COMMISSION IMPLEMENTING DECISION (EU) 2022/1245

of 15 July 2022

laying down rules and procedures for the application of Regulation (EU) 2021/696 of the European Parliament and of the Council as regards the participation of Member States in the SST sub-component, the establishment of the SST Partnership and the development of the initial key performance indicators

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to 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 ([1]), and in particular Articles 57(4), 58(3) and 58(8) thereof,

Whereas:

(1) Decision No 541/2014/EU of the European Parliament and of the Council ([2]) established a Framework for Space Surveillance and Tracking (SST) Support. On the basis of that Decision, a group of Member States created the SST Consortium with the objective of providing the following SST services: risk assessment of collision, detection and characterisation of in-orbit fragmentations, and risk assessment of the uncontrolled re-entry of space objects into the Earth's atmosphere.

(2) In accordance with Regulation (EU) 2021/696, amongst the general objectives of the Union space programme, are to enhance safety, security and sustainability of all outer space activities pertaining to space objects and debris proliferation, as well as space environment, by implementing appropriate measures, including development and deployment of technologies for spacecraft disposal at the end of operational lifetime and for space debris disposal.

(3) The SST partnership referred to in Article 58(2) of Regulation (EU) 2021/696 should take over the activities performed by the SST Consortium regarding the provision of SST services at Union level, while ensuring a smooth transition and the continuity of the provision of SST services.

(4) Pursuant to Article 57 of Regulation (EU) 2021/696, any Member State is to be able to participate in the SST sub-component, while having due regard to the criteria set out for participation therein. In order to encourage Member States' participation, the steps of the procedure should be detailed as clearly as possible.

(5) The participation of Member States in the SST Partnership is voluntary and subject to the assessment of the compliance criteria. It is therefore important that the selection procedure is clearly defined and streamlined.

(6) Pursuant to Article 57(1) of Regulation (EU) 2021/696, Member States are to submit a single joint proposal including all the Member States wishing to participate in the SST Partnership. However, pursuant to Article 57(3), if no joint proposal is submitted to the Commission or if the joint proposal does not comply with the criteria listed in Article 57(1), at least five Member States may submit a joint proposal to the Commission.

(7) Pursuant to Article 57(3), Member States are allowed to present competing offers. In the case where competing offers are presented, the Commission is to select one.

(8) In accordance with Article 57 of Regulation (EU) 2021/696, rules are to be developed for the use and exchange of SST data.

([1]) OJ L 170, 12.5.2021, p. 69.

([2]) Decision No 541/2014/EU of the European Parliament and of the Council of 16 April 2014 establishing a Framework for Space Surveillance and Tracking Support (OJ L 158 27.5.2014, p. 227).

(9) The Member States' proposal is to comply with the criteria and specifications listed in Article 57(1) and in this Decision.

(10) Individual conditions, collective conditions and detailed rules on the functioning of the organisational framework of the participation of Member States in SST should be based on the practices developed by the SST Consortium and aim to ensure the delivery of the most efficient SST services and best value for money.

(11) Key performance indicators have been developed in the framework of the activities performed by the SST Consortium during the last six years. They aim to ensure the control of the quality of the SST services.

(12) In order to ensure the establishment of the SST Partnership, it is necessary to implement a transparent and smooth procedure for the participation of Member States. Each steps of the procedure should be presented and the criteria, on which the selection would be based, should be enumerated and detailed.

(13) After the establishment of the SST Partnership, the development of key performance indicators is necessary in order to ensure that the SST Partnership activities are correctly supervised.

(14) In order for the SST Partnership to become operational, a smooth transition between the activities carried out by the SST Consortium established under Decision No 541/2014/EU and the SST Partnership should be established and SST Partnership should liaise with the SST front desk selected by the Commission in accordance with Article 59(1) of Regulation (EU) 2021/696. The Commission which has overall responsibility for the implementation of the Space Programme as indicated in Article 28(1) of Regulation (EU) 2021/696, should be informed of the progresses made by the SST Partnership as regards the completion of its operational capacity to provide SST services at least three months after the signature of the SST Partnership.

(15) The measures provided for in this Decision are in accordance with the opinion of the SSA Committee,

HAS ADOPTED THIS DECISION:

SECTION I

GENERAL PROVISIONS

Article 1

Subject matter

1. This Decision sets out detailed provisions concerning the procedures for the participation of the Member States in the Space Surveillance and Tracking (SST) Partnership, as referred to in Article 58(1) of Regulation (EU) 2021/696.

2. This Decision specifies the elements necessary for the Member States to comply with the criteria listed in Article 57(1) of Regulation (EU) 2021/696 for the establishment of the SST Partnership, as referred to in Article 57(4) of Regulation (EU) 2021/696.

3. This Decision establishes the initial key performance indicators and rules on the functioning of the SST Partnership, as referred to in 58(3) of Regulation (EU) 2021/696.

Article 2

Definitions

For the purposes of this Decision, the definitions set out in Annex IV and the following definitions apply:

(1) 'SST Consortium' means the Consortium of designated national entities established under Article 7(3) of Decision No 541/2014/EU;

(2) 'the proposal' means the draft SST Partnership Agreement and all the documentation listed in Annex III to be sent by the applicant Member States as part of their proposal to the Commission;

(3) 'Applicant Member States' means the Member States having submitted a joint proposal regarding participation in the SST Partnership;

(4) 'Yearly Operation Reviews (YOR)' The operation activities, including operation of the service provision function, operation of the processing function and operation of the sensor function, shall be monitored through an annual 'Operation review' in order to review the global behaviour of EU-SST system, to manage its overall performance and availability;

(5) 'Participating Member States' means the Member States participating in the SST Partnership.

Article 3

Classified information

1. Where the proposal contains classified information, Council Decision 2013/488/EU ([3]) as well as Commission Decision (EU, Euratom) 2015/444 ([4]) shall apply. The level of classification of that information shall not exceed RESTREINT UE/EU RESTRICTED.

2. Where the proposal contains classified information, it shall include an executive summary which shall not include any classified information.

