

EPOS ERIC

ANNUAL ACTIVITY REPORT 2019

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Adopted by the EPOS ERIC General Assembly
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Table of Contents

Foreword by EPOS ERIC Executive Director	7
Executive Summary.....	9
1. Establishment of the Executive Coordination Office (ECO)	10
2. Establishment of the Integrated Core Service Central Hub (ICS-C)	13
3. TCS-ICS Interactions	14
4. Service Contracts.....	15
5. Community Building.....	16
6. Communication and Outreach.....	17
7. Planning General Assembly	18
8. Long-term Sustainability.....	18
9. Management Report	19
10. The way forward	21

Foreword by EPOS ERIC Executive Director

EPOS, the European Plate Observing System, is the Research Infrastructure aimed at ensuring sustainable and universal use and re-use of multidisciplinary solid Earth science data and products. EPOS relies on e-science innovation to foster progress in science for supporting a safe and sustainable society. In accordance with its scientific vision, the EPOS mission is to integrate the diverse and advanced European research infrastructures for solid Earth Science to monitor and unravel the dynamic and complex Earth system. The EPOS ultimate goal is to enable innovative, multidisciplinary research for a better understanding of the Earth's physical processes that control earthquakes, volcanic eruptions, ground instability, tsunamis, and all those processes driving tectonics and Earth surface dynamics. EPOS integrates research infrastructures managed by national and international organisations, and aims at delivering an interoperable platform where specific scientific services are presented in a uniform and harmonized manner, facilitating cross-disciplinary access and utilization.

EPOS ERIC is the European Consortium coordinating and guiding the EPOS Research Infrastructure and its Delivery Framework. EPOS ERIC whose legal seat is hosted in Rome (Italy), has been granted by the European Commission on October 30th 2018. Therefore, the 2019 has been the first year of operation of EPOS ERIC. Importantly, year 2019 also marked the end of the EPOS Implementation Phase, which started in 2015. The successful conclusion of its implementation phase is a crucial stage in the lifecycle of a research infrastructure. This has been even more essential for EPOS, considering the dimension of its pan-European integration plan which involves 25 countries and nearly 140 research organizations in Europe and the multidisciplinary breadth of its Delivery Framework.

The EPOS Implementation Phase was centred around two key objectives: the establishment of the ERIC and the implementation of the EPOS Delivery Framework; the latter was accomplished throughout the EPOS IP project that involved 47 beneficiaries and received € 18.379.000 of budget being EPOS one of the three research infrastructures prioritized by ESFRI and the Competitiveness Council for implementation. Both these key objectives have been fully achieved by the end of the implementation phase in 2019. The last year of such an ambitious project and the first year of operation of the ERIC have characterized the 2019 EPOS ERIC Activity Plan.

The establishment of the EPOS ERIC legal entity from an administrative, financial and governance point of view has been the priority action in the 2019 EPOS activity plan together with the operational establishment of the Executive Coordination Office (ECO) at the Istituto Nazionale di Geofisica e Vulcanologia (INGV) in Rome (Italy). Consolidating the relationships with the Representing Entity hosting the legal seat (INGV in the case of EPOS ERIC) represents a critical step for adopting those operational procedures necessary to coordinate and guide the ERIC. Establishing and making an ERIC operational is an inspiring and surprising challenge. The ECO and the Executive Director have been continuously stimulated to find solutions for foreseen and unforeseen issues covering a quite heterogeneous spectrum of topics. This has required, and still requires, skills but also some creativity to conceive solutions or adapt experiences learnt from other ERICs and initiatives to the specific EPOS framework.

The EPOS Governance model identifies two key ERIC components: the ECO hosted at the legal seat and the ICS-C, the novel e-infrastructure to provide integrated access to multidisciplinary data and services, hosted in United Kingdom and France with technical support from Denmark. According to

the EPOS ERIC Statutes these two elements lie inside the ERIC perimeter, while the Thematic Core Services (TCS), in charge of integrating the data and the services from national and international research infrastructures and representing the disciplinary contributions from the engaged communities, lie outside this perimeter. Consolidating the EPOS Governance model together with the adoption of its Financial model has been the first grand challenge of the 2019 Activity Plan. The hosting of the ICS-C in countries different from the country hosting the legal seat has represented the first delivery from the EPOS IP project to EPOS ERIC characterizing the transition from the implementation to the operational phase. Overall the adoption of the EPOS governance and financial models has given a different perspective to the legal work to be undertaken, which has been progressively explored during the entire year.

The implementation of the data and service provision done in the framework of the EPOS IP Project and within the TCS lasted for the entire project lifetime (2015-2019). The data and services provided by TCS and the ICS have been validated during the third year of the project. This allowed the testing of the TCS-ICS system by verifying accessibility and interoperability of TCS data and services with the ICS-C prototype. Therefore, the effective transfer of achievements from EPOS IP Project to EPOS ERIC and the full exploitation of these achievements by EPOS ERIC have been prioritized actions in the EPOS ERIC 2019 activity plan. This has been an essential strategic action necessary to enable EPOS ERIC to govern and coordinate the development of its Delivery Framework.

