



Delibera n. 256

30 Novembre 2020

Allegato AI Verbale n. 09/2020

Oggetto: Consortium Agreement del Thematic Core Service Satellite Data di EPOS.

## IL CONSIGLIO DI AMMINISTRAZIONE

VISTO il Decreto legislativo 29 settembre 1999, n. 381, concernente la costituzione dell'Istituto Nazionale di Geofisica e Vulcanologia (INGV);

VISTO il Decreto legislativo 25 novembre 2016, n. 218, recante "Semplificazione delle attività degli enti pubblici di ricerca ai sensi dell'articolo 13 della legge 7 agosto 2015, n. 124";

VISTO lo Statuto dell'INGV, approvato con Delibera del Consiglio di Amministrazione n. 114/2020 del 19 giugno 2020, emanato con Decreto del Presidente n. 78/2020 del 27/10/2020, pubblicato sul Sito WEB istituzionale – Avviso di emanazione di cui al Comunicato su Gazzetta Ufficiale della Repubblica Italiana - Serie generale - n. 264 del 24 ottobre 2020), in particolare, l'art. 2, comma 5;

VISTO il Regolamento di Organizzazione e Funzionamento dell'Istituto Nazionale di Geofisica e Vulcanologia emanato con Decreto del Presidente n. 36/2020 del 22/04/2020, pubblicato sul sito istituzionale;

VISTO il Regolamento di Amministrazione, Contabilità e Finanza, adottato con Delibera del Consiglio di Amministrazione n. 145/2020 del 22 luglio 2020, ed emanato con Decreto del Presidente n. 75/2020 del 21 ottobre 2020;

VISTA la decisione di esecuzione (UE) n. 2018/1732 della Commissione Europea, del 30 Ottobre 2018 relativa all'istituzione del Sistema di osservazione della placca tettonica europea – Consorzio per un'infrastruttura europea di ricerca (ERIC EPOS), notificata con il numero C(2018) 7011;

VISTO il Decreto Ministeriale per il riparto del Fondo ordinario per gli Enti e le Istituzioni di ricerca, con il quale il MIUR ripartisce i finanziamenti necessari per la partecipazione italiana agli ERIC sotto la voce «attività di ricerca a valenza internazionale» e in particolare, l'art. 1 comma 3 che prevede testualmente " *I contributi per la partecipazione agli ERIC, o ai progetti da questi realizzati, sia nella forma in-kind sia di contributi finanziari a valere sul FOE, questi ultimi come determinati nella relativa tabella riferita alle "Attività di ricerca a valenza internazionale" costituiscono a tutti gli effetti quota di entrata dei bilanci dei medesimi ERIC, anche mediante eventuale trasferimento diretto*";

VISTA la nota del 20.10.2020, prot. n.2512, con la quale il dott. Christian Bignami, responsabile delle attività nell'ambito del TCS Satellite Data, ha precisato che il Consortium Agreement è mirato a formalizzare la partecipazione della comunità scientifica al TCS Satellite Data nonché, ad assicurare una governance condivisa per contribuire all'operatività di EPOS garantendo l'impegno delle comunità e delle

infrastrutture di ricerca nazionali coinvolte nella fornitura di dati e prodotti scientifici, trasmettendo lo schema del Consortium Agreement;  
RAVVISATA la necessità di nominare un rappresentante INGV all'interno del TCS Consortium Board;  
VISTO lo schema del Consortium Agreement nonché le disposizioni in esso contenute;  
VALUTATE le esigenze scientifiche e tecnologiche dell'Istituto;  
Su proposta del Presidente,

**DELIBERA**

**Art. 1**

Il dott. Christian Bignami è nominato Rappresentante INGV all'interno del EPOS TCS Satellite Data Consortium Board, per un periodo di tre anni, rinnovabile, a decorrere dalla data di sottoscrizione del Consortium Agreement. Il rappresentante avrà cura di interfacciarsi, preliminarmente all'approvazione aggiornamento e/o revisione del Work Programme annuale, con Presidente e Direttore di Dipartimento competente, trasmettendo agli stessi una relazione sulle azioni e sulle risorse che costituiscono, per ciascuna annualità, il contributo INGV al TCS Satellite Data.

**Art. 2**

E' approvato lo schema del Consortium Agreement del Thematic Core Service Satellite Data di EPOS, allegato alla presente, quale parte integrante e sostanziale.

Viene dato mandato al Presidente alla sottoscrizione definitiva degli atti.

Firmato il 18/12/2020

Depositato presso la Segreteria del Consiglio in data 18/12/2020

La segretaria verbalizzante  
(Dott.ssa Maria Valeria INTINI)

Firmato digitalmente da

**MARIA VALERIA INTINI**

CN = INTINI  
MARIA VALERIA  
O = INGV  
C = IT

IL PRESIDENTE  
(Prof. Carlo DOGLIONI)



Firmato  
digitalmente da  
**DOGLIONI CARLO**  
C: IT

## **EPOS Thematic Core Service Satellite Data Consortium Agreement for the Construction and Operation of the EPOS Research Infrastructure**

Between

1. Istituto per il Rilevamento Elettromagnetico dell'Ambiente (IREA) – Consiglio Nazionale delle Ricerche (CNR), whose registered office is at Via Diocleziano 328, 80124, Napoli, Italy, hereinafter referred to as IREA-CNR ("Party");
2. Agencia Estatal Consejo Superior de Investigaciones Científicas (CSIC), M.P., with institutional headquarters at c/ Serrano 117 – 28006 MADRID, hereinafter referred to as CSIC ("Party"); with NIF Q2818002D, a public research body represented for the signature of this document by Prof.<sup>a</sup> ROSINA LÓPEZ-ALONSO FANDIÑO, Vice-President for Organization and Institutional Relations, acting in accordance with the authority delegated by the CSIC presidency in the decision of 20 April 2017 (Official Spanish Gazette [BOE] 23 May 2017);
3. University of Leeds, whose registered office is at Leeds, LS2 9JT, United Kingdom, hereinafter referred to as UoL ("Party");
4. Centre National de la Recherche Scientifique, Paris, France, hereinafter referred to as CNRS ("Party"); established in Rue Michel-Ange 3, Paris 75794, France, intracommunity VAT identification number FR40180089013, represented by its Chairman and CEO, Mr Antoine PETIT, who has delegated his signing authority for this Consortium agreement to the Regional Representative of the Paris Regional Michel Ange Division, Ms Hélène MAURY.