SECTION II

PROVISIONS CONCERNING THE PROCEDURES FOR THE ESTABLISHMENT OF THE SST PARTNERSHIP

Article 4

Procedure for submission of a joint proposal under Article 57(1) of Regulation (EU) 2021/696

1. The applicant Member Statesshall draft a joint proposaland submit it to the Commission. The proposal is to comply with the criteria listed in Article 57(1) of Regulation (EU) 2021/696, as set out in Article 7 of this Decision.

2. The Commission shall evaluate the proposal. The Commission may communicate with the applicant Member States by sending questions and comments on the proposal to the Member State contact point referred to in Article 7(1). Applicant Member States shall reply within four weeks and, if appropriate, update the proposal. The answers shall be sent by the Member State designated to serve as contact point in the exchanges with the Commission according to Article 7(1).

3. Applicant Member States shall be informed of the outcome of the analysis performed by the Commission both by registered post mail and in electronic format.

4. The proposal referred to in paragraph 1 shall be submitted within a period of 18 months after the publication of Regulation (EU) 2021/696. Upon the request of the Member States or the Commission, that period can be extended by 3 months.

([3]) Council Decision 2013/488/EU of 23 September 2013 on the security rules for protecting EU classified information (OJ L 274, 15.10.2013, p. 1).

([4]) Commission Decision (EU, Euratom) 2015/444 of 13 March 2015 on the security rules for protecting EU classified information (OJ L 72, 17.3.2015, p. 53).

Article 5

Procedural steps for submission of a proposal under Article 57(3) of Regulation (EU) 2021/696

Where no joint proposal has been submitted in accordance with Article 57(1) of Regulation (EU) 2021/696 or the Commission considers that a joint proposal thus submitted does not comply with the criteria listed in Article 57(1) of Regulation (EU) 2021/696, a second phase shall be opened. That phase shall comprise the following steps:

(1) At least five applicant Member States shall draft one or several proposals and submit them to the Commission. Each Member State may be part of only one proposal. The proposal(s) shall comply with the criteria listed in Article 57(1) of Regulation (EU) 2021/696, as set out in Article 7 of this Decision.

(2) The Commission shall evaluate the proposal(s). The Commission may communicate with the applicant Member States by sending questions and comments on the proposal to the Member States' contact points mentioned in Article 7. Applicant Member States shall reply within four weeks and if appropriate update the proposal. The answers shall be sent by the Member State designated to serve as contact point in the exchanges with the Commission pursuant to Article 7(1).

(3) In case of a single proposal, the Commission shall evaluate if the criteria listed in Article 57(1) of Regulation (EU) 2021/696, as set out in this Decision, are fulfilled.

(4) In case of several proposals, the Commission shall select the offer which ensures the best performance taking into account the fulfilment of the selection's criteria. The selection shall be based on the criteria listed in Article 57(1) of Regulation (EU) 2021/696, as set out in this Decision. The Commission shall take into consideration the following qualitative elements:

   (a) the best functional and technical architecture;

   (b) the principle of avoidance of unnecessary duplication;

   (c) the demonstration of the performance of the SST system proposed.

(5) Proposal(s) referred to paragraph 1 shall be submitted within 2 months after the decision of the Commission, in accordance with Article 57(3) of Regulation (EU) 2021/696 to reject a joint proposal or 2 months after the end of the deadline established in Article 4(4) in case no joint proposal has been submitted in accordance with Article 57(1) of Regulation (EU) 2021/696.

Article 6

Signature, publication of the information and other arrangements

1. The Constituting National Entities shall sign the SST Partnership Agreement within six weeks after the acceptance of the proposal by the Commission. If no such agreement is signed, the procedure of Article 57(3) of Regulation (EU) 2021/696 shall be initiated.

2. The SST Partnership Agreement shall be sent to the Commission by registered post mail or by any other mean attesting the effective date of delivery and the validity of the document, including by electronic signature.

3. The Commission shall publish on its website the list of the Participating Member States.

4. The SST Partnership shall establish direct contact with the European Union Agency for the Space Programme (EUSPA)regarding the activities of the SST Front Desk in order to conclude the necessary implementing arrangements laid down in Article 59 of Regulation (EU) 2021/696.

SECTION III

PROVISIONS CONCERNING THE SUBSTANTIAL ELEMENTS FOR THE ESTABLISHMENT OF THE SST PARTNERSHIP AGREEMENT

Article 7

Detailed conditions to demonstrate compliance with criteria under Article 57(1) of Regulation (EU) 2021/696

1. Applicant Member States shall designate among themselves a Member State which shall serve as a contact point for the purposes of the communication with the Commission as referred to in Articles 4(2) and 5(2).

2. The proposal shall contain:

(a) the draft SST Partnership agreement and all the documentation listed in Annex III;

(b) the name and the contact details of the applicant Member State which has been designated in accordance with paragraph 1.

3. The proposal and the information referred to in paragraph 2, point (b), shall comply with the conditions set out in Annex I.

Article 8

Other conditions

The proposal shall be sent to the following address:

SST – Unit B1
European Commission
DG DEFIS
BREYDEL
Avenue d'Auderghem 45
B-1049 Brussels
BELGIUM

SECTION IV

RULES ON THE FUNCTIONING OF THE ORGANISATIONAL FRAMEWORK OF THE PARTICIPATION OF MEMBER STATES IN SST SUB-COMPONENT AND KEY PERFORMANCE INDICATORS

Article 9

The functioning of the organisational framework of the participation of Member States in SST

Participating Member States shall ensure that the organisational framework of their participation complies with the conditions set out in Annex I.

Article 10

The key performance indicators

1. Participating Member States shall develop the necessary mechanisms in order to establish and monitor the key performance indicators listed in Annex II.

2. The SST Partnership shall report to the Commission every year during the Yearly Operational Review on the results of the key performance indicators.

SECTION V

FINAL PROVISIONS

Article 11

Transition from the SST Consortium to the SST Partnership

1. The setting up of the SST Partnership's activities shall start immediately after the signature of the SST Partnership Agreement.

