EPOS SP – Grant Agreement n. 871121

D8.1 - First Report on sustainability of data provision and preservation

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VERSION	DATE	CHANGE
v0.1	2021-07-21	Draft version delivered for review.
v0.2	2021-07-31	Revised version after review.

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Executive Summary

This deliverable is delivered as EPOS SP report at M18 named “D8.1 First Report on sustainability of data provision and preservation”. This report contains a description of work done in preparation for the data provision landscape analysis. There are no explicit results available yet for the Data Provider sustainability landscape analysis due to delays in the schedule of previous Service Provider landscape analysis survey and other activities which required broader coordination within EPOS SP. Here we are introducing the EPOS Delivery framework and explaining where the data provision come into connection with EPOS.

We present here the work done for Service Provider landscape analysis survey, design and its execution (no results though). Similar procedures will be required for the Data Provider landscape analysis survey preparation. The survey document is provided as Annex 1 and its version in Google Form (used for execution) as Annex 2.

1. Introduction

Raw data and associated metadata are the foundation upon which EPOS is built. The data production is achieved by the work of hundreds of organizations across Europe that agree to open their data for further use. These organizations are connected to EPOS through data “Supplier Letters” but a large part of the data production is in many cases based on numerous funding sources related to national EPOS Consortia, national RIs and projects. EPOS needs to identify actions that will help the data producers to continue being engaged in EPOS, and which will facilitate their quest for resources at a national and regional level. This work will be carried out as a landscape analysis involving direct discussions with the organizations responsible for data provision and/or organizations responsible for TCS and/or with members of the EPOS ERIC General Assembly, as needed. This landscape analysis will be carried out also through joint interactions and interviews carried out in Task 2.2.

First chapter (2. Background) of this deliverable is describing background information about EPOS structure, architecture and governance since those are crucial for understanding the EPOS service delivery plan. Next chapter (3. Sustainability of data provision) covers the main topic and describes the work done related to the *Task 8.1 Sustainability of data provision and preservation* since the beginning of the EPOS SP project followed by chapters 4. Discussion and 5. Conclusion. There are two annexes attached, where the first one is the survey document (Annex 1 - Landscape analysis: Service provider survey

), prepared by the working group and the second one the actual survey form (Annex 2 - EPOS-Service Provider landscape analysis (Google Forms)

).

2. Background

EPOS is a single, pan-European distributed Research Infrastructure (RI) providing access to multidisciplinary solid Earth science data. Main roles of the RI can be summarized as

- Providing virtual access to data and physical access to facilities
- Strengthening data management and interoperability through e-science innovation

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- Allowing communication with different stakeholders
- Fostering Open Science, communication to society and a safe exploitation of geo-resources

It should be noted that at this stage, focus was on the first two roles of the RI, as mentioned in the above four bullet points. The remaining two roles will be addressed at a later stage.

EPOS ERIC was established in 2018. Main goal of EPOS ERIC is to facilitate research through its Integrated Core Services (ICS) giving access to Thematic Core Services (TCS) from the underlying RIs at different levels (national, regional, European, international) – see Figure 1.

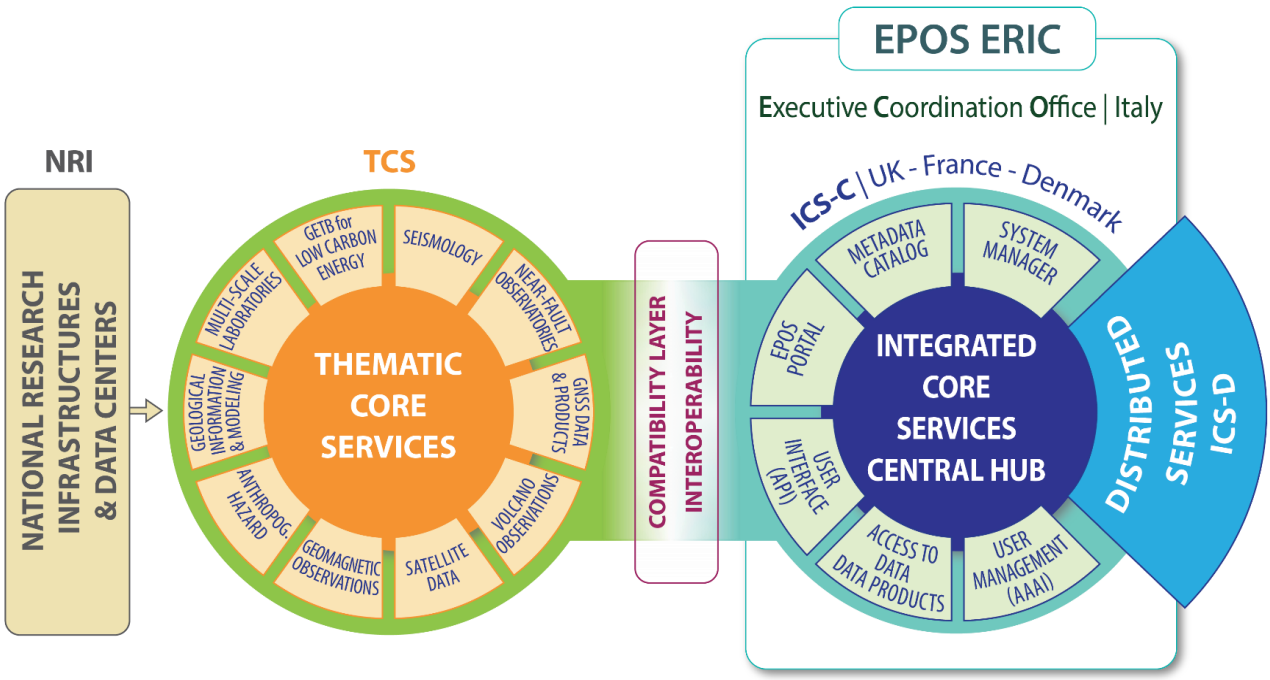

Figure 1: Main elements of the EPOS architecture

TCS are collecting and processing data from Data Providers and providing them to ICS as Data, Data Products, Services and Software (DDSS). Data and Data Products are exposed via web services from TCS. Each web service needs to be described within EPOS-DCAT-AP metadata model and ingested into the central database of the ICS. Content of the webservices is then made available at the EPOS Data Portal, which serves currently as a search and contextualization portal. Users can see which datasets are available among different TCS, visualize the simple content and configure and download data of their interest.

EPOS ERIC has a complex governance structure (Figure 2), with legal, financial, technical and scientific aspects.

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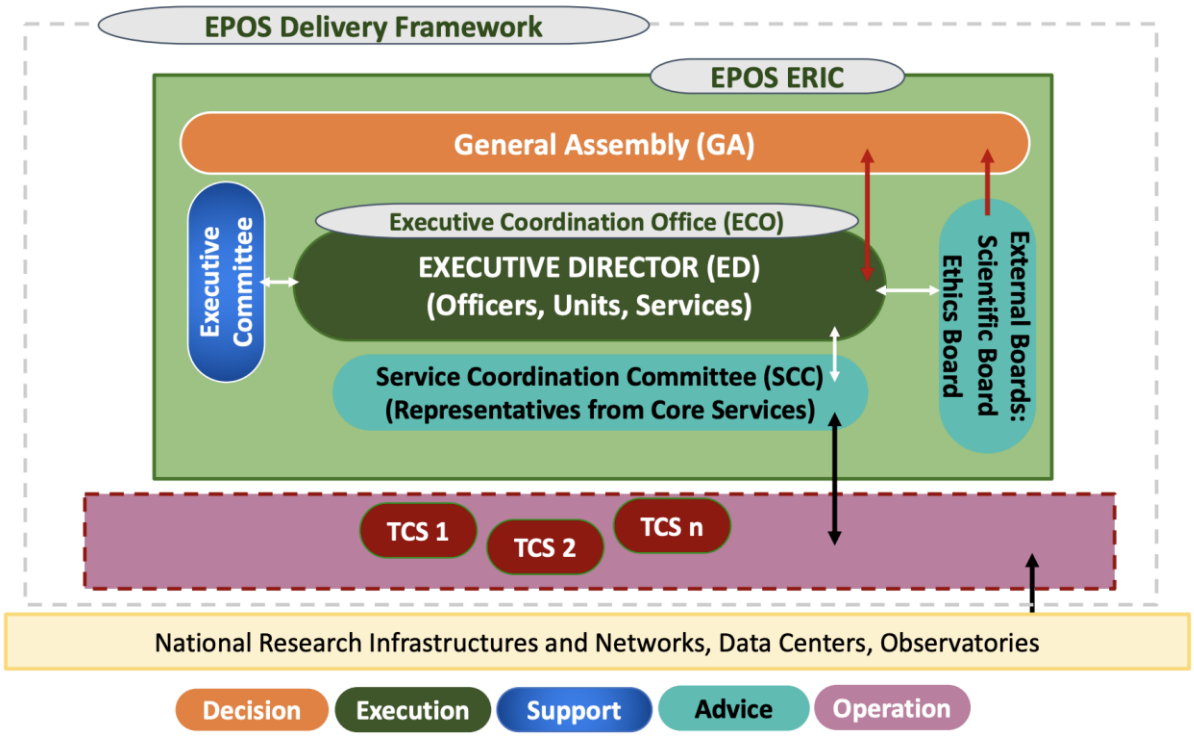

Figure 2: EPOS ERIC governance overview

The structure of the data provision and the legal dimension can be schematically visualized as shown in Figure 3. Each TCS has its own internal governance structure but there are strong similarities among TCS. Feeding the system starts at the bottom at Data Provider or National Research Infrastructure level. Here individual DDSS can be defined and grouped into services at Service Provider level and served towards ICS-C. The data production is achieved by the work of hundreds of organizations across Europe that agree to open their data for further use. These organizations are connected to EPOS through data Supplier Letters, but a large part of the data production is in many cases based on numerous funding sources related to national EPOS Consortia, national RIs and projects.

