



IMPLEMENTING ARRANGEMENT

BETWEEN

**THE INDIAN SPACE RESEARCH ORGANISATION
(ISRO)**

AND

**THE CENTRE NATIONAL D'ETUDES SPATIALES
(CNES)**

FOR

**PRE-FORMULATION STUDIES OF A MARITIME DOMAIN
AWARENESS MISSION**

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The **Indian Space Research Organisation** (hereinafter referred to as "**ISRO**"), acting under the framework agreement executed on behalf of the President of India through the Department of Space, its headquarters at Antariksh Bhavan, New BEL Road, Bangalore – 560 0231, represented by Shri (Dr) K.Sivan, its Chairman

And

The **Centre National d'Etudes Spatiales** (hereinafter referred to as "**CNES**"), a French scientific and technical public establishment of industrial and commercial nature, established under the provisions of the law 61-1382 dated December 19th 1961, and governed by the provisions of articles L. 331-1 to L. 331-8 of the French Research code, the registered office of which is at 2, place Maurice Quentin, 75039 Paris Cedex 01 France, represented by Dr. Jean-Yves Le Gall, its President,

Hereinafter individually referred to as "Party" or collectively as "Parties" of this Implementing Arrangement (hereinafter referred to as 'IA');

PREAMBLE

RECALLING the terms of the Cooperation Agreement signed on April 10th 2015 between the Parties and called, "Programme between the CNES and ISRO for a reinforced cooperation in space activities" (hereinafter referred to as "Cooperation Agreement") which set out the terms and conditions for a favourable cooperative framework between the Parties for the implementation of any future joint mission and/or any cooperative activities decided by the Parties.

RECALLING that a meeting has been held in New Delhi on May 19, 2017 between the Indian National Security Secretariat, ISRO, CNES and the French Embassy to discuss about topics related to maritime awareness through space and ground systems. Following this meeting, it has been decided to create a Joint Working Group ISRO – CNES specifically tasked with the evaluation of the feasibility of an Indo-French co-development of a space system for maritime domain awareness, with the objective to provide relevant data and services to both nations.

RECALLING that an ISRO-CNES Joint Working Group for Communication and Navigation (CNJWG) has been created on July 2017.

RECALLING that a seminar of experts from ISRO and from CNES has been held in France on October 2017 in order to elaborate a programme objective regarding maritime awareness.

HAVE AGREED as follows:

ARTICLE 1
PURPOSE OF COOPERATION

The purpose of this IA is to describe the undertakings of ISRO and CNES to conduct (definition) pre-formulation studies for a potential joint maritime awareness mission.

ARTICLE 2
RESPECT OF LAWS AND REGULATIONS

The Parties shall carry out the cooperative activities under this IA, on a reasonable effort basis, subject to the laws and regulations applicable in each country, in particular the ones pertaining to export control, and to the availability of their respective resources.

ARTICLE 3
OBJECTIVES

- 3.1. The proposed joint mission will be devoted to maritime domain awareness, with the objective to provide relevant data and services to both nations. The objective is to monitor the maritime traffic and to identify the non-compliant ships at the maximum possible revisit frequency. The monitoring system should provide end to end solution for detection, identification, monitoring of vessels in the regions of interest for France and India.
- 3.2. The main objectives of the present IA are to define:
 - 3.2. 1. Mission requirements and
 - 3.2. 2. A technically feasible and cost affordable concept corresponding to these requirements taking benefit of the relevant capabilities in India and France.

- 3.3. In order to achieve these objectives, the Parties shall carry out joint activities under the present IA that will enable the achievement of the pre-formulation studies in terms of:
- 3.3. 1. Mission requirements,
 - 3.3. 2. Data Policy,
 - 3.3. 3. Mission architecture scenarios based on:
 - constellations of satellites deployed appropriately either in a single or multiple orbital geometry composed of different payload sensors and suitable platforms, with an appropriate ground segment for programming and data receiving, processing and dissemination
 - and processing capability using existing data to be set up in the shorter term
 - 3.3. 4. Launch strategy,
 - 3.3. 5. Cost-effectiveness,
 - 3.3. 6. Cost sharing, work share and responsibilities.
- 3.4. The outcome of the pre-formulation studies is intended to provide sufficient information in order to allow the Parties to take the necessary decisions on the next steps of potential joint development programme for maritime awareness.

