ARTES

PI^3 “PEOPLE, PLANET, PROSPERITY” THEMATIC CALL

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1. ACRONYMS

ARTES	Advanced Research in Telecommunications Systems
AUM	Assets Under Management
ESA	European Space Agency
ESG	Environmental, Social and corporate Governance
TIA	Directorate of Telecommunications and Integrated Applications

2. OVERVIEW

This document presents an overview of the "Π^3 (pi cube) People, Planet, Prosperity" Thematic Call issued under the ARTES Programme. The call offers the opportunity to Industry to bring forward their space-related technology developments and business propositions to *enable action beyond information* in an ESG (Environmental, Social and corporate Governance) context.

The ESG narrative is making central aspects like corporate transparency, efficient reporting to stakeholders, mitigation actions beyond asset selling and short-to-medium term action assessment. Telecommunications, and in particular 5G standards with their overarching approach, are fundamental pillars to deliver on this narrative.

The following are examples of relevant themes under the umbrella of this call:

- Hybrid and just-in-time data collection approaches.
- Processing and actuation through networks, especially on network edges.
- Verification through general ledger technologies and satellite telecommunications.

3. BACKGROUND AND RATIONALE

The World's economy is undertaking a major transformation through the confluence of several trends:

- Customers now demand enterprise transparency and corporate and environmental responsibility and are purchasing from companies aligned with their values.
- Investors' classic return on investment is shifting from pure capital return to a broader set of socio-economic returns.
- Policymakers are updating regulation addressing the need for decarbonised and circular economies to guarantee a sustainable future.
- Enterprises are embracing digitalisation and data analytics paradigms to increase productivity, reduce costs and transform operations into virtual environments.

Enterprises and corporations are responding by introducing Environmental, Social and Governance (ESG) regulation (Latham & Watkins LLP, 2021) and practices. While currently under development, ESG represents an important market opportunity: ESG assets are predicted to reach $53 trillion by 2025, a third of global Assets Under Management (Bloomberg Intelligence, 2021) with Europe representing nearly half of such assets (Figure 1).

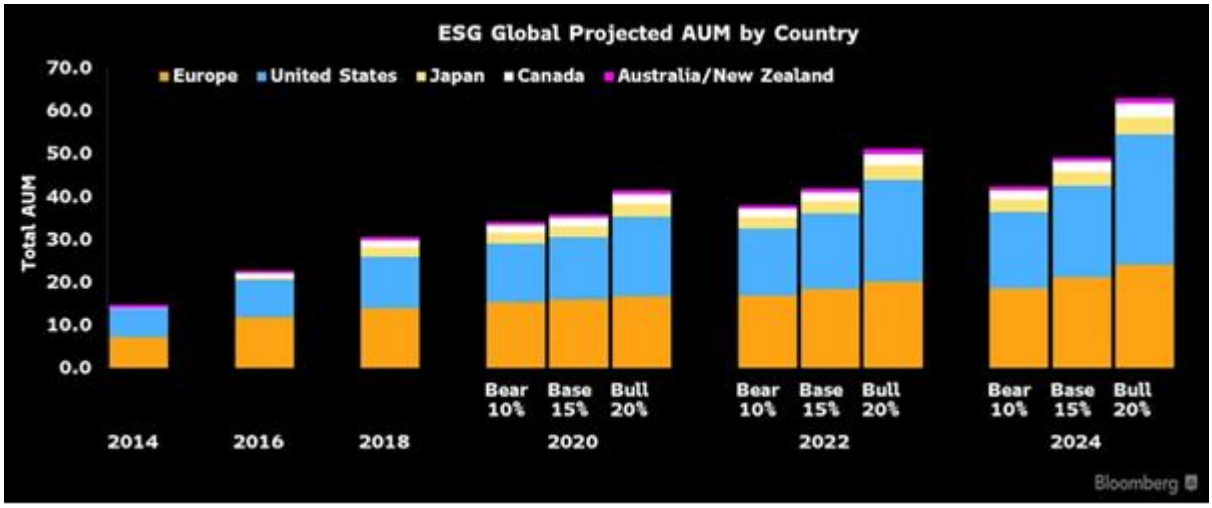

Figure 1: ESG Assets Under Management (AUM)

Despite the size of this market, ESG monitoring and reporting practices rely heavily on fragmented, sketchy or unreliable data often collected, analysed and reported by the same organisations estimating the market value. Space data is somewhat included in this mix.