The CNRS, authorized by the Institut de physique du globe de Paris, is acting in the name and on behalf of the joint research laboratories UMR7154 (IPGP-UMR) and UMS3454 (IPGP-UMS).

The CNRS and Université de Strasbourg, a Scientific, Cultural and Professional Public Institute, having its registered office at 4, rue Blaise Pascal – CS90032, 67 081 Strasbourg Cedex, hereinafter "UNISTRA", are acting on their own behalf as well as in the capacity of the supporting authority of the "Institut de Physique du Globe de Strasbourg" (UMR7516 – IPGS), directed by Laurence JOUNIAUX.

UNISTRA has mandated the CNRS for the signature of this agreement in the mandate agreement, signed between the CNRS and UNISTRA on April 30th, 2018.

By virtue of the Grenoble' site agreement 2016-2020 signed on June, 12th, 2018, the Université Grenoble Alpes and Université Savoie Mont-Blanc have authorised the CNRS to negotiate, signed and managed in their name and on their behalf and in the limits mentioned in the said agreement, any contract that can be conclude in the frame of the said laboratory, including this agreement, in the name and on behalf of the ISTERRE Laboratory – UMR5275, directed by Stéphane GUILLOT.

Pursuant to the decision of January 25th, 2018, giving power of signatory to a Regional Delegate for the coordination of partnership agreements for a unit within his or her district, together with other units under other CNRS districts, the Paris Michel Ange Regional Delegation shall sign this agreement on behalf of the Ile-de-France Villejuif, Alsace and Alpes Regional Delegations.

5. Istituto Nazionale di Geofisica e Vulcanologia (INGV), whose registered office is at Via di Vigna Murata 650, 00143, Roma, Italy, hereinafter referred to as INGV ("Party");

**Preamble:**

As member organisations of the EPOS Thematic Core Services (TCS) Satellite Data Consortium, also referred to as “Party” or “Parties”, have agreed to enter into the consortium agreement, hereinafter referred to as “Consortium Agreement”, under the terms and conditions below.

The mission of TCS Satellite Data is to lead the Earth Observation Satellite Community to actively contribute to EPOS Research Infrastructure by easing the access to Earth Observation data, providing open access state-of-art and mature products and services, liaising with national and international space agencies, in compliance with the main European and International Satellite Programmes.

Whereas the Parties to this Consortium Agreement wish to define their rights and obligations as part of the Thematic Core Services (TCS) Satellite Data which is providing data and services to the EPOS Research Infrastructure,

IT IS THEREFORE AGREED BETWEEN THE PARTIES AS FOLLOWS:

**Article 0: Definitions**

“Consortium Board”: the decision-making body of the TCS Satellite Data.

“Cost-book”: the details of the yearly operational costs of each service across the Thematic Core Service defined in Annex 5.

“EPOS-ERIC”: European Research Infrastructure Consortium (ERIC) of EPOS. The ERIC legal framework provides EPOS with legal personality and capacity recognised in all EU Member States.

“Results”: any (tangible or intangible) output of the action such as data, knowledge or information, whatever its form or nature, whether it can be protected or not, that is generated in the action, as well as any rights attached to it, including intellectual property rights.

“Software”: sequences of instructions to carry out a process in, or convertible into, a form executable by a computer and fixed in any tangible medium of expression.

“Core Software”: software belonging to a Party prior to the entry into force of the Consortium Agreement.

“Derived Software”: software developed from Core Software under the Consortium Agreement.

There are two categories of Derived Software: Adaptations and Extensions:

- a) Adaptation: Derived Software using the same algorithms as the Core Software from which it is derived and/or rewritten in another language.
- b) Extension: Derived Software allowing for access to new functions or performance by comparison to the Core Software from which it is derived.

“Shared Software”: software created ex nihilo under the Consortium Agreement.

“TCS Service Provider”: TCS Party that contributes to the EPOS Research Infrastructures with validated and operational services.

“Work Programme”: the description of the actions and resources of each Party for the TCS Satellite Data defined in Annex 4.

**Article 1: Parties to this Consortium Agreement**

*Parties* are organisations contributing to the TCS Satellite Data with specific tasks as defined in accordance to the Work Programme.

*Full Members* sign this Consortium Agreement and have full voting rights in the governance structure of the TCS Satellite Data Consortium. The list of Full Members and their representatives is detailed in Annex 3.

*Associated Members* contribute to the TCS Satellite Data but they do not sign this Consortium Agreement. *Associated Members* shall sign a Memorandum of Understanding, after approval of the Consortium Board, with one of the TCS Satellite Data Parties, authorized by the other.

*Associated Members* have an observer status in the *Consortium Board*, but without voting rights.

Any new *Party* shall sign the Consortium Agreement and describe its activities in the Work Programme as agreed upon with the Consortium Board. The accession of any new *Party* shall enter into force upon the date of the signature of the new *Party*.

Any addition to the TCS Satellite Data Consortium of a new *Party* requires the approval of the *Consortium Board* by unanimous decision.

Any *Party* may withdraw from the TCS Satellite Data Consortium upon request, provided that twelve (12) months' prior notice is given to the *Consortium Board*. The withdrawing *Party* undertakes to complete its commitment taken up to the date of its withdrawal regarding the joint activities and for the running year regarding its potential financial contribution.

In the event of negligent failure to perform a *Party's* duties, the *Consortium Board* may exclude such *Party*. Such a decision requires the approval of the *TCS Satellite Data Consortium Board* members, with at least two-thirds (2/3) of the *Consortium Board* members voting in favour of exclusion, and without the concerned representative(s) from voting.

