

## EPOS SP – Grant Agreement n. 871121

### D8.3 - Report on identification of critical issues for sustainability

#### Document Information Summary

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## Executive Summary

Within EPOS SP, WP8 is the Work Package dedicated to long-term sustainability of the EPOS Research Infrastructure, and its task 8.2 has as its objective to investigate critical risks towards sustainability and to suggest actions for limiting and managing such risks. The current deliverable marks the end of the first phase of work of the task, where the most important actions were two rounds of meetings with the EPOS SP Work Packages, and input from them through specific forms. This work led to the first identification of risks to EPOS long-term sustainability and offered initial ideas about possible mitigation actions for limiting risks and contingency plans for limiting the impact. WP8 also achieved the introduction of the streamlining of the sustainability perspective within EPOS SP and created an understanding for the differentiation of, on one hand, risks within EPOS SP, that also needs to be handled within the project, and, on the other, risks to EPOS ERIC long-term sustainability, the core activity of WP8.

During the work of task 8.2, some important conclusions were made, that will provide guidance for the upcoming work within WP8. First, on a strategical level that led to changes in the WP8 roadmap and timeline, the scope of the task was enlarged by extending the group that will have in-depth interaction with WP8 with stakeholders from the EPOS Delivery Framework. This decision was validated by the Executive Board and will lead to a more complete analysis of the risk situation. Further, it was concluded that close cooperation between task 8.2 and the EPOS ERIC Executive and Coordination Office (ECO) as well as with WP2 is of high importance for achieving lasting results. This will be facilitated by the dynamic created with the Work Packages and within the Executive Board during the first phase of task 8.2. Another conclusion was the need to link the work of task 8.2 to the risks to EPOS service and data provision mapped by the surveys carried out within tasks 2.2 and 8.1.

In the upcoming phase of task 8.2 (September 2021-July 2022), the work continues by opening the discussion on risks to the EPOS Delivery Framework stakeholders and by taking the analysis from the first phase one step further. The final outcome will be the definitive list of risks to long-term sustainability, accompanied by suggestions for concrete mitigations actions, as well as contingency plans, to be delivered in D8.4 together with the EPOS register for long-term risks. This will be made possible by the fact that WP8 laid the necessary foundations for the next steps and the deepening of the analysis during the first phase of task 8.2. The conclusions of task 8.2 will also be incorporated in D8.5, the EPOS Long-term Sustainability Plan.

## 1. Introduction

EPOS has been designed and constructed during over more than a decade and as it moves into the operational phase, it is crucial to consider how it can remain sustainable in the long-term. The overall objective of the EPOS Sustainability Phase (EPOS SP) project is to consolidate the sustainability of the EPOS Research Infrastructure and its integrated services through targeted actions. Within EPOS SP, Work Package 8, with the title *Impact on long-term sustainability*, is the Work Package (WP) with the most long-term time perspective. It shall collect and assemble the input on sustainability issues from the thematic WP:s in order to deliver a Sustainability Plan that should cover the whole of the EPOS Delivery Framework, including EPOS ERIC and the Integrated Core Services (ICS), the Thematic Core Services (TCS) and the data provision. The ambition is that D8.5, the EPOS Long-term Sustainability Plan becomes the EPOS ERIC sustainability plan for the period 2023-2028.

The Executive Board, upon proposal from the WP8 leader, has decided that initially, the time perspective will be five years from the end of EPOS SP, meaning from 2023 until 2028. EPOS has the ambition to operate for much longer and tools that are put into place should ideally continue to be functional in a more extended timeframe, but for the sake of EPOS SP and for measuring the effects of actions taken, the five-year perspective is applied. In 2028, the current strategies and actions accomplished will have to be re-evaluated. This context explains why there is a specific task that manages risks to sustainability within EPOS SP WP8 and why it cannot be included in the already ongoing risk work (on EPOS SP and EPOS ERIC level, respectively), where the specific long-term perspective is lacking.

WP8 is constructed as a transversal WP so that it can apply a holistic view on EPOS sustainability and tackle all aspects of sustainability. It will build on the outcomes of WP2-WP7, so continuous and efficient interaction with all WP teams is essential. Smooth cooperation with the EPOS ERIC Executive and Coordination Office (ECO) and the different actors within the Delivery Framework is however as important. Being the centre for the project's sustainability work, WP8 also aspires to raise awareness about the sustainability issue more generally across EPOS and EPOS SP with the aim to streamline a sustainability perspective in all work.

To achieve this goal, WP8 is made up of with three different tasks (8.1, 8.2 and 8.3) where the first two represent stepping stones towards the third one, intended to deliver the Long-term Sustainability Plan, key deliverable of EPOS SP. Task 8.1 deals with the sustainability of data provision and preservation and task 8.2 concerns the identifying of critical risks and solutions for sustainability. The two tasks deliver information and conclusions to task 8.3, that will mainly operate during the last year of EPOS SP and deliver the project-wide sustainability plan that will accompany EPOS ERIC during several years. The plan, as the rest of the sustainability actions created through EPOS SP, will focus on the challenge of escorting EPOS from a project mode to an operational mode.

Long-term sustainability is the most challenging target for all research infrastructures, including European Research Infrastructure Consortia (ERICs) like EPOS. The typology of the RI in this context is decisive; the challenges are not the same if it is single-sited, distributed or virtual. There are however some common features. Long-term sustainability concerns everything that allows a RI to stand on its own and remain operational after the end of project funding. Sustainability is not solely financial and conditional upon stable funding, even though this is a fundamental aspect. The concept can be said to build upon a few fundamental pillars, being the financial, governance/legal and technical dimensions, but it is equally influenced by factors such as cooperation with other research infrastructures, exchanges with industry, scientific relevance,

international reach, data preservation, user engagement, innovation capacity, outreach, staff training, etc.<sup>1</sup> As formulated within EPOS SP<sup>2</sup>, and inspired by the ESFRI Long-Term Sustainability Recommendations<sup>3</sup>, a sound sustainability policy should provide a good structure and long-term resources for operation. This, in turn, demands a complex synergy with different actions dedicated to:

- Securing governance and financial sustainability.
- Securing technical sustainability and developing innovation to exploit data and service provision fully.
- Establishing and maintaining excellence by preserving and reinforcing the trust and awareness of users.
- Exploiting economic and societal benefits to keep stakeholders engaged.