The activities undertaken in 2019 allowed the successful completion of the EPOS Implementation Phase and paved the way to the subsequent stage in the EPOS lifecycle, namely the Pilot Operational Phase (EPOS POP). The exploitation of the EPOS IP results allowed EPOS ERIC to start coordinating the Pilot Operational Phase for building a sustainable EPOS Delivery Framework consolidating the financial viability and tackling the challenge of its long-term sustainability. This challenge will be further explored by the EPOS SP project, coordinated by EPOS ERIC and funded by the European Commission.

The current document represents the 2019 EPOS ERIC Activity Report and it describes the undertaken activities and the use of resources, but also it presents the bottlenecks encountered during this founding stage of the EPOS RI. The 2019 Activity Report includes the Management Report, to facilitate the connection with the Financial Statements and the Notes to the Financial Statements.

Massimo Cocco

EPOS ERIC Executive Director

Executive Summary

This document presents the EPOS ERIC 2019 Annual Activity Report and relies on the “EPOS ERIC 2019 Activity Plan” presented by the Executive Director to the EPOS ERIC General Assembly (Copenhagen 28th February 2019). The General Assembly acknowledged the EPOS ERIC Activity Plan for the year 2019, which is the first year of operation of EPOS ERIC. Indeed, EPOS ERIC has been granted by the European Commission (EC) on October 30th 2018, but the membership fees were provided by members and the budget was constituted in 2019.

The EPOS ERIC 2019 Activity Plan relies on the achievement of the following objectives:

1. The Executive Coordination Office (ECO) is established and become operational;
2. EPOS ERIC legal entity is fully established from an administrative and fiscal point of view;
3. The governance framework of the Integrated Core Services Central Hub (ICS-C) is finalized;
4. Effective transfer of achievements from EPOS IP Project to EPOS ERIC is ensured.

This document reports on the activities performed by EPOS ERIC in order to accomplish the objectives foreseen in the 2019 Activity Plan and it summarizes the incurred costs and revenues coherently with the EPOS ERIC 2019 Financial Statements.

In particular, to achieve objectives 1 and 2 the following activities have been performed:

- finalization of the Collaboration Agreement between the hosting institution (INGV) and EPOS ERIC to ensure the secondment of the Transition Executive Director and the allocation of the necessary human resources to make the ECO structured and operational;
- finalization of the administrative procedures to ensure the EPOS ERIC operation;
- support to EPOS ERIC activities including dissemination and outreach.

To accomplish objective 3 the following activities have been performed:

- update of the legal framework suitable for ICS-C hosting through a new Collaboration Agreement between EPOS ERIC and the hosting organizations coherent with the financial requirements;
- transfer of achievements from the EPOS IP project to EPOS ERIC and the hosting organizations to ensure the readiness for ICS-C operation in 2020.

To achieve objective 4 the following activities have been performed:

- support planned activities for the TCS-ICS interactions for testing interoperability with ICS-C;
- update of the legal framework for TCS Governance and Coordination and for service provision.

Further activities have been undertaken in 2019 concerning Community Building and Communication and Dissemination, including the design of the novel EPOS ERIC Communication Plan. The ECO organized three meetings of the EPOS ERIC General Assembly in 2019: i) February 28th–March 1st, Copenhagen, Denmark; ii) June 10th–11th, Ljubljana, Slovenia; December 10th–11th, Amsterdam, The Netherlands. At the beginning of 2019, the ECO and the EPOS community elaborated a proposal for responding to the INFRADEV-03-2018-2019 EC call. The proposal has been submitted on March 20th 2019. The proposal was successfully evaluated and EPOS ERIC was approved with the Grant Agreement 871121 — EPOS SP project with a budget of €4,998,093.75.

This document also includes a section on the *Management Report* to provide an overall description of the ECO management of the activities, EPOS ERIC budget and available resources.

1. Establishment of the Executive Coordination Office (ECO)

The ECO has been organized in different units (or areas of activities), each one having specific commitments and allocated personnel as illustrated in Figure 1. The roles of Scientific Officer and IT Officer have been also acknowledged by the EPOS ERIC General Assembly.

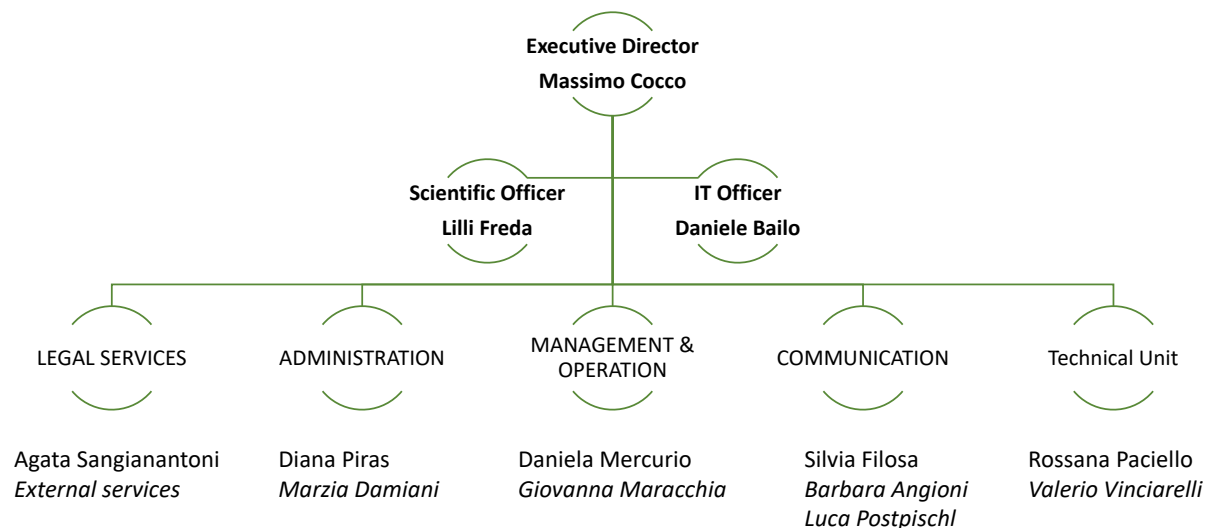


Figure 1. Organization of the Executive Coordination Office and available human resources in 2019. This ECO organization has been further implemented in 2020 as described in a dedicated document.