## **Article 2: Purpose of this Consortium Agreement**

This Consortium Agreement sets out organisational, managerial and financial guidelines to be followed by the EPOS TCS Satellite Data Consortium in order to cooperate with EPOS ERIC.

## **Article 3: Organisation of TCS Satellite Data Consortium**

The EPOS TCS Satellite Data Consortium is composed of the following bodies:

### **3.1 Consortium Board (CB)**

The *Consortium Board* is the decision-making body the TCS Satellite Data.

It is composed of one (1) authorised representative(s) of each *Party*.

Each *Party* has one (1) vote.

Each member of the *Consortium Board* shall be deemed to be duly authorised to deliberate, negotiate and decide on all matters listed in of this Consortium Agreement, after advice from the relevant departments within its establishment (in particular relating to intellectual property rights).

In addition to the authorised representative(s) of each *Party*, the *Consortium Board* is composed of one (1) authorised representative of each Associated Member, with observer status and without voting rights.

The *Consortium Board* elects a chair among its members (two-thirds (2/3) majority). The term of the mandate is two (2) years renewable once.

The *TCS Satellite Data Consortium Board's* regulations are detailed in Annex 1.

### **3.2 The Executive management body**

The director (hereinafter referred to as the “Director”), elected by the Consortium Board (two-thirds (2/3) majority), is the executive body. They has the overall responsibility for managing the activities decided by the Consortium Board and representing the TCS Satellite Data Consortium.

The term of the mandate is three (3) years renewable once.

They reports to the Consortium Board.

The Director cannot make any legally binding decisions on behalf of any Party.

The Director nominates a vice director.

### **3.3 The User Committee**

A User Committee shall be set up composed of main representatives of the user community.

The Consortium Board, on a proposal from the Director, will appoint the User Committee.

The User Committee shall designate a spokesperson who shall advice the Director. They will be part of the Consortium Board without voting rights.

### **3.4 The Space Agency Committee**

A Space Agency Committee shall be set up composed of the representatives of the National and International Space Agencies.

The Consortium Board, on a proposal from the Director, will appoint the Space Agency Committee.

The Space Agency Committee shall designate a spokesperson who shall advice the Director. They will be part of the Consortium Board without voting rights.

### **3.5 The Information Technology (IT) Committee**

An IT Committee shall be set up composed of one (1) representative from each TCS Service Provider.

The IT Committee has the responsibility for monitoring and addressing the technical issues in the deployment of the TCS services and their implementation within the EPOS Integrated Core Services.

The Consortium Board, on a proposal from the Director, may appoint additional members of the IT Committee.

The IT Committee shall designate a spokesperson who shall advice the Director. They will be part of the Consortium Board without voting rights.

## **Article 4: Workprogramme of the TCS Satellite Data**

The Consortium Board shall draw up and approve the Work Programme of the TCS Satellite Data with simple majority. The Work Programme will be updated annually, as well as the related resources.

Any change of the Work Programme shall be approved by the Consortium Board.

## **Article 5: Rights and Obligations of the Parties**

Each Party undertakes to take part in the efficient implementation of their responsibilities within the activities of the EPOS Research Infrastructure, and to cooperate, perform and fulfil, promptly and on time, all of its obligations as may reasonably be required from it.

Each Party undertakes to notify promptly, in accordance with the governance structure of the EPOS Research Infrastructure, any significant information, fact, problem or delay likely to affect the activities.

Each Party shall promptly provide all reasonably required information having bearings on other EPOS Research Infrastructure activities.

Each Party shall take reasonable measures to ensure the accuracy of any information or materials it supplies to the other Parties.

## **Article 6: Budget**

Each Party shall be responsible for its own resources described in the Work Programme and the Cost-book. For the avoidance of doubt, where co-funding is involved no Party shall be required to commit any co-funding beyond the required co-funding period.



Any additional contribution of own resources from the Parties shall be subject to a decision of the Consortium Board as set out in Annex 1.

Any distribution of common funds allocated by EPOS-ERIC or any third party shall be subject to a decision of the Consortium Board (two-thirds (2/3) majority) and to set up of the related agreements.

Any provision regarding a joint budget requires a unanimous vote of the Consortium Board and shall be subject to an amendment of the Consortium Agreement in order to detail in a financial annex the distribution of the joint budget between the Parties.

## **Article 7: Data and Intellectual Property Rights**

### **7.1. General Principles**

The TCS Satellite Data fosters as much as possible the use and the distribution of open and free access data and products. The principles and process of handling data and intellectual property rights within the activities of the EPOS Research Infrastructure are laid down in the Data Management Plan of the TCS (Annex 2) which will be regularly reviewed and updated. Any modification in the DMP shall be approved by the Consortium Board as detailed in Annex 1. The provisions of the Data Management Plan are complemented with this article.

### **7.2. Ownership of Results**

#### **7.2.1 Managements of Results**

Results obtained in the framework of this Consortium Agreement shall belong to the Party or Parties generating it.

In case of Results generated by several Parties, hereinafter referred to as “Joint Owners”, the co-ownership rate and intellectual property costs will be equally shared between the said Parties.

In case of Results, the Parties shall designate between them an intellectual property manager (hereinafter “IP Manager”) during a meeting of the Consortium Board. The IP Manager will manage and monitor the protection of the Results. In the event that, at least two French public Parties are included among the Joint Owners, such French public Parties shall designate between them a representative, hereinafter “Representative”, in accordance with the article L. 533-1 and its decrees of the French research code.

The Parties undertake to sign in good faith any legal instrument enabling them to exercise proprietary rights over the Results in accordance with this Consortium Agreement prior any exploitation.

It is agreed that the Parties shall proceed in the interest of the inventors, in accordance with European and Countries Parties legislation.

#### **7.2.2 Software**

In addition to the provisions set out in Sections 7.1 and 7.2.1, the Core Software shall remain the property of the Party which holds it prior to the signing of the Consortium Agreement.

