EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR DEFENCE INDUSTRY AND SPACE

Innovation and Outreach
The Director

PRELIMINARY MARKET CONSULTATION

UNION SECURE CONNECTIVITY PROGRAMME

Disclaimer

- The addressees are made aware that at the time of the present Preliminary Market Consultation (PMC), the legislative process towards the adoption of the Regulation establishing the Union Secure Connectivity (USC) Programme is ongoing.
- Nothing in this consultation shall be interpreted or construed so as to influence the ongoing legislative process.
- The purpose of the consultation is strictly limited to the preparation of possible future procurement(s) based on the available actual information; any action will only be possible upon adoption of the Regulation that will constitute the basic act and legal basis for any procurements, taking therefore into consideration possible changes on elements contained in the final adopted text.
- This PMC invites the addressees to provide inputs and ideas for areas where they wish to provide a contribution, by sending all or parts of the information requested in Section 4 within the identified deadline.
- The participation to this consultation shall not have any consequence in relation to any future procurement(s) process related to the USC
- The Commission, taking into account the general principle of proportionality, will take all possible measures to ensure that the results of this market consultation will not unduly bias the procurement.
- Nothing in this consultation and in the relevant results shall be interpreted as to create obligations on the Commission nor to generate legitimate expectations in the market and in the addressees in particular as to the actual implementation of any specific procurement action.
- The EU needs, including governmental user needs and requirements, as presented in this PMC, in particular in RD1, cannot be considered as final ones as they represent an initial view from the European Commission services and will be consolidated with the Member States following the adoption of the Regulation.

1 INTRODUCTION TO THE UNION SECURE CONNECTIVITY PROGRAMME

On 15 February 2022, the European Commission tabled a proposal for a Regulation establishing the Union Secure Connectivity (USC) Programme [1], hereinafter "*the Draft Regulation*", and on 29 June 2022, the Council adopted a mandate for negotiations with the European Parliament on the proposal. **The proposal is currently being discussed by the European Parliament and the Council; therefore, some parts of the proposal will be subject to modification until its final adoption.**

In today's digital world, space-based connectivity is a strategic asset for EU's resilience. It enables our economic power, digital leadership and technological sovereignty, competitiveness and societal progress. Secure connectivity has become a public good for European governments and citizens. The Commission is thus putting forward an ambitious plan for an **EU space-based secure communication system** that will:

- Ensure the provision and long-term availability of worldwide uninterrupted access to secure, autonomous, reliable and cost-effective satellite governmental communication services to governmental users by establishing a secure connectivity system under civil control and by supporting the protection of critical infrastructures within the meaning of Council Directive 2008/114/EC, surveillance, external actions, crisis management and applications that are critical for the economy, environment, security and defence;

- Enable the provision of commercial services or services offered to governmental users based on commercial infrastructure at market conditions by the private sector in line with applicable Union's competition law in order to facilitate, among others, further development of worldwide high-speed broadband, and seamless connectivity as well as removing communication dead zones and increasing cohesion across Member States' territories. The system will also provide connectivity over geographical areas of strategic interest, for instance Africa and the Arctic.

Both governmental user needs and satellite communication solutions are changing rapidly. The EU space-based secure communication system seeks to meet these increased and evolving needs, and will also include the latest quantum communication technologies for secure encryption. It will be based on the development of innovative and disruptive technologies, and on the leveraging of the New Space ecosystem.

The total cost is estimated at €6 billion. The proposed Union's contribution to the Programme from 2023 until 2027 is €2.4 billion at current prices. The funding will come from different sources of the public sector (e.g. EU budget, Member States, European Space Agency's (ESA) contributions) and private sector investments.

This initiative will further boost the competitiveness of the EU space ecosystem, as the development of a new infrastructure would provide a gross value added (GVA) of €17-24 billion and additional jobs in the EU space industry, with further positive spill-over effects on the economy through the downstream sectors using the innovative connectivity services. Citizens would also benefit from the technological advantages, reliability and

[1] The Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL establishing the Union Secure Connectivity Programme for the period 2023-2027 is available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0057

operational performance of such satellite communication services ensuring high-speed internet connections across the EU.

2 LEGAL BASIS

This consultation is conducted on the basis of article 166 of Regulation 2018/1046 (the EU Financial Regulation) and point 15 of its Annex I.

3 PURPOSE AND ADDRESSEES

The purpose of this Preliminary Market Consultation (PMC) is to acquire information regarding the current and future capabilities of industry that can provide ideas and potentially different technical and operational solutions and business initiatives responding to the EU needs and relevant for the USC Programme with a view to preparing the potential related future procurement procedure(s).

In addition, this PMC will provide inputs needed by the European Space Agency to elaborate further its new programme proposal 'ESA programme related to EU Secure Connectivity' to be submitted to its Council at ministerial level of November 2022 as a step towards ESA Partnership Projects related to the development, validation and related deployment activities in the context of the EU Secure Connectivity.

The addressees of the PMC are all interested entities with experience and capacity to participate in concession contracts, supply, service, or works contracts or mixed contracts, relevant to the implementation of the USC Programme, compliant with the conditions and modalities established hereinafter.

This PMC invites the addressees to provide inputs and ideas on relevant solutions and initiatives, for part or all of the objectives of the USC programme, by sending all or parts of the information requested in Section 4 within the identified deadline.

4 REPLY DELIVERY, ENQUIRIES AND INDICATIVE SCHEDULE

Your reply to the PMC shall be in English.

It can be submitted in an electronic form to: DEFIS-SECURE-CONNECTIVITY@ec.europa.eu.

The reply may be alternatively submitted in electronic form by registered post mail or courier service to the European Commission if you deem it more appropriate for reasons of protection of information and subject to the provisions described in section 9 (Confidentiality and Access to Information).

It shall be submitted at the latest by 16.00 Brussels local time on 9 September 2022.

Addressees will have the possibility to ask questions to the Commission regarding this PMC via the email: DEFIS-SECURE-CONNECTIVITY@ec.europa.eu.

Bilateral physical meetings/interactions or video conferences may take place on request of the addressees between the 29 of August and 2 September 2022. Whenever relevant,

representatives from the European Union Agency for the Space Programme (EUSPA) and/or the European Space Agency (ESA) may participate.

5 DESCRIPTION OF THE SECURE CONNECTIVITY MISSION

The system developed in the Union Secure Connectivity programme aims notably at providing a sovereign solution to the complex blend of EU governmental user needs benefiting from secure satellite communications connectivity.

The system implemented under the European Union Secure Connectivity Programme shall provide satellite communication services to governmental users in the following cases: surveillance (land border surveillance, maritime surveillance, external action & crisis management (maritime emergency, humanitarian aid; civil protection; law enforcement interventions; EU external actions; forces deployment), key infrastructures (transport infrastructure; space infrastructure; institutional communications; other critical infrastructures).

Together with the services provided by the GOVSATCOM component of the EU Space Programme Regulation[2] through the pooling and sharing of other satellite resources, the services provided to the users above can be grouped according to the infrastructure that will actually provide them, as follows:

- Services restricted to governmental users based on the governmental USC infrastructure ("Hard-gov"):
    - Robust Worldwide Low-latency Service
    - Robust Space Data Relay
- Services provided to governmental users by commercial USC infrastructure ("Light-gov")
    - Assured Worldwide Low-latency Service
    - Assured worldwide Narrowband Service
- Services provided to governmental users through pooled and shared resources (GOVSATCOM)
    - Robust & Enhanced MS pooled service
    - Assured pooled service
- Quantum Communication Services, such as Quantum Key Distribution

The infrastructure of the Secure Connectivity system entails the development of a space segment that can be implemented in different ways, comprising constellations of satellites in different types of orbits. The system shall provide satellite communication services to a variety of end-users with heterogeneous needs. The system shall service at least two differentiated segments, one of them covering governmental end-users and the other covering commercial end-users. In addition to the governmental segment, the commercial segment is a constituent part of the USC infrastructure, and shall support the establishment of a public private partnership as explained in the next section.

The combination of public and private needs in a single system implies that the public sector is aware of the possible business model and associated technical solutions in order

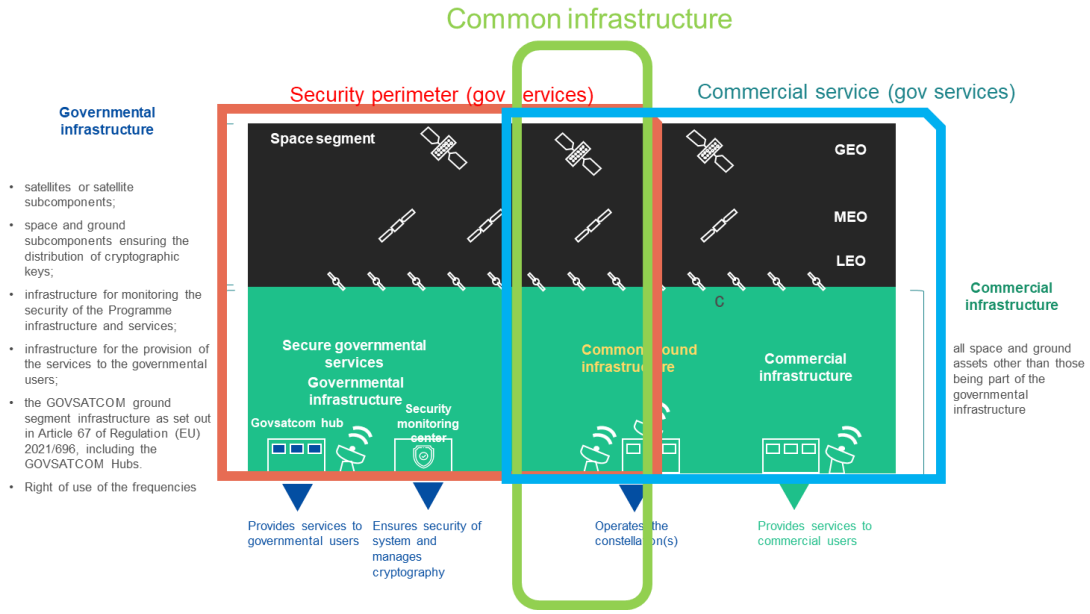
[2] Regulation (EU) 2021/696 of the European Parliament and of the Council of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme

to tailor its public private cooperation model. This is clearly one of the key focus of this PMC.