2. The SST Partnership shall establish contact with the SST Consortium referred to in Article 7(3) of Decision No 541/2014/EU in order to ensure the smooth transfer of the activities.

3. The Front Desk shall be considered operational once all the activities have been handed over to it and the implementing arrangements between the Constituting National Entities and the Front Desk have been signed.

4. The SST Partnership shall be ready to start providing SST services 3 months after the signature of the SST Partnership Agreement.

Article 12

Entry into force

This Decision shall enter into force on the day following that of its publication in the *Official Journal of the European Union*.

Done at Brussels, 15 July 2022.

For the Commission
The President
Ursula VON DER LEYEN

ANNEX I

INDIVIDUAL CONDITIONS, COLLECTIVE CONDITIONS AND ORGANISATION OF MEMBER STATES' PARTICIPATION, REFERRED TO IN ARTICLES 4 AND 5

1. INDIVIDUAL CONDITIONS

1.1. **Ownership of, or access to, an adequate SST sensor available for the SST sub-component and human resources to operate it:**

1.1.1. *Ownership of, or access to, the SST sensor*

1.1.1.1. For the purposes of Article 57(1), point (a), of Regulation (EU) 2021/696 of the European Parliament and of the Council ([1]), a Member State shall be considered to have ownership of a SST sensor when it has the adequate legal title and possession, according to its national law, in relation to the sensor and the data it produces.

1.1.1.2. For the purposes of Article 57(1), point (a), of Regulation (EU) 2021/696, a Member State shall be considered to have access to an SST sensor if the necessary data produced by that sensor cannot be denied by a third party and, in the case of a tracking sensor, the Member State or the Constituting National Entity can order a tasking request.

1.1.2. *Adequate SST sensor*

1.1.2.1. For the purposes of Article 57(1), point (a), of Regulation (EU) 2021/696, a SST Sensor shall be considered to be adequate operationally if the sensor is in category A (as defined in 2.2.1.1).

1.1.2.2. For the purposes of Article 57(1), point (a), of Regulation (EU) 2021/696, a SST Sensor shall be considered to be adequate non-operationally if it is included in category B or C, as defined in 2.2.1.1).

1.1.3. *Sensor available for SST*

For the purposes of Article 57(1), point (a), of Regulation (EU) 2021/696:

1.1.3.1. A SST sensor shall be considered available for SST operationally: when that sensor is in category A, as defined in 2.2.1.1 and at least one of the following conditions is met:

(a) the sensor shall be at least 20 % dedicated to the SST Partnership's tasks, but a lower percentage for tracking sensors can be accepted if justified by the architecture studies;

(b) the SST related task of the sensor has priority over any other missions of that sensor;

1.1.3.2. A SST sensor shall be considered available for SST non-operationally when the following conditions are met:

(a) the sensor is listed in category B or C (as defined in 2.2.1.1);

(b) the Member State can prove that the technology risks and operational risks are mastered.

1.1.4. *Technical and human resources to operate the sensor*

Information, to demonstrate that the technical and human resources are and will be available to operate the sensor, shall be part of the proposal.

([1]) 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 (OJ L 170, 12.5.2021, p. 69).

1.1.5. *Security of the SST sensors*

1.1.5.1. The Member State shall be responsible for the security aspects of the proposed SST sensor.

1.1.5.2. The Member State shall perform and provide an initial risk assessment for the proposed SST sensor. The risk assessment shall include:

— the capacity of the sensor to deal with classified information,

— the technical, contractual and operational measures in place to ensure that data produced by that sensor cannot be denied by a third party and in the case of a tracking sensor the sensor is able to receive a tasking request, execute and disseminate the results,

— the associated residual risks.

1.2. **Ownership of, or access to, an adequate operational analysis capability and data processing capability specifically designed for SST purposes and available for SST:**

1.2.1. *Ownership of, or access to, the SST operational analysis and data processing capability*

1.2.1.1. For the purposes of Article 57(1), point (a), of Regulation (EU) 2021/696, a Member State shall be considered to have ownership of an SST operational analysis capability and data processing capability when it has the adequate legal title and possession, according to its domestic law, in relation to the capability and the data and information it produces.

1.2.1.2. For the purposes of Article 57(1), point (a), of Regulation (EU) 2021/696, a Member State shall be considered to have access to an SST capability if the data and information produced by that capability cannot be denied by a third party.

1.2.1.3. A SST capability shall be considered under development in the context of contributing to the SST Partnership when the following conditions are met:

— the date of entry in operation of the capability is known and is prior to the delivery of SST services by the SST Partnership and no later than 30 June 2023,

— the Member State can prove that the technology risks are mastered and that investments have been committed at the national level to develop that capability.

1.2.2. *Adequate SST operational analysis and data processing capability*

1.2.2.1. Data processing capability shall be considered 'adequate' if it includes the necessary hardware and software solutions to process SST data and produce the relevant SST information and/or deliver SST services. It shall include the necessary features to operate at any time.

1.2.2.2. Operational analysiscapability shall be considered 'adequate' if it comprises both the hardware and software solutions and trained analysts in order to generate SST information and deliver SST services.

1.2.3. *Security of the capabilities*

In order to comply with the obligation related to Article 57 (1), point (b) of Regulation (EU) 2021/696, the following elements shall be justified in the proposal.

1.2.3.1. An applicant Member State shall be responsible for the security aspects of the proposed SST capabilities.

1.2.3.2. An applicant Member State shall perform and provide the initial risk assessment of the proposed SST capabilities. The initial risk assessment shall include in particular:

— the ability of the capability to deal with classified information,

— the technical, contractual and operational measures in place to ensure the capability is not denied to the Constituting National Entity of the Member State,

— the associated residual risks.

2. COLLECTIVE CONDITIONS AND DETAILED RULES ON THE FUNCTIONING OF THE ORGANISATIONAL FRAMEWORK OF THE PARTICIPATION OF MEMBER STATES IN SST

In order to comply with the obligation related to the action plan of Article 57(1), point (c) of Regulation (EU) 2021/696, the following elements shall be provided in the proposal.