On January 29th 2019 the Transition Executive Director and the INGV President have signed the Collaboration Agreement between INGV and EPOS ERIC. The agreement regulates the INGV commitments for the provision of the host premium for hosting the legal seat of EPOS ERIC and confirms the temporary secondment of Massimo Cocco to EPOS ERIC to act as Transition Executive Director (the assignment was approved by INGV Administration Council on December 2018). This action finalized the process regarding the appointment of the Transition Executive Director that started during the first EPOS ERIC General Assembly (Resolution N.2 November 8th 2018).

The Executive Director was therefore endorsed to officially establish the ECO, which started to be operational in February 2019. The ECO organization has been implemented in 2019 following the structure shown in Figure 1 and the final operational structure has been presented to the GA on December 2019 and detailed in a Report elaborated at the beginning of 2020. The INGV personnel previously allocated to the Project Management Office of the EPOS IP project ensured the undertaking of the preparatory activities in November and December 2018. In Table 1 we detail the human resources allocated to the ECO in 2019 and the associated costs.

The first action undertaken by the ECO with the support of the consultant company INNOVA has been the formal establishment of EPOS ERIC as a legal subject from a fiscal and administrative point of view. This required obtaining the Fiscal Code, the VAT Number, the necessary administrative tools (digital signature, certified mail address) and the opening of the bank account of EPOS ERIC. These actions were completed within the first three months of 2019 (January-March). On April 1st 2019 the EPOS

ERIC bank account was operational. The EPOS ERIC budget from membership fees and cash contribution from the Italian host premium was established since May 2019.

The contracts for identifying the EPOS ERIC chartered accountant and the labour consultants have been also elaborated and signed in June 2019. The Tender to identify the external professionals for the financial audit of EPOS ERIC has been launched and concluded: BDO ITALIA SpA has been selected as the External Auditing Company for EPOS ERIC; a first meeting to plan action for the auditing already took place in 2019.

The expenditures to set up the ECO concern both personnel (summarized in Table 1) and activities to establish and operate the ECO during its first year of action as foreseen in the 2019 Activity Plan and the 2019 provisional budget. The budget for supporting ECO activities (see Table 2) has been taken from the cash contribution foreseen in the Italian host premium.

Table 1. Human Resources for ECO and associated costs

Name	Role / profile	Financial Sources	P/M year	Envisioned Costs (€)	Expenditure (€)
Massimo Cocco	Executive Director	EPOS-ERIC budget	12	170,000	170,000
Carmela Freda	Scientific Officer	Allocated as in-kind	6	36,000	35,957.44
Daniele Bailo	IT Officer	Allocated as in-kind	10	40,400	30,690.96
Agata Sangianantoni	Head of Legal Unit	Allocated as in-kind	3	14,100	5,111.25
Giovanna Maracchia	Management Unit	Allocated as in-kind	1	4,100	5,627.04
Rossana Paciello	Technical Unit	Allocated as in-kind	10	40,400	35,416.42
Barbara Angioni	Graphic Designer	Allocated as in-kind	6	23,800	18,452.13
Silvia Filosa	Communication Unit	Allocated as in-kind	6	23,800	31,018.48
TOTAL (secondment) in-kind personnel				182,600	162,273.71
Diana Piras	Administrative Unit	Temporary Position funded through HP	10	33,000	30,206.34
Marzia Damiani	Administrative Unit	Temporary Position funded through HP	8	27,000	26,276.10
Daniela Mercurio	Management Unit	Temporary Position funded through EPOS IP	1	4,100	3,618.71
TOTAL (Host Premium) in-kind personnel				64,100	60,101.15

According to the Italian Bid to host the EPOS ERIC legal seat, the costs of the personnel annually provided in-kind by the INGV was assumed to be up to €291,000. This cost represents the envisioned funds to support a fully operational ECO. This was not expected to occur in 2019, as indicated by the envisioned costs for in-kind personnel (€182,600) included in the Activity Plan and in the 2019 provisional budget (see Table 1). Indeed, the costs incurred in 2019 for personnel provided in-kind by INGV correspond to **€162,273.71** (see Table 1), slightly less than the envisioned in-kind contribution. The difference is due to various reasons. First, the envisioned contributions for personnel provided in-kind by INGV (€182,600) refers to the whole year, while the in-kind personnel were seconded to EPOS ERIC since February 20th 2019 (due to the required time for finalizing the INGV administrative procedure). Second, in 2019 the available staff was committed to work both on the EC EPOS IP project

and on EPOS ERIC, thus limiting the available in-kind human resources to be provided by INGV to EPOS ERIC. In total, INGV seconded to EPOS ERIC 56 P/M (4.67 FTE) instead of 61 P/M (5.08 FTE), this difference is mostly due to the shorter duration of the secondment with respect to the 12 months considered in the planning. The shorter duration of the personnel allocation also explains the small difference between the envisioned (€64,100) and the actual (**€60,101.15**) costs for the temporary positions hired by INGV with the host premium and allocated in-kind to the ECO (see Table 1).