Since the sustainability concept in the framework of an RI is necessarily broad the sustainability work within EPOS SP is approached from a multifaceted point of view. Even though EPOS has similarities with other RI:s, the fact that it is a distributed RI on a very large scale makes it stand out in terms of structural challenges that need to be addressed. The approach to sustainability needs to be adapted to the EPOS technical architecture, financial model and governance structure, across the entire EPOS Delivery Framework, which reaches wider than the activities of EPOS ERIC. It can also be pointed out that EPOS will change during its life span, which makes it necessary to include this adaptability as part of the sustainability strategy.

Task 8.2, the task within which the current deliverable has been created, revolves around the *risks* to EPOS sustainability and the possible *actions* to mitigate them. Task 8.2 adopts a practical approach to risks with an objective of defining concrete solutions, and follows the joint strategy established at the EPOS SP Executive Board level. Input on risks will be provided through direct interaction with each WP and through meetings with actors within the EPOS Delivery Framework, including the TCS. Risks related directly to EPOS SP actions and objectives, i.e. risks to the EPOS SP project, and managed by the EPOS SP Project Management Office are excluded from the scope of task 8.2. The work in WP8 is carried out with the assumption that all EPOS SP actions will be successful and all EPOS SP objectives reached; the objective is to foresee the risks that will remain despite the presumed success of EPOS SP.

The current document, D8.3, is the first deliverable from task 8.2 and it will focus on the in-depth input from the WP:s provided during two rounds of meetings organised in 2020 and 2021. In the second and final report, D8.4, task 8.2 will continue where D8.3 ends, enlarge the scope and include the perspective of all key EPOS actors from the Delivery Framework. In addition to this material, task 8.2 will work on the basis of the outcomes of the service provider survey (task 2.2) and the data provider survey (task 8.1), both included in the WP2 landscape analysis, as well as develop a long-term sustainability version of the present EPOS risk register and make projections of how it will evolve during EPOS SP, in order to deliver a final version to include in D8.4.

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<sup>1</sup> Sustainable European research infrastructures, A call for action, Directorate-General for Research and Innovation (European Commission), 2017, [https://ec.europa.eu/info/sites/default/files/research\\_and\\_innovation/research\\_by\\_area/documents/swd-infrastructures\\_323-2017.pdf](https://ec.europa.eu/info/sites/default/files/research_and_innovation/research_by_area/documents/swd-infrastructures_323-2017.pdf)

<sup>2</sup> EPOS SP deliverable D9.2, June 2021

<sup>3</sup> ESFRI Scripta Vol2: Long-Term Sustainability of Research Infrastructures, 2017, [https://www.esfri.eu/sites/default/files/ESFRI\\_SCRIPTA\\_SINGLE\\_PAGE\\_19102017\\_0.pdf](https://www.esfri.eu/sites/default/files/ESFRI_SCRIPTA_SINGLE_PAGE_19102017_0.pdf)

## 2. Establishing a Roadmap for Task 8.2

Sustainability and the risks to it is a very vast subject and also of high strategic importance for EPOS. While the objectives of task 8.2 were clear from the very beginning, there was no predefined working method. It was essential but challenging to find a suitable methodology and roadmap of actions, since it would be decisive for successfully carrying out the task, in collaboration with many EPOS instances and actors. One first important step was the division of the task work in two different work phases. The first one should last until the submission of the current deliverable in month 18 of the project (July 2021) while the second phase will start in September 2021 and last until the submission of the second and final deliverable D8.4 in month 30 (July 2022). The description of the work scheduled during the second phase can be found in section 6.

Task 8.2 participants observed that there was an important need to regularly ensure that it had the support of the Executive Board and the EPOS ERIC Executive and Coordination Office (ECO) and also to finetune the chosen strategies with WP2. Therefore, meetings were held regularly both at the beginning of the first phase of the task and as the work progressed. These encounters will continue until the delivery of the final deliverable. An overview of the first phase work, coordination meetings during the first 18 month of the project, as well as the work meetings within task 8.2 can be found in figure 1.

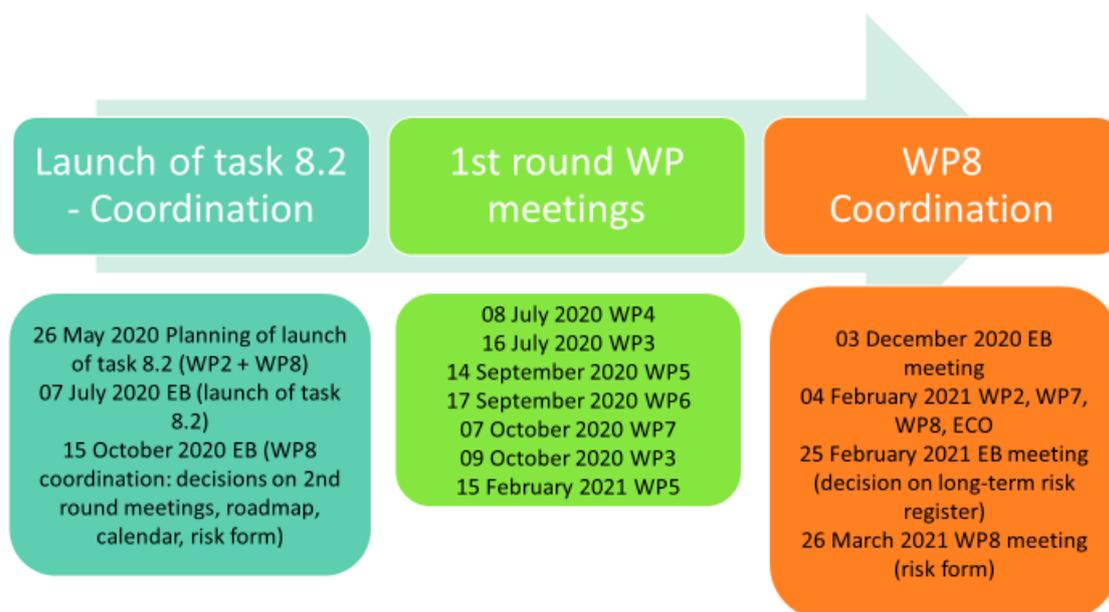




Figure 1: Overview of meetings organised by WP8 and meetings of EPOS SP in which WP8 contributed directly with agenda points and discussions.

Task 8.2 will collect input on risks through direct interaction with each WP. This follows the rationale behind the EPOS SP WP structure (figure 2), which is organised according to the different main topics that are essential for developing and maintaining long-term sustainability. The success of EPOS depends on that of all the different pieces and it is indeed within the WP:s that the core subjects related to sustainability are already being discussed and developed in different forms. This means that part of the task 8.2 work will consist of collecting the results achieved within the actions of each WP, with additional discussions on sustainability in a more unrestricted way. The collection of input from WP:s has been done in two rounds of one-to-one meetings, the first round being mostly an introduction of the sustainability work and a presentation of the WP8 work and the second round being an in-depth and concrete discussion on risks.