2.1. **Architecture of the Union system**

2.1.1. *The delivery of a technical and functional architecture*

The SST Partnership shall deliver a proposal containing a technical architecture and a functional architecture of the SST system.

The proposed technical architecture shall be based on and justified by architecture studies.

2.1.1.1. Architecture studies

The SST Partnership shall propose a SST system based on and justified by architecture studies.

For the architecture of the Operational SST System, it shall deliver the architecture study including the sensors listed in category A (as defined in 2.2.1.1).

For the architecture of the 'Planned evolution of the SST System', it shall deliver the architecture study including the sensors listed in category A and categories B and/or C, (as defined in 2.2.1.1), as far as the necessary data on the planned sensors are available.

Architecture studies shall be performed at least every three years in order to take into consideration potential development of the SST system, users' needs, technical evolution, adding of new sensors (while taking into account the SST budget envelope), and de-scoping of sensors.

2.1.1.2. The general technical architecture

The general technical architecture shall present the detailed elements composing the SST System:

— Sensor function,

— Processing function, including: data and information, data base and catalogue,

— Service function, in order to ensure the delivery of SST services listed in Article 55 (1) of Regulation (EU) 2021/696.

The general technical architecture shall include security aspects, including at least the following elements:

— Protection of the infrastructures and of the provision of services

— The protection of classified data and information

— Asset management and vulnerability identification

— Protection against physical, cyber-attacks, and tampering of data streams

— Intrusion detection, management and business continuity

— Adequacy to comply with instructions issued in accordance with Council Decision (CFSP) 2021/698 ([2]).

2.1.1.3. The general functional architecture

A functional architecture is based on a Functional Analysis (as defined in Annex IV) and a Functional Description.

The general functional architecture shall also comprise the repartition of activities among the different Experts' Teams aiming to ensure the repartition of activities between the different members of the SST Partnership, in order to ensure the delivery of SST services listed in Article 55(1) of Regulation (EU) 2021/696 and the decision-making mechanisms.

The general functional architecture shall include the following security aspects:

— Definition of the security responsibilities, including decision making process for establishment of policies, and controls,

— Operational organisation for incident handling including communication towards user communities for incidents impacting the service provision.

The technical and functional architectures shall be revised at least every three years in order to take into account the potential development of the SST system, user needs, technical evolution of new sensors, and de-scoping of sensors.

2.1.2. *The principle of unnecessary duplication*

The proposed SST system shall be based on the principle of avoiding unnecessary duplication. Avoiding unnecessary duplication shall be understood as to include all the necessary elements in order to ensure and enhance the performance and autonomy of SST capabilities at Union level, while refraining from adding assets that result in system redundancy above the level necessary for the timely and reliably delivery of SST services.

2.1.3. *Performance demonstration of the SST system*

The SST system performance shall be collectively demonstrated according to the following criteria/ domains:

— Number of objects the network of sensors is capable of detecting in each orbital regime,

— Cataloguing of space objects,

— Collision Avoidance service,

— Re-entry service,

— Fragmentation service, and

— Ability to develop new services (mitigation and remediation).

The list of Union SST sensors of the different Very Large Areas (VLA) and associated value-added shall be demonstrated by architecture studies and ensured by the technical architecture.

The quality of the compromise between the performance (quality of services; Union catalogue size …) and the cost achieved for the resulting SST system shall be demonstrated.

2.2. **General rules regarding the selection of the sensors participating to the SST system**

2.2.1. *Lists and categories of sensors*

The list of national sensors selected by the SST Partnership in order to provide the SST services listed in Article 55 of Regulation (EU) 2021/696 shall be provided.

([2]) Council Decision (CFSP) 2021/698 of 30 April 2021 on the security of systems and services deployed, operated and used under the Union Space Programme which may affect the security of the Union, and repealing Decision 2014/496/CFSP (OJ L 170, 12.5.2021, p. 178).

The sensors shall be assigned to a category A, B or C.

The categorisation procedure for sensors might be updated to be kept in line with the latest needs of the SST sensor network. In case of changes, they have to be:

— justified according to architecture studies,

— approved by a vote of the SST Partnership,

— accepted by the Commission.

2.2.1.1. The sensors shall be presented in the following categories:

— Category A: Operational sensors delivering operational data: Member States' adequate operationally (as defined in 1.1.2.1) sensors participating to the delivery of the SST services whether financed partially by the Commission, or not financed by Commission.

  For the operational sensors, listed in category A, the Member State shall commit for each sensor on the percentage of dedication for SST activities. In case the exact dedication is not known due to pending budget negotiations, an expected dedication should be indicated. However, the exact dedication will have to be specified in the grant proposal. The declared dedication shall be expressed in a minimum number of days per month, or number of hours per day, or number of available tasking requests and shall be valid for any month all along the grants attributed under the Regulation (EU) 2021/696 establishing the Union Space Programme.

— Category B: Pre-Operational sensors delivering test data: Member States' adequate non-operationally (as defined in 1.1.2.2) sensors not participating yet to the delivery of SST services and awaiting to successfully go through the assessment campaigns (as described in 2.3) before being able to participate to the delivery of SST services. The sensors included in category B shall not receive funding for operational activities but they may receive funding for preparing the assessment campaigns.

— Category C: Under-development sensors: Member States' adequate non-operationally (as defined in 1.1.2.2) sensors which might be used for SST Services in the future once they will be finalised, operational and passed the assessment campaign. The sensors included in category C shall not receive funding for operational activities but might receive funding from research and development activities based on justifications provided by architecture studies.

2.2.1.2. The change of categories

The passage from category A to B shall be triggered by the failure to pass:

— a calibration campaign, or

— two operational campaigns in a row.

It shall be accompanied by:

— an approval by a vote of the SST Partnership,

— information to the Commission.

The passage from category B to A shall be triggered by:

— the success of an assessment campaign (calibration campaign and operational campaign).