Whether combining either a single space segment for both governmental and commercial segments, or having two separate constellations, the USC shall comprise a system of multi-orbit satellites, including at least a constellation on LEO and/or MEO orbits to provide the global coverage and the low latency needed for the governmental and commercial services and additional Non-Connectivity Missions. It is understood that part of the needs may be answered by specific solutions or constellations.

The overall timeline of the system will also result upon this public private partnership and may be driven by very stringent commercial needs in terms of entry time to market. Yet for the governmental side, stringent planning also applies, starting with initial services in 2024 notably building upon existing and planned GOVSATCOM assets, as defined in the Space Regulation[3] and continuing with the development and deployment of new dedicated constellation(s) with services delivered on a global scale by 2027.

Governmental to commercial interfaces will be critical in designing the public private partnership. In particular, the following EU assets will be part of the governmental infrastructure: a GOVSATCOM Hub, as defined in the Space Regulation, and a Security Monitoring Centre. An initial sketch can be found hereafter defining the perimeter between the Governmental, the commercial and the common infrastructure.



A preliminary set of high-level requirements (reference document RD1) is provided as a key reference document for the addressees to understand and analyse the public sector needs and use this information to provide a structured reply to the PMC.

[3] REGULATION (EU) 2021/696 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 28 April 2021 establishing the Union Space Programme and the European Union Agency for the Space Programme and repealing Regulations (EU) No 912/2010, (EU) No 1285/2013 and (EU) No 377/2014 and Decision No 541/2014/EU

6 DESCRIPTION OF THE IMPLEMENTATION MODEL UNDER SECURE CONNECTIVITY

According to article 15 of the Draft Regulation the activities set out in Article 4 of this Regulation shall be implemented through contracts awarded in compliance with the Financial Regulation and the principles of procurement under Article 17 of this Regulation and may take the form of concession contracts, supply, service, or works contracts or mixed contracts.

In the case of concession contracts, it would permit to build upon the existing EU satellite communication technological and infrastructural base, including private assets, and to provide robust and innovative governmental services, while allowing the private partner to complement the Programme infrastructure with additional capabilities to offer commercial services on market conditions through additional own investments. Such a scheme would furthermore optimise deployment and operation costs by sharing development and deployment costs on subsystems common to both governmental and commercial infrastructures, as well as operational costs by allowing a high level of capacity mutualisation. It would stimulate innovation in particular for New Space companies by enabling the sharing of Research and Development risks between public and private partners.

Within this frame the consultation will concern both:

i) general aspects and Union's objectives which represent qualifying aspects of the Connectivity Programme and are going to be implemented regardless from the selected implementation scheme, and

ii) more specific aspects relevant to the implementation of a possible concession scheme, as far as approach to assets, market and risk allocation are concerned

7 INNOVATION AND INVOLVEMENT OF SMES

A key priority for the European Commission is to foster a competitive and innovative European space sector. The European Commission identifies the need for an entrepreneurial ecosystem, creating new business opportunities, bringing new technologies and disruptive industrial processes.

In this regard, the start-ups and Small and Medium Enterprises will be beneficial to create an innovative and competitive Union space sector and will contribute to foster competition and thereby reducing manufacturing costs when at the same time fast implementation and time to market. Supporting research and innovation of disruptive technologies and bringing new actors via the spill-over effect and democratising the access to space and space-based service provision will increase the competitive environment and the overall competence of the market.

In particular, the following approach shall be considered:

- a plan to maximise the participation of start-ups and SMEs from across the Union in the activities, and
- a plan to allow start-ups, SMEs and mid-cap companies from across the Union to deliver own services to end-users.

SMEs and start-ups are therefore encouraged to participate actively to this PMC.

8 ESA PARTNERSHIP PROJECTS FOR DEVELOPMENT, VALIDATION AND RELATED DEPLOYMENT ACTIVITIES IN THE CONTEXT OF THE EU SECURE CONNECTIVITY PROGRAMME

The economic operator(s) that would be selected under the relevant EU procurement actions may benefit from setting up Partnership Project(s) with the European Space Agency for implementation and co-funding of development, validation and related deployment activities, subject to approval of the ESA Programme related to EU Secure Connectivity at the ESA Council at Ministerial level of November 2022.

In this context, questions raised in the PMC and in particular the questions raised under Annex A.1.13 aim at providing preliminary (and non-committing) technical, programmatic and financial elements for the development, validation and related deployment activities of the space and ground infrastructure to provide governmental services in the context of the EU Secure Connectivity initiative.

The response to the questions will be used to support the preparation of the ESA Ministerial Programme and its subscription by ESA Member states at the ESA Council at Ministerial level of November 2022.

***Disclaimer**: Nothing in this consultation and in the relevant results shall be interpreted as to create obligations neither on ESA nor on the European Commission with regard to the actual implementation of any specific procurement action or contract. Nothing in particular shall be interpreted as to create the appearance or expectation of the launch of an interinstitutional procurement or a joint procurement between the Commission and ESA for the purposes of the EU Financial Regulation.*

9 INFORMATION REQUESTED

The general objective of this PMC is to collect:

A. Information on the market players that may be interested in participating in future activities of USC programme;

B. General description of the intended solution(s) for some or all of the different system components of USC;

C. A business approach for the provision of services for some or all of the different system components of USC, including the entry time to market;

D. A high-level costing of the commercial and governmental parts of some or all of the different system components of USC;

E. An overall development, validation and deployment logic for some or all of the different system components of USC.

Additional specific objective of this PMC is to collect responses to the thematic questions listed in Annexes A.1.

10 CONFIDENTIALITY AND ACCESS TO INFORMATION

10.1 PROPRIETARY INFORMATION

The Proprietary Information from the European Commission consisting of the reference document (RD1) listed in Section 12 may be made available to the addressees subject to some conditions:

- Proprietary Information may be made available to the interested parties subject to submission of Non-Disclosure Undertaking (NDU) in the form provided in appendix 2 according to the procedure described in section 10.2.
- Commercial in confidence information from the addressees will be protected if they request so and may be the subject of the signature of the non-disclosure agreement (NDA) laid out in appendix 2. In such a case the NDA will substitute the NDU.

10.2 DISCLOSURE AND REQUEST FOR ACCESS TO PROPRIETARY INFORMATION

In order to be given access to the Proprietary Information as defined in Section 12, interested parties shall submit a request to the Commission via email to DEFIS-SECURE-CONNECTIVITY@ec.europa.eu including a duly signed Non-Disclosure Agreement / Non-Disclosure Undertaking[4] through certified electronic signature, according to the template provided in appendixes 1 and 2 with attached to it a copy of its registration and documents establishing the authorisation rights of the signatory of the NDA/NDU. Once received the Commission shall send the Unclassified Proprietary Information to the interested party.

Nota Bene: access to the EU Proprietary Information is not strictly required to answer this market consultation. It is therefore not a precondition to enter this consultation.

Without prejudice to specific provision included in the NDA/NDU, the Commission reserves the right to disclose the information received in this PMC to the European Union Agency for the Space Programme (EUSPA), the European Space Agency (ESA), committees foreseen in the Space Regulation[5], and Commission's contractors.

10.3 DATA PROTECTION SECTION

If processing the reply to the stakeholder consultation involves the processing of personal data, such data will be processed pursuant to Regulation (EC) No 2018/1725.

Purpose of the processing: personal data is collected and further processed for the purpose of the management and administration of the replies to the market consultation.

Data concerned: the following data can be processed: name, surname, function, contact details (email address, business telephone number, mobile telephone number, fax number, postal address, company and department, country of residence, internet address).

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4 It is at party's discretion to decide whether it will submit an NDU or NDA, depending on its need to formally protect the information shared through its participation in the Consultation

5 Regulation (EU) No 696/2021

Lawfulness of the processing: the lawfulness of the processing is based on article 5.1 (a) of Regulation 1725/2018.

Recipients of the data processed: for the purpose detailed above, access to your personal data is given to Commission staff without prejudice to a possible transmission to the bodies in charge of a monitoring or inspection task in accordance with European Union law.

Information on the retention period of personal data: responses to the stakeholder consultation, including personal data, will be retained by the Commission for a period of 10 years following the closure of the stakeholder consultation.

Data subject's rights and contact data: Data subjects have the right of access and rectification (modification, correction or deletion) of their personal data at any time. Requests shall be addressed to the Commission describing the request explicitly. Data subjects are entitled to lodge an appeal with the European Data Protection Supervisor (EDPS) at edps@edps.europa.eu should they consider that the processing of their personal data does not comply with Regulation (EC) 1725/2018.

11 LEGAL AND BUSINESS INFORMATION REGARDING INTERESTED ENTITIES

Addressees are free to answer the PMC even if they are concerned only by a subset of the information sought. There is no obligation to reply to all the questions of the PMC.

Addressees are free to answer in the form of consortium.

Annex A.2.b is offered as information to the addressees to familiarise themselves with the process of assessment of eligibility and participation conditions applicable to possible future USC tender(s). It will allow interested entities to check their compliance with respect to participation conditions used for the preservation of the security, integrity and resilience of operational systems of the Union, as described in the article 24 of the Space Programme Regulation. Such conditions of participation will be used for the prime contractor(s)/concessionaire(s) and the security sensitive suppliers only in the future tender(s) and is not applicable to the current PMC; **the template is attached to this PMC only for advance information purposes, and the Commission will not assess any eligibility condition at this stage**.

12 LIST OF ANNEXES, APPENDIXES AND PROPRIETARY INFORMATION

The following **Annexes** need to be filled to answer to the PMC:

- **Annex A.1:** Questions for the Addressees
- **Annex A.2.a**: Template of the response letter
- **Annex A.2.b**: Legal and Business information - Criteria for self-assessment of participating conditions in future tender(s)

In case the addressees are willing to access the EU proprietary information, (one of) the following **Appendix** need to be filled:

- **Appendix 1**: Template Non-Disclosure Agreement
- **Appendix 2**: Template Non-Disclosure Undertaking

Proprietary information (available to the addresses under the conditions set in Section 10.2):

- **RD1**: Preliminary set of high-level requirements

13 SUBMISSION OF RESPONSES

Submission of a response implies acceptance of the conditions of the PMC.