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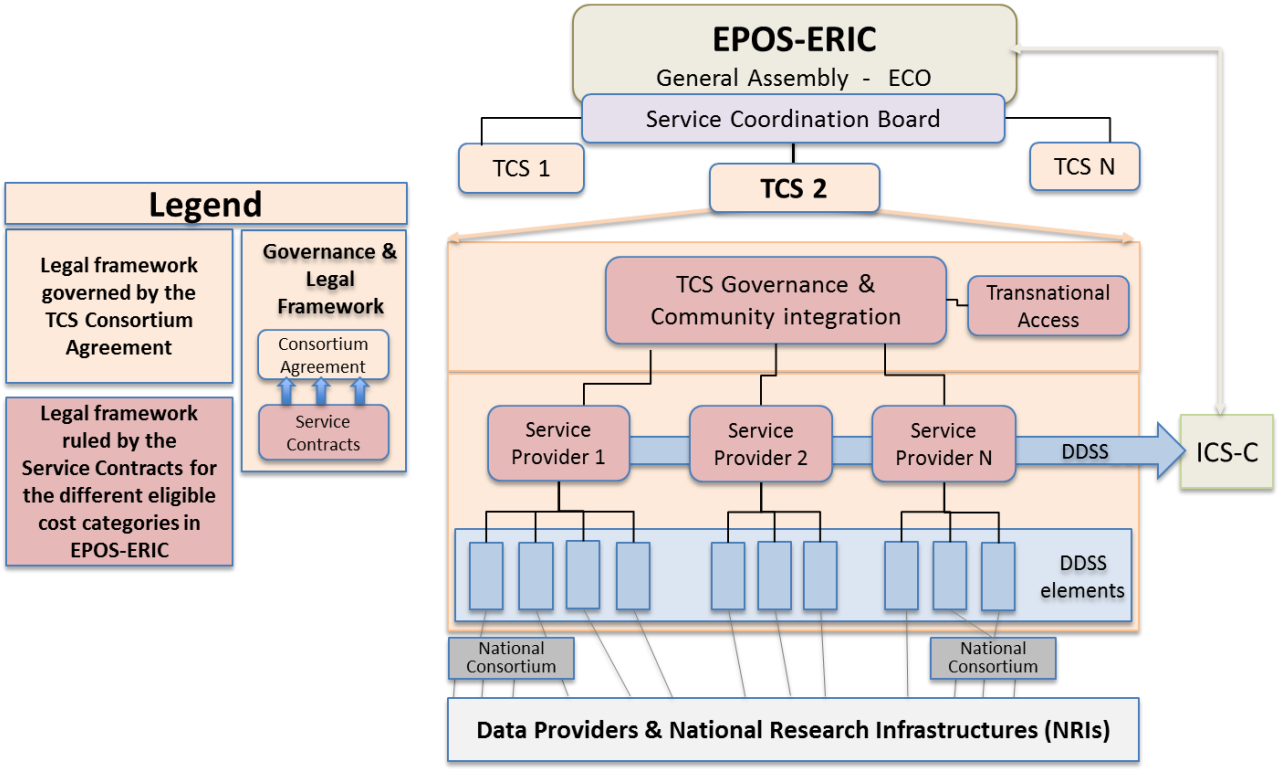

Figure 3: EPOS legal dimension and Data Management

Finding a sustainable model for keeping the whole chain of interactions active is the key deliverable of the EPOS SP project and each WP in EPOS SP is considering various aspects. Task 2.2 in WP2 aims at reinforcing the robustness of the in-kind contributions of the Thematic Core Services (TCS) through national and institutional engagement at the Service Provider level while Task 8.1 in WP8 is focused on sustainability of data provision and preservation – at Data Provider level. Hence these two tasks are closely related.

Terminology in EPOS is complex and for that reason we provide a list of definitions in a graphic way (Figure 4).

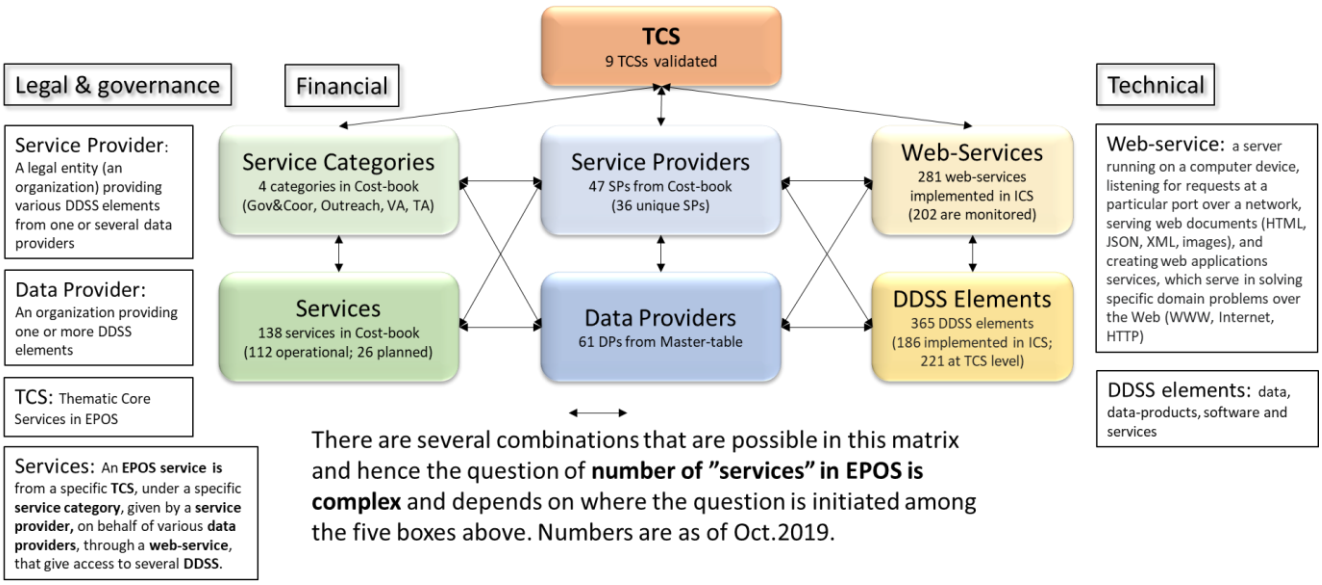

Figure 4: Terminology in EPOS Delivery Framework

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3. Sustainability of data provision

Assuring continuous and long-term data provision is a building stone in EPOS. Running a landscape analysis among service providers and data providers is a starting point for understanding the weak points. Based on this analysis, specific actions and decisions can be made to improve the data provision sustainability.

Tasks 2.2 and 8.1 of EPOS SP project are tightly related and for that reason the landscape analysis has been prepared in close collaboration. Since the data come from Data Providers to Service Providers, and since the Service Providers are closer to EPOS ERIC and generally have a better understanding about its structure, it was decided that the landscape analysis among Service Providers should be done first (Q2 2021). Outcomes and lessons learned will be then used for preparation of Data Provider landscape analysis (Q4 2021). The main aim of the Service Providers landscape analysis was to collect information about sustainability of services provided to EPOS. Apart from this, the input collected through the two surveys will feed the analysis behind the Long-term Sustainability Plan, since EPOS long-term sustainability depends largely on sustainable data and service provision.

3.1 Design and execution of the surveys

It was decided that interviews and questionnaires in form of online survey will be used to run the landscape analysis among Service Providers. Similar procedure is planned to be also applied for Data Provider landscape analysis. The landscape analysis needs to involve all aspects of sustainability of the EPOS Delivery framework, i.e. governance, legal, financial and technical.

Preparing the questionnaire

A working group consisting of members of WP2 and WP8 (EPOS-ERIC, CNRS, UIB, ETH and GFZ) was created for preparing the landscape analysis. The first task in this group was to identify sustainability indicators which could then be transformed into questions and used in the landscape analysis survey.

Sustainability indicators identified by the working group are the following:

- EPOS attachment
- Visibility
- Uniqueness
- Solidity over time
- Impact and support from the scientific community
- Clear and stable governance
- Confidence from organisation
- Funding stability
- Technical solidity
- Long-term maintenance

Based on this list the questions were formulated and elaborated in detail (see Annex 1). Each indicator requires several questions to cover main aspects of it. Formulation of the questions was not straightforward and multiple versions were exchanged within the working group before the consensus was made. There were several coordination meetings (held almost every month since March 2020) within the working group to discuss content and formulations of the individual questions. The questions were then transferred into the Google Form (Annex 2) which resulted in 53 questions. In addition, an introductory text with an explanation of the purpose of the survey to participants and a consent form were prepared.

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The survey was designed with the best intentions to assess the sustainability objectively, however, the technical means did not fully meet the requirements and the flow through the questionnaire was not as smooth as expected (complex conditional redirection).

GDPR, privacy issues

Specific sections related to the GDPR statement and the declaration of the consent to the survey conditions have been added at the beginning of the survey.

GDPR Statement

This survey is carried out by EPOS ERIC through CNRS, using the technical resources of the University of Bergen (UiB) and Google Forms. The purpose of the survey is to evaluate the sustainability of the service provision within EPOS.

Your replies will be stored and processed by UiB and CNRS for the needs of the EPOS SP project (maximum 5 years). The only personal information that will be stored, is your name, email address and organisation information. They will only be used in order to send feedback on the survey results.

The survey on service provision is intended only for internal use (EPOS ERIC + EPOS SP internal work and participating organisations). The information collected will not be shared with third parties, outside of EPOS. No commercial use will be made of the information.

For more information on the handling of personal data or if you want to delete or rectify the data collected from you, please contact EPOS ERIC or CNRS: management@epos-eric.eu and karin.karlzen@univ-grenoble-alpes.fr.

Consent

By completing and submitting this questionnaire, I declare consenting to the conditions stated hereunder:

- I confirm that I have read and understood the information provided about the survey and have had the opportunity to ask questions.
- I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my legal rights being affected.
- I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my legal rights being affected.

Preparing the survey

The survey was designed to collect information about sustainability of service provision. The first information about the landscape analysis was disseminated during the TCS interviews in November-December 2020 where the procedure and expected execution was introduced. The SP survey was initially planned to be executed in Q3 2020, but there were topics requiring further discussions both within WP2 and with EPOS ERIC related to the financial assessment of the services. In addition, coordination with surveys executed in other WPs was made.