It shall be accompanied by:

— an approval by a vote of the SST Partnership,

— an approval of the Commission.

— the analysis of the added-value of the sensor according to the architecture studies.

The passage from category B to C shall be triggered by the failure to pass:

— a calibration campaign or

— two operational campaigns in a row, except if the sensor had been demoted from category A to category B due to a failure to pass two operational campaigns in a row, in which case the failure of one operational campaign shall trigger the downgrading of the sensor from category B to C.

It shall be accompanied by:

— an approval by the SST Partnership,

— information to the Commission.

The passage from category C to B shall be:

— justified according to architecture studies by the added-value to the overall SST system.

— approved by a vote of the SST Partnership,

— accepted by the Commission.

2.2.2. *Selection of the sensors*

The sensors selected to participate to the delivery of SST services (Category A) shall be chosen using objective criteria, such as: technical parameters, performance, location and the successful regular participation to assessment campaigns according to the periodicity requested in 2.3.

No Member State can derive any right to be considered in SST with its existing assets or those being nationally developed, except in exceptional cases that need to be duly:

— justified according to architecture studies by the added-value to the overall SST system,

— approved by a vote of the SST Partnership,

— accepted by the Commission.

Nationally operated Union sensors will not have a right to be considered as sensors contributing to the SST Partnership unless they are:

— justified according to architecture studies by the added-value to the overall SST system,

— approved by a vote of the SST Partnership,

— accepted by the Commission.

2.3. **Regular check of the sensors selected by Assessment campaign**

The assessment campaign shall be composed of two elements:

— Assessment of the technical performance ('calibration campaign')

— Assessment of the operational performance ('operational performance analysis').

2.3.1. *Assessment of the technical performance: calibration campaigns*

2.3.1.1. Calibration campaign: general rules

Each sensor selected to be part of the SST system shall have the obligation to participate to calibration campaigns conducted by the SST Partnership in order to ensure the quality of the data produced.

The calibration campaign periodicity may vary according to the typeof sensor, as follows:

— radars selected to be part of the SST system shall go through, at least, a calibration campaign every 12 months,

— telescopes selected to be part of the SST system shall go through, at least, a calibration campaign every 6 months,

— lasers selected to be part of the SST system shall go through, at least, a calibration campaign every 12 months.

2.3.1.2. Criteria for calibration campaign

The calibration campaigns shall follow specific objective criteria in order to ensure the fairness of the results and the overall efficiency of the SST system.

The criteria shall be the following:

	Technical performance
	[N] – Noise
Survey Radars	Range ≤100m Range Rate ≤4m/s
Tracking Radars	Range ≤50m Range Rate ≤2m/s
Survey telescopes (MEO/GEO)	Angular accuracy ≤2 arcsec
Tracking telescopes MEO/GEO	Angular accuracy ≤2 arcsec
Tracking telescopes LEO	Angular accuracy ≤7,2 arsec
Lasers	Range accuracy ≤5m

Threshold to be applied for the participation of sensors are subject to evolution based on performance monitoring process and values in this Annex could be updated to be kept in line with the latest needs of the SST sensor network. In case of changes, they have to be presented and justified at the Yearly Operational Review.

2.3.2. *Assessment of the operational performance: Operational performance analysis*

2.3.2.1. Operational performance analysis: general rules

Each sensor selected to be part of the SST system shall have the obligation to share data in order to allow the SST Partnership to perform operational performance analysis for ensuring the operational performance of the data produced.

Sensors included in the category A shall transmit data to their Constituting National Entity, or to the Constituting National Entity of another Member States with whom the State has a specific agreement. The Constituting National Entity shall send the data with adequate timeliness and regularity to the database via electronic means with the appropriate security measures.

The operational performance analysis periodicity may vary according to the type of assets, as follows:

— Radars selected to be part of the SST system shall go through, at least, an operational performance analysis every 12 months.

— Telescopes selected to be part of the SST system shall go through, at least, an operational performance analysis every 6 months.

— Lasers selected to be part of the SST system shall go through, at least, an operational performance analysis every 12 months.

A sensor, which has failed an operational performance analysis, is entitled to remain in category A while waiting for the next operational performance analysis.

A sensor failing two operational performance analysis in a row shall be removed from category A, and included in category B, except in exceptional cases that need to be duly:

— justified according to architecture studies by the added-value to the overall SST system,

— approved by a vote of the SST Partnership,

— accepted by the Commission.

2.3.2.2. Criteria for operational performance analysis

	Operational performance		
	Objects/operational hour	Measurements/effective hour	Timeliness (of data sharing)
Survey Radars	≥65	≥250 meas/hour	>90 % of tracks in less than 48h AND >75 % of tracks in less than 24h (*)
Tracking Radars	N/A	≥12 meas/hour	
Survey telescopes	≥7	≥24 meas/hour	
Tracking telescopes	N/A	≥21 meas/hour	
Lasers	N/A	≥19 meas/hour	

(*) additional timeliness performance criteria could be developed upon the request of the Commission by the EU SST Partnership

Threshold to be applied for the participation of sensors are subject to evolution based on performance monitoring process and values in this annex could be updated to be kept in line with the latest needs of the SST sensor network. In case of changes, they have to be presented and justified at the Yearly Operational Review.

Effective time means a declarative value communicated every month by the Member State responsible of the sensor. It is used for the computation of the Measurement Rate.

Operational time means time when sensor shared measurements is computed as the total duration of the tracks shared through the SST Database.

2.4. **Specific rules for telescopes, radars, lasers and others types of sensors**

2.4.1. *Telescopes*

The SST Partnership shall ensure, as far as possible, an ideal geographical distribution of the telescopes based on the needs for providing coverage, cataloguing and SST services, while respecting the principle of unnecessary duplication.

The geographical repartition of telescopes and the best value for money shall be justified and validated by architecture studies.

The overall number of telescopes (surveillance and tracking) shall be assessed according to the need demonstrated by the architecture studies and the needs for each VLA. The architecture study shall demonstrate the value-added of each asset and indicate how the principle of non-duplication has been respected.