Table 2 lists the EPOS ERIC envisioned costs and expenditures to financially support the activities for establishing and operating the ECO together with the associated costs envisioned in the 2019 Activity Plan acknowledged by the General Assembly.

Table 2. *Envisioned costs and actual expenditures for ECO kick-off and operational activities*

Other costs to set up ECO supported by the Italian cash contribution (cash HP)	Envisioned Costs (€)	Expenditures (€)
Administrative Support for ECO set up (outsourcing)	12,500	12,500.00
Outsourcing and Management Consultancy	70,000	36,657.20
Audit firm for internal auditing	10,000	2,800.00
External Advisory Boards	18,000	0
General Assembly Meetings (3)	48,000	28,976.12*
Consumables Dissemination and other supplies	25,000	232
IT Equipment	50,000	0
Miscellaneous	20,000	2775
Other Services	233,500	0
TOTAL	487,000	83,940.32

* This cost refers to the meetings of the 3rd and 4th General Assembly. The 2nd GA was covered by the Italian funds (€15,732.00) as a part of the in-kind contribution, because the EPOS ERIC budget was not yet constituted.

Some of the activities envisioned in the 2019 Activity Plan, whose costs were included in the 2019 provisional budget, were not performed due to different reasons. The establishment of the External Advisory Board, for instance, has been postponed to 2020. The expenditures for consumables, IT equipment and miscellaneous have been paid by INGV through the Italian host premium, as explained in the last section of this document. The funds allocated to other services were not committed and spent because these services did not become necessary in 2019.

An additional budget of €25,000 was allocated in the 2019 provisional budget to support travels for the Executive Director and the ECO and experts invited to attend the official EPOS ERIC meetings. The expenditure for travels in 2019 corresponds to **€29,946.44** as shown in the 2019 Financial Statements.

At the beginning of 2019, the ECO coordinated the elaboration, with the support of the EPOS community, and the submission of a proposal for responding to the INFRADEV-03-2018-2019 EC call (deadline for submission was March 20th 2019) dedicated to support the long-term sustainability of established research infrastructures. EPOS ERIC was identified in the proposal as the coordinator of the project. The proposal passed the evaluation and EPOS ERIC was granted with the agreement N°871121 — EPOS SP (EPOS Sustainability Phase) project for three years (February 1st 2020 – January 31st 2023) with a total budget of €4,998,093.75 and 24 beneficiaries. The project EPOS SP coordinated by EPOS ERIC has started the activities on February 1st 2020.

2. Establishment of the Integrated Core Service Central Hub (ICS-C)

The establishment of the Central Hub of the Integrated Core Services (ICS-C) was a priority action of EPOS ERIC in 2019. This required the accomplishment of two key activities: (i) the conclusion of the ICS-C prototype implementation in the framework of the EPOS IP project and (ii) the definition of the legal framework to manage the ICS-C hosting by the hosting organizations, namely BGS (UK), BRGM (France) and GEUS (Denmark).

The EPOS IP project has been very successful and all the objectives planned in its workplan have been accomplished, respecting the timeline and ensuring the exploitation of achievements by EPOS ERIC. The hosting of the ICS-C at the involved organizations (BGS, BRGM, GEUS) required the transfer of achievements from the EPOS IP project to EPOS ERIC. This action was planned for the last trimester of 2019.

According to the discussions and the decisions in the EPOS ERIC General Assembly, the legal framework to finalize the ICS-C hosting was envisaged through the elaboration and signature of a Collaboration Agreement between BGS, BRGM and GEUS and the signature of a Partnership Agreement between EPOS ERIC and the organization (BGS) entitled to represent the three hosting institutions. During 2019, preliminary drafts structuring these documents have been elaborated and discussed by EPOS ERIC and the hosting organizations. Meanwhile, further activities have been undertaken focusing on the most suitable legal and financial context for these agreements coherently with the EPOS ERIC framework. To this task, EPOS ERIC asked for the opinion of legal and financial experts about the “Partnership Agreement for the operation of the EPOS-ERIC ICS-C” to be signed by EPOS ERIC and BGS (UKRI), the latter representing the three hosting institutions. These consultations pointed out diverse issues in the foreseen legal and financial framework as, for example, to absolutely avoid the interpretation of these contracts in terms of a synallagmatic framework. Moreover, because, as stated in the Statutes and in the Scientific and Technical Description of EPOS ERIC, the ICS-C is considered as a component of the ERIC, the host premium provided in-kind by the hosting organizations has to be quantified in a way auditable by external professionals and auditors. The certification of the in-kind contributions declared in the bid to host the ICS-C still represents an issue that must be discussed and formalized in a suitable legal and financial framework agreed by the parties. Indeed, the necessity to audit the resources provided in-kind and included in the host premium, suggested to abandon the legal framework consisting of two distinct documents (Partnership Agreement signed by EPOS ERIC and BGS/UKRI, and the Collaboration Agreement signed by the three hosting institutions) and to have a single agreement signed by EPOS ERIC from one side and BGS, BRGM and GEUS on the other side. This required to reorganize and structure a new legal document capable to address the new financial context. This made impossible to accomplish the objective of completing the ICS-C hosting from a legal and financial point of view in 2019.