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Content of the questionnaire had been finalized during February 2021, but before sending it to all Service Providers, it was decided to collect feedback from a smaller group of testers first.

Testing the survey

A first draft of the survey questionnaire was sent to volunteers from TCSs (March 2021) to be tested whether it is understandable and meaningful. Based on feedback from seven TCS testers (68 comments) the questionnaire was modified (simplified).

3.3 Service Provider landscape survey

There were 227 services integrated into the ICS provided by 37 organizations at the time of launching the survey. These organizations are considered as Service Providers but there can be more than one Service Provider within one organization. There were 81 Service Providers (February 2021) providing virtual access to services.

Invitation to the survey itself went to all current Service Providers from nine TCS on 1 April 2021 and execution of the survey was coordinated by CNRS. List of all services grouped by TCS had been added to the beginning of the survey to simplify the service identification. The questionnaire could be answered once for multiple services in case the conditions are similar. If not, additional responses should be submitted.

The survey was closed at the beginning of June 2021, once responses for all services were collected. The results are being analysed and will be made available in deliverable D2.4. Preliminary outcomes are outlined in D8.3.

3.4 Data Provider landscape survey

Data Provider landscape survey has not started yet and is planned to be executed in Q4 2021 (Figure 5: Time-plan for Data Provider survey). It will follow the similar method as the Service Provider landscape survey. The Data Provider survey will involve many more participants and therefore the selection of the questions needs to be done carefully. The Service Provider survey needs to be analysed thoroughly first.

Figure 5: Time-plan for Data Provider survey

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Challenges

There are multiple challenges to be tackled for successful execution of the Data Provider landscape survey:

- Contact all Data Providers contributing with data to EPOS
    - To achieve this each Service Provider might be asked to distribute the survey to all contributing Data Providers
- Capture a clear structure and relations between Service Providers and Data Providers
    - This needs to be done across all the dimensions: governance, legal, financial, technical and possibly also scientific
- Make the survey simple but yet comprehensive so all key questions and sustainability indicators are covered
- Make sure that the collection of responses is complete
    - This will require system for checking of received responses from each Data Provider
    - This system needs to be made available for Service Providers for entering information about the Data Providers (email, to which service DP is contributing, response status)
- Interpret the responses in a clear way so the outputs can be used directly for improving the EPOS Service Delivery framework
- Involve Data Providers in the survey and explain advantages of contributing to EPOS
    - This should be probably done before running the online survey in a form of a webinar

Results

Results of the Data Provider landscape survey will be presented in D8.2.

4. Discussion

One of the challenges in the Data Provider landscape analysis is to obtain similar representative responses across wide spectrum of Data Providers to be able to interpret them and use for improving the EPOS Service Delivery framework.

Thanks to the clear EPOS governance structure it should not be difficult to reach all Data Providers but it might be time consuming to keep track of received responses. It would be best to automatize the collection of responses as much as possible.

Responses from the Service Provider landscape survey needs to be analysed thoroughly before designing the Data Provider questionnaire.

From the preliminary results of the Service Provider landscape analysis, we learned that most of the difficulties for participation in EPOS are of financial nature (for various reasons) or due to lack of qualified staff. Similar difficulties are probably being dealt with at Data Provider level. The role of EPOS is therefore to provide proper support for them and not only harvest the data, provide full support on governance and legal level, show the new opportunities for gaining visibility and increasing impact so competitions over funding will become easier.

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The toughest challenge though might be still ahead of us and that is to demonstrate and prove usefulness of the EPOS ERIC as a truly research infrastructure.

5. Conclusion

This deliverable is presenting results achieved on the way towards the Data Provider sustainability landscape analysis though no explicit results are available yet due to delays in the schedule of previous Service Provider landscape analysis survey and other activities which required broader coordination within EPOS SP.

The Data Provider sustainability landscape analysis will be prepared in Q3 2021 and executed in Q4 2021. Results of the landscape analysis will be presented in D8.2 (M30).

List of annexes

Annex 1 - Landscape analysis: Service provider survey

Annex 2 - EPOS-Service Provider landscape analysis (Google Forms)

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Annex 1 - Landscape analysis: Service provider survey

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Landscape analysis: Service provider survey

EPOS-SP (WP2+WP8)

Indicators

Indicators are indicated in red below.

- Visibility
- Uniqueness
- Stability over time
- Impact and support from the scientific/user community
- Data provision sustainability
- Clear and stable governance
- Support from organisation
- Funding stability
- Technical robustness/stability
- Training
- Long-term maintenance

EPOS Service Provider landscape analysis

Objective of the survey

This survey is organized by WP2 (Governance and Financial Framework) and WP8 (Impact on long-term sustainability) within the EPOS SP project (https://epos-eu.org/about/epos-pilot-operational-phase-pop/epos-sustainability-phase-project-2020-2023) with the main aim to collect information about sustainability of services provided to EPOS from service providers.

• Who should fill in the questionnaire?
o EPOS service providers. If responses are significantly different for different services, please fill in the questionnaire for each (group of) service(s) that have similar responses. You can at any time correct the service selection (navigate back).

• How long is the questionnaire?
o The survey contains 53 questions divided into multiple thematical sections on technical, governance, legal and financial issues.
o The survey takes about 20-30 minutes to fill in. Consecutive submissions for each service might take less time.

• How will the survey results be used?
o The results will be used within the EPOS SP project for assessing sustainability of service provision to EPOS. The results will be treated as purely informative in will not be part of the EPOS-ERIC evaluation of each service.

More details about the survey are provided at:

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https://drive.google.com/file/d/12ZjrEfpuesRUcP2kqhUJ7DlDHFC7xWr2/view?usp=sharing (there will be link to dedicated webpage for the sharp run)

GDPR Statement

This survey is carried out by EPOS ERIC through CNRS, using the technical resources of the University of Bergen (UiB) and Google Forms. The purpose of the survey is to evaluate the sustainability of the service provision within EPOS.

Your replies will be stored and processed by UiB and CNRS for the needs of the EPOS SP project (maximum 5 years). The only personal information that will be stored, is your name, email address and organisation information. They will only be used in order to send feedback on the survey results.

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Consent

By completing and submitting this questionnaire, I declare consenting to the conditions stated hereunder:

- ☒ I confirm that I have read and understood the information provided about the survey and have had the opportunity to ask questions.
- ☒ I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my legal rights being affected.
- ☒ I agree to take part in this survey.

Identification of the respondent

- Organisation country
- Organisation web site
- Representative name(s), email(s), role of the person(s) within the organisation
- Comments

TCS selection

- Name of the Service *(drop down menu – list copied from cost-book)*

Identification of the service

- Name of the service for which the questionnaire is being answered (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data). Select multiple services if those are provided by the same Service Provider.

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- Service web site

General information

1. Quantitative What is the purpose of the EPOS service? (*several choices possible*):
    - Services to scientists in academia (data, data products, …)
    - Service to R&D of private sector
    - Service for commercial purposes
    - I don't know
    - Free text

Visibility

2. Quantitative Is EPOS included in the National Roadmap for Research Infrastructures?
    - Yes
    - No
    - Part of it
    - There is no National Roadmap in my country
    - I don't know
    - Free text

3. Quantitative Please indicate the service visibility at the following levels:
    - International
    - European
    - National
    - Regional

    Alternatives for each level:
    - To a great extent
    - Somewhat
    - Very little
    - Not at all
    - I don't know
    - Free text

4. Quantitative Did the service exist before EPOS?
    - Yes
    - No
    - I don't know
    - Free text

Uniqueness

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5. Quantitative Do other organisations in your country provide services similar to your EPOS service?
    - Yes
    - No
    - I don't know
    - Free text

Stability over time

6. Quantitative Since when does the EPOS service you offer exist?
    - The service existed in exactly the same form before EPOS.
        - For how long?
    - The service existed in another form before EPOS.
        - For how long?
    - The service existed as a concept/plan before EPOS.
        - For how long?
    - The service did not exist before EPOS.
    - I don't know
    - Free text

Information about users

Impact and support from the scientific/user community

7. Quantitative How many different users does the EPOS service have or foresee to have per year?
    - 1-10
    - 11-100
    - 101-1 000
    - 1 001-10 000
    - 10 001-100 000
    - 100 001-1 000 000
    - More than 1 000 000
    - I don't know
    - Free text

8. Quantitative How many users from outside of your country does the EPOS service have or foresee to have per year?
    - 1-10
    - 11-100
    - 101-1 000
    - 1 001-10 000
    - 10 001-100 000
    - 100 001-1 000 000
    - I don't know
    - Free text

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Amount of data

9. Quantitative What is the volume of data shipped or foreseen to be shipped yearly by the EPOS service (order of magnitude)?
    - kB
    - GB
    - TB
    - I don't know
    - Free text

10. Quantitative How many data and metadata requests does the EPOS service get/foresee per year?
    - 1-10
    - 11-100
    - 101-1 000
    - 1 001-10 000
    - 10 001-100 000
    - 100 001-1 000 000
    - > 1 000 000
    - I don't know
    - Free text

Linkage to research

11. Quantitative Is the EPOS service linked to the research priorities in your country?
    - Yes
    - No
    - I don't know
    - Free text

12. Quantitative Is the EPOS service well known by national researchers?
    - To a great extent
    - Somewhat
    - Very little
    - Not at all
    - I don't know
    - Free text

Data provision sustainability

Data provision sustainability

13. Quantitative Is the data provision of the EPOS service sustainable (i.e. Can your data provision be guaranteed in the future)?
    - To a great extent
    - Somewhat
    - Very little

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- Not at all
- I don't know
- Free text

14. Quantitative Do you have a risk management plan in place for service delivery?
    - Yes
    - No
    - I don't know
    - Free text

15. Qualitative What do you consider to be the highest risk to the sustainability of service provision to EPOS?
    - Free text

Governance

Clear and stable governance

16. Quantitative Which is the organisational framework that operates the EPOS service?
    - Dedicated legal body
    - National Consortium
    - Part of service portfolio of a Community legal body
    - Department in an institution
    - An informally organised activity in an institution
    - Dedicated organisation that is not a legal body
    - Part of a service portfolio of an organisation that is not a legal body
    - Informal partnership between organisations
    - I don't know
    - Free text