2.4.1.1. For surveillance telescopes

The number of surveillance optical sensors in Europe VLA shall be restricted to one Full Time Equivalent ([3]) per Member State.

The number of surveillance optical sensors worldwide (including Europe VLA) shall be restricted to two Full Time Equivalent per Member State.

In case there is the necessity to have more telescopes' resources in one Member State, it has to be:

— justified by architecture studies,

— approved by a vote of the SST Partnership,

— accepted by the Commission.

([3]) One FTE telescope means one telescope with 100 % dedication, or N telescopes with the 'sum of N' dedications =100 %.

2.4.1.2. For tracking telescopes

The number of tracking optical sensors in Europe VLA shall be limited to one Full Time Equivalent per Member State.

The number of tracking optical sensors worldwide (including Europe VLA) shall be restricted to two Full Time Equivalent per Member State.

In case there is the necessity to have more telescopes' resources in one Member State, it has to be:

— justified by architecture studies,

— approved by the SST Partnership,

— accepted by the Commission.

2.4.1.3. For telescopes able to do surveillance and tracking

Sensors capable of working in both surveillance and tracking mode shall declare which is its main operational mode when contributing to SST. The assessment of the sensor shall be evaluated with respect to the main operational mode; notwithstanding that, the sensor would operate also in the other mode, if required.

For the technical performance and operational, the sensor shall comply with the most restrictive requirement, to ensure its compliance in the worst-case scenario. For example, a telescope capable of working as survey and tracking sensor and declaring survey as its main purpose shall be able to observe at least seven objects per hour and demonstrate an angular accuracy better than two arcsec RMS (Root Mean Square).

2.4.2. *Radars*

The SST Partnership shall ensure, as far as possible, an ideal geographical distribution of the radars based on the needs for providing coverage, cataloguing and SST services while respecting the principle of unnecessary duplication.

The number of radars participating in the delivery of SST services (category A) shall be limited.

The inclusion of an additional radar, in category A, shall be:

— justified by architecture studies,

— approved by the SST Partnership,

— accepted by the Commission.

The geographical repartition of radars and the best value for money shall be justified and validated by architecture studies.

2.4.3. *Lasers*

Laser participating to the provision of SST Services shall be able to acquire and track non-cooperative target in order to be included in category A.

The number of lasers shall be limited to five sensors worldwide.

In case there is the necessity to have more lasers' resources or lasers capable of tracking only cooperative objects, it has to be:

— justified by architecture studies,

— approved by a vote of the SST Partnership,

— accepted by the Commission.

2.4.4. *Other types of sensors*

The SST Partnership may add other types of sensors (such as space based sensors, passive ranging techniques …).

The inclusion of an additional other types of sensors shall be:

— justified by architecture studies,

— approved by a vote of the SST Partnership,

— accepted by the Commission.

2.5. **Financing rules for the upgrade and operation of assets**

Each upgrade and development receiving Union funding shall be justified under the SST architectures developed by the SST Partnership. The justification must highlight the starting performance of the asset, the intended final performance and the corresponding added-value to the SST system performances.

The SST sub-component shall focus on the upgrading of existing national assets.

2.5.1. *Capital expenditure (CAPEX)*

Due to the nature of the Union activities in SST, the level of Union financing of the upgrade of each asset shall be based on the justification for total capital expenditure (CAPEX) of the sum of all the upgrades committed on that asset within the period of each SST grant with the SST Partnership, and shall be limited to 45 % of the total CAPEX. The financial proof of national investments shall be sent to the Commission by the Member States.

A higher percentage might be accepted if:

— justified according to architecture studies by the added-value to the overall SST system,

— approved by a vote of the SST Partnership,

— accepted by the Commission.

Investments below EUR 75 000 may receive a higher percentage of financing.

2.5.2. *Operational expenditure (OPEX)*

The percentage funded by the Union shall be consistent with the dedication to the SST sub-component and the total OPEX of the asset. For example, the OPEX cost for a sensor X % dedicated to SST cannot be greater than X % of the total (100 %) OPEX which shall be declared to the Commission.

ANNEX II

KEY PERFORMANCES INDICATORS, REFERRED TO IN ARTICLE 10

The following concepts shall be used in the proposal:

— Metrics: something that is measured and reported to help manage a process or activity.

— Key Performance Indicator (KPI): A metric that is used to measure the achievement of the Critical Success Factors and help manage a process / plan /project or other activity.

Naming convention

The naming convention for the indicators aims to facilitate the mapping between the indicators and the categories that they belong to.

Each indicator shall be associated with a code that uniquely identifies it according to the following nomenclature: [T][CC]-[n]

Where:

— T: indicator type. It can be a KPI (K) or a metric (M).

— CC: category. The second column indicates the acronyms used for each of KPI or Metric categories.

S	Sensors
CAT	SST Catalogue
DS	Data Sharing
TR	Tasking Requests
DB	SST Database
SP	Service Provision
FD	Front Desk
U	User engagement and outreach

— n: sequence. Number that identifies the indicator across each category.

List of Metrics & KPI to be used and associated targets

Target values has to be proposed by the SST Partnership in the grant proposal.

The proposal of the SST Partnership shall demonstrate how those metrics/KPIs will be measured and monitored along the project.

