



DOCUMENT

ESA Secure Satellite Communications Support to ESA Long Term Plan

Announcement

Industrial Opportunity for the development & demonstration of one or several ESA Precursors to GOVSATCOM

APPROVAL

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1 ACRONYMS

| | |
|-------|---|
| AO | Announcement of Opportunity |
| ARTES | Advanced Research in Telecommunications Systems |
| BC | Business Case |
| BP | Business Plan |
| CAPEX | Capital Expenditure |
| EC | European Commission |
| EDA | European Defence Agency |
| ESA | European Space Agency |
| GS | Ground Segment |
| IOD | In-Orbit Demonstration |
| IOT | In-Orbit Test |
| IOV | In-Orbit Validation |
| LEO | Low Earth Orbit |
| MOC | Mission Operations Centre |
| NoI | Notification of Intent |
| OP | Outline Proposal |
| OPEX | Operational Expenditure |
| P/F | Platform |
| P/L | Payload |
| PPP | Public-Private Partnership |
| RF | Radio Frequency |
| RPAS | Remotely Piloted Aerial Platform |
| SCC | Spacecraft Control Centre |
| S/C | Spacecraft |
| SLA | Service Level Agreement |
| TBC | To Be Confirmed |
| TBD | To Be Defined |
| TC | Telecommand |
| TM | Telemetry |
| TTC | Telemetry, Tracking and Command |

2 REFERENCE DOCUMENTATION

Reference documentation, including initial Mission Requirements will be made available to the parties having submitted a Notification of Intent.

3 SCOPE

This document presents the ESA GOVSATCOM Precursor Announcement including:

- Background and Rational
- Incremental Approach
- Description of the Opportunity
- Industrial Focus
- Process and Schedule

4 BACKGROUND AND RATIONAL

The seventh ESA-EU Space Council held in November 2010 acknowledged the reinforced EU engagement in security and defence matters embedded in the Lisbon treaty. It invited the EC and the EU Council, assisted by EDA and together with Member States and ESA, to explore ways to support current and future capability needs for secure space assets and services, including satellite communications.

In December 2013, the European Council called for preparations for the next generation of Governmental Satellite Communication through the close cooperation between the Member States, the EC and ESA and asked for a user group to be set up.

In December 2014 the EU Competitiveness Council underlined the need to avoid fragmentation of demand and to foster civil-military synergies for the preparation of the next generation of governmental satellite communication, through close cooperation among Member States, EDA, the EC and ESA.

As a result, EDA initiated programme preparations including a supporting study focused on military aspects and plans by early 2017 to propose to EDA's Member States various options for a comprehensive programme for implementation of GOVSATCOM. The EC has concluded a preparatory study on governmental satellite communications, focused on civilian needs and established a related user group. The EC plans to identify options for new activities that could be proposed in the EU's Space Program. It recently issued a indicative roadmap on the European Defence Action Plan which refers to GOVSATCOM as a possible future concrete initiative.

http://ec.europa.eu/smart-regulation/roadmaps/docs/2016_grow_006_cwp_european_defence_action_plan_en.pdf

ESA is supporting the above preparations via an incremental approach.

5 ESA INCREMENTAL APPROACH

5.1 Three Phases

In the following an ESA incremental approach is presented which defines three phases or steps:

A first step (2015/16) primarily consisting of preparatory studies:

- In this step, ESA is supporting the consolidation of requirements, the identification of

innovative technologies, system architectures and technical implementation scenarios, addresses the opportunities for a precursor. This step is further described in chapter 5.2

A second step (2017-2020) for further preparatory action:

- In this step, ESA is focusing on the precursor activity subject to this announcement. The precursor shall
 - provide for innovative system developments (including in-orbit system elements) and innovative services in support to the validation of technical specifications and of preliminary operational concepts, which could be considered for a future operational GOVSATCOM system;
 - demonstrate precursor Services which could be considered in the development of future GOVSATCOM operational services, e.g. provided under service level agreements.
 - support European industry to develop new security technologies as well as downstream applications solutions.

This is further described in chapter 6 and following.

A third step would be within the governance of an operational GOVSATCOM programme, which is assumed to be under EU lead.

ESA's preparatory steps and in particular any ESA supported precursor developments shall not preempt the future governance scheme of an operational GOVSATCOM programme.

5.2 Ongoing Studies

5.2.1 Requirements and Technology

As results of preparatory activities and studies mentioned under 4. above, EDA and EC have identified an initial set of high level user needs and requirements for governmental satellite communications in a number of domains such as:

- Crisis management, e.g. civil protection, humanitarian aid, common security and defence policy (CSDP) missions
- Surveillance, e.g. border and maritime
- Key infrastructure monitoring, e.g. transport (air, rail), space infrastructure, institutional communications
- Emerging domains, e.g. RPAS, data relay, arctic communications

ESA, as part of step 1 defined under 5. above, is supporting EC and EDA through ongoing ARTES-1 (Future Preparations Element) studies. The studies are currently consolidating the initial set of user needs and requirements as identified above. The ARTES-1 studies will support the definition of initial mission requirements, which will be made available to all parties having submitted a Notification of Intent in response to this announcement as per 2. above.