17. Quantitative Do you consider the governance of the organisational framework as stable, considering aspects like time, representativeness of members, human resources, etc.?
    - Yes
    - No
    - Partly
    - I don't know
    - Free text

18. Quantitative For how long has the organisational framework had its present form?
    - Less than a year
    - 1-5 years
    - 6-10 years
    - 11-15 years
    - 16-20 years
    - For longer
    - I don't know
    - Free text

Support from organisation

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19. Quantitative Do you consider that your EPOS service has adequate administrative support considering the amount of resources and required skills?
    - Yes
    - No
    - Partly
    - I don't know
    - Free text

20. Quantitative Do you consider that the EPOS service has a sufficient level of administrative and managerial support from the organisation running the service?
    - Yes
    - No
    - Partly
    - I don't know
    - Free text

Financial sustainability

Funding stability

21. Quantitative What is the dominant funding mechanism (foreseen or existing) of the EPOS service?
    - Institutional funding
    - Project funding
    - Recurrent from ministry
    - Recurrent from a university or an organisation
    - Recurrent commercial activity
    - EPOS funding
    - Other additional funding
    - I don't know
    - Free text

21.B. Quantitative In case of project funding (previous question), what is the level?
    - National
    - Regional
    - EU
    - Private
    - Other

22. Quantitative Is the recurrent budget that funds your EPOS service annual or multi-year?
    - Annual
    - Multi-year
        - How many years?
    - I don't know
    - Not applicable (new services)

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- Free text

23. Quantitative Are there changes to be expected in your EPOS service's funding scheme in the next 5 years (no matter the source)?
    - Yes
        - Which ones?
    - No
    - I don't know
    - Free text

23.B. What changes are to be expected in your EPOS service's funding scheme in the next 5 years (no matter the source)?
- Free text

24. Quantitative To which degree do you consider the funding of your EPOS service adequate (taking into consideration the situation during the last 3 years)?
    - Fully
    - Partly
    - Not at all
    - I don't know
    - Not applicable
    - Free text

25. Quantitative To which degree do you consider the *stability* of the funding schemes adequate for your EPOS service (taking into consideration the situation during the last 3 years)?
- Fully
- Partly
- Not at all
- I don't know
- Not applicable
- Free text

26. Quantitative How do you foresee the financial risks for your EPOS service in the future (next 5 years)?
    - They will increase.
    - They will remain the same.
    - They will decrease.
    - I don't know
    - Free text

27. Quantitative For existing services: how big is the additional cost of running it as an EPOS service?
    - <10 %
    - 10-50 %
    - 50-90 %
    - >90 %
    - I don't know
    - Free text

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28. Quantitative Over the previous 3 years, what is the percentage of staff costs that is covered by project or other temporary funding to run the EPOS service?
    - <10 %
    - 10-30 %
    - 31-50%
    - 51-70 %
    - 71-90%
    - >90 %
    - I don't know
    - Free text

29. Quantitative How strong is your dependency on EPOS ERIC funding to run the EPOS service?
    - Very strong
    - Moderate
    - Weak
    - Absent
    - I don't know
    - Free text

30. Qualitative Which actions are presently ongoing to ensure funding for the EPOS service?
    - Free text

31. Quantitative Do you have enough staff to run the EPOS service?
    - Yes
    - No
    - Partly
    - I don't know
    - Free text

Technical sustainability

32. Quantitative How is your technical infrastructure organised? (several choices possible)
    - In a local or regional infrastructure (for example a regional datacentre)
    - In a national infrastructure
    - In an institutional infrastructure (for example university data centre)
    - Self-managed hardware
    - Cloud-based infrastructure
    - I don't know
    - Free text

- Technical robustness/stability

33. Quantitative What is the stability over time presently foreseen for your technical infrastructure?
    - 10 years and more
    - 5 years
    - 2 years or less

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- Impossible to say at this stage
- I don't know
- Free text

34. Quantitative Do you consider the present technical infrastructure and resources adequate?
    - No
    - Yes, at present
    - Yes, but may be inadequate in the future
    - I don't know
    - Free text

35. Quantitative Do you consider that the EPOS service is in a good position (regarding technical aspects, staff…)? (*several choices possible*)
    - For daily operations
    - For adapting to changes in the technical environment (hardware and software)
    - For developing new services
    - I don't know
    - Free text

36. Quantitative For how long has the present technical implementation been running?
    - Not operating
    - Less than 2 years
    - 2-5 years
    - 6-10 years
    - more than 10 years
    - I don't know
    - Free text

37. Quantitative For the EPOS service or an equivalent pre-existing service, for what period of time do you have statistics on service usage?
    - Not operating
    - Less than 2 years
    - 2-5 years
    - 6-10 years
    - more than 10 years
    - I don't know
    - Free text

Training

38. Quantitative What type of trainings would you appreciate to have in EPOS ?
    - Guidelines and training for new service implementation
    - Metadata preparation/update in EPOS-DCAT-AP
    - Testing of ICS Data Portal after metadata updates
    - Usage of ICS Data Portal
    - Guidelines and training for new service implementation
    - Metadata preparation/update in EPOS-DCAT-AP

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- Testing of ICS Data Portal after metadata updates
- Usage of ICS Data Portal
- Free text

- A lot
- Somewhat
- Not needed
- Not relevant

39. Qualitative What other types of training would you appreciate?

Long-term maintenance

Long-term maintenance

40. Quantitative Do you consider that the EPOS service is dependent on a single member of staff?
    - Yes
    - Partly
    - No
    - I don't know
    - Free text

41. Quantitative Do you find it difficult to hire staff with appropriate technical skills?
    - To a great extent
    - Somewhat
    - Very little
    - Not at all
    - I don't know
    - Free text

42. Quantitative In the last 3 years, has your service had to undergo major technical changes to comply with EPOS (not considering minor adaptions)?
    - Yes (please describe in next question)
    - No
    - I don't know
    - Not applicable.
    - Free text

42.B. If previous answer is YES: Describe what major technical changes your service has had to undergo in the last 3 years to comply with EPOS.

43. Quantitative Do you plan any major technical changes for your service over the next 3 years?
    - Yes (please describe in next question)
    - No
    - Not applicable
    - Free text

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43.B. If previous answer is YES: Describe what major technical changes your service plans for the next 3 years.

44. Quantitative Do you consider that there are technical threats to the continuity of the EPOS service (short, medium and long term)?
    - If previous answer is YES: Describe what major technical changes your service plans for the next 3 years.
    - No
    - I don't know
    - Not applicable
    - Free text

44.B. If previous answer is YES: Describe the technical threats to the continuity of the service (short, medium and long term).

EPOS relation

45. Quantitative What could prevent/stop the operation of your EPOS service? (*Multiple choices possible*)
    - Financial issues
    - Technical issues
    - Legal issues
    - Governance issues
    - Administrative issues
    - I don't know
    - Free text

46. Quantitative What support do you need from EPOS ERIC in the short/long run to be able to continue operating your EPOS service? (*Multiple choices possible*)
    - Financial support
    - Technical support
    - Technical expertise
    - Legal support
    - Governance support
    - Administrative support
    - I don't know
    - Free text

47. Qualitative What are your expectations on operating an EPOS service?
    - Free text

48. Quantitative Has EPOS been beneficial for the organisational unit until this date?
    - To a great extent
    - Somewhat
    - Very little
    - Not at all
    - I don't know
    - Free text

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49. Quantitative In which way has EPOS been beneficial?
    - Increased visibility
    - Recurrent funding
    - National project funding
    - European funding
    - Other funding
    - Strengthening of governance structure
    - Other
        - Specify
    - I don't know
    - Free text

50. Qualitative Are there ways in which EPOS ERIC could help increase funding of your EPOS service (whether it is national, project or institutional funding)?
    - Free text

51. Qualitative What could *you* do to support EPOS in general?
    - Free text

52. Qualitative Do you have any other input or information about sustainability?
    - Free text

General feedback about this questionnaire/survey

53. Qualitative Do you have any comments about the questionnaire?

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Annex 2 - EPOS-Service Provider landscape analysis (Google Forms)

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Sustainability survey for EPOS Service Providers

*Required

Objective of the survey

This survey is organized by WP2 (Governance and Financial Framework) and WP8 (Impact on long-term sustainability) within the EPOS SP project (https://epos-eu.org/about/epos-pilot-operational-phase-pop/epos-sustainability-phase-project-2020-2023) with the main aim to collect information about sustainability of services provided to EPOS from service providers.

• Who should fill in the questionnaire?
o EPOS service providers. You will be requested to select one or several services for which you want to provide information. If replies are significantly diverse between the different services, please complete a separate questionnaire for each (group of) service(s). You can change the service selection either by going back to the first page or by completing the whole questionnaire with the option of going back directly to service selection.

• How long is the questionnaire?
o The survey contains 53 questions divided into multiple sections: technical, governance, legal and financial.
o The survey takes about 25-30 minutes to fill in. Consecutive submissions for each service might take less time.

• How will the survey results be used?
o The results will be used within the EPOS SP project for assessing the sustainability of service provision to EPOS. The results will be treated as purely informative and will not be part of the EPOS-ERIC evaluation of each service.

GDPR Statement

This survey is carried out by EPOS ERIC through CNRS, using the technical resources of the University of Bergen (UiB) and Google Forms. The purpose of the survey is to evaluate the sustainability of the service provision within EPOS.

Your replies will be stored and processed by UiB and CNRS for the needs of the EPOS SP project (maximum 5 years). The only personal information that will be stored, is your name, email address and organisation information. They will only be used in order to send feedback on the survey results.

The survey on service provision is intended only for internal use (EPOS ERIC + EPOS SP internal work and participating organisations). The information collected will not be shared with third parties, outside of EPOS. No commercial use will be made of the information.

For more information on the handling of personal data or if you want to delete or rectify the data collected from you, please contact EPOS ERIC or CNRS: management@epos-eric.eu and karin.karlzen@univ-grenoble-alpes.fr.

1. By completing and submitting this questionnaire, I declare consenting to the conditions stated hereunder: *

Tick all that apply.

- [ ] I confirm that I have read and understood the information provided about the survey and have had the opportunity to ask questions.
- [ ] I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my legal rights being affected.
- [ ] I agree to take part in this survey.