The EPOS ERIC funds allocated in the 2019 provisional budget to finalize the establishment of the ICS-C hosting were €300,000 according to the EPOS Financial Plan and EPOS ERIC Statutes. For the reasons explained above, it was not possible to sustain this expenditure in 2019.

As anticipated above, another crucial activity related to the establishment of the ICS-C hosting was the transfer of the EPOS IP project achievements concerning the ICS-C prototype to EPOS ERIC. To this task, the ECO has elaborated a further document, namely the “Inter-Institutional Collaboration

Agreement” (IICA), discussed in various teleconferences and face-to-face meetings and finally signed (at the beginning of October 2019) with BGS, BRGM and GEUS having a three months duration (ending on December 21st 2019). The IICA also served to create the readiness conditions for the subsequent ICS-C hosting for operation. In the IICA, the four organizations agreed to provide in-kind resources and skills to undertake the transfer of developments from the EPOS IP project to the three hosting organizations under the EPOS ERIC coordination. These resources include in-kind contributions from hosting organizations as well as cash and IKC from EPOS ERIC. The IICA allowed the possible extension, if necessary, after December 31st 2019 to the first trimester of 2020 to complete the undertaking. Indeed, this extension has been endorsed by the EPOPS ERIC General Assembly on December 10th 2019 and, since it has been necessary to extend the duration of activities, EPOS ERIC and the three hosting organizations signed the “Reconnaissance Deed in application of the Inter-Institutional Collaboration Agreement”.

The EPOS ERIC budget allocated to support the transfer of achievements regarding the ICS-C operation is **€195,500** and, because of the extension regulated by the Reconnaissance Deed, it will be allocated and spent in 2020 being identified in the 2019 balance sheet as deferred income finalized to this spending commitment within the constrained cash carry over as explained in the Notes to the Financial Statements.

3. TCS-ICS Interactions

The last year of activity of the EPOS IP project has been dedicated to the testing of validated services for pre-operational performances. Key activities also concerned the testing of the interoperability among TCS and ICS-C and the sharing of the development of the user interface. This required synergic efforts between TCS and ICS experts and IT developers, who have worked together in the same virtual research environment to complete the development of ICS-C to be presented to users and external evaluators. These “*TCS-ICS interactions*” have been conducted through workshops, where the experts and IT developers have shared awareness and solutions on how to finalize the implementation of the central hub of the Integrated Core Services (ICS-C). Human resources to undertake these activities have been made available from the EPOS IP project, but a direct economic contribution from EPOS ERIC was necessary to support the workshops. The requested financial support for the logistic of two TCS-ICS interaction workshops plus one User Feedback Group Testing meeting and one External Evaluation meeting have been agreed with the EPOS ERIC General Assembly.

The funds allocated in the 2019 provisional budget to support these community meetings correspond to a total amount of €75,000. During year 2019, three “*TCS-ICS Interactions*” workshops attended by 40 scientists and IT experts on average have been organized by the ECO and financially supported by EPOS ERIC (29-30 April 2019, Amsterdam; 9-10 May 2019, Rome; 9-13 September 2019, Prague). Moreover, a User Feedback Group Testing Workshop (3-5 June 2019, Prague) attended by 30 scientists has been also organized and supported by EPOS ERIC. The EPOS ERIC expenditure in 2019 to support these meetings corresponds to **€49,898.78**. EPOS ERIC also contributed by financially supporting other services (for a cost of **€2,081**) for the TCS-ICS Interaction initiative organized by GEUS in Copenhagen on 10-12 December 2019. The total EPOS ERIC expenditure in 2019 to support the TCS-ICS activities has been €51,979.78.

4. Service Contracts

The EPOS ERIC governance model relies on the signature of legal agreements between EPOS ERIC and the TCS for ensuring the TCS governance and coordination as well as the TCS data and service provision through the ICS-C. During the whole preparatory phase (EPOS PP) and during the first three years of the implementation phase (EPOS IP) these legal agreements were named Service Contracts. During its first meeting, the EPOS ERIC General Assembly recognized the importance of starting activities in 2019 dedicated to identify the most suitable legal and financial framework for finalizing the signature of these service contracts. According to the identified framework, these contracts will be signed between EPOS ERIC and those research organizations (Service Providers) recognised by each community as representatives to coordinate the TCS (TCS Governance and Coordination) and to provide access to data and services through the ICS-C. The purpose of service contracts has been discussed within the EPOS community and with the General Assembly. It has been agreed that these contracts will serve to regulate the financial support for the delivery of TCS validated services through ICS-C, therefore contributing to the construction and operation of the EPOS Delivery Framework.

The eligible service categories have been identified during the implementation phase with the community and the General Assembly as follows:

- a. TCS Governance, Community Coordination and Outreach
- b. TCS Coordination of Trans-national Access
- c. Provision of Trans-national Access
- d. Provision of Data, Data Products, Services and Software (DDSS).

The costs for each service are detailed in the TCS Cost Book, which has been also presented and discussed with the General Assembly. The TCS Cost Book represents another important achievement of the EPOS IP project to be exploited by EPOS ERIC.