The deadline for submission of responses is:

9 September 2022 - 16.00:00 Brussels local time

The responses to this Preliminary Market Consultation should be sent in English in electronic format by email to the following address:

DEFIS-SECURE-CONNECTIVITY@ec.europa.eu

or, in electronic form by registered post mail or courier service to:

Mr. Christoph Kautz

Head of unit B.1 - Secure connectivity, Space Surveillance and Applications

European Commission - Directorate-General Defence Industry and Space

Avenue d'Auderghem 45 (BREY 07/060)

B-1049 Brussels/Belgium

ANNEX A.1 QUESTIONS FOR THE ADDRESSEES

This PMC invites the addressees to freely provide further analysis and trade-offs on the Secure Connectivity mission as currently specified in the RD1 (draft preliminary high-level requirements).

However, in order to gain a thorough knowledge of the EU industrial capacity, the present Annex poses specific questions on the different topics relevant for the initiative. In the next sections a preliminary background of each topic addressed in the preliminary definition of the Mission is provided to better clarify the context of the related questions.

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ANNEX A.1.0 OVERALL GENERAL DESCRIPTION

For some or all of the different system components of USC, please provide your understanding and potential solution from a technical, business, operational and cost point of view according to the structure below

A. Please add here your general description of the intended solution(s) for some or all of the different system components of USC;

B. Please explain here your business approach for the PPP implementation and provision of services for some or all of the different system components of USC, including the entry time to market;

C. Provide here a high level costing of the commercial and governmental parts of some or all of the different system components of USC;

D. An overall development, validation and deployment logic for some or all of the different system components of USC.

Please explain and provide supporting material to demonstrate how your solution in terms of infrastructure, software, and operational concepts will enable the European Commission to achieve its strategic, operational and security objectives for USC.

Please indicate any main time scale for the USC development and its operational validation according to your proposed solutions.

In addition, interested entities are free to comment and/or make suggestions to the draft preliminary set of high-level requirements referring to specific requirements number for the purpose of structured feedback.

ANNEX A.1.1 COMMUNICATION SERVICES PORTFOLIO

The desired service portfolio for the USC is defined in the Preliminary set of high-level requirements (RD1 - Section 3.2.1 Services to governmental users based on the governmental infrastructure). Through the present PMC the Commission intends to confirm the associated characteristics.

The services can be grouped according to the infrastructure that will actually provide the USC connectivity services: a) EU infrastructure (the supplied governmental services hereby defined as "hard-gov") b) privately owned infrastructure (defined as "light-gov") c) pool and shared resources (includes both hard-gov and light-gov) d) dedicated infrastructure for Quantum Key Distribution services, as defined in section 5 of the PMC "Description of the secure connectivity mission".

Q1.1 In relation to the identified service portfolio, do you envisage any further type of service that could satisfy the needs of the users identified in the preliminary requirements?

Q1.2 Can you assess the feasibility for the desired minimum service availability (see preliminary requirements sec. 3.2.1), with specific reference to the impairments of radio transmissions in Ka and possible other bands?

Q1.3 Can you provide a preliminary assessment on the expected performance (coverage and availability) of any envisaged broadcast communications for safety applications (e.g. distress signals or ADS-B, AIS for aircraft and vessels surveillance)?

Q1.4 If the narrowband service is provided for M2M and IoT applications, could you specify the associated service characteristics, in terms of type of applications, time of revisit, latency, message size, number of messages sent by day, standard used, etc?

ANNEX A.1.2 NON-COMMUNICATION SERVICES

The Secure Connectivity infrastructure can be exploited to provide additional "Non-Communication services" as extra capacity with respect to the primary mission (connectivity services), notably to enhance the capabilities of the EU Space Programme components. These extra non-communication services will improve the value of the overall USC service portfolio with the introduction of additional products, payloads and ground facilities.

These extra delta-infrastructure shall be introduced for each non-communication service without impacting the communication services provision and according to different implementation scenarios and progressive improvements, and shall be cost effective and subject to technical/programmatic constraints mandatory to ensure the primary mission.

The responder to the PMC is invited to answer to the questions on any of the non-communication missions presented below.

EGNSS - Galileo augmentation*	Increase the availability and continuity of GNSS services thanks to the extra transmission of GNSS signals and/or novel augmentation signal from fast revisit satellite
EGNOS	Improve EGNOS space segment redundancy thanks to the availability of new EGNOS transponder/s
GNSS RF monitoring	New capacity for enabling detection and localisation of Radio-frequency interferences (RFI) on the EGNSS bands at different orbit altitudes
EGNSS - Radio Occultation	New capacity for enabling atmospheric sounding through GNSS signals
SST – Satellite Based Space Surveillance**	Providing improved capacity (time, continuity, accuracy) in support to the objectives of Space Surveillance and Tracking (SST) of catalogued and new objects
EO – Optical visible sensing	Provide additional Earth Observation capacity by means of fast revisit and high resolution optical imaging supporting and enhancing the current Sentinel-2 service
EO – CO2 sensing	Provide a contribution to the overall global Earth Observation mission providing additional Global monitoring of anthropogenic CO2 emissions from low orbits (high spatial resolution)
Security – Persistent live video stream	Provide innovative monitoring services by means of fast revisit Video live-stream with real-time global coverage
Security – Thermal IR imaging	Provide a contribution to the overall global Earth Observation mission providing additional High resolution thermal infrared sensing from low orbits (high spatial resolution)
Other	Other missions to be defined

(*) Galileo augmentation /Governmental LEO PNT services: LEO PNT has been identified as an opportunity to complement purely governmental services, such as: Improved resilience, robustness, availability and accuracy for PRS Navigation services, and Enhanced PRS Security Services. No private undertaking shall be considered for this mission. LEO PNT has also been identified as an opportunity to complement/enhance the Galileo Open Services.

(**) SST – Satellite Based Space Surveillance: Public undertakings can only be envisaged in the context of the EU-SST governance (assets are managed by government member of the partnership)

Q2.1 Which of the above mission is feasible within your technical solution to include in the short or medium term? Please justify, identifying the TRL level for each of the non-communication service and the roadmap for implementation of services including description of the starting point maturity, risk mitigation actions (technological, regulatory, etc.)? Do you see applicable innovative industrial approaches to implement such services?

Q2.2 Do you envisage the inclusion of other non-communication services?

Q2.3 Could some of the above missions be provided on a commercial basis? In this case, which business case(s) and revenue-making mechanisms could be envisaged?

Q2.4 Can you elaborate on the apportionment in terms of CAPEX and OPEX with the common infrastructure?

Q2.5 What are the potential benefits, synergies, limitations and risks that you anticipate for the accommodation of the mission's specific component and payload with the other components and payload of USC or the other mission, including the re-use of the communication missions for data link? What is the performance achievable and the added value for the users?

Q2.6 What would be the hosting scheme and payload accommodation on satellites supporting the main missions?

Q2.7 What are the constraints and solutions related to the management of frequency filings associated coordination mechanisms and other regulatory issues, notably for RF monitoring?

ANNEX A.1.3 COMMERCIAL SERVICE AMBITION

The draft Regulation sets the objective to enable the provision of commercial services in order to facilitate, among others, further development of worldwide high-speed broadband, and seamless connectivity as well as removing communication dead zones, increasing cohesion across Member States' territories and improve connectivity over geographical areas of strategic interest, such as Africa and the Arctic;

The draft Regulation also foresees in this respect the provision of fair, reasonable and non-discriminatory access to infrastructure necessary for the provision of commercial services to third-party operators.

Q3.1 What is the set of commercial services that you aim to provide in terms of:

i. Broadband connectivity
ii. Other connectivity services (e.g. low data rate connectivity, optical communications, etc.)
iii. Additional non-communication services

For each service, what are the target end-user communities and geographies that you would deploy in priority?

Q3.2 For each considered service, what is the relevant market? What are the competitive conditions in it:

- *Are there other operators providing similar services?*
- *How are similar services commercialized and priced?*

Q3.3 How do you consider that these services contribute to remove communication dead zones and increasing cohesion across Member States' territories?

ANNEX A.1.4 EXPLOITATION MODEL

The fact that the concessionaire(s) business model is viable, sound and robust is essential to ensure the viability of the concession contract(s).

On the assumption that the USC Programme will be implemented through one or more concession contracts, the following aspects are relevant for the market consultation:

Q4.1 Which is the revenue models and the charging schemes you envisage to underpin the concession/s.

Q4.2 Which contribution of the concessionaire(s) would you consider for the governmental infrastructure:

- *Operations of the governmental infrastructure*
- *'meta-operator' support to the operations of the GOVSATCOM Hub*
- *Other activities*

Q4.3 What are the CAPEX/OPEX risk sharing mechanisms that need to be considered in the contracts? For each risk, which mitigation actions do you expect from the public sector?

- *Topline: which level of commitment expected on the purchase of 'light governmental' services? Under which form?*
- *Design risks, accreditation*
- *Schedule risks*
- *Other risks*

ANNEX A.1.5 SMES, START-UPS AND NEW SPACE

A key priority for the European Commission is to foster a competitive and innovative European space sector. The European Commission identifies the need for an entrepreneurial ecosystem, creating new business opportunities, bringing new technologies and disruptive industrial processes.

The draft Regulation provisions aim at maximising the participation of start-ups and SMEs throughout the Secure Connectivity value chain through:

1. ensuring that at least 30 % of the value of the contract is subcontracted by competitive tendering in order to enable the cross-border participation of SMEs
2. requiring that contractors provide a plan to maximise the integration of start-ups and SMEs from across the Union in all Programme activities
3. requiring that start-ups, SMEs and mid-cap companies from across the Union are able to deliver own services to end-users.

Start-ups have demonstrated that they are technologically advanced and eager to contribute with innovative solutions. New Space companies have demonstrated to be able to manage important activities including full fledge infrastructures delivering services. Hence, the European Commission is exploring the possibility to award contracts directly to new space companies and benefit from their value-added services in compliance with the objectives defined in the Draft Regulation.