Adaptations carried out, regardless of the author, in the framework of the Consortium Agreement, shall be the property of the Party owning the Core Software. Accordingly, where the Party having carried out Adaptations is not the owner of the Core Software, it undertakes to assign the right of use of such Adaptations, free of charge, to the Party owning the Core Software, including the right to reproduce, represent, translate, adapt, arrange, alter and market the Adaptation.

Each Party shall be the owner of the Extension produced by it within the framework of the Consortium Agreement, regardless of which Party is the owner of the Core Software from which such Extensions are derived.

Extensions produced jointly by the Parties, regardless of which party is the initial owner of the Core Software from which such extensions are derived, shall be the joint property of the Parties.

The Shared Software shall be the jointly owned property of the Parties.

Where required, the Parties undertake in good faith to negotiate any instrument enabling them to exercise the above-mentioned rights in accordance with this agreement.

### **7.2.3 Use of the Results**

In case of joint ownership: each of the Joint Owners shall be entitled to use their jointly generated and jointly owned research results, whether patentable or not, for non-commercial research and teaching activities on a royalty-free basis, and without requiring the prior consent of the other Joint Owner(s). Each of the Joint Owners shall be entitled to otherwise exploit the jointly owned research results and to grant, subject to the other Joint Owners approval, exclusive or non-exclusive licenses to third parties, if the other Joint Owners are given prior notice and compensation and if third parties are given a fair and reasonable compensation.

Subject to any third party rights, each Party hereby grants to the other Parties a non-exclusive, royalty-free license to use its Results for the purpose of carrying out tasks under this Consortium Agreement. Each Party shall be responsible for securing rights, to the necessary extent, to such Results from its employees, students, and/or any sub-contractors

## **Article 8: Confidentiality**

### **8.1. General Principles**

All information in whatever form or mode of communication, which is disclosed by a Party (the “Disclosing Party”) to any other Party (the “Recipient”) in connection with the activities under this Consortium Agreement and which has been explicitly marked as “confidential” at the time of disclosure, or when disclosed orally has been identified as confidential at the time of disclosure and has been confirmed and designated in writing within fifteen (15) calendar days from oral disclosure at the latest as confidential information by the Disclosing Party, is “Confidential Information”.

### **8.2. Obligations**

The Recipients hereby undertake during the Consortium Agreement and for a period of four (4) years after the termination of this Consortium Agreement:

- a) not to use Confidential Information otherwise than for the purpose for which it was disclosed;
- b) not to disclose Confidential Information to any third party without the prior written consent by the Disclosing Party;
- c) to ensure that internal distribution of Confidential Information by a Recipient shall take place on a strict need-to-know basis;
- d) to return to the Disclosing Party on demand all Confidential Information which has been supplied to or acquired by the Recipients including all copies thereof and to delete all information stored in a machine readable form. The Recipients may keep a copy to the extent it is required to keep, archive or store such Confidential Information because of compliance with applicable laws and regulations or for the proof of on-going obligations.

## **Article 9 : Dissemination**

For the avoidance of doubt, nothing in this Article 9 has impact on the confidentiality obligations set out in Article 8.

### **9.1 Dissemination of another Party’s unpublished Results**

A Party shall not include in any dissemination activity another Party's Results without obtaining the owning Party's prior written approval, unless they are already published.

### **9.2 Cooperation obligations**

The Parties undertake to cooperate to allow the timely submission, examination, publication and defence of any dissertation or thesis for a degree that includes their Results subject to the confidentiality and publication provisions agreed in this Consortium Agreement.

### **9.3 Use of names, logos or trademarks**

Nothing in this Consortium Agreement shall be construed as conferring rights to use in advertising, publicity or otherwise the name of the Parties or any of their logos or trademarks without their prior written approval.



## **Article 10: Liability**

Except as otherwise specifically agreed, each *Party* shall only be liable towards the other *Parties* for direct damages, whether based on personal injury or material damage, it or the persons charged with the fulfilment of its obligations have caused through gross negligence or wilful misconduct.

No *Party* shall be liable to any other *Party* for special, collateral, incidental or consequential loss or damages such as, but not limited to, loss of profit, loss of revenue, or loss of contracts.

A *Party's* aggregate liability towards any other *Party* shall be limited to once the *Party's* share of the total costs of the Project, as assessed by the Parties in the more recent TCS Cost-book (Annex 5) and approved by EPOS ERIC, provided such damage was not caused by a wilful act or gross negligence.

Each *Party* shall be solely liable for any loss, damage or injury to third parties resulting from any breach of any of the provisions of this Consortium Agreement or arising out of the termination of this Consortium Agreement

Each Party is liable only for its own part and the Parties do not have joint liability against third parties or the EPOS ERIC.

## **Article 11: Duration of this Consortium Agreement**

### **11.1 Entry into force**

This Consortium Agreement shall come into force on the last date of signature by the Parties, hereinafter "Effective Date".

### **11.2 Expiration**

This Consortium Agreement will terminate ten (10) years after its Effective Date, unless otherwise agreed by the *Parties*

### **11.3 Termination or extension**

This Consortium Agreement may be extended or terminated before expiration date by a two-thirds (2/3) majority approval by the *Consortium Board* after proposition by any *Party*, in accordance to the rules provided in Annex 1.

### **11.4 Survival of rights and obligations**

The provisions relating to Intellectual Property Rights, as well as for Liability shall survive the expiration or termination of this Consortium Agreement.

Termination shall not affect any rights or obligations of a *Party* leaving the Consortium Agreement incurred prior to the date of termination, unless otherwise agreed between the *Consortium Board* and the leaving *Party*. This includes the obligation to provide all input, deliverables and documents for the period of its participation.

## **Article 12: Amendment procedure**

Amendment proposals may be submitted to the *Consortium Board* by any Party.

Amendment proposals shall be listed on the agenda communicated with the invitation to the *Consortium Board*.

All Annexes are an integral part of the Consortium Agreement.

Notwithstanding the foregoing, in order to modify and/or update the Annexes, it is not necessary to follow the same procedure as for amending the Articles of the Consortium Agreement. The Annexes 1, 2, 3, 4, and 5 can

be modified and/or updated by decision of the *Consortium Board* in accordance to the regulations set up in Annex 1.