ARTICLE 4

APPLICATION OF COOPERATION AGREEMENT

- 4.1. The Parties acknowledge that this IA refers and is subject to the Cooperation Agreement referred to in Preamble and shall be considered as an Implementing Arrangement under Article 6 of the Cooperation Agreement.
- 4.2. Therefore, all the relevant provisions contained in the Cooperation Agreement shall apply to the activities carried out by the Parties under this IA and in particular those of Articles 8 (Financing), 10 (Transfer of Goods and Technical Data), 15 (Liability) and 16 (Settlement of Disputes)

ARTICLE 5
UNDERTAKINGS OF THE PARTIES

- 5.1. The Parties will jointly undertake during these pre-formulation studies, the following activities:
- 5.1. 1. Defining a Mission Requirement Document (MRD),
 - 5.1. 2. Defining Data Policy,
 - 5.1. 3. Making trade off studies between requirements and cost, or making requirements/cost scenarios of interest,
 - 5.1. 4. Exploring the areas of cooperation for joint development of software and hardware.
 - 5.1. 5. Exploring the areas of cooperation for joint development of algorithm and processing technique to enable ship detection and Ocean Surveillance from the Sentinel 1A&B raw data.
 - 5.1. 6. Defining an agreed mission architecture and operation concept,
 - 5.1. 7. Defining Parties' sharing of responsibilities and identifying their respective contributions for the subsequent phases,
 - 5.1. 8. Providing a program schedule and cost estimate and identifying critical items,
 - 5.1. 9. Studying the feasibility and the modalities of data sharing till the maritime awareness space infrastructure becomes operational.
 - 5.1. 10. Preparing agreements required to proceed with the subsequent phases of the mission; and
 - 5.1. 11. Sharing of all the results of the studies between the Parties according to article 7 hereafter.
- 5.2. The Parties shall present the pre-formulation concept study results to their respective senior management for review within one year following the signature of this IA

ARTICLE 6
POINTS OF CONTACT

- 6.1. The Parties designate the following representatives as points of contact for the activities under this Agreement:

For CNES:

M. Claude Fratter
Head, Pre-projects and Advanced Studies
Innovation, Applications and Science Directorate
Centre spatial de Toulouse
18 avenue Edouard Belin
31 401 TOULOUSE CEDEX 9
France

For ISRO:

Programme Director, Special Projects,
ISRO HQ, Bangalore -560 0231

- 6.2. The points of contact will be responsible for overview and facilitate the implementation of the cooperative activities and the communication between the Parties.
- 6.3. Any change in a Party's respective contact information will be communicated in writing to the other Party.

ARTICLE 7
INTELLECTUAL PROPERTY AND CONFIDENTIALITY

- 7.1. Each Party retains the ownership of methods, technical know-how and products used for the realisation of activities under this IA.
- 7.2. The results of the studies conducted by or on behalf of each Party under this IA, remain the property of the relevant Party. The results of studies which belong to one Party shall be considered as proprietary information for which protection is to be maintained and may be communicated to the other Party

in compliance with the provisions of Article 10 "Transfer of Goods and technical data" of the Cooperation Agreement.

- 7.3. In accordance with the article 5.1.2, the Parties will later convene by mutual written agreement, on the conditions under which the results of joint studies may be used by either Party for other purposes than this cooperation,
- 7.4. It is the joint intention of the Parties that other entities (hereafter referred to as the Related Entities), including but not limited to entities located in or having their places of business in India and France, shall be involved in the completion of the studies referred to above. Such Related Entities will be required by the Parties, by contract or otherwise, to be bound by the provisions of Article 10 of the Cooperation Agreement related to the use, disclosure and retransfer of proprietary Information.

ARTICLE 8 AMENDMENTS

Any modification to this IA shall be executed in writing. The amendment shall be signed by an authorized representative of ISRO and CNES.

ARTICLE 9 ENTRY INTO FORCE AND DURATION

- 9.1 This IA shall enter into force upon the date of its signature by the representatives of the Parties and shall remain valid for a period of one (1) year, unless unilaterally terminated by either Party in accordance with the provisions of the paragraph below. The estimated duration of the pre-formulation study is less than a year.
- 9.2 Either Party may unilaterally terminate this IA before its expiration date by written notice to the other Party six (6) months before the desired date of termination. The terminating Party will not incur any liability to the other Party for terminating this IA. It may also be jointly terminated by the Parties in writing, with termination to become effective as of the date stated by the Parties in the written termination.
- 9.3 Expiration or termination of this IA will not affect the Parties' continuing obligations under Articles 7, 10, 11, 12, 13,14 and 15 of the Cooperation Agreement unless otherwise agreed by the Parties.

Done in duplicate, in French, Hindi and English languages, all texts being equally authentic. However, due to the fact that the English language was used in the preparation and negotiation of this IA, the English version, may be used for any issue related to the interpretation and implementation of this IA.

IN WITNESS WHEREOF, the undersigned, duly authorized, hereby sign this IA.

For ISRO



10/03/18

K. Sivan
Chairman

For CNES



Jean-Yves Le Gall
Président

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