Q5.1 Identify the technologies, equipment or sub-systems relevant to the USC that:
- *SME & Start-Ups companies can build and deploy (state of play 2022)*
- *SME & Start-Ups companies could/would be able to build and deploy (2023-2035).*

Q5.2 Which USC services could SME, Start-up and mid-cap companies provide?

Q5.3 Which part of the concession contract(s) would be the most beneficial for the involvement of the SMEs and Start-up companies? Please explain.

Q5.4 In the light of the sovereignty objectives (see annex A.1.18), do you see any showstopper for involvement of SMEs/start-ups in the security sensitive part of the USC programme?

Q5.5 Are you familiar with the instruments put in place by the Commission to facilitate investment in New Space industrial ecosystem? Do you intend to use these tools in the context of USC?

ANNEX A.1.6 OVERALL DEPLOYMENT LOGIC AND SCHEDULE

The deployment of the secure connectivity infrastructure entails the development and deployment of a substantial space segment component (and to less extend a ground segment component) in a very short time to meet the requested Programme objectives in terms of calendar, namely an initial service as soon as possible and full operational capability (FOC) a first generation of secure connectivity by the end of 2027.

The objectives for USC in terms of deployment schedule shall include:

- Deployment of a constellation providing a first level of broadband services worldwide either in LEO or in MEO or combination of both by the end of 2027
- Deployment of a constellation providing first level Low Data Rate services on smaller platforms [if not embedded in the broadband mission constellation] by the end of 2027
- An initial QKD service deployment by the end of 2027
- 1st Launch of first Secure Connectivity asset within 18-24 months from Contract signature

The schedule for the deployment and associated logic need to take into account several type of elements:

1. Schedule elements

- The procurement schedule for the USC concession;
- The schedule for the development of the required technologies, which depends on the complexity of the mission, the intended services delivery;
- The schedule for the development and production of the satellites, which depends on the satellite complexity, availability of suitable off-the-shelve technologies, and series production capability (including the production cadence and necessary facilities);
- The schedule for the launch and constellation ramp-up in orbit, which depends on the intended orbit, the number of satellites per launch, the launch cadence capability considering the already crowded manifest of some launchers, and availability of other European launchers (e.g. micro-launchers)

2. Technical Elements

- The selection of the orbits (LEO and/or MEO) impacts the compliance with latency, coverage, time to service and cost.
- Orbit Raising vs. Direct Injection: while satellites direct injection into orbit by the launcher is the fastest way to get the satellites on their nominal slot for service provision, an orbit raising approach with injection in a lower orbit may allow deploying more satellites in one single launch, reducing the possibly the total number of launches and deployment costs.
- Filing: the deployment schedule must also be compatible of specific constraints of deployment required by the administrations and added in the corresponding filing.

This cross check needs to be made in order to justify the choice of filing in particular for the governmental part as deployment of the governmental satellite infrastructure can be directly impacted but also for the deployment of the commercial part for non-existing assets in the space segment.

1. *Constellation deployment logic (size, orbit, satellites size…)*

Q9.1 What is the preferred baseline constellation deployment to support worldwide high capacity broadband Services: LEO vs. MEO satellites in the envisaged timeframe? What are the assumptions in terms of satellite size (mass, power), orbit and possibility to embark additional missions? Which deployment schedule would you target for a LEO and/or MEO constellation?

Q9.2 Considering the schedule constraints, do you see an advantage in considering the deployment of mixed MEO/LEO constellations to reach a global coverage as soon as possible?

Q9.3 Can you define relevant intermediate configurations of the constellation (to cope with budget and launch capabilities limitations) and associated services performances levels? What are the possibilities to complement a first baseline constellation deployment with other orbital constellation at a later stage?

Q9.4 What is the preferred baseline constellation deployment to support low data rate worldwide services based on smaller satellites (tens of kilos)?

2. *Satellite development and production schedule*

Q9.5 What are the assumption regarding the satellite design and development schedule for the various configuration (broadband services, low data rate services)? What are the conditions to enable a first launch of USC satellites in a 18-24 months' timeframe?

Q9.6 Do you consider any specific need to perform a first demonstration flight of USC satellites before initiating the full fledge series production (trade-off between risks vs. schedule)?

Q9.7 Which satellites production capabilities do you consider can be realistically achieved, bearing in mind the deployment schedule and the various possible constellation sizes (60-78 satellites Low Data Rate nanosatellites constellation, 100+ satellites in LEO orbit, 24 satellites in MEO orbit)?

Q9.8 Do you consider that the procurement of Long Lead Items as essential elements to accelerate the deployment schedule. How long in advance of the main concession contracts should those LLI be procured?

3. *In-orbit deployment schedule and strategy*

Q9.9 What are the mass to orbit and accommodation which can be made on the intended launchers, orbit raising time for the satellite to reach final destination. Which trade-off can be made between injection in the final orbit vs. orbit raising by the satellites and injection in a lower orbit?

Q9.10 What are the launch manifest constraints and uncertainties, and which launch rate can be realistically achieved on available European launchers in the timeframe 2025-2027?

Q9.11 What is your assessment with regards to the use of micro launchers or ride-share (for small satellites deployment) to tackle any possible launch rate constraints stemming from the Vega C/A-6 manifest?

4. <u>Ground segment deployment strategy and schedule</u>

Q9.12 What are the required number of gateway stations /antennas to provide global coverage, and expected capacity? What are the possible locations?

Q9.13 Which ground segment schedule deployment shall be considered to match the space segment deployment?

ANNEX A.1.7 GOVERNMENTAL-COMMERCIAL INTERFACES

The infrastructure of secure connectivity is composed of the governmental and commercial infrastructure. It shall deliver governmental services, whose objective is to ensure a high level of robustness, and provide a service with specific security characteristics and commercial services which are defined by the concessionaire(s) in accordance with the needs and the positioning on the market.

The draft Regulation allows to share interface and common subsystems within the infrastructures, that will support both governmental and commercial services, to benefit from synergies between the two types of services.

This sharing of the infrastructure has the following impacts:

1. Common subsystems and/or interfaces may be owned by the contracting authority (if it is deemed necessary and relevant in order to ensure the protection of the security interests of the Union and its Member States).
2. Even when a common subsystem or interface belongs to the commercial service, taking into account that it supports the governmental service, it enters into the security perimeter, therefore is subject to the accreditation process.
3. As the common infrastructure is shared between commercial and governmental services, the limitation of the resources may translate in conflicting use of governmental and commercial services. The Commission should have at its disposal the right to prioritise the provision of the governmental services over the commercial services in case of crisis or force majeure. Specific terms and conditions have to be established in the contract to that purpose.

With regards to security and accreditation, the USC infrastructure must find the optimal trade-off in view of the 3 key characteristics that contribute to security for the users:

- **Robustness / Service Assurance**: considering a defined size and overall capacity of the constellation, this dimension expresses the capacity of the system to provide a robust and resilient governmental service. This characteristic is reached by integrating security measures in the infrastructure and operations (with cost impacts on the infrastructure see annex A.1.8), but also defining a security architecture that isolate untrusted or exposed sub-components of the system. This criterion is improved by segregation between governmental and commercial infrastructure.

- **System size and capacity**: The dimension (number of satellites) of the space segment for governmental services has a direct impact on security for the users. In particular, having at disposal a space segment that allows users to point multiple satellites at the same time, creates diversity in the channels for a single user and therefore raises the level of service availability. It is therefore mandatory to optimize the profitability for all stakeholders. This criterion is improved through resource sharing.

- **Flexibility**: Taking into account the potential variability of the governmental service demand, this dimension expresses the interchangeability of the GOV and COM resources with the aim of achieving optimal service availability at any time. This criterion is improved through resource sharing

The objective of the preliminary market consultation is to explore the potentiality of sharing infrastructures between the governmental and the commercial services.

Q7.1 Could you indicate the advantages expected for the governmental service of your proposed architecture, in particular in terms of size/dimension of the space segment and channel diversity, and in terms of flexibility? Could you describe the mechanisms and solutions to ensure that the security profile of the governmental service is not reduced?

Q7.2 Could you propose contractual safeguard (participation to the decision-making process, compensations, etc…) to put in place to ensure that the right to prioritise its access to the commercial services from the other customers in case of crisis or force majeure does not hamper the exploitation model?

Q7.3 Could you describe the advantages expected for the commercial services of such communalization?

Q7.4 If the solution proposed allows to prioritize the governmental service on the commercial services, indicate the technical (thresholds). Answer to Q7.2 on contractual safeguards must be completed to cover this possibility.

ANNEX A.1.8 SECURITY ARCHITECTURE AND CONCEPT OF USE

Secure Connectivity must provide an uninterrupted access to secure, autonomous, reliable and cost-effective satellite governmental communication services to governmental users, supporting the protection of critical infrastructure, surveillance, external actions, crisis management and applications that are critical for the economy, environment, security and defence. The Commission together with the Member States will define specific security requirements applicable to the governmental infrastructure and the governmental service. Such requirements will mainly be based on the policies and guidelines of the Council information assurance (including the development of security products for the protection of classified information up to SECRET UE/EU SECRET to protect the critical links of the system), and stringent approach from the civil sector (e.g ISO 27002, NIST cyber security framework). A sound security architecture in conformity with these requirements will be necessary in the implementation of the programme. This architecture shall coherently segregate governmental services from non-accredited systems and ensure system integrity. These requirements and solutions are supported by a risk and threat analysis that conforms with latest security standards, justifying the requirements and design choices.

The governmental infrastructure and the governmental services will be subject to security accreditation by the Security Accreditation Board. The accreditation is the process to provide assurance that a system or an infrastructure hosting and processing information requiring adequate protection in terms of confidentiality, integrity and availability has implemented appropriate security measures, and that a sufficient level of protection has been achieved to treat the security risks (therefore residual risks can be accepted). The process of accreditation as well as the relevant governance is defined in the regulation proposal. Accreditation is not only on the approval of the security requirements at the beginning of the Programme but more importantly on the assessment of the effectiveness of the implementation and, in case of deviation, that this deviation does not affect the security profile in a way the service is becoming unsuited for its intended purpose. The security accreditation board takes its decision based on evidence that require full transparency from the concessionaire, the elaboration of specific evidence and the organisation of independent tests (e.g. penetration testing).