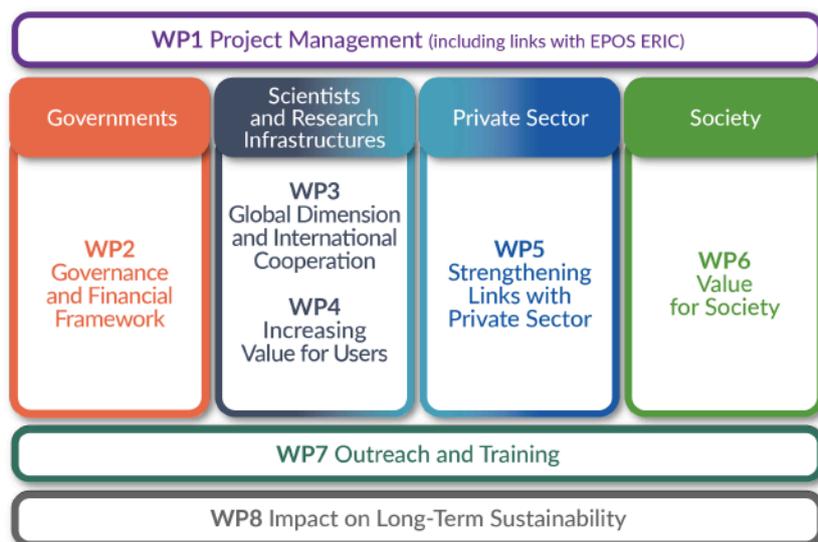


Figure 2: Overview of EPOS SP Work Packages. Note that while WP7 is a transversal work package, it also contributes to WP8.

While defining the methodology of task 8.2, it was established that risks related directly to EPOS SP actions and objectives are excluded from the scope of task 8.2 – only risks to EPOS long-term sustainability are relevant. The work in WP8 is carried out with the assumption that all EPOS SP actions will be successful and all EPOS SP objectives reached; the objective is to imagine the risks that will remain despite them.

The work described briefly above will allow WP8 to identify critical risks that may affect the long-term sustainability of EPOS, as well as mitigation actions and contingency plans. The outcome of task 8.2 will however not be reduced to a listing of the input from the different EPOS and EPOS SP actors; WP8 will take the work one step further by conducting a proper analysis of the situation in order to pave the way for the writing of the Long-term Sustainability Plan and also identify risks that are not natural outcomes of WP2-WP7. Some of the risks to sustainability are already known, in particular financial risks, but task 8.2 aims at providing a holistic, formalised and in-depth view on such risks and their inter-dependencies.

## 2.1 Challenges for the task 8.2 Roadmap

Within task 8.2, regarding the construction of the methodology as well as during the practical work, there were a number of challenges to be taken into consideration. First of all, the responsibility of WP8 is considerable, both because of the scope of its work and the importance of the outcome. Indeed, WP8 is the WP that should unite all the outcomes of the other WP:s, treat the entire spectre of sustainability and create the most important deliverable of EPOS SP, the Long-term Sustainability Plan.

A considerable difficulty is that while the tasks in each WP are aimed at enhancing EPOS sustainability, the definition and production of input to WP8 is not part of the Description of Action (DoA) for them. There were also aspects of WP8 work that were not foreseen in the DoA and where the planning had to be adapted to the current needs of EPOS SP. In particular, the practical communication channels had not been established. An unforeseen difficulty is that the participants in WP8 are in practice the WP8 leader (CNRS) and the WP leader of each WP. This means that WP8 meetings have the same participants (except for WP1) as the meetings of the Executive Board, but the Executive Board meetings are organised by WP1 and dedicated to the EPOS SP project as a whole. Developing an efficient methodology, and ensuring that defining the input from each WP, in spite of this activity not being part of the DoA, enters the work programme of each WP, occupied quite a large part of the first phase of the task 8.2 work. Another unforeseen element is the enlargement of the audience for the input to WP8, where the Delivery Framework actors are now included. According to the DoA, task 8.2 should only interrogate WP:s. During the initial work of the task and more generally working on sustainability issues within the project during its first year, it became clear that it would be both useful and necessary to enlarge the scope of the discussions on sustainability. It was therefore decided by WP8 together with the EPOS ERIC Executive and Coordination Office (ECO) to include in the process stakeholders that are not directly connected to EPOS SP, but belong to the larger sphere of the EPOS Delivery Framework (see figure 3).

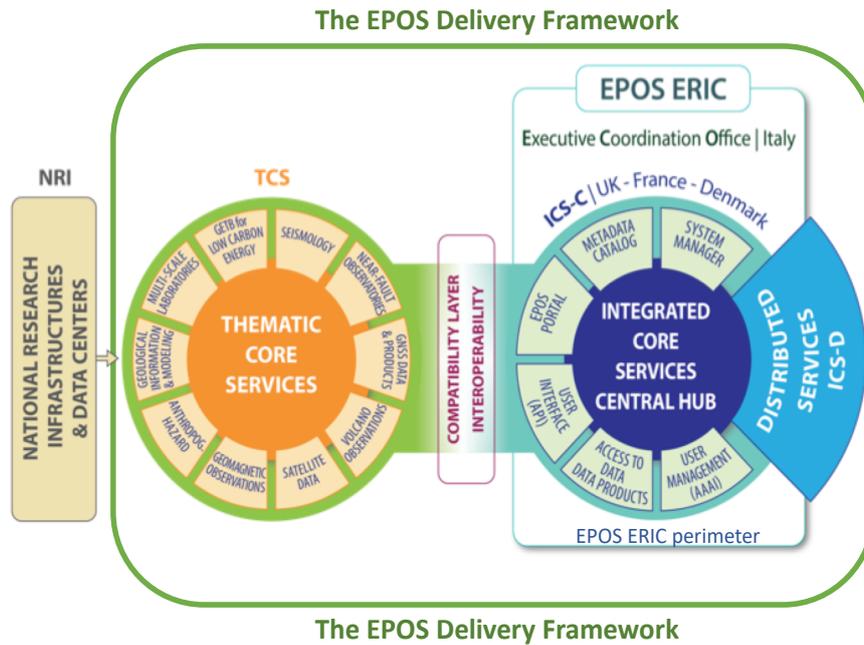


Figure 3: the EPOS Architecture. National Research infrastructures provide Data and Data products to EPOS Thematic Core Services (TCS) which operate the thematic services for their community and make DDSS (Data, Data Products, Software and Services) available to their community through dedicated portals and through the EPOS Integrated Core Services (ICS), which are governed by the EPOS ERIC, daily operated through the Executive Coordination Office.