Identification of the respondent

2. Organisation country *

3. Organisation web site *

4. First name + surname *

5. Your role within the organisation *

6. Email address *

7. Comments

Here you can provide any comments related to the identification of the respondent.

TCS selection

In this section, you will be asked to select the services concerned by your responses. You can select multiple services, however, if responses are significantly diverse for different services, please fill in the survey once for each (group of) service(s).

8. TCS name *

Mark only one oval.

- ◯ Anthropogenic Hazards *Skip to question 9*
- ◯ Geomagnetic Observations *Skip to question 17*
- ◯ Geological Information and Modeling *Skip to question 13*
- ◯ GNSS Data and Products *Skip to question 21*
- ◯ Multi-scale Laboratories *Skip to question 41*
- ◯ Near-Fault Observatories *Skip to question 25*
- ◯ Satellite Data *Skip to question 29*
- ◯ Seismology *Skip to question 33*
- ◯ Volcano Observations *Skip to question 37*

Identification of the service - AH

9. Name of the service for which the questionnaire is being filled in (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data/search). One can select multiple services if those are provided by the same Service Provider and the answers are same for all. You will be asked again at the end of the survey and the list of services can be updated then. NB. If you don't find your service in the list below, please tick the last box and add information about the survey in a comment after the end of the list.

Tick all that apply.

- [ ] AH - List of episodes
- [ ] AH - List of applications
- [ ] AH - Episode CZORSZTYN: shallow water reservoir - dataset
- [ ] AH - Episode SONG TRANH: deep water reservoir - dataset
- [ ] AH - Episode MONTEYNARD: water reservoir - dataset
- [ ] AH - Episode VAL D'AGRI: water reservoir - dataset
- [ ] AH - Episode VOUGLANS: water reservoir - dataset
- [ ] AH - Episode GROSS SCHOENEBECK: geothermal energy production experiment - dataset
- [ ] AH - Episode SOULTZ-SOUS-FORETS 1993 STIMULATION - dataset
- [ ] AH - Episode SOULTZ-SOUS-FORETS 2000 STIMULATION - dataset
- [ ] AH - Episode SOULTZ-SOUS-FORETS 2003 STIMULATION - dataset
- [ ] AH - Episode THE GEYSERS Prati 9 and Prati 29 cluster: Treated wastewater injection for geothermal power production - dataset
- [ ] AH - Episode THE GEYSERS: geothermal energy production - dataset
- [ ] AH - Episode ST. GALLEN: geothermal project - dataset
- [ ] AH - Episode SOULTZ-SOUS-FORETS 2004 STIMULATION - dataset
- [ ] AH - Episode SOULTZ-SOUS-FORETS 2005 STIMULATION - dataset
- [ ] AH - Episode COOPER BASIN: geothermal energy production - dataset
- [ ] AH - Episode LGCD: regional seismicity and ground motion associating underground hard rock mining - dataset
- [ ] AH - Episode USCB: regional seismicity and ground motion associating underground coal mining - dataset
- [ ] AH - Episode BOBREK MINE: local seismicity linked to longwall mining - dataset
- [ ] AH - Episode PYHASALMI MINE: in situ underground laboratory - dataset
- [ ] AH - Episode GISOS-CERVILLE: underground solution mining - dataset
- [ ] AH - Episode THORESBY COLLIERY: underground coal mining - dataset
- [ ] AH - Episode ASFORDBY: underground coal mining - dataset
- [ ] AH - Episode NORTHWICH: underground salt extraction cavities - dataset
- [ ] AH - Episode PREESALL MINE: underground salt extraction cavities - dataset

- [ ] AH - Episode LACQ GAS FIELD: conventional hydrocarbon extraction - dataset
- [ ] AH - Episode VAL D'AGRI FIELD: conventional hydrocarbon extraction - dataset
- [ ] AH - Episode OKLAHOMA: conventional and unconventional hydrocarbon extraction and wastewater injection - dataset
- [ ] AH - Episode GRONINGEN FIELD: conventional hydrocarbon production - dataset
- [ ] AH - Episode GAZLI: hydrocarbon field - dataset
- [ ] AH - Episode STARFISH: underground gas storage - dataset
- [ ] AH - Episode VAL D'AGRI FIELD: conventional hydrocarbon extraction - dataset
- [ ] AH - Episode OKLAHOMA: conventional and unconventional hydrocarbon extraction and wastewater injection - dataset
- [ ] AH - Episode PREESE HALL: Shale Gas - dataset
- [ ] AH - Episode OKLAHOMA: conventional and unconventional hydrocarbon extraction and wastewater injection - dataset
- [ ] AH - Episode LUBOCINO: Shale Gas - dataset
- [ ] AH - Episode WYSIN: Shale Gas - dataset
- [ ] AH - Episode COTTON VALLEY: hydraulic fracturing - dataset
- [ ] Other service(s).

10. If you are responsible for other major operational services that contribute to EPOS, please list them here. If possible, indicate the DDSS number (see EPOS Costbook).

_____

11. (Please check this box ONLY IN CASE you are adjusting the list of the services after reaching the end of the survey - to be redirected to final check.)

Mark only one oval.

- ( ) I have finished all questions and want to skip to end of the survey
  Skip to question 149

12. Please list the relevant web site(s) for your service(s).

Skip to question 44

Identification of the service - GIM

13. Name of the service for which the questionnaire is being filled in (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data/search). One can select multiple services if those are provided by the same Service Provider and the answers are same for all. You will be asked again at the end of the survey and the list of services can be updated then. NB. If you don't find your service in the list below, please tick the last box and add information about the survey in a comment after the end of the list.

Tick all that apply.

- [ ] GIM - Borehole Discovery Service
- [ ] GIM - Borehole View Service
- [ ] GIM - Geological Map 1:1,000,000 (OneGeology-Europe layer)
- [ ] GIM - Geological Feature Discovery Service
- [ ] GIM - 3D/4D Model View Service
- [ ] GIM - 3D/4D Model Discovery Service
- [ ] GIM - Mine Discovery Service based on Minerals4EU dataset
- [ ] GIM - Mine View Service based on Minerals4EU dataset
- [ ] Other service(s).

14. If you are responsible for other major operational services that contribute to EPOS, please list them here. If possible, indicate the DDSS number (see EPOS Costbook).

15. (Please check this box ONLY IN CASE you are adjusting the list of the services after reaching end of the survey - to be redirected to final check.)

Mark only one oval.

- ( ) I have finished all questions and want to skip to end of the survey
  Skip to question 149

16. Please list the relevant web site(s) for your service(s).

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Skip to question 44

Identification of the service - GEOM

17. Name of the service for which the questionnaire is being filled in (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data/search). One can select multiple services if those are provided by the same Service Provider and the answers are same for all. You will be asked again at the end of the survey and the list of services can be updated then. NB. If you don't find your service in the list below, please tick the last box and add information about the survey in a comment after the end of the list.

Tick all that apply.

- [ ] GEOM - World Data Centre (WDC) Geomagnetic Observatory Station List
- [ ] GEOM - INTERMAGNET Geomagnetic Observatory Data
- [ ] GEOM - World Data Centre (WDC) Geomagnetic Observatory Data
- [ ] GEOM - INTERMAGNET Geomagnetic Observatory Station List
- [ ] GEOM - IMAGE station list
- [ ] GEOM - Magnetometer data of the International Monitor for Auroral Geomagnetic Effects (IMAGE)
- [ ] GEOM - Global geomagnetic survey data collected by the World Data Centre (WDC)
- [ ] GEOM - International Geomagnetic Reference Field (IGRF), global model
- [ ] GEOM - World Magnetic Model (WMM)
- [ ] GEOM - Index data from the International Service for Geomagnetic Indices (ISGI)
- [ ] GEOM - Event data from the International Service for Geomagnetic Indices (ISGI)
- [ ] GEOM - Electrojet indicators for the IMAGE network
- [ ] GEOM - IMAGE station list (electrojet indicators)
- [ ] GEOM - Event indicators for the IMAGE network
- [ ] GEOM - IMAGE station list (electrojet events)
- [ ] GEOM - Magnetotelluric time series
- [ ] GEOM - Magnetotelluric sites view
- [ ] GEOM - Magnetotelluric transfer functions
- [ ] Other service(s).

18. If you are responsible for other major operational services that contribute to EPOS, please list them here. If possible, indicate the DDSS number (see EPOS Costbook).

19. (Please check this box ONLY IN CASE you are adjusting the list of the services after reaching end of the survey - to be redirected to final check.)

Mark only one oval.

- [ ] I have finished all questions and want to skip to end of the survey
  Skip to question 149

20. Please list the relevant web site(s) for your service(s).

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Skip to question 44

Identification of the service - GNSS

21. Name of the service for which the questionnaire is being filled in (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data/search). One can select multiple services if those are provided by the same Service Provider and the answers are same for all. You will be asked again at the end of the survey and the list of services can be updated then. NB. If you don't find your service in the list below, please tick the last box and add information about the survey in a comment after the end of the list.

Tick all that apply.

- [ ] GNSS - Download RINEX file Metadata from EPOS Validated Providers
- [ ] GNSS - List RINEX Files search parameters
- [ ] GNSS - GNSS Stations with RINEX Data
- [ ] GNSS - Raw GNSS Position Time Series from WUT-EUREF Distribuition
- [ ] GNSS - Cleaned GNSS Position Time Series from UGACNRS Distribuition
- [ ] GNSS - Cleaned GNSS Position Time Series from INGV Distribuition
- [ ] GNSS - GNSS Station Velocities from ROB-EUREF Distribuition
- [ ] GNSS - Cleaned GNSS Position Time Series from ROB-EUREF Distribuition
- [ ] GNSS - Cleaned GNSS Position Time Series from LTK Distribuition
- [ ] GNSS - GNSS Station Velocities from LTK-EUREF Distribuition
- [ ] GNSS - Cleaned GNSS Position Time Series from LTK-EUREF Distribuition
- [ ] GNSS - GNSS Station Velocities from ROB-EUREF Distribuition
- [ ] GNSS - Cleaned GNSS Position Time Series from ROB-EUREF Distribuition
- [ ] GNSS - GNSS Station Velocities from LTK- Distribuition
- [ ] GNSS - GNSS Station Velocities from LTK-EUREF Distribuition
- [ ] GNSS - Cleaned GNSS Position Time Series from LTK-EUREF Distribuition
- [ ] GNSS - GNSS Stations with Products
- [ ] GNSS - List Product Download Search Criteria
- [ ] Other service(s).