The preliminary market consultation aims at providing views to the Commission on the readiness of industry to cope with the described security process in the context and schedule of USC, namely an infrastructure co-hosting commercial service built through of private investment.

Security requirements and security solutions

Q8.1 Could you confirm your experience and readiness to cope with stringent security requirements that are expected for the governmental service, including in particular your capacity to manage classified information up to SECRET EU/EU SECRET level, and to develop accredited systems?

Q8.2 Could you identify the major solutions you intend to integrate to meet high level security? This includes an assessment of the level of maturity of these security

solutions, their availability within the EU and, if relevant, a list of activities to be performed in the development phase to ensure maturation?

Security accreditation

Q8.3 Taking into consideration that security accreditation is limited to the governmental infrastructure and service, could you describe in your infrastructure, the accreditation perimeter for the final system as well as for major milestones of the deployment of the infrastructure.

Q8.4 Taking into account that it is expected that the public sector will manage all risks related to the security accreditation (in terms of cost and schedule) only for the governmental service, could you present an architecture of the common infrastructure and a deployment logic that mitigates all impacts of a security accreditation decision (e.g. refusal to deploy, request of a risk treatment) on the commercial service.

Q8.5 Could you propose the main characteristics (standards, etc.) of project management and the concept of exploitation, and describe how you intend to integrate accreditation (including independent assessment) within the project? If you propose a management of the project (or part of it) through agile methodologies, could you propose an organisation allowing the production and collection of adequate evidence supporting accreditation?

ANNEX A.1.9 SPACE SEGMENT – MULTI-ORBITAL CONCEPT AND PRODUCTION LOGIC

A multi-orbit concept based on LEO/MEO constellations complementing existing GEO capabilities will deliver better services overall, offering lower latency and global coverage.

The satellite development and production logic is a complex matter because it has to take into account various constraints such as development and production costs, the tight schedule development and constellation deployment constraints and technology performances. In addition the USC mission also includes a wide range of missions which may require different type of satellites capabilities and size, ranging from a few tens of kilos for micro/nano satellites providing low data rate services to medium-size satellites providing high capacity broadband services. In this respect a "one fits for all" approach for what concerns the satellite design, development and production may not be desirable.

As far as the satellite design and development approach is concerned, it is key to identify the critical technologies from a technical and security point of view which may have an impact of the development schedule. This may be either due to the need to perform anticipated pre-development for technology qualification, or due to the need to restrict the procurement of specific units within Europe for security sensitive/ non-dependency reasons. In addition, limitation of EAR/ITAR components shall also be a design target.

Furthermore, the tight schedule constraints may not be compatible with a complex satellite design qualification at the start of the constellation deployment and a versioning approach may also be considered, in particular making use of a modular design of the satellites, to gradually evolve the satellites functionalities/capacity over time in the deployment of the constellation.

The deployment of the satellites in-orbit may be subject to the use of different type of European launchers and therefore require a different launch configuration to adapt to the deployment and replenishment needs. The design will have to come with smart dispenser/satellite configuration approach to cope for this reality.

The production of a high number of satellites to be deployed in a LEO or MEO orbit will require optimization of the satellites series production and testing approach. In order to accommodate with the production limitations at one given facility, a multi-site production approach is also to be considered.

Multi-orbital concept

Q9.1 Can you provide details on:

- *Rationale for the orbit selection*
- *Constellation description (altitudes, number of satellites, inclinations, etc.)*
- *Constellation performance (e.g. coverage, availability)*
- *Preliminary technical characteristics such as coverage, system capacity, latency, user terminal complexity/cost, system orchestration, availability, operational lifetime, constellation operations management.*

Satellite Design and Development:

Q9.2 Provide an identification of the key critical equipment for which developments need to be anticipated, innovation/performances to be achieved. Can you identify potential suppliers for those equipment's, and assess the risks of non-European availability?

Q9.3 Are there specific risk related to EEE parts procurement that might jeopardize the project schedule (FOC by end 2027)? If necessary propose mitigation actions, identify LLIs and proposed LLI procurement scheme to meet the schedule.

Q9.4 What would be the impact on the Programme of work to achieve an ITAR/EAR free satellite? Which actions can be undertaken to limit the number of ITAR/EAR components?

Q9.5 What are the already qualified candidate platforms for LEO, MEO and nano-satellites on which you would base the design of the satellites as well as required adaptations of these platforms to meet USC requirements?

Q9.6 Is there an opportunity for conceiving an evolutive space segment design to optimize the start of operational services. What are the possibilities to implement modularity and scalability on the satellites to make them flexible so it might help progressive investment of the private sector in accordance with the market demand?

Satellites manufacturing and production

Q9.7 Can you describe the facilities in Europe for both satellite integration and testing which are readily available to support the series production of satellites. Would you suggest an approach with parallel production on multiple sites? Are there new facilities to be developed in anticipation?

Q9.8 Can you describe the proposed unit and satellite acceptance tests programme that will allow to meet the required production cadence, minimize the costs while guaranteeing compliance to mission requirements and quality standards?

Q9.9 Can you describe the proposed unit and satellite production concept to meet the required production cadence.

Q9.10 Would you recommend proceeding with a double source procurement approach for the satellites or specific units to reduce schedule, costs and technical risks given the budget limitation, in particular for the development phase. Identify the preferred double sourcing areas.

Q9.11 The deployment of the satellites may require the use of different type of launchers to match with the launch manifest, the replenishment phase or a first demonstration flight. How can the satellite design be optimized to match different dispensers and launch configurations? Describe the proposed dispenser solution to match the deployment approach and schedule.

ANNEX A.1.10 GROUND SEGMENT AND GROUND NETWORKS

The list of the ground segment and related functionalities are included in the RD1.

Q10.1 In the concept that you propose, would the commercial services offered to governmental users (authorized by the respective Competent GOVSATCOM Authority) also be provided through the GOVSATCOM Hub(s)? What is the concept of operation? How would the user needs be allocated to GOVSATCOM resources (through pooling and sharing of existing capacities) versus USC services?

Q10.2 Is there the need to put in place is an Integration System Development Plan (ISDP) to capture all the steps needed to allow eventually a "seamless" integration between the GOVSATCOM Hub(s) procurement and the USC? If so, what would this entail?

Q10.3 What grouping of the ground segment elements and functionalities do you envisage? Can you provide a description of the approach, and argumentation of its advantages and disadvantages, as well as indicative cost?

Q10.4 Do you consider the possibility to use of ground elements (resources/functionalities) for the support of commercial as well as governmental services provision or do you implement complete segregation between GOV and Commercial Ground Segment?

Q10.5 Please identify and report the technology maturity and the technology gaps concerning RF aspects of feeder links and gateways for Secure Connectivity's NGSO constellations?

Q10.6 Please confirm whether all aspects of the Ground Network deployment and operation (in particular location of Landing sites, ground interconnection, use of Cloud functionality), can satisfy EC Security and Sovereignty requirements for all Governmental services of EUSCP, including source of technology and solution and location of components.

Q10.7 How does the responder plan to achieve a high availability (e.g. >99.9%) ground network that is able to counteract atmospheric impairments and what gateway (GW) diversity strategy is required to be implemented? How does this strategy affect the teleport location selection?

Q10.8 What ground network architecture do you envisage for the Secure Connectivity constellation(s), including the terrestrial interconnection? What are its expected interfaces with the Optical Transport Network (OTN) (e.g. PoP/IXC)?

Q10.9 Please elaborate on means to improve the system availability considering the critical MCC(s) function implementation (E.g distributed MCC, partial/full MCC on-board, MCC redundancy), and provide elements of the complexity/cost associated to the proposed scenario.

Q10.10 Do you consider alternative technologies to 5G core network for the ground network? If so, can you please provide a description of the approach, and argumentation of its advantages and disadvantages, as well as indicative cost?

Q10.11 To which extent does you consider necessary the use of cloud services for different ground network functions (e.g. data processing, data storage, data distribution, and data analytics, mission control, etc.) of Secure Connectivity constellations? How can the European sovereignty be ensured when cloud solutions are used?

Q10.12 Do you consider an improved end-to-end latency could be achieved by optimizing the ground segment configuration? Could you please elaborate on this point, considering possible trade-off with the inter-satellite link functionalities?

ANNEX A.1.11 INTEGRATION OF EUROQCI AND SECURE CONNECTIVITY

European Quantum Communication Infrastructure or ('EuroQCI)' means an interconnected space and terrestrial infrastructure integrated to the infrastructure of the Programme using quantum-based technology; EuroQCI activities in the Secure Connectivity Programme include the development of SpaceQCI, meaning the Space and related ground segment of EuroQCI. The initial objective is to provide a quantum key distribution (QKD) services, a highly secure form of encryption. EuroQCI quantum key distribution services should cover users' need in terms of assurance, up and including the ability to use the key material (when appropriate in combination with conventional solutions and post-quantum cryptography) in electronic products approved for the protection of classified information up to SECRET UE/EU SECRET, or equivalent levels of classification. Taking into account that QKD technology and products are not yet sufficiently mature to be used for the protection of EU classified information (EUCI) and that important questions about QKD security still need to be solved—such as standardisation of QKD protocols, side channel analysis and evaluation methodology—the Commission intends to progressively reach this objective through intermediate steps (demonstration, provision of unclassified services, and provision of classified services).

In this context, general questions must already be raised with private actors: exploitation model and synergies with other communication missions. Answers to such questions may impact the procurement strategy for the EuroQCI infrastructure.

Exploitation model:

EuroQCI aims at covering the future needs of the **public sector.** The Commission disposes of two major options for the future concept of exploitation:

Concession model (equivalent to other Secure Connectivity mission): The unclassified space-based quantum service is built on an infrastructure that provides also commercial services. The public unclassified is a « light governmental service », purchased by the European Commission as a public customer of a private owned system.

In addition, a specific infrastructure delivers the quantum keys for classified purpose. This specific system is fully integrated in the governmental infrastructure. The impacts of such model for the private infrastructure and service delivery are the following:

- Eligibility and participation criteria are applied in an equivalent way as described in annex 3.1.19;
- Accreditation covers the unclassified service, with commensurate security objective fulfilling the user expected level of assurance on the produced keys;

Full public infrastructure model (equivalent to Galileo): The unclassified and classified services are operated on a governmental infrastructure. The impacts of such model are the following :

- Access by users not supported by Secure Connectivity authority is not allowed. Third states must sign an international agreement with the EU in accordance with Article 218 TUE.
- EuroQCI is fully built and own by EU and the MS, role of industry is limited to the development and operations of the infrastructure.