The first group of interaction outside EPOS SP are related to the EPOS ERIC Executive Coordination Office: the Executive Director, the different EPOS officers and the EPOS management and administrative staff. The second group is made up of those related to the “EPOS communities” and who are fundamental for the operation of EPOS: the ICS, and the TCS, all represented in the EPOS Service Coordination Committee. Finally, WP8 reaches out also to the National Research Infrastructures (through task 8.1), which are not part of the EPOS Delivery Framework, but on which the entire Data (and partly Data Products) provision rely. This modified scheme for collecting input on risks is illustrated in figure 4, which also illustrates the place of WP8 in terms of interaction with groups within the EPOS landscape.

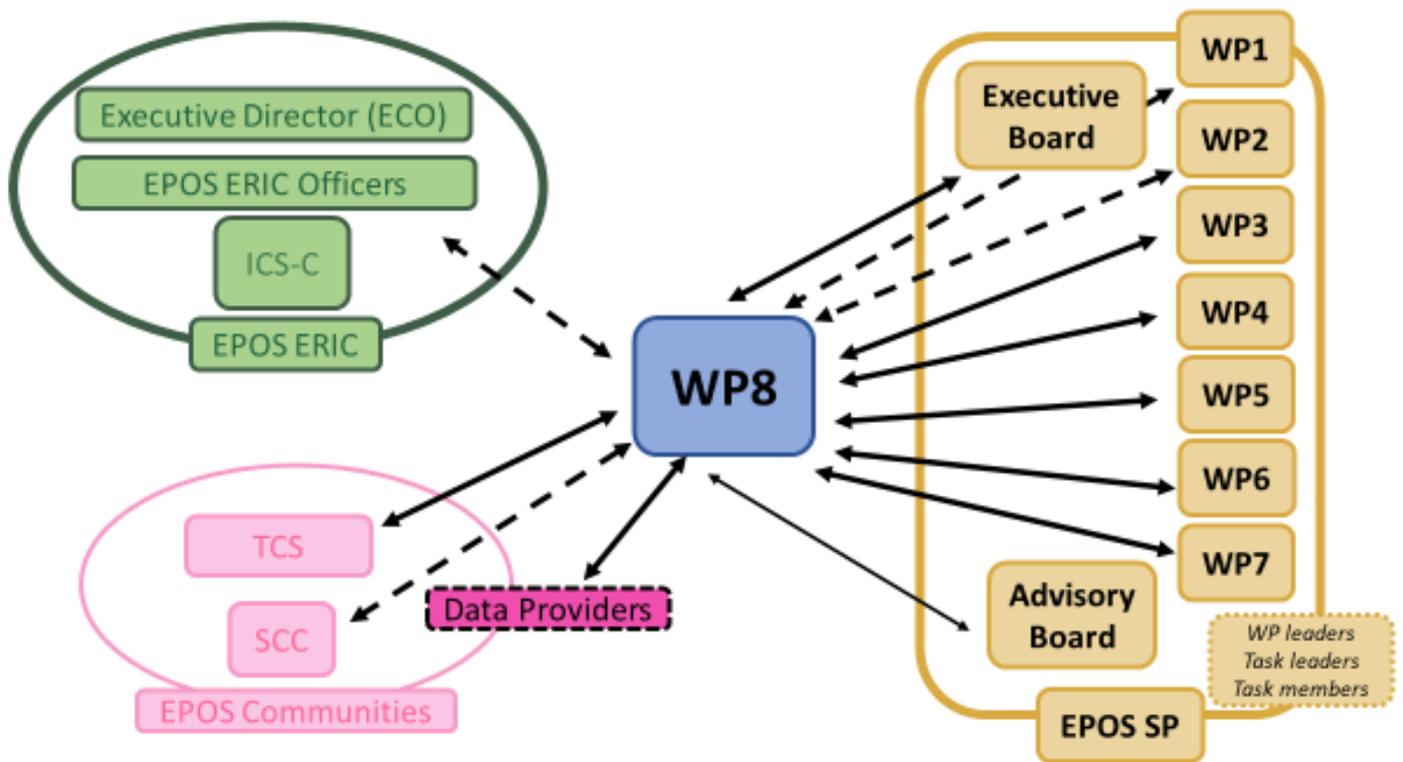


Figure 4: Overview of the input from EPOS SP, EPOS ERIC and the Delivery Framework to WP8.

By including the perspectives of persons that are engaged in EPOS key components, it will be possible to obtain a more complete picture of the risk situation; this is key input for preparing the EPOS Sustainability Plan. In practice, this means that the process for collecting input will concern also EPOS actors in their roles of for example ICS-C director, IT board chair, etc. The WP:s of EPOS SP will disappear as soon as the project ends whereas the persons having responsibilities will remain and thus be part of the solutions post 2023. This change does not only implicate a larger number of persons providing their input on risks to sustainability but equally an enlargement with regard to the subjects covered by the process, since all EPOS-related subjects are not covered by EPOS SP. The complete list of the internal stakeholders to include in the discussions can be found in section 6.

WP8 also observed early on that there was a need to raise awareness about long-term sustainability generally within EPOS SP, as the risk was otherwise to focus only on the short-term project objectives. Since a streamlining of the long-term perspective is a necessary condition for concrete on risks to long-term sustainability, this finding was incorporated in the coordination work and included in the methodology.

### 3. Current risk management within EPOS

An active approach to risk management has been taken throughout the existence of EPOS. Currently, there are processes on different levels for identifying and managing risks but the tools used are often quite similar.

In this deliverable, there will be a distinction made between risks that concern only the activities and objectives of the EPOS SP project, the ones that concern EPOS ERIC (though often linked to EPOS SP) and the main objective of task 8.2, the risks to EPOS long-term sustainability.

NB. Within the current deliverable, three different risk registers are discussed, that all use the same interface and terminology:

**The EPOS SP risk register (register A):** Concerns risks within EPOS SP (2020-2023) and towards project objectives. Responsibility of WP1/EPOS SP Project Management Office (PMO).

**The EPOS ERIC risk register (register B):** Covers risks related to EPOS ERIC and the Delivery Framework. Monitored and managed by the EPOS ERIC Executive and Coordination Office (ECO). The time perspective for the EPOS ERIC risk register is roughly the same as for the EPOS SP risk register. Has the aim of accompanying the transition from EPOS implementation to EPOS operation.