22. If you are responsible for other major operational services that contribute to EPOS, please list them here. If possible, indicate the DDSS number (see EPOS Costbook).

23. (Please check this box ONLY IN CASE you are adjusting the list of the services after reaching end of the survey - to be redirected to final check.)

Mark only one oval.

- ( ) I have finished all questions and want to skip to end of the survey
  Skip to question 149

24. Please list the relevant web site(s) for your service(s).

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Skip to question 44

Identification of the service - NFO

25. Name of the service for which the questionnaire is being filled in (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data/search). One can select multiple services if those are provided by the same Service Provider and the answers are same for all. You will be asked again at the end of the survey and the list of services can be updated then. NB. If you don't find your service in the list below, please tick the last box and add information about the survey in a comment after the end of the list.

Tick all that apply.

- [ ] NFO - CRL Velocity and Acceleration Waveform - NOA
- [ ] NFO - IRPINIA Velocity and Acceleration Waveform
- [ ] NFO - CRL Velocity and Acceleration Waveform - RESIF
- [ ] NFO - TABOO Velocity and Acceleration Waveform
- [ ] NFO - Vrancea Velocity and Acceleration Waveform
- [ ] NFO - Marmara Velocity and Acceleration Waveform
- [ ] NFO - Vrancea Stations
- [ ] NFO - TABOO Stations
- [ ] NFO - CRL Stations - RESIF
- [ ] NFO - Marmara Stations
- [ ] NFO - IRPINIA Stations
- [ ] NFO - CRL Stations - NOA
- [ ] NFO - TABOO Events
- [ ] NFO - IRPINIA Events
- [ ] NFO - Vrancea Events
- [ ] NFO - CRL Events
- [ ] NFO - IRPINIA Vp/Vs
- [ ] NFO - TABOO Vp/Vs
- [ ] NFO - Vrancea Vp/Vs
- [ ] NFO - Historical earthquakes of interest for the SISZ NFO (FDSN-event)
- [ ] NFO - Historical earthquakes of interest for the Vrancea NFO (FDSN-event)
- [ ] NFO - Historical earthquakes of interest for the MARMARA NFO (FDSN-event)
- [ ] NFO - Historical earthquakes of interest for the VALAIS NFO (FDSN-event)
- [ ] NFO - Historical earthquakes of interest for the CRL NFO (FDSN-event)
- [ ] NFO - Historical earthquakes of interest for the TABOO NFO (FDSN-event)
- [ ] NFO - Historical earthquakes of interest for the IRPINIA NFO (FDSN-event)
- [ ] NFO - Vrancea Rn concentration and local temperature
- [ ] NFO - TABOO Rn concentration and local temperature
- [ ] NFO - TABOO Radon Stations
- [ ] NFO - Vrancea Radon Stations

- [ ] NFO - TABOO Meteo at CO2 site
- [ ] NFO - TABOO CO2 soil dynamic concentration
- [ ] NFO - TABOO CO2 Stations
- [ ] NFO - CRL Strainmeter Waveforms and Water level-pressure Data
- [ ] NFO - CRL Strainmeter Station Information
- [ ] NFO - Vrancea Infrasound Waveform Data
- [ ] NFO - Vrancea Infrasound Station Information
- [ ] Other service(s).

26. If you are responsible for other major operational services that contribute to EPOS, please list them here. If possible, indicate the DDSS number (see EPOS Costbook).

_____

27. (Please check this box ONLY IN CASE you are adjusting the list of the services after reaching end of the survey - to be redirected to final check.)

Mark only one oval.

- ( ) I have finished all questions and want to skip to end of the survey
  Skip to question 149

28. Please list the relevant web site(s) for your service(s).

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Skip to question 44

Identification of the service - SATD

29. Name of the service for which the questionnaire is being filled in (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data/search). One can select multiple services if those are provided by the same Service Provider and the answers are same for all. You will be asked again at the end of the survey and the list of services can be updated then. NB. If you don't find your service in the list below, please tick the last box and add information about the survey in a comment after the end of the list.

Tick all that apply.

- [ ] SATD - Wrapped Interferograms
- [ ] SATD - Spatial Coherence
- [ ] SATD - Unwrapped Interferograms
- [ ] SATD - Map of LOS Vector
- [ ] SATD - Interferogram Atmospheric Phase Screen from Global Atmospheric Model
- [ ] SATD - DEM in radar geometry
- [ ] SATD - Lookup table from radar coordinates to ground coordinates
- [ ] SATD - LOS Displacement Time Series
- [ ] Other service(s).

30. If you are responsible for other major operational services that contribute to EPOS, please list them here. If possible, indicate the DDSS number (see EPOS Costbook).

_____

31. (Please check this box ONLY IN CASE you are adjusting the list of the services after reaching end of the survey - to be redirected to final check.)

Mark only one oval.

- ( ) I have finished all questions and want to skip to end of the survey
  Skip to question 149

32. Please list the relevant web site(s) for your service(s).

Skip to question 44

Identification of the service - SEIS

33. Name of the service for which the questionnaire is being filled in (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data/search). One can select multiple services if those are provided by the same Service Provider and the answers are same for all. You will be asked again at the end of the survey and the list of services can be updated then. NB. If you don't find your service in the list below, please tick the last box and add information about the survey in a comment after the end of the list.

Tick all that apply.

- [ ] SEIS - Seismic waveforms distributed by NOA (National Observatory of Athens, Greece)
- [ ] SEIS - Seismic waveforms distributed by KNMI (ORFEUS Data Center)
- [ ] SEIS - Seismic waveforms distributed by BGR (Federal Institute for Geosciences and Natural Resources, Germany)
- [ ] SEIS - Seismic waveforms distributed by SED/ETHZ (Swiss Seismological Service at ETH Zurich, Switzerland)
- [ ] SEIS - Seismic waveforms distributed by INGV (Italian National Institute of Geophysics and Volcanology)
- [ ] SEIS - Seismic waveforms distributed by KOERI (Kandilli Observatory and Earthquake Research Institute, Turkey)
- [ ] SEIS - Seismic waveforms distributed by UIB-NORSAR (University of Bergen & NORSAR)
- [ ] SEIS - Seismic waveforms distributed by the RESIF Data Center, France
- [ ] SEIS - Seismic waveforms distributed by LMU (Ludwig Maximilian University Munich)
- [ ] SEIS - Seismic waveforms distributed by NIEP (National Institute for Earth Physics, Romania)
- [ ] SEIS - Seismic waveforms distributed by GFZ (German Research Centre for Geosciences)
- [ ] SEIS - Seismic waveforms distributed by EIDA (federated access)
- [ ] SEIS - Quality metrics distributed by UIB-NORSAR (University of Bergen & NORSAR)
- [ ] SEIS - Quality metrics distributed by BGR (German Federal Institute of Geosciences and Natural Resources)
- [ ] SEIS - Quality metrics distributed by INGV (Italian National Institute of Geophysics and Volcanology)
- [ ] SEIS - Quality metrics distributed by RESIF Data Center, France
- [ ] SEIS - Quality metrics distributed by GFZ (German Research Centre for Geosciences)
- [ ] SEIS - Quality metrics distributed by KOERI (Kandilli Observatory and Earthquake Research Institute, Turkey)
- [ ] SEIS - Quality metrics distributed by NIEP (National Institute for Earth Physics)
- [ ] SEIS - Quality metrics distributed by NOA (National Observatory of Athens, Greece)
- [ ] SEIS - Quality metrics distributed by SED/ETHZ (Swiss Seismological Service at ETH Zurich, Switzerland)
- [ ] SEIS - Quality metrics distributed by EIDA (federated access)

- [ ] SEIS - Seismic metadata distributed by BGR (Federal Institute for Geosciences and Natural Resources, Germany)
- [ ] SEIS - Seismic metadata distributed by INGV (Italian National Institute of Geophysics and Volcanology)
- [ ] SEIS - Seismic metadata distributed by KNMI (ORFEUS Data Center)
- [ ] SEIS - Seismic metadata distributed by the RESIF Data Center, France
- [ ] SEIS - Seismic metadata distributed by KOERI (Kandilli Observatory and Earthquake Research Institute, Turkey)
- [ ] SEIS - Seismic metadata distributed by NOA (National Observatory of Athens, Greece)
- [ ] SEIS - Station metadata distributed by GFZ (German Research Centre for Geosciences)
- [ ] SEIS - Seismic metadata distributed by LMU (Ludwig Maximilian University Munich)
- [ ] SEIS - Seismic metadata distributed by NIEP (National Institute for Earth Physics, Romania)
- [ ] SEIS - Seismic metadata distributed by UIB-NORSAR (University of Bergen & NORSAR)
- [ ] SEIS - Seismic metadata distributed by SED/ETHZ (Swiss Seismological Service at ETH Zurich, Switzerland)
- [ ] SEIS - Seismic metadata distributed by EIDA (federated access)
- [ ] SEIS - Engineering Strong-Motion (ESM) Flatfile 2018
- [ ] SEIS - Parameters of modern earthquakes (1998-present) - FDSN event
- [ ] SEIS - Seismic moment tensor data
- [ ] SEIS - Parameters of historical earthquakes (1000-1899) - FDSN event
- [ ] SEIS - Parameters of historical earthquakes (1000-1899) - OGC WFS
- [ ] SEIS - Parameters of historical earthquakes (1000-1899) - OGC WMS
- [ ] SEIS - Felt reports for modern earthquakes (2012-present)
- [ ] SEIS - Macroseismic intensity data for historical earthquakes (1000-1899)
- [ ] SEIS - Fault rupture models (SRCMOD)
- [ ] SEIS - Bibliography for historical earthquakes
- [ ] SEIS - Flinn-EngdSEISl region lookup service
- [ ] SEIS - Seismic Event Identifier mapping service
- [ ] SEIS - European Database of Seismogenic Faults - Crustal Faults (OGC WFS)
- [ ] SEIS - European Database of Seismogenic Faults - Subductions (OGC WFS)
- [ ] SEIS - European Database of Seismogenic Faults (OGC WMS)
- [ ] SEIS - ESHM13 475 yr mean PGA hazard map (OGC WMS)
- [ ] SEIS - USGS Shakemap input files from the RRSM (automatic) database
- [ ] SEIS - USGS Shakemap input files from the ESM (manual) database
- [ ] SEIS - European Exposure Model Level 1 (OGC WMS)
- [ ] SEIS - European Exposure Model Level 0 (OGC WMS)
- [ ] Other service(s).