Based on the above-mentioned discussions and considering that TCS Governance and Coordination has been identified as a high priority for EPOS, the signature of service contracts for the TCS Governance and Coordination has been planned to occur in 2019. For this reason, this activity has been included in the EPOS ERIC 2019 Activity Plan and a total cost of €200,000 has been allocated in the EPOS ERIC provisional budget.

However, similarly to the hosting of the Central Hub of the Integrated Core Services, the legal and financial requirements discovered when discussing with the chartered accountant and the financial auditors suggested to change the approach of elaborating and signing the service contracts with the concerned TCS. In particular, the need to avoid any synallagmatic framework forced us to change the name Service Contracts into "*Collaboration Agreements*", and to characterize these agreements as initiatives of common scientific interest of the involved parties and not as a direct benefit for EPOS ERIC. For these reasons, the finalization and the signature of these legal documents with TCS have been postponed to 2020. Moreover, and not less important, this delay was also due to the time required by national and international research organizations engaged in each TCS to sign the Consortium Agreement necessary to for formally establishing the TCS and for identifying those organizations endorsed to act as Coordinators for TCS Governance and as service providers.

To plan activities related to these issues, the ECO elaborated a Service Delivery Plan, which includes a Service Activation Procedure, and presented this document to the EPOS ERIC General Assembly during

the Amsterdam meeting (10-11 December 2019). The Service Delivery Plan is part of the 2020-2022 Strategic Plan of EPOS ERIC and has characterized the definition of the 2020 Annual Activity Plan. The ECO has proposed a new activation roadmap for the “TCS Governance, Coordination and Outreach”, relying on the following priorities:

- Update the costs for TCS Governance and Coordination considering further national in-kind contributions and the EPOS ERIC available budget,
- Identify a first set of TCS capable to activate this service within summer 2020 ensuring the provision of data and services during the first pilot operational testing (Autumn 2020),
- Support activities for Governance and Coordination, postponing Outreach activities to the adoption of the EPOS ERIC Communication Plan and sharing resources with EPOS ERIC,
- Support individual TCS Meetings open to the user community during 2020 through EPOS ERIC funds as a part of community building to strengthen TCS visibility and role,
- Plan the progressive funding of Outreach activities depending on available budget and EPOS ERIC Communication efforts and allocated resources,
- Ensure the progress of the other TCS towards the activation of this service within 2020
- Adopt the procedures for approving service activation by EPOS ERIC GA,
- Finalize and adopt the Implementing Rules for the management of the EPOS Delivery Framework.

For the above-mentioned reasons, in 2019 it was not possible to sustain any expenditure to support legal agreements with TCS for both Governance and Coordination as well as data and service provision.

5. Community Building

The EPOS IP project certainly facilitated the community building within the EPOS research infrastructure by transforming the thematic Working Groups of the EPOS Preparatory Phase into the Thematic Core Services, the key components of the EPOS Architecture. The EPOS IP project has been pivotal also for implementing the legal and governance framework necessary to formally establish the TCS. Indeed, during the project, the communities elaborated and agreed on the structure of the “Consortium Agreement” to be signed by national and international research organizations for participating to the TCS activities. During year 2019, four over nine TCS (Seismology, Near Fault Observatories, Anthropogenic Hazards, Geological Information and Modeling) managed to finalize the signature of their Consortium Agreement and one more (GNSS Data and Products) has been finalized in January 2020.

To the same task of sustaining community building, in 2019, EPOS ERIC financially contributed to the organization of one community meeting, namely the 2019 EPOS Seismology Workshop including the ORFEUS Annual Observatory meeting & Workshop and the EMSC General Assembly. The event, attended by 75 seismologists, was held in Amsterdam on 8-10 October 2019. To support this initiative EPOS ERIC spent **€7,000** as reported in the 2019 financial statements. EPOS ERIC also contributed by financially supporting other services (for a cost of **€3,000**) for the TCS Anthropogenic Hazards initiative organized in Poland on November 2019. Moreover, the ERIC also supported the EPOS collaboration with other ERICs, in particular those hosted in Italy.

The ECO also organized a meeting in Madrid on September 27 2019, in the framework of the EPOS IP Final Meeting; this meeting was dedicated to discuss data and service interoperability, FAIR data management and readiness to participate to the European Open Science Cloud initiative. The meeting, attended by more than 80 experts, data scientists and IT developers from many different Research Infrastructures, e-science projects and EOSC initiatives, has been very successful and it strengthened the EPOS positioning both within the EOSC landscape and in the international cooperation among RIs.

The EPOS ERIC funds allocated in the 2019 provisional budget to support the Community Building and networking were €40,000. The 2019 cost of this activity corresponds to €42,092.31 of which **€32,091.32** for meetings and **€10,000** for other services.

6. Communication and Outreach

As envisioned in the 2019 Activity Plan, most of EPOS activities concerning communication and outreach were conducted within the work plan of the EPOS IP project. The TCS have been established in this framework, the ICS-C has been implemented and the prototype built in the framework of EPOS IP with the ambition to ensure the EPOS ERIC exploitation. Furthermore, the human resources to be potentially dedicated to communication activities within the ECO and the EPOS community were committed in the EPOS IP project. This certainly limited the communication activities supported by EPOS ERIC and the use of dedicated funds.