Furthermore, the ARTES-1 studies will support the identification of requirements for technology developments. The developments under assessment include domains such as:

- Secure TTC, access control and protection of planning data
- Anti-jamming capabilities

- Cyber-security
- Interference
- Secure hosted P/L
- In-flight reconfigurable on-board processor
- Phased array antennas
- Flexible capacity management, frequency and beam planning solutions
- Emerging constellations, e.g. low latency, polar orbits
- Ground Segment solutions required for secure management of pooled SATCOM resources
- User equipment, e.g. high-speed/low-cost user modems
- European security certification
- RF Military-band and Optical communications

Note: A precursor is not expected to address any military-type requirements related to space- or ground-based intentional attacks.

5.2.2 European Autonomy

In addition to the requirements and technology domains identified above, particular importance may be given to identify technology domains which may call for replacement of non-European technology solutions by European solutions to ensure European security of supply. This may reduce technology dependence and support the further build-up of European knowhow related to key technologies, otherwise only available from non-European actors.

Similarly, attention will be given w.r.t. potential dependencies on SATCOM operational assets provided by non-European actors such as satellite capacity, ground stations and control centres on non-EU territories.

6 DESCRIPTION OF THE OPPORTUNITY

6.1 Main principles of the opportunity

This announcement presents opportunities for Satellite Operators/Service Providers and Satellite manufacturers residing in an ESA Member State to

- enter into a partnership with ESA on development of innovative technologies/systems/services as GOVSATCOM precursors
- be the owner of the Precursor System and the sole beneficiary of any potential service revenues during and/or subsequent to the demonstration phase

In such partnership ESA shall

- cover through co-funding, the technology risk associated to innovative developments in the Precursor
- provide support to the precursor service demonstrations (Note: ESA does not provide any demonstration user/anchor customer to the Precursor nor ensure any service revenues, while ESA may consider measures to support the Partner(s) in attracting users, e.g. leveraging from its institutional relations)

In return the Partner(s) shall

- provide the respective private co-funding

- develop and be the owner of the Precursor infrastructure
- if the Precursor infrastructure includes a new space component (payload/satellite), procure any Precursor hosting and launch services and ensure its launch and commissioning in time for start of demonstrations latest by 2019/2020
- develop and operate the Precursor services according to the Partner business case and in any case as a minimum until 2021
- develop a roadmap for the evolution of the system and services considering
 - the development of services in perspective of future GOVSATCOM and any 3rd party users
 - the evolution of the system towards new capabilities and geographical coverage
- ensure availability of the Precursor for operations also beyond the demonstration phase and over its lifetime under conditions to be agreed and within the limits of any allocated system capacity.

The conditions for capacity sharing and priorities between Precursor governmental services and any services provided to 3rd party users shall be defined in line with the co-funding agreements of the Precursor.

The Partner(s) shall identify if/how early institutional commitments to procure GOVSATCOM-related capacity and/or services, e.g. via SLA may impact the phasing and level of available co-funding.

The Partner(s) may identify any technical or programmatic support which may be required from ESA beyond what is defined above.

6.2 Precursor Description

ESA does not intend to prioritize any particular mission requirements to which a Precursor shall comply. ESA expects industry to define its own priorities in line with its business plans and w.r.t. the user needs and initial mission requirements. For the same reason, ESA does not intend to prioritize particular domains of innovation in technology and service development. Consequently, the precursor provides the opportunity to industry to propose an implementation in response to its own priorities regarding the needs and innovation domains identified in chapter 5.1.1. These priorities can be further consolidated during the dialogue phase defined under 8. below, including a dedicated industry workshop.

However, within the flexibility provided by the above, a Precursor shall include

- A service element
 - Innovation of services in response to a sub-set of identified governmental needs
 - Support end-to-end solutions and the development of precursor services
- A technology element
 - Innovation of technologies in any of the following segments: space segment, ground control and planning segment, user segment, network segment. I.e. the Precursor may also be based on existing space segment assets, provided it includes service features implemented through innovative ground segment features.

Furthermore, the Precursor may also include an element in relation to secure and guaranteed access and European autonomy as per 5.1.2, i.e. it should identify any

value it may bring for reducing the dependency on non-EU actors, such as

- ownership of asset, location of operations facility (e.g. S/C; SCC; MOC)
- security of technology supply, manufacturing know-how
- security certification.

Where applicable, any features of the Precursor which might represent an element of European dependence in the above meaning shall be identified. Some level of dependence may be acceptable for a Precursor and could be intrinsic e.g. in case of use by the Precursor of existing space assets. However, in such case information should be provided on the considered evolution of the developments towards improved non-dependence.