**The EPOS register for long-term risks:** Developed by task 8.2 and covers risks to EPOS sustainability in a long-term perspective (for a start 2023-2028). Currently, only a draft version (register C) exists, that will be finalised in 2022 and should evolve into the EPOS ERIC long-term risk register (register D).

### 3.1 Risk management within EPOS SP – The EPOS SP risk register (register A)

The risks within EPOS SP are the ones that exist currently or that will jeopardise the success of the EPOS SP activities before the end of the project (2023). The responsibility of mapping these risks lies on WP1 and its leader, the EPOS SP Project Management Office (PMO), while the risks are also monitored by project organs: the Executive Board and the Project Council, with advice from the Advisory Board.

The main tool for monitoring risks is the EPOS SP Risk register (register A), a document that is updated regularly by the EPOS SP Project Management Office with input from WP:s. The first official version can be found in deliverable D1.2 from April 2020. It contains a list of the known risks to the successful implementation of EPOS SP, the proposed mitigation actions, indications of the likelihood of occurrence and the expected impact if the risk materialises, as well as information from the WP:s on the application of risk-mitigation measures, the materialisation for the risk and the eventual contingency plan. The register is accompanied by a heat map that represents the risks in a visual manner that allows for clearly distinguishing the ones that need to be managed more closely. The heat map is also a practical tool for highlighting the development over time.

### 3.2 Risk management on the EPOS ERIC level – the EPOS ERIC risk register (register B)

The risks related to EPOS ERIC and the Delivery Framework are managed in a separate process to the EPOS SP risks. The risks are grouped after the different objectives for EPOS ERIC work: finalize ICS-C hosting, establish TCS Governance and Coordination, enable TCS Data and Service Provision, implement and Establish TNA Coordination and Provision, foster IT Development of the TCS-ICS System and harmonization of National Strategies. There is also a group that concerns the exploiting EPOS SP Achievements and that lists risks related to the activities of WP:s 3-7 that are of special importance for EPOS ERIC.

The EPOS ERIC risks are monitored and managed by the EPOS ERIC Executive and Coordination Office (ECO). Just as the EPOS SP risk register (register A), it contains a heatmap. The EPOS ERIC risk register (register B), can be found in Annex 1. Not only are the risks monitored by the EPOS ERIC Executive and Coordination Office (ECO), but the actions proposed to prevent the risks from materialising are also, in most cases, the responsibility of the ECO.

The time perspective for the EPOS ERIC risk register (register B) is roughly the same as for the EPOS SP risk register (register A), i.e. a few months or years depending on the risk, with the aim of managing the delicate transition from the EPOS implementation phase to the EPOS operational phase. Most of the actions that the risks are related to, should therefore be finalised by the end of EPOS SP. WP8 work should therefore not focus on these risks, that are already managed, but rather focus on the complementary and necessary long-term perspective. Following this analysis, it is therefore a logical outcome that there is, at this particular stage, an identified process for risks to long-term sustainability, as a specific action of EPOS SP, which will (collaborate with and) report back for direct use by EPOS ERIC. The EPOS ERIC risk register will however contribute to the input to WP8, because, some of the risks could remain over time and be problematic for EPOS in the long-term.

## 4. Anticipation of risks to long-term sustainability

### 4.1 Specific points to include in the methodology

Another aspect of the anticipation of risks, to take into consideration within task 8.2, is the promotion of the sustainability perspective all-over EPOS and EPOS SP. In order to make EPOS sustainable, it is essential to increase the awareness about the issue amongst the actors and stakeholders that are involved, in a pragmatic and engaging way. If there is a high general awareness of sustainability and risks to it, it is presumable that actions that proactively work towards sustainability are taken and that the risks will decrease. This aspect concerns WP8 generally, but is most important within task 8.2. It is not explicitly mentioned in the DoA that the sustainability perspective should be promoted, but it is a logical consequence of the transversal nature of WP8 and the explicit objective to strengthen EPOS sustainability in all domains. The WP8 leader therefore attempts to integrate the sustainability perspective whenever it is possible; not only in all WP8 actions and activities but also during meetings with the Executive Board, the Advisory Board, etc. Even though EPOS SP is intended to foster sustainability, the awareness might not be present in all the ordinary project work, which is, for natural reasons, focused on the current situation.

Since the risk anticipation of task 8.2 concerns all different aspects of sustainability, it is key to obtain input from a large audience. It was foreseen in the EPOS SP Description of Action (DoA) to base the work on risks on input from WP:s 2-7, since they work on important and vast thematic EPOS domains and therefore are best placed to evaluate the risks related to these. However, even though WP8 is composed by the WP leaders that represent their WP:s, it is important to include as many EPOS SP participants as possible to carry out task 8.2 and therefore involve the whole WP:s and not only the leaders.

### 4.2 Methodology

#### 4.2.1 Overall timeline of work

The work within task 8.2 was launched on the 26 May 2020 with a coordination meeting between WP2, the WP8 leader and the EPOS ERIC Executive and Coordination Office (ECO). The core activity during the first phase of task 8.2 has been the collecting of input from WP:s 2-7, through two rounds of meetings but also in written form (see sections 4.2.2 and 4.2.3). WP1 is not part of the work since it is related only to the management of the EPOS SP project. Input from EPOS ERIC and its management office is however collected through WP2 (note: EPOS ERIC Executive Director was also WP2 leader until March 2021) and in coordination meetings with the WP8 leader. During the second phase of the project, there will also be specific meetings with the EPOS ERIC officers (see section 6). WP7, that concerns Outreach and Training, is included in the work of task 8.2 but has a specific role, since it is a transversal WP (just as WP8) and has a special link to the EPOS ERIC Executive and Coordination Office (ECO) through the participation of the communication officers.

As for EPOS SP and EPOS ERIC, it was decided at the 7th Executive Board meeting (25 February 2021) that task 8.2 should create its own risk register, the EPOS register for long-term risks. Rather than amending the existing ones, there is a need to create a register that concentrates wholly on long-term risks to sustainability, and that is constructed in collaboration with EPOS actors. The creation and use of this risk register will be developed in section 4.4.

Since the members of task 8.2 are the leaders of the different EPOS SP Work Packages, few specific WP8 meetings have been organised until now. Instead, the discussions on the objectives, the strategic choices and the roadmap of the task have taken place at the EPOS SP Executive Board meetings.