### **Article 13: Miscellaneous**

#### **13.1 Language**

This Consortium Agreement is drawn up in English, which language shall govern all documents, notices, meetings, arbitral proceedings and processes relative thereto.

#### **13.2 Applicable law**

This Consortium Agreement shall be construed in accordance with and governed by the laws of the defendant.

#### **13.3 Settlement of disputes**

The parties shall endeavour to settle their disputes amicably.

If, and to the extent that, any dispute, controversy or claim arising under, out of or relating to this Consortium Agreement and any subsequent amendments of this contract, including, without limitation, its formation, validity, binding effect, interpretation, performance, breach or termination, as well as non-contractual claims has not been settled amicably, the courts of the defendant shall have exclusive jurisdiction.

Nothing in this Consortium Agreement shall limit the Parties' right to seek injunctive relief in any applicable competent court.

**Parties and their Representatives****ISTITUTO PER IL RILEVAMENTO ELETTROMAGNETICO DELL'AMBIENTE (IREA)****CONSIGLIO NAZIONALE DELLE RICERCHE (CNR)**

Registered office: Via Diocleziano, 328, 80124 Naples, Italy

**Signature:** \_\_\_\_\_**Name:** Riccardo Lanari**Position in the Organisation:** Acting Director of IREA-CNR

**AGENCIA ESTATAL CONSEJO SUPERIOR DE INVESTIGACIONES CIENTIFICAS**

Registered office: c/ Serrano 117, 28006, Madrid, Spain

**Signature:** \_\_\_\_\_

**Name:** Prof.<sup>a</sup> ROSINA LÓPEZ-ALONSO FANDIÑO

**Position in the Organisation:** Vice-President for Organization and Institutional Relations

**UNIVERSITY OF LEEDS**

**registered office: LS2 9JT, Leeds, United Kingdom**

**Signature:** \_\_\_\_\_

**Name:** CERI WILLIAMS

**Position in the Organisation:** Director of Research and Innovation Development

**CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE,**

Registered office: 3, rue Michel Ange, 75016 Paris

**Signature:** \_\_\_\_\_

**Name:** Hélène MAURY

**Position in the Organisation:** Regional Representative of Paris - Michel Ange circonscription



**ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA (INGV)**

Registered office: Via di Vigna Murata 605, 00143, Roma, Italy

**Signature:** \_\_\_\_\_

**Name:** Prof. Carlo Doglioni

**Position in the Organisation:** President

**List of Annexes****Annex 1:**

Regulations of the TCS Satellite Data *Consortium Board*

**Annex 2:**

Data Management Plan of the TCS Satellite Data

**Annexe 3:**

List of the representatives of the Parties

**Annex 4:**

Work Programme of the TCS Satellite Data

**Annex 5:**

Cost-book of the TCS Satellite Data

## **Annex 1: Regulations of the TCS Satellite Data Consortium Board**

### **Powers**

The Consortium *Board* will be in charge of namely, but not exclusively:

- Deciding on the strategic issues related to the EPOS TCS Satellite Data
- Deciding on the integration of a new Party and/or removal of existing one(s);
- Approving the Work Programme and its annual updating;
- Approving the Cost-book and its annual updating
- Approving the Data Management Plan and any change of it;
- Appointing the Consortium Board Chair;
- Appointing the Director
- Preparing funding strategies and other joint initiatives;
- Preparing the service agreement with EPOS-ERIC.

### **Ordinary and extraordinary meetings:**

The *Consortium Board* will meet on ordinary meetings at least once per year.

The *chairperson* of the *Consortium Board* (hereinafter “Consortium Board Chair”) shall convene all members and observers by notice in writing at least 30 (thirty) calendar days preceding the meeting.

The *Consortium Board* may meet on extraordinary meetings when necessary.

The request shall be made by any *Party* to the *Consortium Board Chair*, who will decide whether or not it is necessary to organise an extraordinary meeting of the *Consortium Board* and define the organisation of such an extraordinary meeting.

### **Agenda**

The Consortium *Board Chair* shall set the agenda for each meeting and include it in the invitation to the meeting.

Each member shall be entitled to add issues on the agenda until fifteen (15) calendar days before the meeting.

Any issue which is not on the agenda may not be discussed or decided in the meeting, unless all members are present and no one objects.

### **Quorum and majority rules:**

The *Consortium Board* shall validly hold a meeting only if the quorum requirements have been met.

The *Consortium Board* shall validly make a decision only if the majority requirements have been met.

The normal quorum requirement shall be met when at least half of the members, who are entitled to vote, are present or represented.

The special quorum requirement shall be met when at least two thirds (2/3) of the members, who are entitled to vote, are present or represented.

A simple majority shall be formed when the count of votes in favour of the decision is higher than the count of votes against.

A qualified majority shall be formed when at least the two thirds (2/3) of the votes cast are in favour of the decision.

For decisions to be made with a simple majority, a normal quorum shall suffice.

For decisions to be made with a qualified majority, a special quorum shall be required.  
For unanimous decisions all members must be present or represented.

### **Voting rules**

The *Consortium Board* shall be able to decide with a qualified majority if an issue on the agenda falls under the categories that require a ballot and if it requires simple or qualified majority. Such a decision may not be taken unless the special quorum requirement has been met, irrespective of whether the meeting is ordinary, extraordinary, or repeat.

Without prejudice to the above, the *Consortium Board* shall be competent to, namely, but not exclusively:

- Decide, with simple majority, its internal rules of procedure;
- Approve, with simple majority, the Work Programme and any changes of it;
- Approve the Data Management Plan and any changes of it, with unanimous decision;
- Decide, with qualified majority, upon the distribution of common funds allocated by EPOS-ERIC or any third party and the joint budget;
- Approve, with unanimous decision, the service agreement(s) with EPOS-ERIC
- Accept, with unanimous decision, a new Party;
- Decide, with unanimous decision, any provision regarding a joint budget.
- Exclude a Party with a qualified majority;
- Make proposal to Parties to amend the Articles of the Consortium Agreement, with unanimous vote;
- Amend Annexes 1 with a qualified majority;
- Dissolve the TCS Satellite Data consortium with a unanimous decision.