Category	ID	Title	Expected target	
			2022	2027
Sensors	MS-1	Number of sensors	TBD	TBD
	KS-1	Sensors not sharing data	0	0
	MS-2	Sensors declared dedication		
	KS-2	Sensors real dedication	=MS-2	=MS-2
	MS-3	Sensors recovery time		
	KS-3	Sensors calibration campaigns compliance	100 %	100 %
	MS-4	Sensors in calibration campaign		
	KS-4	Sensors sharing data in calibration campaign	100 %	100 %

SST Catalogue	KCAT-1	Number of autonomously catalogued objects;	TBD	TBD
	MCAT-1	% of autonomously catalogued objects with respect to the US public catalogue;	TBD	TBD
	K-CAT 2	Accuracy of catalogue debris	TBD	TBD
	K-CAT 3	Orbit age of the objects in the catalogue	TBD	TBD
	K-CAT 4	Number of new objects added	TBD	TBD
SST Database	MDB-1	Space objects population		
	KDB-1	Orbit regimes coverage		
	MDB-2	Age of orbits		
Data Sharing	MDS-1	Declared data sharing regularity		
	KDS-1	Effective data sharing regularity	=MSD-1	=MSD-1
	MDS-2	Number of measurements		
	MDS-3	Number of tracks		
	MDS-4	Number of orbits		
Service Provision	MSP-1	Number of events reported		
	KSP-1	Autonomous events		
	MSP-2	Number of products		
	KSP-2	Autonomous products		
	KSP-3	Products delivery timeliness	3h (TBC)	1h (TBC)
	MSP-3	Service specific requests		
	KSP-4	Resolution time for service specific requests	1 day (TBC)	0,5 days (TBC)
	KSP-5	Products format deviations	0 %	0 %
	KSP-6	CA service configuration compliance	100 %	100 %
	KSP-8	Contribution of Sensors to autonomous products		
Tasking requests	MTR-1	Number of tasking requests		
	MTR-2	Tasking responses by types		
	KTR-1	Successful tasking requests		
	KTR-2	Tasking requests resolution time		
	KTR-3	Responsiveness to Tasking Requests per Sensor		
Front Desk	MFD-1	Number of support requests		
	MFD-2	Number of incidents		

	KFD-1	Resolution time for support requests		
	KFD-2	Resolution time for incidents		
	KFD-3	Products downloads		
	KFD-4	Autonomous products downloads		
	KFD-5	Portal availability		
User engagement and outreach	MU-1	Number of potential users/organization		
	KU-1	User uptake / Number of users		
	MU-2	Number of new users		
	KU-2	Users downloading the products		
	KU-3	Users accessing the Portal		
	MU-3	Users' uploads		
	MU-4	Spacecraft status		

ANNEX III

INFORMATION TO BE PROVIDED WITH THE SUBMISSION OF THE PROPOSAL, REFERRED TO IN ARTICLE 7

1. DOCUMENTATION RELATIVE TO INVIDIVUAL CONDITIONS

The application shall demonstrate compliance with the criteria set out in Annex I:

1.1. **If the asset is a sensor the application shall cover the following:**

1.1.1. *Ownership of or access to the SST sensor*

Information to demonstrate compliance of the SST sensor with the criteria set out in Annex I, Part I, Section 1 – Ownership of or access to SST sensors.

1.1.2. *Adequate SST sensor*

Information to demonstrate compliance of the SST sensor with the criteria set out in Annex I, Part I, Section 1 – Adequate SST Sensor.

1.1.3. *Sensor available for SST*

Information to demonstrate compliance of the SST sensor with the criteria set out in Annex I, Part I, Section 1 – SST sensor available or under development.

1.1.4. *Technical and human resources to operate the sensor*

Information to demonstrate that the technical and human resources are and will be available to operate the sensor.

1.1.5. *Security of the SST sensors*

Information to demonstrate compliance of the SST sensor with the criteria set out in Annex I, Part I, Section 1 – Security aspects.

1.2. **If the asset is an operational analysis and data processing capacity specifically designated for SST, the application shall cover the following:**

1.2.1. *Ownership of, or access to the SST operational analysis and data processing capability*

Information to demonstrate compliance of the SST capbility with the criteria set out in Annex I, Part I, Section 2 – Ownership of or access to SST capabilities.

1.2.2. *Adequate SST operational analysis and data processing capability*

Information to demonstrate compliance of the SST sensor with the criteria set out in Annex I, Part I, Section 2 – Adequate operational analysis and data processing capacities.

1.2.3. *Security of the capabilities*

Information to demonstrate compliance of the SST capability with the criteria set out in 1.2.3 – Security aspects, including data and information security aspects, that reflects the existing design of the SST developed by the Consortium and the commitment to contribute to an endeavour agreed with the other Member States

2. COLLECTIVE CONDITIONS AND ACTION PLAN

2.1. **General documents**

List of the Constituting National Entities.

The text of the SST Partnership Agreement, which shall include: Information on the overall design of the SST at Union level, including: the governance of the SST Partnership with the role of the different technical bodies and their decision-making mechanisms.

2.2. **Configuration of the system**

— A functional architecture

— A technical architecture

— Achitecture studies for category A and categories B and/or C, as defined in 2.2.1.1, as far as the necessary data on the planned sensors are available

— List of sensor incorporated in the system per category A, B or C, as defined in 2.2.1.1

— List of capabilities incorporated in the system

— Objective criteria used to performed the assessment campaign

— List of assessment campaigns already performed per sensor.

2.3. **Distribution of the activities and decision making procedures**

Description of the distribution of activites among the Expert Teams.

Description of the activities of the SST Front Desk.

Description of the decision-making procedures.

2.4. **Rules on the sharing of data**

Information to describe the overall modalities of sharing data between the members of the SST Partnership.

2.5. **Transition measures**

Description of transitions measures foreseen for ensuring a smooth transition between the SST Consortium and the SST Partnership.

ANNEX IV

DEFINITIONS REFERRED TO IN ANNEX I TO III

1. **Very Large Area (VLA)**

The VLA concept consists in defined geographical regions allowing to group sensors. At first order, the same sensor placed in locations in different VLAs will show different performance and added value. The following "Very Large Areas" are considered today:

— VLA 'Asia'

— VLA 'Europe'

— VLA 'North America'