A prioritized action for the 2019 Activity Plan was the elaboration of the EPOS ERIC Communication Plan. The elaboration of this strategic document requires skills and experiences that were not available in the ECO and in EPOS. For this reason, it was decided to benefit of a specialized company and therefore to assign the commitment of elaborating a proposal for the EPOS ERIC Communication Plan in outsourcing. The provisional budget for this undertaking was €30,000 and a tender to select the specialized company was open in June 2019. Sissa MediaLab company from Trieste (Italy) was selected to elaborate a “Proposal for the EPOS ERIC Communication Plan”. The activities started in October 2019 with six months duration and the plan has been finalized in March 2020. The cost for this commitment is €30,000, of which **€15,000** correspond to activities concluded and spent in 2019 and the remaining activities, for a value up to €15,000, were postponed to 2020.

The 2019 Activity Plan also included funds to support the elaboration of videos and other communication tools tailored for different target audiences. The provisional budget allocated to this activity was €40,000. The original motivation was to communicate and disseminate the ERIC guidance of the EPOS Delivery Framework and the EPOS ERIC brand. However, all these activities including the design and development of the new Web Site, were postponed to 2020 in order to dedicate the necessary human resources and skills as well as to adopt and follow the indications and guidelines detailed in the EPOS ERIC Communication Plan.

7. Planning General Assembly

During the year 2019, the ECO organized three meetings of the EPOS ERIC General Assembly:

- February 28th–March 1st, Copenhagen, Denmark;
- June 10th–11th, Ljubljana, Slovenia;
- December 10^t–11th, Amsterdam, The Netherlands.

A budget of €48,000 was allocated to support the organization of these meetings of the EPOS ERIC General Assembly. The expenses related to the first of these three meetings have been provided in-kind by Italy (**€15,732.00**) within its host premium and are included in the Financial Statements; this because the meeting needed to be organized before the ERIC budget was actually available. The remaining two meetings have been supported with the ERIC budget with a total cost of €28,976.12 (see Table 2).

8. Long-term Sustainability

Long-term sustainability is the most relevant and most difficult target for a research infrastructure. To this task, on 2018 the European commission launched a call focused on “Development and long-term sustainability of new pan-European research infrastructures” (Horizon 2020 Call: H2020-INFRADEV-2018-2020). Therefore, at the beginning of 2019, the ECO, with the support of the EPOS community elaborated a proposal to respond to the call. The proposal has been submitted on March 20st 2019. The proposal passed the evaluation and EPOS ERIC was granted with the 871121 — EPOS SP project having a budget of €4,998,093.75 and 24 beneficiaries. The EPOS SP project represents now the collaborative framework in which addressing the challenges of financial viability and long-term sustainability together with the EPOS community. The project is a relevant contribution to EPOS ERIC because it contributes in keeping the communities committed to support the building of the EPOS Delivery Framework. The 24 beneficiaries are indeed committed to implement the activity plan. Importantly, 10% of the budget is dedicated to support the participation of research organizations from countries that have not yet joined EPOS ERIC, but are in the process of doing it. This has been planned since the beginning with the purpose of strengthening connections with countries involved in EPOS but not yet EPOS ERIC members so that the number of countries supporting EPOS at a national level would increase, thereby ensuring further membership fees and additional national and organisational support to EPOS TCS and data provision. Furthermore, the project will also keep National Authorities that already joined EPOS ERIC informed and engaged through the EPOS ERIC General Assembly while trying to engage potential member countries not involved or weakly involved in EPOS so far.

9. Management Report

EPOS ERIC has been granted by the European Commission on October 30th 2018. The EPOS ERIC 2019 Activity Plan has been discussed and acknowledged by the General Assembly on November 2018. Because the membership fees and the cash contribution from the Italian host premium have been provided starting from 2019, this one has been the first year of operation of EPOS ERIC. According to the 2019 EPOS ERIC Provisional Budget the total provisional revenues, composed by the membership fees contribution (**€1,335,000**) and the Italian cash contribution (**€597,900**), was **€1,932,900**.

The present Activity Report describes the activities undertaken in year 2019 and reports their costs compared with those envisioned in the 2019 provisional budget. The 2019 Financial Statements and the Accompanying Notes describe the financial status of EPOS ERIC at December 31st 2019 and identify the cash carry over at the end of the financial year. The latter corresponds to **€1,539,935**, of which **€1,344,435** is deferred income dedicated to support the continuation of 2019 activity plan and the EPOS start-up activities and **€195,500** dedicated to finalize the ICS-C transition activities described in the IICA. As explained in the Financial Statements, the cost for the transfer of achievements from the EPOS IP project to the hosting organizations and EPOS ERIC (**€195,500**) will be incurred by EPOS ERIC in 2020 at the end of the activity plan detailed in the Inter-Institutional Collaboration Agreement and in the Reconnaissance Deed that extended its duration to 2020.

The Italian in-kind contributions correspond to **€244,768** (as detailed in Table 3) and the main part of it corresponds to the personnel in-kind provided by INGV to EPOS ERIC (see Table 1).