Synergies with other services:

The first generation of EuroQCI will be built from a family of quantum protocols known under the common denomination "prepare and measures". Entanglement based protocols are not mature enough for the development of a service.

SpaceQCI payloads are mainly composed of a quantum random number generator, a quantum source and an optical transmitter (telescope). Because this generation of satellite is based on prepare and measure protocols, quantum components are built to cope with very demanding security requirement since they constitute a trusted node (as they host the quantum key material produced).

On the other hand, according to preliminary analysis, the telescope may not be in the security perimeter and therefore could serve other missions. Some missions have already been identified to take benefit of the presence of such telescope, including optical links for massive data transfer. Other synergies may exist with other missions.

The preliminary market consultation is the opportunity to collect the view and potential projects proposed by industry able to be synergetic with the EuroQCI space segment from an infrastructure point of view, and explore potential roadmaps and key points.

Q11.1 Could you provide the following information in order to allow the Commission to better assess the feasibility of the concession model:

- *the description of the technical characteristics for a space based quantum service delivering service for both governmental and commercial users demonstrating synergies in term of infrastructure ;*
- *the viability of the business case, the pertinence of the concession model (targeted users, expected revenues, etc.), and beneficial impact for the public sector of this model versus the full public infrastructure model;*
- *elements on the expected schedule,*
- *the ability to cope with security aspects: security requirements, accreditation of the service for governmental users and participation conditions for all the supply chain and mechanism to ensure the governmental user of this infrastructure can be prioritized.*

Q11.2 Could you provide your view on synergy with other mission where a spacecraft delivering Quantum key distribution service can reuse part of the infrastructure, and in particular the telescopes to deliver other useful services (including communication or additional missions), e.g :

- *the characteristics and expected performances of the proposed services;*
- *the expected architecture of the solution, in particular providing elements on the preservation of the security of the QKD service ;*
- *user segment aspects for the service and integration in the overall secure connectivity multi-orbital constellation (e.g use of the space data relay service);*
- *elements on the technological readiness & roadmap of development for this mission;*
- *options for implementation including cost and sharing between private and public sector;*

ANNEX A.1.12 TECHNOLOGICAL DRIVERS

The implementation of the USC will translate into social economic benefits for the EU notably if the commercial service is viable. It should be sufficiently differentiated compared to the competition and sufficiently attractive, as a result of the technological advantage.

Q12.1 Could you describe your vision of the market and your business model (short, medium & long term), the contribution of Secure connectivity and how it contributes to our objective (in particular industrial footprint). What are the technology challenges necessary to achieve these objectives?

Q12.2 Can you suggest other critical trends on the market relevant for secure connectivity/ breakthrough technologies/service?

Q12.3 Describe competitive positioning of your commercial services part of secure connectivity, what is added value compared to competition? What is the impact on the industrial EU footprint?

Q12.4 Indicate the specific area in the supply chain for the governmental service where there is a joint interest between public and private sector, indicate the rationale, and the necessary conditions for a success?

ANNEX A.1.13 DEVELOPMENT & VALIDATION ACTIVITIES AND TECHNOLOGY RISK

Industrial activities are required to mitigate technology and development risks, and to enable the EU supply chain to accommodate the specific needs and requirements of USC.

The selected concessionaire(s) under the relevant EU procurement actions shall be responsible for ensuring this objective. To that end they will benefit from specific funding under the Horizon Europe Programmes, and potentially also from Partnership Projects of the European Space Agency, which co-funds development and validation activities related to the Union Secure Connectivity Programme. These Partnership Projects are subject to approval by the relevant programme at the next ESA Council held at Ministerial level (planned end of November 2022), and a subsequent positive outcome of the relevant ESA decision processes.

In this context, questions raised below aim at providing preliminary (and non-committing) technical, programmatic and financial elements related to the development and validation of the envisaged new solutions.

Q13.1 Remaining consistent with the responses to be delivered under annex A.1.6, which multi-constellation system would you recommend to meet EU needs and requirements, covering as a minimum:

- *a. a high-level definition of various system configurations, architectures and relevant segments (space, ground, security and user segments) and related components;*
- *b. a definition of the relevant services provision in line with the preliminary high-level documents (RD1)*
- *c. a preliminary definition of potential reuse of existing assets (i.e.: already existing space segment, Satellite communication capacity etc.)?*

Q.13.2 For each of the new systems (or constellation) you think necessary to deploy as part of the EU Secure Connectivity infrastructure, and for all system segments, what is the system configuration and architecture to be deployed to be able to verify and validate:

- *a. the end-to-end system;*
- *b. the end-to-end minimum system performances and service requirements vs. EU requirements?*

Q.13.3 What is the design, development and validation/verification roadmap, including as a minimum:

- *a. a system design roadmap identifying development/technology, design plan and justification versus the preliminary high-level documents (RD1);*
- *b. identification of critical aspects related to the availability of the required technologies and other element in a timeline consistent with EU overall timeline for development, validation and associated deployment of the EU Secure Connectivity infrastructure;*
- *c. a technology roadmap, including its justification, relevant TRL definition/upgrade and a qualitative assessment of the performance upgrade/needs;*

d. *a specific predevelopment, design, verification and validation activity roadmap, needed to support the development, validation and associated deployment of the system in line with schedule and technical requirements?*

Q.13.4 What is the (preliminary) design, development, verification and validation plan, up to end-to-end system functional and performance validation and for each segment (space, ground, security and user), including as a minimum:

a. *a breakdown between non-recurring activities and the minimum deployment elements needed to achieve system functional validation, including associated ROM costs;*
b. *a breakdown between non-recurring activities and the minimum deployment elements needed to achieve system performance validation, including associated ROM costs?*

Q.13.5 What is the system deployment plan, including:

a. *an assessment of production and test facility needs and developments required to support large system industrialization;*
b. *a critical assessment of potential launch strategies and a plan for system functional validation in orbit?*

Q.13.6 What is the schedule, covering all activities and their dependencies?

Q.13.7 Without prejudice to the final service provision set-up, have you already identified a suitable organisation of parts of your supply chain for the development and validation activities? Can you give quantitative elements on this organisation, including the participation of SMEs, Mid-Caps and start-ups, and the EU-wide industrial cross-border participation?

Q.13.8 Have you identified any additional de-risking activities and, if so, what is their content, timeline, estimated cost and relationship with development and validation activities?

Q.13.9 May you please describe any additional de-risking activity you might identify, their content, timeline, and cost estimate, as well as their articulation with development and validation activities?

ANNEX A.1.14 USER TERMINALS

Three main scenarios has been identified concerning the approach to the development of the user terminals:

1. Task the concessionaire(s) to develop at least a single user terminal that fits several use cases. This approach would allow the concessionaire to provide an end-to-end service at least to one governmental use case as soon as the constellation will be in place and operated.
    - Need to define the use case that would be served in priority
    - The market will address the development of terminals for the other use cases
2. Task the concessionaire(s) to develop multiple users terminals (depending on the main applications/services). This approach would allow the concessionaire to provide an end-to-end service to several governmental use cases as soon as the constellation will be in place and operated.
    - Need to define the use cases that would be served in priority
    - The market will address the development of terminals for the other use cases
    - Identify technological building blocks that could be used for different terminals in a synergic way
3. Leave the market free to react based on services definition.

The first and second scenarios entail that the USC would be in charge of providing end-to-end services for certain use cases (to be identified) and the selection of such terminals will be based on a detailed make-or-buy trade-off.

Suitability of the business case for the terminals.

Q14.1 *Concerning the approach on user terminal for the tender bid, three main scenarios were described:*

a. Which is the preferred approach?
b. In case one of the first two scenarios is envisaged, which could be the associated use cases?

Q14.2 *Please provide a list of terminals mapped versus the different use cases, identifying the main performance requirements and underlying required technologies.*

Questions related to standardisation and certification

Q14.3 *Could you please identify the specific use cases for which standardisation and/or certification requirements exist (in particular for safety related applications) and the associated requirements?*

Q14.4 *For the direct to users/handheld terminals,*

a. *Which are the governmental use-cases which may benefit according to you, of direct-to-handheld connectivity? Please also describe the envisaged benefits for these use cases.*
b. *New, upcoming initiatives aim to provide connectivity to commercial/terrestrial, unmodified smartphones. Do you foresee such approach to support the use cases related to direct-to-handheld, or rather the development of a SATCOM-specific terminal equipment? Please justify this trade-off.*
c. *Which is the standard for transmission to be considered as reference? The answer should be given based on technical and business related arguments.*
d. *Satellite use is already included in the 3GPP standard. Are there other actions that need to be taken for both commercial smartphones and general direct to users options?*

Interoperability

Q14.5 *What is in your opinion the most appropriate terminal and system architecture/solution to overcome interoperability barriers due to the expected variety of existing and new satellite links and associated gateways contributing to the governmental services provided by secure Connectivity? What is your approach to the provision of standardised/interoperable user terminals for both the GOVSATCOM and the USC satellites? Should terminals implement waveform selection (e.g. EPW)? Will the UCS architecture need to support several Gateway Hub/Modem vendor solutions?*

Backhaul

Q14.6 *With respect to 5G backhaul, which 5G architecture shall be implemented to serve the USC use cases?*

Q14.7 *Given the use cases to be supported, are direct access or backhaul solutions privileged to support IoT services? Please elaborate this trade-off. Which are the constraints flowing down on the user terminal, e.g.: air interfaces to be implemented, frequency bands, antennas etc?*

Low data rate use cases

Q14.8 *Concerning <u>voice communication</u> via handheld terminals, would it require only S/L frequency bands in the future, or other frequencies will be considered?*

Q14.9 *Could <u>governmental narrowband services</u> be operated via the commercial infrastructure providing the necessary secure connection and availability?*

Q14.10 *Given the high number of different <u>IoT system implementations</u> (LoRaWan, NB-IoT, E-SSA/S-MIM, etc.), which solutions seem the most adapted to answer the use cases of the system?*

Optical terminals

Q14.11 *Which scenario(s) seems to be better suited to fulfil the user needs:*
a. *optical links to connect with LEO satellites for secure data relay*

b. *optical link between a satellite and a platform flying above cloud level (e.g. to serve HAPS and RPAS)*
c. *optical link to provide back-up connectivity for data centres.*

Q14.12 *How many optical sites would be needed (in Europe) to ensure high availability of the secure data relay service in the three cases mentioned above?*

ANNEX A.1.15 FREQUENCY RESOURCES AND FILINGS

The exploitation of effective and sovereign frequency and orbital rights through appropriate satellite network filings submitted to the ITU is of paramount importance for the success of the EU Secure Connectivity initiative.