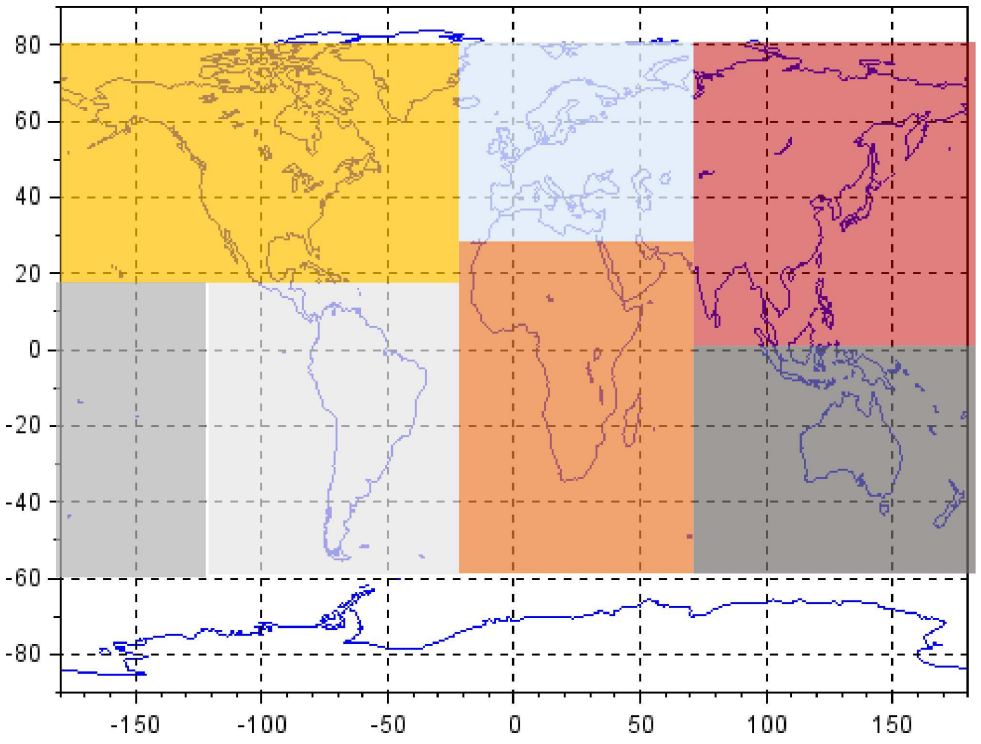
— VLA 'Oceania'

— VLA 'Pacific Ocean'

— VLA 'South of Africa'

— VLA 'South America'

The approximate location of the VLAs is illustrated in this figure:



2. **Architecture studies**

The term 'architecture studies' gathers a set of system engineering activities. It includes the evaluation of performance and the added value of a given asset, a given upgrade, a whole network of sensor or the evaluation and classification of alternative design solutions and the justification of their ranking. The architecture studies are consistent with a bottom up approach targeting best value for money, avoiding unnecessary duplication while monitoring that the system answers the high-level user needs. The architecture studies covers all the functions of the system: Sensor function, Data processing function and Service function.

3. **Raw data**

Data at sensor level that has not undergone any post-processing (such as data per radar pulse, images, and photon detection).

4. **Observable**

A non-timestamped single measurable quantity of a space object obtained after processing raw data (such as azimuth, elevation, RA, DEC, range, Doppler, RCS, and MAG).

5. **Measurement**

Set of processed geometrical (such as angles, range, and differential of arrival times) and/or physical (such as magnitude and RCS) observables of a single sensor all belonging to a single object and the same epoch.

6. **Track**

Set of consecutive measurements of a single sensor for a single object with gaps between measurements not exceeding a mean track duration to be defined for each sensor.

7. **Noise**

Parameter Id	[N]
Name	Noise
Description/Definition	Measurement noise is defined as the root mean square (RMS) of the observation residuals. Measurement noise is generally assimilated to a Gaussian (normal) distribution. In this way, the interval centered on the mean with a semi-amplitude of 1- σ comprises 68,27 % of residuals data. This noise could also be considered as the standard deviation forcing the mean to be zero (consistency between both approaches will be checked).
Metric(s)	Angular: as angular observations are defined in spherical coordinates, the standard deviation will be computed to: $ra \bullet \cos(dec)$, or equivalently $az \bullet \cos(el)$, where ra=right ascension, dec=declination, az=azimuth and el=elevation *dec* or equivalently *el* Range: Obtained as direct results from observations Range rate: Obtained as direct results from observations
Measurement unit	Arcsec, m, m/s (angles, range and range rate respectively)

8. **Operational analysis definitions**

Parameter Id	[TL]
Name	Timeliness
Description/Definition	Delay of provision of measurements
Metric(s)	Time between the end of the tracks shared and sharing. Cut off value 90 % of the data shared in the SST Database, this is 'Inserted time' – 'End time' in less than 48h, and 75 % in less than 24h.

	It is supplemented with the amount of data shared within 48h and 24h
Measurement unit	Hours

Parameter Id	[O2]
Name	Objects/operational hour
Description/Definition	Average number of different objects observed by a sensor per hour
Metric(s)	Average of number of different objects observed per interval of 1 hour. The whole operational period is divided in N intervals of 1 hour. For each interval i, the number of different objects observed by the sensor is computed $$O2 = \frac{\sum_{i=1}^{N} o_i}{N}$$
Measurement unit	Objects/h

Parameter Id	[MR]
Name	Measurements rate
Description/Definition	Number of measurements
Metric(s)	measurements / Effective dedication declared time (h)
Measurement unit	measurements/h

9. **Other definitions**

Dedication	
Declared Dedication	Maximum time an asset is declared to contribute to SST in a reporting period according to the commitments of the Grant.
Effective Dedication	Time an asset contributes to SST in a reporting period.
Ineffective Dedication	Time a sensor is not able to contribute to the SST because of maintenance or unavailability (weather, unplanned maintenance, etc.).
Functional Analysis	Definition and description of the main SST functions, as well as their interactions in terms of workflows, inputs, outputs, and exchange of information. The break down into functions is done on a conceptual basis, and not linked to the physical implementation in the architecture of the SST system. Some functions may be distributed among several physical elements.

Operational Sensor	A sensor, which has successfully passed all the quality and contribution criteria of the operational performance monitoring.
Potential Dedication	Maximum time hypothetically a sensor could be working for SST.
SST Assets	SST Sensor and Data Processing capabilities.
Tasking request	Request to the sensors contributing to SST to provide data related to a specific object or event.