The significant 2019 cash carry over resulting from the 2019 balance sheet to the 2020 EPOS ERIC budget, can be explained as follows:

- The first six months of year 2019 were dedicated to ensure the ECO operation, to collect membership fees from ERIC members and the cash contribution from the Italian host premium, and to start the financial management of the new legal subject; therefore, the annual budget could have been used only starting in the second half of 2019.
- The EPOS IP project concluded its activity plan on September 30th 2019; the project has been a huge commitment for the whole EPOS community, including the ECO, thus requiring a lot of human resources and dedicated participation to successfully achieve all the planned objectives; importantly, the EPOS IP project economically supported all the relevant activities that ensured the accomplishment of the two key objectives of the EPOS Implementation Phase: (i) the establishment of EPOS ERIC ensuring its exploitation of project results and (ii) the design and development of the data and service provision founding the EPOS Delivery Framework.
- The occurrence of unexpected complications concerning the financial management of collaboration agreements and service contracts with TCS and ICS, in particular for the ICS-C hosting, which required to redefine the legal framework and to redraft the all documents elaborated so far; consequently, the funds allocated in the 2019 provisional budget to federate the TCS and host the ICS-C could not be expended because of the still not finalized legal and financial framework.
- The unforeseen need to further support transfer of achievements from the EPOS IP to the ICS-C hosting organizations.
- More time was required to identify the new services for sustaining the full EPOS ERIC operation.

The cash carry over will be used in 2020 to finalize the activities started in 2019, to further support the activities necessary to make the ECO and EPOS ERIC fully operational and to financially support the kick-off of the EPOS Delivery Framework.

As anticipated above, the EPOS ERIC operation relies on the host premium provided by Italy and quantified in the Italian Bid to host the legal seat of EPOS ERIC selected by the Board of Governmental Representatives and acknowledged by the EPOS ERIC General Assembly. The host premium includes cash and in-kind contributions for the hosting of the ECO up to €732,000 and the secondment of INGV employees up to a total cost of €291,000, thus making the annual host premium equal to €1,023,000.

The 2019 EPOS ERIC provisional budget acknowledged by the General Assembly foresees an Italian in-kind contribution of €732,000, partitioned as listed in Table 3 and the secondment of INGV employees for a cost of €182,600 yielding the 2019 host premium of €914,600.

Table 3. Italian Host premium for 2019

Italian Host Premium	Provisional budget	Provided in 2019
Cash contribution to ERIC	597,900.00	597,900.00
Personnel hired by INGV with the Italian funds (temporary positions) provided in-kind to ERIC	64,100.00	60,101.15
In-kind contributions to set up the ECO	70,000.00	22,393.20
TOTAL	732,000.00	680,394.35
INGV Personnel seconded to EPOS ERIC (in-kind)	182,600.00	162,273.71
Grand TOTAL	914,600.00	842,668.06

According to the activities and human resources reported in this document, the costs (**€162,273.71**) for the INGV personnel (permanent positions) seconded to EPOS ERIC is slightly less than the envisioned costs (€182,600). As explained above, this was due to the duration of the secondment period (starting from February 20th 2019) shorter than the annual envisioned duration. Moreover, the INGV human resources envisioned for the in-kind provision to EPOS ERIC were also committed for the EPOS IP EC project. In total, INGV seconded to EPOS ERIC 56 P/M (4.67 FTE) instead of 61 P/M (5.08 FTE). Furthermore, the difference between the envisioned (€64,100) and the actual (**€60,101.15**) costs for the INGV temporary positions hired through the host premium to be allocated in-kind is relatively small and it can be explained with the shorter duration of the secondment (see Tables 1 and 3). Finally, also the actual costs for the ECO set up (**€22,393.20**) resulted to be less than the planned costs (€70,000). This difference is due to delays in completing the redevelopment of the buildings dedicated to host the offices of EPOS ERIC. It is important to underline that no indirect costs have been included in assessing the Italian host premium provided by INGV to EPOS ERIC and no value have been attributed to the areas identified by INGV to host the EPOS ERIC legal seat. This might change in the future depending on the increase of the in-kind contribution for other services different from personnel.

As mentioned above, the financial status of EPOS ERIC is described numerically in the Financial Statements and detailed in the Notes to the Financial Statements. It is worthy to recall that these documents describe the financial status of EPOS ERIC at December 31st 2019, the end of the first

financial year for EPOS ERIC. The current 2019 Annual Activity Report describes the activities and the associated costs referring to the Notes to the Financial Statements for the financial details.

10. The way forward

EPOS is a pan-European distributed research infrastructure relying on a federated approach to integrate national and international research infrastructures from more than 20 countries and engaging more than 140 research organizations. Its governance model, designed and implemented during the EPOS PP and EPOS IP phases (2010-2019), needs to be adapted to guide and operate the EPOS Delivery Framework. The financial viability of the EPOS Research Infrastructure (EPOS RI) is still under construction and its long-term sustainability still represents the challenge and the horizon pointing the road ahead. The year 2019 represented the kick-off of this complex RI and the overall assessment of the achievements can be considered extremely positive, as corroborated by the successful conclusion of the EPOS Implementation Phase and the establishment of EPOS ERIC. EPOS ERIC is now called upon to guide and make operational the EPOS Delivery Framework maintaining the momentum created by EPOS IP, supporting an aware and motivated participation and coordinating the transition from the implementation to the operational phase. This transition has been designed in the 2020-2022 EPOS ERIC Strategic Plan, which has the task to tackle the challenge of building a long-term sustainable EPOS Delivery Framework. The new EPOS SP project is the collaborative framework where addressing this challenge. The activities undertaken in 2019 have succeeded in the design of the transition to the operational phase. This report has the duty to present both the successful achievements and the bottlenecks we have encountered in this first year of operation of EPOS ERIC.