For "hard gov" applications the Commission has identified at least one filing (FMS-LEO) made available by an EU Member State for the USC, and other EU filings may also become available. The Commission intends to work with Member States to secure long-term licences for the rights associated with such filings, in order to access the required frequency and orbital resources for hard gov applications.

The Commission also intends to work with Member States to establish an EU regulatory group of associated administrations to oversee the management of these identified filings, which will also see the creation of a new ITU network organisation to be associated with the filings that Member States make available for the USC. This EU27 coordination group could also cover filings supplied by industry for commercial applications, if considered appropriate and at the discretion of the filing 'owner'

Q15.1 Do you have the right(s) to use a specific filing(s) submitted to the ITU that could be used for the USC? If yes:

- *Can you please indicate the name, reference and characteristics of this/these filing(s)?*
- *Although the Radio Regulations do not specifically distinguish between governmental/military frequency allocations and those aimed a general purpose or civil applications, such a convention for demarcation is applied by frequency administrations. Do you envisage the filings for which you have the rights being used for commercial and/or "hard-gov" applications?*

Q15.2 Can you explain the scope for the envisaged frequency and orbital resources defined in any filing you may have identified in Q1.1 to be used together with the resources defined by the FMS-LEO filing? The scope may involve for example the ability to use the same or very similar orbits in order to share satellite platforms.

Q15.3 What satellite frequency allocations do you see as being technologically feasible for direct communication with handheld devices, in the next five year timeframe, in the next 10 years, and beyond? Do you envisage the availability of EU sovereign frequency and orbital resources in a satellite network filing? Are there any identified regulatory challenges to deploying a direct to handset service for the USC?

ANNEX A.1.16 PROCUREMENT APPROACH

In accordance with the Draft Regulation, the roles, responsibilities, financial scheme and allocation of risks between the Union and the contractor for their implementation can be implemented through several contracts, which may take the form of a concession contract, a supply, service or works contract or a mixed contract.

In order to be tailor the procurement approach to the upcoming tender(s), the Commission would like to get the views from potential candidates on several aspects influencing the procurement approach.

On the assumption that the USC Programme will be implemented through one or more contracts, the following aspects are relevant for the market consultation:

Q16.1 What are the markets from a user, service and technology standpoint you are able to envisage on the basis of your knowledge and current demand of connectivity-related services?

Q16.2 What would be the reasons/ benefits to keep these markets segregated from a procurement perspective (i.e. subject matter of different and self-standing contracts)

Q16.3 Would the possible split of infrastructures entail in your opinion, as a necessary or appropriate consequence, an equivalent segregation at operations level or would in your view be preferable that a single operator is entrusted with the operation and service provision of all the developed infrastructures.

Q16.4 What would be in your view the minimum/necessary conditions for the identified infrastructures to be delivered under a concession model including, but without limitation to:

- *capability of the infrastructure to generate commercial revenues (reference is made to the section of this market consultation addressing the exploitation model and the relevant questions)*
- *main margins of maneuver/ability of the contractor to make choices under a technical standpoint (including design, development, deployment, operations and service provision)*
- *main aspects concerning risk allocation (design risks, manufacturing risks, operation risks, market/revenue risks, liabilities risks.*

Q16.5 In case several identified infrastructures are capable to be delivered under a concession model would there be in your opinion a merit in merging them under the one single contract or would it be better to maintain the segregation and why?

Q16.6 How should the procurement process evaluate the compliance to environmental requirements further addressed in Annex A.1.20?

Q16.7 How should the procurement process best evaluate the compliance to the widest participation of start-ups and small and medium-sized enterprises (SMEs)?

Q16.8 How can the procurement approach foster the participation of start-ups and SMEs along the whole value chain of the concession and across Member States, hereby incentivising the development of innovative and disruptive technologies"?

ANNEX A.1.17 SOVEREIGNTY AND RESILIENCE

The Draft Regulation covers several aspects linked to the sovereignty of the EU and its Member States over the system developed under the USC programme and its resilience touching upon notably:

- EU right of use of the frequencies for signal transmission
- EU location of governmental ground infrastructure
- EU launch service provider and from the territory of the Member States
- Governmental services users' authorisation and compliance with general security requirements
- Eligibility and participation conditions for the concessionaire(s) and certain categories of suppliers for critical technologies, goods and services
- Conditions of participation for third countries and international organisations
- Physical and cyber security of governmental infrastructure, its operations and governmental services, both in normal conditions and in crisis situations, incl. protection of classified information
- Security risk management and security accreditation
- Right to prioritise governmental service over commercial service
- Supply chains resilience
- Users' security requirements, incl. Secure Connectivity Competent authority
- Integration of EuroQCI as an element of reinforced security for intergovernmental communications

Q17.1 Are you used to engage in public private cooperation scheme requiring similar objectives from the public sector side?

Q17.2 Is this perceived as a constraint or rather as an opportunity with regard to your business model?

Q17.3 Are there any technologies, products (incl. important components) and services necessary for the implementation of the secure connectivity system that are subject to third countries export control regimes? Please provide further details.

Q17.4 Which safeguards could be put in place in order to protect specifically the secure connectivity system and its services from foreign interference threats?

ANNEX A.1.18 NON-DISTORTION OF MARKET

The draft Regulation requires that the contracts shall include adequate safeguards to avoid any overcompensation of the contractors, distortions of competition, any conflict of interest, undue discrimination and any other hidden indirect advantages.

Such safeguards may include the obligation of accounting separation between the provision of governmental services and the provision of commercial services, including the setting up of a structurally and legally separate entity from the vertically integrated operator for the provision of governmental services

Q18.1. Which safeguards would you consider as adequate to prevent any overcompensation of the contractors for the provision of governmental services (obligation of accounting separation between the provision of governmental services and the provision of commercial services, setting up of a structurally and legally separate entity from the vertically integrated operator for the provision of governmental services, competitive tendering, provision of open, fair and non-discriminatory access to infrastructure necessary for the provision of commercial services, others?)

Q18.2. Which safeguards would you consider as adequate to prevent the foreclosing of competition in the provision of satellite services to government customers (regular definition of governmental services portfolio based on markets developments, to be provided, price list of governmental services based on actual costs, e.g. capacity limit, public price list, open access to competitors)?

Q18.3. Which safeguards would you consider as adequate to prevent distortions of competition in the provision of commercial services and to avoid any conflict of interest, undue discrimination and any other hidden indirect advantages to the contractor (obligation of accounting separation between the provision of governmental services and the provision of commercial services, setting up of a structurally and legally separate entity from the vertically integrated operator for the provision of governmental services, provision of open, fair and non-discriminatory access to infrastructure necessary for the provision of commercial services, others?)

Q18.4. How can a fair, reasonable and non-discriminatory access to third-party operators be implemented? What are the prerequisite to such a provision and what is required to enforce it throughout the duration of the programme?

ANNEX A.1.19 CONCESSIONAIRES AND SUPPLIERS ELIGIBILITY CONDITIONS

In order to preserve the EU essential security interest and in particular the security, integrity and resilience of the secure connectivity system, the participants in consortia bidding in a procurement procedure must fulfil the following cumulative criteria: (i) the entity incl. its executive management structures are established in one of the EU Member States, (ii) the entity commits to carry out all relevant activities in one or more of the EU Member States, (iii) the entity is not subject to control by third country or third country entity. These criteria apply to the concessionaire(s), primes and suppliers of critical technologies, goods and services.

Under certain conditions, the contracting authority may apply waivers from the above criteria for certain suppliers, if the security, integrity and resilience of the secure connectivity system and its operations are adequately protected.

Compliance with the above eligibility conditions must be guaranteed throughout the entire duration of the procurement contract(s) and applies to all potential applicants and suppliers of technology, goods and services for the purpose of implementation of secure connectivity, including during its development and validation, deployment and exploitation.

For further references, please consult Article 19 of the Draft Regulation.

Q19.1 Please list (categories of) technologies, goods (including their important components) and services necessary for the development, deployment and exploitation of the secure connectivity system that you assess to be only available from suppliers that do not comply with any of the three criteria above.

Q19.2 While filling the Annex A.2.b, did you self-assess to be in a situation of (non-EU) control potentially affecting your participation? Which are possible solutions to address this in order to ensure compliance with the three criteria in possible EU tender(s)?

Q19.3 The eligibility conditions must be met for the entire duration of the procurement contract, including for instance in case of take-over of the entities concerned. Would a clause in the procurement contract preventing non-compliance with eligibility criteria, e.g. preventing you to sell the part of the company contracted with USC activities, have an impact on your participation and your business strategy? Please explain.

ANNEX A.1.20 SUSTAINABILITY AND DEBRIS PREVENTION MANAGEMENT

Debris prevention management

Several national and international organisations of the space faring nations have established Standards or Guidelines to promote efforts to deal with space debris issues. Although there are currently no legal obligations at EU level, the Commission adopted in February 2022 of a Joint Communication on "An EU Approach for Space Traffic Management" (STM) that identified that the EU should facilitate the development of "Space Traffic Management standards and guidelines" aiming at ensuring the safe and sustainable use of space.

Taking advantage of the opportunity offered by Secure Connectivity initiative, the EU is now well positioned to lead by example.