The work within task 8.2 has been carried out in close cooperation with the EPOS ERIC Executive and Coordination Office (ECO), since EPOS ERIC is not only responsible of task 8.3, which has for objective the creation of the long-term sustainability plan, but most importantly because EPOS ERIC is the “client” of all the work fostering sustainability. It is of course EPOS ERIC that will put into practice the advice and actions plans that are developed within the project and a perfect coordination between the WP8 leader and EPOS ERIC is therefore a prerequisite for a well-functioning process. Through regular meetings, WP8 and the EPOS ERIC Executive and Coordination Office (ECO) have fine-tuned the general outlines designed at the Executive Board meetings and adopted common strategies.

The WP2 leader and proxy have also been associated to these meetings since WP2 has a special status within EPOS SP and therefore in WP8. The issues covered by its actions are of highest strategic importance and are essential for long-term sustainability. WP2 is in charge of adjusting the fundamental structure of EPOS: the governance framework and the legal issues related to it. It also develops EPOS’ financial structure, and as a part of that, the delicate issue of member state contribution. Taking into consideration that all mechanisms of the EPOS Delivery Framework are not fully in place yet (collaboration agreements for TCS, ICS-C hosting...), it becomes even more important that WP8 and WP2 cooperate and harmonise their work.

Finally, the WP8 leader (also leader of task 2.2) has held meetings with UiB, task leader of 8.1, to discuss the use within task 8.2 of the outcome of the surveys on service and data provision that are carried out in 2021 in the framework of tasks 2.2 and 8.1 (see section 5).

Since WP8 relies on the outcome of the work of other EPOS SP WP:s and is guided by the needs of EPOS ERIC, its functioning is necessarily impacted by any changes of plan within them. Due to the COVID-19 sanitary crisis and also some obstacles in relation to the Delivery Framework, some delays occurred during the first year of the EPOS SP project and for the work plan of EPOS ERIC, which additionally changed Executive Director in March 2021. This means that the accumulation of delays naturally leads to delays in WP8. The work of task 8.2 was therefore impacted in this indirectly and the timeline for the second round of WP meetings had to be revised. However, the need for adjustments led to positive modifications to the initial plan, for example a broadening of the scope for input in order to include also actors from the Delivery Framework, with the result being a more mature solution for the management of long-term sustainability. In spite of the changed planning, it can be noted that D8.3 is delivered on time.

#### 4.2.2 First round of WP meetings

As described above, the objective of the first phase of task 8.2 work was to collect input from WP:s 2-7 through meetings and in written form. Once the initial roadmap and timeline of task 8.2 were settled, the WP8 leader started planning the first round of meetings, that could of course only be organised through teleconference, considering the ongoing pandemic. An overview of the meetings can be found in Table 1 below.

WP	Date of meeting(s)	Prior written input from WP
WP3	16 July 2020, 09 October 2020	
WP4	08 July 2020	X
WP5	14 September 2020, 15 February 2021	X
WP6	17 September 2020	X
WP7	07 October 2020	

The first round of meetings was organised in an open manner and the WP8 leader let the WP:s define the exact organisation of the meetings, whereas WP8 established a stricter framework for the second round. The idea in the first round was to introduce the objectives and activities of WP8 to each WP, and to launch the work on the risks to long-term sustainability. The WP8 leader also wanted to present the plan for organising the WP input to the EPOS sustainability plan: the WP deliverables do not constitute content that can be directly integrated into it. WP8 therefore enquired on the content that the WP:s can communicate to WP8, when it can be communicated and in which form. WP8 circulated a set of questions before the meeting:

Within the area of your WP, and at your present state of knowledge:

1. Create a short list of risks to EPOS sustainability
  - Does your WP address all these risks ?
  - If not, which are not addressed ?
  - For each risk, identify in which task the risk is addressed ?
2. List which project products your WP can contribute to the EPOS sustainability plan. Products can take different meanings for each WP and task. Examples can be 'List of formalised cooperation with X', 'EPOS ERIC Ethics charter on real time applications, as approved by EPOS ERIC', 'ICS functionality of publishing list of data providers', ...
3. Which internal deliverables and / or milestones would you suggest for each product?
4. Any other feedback/ideas/suggestions/... are welcome.

In some cases (WP3, WP6), only the WP leader was present during the meeting, and in others (WP4, WP5, WP7), several WP members attended. On the proposal of WP8, a few WP:s chose to provide written input prior to the meeting, which worked as an efficient way of starting the discussions. Others preferred presenting ideas and internal procedures during the meeting itself. The minutes of the meetings can be found at the EPOS intranet. There was no separate meeting with WP2 during the first meeting round since WP8 and WP2 work together continuously.

Being an introductory round, the expectations were not for final results, but for an introduction to the discussions and an opening of the sustainability perspective, and in this sense, the meetings were globally a success. This was, at least in part, due to the fact that WP8 managed to adapt the content and form of the meetings to each WP, its level of maturity and the WP domain.

Even though the first round of WP meetings was principally aimed at being the starting point for the task of collecting input for WP8, the discussions had the positive side effect of boosting the work on sustainability work and raising the awareness about sustainability within EPOS SP in general, by the mere fact of making WP:s discuss the issue in a freer form than within the planned WP activities.

4.2.3 Second round of WP meetings.

In order to collect more concrete material and to work further in-depth, WP8 launched a second round of meetings, this time coupled with a form in order to collect written input directly from the WP:s (more information about the form can be found in section 4.2.4). The filled-in forms constitute a first set of input on risks to this deliverable and will also be part of the base for the input for the second and final deliverable of task 8.2.

This second round of meetings was organised approximately half a year after the first round and offered the advantage of the WP:s having gone further into the project with more actions launched. Their analyses of the sustainability issue and the risks within their WP domain were therefore more mature.

The invitations to the meetings were launched through an email to the members of the Executive Board – that are equally the WP leaders – on 25 May 2021, informing them about the procedure and with a proposal of dates. They also received the form and the instructions for filling it in prior to the meeting, to guarantee the efficiency of the meetings.

The meetings were initially planned for the end of April and beginning of May 2021, but due to the necessary alignment with WP2/EPOS SP Project Management Office (PMO)/EPOS ERIC, they were rescheduled to June. The idea of organising transversal meetings with two WP:s present at the same time for WP:s 3-7 in order to enrich the discussions was proposed by the WP8 leader, but in the end, only individual meetings took place since it was impossible to coordinate the participants' agendas. An overview of the meetings can be found in Table 2 below.