### **Veto rights**

A Party which can show that its own work, time for performance, costs, liabilities, intellectual property rights or other legitimate interests would be severely affected by a decision of the Consortium Board may exercise a veto with respect to the corresponding decision or relevant part of the decision.

A Party may refuse to contribute additional resources beyond the contribution that would be due to meet the agreed level stated in the most recent Work Programme.

### **Minutes of meetings**

The *Consortium Board Chair* shall produce written *minutes* of each meeting that shall be the formal record of all decisions taken. They shall send the draft to all of its members within fifteen (15) calendar days of the meeting.

The *minutes* shall be considered as accepted if, within fifteen (15) calendar days from sending, no member has objected in writing to the *Consortium Board Chair* with respect to the accuracy of the draft of the *minutes*.

The accepted *minutes* shall be sent to all of the members of the *Consortium Board* and the *Consortium Board Chair*, who shall safeguard them.

### **Repeat Meetings**

If the quorum is not met, then the meeting of the *Consortium Board* shall be adjourned and shall be repeated within fifteen (15) calendar days, following a new invitation by the *Consortium Board Chair*.

The issues on the agenda of the repeat meeting shall be the same with the issues on the agenda of the original meeting.

In the repeat meeting of the *Consortium Board*, the quorum shall be considered met, irrespective of the number of members present or represented.

**Representation, Representation by Proxy, Remote Participation:**

Each *Consortium Board* member shall be deemed to be duly authorised to deliberate, negotiate and decide on all matters submitted to the *Consortium Board*, after advice from the relevant departments within its establishment (in particular relating to intellectual property rights).

Any member shall be able to authorise another member to represent it in the meeting of the *Consortium Board* and vote on its behalf. In such a case, the representative shall be provided with a written power-of-attorney signed by the delegate of the principal member.

Any member shall be able to participate in the meeting of the *Consortium Board* using a teleconference or videoconference system, if the technical means are available.

In urgent cases, it shall be possible to hold a *Consortium Board* meeting via e-mail or other means of electronic communication, if no member objects.

## Annex 2: Data Management Plan of the TCS Satellite Data

### 1. Admin Details

**Plan Name:** Horizon 2020 DMP - TCS Satellite Data DMP

**Principal Investigator / Researcher:** Michele Manunta

**Plan Data Contact:** manunta.m@irea.cnr.it

**Plan Description:** Data management plan of the Thematic Core Service Satellite Data of the EPOS Research Infrastructure

**Funder:** European Commission (Horizon 2020)

### 2. Data summary

The TCS Satellite Data collects, generates, and supplies data and products in the framework of satellite Earth Observation in order to support several disciplines of the Solid Earth Science (SES), such as volcanic investigations, seismic and tectonic analyses, and landslides monitoring, according the long-term plan of EPOS.

Currently the TCS includes 5 Research Infrastructures (RIs) located in Italy, United Kingdom, France, Spain and Germany that provide two levels of products, mainly addressed to the determination and analysis of the Earth surface displacements through Satellite Radar and Optical data. The TCS provides two levels of products: the first level deals with “standard” satellite products (mainly SAR interferograms, displacements maps, and deformation time- series). The second level concerns value-added satellite products, such as 3D displacement maps, source mechanisms, and fault models.

The products supplied by the TCS Satellite Data are largely generated by benefiting from satellite images acquired by the satellite constellations (Sentinels) of the Copernicus Programme. In particular, the three RIs (Italy, UK and France) that provide Level-1 products mainly process Sentinel-1 SAR data by benefiting from National Sentinel archives (Collaborative Ground Segments) or ad-hoc archive. The level-2 products, provided by RIs in Italy, UK, Spain, and Germany, are generated by processing level-1 data.

The size of the TCS products ranges from a few megabytes (interferograms and deformation maps) to gigabytes (deformation time series); each RI plans to provide around 1 terabyte of products.

### 3. FAIR data

#### 3.1 *Making data findable, including provisions for metadata*

The TCS has a unique interface towards the ICS. This interface is represented by the ESA Geohazard Exploitation Platform (GEP) that is able to provide interoperable access to data products and processing facilities.

The unique interface allows the TCS to have a common structure and standards for metadata, API and AAAI. In particular:

- metadata follows the ISO 19115 standard;



- main APIs are the OpenSearch and HTTPS for Data Products discovery and retrieval, respectively, and WPS 1.0 for services;
- AAAI is managed directly by the GEP and uses a Shibboleth 2.x, with a local IDP (ESA-SSO IdP) and eduGAIN compatibility.

Currently, the TCS is not adopting any Persistent Identifier (PID) mechanism. In some particular cases, the RIs register their products in the Zenodo platform and assign a DOI name to their products.

### **3.2 *Making data openly accessible***

The TCS Satellite Data will make large use of open satellite images, mainly acquired within the Copernicus Programme and scientific missions distributed by ESA or other national space agencies. The TCS carefully addressed the aspects related to the use, reuse, modification and distribution of the images provided by the data suppliers (space agencies).

Concerning the Copernicus data, the EU law grants free access to Copernicus Sentinel Data and Service Information for the purpose of the following use in so far as it is lawful:

- a) reproduction;
- b) distribution;
- c) communication to the public;
- d) adaptation, modification and combination with other data and information;
- e) any combination of points (a) to (d).

The data coming from other sources not included in the Copernicus Programme will be managed according to the specific licenses signed by the EPOS Service Providers with the space agencies owner of the data, by guaranteeing the free and open access to the derivative DDSS.

All DDSS provided by the TCS Satellite Data will be available under an open data policy. In addition, the large majority will be made available without embargo periods, which will be take into account only for very particular and specific cases, depending on the specific licenses conditions above-mentioned.