Data analysis and observation remains important to understand and report status to all parties involved when appropriately structured, however even more is needed to act promptly. Such is the opportunity for space connectivity to enable action beyond information gathering:

- Precision and/or frequency of data collection necessitate hybrid approaches: mixing remote sensing, on-the-ground sensors, fast processing, modelling and real-time availability.
- Data veracity and curation: prevent manipulation, require verification mechanisms such as general ledger technologies, assessing usability and fixing missing data.
- Action-on-decision: actuation on networks and their edges while taking advantage of bi-directional IoT (Internet of Things) devices.

Π^3 (People – Planet – Prosperity) aims to deliver space projects to answer to the lack of action beyond information to access a stake of the very large ESG market described above. The long-term objective will be for those projects to evolve into fully-fledged Satellite Telecommunications and 5G-enabled operational infrastructure providing commercial services for the benefit of the space industry and the economic players involved.

4. THEMATIC CALL SCOPE

Π^3 aims to deliver Space projects enabling “action beyond observation” within the vast ESG market described above and using Space technologies, specifically satellite Telecommunications and 5G technologies, as key enablers. The long-term objective will be for those projects to evolve into fully fledged operational infrastructure providing commercial services for the benefit of the Space Industry and the (ESG) economic players involved. Any proposed projects should rely on a business case and count with the support of potential customers as soon as possible. They can engage on Definition or Technology development activities to reinforce the case and attract further stakeholders. They can also start directly with Product development or Demonstration activities should the customer base, business case and technology be mature enough.

Subsequently, Π^3 will support the implementation of any related study, technology development, product development, system development, application, and service development as well as the end-to-end validation and potential in-orbit demonstration connected to the projects under development.

Projects under the Π^3 umbrella are planned to benefit from a project-revenue funding business model from investors and financiers contacted keenly involved in ESG monitoring and reporting. As such, industry shall establish partnerships with ESG players early, with the objective to transform these into customers along the development cycle.

ESA's initial consultation with selected stakeholders revealed the key challenges faced by the ESG community: lack of data and standards to report on ESG status is currently being addressed at corporate board and regulatory levels. However, ESG players are under great pressure to show the results of their actions beyond status reporting. Being able to act and, in many cases, act in a timely fashion is the crucial and missing element to "close the ESG loop". The opportunity is for satellite connectivity to act on information derived from Earth observation and other terrestrial data sources on topics such as climate change and environmental issues. Bringing data to infrastructure/decisionmakers will play a crucial role in ESG-related activities.

Assets that can most benefit of this are, for example industrial environments with sub-optimally connected locations, offshore platforms, supply chains or critical infrastructures. Ubiquitous connectivity is crucial for a timely response based on a global set of actionable data resulting from the combination of EO and terrestrial data (World Economic Forum, 2021).

5. OBJECTIVES

There is an opportunity for the European space economy and industry to take a leadership position in ESG-related markets, in particular:

1. To demonstrate to ESG customers that space is more than a monitoring tool: space connectivity allows action no matter where their portfolio assets are located.

2. To build bridges with the ESG community to scale up technology projects and business cases into fully-fledged space-based operational infrastructure.

From an engineering perspective, these objectives mean:

- Find viable ESG-related cases where Space Telecommunications and 5G technologies play a relevant role
- Define architectural concepts associated with the identified case and the implementation roadmap.
- Design with partners the operational and business model for full scale implementation.
- Develop Proofs of Concept to gain ESG community backing as well as initial revenue to support larger scale implementation.
- Progress development into infrastructure suitable for operations, where most of the funding comes from commercial sources; ESA's role will primarily focus on supporting specific key space developments where necessary.

6. PROCUREMENT APPROACH

Any proposals submitted in the context of this call will be implemented in accordance with the current tools provided by the ARTES "Space for 5G" Strategic Programme Line (SPL), always in coordination with National Delegations.