34. If you are responsible for other major operational services that contribute to EPOS, please list them here. If possible, indicate the DDSS number (see EPOS Costbook).

_____

35. (Please check this box ONLY IN CASE you are adjusting the list of the services after reaching end of the survey - to be redirected to final check.)

Mark only one oval.

- ( ) I have finished all questions and want to skip to end of the survey
  Skip to question 149

36. Please list the relevant web site(s) for your service(s).

_____

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Skip to question 44

Identification of the service - VOLC

37. Name of the service for which the questionnaire is being filled in (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data/search). One can select multiple services if those are provided by the same Service Provider and the answers are same for all. You will be asked again at the end of the survey and the list of services can be updated then. NB. If you don't find your service in the list below, please tick the last box and add information about the survey in a comment after the end of the list.

Tick all that apply.

- [ ] VOLC - Seismic stations Guadeloupe Martinique Reunion
- [ ] VOLC - Seismic waveforms Guadeloupe Martinique Reunion
- [ ] VOLC - Seismic Waveforms Santorini
- [ ] VOLC - Seismic stations Santorini
- [ ] VOLC - GNSS raw data Iceland
- [ ] VOLC - GNSS File Dataset
- [ ] VOLC - GNSS-Dataset
- [ ] VOLC - Tiltmeter waveforms Guadeloupe Martinique Reunion
- [ ] VOLC - Tiltmeters Guadeloupe Martinique Reunion station
- [ ] VOLC - Tide stations Guadeloupe
- [ ] VOLC - Tide waveforms Guadeloupe
- [ ] VOLC - GNSS station list Iceland
- [ ] VOLC - GNSS Station information in Iceland
- [ ] VOLC - Geochemical analysis of melt inclusions from magmatics rocks and gases samples
- [ ] VOLC - Bulk Rock Analysis FileDistribution
- [ ] VOLC - Bulk Rock Analysis WSDistribution
- [ ] VOLC - Geochemical analysis of magmatic rocks from the DYNVOLC database
- [ ] VOLC - Geostationary satellite derived Volcanic Ash and SO2 plumes products
- [ ] VOLC - Geostationary satellite derived Volcanic Thermal Anomalies products
- [ ] VOLC - InSAR Wrapped Interferogram over the Piton de la Fournaise Volcano
- [ ] VOLC - Lava flow contour derived from InSAR data
- [ ] VOLC - Ground based radar data Iceland
- [ ] VOLC - Ground based visible and thermal/IR camera Iceland
- [ ] VOLC - Doppler radar near source eruptive parameters
- [ ] VOLC - Ground based UV spectra (DOAS) Iceland
- [ ] VOLC - OPGC Doppler radar raw spectra
- [ ] VOLC - Reports on volcanic activity Guadeloupe Martinique Reunion
- [ ] VOLC - VONA reports for the Icelandic volcanoes
- [ ] VOLC - Weekly Volcanic Report Italy

- [ ] VOLC - Volcanic activity reports Iceland
- [ ] VOLC - Aviation color codes for Icelandic volcanoes
- [ ] VOLC - Volcano Observatory Notice for Aviation Guadeloupe Martinique Reunion
- [ ] VOLC - Catalogue of Icelandic volcanic eruptions
- [ ] VOLC - Collection of Magmatic Rocks and Samples
- [ ] VOLC - S02 probabilistic hazard maps Iceland
- [ ] VOLC - Susceptibility Maps WSDistribution
- [ ] VOLC - Lava flow invasion hazard maps
- [ ] VOLC - Tephra fallout hazard maps Iceland
- [ ] VOLC - Tephra fallout hazard maps for explosive volcanoes
- [ ] VOLC - PDCs Hazard maps
- [ ] VOLC - Probabilistic Hazard maps
- [ ] VOLC - Guideline on S02 health effects
- [ ] VOLC - Daily ash/gas forecasting Iceland
- [ ] VOLC - Software catalog Italy
- [ ] Other service(s).

38. If you are responsible for other major operational services that contribute to EPOS, please list them here. If possible, indicate the DDSS number (see EPOS Costbook).

_____

39. (Please check this box ONLY IN CASE you are adjusting the list of the services after reaching end of the survey - to be redirected to final check.)

Mark only one oval.

- ( ) I have finished all questions and want to skip to end of the survey
  Skip to question 149

40. Please list the relevant web site(s) for your service(s).

Skip to question 44

Identification of the service - MSL

41. Name of the service for which the questionnaire is being filled in (facet name from EPOS ICS Data Portal https://www.ics-c.epos-eu.org/data/search). One can select multiple services if those are provided by the same Service Provider and the answers are same for all. You will be asked again at the end of the survey and the list of services can be updated then.

42. (Please check this box ONLY IN CASE you are adjusting the list of the services after reaching end of the survey - to be redirected to final check.)

Mark only one oval.

- ( ) I have finished all questions and want to skip to end of the survey
  Skip to question 149

43. Please list the relevant web site(s) for your service(s).

Skip to question 44

General information

44. 1. What is the purpose of the EPOS service? *

Tick all that apply.

- [ ] Service to scientists in academia (data, data products, …)
- [ ] Service to private sector R&D
- [ ] Service for commercial purposes
- [ ] I don't know
- [ ] Other: _____

45. Comment to question above

46. 2. Is EPOS included in your country's National Roadmap for Research Infrastructures? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Part of it
- ◯ There is no National Roadmap in my country
- ◯ I don't know
- ◯ Other: _____

47. Comment to question above

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48. 3. Please indicate the service visibility at the following levels: *

Mark only one oval per row.

	To a great extent	Somewhat	Very little	Not at all	I don't know
International level	◯	◯	◯	◯	◯
European level	◯	◯	◯	◯	◯
National level	◯	◯	◯	◯	◯
Regional level	◯	◯	◯	◯	◯

49. Comments on service visibility

50. 4. Did the service exist before the start of the EPOS IP project (Oct 2015) ? *

Mark only one oval.

- Yes *Skip to question 54*
- No *Skip to question 56*
- I don't know *Skip to question 56*

51. Comments on the existence of the service

52. 5. Do other organisations in your country provide services similar to your EPOS service? *

Mark only one oval.

- Yes
- No
- I don't know
- Other: _____

53. Comment to question above

Skip to question 56

Stability over time

54. 6. Since when does the EPOS service you offer exist? NB. Please interpret "before EPOS" as "before the start of EPOS IP in October 2015". *

Mark only one oval per row.

	Yes, more than 10 years	Yes, about 5 years	Yes, about 1 year	Yes, about 6 months	I don't know	Not applicable
The service existed in exactly the same form before EPOS.						
The service existed in another form before EPOS.						
The service existed as a concept/a plan before EPOS.						

55. Comment to question above

Information about users

56. 7. How many different users does the EPOS service have or foresee to have every year? *

Mark only one oval.

- ◯ less than 10
- ◯ 10 - 100
- ◯ 100 - 1 000
- ◯ 1 000 - 10 000
- ◯ 10 000 - 100 000
- ◯ 100 000 - 1 000 000
- ◯ > 1 000 000
- ◯ I don't know
- ◯ Other: _____

57. Comment to question above

58. 8. How many users from outside of your country does the EPOS service have or foresee to have per year? *

Mark only one oval.

- ◯ less than 10
- ◯ 10 - 100
- ◯ 100 - 1 000
- ◯ 1 000 - 10 000
- ◯ 10 000 - 100 000
- ◯ 100 000 - 1 000 000
- ◯ > 1 000 000
- ◯ I don't know
- ◯ Other: _____

59. Comment to question above

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Amount of data

60. 9. What is the volume of data shipped or foreseen to be shipped yearly by the EPOS service (order of magnitude)? If you reply for several services, please indicate the highest volume. *

Mark only one oval.

- ◯ kB
- ◯ MB
- ◯ GB
- ◯ TB
- ◯ I don't know
- ◯ Other: _____

61. Comment to question above

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62. 10. How many data and metadata requests does the EPOS service get/foresee per year? *

Mark only one oval.

- 1-100
- 100-1 000
- 1 000-10 000
- 10 000-100 000
- 100 000-1 000 000
- > 1 000 000
- I don't know
- Other: _____

63. Comment to question above

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Linkage to research

64. 11. Is the EPOS service linked to the research priorities in your country? *

Mark only one oval.

- Yes
- No
- No national research priorities formally or informally defined
- I don't know
- Other: _____

65. Comment to question above

66. 12. Is the EPOS service well known by national researchers? *

Mark only one oval.

- To a great extent
- Somewhat
- Very little
- Not at all
- I don't know
- Other: _____

67. Comment to question above

Data provision sustainability

68. 13. Do you foresee major problems in data provision over the next 5-10 years? *

Mark only one oval.

- Not at all
- Somewhat
- To a great extent
- I don't know
- Other: _____

69. Comment to question above

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70. 14. What do you consider to be the highest risk to data provision?

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Governance

71. 15. Which is the organisational framework that operates the EPOS service? *

Mark only one oval.

- Dedicated legal body
- National Consortium
- Part of service portfolio of a Community legal body
- Department in an institution
- An informally organised activity in an institution
- Dedicated organisation that is not a legal body
- Part of a service portfolio of an organisation that is not a legal body
- Informal partnership between organisations
- I don't know
- Other: _____

72. Comment to question above

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73. 16. Do you consider the governance of the organisational framework as stable? *

Mark only one oval.

- Yes
- No
- Partly
- I don't know
- Other: _____

74. Comment to question above

75. 17. For how long has the organisational framework (see question 15) had its present form? *

Mark only one oval.