The TCS Satellite Data products will be accessible through the Geohazards Exploitation Platform (GEP), developed by the European Space Agency (ESA). GEP represents the main interface for the connection between the TCS and EPOS ICS. Among its features, the GEP is a Cloud platform environment that enables systematic and on-demand processing services, processor integration, data visualization, collaboration, and sharing.

In particular, within the TCS, GEP deals with:

- metadata catalogue,
- access to data products,
- AAAI,

- machine-to-machine interfaces toward the ICS;
- support to data production within the platform;
- promotion and dissemination;

The TCS data and products will be stored in the RI that generated them; some products, produced directly in the GEP, will be stored by the platform.

### **3.3 *Making data interoperable***

TCS Satellite Data intends to provide data and products interoperable between researchers, institutions, organizations, and countries, by adhering to standards for formats, as much as possible compliant with available (open) software applications, and in particular facilitating re-combinations with different datasets from different origins.

To this aim, the TCS adopted OGC metadata standards (ISO 19115) and is defining suitable vocabularies for the provided data and products.

### **3.4 *Increase data re-use (through clarifying licenses)***

The TCS will follow as much as possible the same policy as EPOS. The data policy for each DDSS will be open; CC-BY and CC-BY-NC licenses will be adopted. In particular cases, the TCS partners will take in consideration the possibility to apply other license types or access rules (e.g., embargoed data); however, these data will represent a very small part of the TCS products portfolio.

## **4. Data security**

Currently each RI belonging to the TCS Satellite Data addresses the data recovery issues related to supplied data and products.

### Annex 3: List of the representatives of the Parties

Representative	Party	Country	Street Address	Tel.	email
Michele MANUNTA	IREA-CNR	Italy	Via Diocleziano, 328 80124 Napoli	+39 0817620621	manunta.m@irea.cnr.it
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Tim WRIGHT	University of Leeds	United Kingdom	Woodhouse Lane, Leeds, LS2 9JT	+44 1133435258	T.J.Wright@leeds.ac.uk
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Christian BIGNAMI	INGV	Italy	Via di Vigna Murata 605, 00143 Roma	+39 0651860659	christian.bignami@ingv.it

## Annex 4: Work Programme of the TCS Satellite Data

### 1. Introduction

The EPOS Thematic Core Service referred to as Satellite Data (SATD) is aimed at implementing Earth Observation services, based on satellite observations, transverse to the large EPOS community and suitable to be used in several application scenarios. The overarching goal of the TCS is to contribute to the EPOS Research Infrastructure with mature services that have well demonstrated their effectiveness and relevance in investigating the physical processes controlling earthquakes, volcanic eruptions and unrest episodes as well as those driving tectonics and Earth surface dynamics.

The TCS is organized in National Research Infrastructures. Six institutions, CNR, CNRS, CSIC, INGV, and University of Leeds (UoL) from five different European countries (Italy, France, Spain, Germany and UK) are partners of the TCS.

CNR, CNRS, University of Leeds, and CSIC work on the implementation of 5 services: EPOSAR (CNR, Italy), GDM (CNRS, France), 3D-Def (CSIC, Spain), and Comet (UoL, UK). Each service is related to a different National Research Infrastructure.

At this stage, two levels of products and services, mainly dedicated to the determination of the Earth surface displacements through Satellite Radar and Optical data, are foreseen. The first level deals with “standard” satellite products/tools (mainly interferograms, displacements maps, and deformation time-series). The second level concerns value-added satellite products/tools (3D displacement maps, source mechanisms, fault models, etc...).

As the services will provide access to both products and processing tools, two specific functioning modes have to be considered:

- Continuous mode, i.e., systematic and periodic generation of products, such as the systematic production of updated surface deformation time series over a given defined area;
- On demand mode, i.e., the users run the TCS’ tools to process the chosen satellite dataset and retrieve user-driven deformation measurements using diachronic satellite observations during a telluric crisis (e.g., co-seismic terrain motion maps).

Even if the TCS partners provide products and services, they are not the data provider of the input satellite images that come from National and International space agencies. Two space agencies are currently involved in the TCS activities, CNES (France) and ESA.

Finally, the TCS SATD interfaces with the EPOS Centralized Integrated Core Services (ICS-C) through the Geohazards Exploitation Platform (GEP), a cloud-based platform developed through the support of ESA, which enables systematic and on-demand processing services, processor integration, data visualization, collaboration and sharing.

## 2. TCS Technical Implementation

The TCS SATD partners planned a set of services to integrate with the EPOS ICS-C. They include both products and processing tools. Some of them have been already successfully deployed and validated, whereas others are available at TCS level or are still under implementation.

The following tables summarizes the outcomes of the implementation activities at the end of the H2020 EPOS-IP project.

Table I - Validated **Static** Map Data Product

Data Product	Radar	Geo	Data Org.	Metadata	Format	CNRS	CNR	UoL
Wrapped Differential Interferograms	✓	✓	2D raster	ISO 19115	geotiff	✓	✓	✓
Spatial coherence	✓	✓	2D raster	ISO 19115	geotiff	✓	✓	✓
Unwrapped Differential Interferograms	✓	✓	2D raster	ISO 19115	geotiff	✓	✓	✓
Map of LOS vector (NEU coefficient)	✓	✓	2D raster	ISO 19115	geotiff	✓	✓	✓
Interferogram Atmospheric Phase Screen	✓		2D raster	ISO 19115	geotiff	✓		
DEM in radar geometry	✓		2D raster	ISO 19115	geotiff	✓		
Lookup table from radar coordinates to ground coordinates	✓		2D raster	ISO 19115	geotiff	✓		

Table II - Validated **Multitemporal** Data Product

Data Product	Radar	Geo	Priority	Data Org.	Metadata	Format	CNRS	CNR	UoL
LOS Displacement Time Series	✓	✓	High	Table / 3D	ISO 19115	CSV/SHP/geotiff	✓	✓	✓
Temporal Coherence (Quality of measure)	✓	✓	High	Table / 2D	ISO 19115	CSV/geotiff	✓	✓	✓
Average Scatterer Elevation (Topography)		✓	High	Table / 2D	ISO 19115	CSV/geotiff		✓	✓
Mean LOS velocity		✓	High	Table / 2D	ISO 19115	CSV/geotiff		✓	✓