WP	Date of meeting
WP2	21 June 2021
WP5	07 June 2021
WP6	23 June 2021
WP7	02 June 2021

Another factor to take into consideration during the second round of meetings was the importance of engaging not only the WP leaders and their proxies – already very well informed about the procedure – but also the task leaders and the WP members. It was considered vital to make them participate fully both in order to get an input as rich as possible and to capitalise on common work done until now, but also for effectively integrating the long-term sustainability perspective in EPOS SP work. The invitation from WP8

therefore included a request to include at least the task leaders and gave the opportunity to enlarge the invitation to all WP members. The final participation would of course depend on the agendas of each participant. Two WP meetings (WP3 and WP4) will be carried out after this Deliverable, due to calendar constraints, after the June rescheduling. However, WP3 has provided a filled-in risk form.

Inspired by the success of the EPOS workshop session hosted by Michèle Marti (25 March, 2021), the possibility of using collaborative online tools for the work meetings on risks to sustainability was discussed. However, the idea was abandoned in the end since the reduced meeting audiences made it possible to discuss in-depth with each participant.

The questions that were asked during the meetings, and that needed to be answered definitely in the risk form, were the following:

1. Imagine a situation where all the planned SP work has been done successfully. After the end of EPOS SP (early 2023), what risks to sustainability will remain within the field of your WP?
2. What corrective actions or tools could be used to mitigate the risks? Who should be responsible for the action(s)? Have they already been initiated or established?
3. What is the likelihood of the risk occurring?
4. What is the expected level of impact on EPOS long-term sustainability?

In addition to these questions, the WP:s were also interrogated about the risks in the EPOS ERIC risk register (register B) that concern their WP specifically, meaning one or two risks per WP (see the extract from the register in Table 3).

Risk N.	Risk description	WP concerned
R14	Fail in implementing and adopting the EPOS User Strategy	WP4
R15	Fail to establish the EPOS Global Dimension consolidating the participation to international cooperation	WP3
R16	Fail in engaging the Private Sector	WP5
R17	Fail in expliciting the EPOS added value for society	WP6
R18	Fail in adopting Ethical guidelines in EPOS ERIC	WP6
R19	Fail in implementing a Training Programme	WP7

The contents of the meetings were dynamic; the basis for the discussion was not the same for all meetings but evolved depending on the conclusions from the previous meetings and the internal organisation of WP:s as well as the number of participants. The participants had received the form and the instructions for filling it in prior to the meeting and they were given the freedom to organise their internal work in the manner that they preferred. Some WP:s arrived at the meeting with the form already filled in and the meeting then served for presenting their internal work. After fruitful discussions with the WP8 leader during the meetings, the final versions of the forms were then delivered after the meeting. In other cases, the WP:s had not filled in

the form and the meeting then served for discussing the risks within the WP, based on the outcomes of the first-round meeting and the internal work that had been done within the WP since. The outlines and keywords for the form were decided on and WP8 then let WP:s finalise filling in the forms on their own. This was done either by email exchanges or during an internal meeting.

#### 4.2.4 The risk form

The drafting of the risk form for the identification of long-term critical risks to EPOS sustainability was done in two steps, in order to guarantee its efficiency as a tool for mapping risks. First, a WP8 coordination meeting was held on 26 March, 2021, with the objective of validating the form, as well as the procedure for working with it, and more generally the strategy for task 8.2. WP leaders 2-7 were invited in their roles as WP8 members. Leaders of WP:s 4, 6 and 7 (plus proxy) were present. The absent WP leaders were invited to send their input about the form and the instructions before the meeting. WP5 did not have any comments while WP3 filled in the form with input on risks in the field of international cooperation, which can be considered as another form of input. During the meeting, the participants were able to agree on a common view on the task 8.2 approach and actions, and the principles for the risk form and its instructions were approved of. A second meeting took place on 17 May, 2021 between WP8 leader CNRS, WP2 leader and proxy, the EPOS ERIC Executive and Coordination Office (ECO) and EPOS SP Project Management Office (PMO), where the validation of the procedure for the form was confirmed. The final version of the form can be found in annex 3.

The work with the form was based on the idea that the form would be an efficient tool for collecting input on long-term sustainability, together with the different meetings. The importance of keeping the form simple and the instructions on how to fill it in crystal clear were stressed, in order to guarantee an easy treatment by WP8 and to facilitate and speed up the WP work. Practically, this means:

- Filling in the form once for each risk, with no limit on the number of risks to submit.
- Limiting the input to one page/risk, with around half a page to explain the risk itself and around half a page to the corrective action(s).
- Defining and limiting every risk as much as possible.

The WP:s were also invited to indicate the probability of risk occurrence and the impact on EPOS long-term sustainability by using a 5-level scale (1-5, with 5 being the most serious), the same that is used in the other two risk registers.

#### 4.3. Outcome of meetings with WP:s

The first round of meetings with the WP:s served as an introduction to the WP8 work, where the main focus was to launch the discussions on long-term sustainability and find the right form for it, in order to prepare the future work and the second round of meetings. The information provided to the WP:s prior to the meetings (by email and through the Executive Board) was the same, but the actual meetings did not play out in the same way. This was in part due to the fact that the audience was not the same; some WP:s were represented only by their leader whereas had several WP members participating. The questions asked by WP8 were also interpreted in different manners by the participants. By listening to the WP:s in a more unrestricted way, WP8 could collect input both to task 8.2, by getting a first appreciation of the current state of risks to sustainability and possible mitigation actions, but also to the Long-term Sustainability Plan, for example lists of products to be delivered by the WP:s. The first round of meetings also served as a useful tool for identifying difficulties and issues within each WP. On the whole, the meetings provided ideas on how to

adapt communication and prepare the second round of meetings. One example of the concrete outcome was the acknowledgement that WP leaders are generally well informed on the sustainability issues and that it is necessary to get down to task level, and involve all or most of the WP members, to be efficient and spread the main WP8 messages. It was equally observed that there is a real need for concrete tools to work with sustainability, within the WP:s and within EPOS ERIC. These tools will have to be defined by each WP, with the support of WP8.

The input from WP:s during the first round of meetings was documented in meeting minutes that were made available on the EPOS intranet.

The meetings in the second round were conducted in a more in-depth and precise manner and the focus lay clearly on the risks to sustainability. This was a result of the first round, that allowed WP8 to discuss the task 8.2 roadmap in detail with the Executive Board and the EPOS ERIC Executive and Coordination Office (ECO), find the right format for discussions and adapt the procedure before launching the new meetings. This time, most WP:s were represented by several members, which was considered an important advantage for the discussions. The WP:s also had a better awareness of what was expected of them during the meeting and arrived well prepared, which led to smooth and efficient discussions. The use of the risk form (see section 4.2.4) also facilitated the discussions, both for the WP:s that had filled in the form prior to the meeting and for those who had not, since it provided a clear structure for the discussions and specific input on the different risks. The risk forms provided by the WP:s (3, 5, 6, 7) at this date can be found in Annexe 5.