The EU approach addresses the regulatory aspects of STM. In particular, the EU should facilitate the development of STM standards and guidelines aiming at ensuring the safe and sustainable use of space. While working closely with Member States in the standardisation field, the Commission could support the selection of STM standards and guidelines, which should be promoted at EU level. These standards could for example concern the use of active devices to facilitate the tracking of satellites, the warning of any major incident or re-entry, as well as the development of guidelines for special cases of STM, such as non-manoeuvrable satellites or constellations.

The Secure Connectivity system shall apply the fundamental principles of sustainability and space debris management along seven avenues:

1. To prevent uncontrolled growth of abandoned spacecraft and spent launch vehicle orbital stages with particular regard to preserve the LEO and GEO Protected Regions.
2. To prevent debris generation as a result of intentional release of mission-related objects, or break-up of space systems.
3. To prevent accidental break-ups (e.g. as a result of explosions of components storing energy on-board space systems and collision with space debris and meteoroids).
4. To prevent orbital collisions by performing collision avoidance manoeuvres and disposal manoeuvres to limit long-term presence of non-operational space systems in the Protected Regions.
5. To mitigate "light pollution in dark sky" (especially for the LEO constellation segment).
6. To limit casualty risk due to controlled or uncontrolled re-entry of space systems.
7. The entire life-cycle of space operations including launch phase, in-orbit operations of spacecraft, and end-of-life de-orbit operations

In this domain, the main goal of PMC is to check on the market the feasibility to comply with the main existing standards and guidelines (ISO 24113; IADC; ESA guidelines) and potential future ones developed by the EU.

Sustainability issues

The European Green Deal[6] aims to mobilise industries for a clean and circular economy and set out the objective to make Europe the first climate neutral continent in the world.

The aim is to make all sectors of the EU's economy fit to meet this challenge, and this includes the EU space sector. It paves the way for a modern, technologically advanced, and competitive economy, which in turn would contribute to improving quality of life and ensuring an orderly transition to climate neutrality.

Life Cycle Assessment (LCA) is recognized as the most appropriate methodology to measure and act upon environmental impacts. The European Space Agency (ESA) is using LCA in space projects and technologies and has published the first space-specific LCA Handbook in 2016.[7] LCA is also basis of the EU environmental footprint method, recommended by the European Commission since 2013 and now discussed as reference method for the green claims' initiative.[8]

However, there is currently no commonly agreed sector-specific methodology, as well there is a lack of data, and several important environmental aspects are not covered by a common standard LCA impact assessment method. Also, space technologies operate in extreme conditions, any life cycle environmental footprint requirements for space products should balance sustainability considerations with resilience and expected performance.

Q20.1 In order to evaluate the proposed implementation of space debris mitigation measures, as well a life cycle environmental footprint, and to get confidence on possible solutions to be included in the following ITT, what is the feasible "Space Debris Mitigation Plan" that you propose to be established for each orbit planned for Secure Connectivity (LEO; MEO; GEO)?

The proposed "space debris mitigation plan" must be detailed and documented. It should include at least:

1. *Management plan addressing space debris mitigation activities*
2. *Plan for the assessment and mitigation of risks related to space debris, including:*
   a) *the statement of planned compliance of the proposed design with the applicable standards*
   b) *the description of design and operational measures planned for minimising the hazard related to malfunctions that have a potential for generating space debris and achieving compliance with the applicable standards*
   c) *identification of the verification and validation methods to demonstrate the compliance with the applicable standards*
3. *The obligation to register to EUSST*
4. *Plan for disposal of the satellites and/or orbital stages at end of mission including:*

6 COM(2019) 640 final

7 ESA, 2016. Space system Life Cycle Assessment (LCA) guidelines

8 https://ec.europa.eu/environment/eussd/smgp/initiative_on_green_claims.htm

a) *preliminary re-entry casualty risk analysis with rationale for the planned re-entry approach and identification of the tools and methodologies used for the assessment*
b) *Identification of the space system functions that contribute to the planned controlled re-entry, if applicable*
c) *Identification of the re-entry scenario, including nominal and degraded de-orbit cases;*
d) *Verification and validation plan to demonstrate compliance with the re-entry casualty risk requirement*

In addition, the first set of requirements listed in Annex 3 of RD 1 should be analysed and evaluated in term of feasibility in the frame of Secure Connectivity system.

Q20.2 What solutions do you propose to minimise disruptive visual brightness for LEO constellations and limit disruptions to the astronomy and naked eye observing communities prevent light pollution from? What is the TRL level of such solution, and was it ever tested and in which conditions?

Q20.3 For assessing the feasibility for a "life cycle environmental footprint" for Secure Connectivity, please provide detailed and documented analysis. It should include at least the replies to the following questions, divided in 3 categories (short term, near future and long term):

Short-term:

1. *How familiar are you with the environmental impact assessment related methodologies? Do you have dedicated staff working on the topic?*

2. *What life cycle environmental information and data of the equipment/system are you able to share already in 2022/2023?*

3. *Would you be able to quantify (a) the climate change impact (Greenhouse gases emissions) related to your product/service, (b) other environmental impacts specified in e.g. the EU recommended product environmental footprint methodology?*

4. *Would you be able to answer contractual requirements dealing with the establishment of a scheme to offset the CO_2 emissions generated along the life cycle of your product/service?*

5. *What is currently missing for you to share more environmental information and data (agreed methods, agreed life cycle metrics, precise requests in procurement)?*

Near future:

6. *What additional life cycle environmental information and data of the equipment/system will you be able to share already in 2028?*

7. *How do you currently (or plan in the near future) address the space debris' sustainability issue in the life cycle management practices of your company? (LCA, Sustainability label, information sharing?)*

8. *Do you plan to compare the environmental impacts of your product/service to an average baseline scenario based on current/near future average practices of the sector?*

Long term:

9. *When do you plan to be able to share a reviewed Life cycle Assessment study on your equipment/system?*

10. *When do you plan to be able to share quality-assured Life cycle Inventory datasets, e.g. through the Life Cycle Data Network? Under which confidentiality conditions to you plan to share such datasets?*

Q20.3 On what concerns sustainability assessment for critical raw materials and supply chain bottlenecks, please provide, at least, the following information:

1. *Do you already monitor the potential (environmental, social or resilience) risks coming from the sourcing of critical raw materials/components/technologies in your supply chains?*
2. *If yes, are you doing so in the frame of:*
    a. *a program related to obsolescence risk management program (such as one for Reach regulation)*
    b. *life cycle management practices (e.g. coupled with environmental Life Cycle Assessment studies);*
    c. *due diligence standards (Which ones?)*
    d. *another tools?*
3. *Up to which up-stream level of your supply chain, are you able to monitor potential supply risks (e.g. Tier1 suppliers, components, processed materials, raw materials)?*
4. *Which mitigation measures could you envisaged in case of identified supply risk? (strategic stockpiling, diversification of the supply, substitution of materials/components)*

ANNEX A.1.21 LIABILITY AND INSURANCE

Addressees are asked to explain whether insurance mechanisms could be an efficient way to address liability as part of their solutions for USC. The Commission is interested to understand which particular insurance schemes would be considered and their associated conditions.

Insurance for liability purposes

Q21.1 Is there a specific insurance market for satellite communication services related damages? Does it cover satellites communication constellations? What kind of damages are covered? What are the main exclusions? What would be the premium to be paid? What are if any the insurance standard deductibles?

Insurance related to launches and in-orbit life

Q21.2 Is there a specific market for LEO satellites launches and satellites communication constellations in orbit life insurances? Are there any issues of non-insurability? What would be the premium to be paid? What are if any the insurance standard deductibles?

ANNEX A.1.22 SUPERVENING EVENTS, DEFAULT AND TERMINATION

Contracts for the implementation of the Space Connectivity Programme are likely to have a multi-year duration. In this frame supervening events may happen, impairing the possibility to provide services or affecting the original economic equilibrium of the contract.

At the same time it will be key for the public sector to put in place all the conditions preserving continuity of services.

In this frame:

Q22.1 Please explain how would you manage and what level of protection, if any, you would expect against the risk of hyper-inflation in the frame of a concession contract scheme, identifying as well the boundaries of this risk?

Q22.2 Please explain what measures you envisage to ensure continuity of services in the event of financial distress of the contractor or in the event of termination

Q22.3 Please explain whether and to what extent you intend to make recourse to debt in order to finance the activities of the concession and in such a case:

- *Which kind of debt? Towards non-EU lenders?*
- *What would be the most relevant aspects of the financial security/guarantee package and in particular the securities taken on the concession assets, taking into account the boundaries of the Draft Regulation?*
- *What would be the most common representation and warranties on the business of the concessionaire you would envisage to release to the lenders and what would be their impact in the life of the concession?*

ANNEX A.2.A

[N.B. Use this Template to prepare your response to the PMC. You can add your own logos, headers/footers prior to finalising your proposal for submission to the European Commission. The PMC Response shall be submitted in a searchable and indexed PDF file for easier viewing.]

[including a COVER LETTER]

From: *(**Respondent** to insert name of the Entity submitting the Notification of Interest)*
Date: *(**Respondent** to fill in the date of the proposal)*
To: *The European Commission*
Subject*: **[Reference] Preliminary Market Consultation***

Dear Sir or Madam,

With reference to the above Preliminary Market Consultation (PMC), we are pleased to present this Response:

1. The Respondent is:
   (full name of company or institute)
   (address of its seat)
   Telephone:
   Email:
   Nationality.....
   VAT Number: …….
   Country *(ISO Code)*
   Small-Medium Enterprise (Y/N):
   Company turnover (indicative):
   Number of employees (indicative):

If this response is presented by more than one entity, please detail the above information per each respondent.

3. The contact person of the Respondent to whom all communications relating to this letter should be addressed is the following: ***.....*** *(name of contact person(s) as well as fax number, telephone number, e-mail address). Please fill in as needed.*

4. [As may be confirmed in the NDA,] by submitting this Response to the PMC, I/we the undersigned herewith officially authorise the European Commission to use the information provided as part of this Response for the purposes laid out in section 3.

on this day [Name] / [Title]

Enclosed:

i. Replies to questions contained in Annex A1
ii. Non-Disclosure Agreement or Undertaking (as per Appendixes 1 and 2)

ANNEX A.2.B -

Annex 2.B ‘Legal and Business information - Criteria for self-assessment of participating conditions in future tender(s)’ is provided in a separated document for convenience.