The call aims at industry-initiated proposals addressing ESG-related topics. They can address commercial opportunities, or a subset of the needs identified through technology development, upstream activities, or downstream applications.

ESA will work with scale-up initiatives, typically beyond ARTES procurement and even beyond ESA. By partnering with the right stakeholders and industrial actions, ESA intends to enable opportunities for European industry to grow and disseminate developed solutions across the wider ESG landscape. For this, ESA will seek actively Member States' input and feedback.

According to the rules of the ARTES SPL programme, the price of activities carried out in a given ESA Member State are charged against the contribution of that State in the programme. Letter(s) of Authorisation of Funding (AoF) from the relevant National Delegation(s) is(are) therefore required as part of the Full Proposal. The Industry is however advised to inform the relevant National Delegation(s) when submitting the Pitch (first stage of the call process, see Section 8.1). National Delegations coordinates are available through: https://artes.esa.int/national-delegations.

The Proposal(s) by the Industry can cover vertical integration between Technology, Products, Services and Applications. The Proposal(s) can also cover one or multiple phases of the full life cycle of activities including definition, technology and product developments, and demonstration in a pre-operational environment.

7. INDUSTRIAL FOCUS

The focus of the present call is on industry-initiated activities targeting ESG markets. While ESA has established preliminary contacts with ESG stakeholders, industry is responsible to come with initial cases and proposals to follow-on. Initial cases will be consolidated during the dialogue phase with ESA (see section 8.1).

Industry applying shall demonstrate their existing engagement with ESG stakeholders and show how proposed projects may benefit from revenue-driven funding particularly during later stages (Product development and Demonstration).

8. PROCESS AND SCHEDULE

8.1. Timeline and Procedure

The Thematic Call will be open from January 2022 for a period of 12 months, where the Industry can respond by submitting pitches. The timeline and the various steps are illustrated in Figure 2.

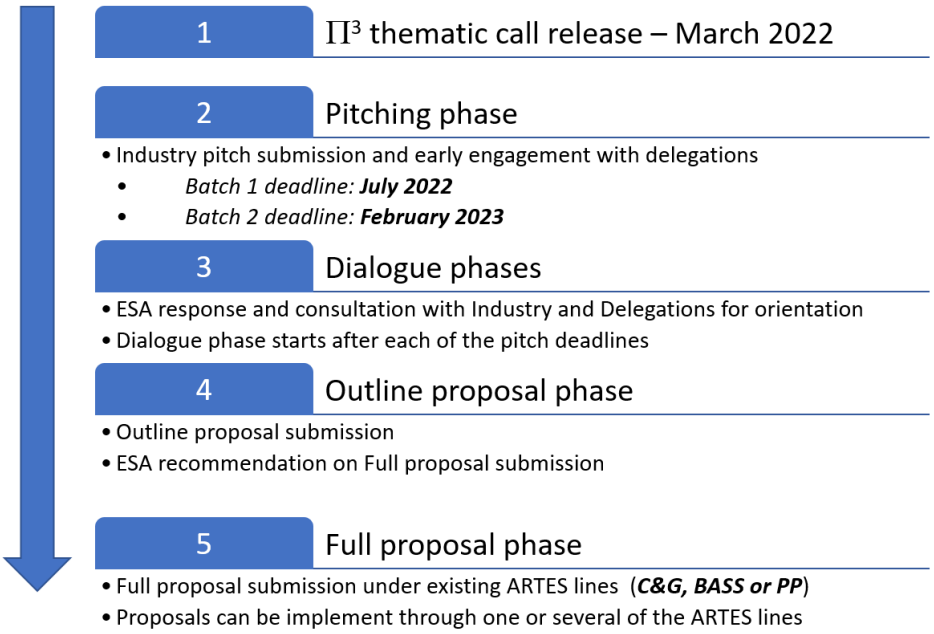

Figure 2: Procurement approach and timeline of the Thematic Call

In **Step 1 (Thematic call release)**, ESA will release the Thematic Call.