7 INDUSTRIAL FOCUS

The ESA precursor initiative is defined in support to a results-oriented dialogue with European industry. It shall support European industry competitiveness in the domain of secure SATCOM and provide them with the necessary innovative solutions to be able to anticipate and capture future GOVSATCOM enabled business opportunities. It is part of ESA's efforts to support European efforts in cooperation with the EU, the EC and its Agencies, the European Defence Agency as well as National Space Agencies, in identifying, jointly with industry, the technological solutions enabling pooling & sharing of systems, infrastructures and services, and in ensuring that the necessary development work is supported in a timely manner. The precursor aims at contributing to a European cooperation considering established practice developed by ESA within the ARTES programme and Public-Private Partnerships with industry. ESA believes that the Precursor provides for an effective involvement of European industry and can help to optimize the quality of the findings and the positive impact on the competitiveness of European industry.

8 PROCESS AND SCHEDULE

The announcement procedure will be in three steps and with the following dates:

| Step | | Date |
|------|--|---------------------------------|
| 0 | Issue of Announcement | 26.2.106 |
| 1 | Submission of Notice of Intent by Industry | 23.3.2016 12:00 |
| 2 | Dialogue Phase supported by an Industry Workshop | 29.2.-6.5.2016 5.4.2016 (WS) |
| 3 | Submission of Outline Proposals by Industry | 6.5.2016 |

A contractual procedure may follow for Precursor Outline Proposals which have found support at ESA CMIN16.

Step 1: Notice of Intent

Following the issuing of this Announcement, interested potential partners are requested to submit a Notice of Intent by **23 March 12:00**, indicating their firm intention to submit an Outline Proposal and providing a first set of information (up to 5 pages) as defined below:

- Outline of intended precursor mission(s)
- Description of considered innovative elements
 - technology elements, e.g. S/C, P/L, GS and/or

- service elements

It also may consider first elements related to:

Considered Business Perspective
 PPP and risk/cost sharing considerations
 Considered Industrial Organisation.

The Notice of Intent may also

- identify any particular areas where specific support from ESA may be required and open points for consolidation during the dialogue phase
- any request for bi-lateral discussions at the occasion of the Industry Workshop defined below
- identify the intended list of participants to the Workshop.

The completed Notice of Intent shall be submitted by e-mail to

Govsatcom-Precursor@esa.int

Step 2: Dialogue Phase

Additional information regarding the Precursor will be provided to the potential Partners who have confirmed their interest (by means of the Notice of Intent defined in Step 1). This will include the initial mission requirements and also information on the expected scope and content of Outline Proposals.

It is recognised that some interactions with the potential Partners may be required and ESA therefore may offer support in providing further clarifications, aimed at better shaping the Outline Proposals.

Dialogue sessions may be organised individually with each potential Partners during this phase on request. Requests shall be made to the email provided above.

An Industry workshop is scheduled for 5.4.2016 at ESA HQ, Paris,. The provisional agenda of the workshop is provided below:

ESA Presentation of GOVSATCOM Precursor
 Presentation of ARTES-1 intermediate results incl. initial mission requirements
 Possibility of bi-lateral meetings upon prior request (afternoon).

At the end of the dialogue phase, the potential Partners are expected to provide an Outline Proposal.

Step 3: Outline Proposal

The detailed scope expected from the Outline Proposal will be provided to all parties that have submitted a Notification of Intend. It may include the following aspects:

Outline of the demonstration and related high level mission requirements
 Description of innovative technology elements, e.g. S/C, P/L, GS
 Description of innovative service elements of the demonstration

Design & Development Plan and IOT/IOV Approach
 Business Perspective of Operator/Service provider and manufacturer
 Justification of PPP
 Industrial Organisation and Programme of Work
 Funding Plan and cost estimates.

Subsequent Steps

Based on the outline proposals of Industry, following preparation with its Member States, and in co-ordination with EDA and the EC, ESA intends to prepare and submit to the ESA Ministerial Council a Proposal for decision for GOVSATCOM Precursors using the best suited programmatic framework.

For Proposals approved and funded at CMIN16, ESA will subsequently enter into contract negotiations. Depending on Member State support and the adequacy of Proposals more than one contract may be placed. ESA has no obligation to place any contract.

Evaluation Criteria

For any Outline Proposal to be considered as an adequate basis for further consideration towards CMIN16, the following evaluation criteria will be used:

1. Consortium experience in Satellite Operation and Service provision as well as Service and System development
2. Proposed management organisation, including management of risks
3. Adequacy of cost and funding
4. Potential for future evolution
5. Compliance with the principles defined under 6.1.

Announcement guidelines

The submissions and all correspondence relating to it shall be in English.

Any document submitted in reply to the announcement shall become the property of the Agency. The Agency will treat commercially sensitive or proprietary information confidentially and solely for the purpose of the assessment of the response.

Expenses incurred in the preparation and dispatch of the response to the announcement will not be reimbursed. This includes any expenses connected with the dialogue phase.

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

Prior to submitting an Outline Proposal, the interested potential partner(s) is requested to complete and send a Notice of Intent no later than the date indicated in section 8.