Greek proposals are not admissible under in this call.

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**Important Note:**

- For optimal viewing and accurate completion of the template, please download and install the latest version of [Acrobat Reader](#), which is available for free.
- Click on " ? " for more information.

### Section AP.1 Background Information

**1 AP.1.1 Idea name:**

Brand name:  Full name:

**2 Thematic market area**

Primary 1:  Subcategories 1:

Primary 2:  Subcategories 2:

Keywords 1:  Keywords 2:  Keywords 3:

**3 AP.1.2 Basic company information**

Name:  Website:

Address:  Country:  Phone:

Contact point name:  Email:

**4 AP.1.3 Company background**

Year of creation:  Revenues (Most recent figure in EUR) / Year:

Number of employees:  Industry / sector:

Coming from ESA BIC(\*)  (\*) If Yes, conclusion date of BIC contract: mm/yyyy

More details:  Max 155 characters (no spaces)

**5 AP.1.4 Have you had any previous activities within Business Applications?**

If Yes, indicate name of any previous activities and possible commercial outcomes

Max 270 characters (no spaces)

**6 AP.1.5 Are you applying with sub-contractors?**

If Yes, who are the other entities?

Name:  Website:  Industry:  Country:

Name:  Website:  Industry:  Country:

Name:  Website:  Industry:  Country:

Roles in Activity:  Max 360 characters (no spaces)

# Authorisation from National Delegation

1. The **authorisation form the National Delegation** will be required for the submission of the Full Proposal (third step in the application process), thus it is a good idea to initiate a dialogue with your National Delegation **early on**.
2. Please note that funding is **open to consortiums**, however all organisations and businesses **must be located in an ESA member state** participating in the **programme BASS**.
3. To date, these countries include **Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Lithuania, Ireland, Italy, Luxembourg, The Netherlands, Norway, Poland, Portugal, Romania, Sweden, Switzerland, and The United Kingdom**.
4. The contact information of the National Delegations can be found at <https://business.esa.int/national-delegations>

# Thank you, Q&A.

Asimina Syriou, Energy Lead

Business Applications - Space Solutions

Directorate of Commercialisation, Industry and Competitiveness

[LinkedIn](#)

[Energy BASS webpage](#)



## ENERGY BULLETIN



Sign up for our quarterly **Energy Bulletin**