In **Step 2 (Pitching Stage)**, the interested Industry partners are requested to submit their proposal(s) based on a short Pitch template made available by ESA that can be downloaded from the Thematic Call website.

The completed Activity Pitch Questionnaire (APQ) shall be submitted by e-mail to

5G@esa.int

stating as subject *"P3 Thematic Call <<Proposal Title>>"*

The Pitch shall be approved and signed at higher company management level and indicating their firm commitment to the proposed activity. Multiple Pitches can be submitted.

Pitches can be submitted within two batches (time-windows):

- First batch lasting from January 2022 to May 2022
- Second batch lasting from May 2022 to December 2022.

In parallel the interested Industry shall contact the relevant ESA Member States Delegates to verify their interest and their in-principle support.

In **Step 3 (Dialogue phase)**, after each batch deadline, following an assessment of the Pitch by ESA, ESA will provide a feedback to the company, aiming to provide a reply within 10 working days following the deadline for submission of the Pitch (Feedback by June 10 2022 for first batch, January 10 2023 for 2nd batch at latest). Proposals submitted before the deadline may be reviewed and provide feedback in advance of the deadlines.

ESA may require interaction with Industry, entering in a dialogue aimed at shaping and improving the Outline proposal. Dialogue sessions may be organised individually with potential partners prior to Step 4. ESA may also consult with the relevant National Delegation(s) when necessary for orientation providing key information (e.g. title, cost, price, subcontractor(s)) to them.

ESA will notify Industry about the applicable programmatic line(s) and co-funding schemes when extending an invitation to submit an Outline Proposal. Any invitation will be subject to a positive evaluation of the Pitch as well as Industry having informed their National Delegation(s).

In **Step 4 (Outline proposal phase)**, Industry will submit an Outline Proposal using ESA provided templates. The Outline Proposal will expand the Pitch with more extensive detail in accordance with the relevant ARTES programmatic line(s).

Should ESA evaluate positively the proposal and have received an in-principle support from the relevant National Delegation(s), Industry will receive an invitation to submit a Full Proposal

two weeks after the relevant board meeting where the proposal will be discussed. The invitation will contain relevant information on the relevant programmatic line(s) as well as associated procurement process(es). These lines are ARTES Competitiveness & Growth (C&G), Business Applications (BASS) and Public Private Partnership (PP).

In **Step 5 (Full proposal phase)**, Industry will submit a Full Proposal together with the Authorisation of Funding (AoF) from the relevant National Delegation(s). Following a positive assessment by ESA the proposed activity will be approved for implementation.

8.2. Evaluation Criteria

The evaluation process is non-competitive, as each proposal will be assessed individually on its own merits. The following criteria will be the used during the assessment for further consideration:

1. Potential evolution towards a commercial solution; engagement with ESG community; market potential; associated return on investment and net socio-economic impact; potential for revenue-based funding in later project stages.
2. Technical credibility of the proposed solution; development plan soundness; relevant utilisation of Space Telecommunications and 5G technologies.
3. Consortium experience in technical and business matters relevant to the proposed product, technology and/or applications.
4. Proposed management organisation, including risk management.
5. Adequacy of cost and funding.

8.3. General Conditions

Any submissions and related correspondence shall be in English.

The tender shall not contain any Classified Information, whether in the Pitch, Outline Proposal or in the Full Proposal. To avoid any confusion with Classified security markings, the unclassified protective marking used by the Tenderer in the proposal shall not contain the terms: "Restricted", "Confidential", or "Secret". However, should the Tenderer consider necessary to include Classified Information in the tender, the Tenderer shall inform beforehand the Security Officer.

The Tenderers are informed that Classified Information can be shared with ESA only in compliance with the Project Security Instruction (PSI) duly established by the Agency beforehand and subject to the approval by the ESA Member States.

The Agency will treat commercially sensitive or proprietary information confidentially and solely for the purpose of the assessment of the response.

No expenses incurred in preparing and dispatching any response to the announcement will be reimbursed. This also applies to any expenses connected with any potential dialogue phase.

This announcement does not bind the Agency in any way to place any contract. The Agency reserves the right to issue amendments to this announcement.