Table III - Level 2 Data Product ready at TCS level

Data Products	Priority	Data Org.	Metadata	Format	CSIC	CNR	UoL
Model Parameters	Medium	Table	ISO 19115	CSV	✓	✓	✓
Modelled LOS Displacement	Medium	Table	ISO 19115	CSV	✓	✓	✓
Inversion Statistical Analysis	Medium	2D raster (Image)	ISO 19115	JPG, PNG, etc	✓	✓	✓

Table IV – Level 1 services ready at TCS level

Services	Priority	Metadata	API	CNRS	CNR	CSIC
EPOSAR Sentinel-1 Processing on demand (L1)	High	ISO 19115	WPS 1.0		✓	
EPOSAR ERS-ENVISAT Processing on demand (L1)	High	ISO 19115	WPS 1.0		✓	

Table V - Level 2/3 data products under implementation

Data Products	Priority	Data Org.	Metadata	Format	CSIC	CNR	UoL
3-D Displacement maps	Medium	2D / Table	TBD	geotiff / CSV	✓		
3-D Displacement Time Series	Medium	2D / Table	TBD	geotiff/CSV	✓		
Strain Rate Maps	Medium	2D raster	TBD	TBD			✓
Seismic Hazard Maps	Medium	2D raster	TBD	TBD			✓



Table VI - On-demand Services under implementation

Services	Priority	Metadata	API	CNRS	CNR	CSIC
GDM-SAR processing on demand	High	ISO 19115	WPS 1.0	✓		
GDM-SAR visualization	High	ISO 19115	WPS 1.0	✓		
GDM-optical processing	Medium	TBD	WPS 1.0	✓		
Displacement Analytical Modelling - Displacement Maps (L2)	Medium	TBD	WPS 1.0		✓	✓
Displacement Analytical Modelling - Displacement Time Series (L2)	Medium	TBD	WPS 1.0		✓	✓
Modelling toolbox with User Interface	Medium	TBD	Custom web interface			✓
Data fusion (InSAR , GNSS,...) to obtain 3D displacement maps	Medium	TBD	Custom web interface			✓
Joint Displacement and Gravity data Modeling	Medium	TBD	Custom web interface			✓

### 3. TCS Roadmap

A TCS key activity deals with populating the DDSS database by continuously feeding GEP with the available products. Secondly, the TCS has to address the not-validated DDSS implementation, i.e., level 2 and 3 services (EPOSAR, MOD, 3D-DEF, Comet) and the GDM optical services. The deployment and validation of these services (Table VII) has high priority in the TCS activities.

Table VII – TCS Services to be developed and released

Service	Provider	Level 1	Level 2/3	Continuous mode	On-demand mode
EPOSAR	CNR		✓	✓	✓
3D-DEF	CSIC		✓		✓
COMET	Univ. Leeds		✓	✓	
GDM	CNRS	✓			✓




Finally, the TCS shall build a long-term sustainability framework. In particular, the TCS SATD has to:

1. establish a formal link with the Space Agencies which have not yet been engaged in EPOS. The connection with the Space Agencies has to cover both the access to satellite data not included in the Copernicus

Programme (e.g., COSMO-SkyMed and TerraSAR-X) and the involvement of the national user communities of the Space Agencies;

2. build a cooperation layer with the existing international satellite initiatives, such as CEOS Geohazards Laboratory, Geohazard Supersites and National Laboratories, and the European Ground Motion Services;
3. assess the capability of the recent European cloud computing initiatives in supporting the TCS SATD activities. This latter mainly concerns the exploitation of Copernicus DIAS providers, EOSC environment and ESA's GEP to deploy sustainable services within EPOS.

## Annex 5: Cost-book of the TCS Satellite Data

	ID	SERVICE NAME	SERVICE DESCRIPTION	SP	MS	DDSS		FTE	DIRECT COSTS (k€)				IKC*	FUNDING (k€)	
						ICS implemented by end 2020	TCS implemented now		STAFF	TRAVEL	OTHER*	TOTAL		EPOS-ERIC	BETA
	<b>WP12-SP-001</b>	TCS Governance & Coordination	TCS and Consortium management	ONR	IT	DDSS		0,75	45	5	0	50		0	1,00
	<b>WP12-SP-002</b>	Outreach	TCS Outreach	ONR	IT			0,25	15	10	10	35		0	1,00
SUBTOTAL															
	<b>WP12-SP-003</b>	EPOSAR	Levels 1/2/3, continuous and on-demand mod SAR processing	ONR	IT	1,2,3,4,8,9,11,12	16-18,27-30,34	3	150	5	150	305	305	0	0,00
	<b>WP12-SP-004</b>	GDM	Level 1, on-demand SAR and optical processing	CNRS	FR	1,2,3,4,8,9,11,12	5-7,10,13-15,24-26	3	198	0	70	268	268	0	0,00
	<b>WP12-SP-005</b>	3D-DEF	Levels 2/3, on-demand SAR processing	CSIC	ES		16-20,29-33	2	130	5	25	160	160	0	0,00
	<b>WP12-SP-006</b>	COMET	Level 1/2/3, continuous SAR processing	ULLEDS	UK	1,2,3,4,8,9,11,12	16-18,21,23,35	2,5	163	5	100	268	268	0	0,00
	<b>WP12-SP-007</b>	GEP (GeoHazards exploitation platform by ESA)	TCS Interface and CES facility for the TCS	ONR	IT			0	0	0	130	130	0	130	1,00
	<b>WP12-SP-008</b>	GEP/ICT	ICT resources offered via the CES facility	ESA	EU			0	0	0	60	60	60	0	0,00
SUBTOTAL															
TOTAL DIRECT COSTS															
TOTAL DIRECT COSTS (including 10% upgrading)															
TOTAL WITH INDIRECT COSTS (25% - except sub-contracts)															