- Less than a year
- 1-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- For longer
- I don't know
- Other:

76. Comment to question above

77. 18. Do you consider that your EPOS service has adequate administrative support, considering resources and skills? *

Mark only one oval.

- ◯ Yes
- ◯ No
- ◯ Partly
- ◯ I don't know
- ◯ Other: _____

78. Comment to question above

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79. 19. Do you consider that your EPOS service has a sufficient level of support from the immediate hierarchy of the organisation that hosts the service? *

Mark only one oval.

- ◯ Yes
- ◯ Partly
- ◯ No
- ◯ I don't know
- ◯ Other: _____

80. Comment to question above

Financial sustainability

81. 20. What is the dominant funding mechanism (foreseen or existing) of the EPOS service? *

Tick all that apply.

- [ ] Institutional funding
- [ ] Project funding
- [ ] Recurrent from ministry
- [ ] Recurrent commercial activity
- [ ] EPOS funding
- [ ] Other additional funding
- [ ] I don't know

Other: [ ]

82. Comment to question above

83. 20.B. In case of project funding (previous question), what is the level?

Tick all that apply.

- [ ] National
- [ ] Regional
- [ ] EU
- [ ] Private
- [ ] Other: _____

84. Comment to question above

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85. 21. Regarding the dominant funding mechanism, is the recurrent budget that funds your EPOS service annual or multi-year? *

Tick all that apply.

- [ ] Annual
- [ ] I don't know
- [ ] Not applicable (new services)
- [ ] Multi-year (please specify for how many years below)
- [ ] Other: _____

86. Comment to question above

87. 22. Are there changes to be expected in your EPOS service's funding scheme in the next 5 years (no matter the source)? *

Mark only one oval.

- No
- I don't know
- Yes (please specify which ones below)

88. 22.B. What changes are to be expected in your EPOS service's funding scheme in the next 5 years (no matter the source)?

89. Comment to questions above

90. 23. Has the funding of your EPOS service been adequate during the last 3 years? *

Mark only one oval.

- ◯ Fully
- ◯ Partly
- ◯ Not at all
- ◯ I don't know
- ◯ Not applicable (new services)
- ◯ Other: _____

91. Comment to question above

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92. 24. Has the stability of the funding scheme of your EPOS service been adequate during the last 3 years? *

Mark only one oval.

- ◯ Fully
- ◯ Partly
- ◯ Not at all
- ◯ I don't know
- ◯ Not applicable (new services)
- ◯ Other: _____

93. Comment to question above

94. 25. How do you foresee the financial risks for your EPOS service in the future (next 5 years)?

Mark only one oval.

- ◯ They will increase
- ◯ They will remain the same
- ◯ They will decrease
- ◯ I don't know
- ◯ Other: _____

95. Comment to question above

96. 26. For existing services: How big is the additional cost of running it as an EPOS service? *

Mark only one oval.

- ◯ <10 %
- ◯ 10-30 %
- ◯ 31-50 %
- ◯ 51-70 %
- ◯ 71-90 %
- ◯ >90 %
- ◯ I don't know
- ◯ Other: _____

97. Comment to question above

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98. 27. Over the previous 3 years, what percentage of staff costs to run the EPOS service is covered by project or other temporary funding? *

Mark only one oval.

- ◯ <10 %
- ◯ 10-30 %
- ◯ 31-50 %
- ◯ 51-70 %
- ◯ 71-90 %
- ◯ >90 %
- ◯ I don't know
- ◯ Other: _____

99. Comment to question above

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100. 28. How strong is your dependency on EPOS ERIC funding to run your EPOS service? *

Mark only one oval.

- ◯ Very strong
- ◯ Moderate
- ◯ Weak
- ◯ Absent
- ◯ I don't know
- ◯ Other: _____

101. Comment to question above

102. 29. Which actions are presently ongoing to ensure funding for the EPOS service?

103. 30. Do you have enough staff to run the EPOS service? *

Mark only one oval.

- Yes
- No
- Partly
- I don't know
- Other: _____

104. Comment to question above

Technical sustainability

105. 31. How is your technical infrastructure hosted? *

Tick all that apply.

- [ ] As part of a local or regional infrastructure (for example a regional data centre)
- [ ] As part of a national infrastructure
- [ ] As part of an institutional infrastructure (for example a university data centre)
- [ ] Self-managed hardware
- [ ] Cloud-based infrastructure
- [ ] I don't know
- [ ] Other: _____

106. Comment to question above

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107. 32. What is the stability over time presently foreseen for your technical infrastructure, with regards to the technical solutions? *

Mark only one oval.

- ◯ 10 years and more
- ◯ 5 years
- ◯ 2 years or less
- ◯ Impossible to say at this stage
- ◯ I don't know
- ◯ Other: _____

108. Comment to question above

109. 33. Do you consider the present technical infrastructure and resources adequate? *

Mark only one oval.

- ◯ No
- ◯ Yes
- ◯ Yes, but may be inadequate in the future
- ◯ I don't know
- ◯ Other: _____

110. Comment to question above

111. 34. Do you consider that the EPOS service is in a good state (regarding technical aspects, staff...)? *

Tick all that apply.

- [ ] For daily operations
- [ ] For adapting to changes in the technical environment (hardware and software)
- [ ] For developing new services
- [ ] I don't know
- [ ] Other: _____

112. Comment to question above

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113. 35. For how long has the present technical implementation (architecture, software...) been running? *

Mark only one oval.

- ◯ Not operating
- ◯ Less than 2 years
- ◯ 2 - 5 years
- ◯ 6 - 10 years
- ◯ More than 10 years
- ◯ I don't know
- ◯ Other: _____

114. Comment to question above

115. 36. For the EPOS service or an equivalent pre-existing service, for what period of time do you have statistics on service usage? *

Mark only one oval.

- Not operating
- Less than 2 years
- 2 - 5 years
- 6 - 10 years
- More than 10 years
- I don't know
- Other: _____

116. Comment to question above

117. 37. What type of training would you and your staff appreciate to have in EPOS? *

Mark only one oval per row.

	A lot	Somewhat	Not needed	Not relevant
Guidelines and training for new service implementation				
Metadata preparation/update in EPOS-DCAT-AP				
Testing of ICS Data Portal after metadata updates				
Usage of ICS Data Portal				

118. Comment to question above

119. 38. What other types of training would you appreciate?

Long-term maintenance

120. 39. Do you consider that the EPOS service is dependent on a single member of staff? *

Mark only one oval.

- ◯ Yes
- ◯ Partly
- ◯ No
- ◯ I don't know
- ◯ Other: _____

121. Comment to question above

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122. 40. Assuming the budget is available, do you find it difficult to hire staff with appropriate technical skills? *

Mark only one oval.

- ◯ To a great extent
- ◯ Somewhat
- ◯ Very little
- ◯ Not at all
- ◯ I don't know

123. Comment to question above

124. 41. In the last 3 years, has your service had to undergo major technical changes to comply with EPOS (not considering minor adaptions)? *

Mark only one oval.

- ◯ No
- ◯ I don't know
- ◯ Not applicable
- ◯ Yes (please describe in next question)
- ◯ Other: _____

125. Comment to question above

126. 41.B. If previous answer is YES: Describe what major technical changes your service has had to undergo in the last 3 years to comply with EPOS.

127. Comment to question above

128. 42. Do you plan any major technical changes for your service over the next 3 years? *

Mark only one oval.

- No
- I don't know
- Not applicable
- Yes (please describe in next question)

129. 42.B. If previous answer is YES: Describe what major technical changes your service plans to do in the next 3 years.

130. Comment to question above

131. 43. Do you consider that there are technical threats to the continuity of the EPOS service (short, medium and long term)? *

Mark only one oval.

- No
- I don't know
- Not applicable
- Yes (please describe in next question)

132. 43.B. If previous answer is YES: Describe the technical threats to the continuity of the service (short, medium and long term).

133. Comment to questions about technical threats above

Overall vision and EPOS relation

134. 44. What do you consider to be the major risks to the sustainability of your EPOS service? *

Tick all that apply.

- [ ] Financial issues
- [ ] Technical issues
- [ ] Legal issues
- [ ] Governance issues
- [ ] Administrative issues
- [ ] Data provision issues
- [ ] I don't know

Other: [ ] _____

135. Comment to question above

136. 45. How do you manage the risks for your service(s)?

Mark only one oval.

- ◯ Single risk management plan
- ◯ Risk management plan for some of the risks
- ◯ Other: _____

137. Comment to question above

138. 46. What support do you need from EPOS ERIC in the short/long run to be able to continue operating your EPOS service? *

Tick all that apply.

- [ ] Financial support
- [ ] Technical support
- [ ] Technical expertise
- [ ] Legal support
- [ ] Governance support
- [ ] Administrative support
- [ ] I don't know

Other: [ ] _____

139. Comment to question above

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140. 47. What are your expectations on benefits and downsides of operating an EPOS service?

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141. 48. Has EPOS been beneficial for the organisational unit until this date? *

Mark only one oval.

- ◯ To a great extent
- ◯ Somewhat
- ◯ Very little
- ◯ Not at all
- ◯ I don't know
- ◯ Other: _____

142. Comment to question above

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143. 49. In which way has EPOS been beneficial? *

Tick all that apply.

- ☐ Increased visibility
- ☐ Recurrent funding
- ☐ National project funding
- ☐ European funding
- ☐ Other funding
- ☐ Strengthening of governance structure
- ☐ I don't know

Other: ☐ _____

144. Comment to question above

145. 50. Are there ways in which EPOS ERIC could help increase funding of your EPOS service (whether it is national, project or institutional funding)?

146. 51. Is there anything you could do to support EPOS sustainability in general?

147. 52. Do you have any other input or information about sustainability?

General feedback about this questionnaire/survey

148. 53. Do you have any comments about the survey?

Final check

Please make sure that all answers are applicable to all of the services that you selected in section "Identification of the service". If this is not the case, please go back to that section and select only those services for which all answers are the same. Please fill in a new survey for any service(s) where answers are different.

149. Do you want to go back to "Identification of the services"?

Mark only one oval.

- Yes *Skip to question 8*
- No, submit the survey