#### 4.3.1 WP2

Responsible of financial and governance issues within EPOS SP, WP2 has not participated in the task 8.2 work in the same, formalised way as the other WP:s. Continuous discussions have however been had between WP2 and WP8, which has led to some preliminary conclusions on risks within the WP2 domain. The work on risks will continue during the second phase of task 8.2.

Note that most of the WP2 risks to long-term sustainability are already listed in the EPOS ERIC risk register (register B). During the first phase of task 8.2, it was discussed in what way they would evolve during EPOS SP and what their status would be in 2023. The results were incorporated in the EPOS register for long-term risks (see section 4.4). Regarding specifically the financial viability, it will be assessed at the end of EPOS SP. The consequences of the fact that the ICS-C might finally stay outside of the EPOS ERIC perimeter will need to be evaluated further.

#### 4.3.2 WP3

Within EPOS SP, WP3 is the WP that treats the issues about European and International cooperation as well as EPOS' global dimension. A key aspect of EPOS sustainability are the new and existing partnerships that have been established with other RIs and similar initiatives. These relationships position EPOS within the international landscape of solid Earth research, which is critical for maximising wider uptake of the EPOS services and encouraging greater participation. WP3 has developed a strategy for establishing and formalising collaborative partnerships with these key initiatives that is partly reliant on proactive engagement with them through a range of activities where there is a common area of interest or objective. An identified long-term risk is that these relationships are not maintained beyond the end of EPOS SP. The framework and strategy for establishing and maintaining these collaborative partnerships has been developed within the context of the project and needs to be translated into EPOS ERIC to ensure that they continue beyond the end of the project. The failure to maintain these collaborative partnerships potentially

undermines the position of EPOS within a global RI for the solid Earth. It also potentially limits opportunities for EPOS to contribute as part of consortia for new research activities and proposals. EPOS ERIC should adopt the strategy (or elements of it) for developing collaborative relationships as documented in D3.1 to ensure that these partnerships are maintained for the longer-term. The strategy for engaging with the wider ecosystem of RIs includes the mechanisms for the formalising of selected collaborative partnerships. These formalised partnerships should be established between EPOS ERIC and other relevant initiatives, and must include a clear plan for ongoing collaborative activities as part of any formal agreement.

#### 4.3.3 WP4

After a meeting during the first round, which was done under different circumstances than with the other WP:s (follow-up meeting to the first User Value Board meeting), it was not possible for WP8 to organise a second meeting with WP4 before the submitting of the current deliverable. The WP had to undergo a change of leader that caused some problems with transmission of information and some delays. The discussions will therefore need to continue during the second phase of task 8.2, in order to have a richer and more mature outcome, including the submission of the risk forms. Some ideas were however discussed during the first WP4 meeting that are mentioned here.

WP4 concerns the EPOS user value and ensuring sustainability of the EPOS Delivery Framework from the technical perspective, with a focus on delivering robust services. Their tasks are carried out alongside the work in the preoperational phase (EPOS POP). Risks within the WP4 domain concern service quality issues, and more specifically data availability, data findability and accessibility and system usability. Methods and tools need to be found for ensuring the long-term monitoring of services. In this context, there is a risk related to the user perception of service quality. It is essential to continuously monitor and encourage user feedback on the ICS-TCS infrastructure reliability and the data accessibility once the pre-operational infrastructure will be deployed and accessible from the public, as is interaction with defined TCS communities, and also candidate TCS.

#### 4.3.4 WP5

WP5 concerns private sector cooperation and EPOS attractiveness for industry and SMEs, and more specifically visibility of the EPOS innovation potential and also legal frameworks for this cooperation. Generally, the impact of risks within the WP domain are not high since the importance for sustainability is moderate. If EPOS does not succeed to create strong private sector relations, it will not jeopardise its sustainability, but if they are strengthened, sustainability will probably increase. In this context, there are differences between TCS, where Anthropogenic Hazards is the most dependant on close cooperation with industry whereas for other TCS it is of secondary importance.

The main risk within WP5 is clearly the risk of failure to create and maintain continual interaction with industry and private partners. This cannot be avoided by one single action or strategy but to get results, it is important to start working on the issue within EPOS as soon as possible. The focus in terms of sustainability should be on cooperation with industry, where the establishment of innovation advisory boards on EPOS or TCS level could be interesting. Another idea is the creation of Industrial Contact Officers. This could help increasing EPOS visibility and attractiveness.

Further, the legal framework needs to be clarified before a more formalised cooperation can take place (task 5.2 is responsible for this). Within this preliminary work, it needs to be defined what the main constraints on services are. One point raised by WP5, is the fact that there is no European Union strategy for making ESFRI research infrastructures available to the private sector and, consequently, no standard legal solutions. Even

though EPOS ERIC might advocate for and contribute to such a strategy in the long-term, it is a risk factor that needs to be accepted in the current state of things.

An important success factor is the attractiveness of EPOS assets provided through the ICS for the private sector stakeholders. The ICS also works as an “EPOS showroom” but at the moment, it is not sufficiently made available for Private Sector interaction. Continuous communication with the private sector is also crucial and the communication strategy developed within EPOS should also include the bespoke solutions for approaching and communicating with it. Tracking the impact of EPOS is also a priority.

There is also a risk related to licenses and not providing sound legal settings that addressed rights, responsibilities and limitations of both EPOS and industrial stakeholders. This can be avoided by collecting information through in-depth interviews and questionnaires, implementing appropriate metadata to expose licences and appropriate AAI to authorise access based on licence conditions.

WP5 finally underlines that the relationship between academia and the private sector is sometimes complex, so any issues within EPOS would just be a reflection of that situation.

#### 4.3.5 WP6

WP6 deals with the subject of EPOS’ value for society and more specifically the ethical implications of service provision, as well as the issue of geo-hazards and -risks, in particular in crisis situations. In addition to this, its task 6.3 manages EPOS readiness for Open Science.

The WP6 team has identified three main risks towards EPOS sustainability, divided in sub risks. The first risk is that EPOS products and services do not meet minimal ethical requirements. Currently, most products and services are mainly targeting scientists. However, several TCS intend to widen their scope and develop or provide access to products and services addressing professionals outside the EPOS framework as well as members of society. To accomplish this development in a balanced manner, WP6 has created a set of ethical guidelines, but there is still a risk of them remaining a purely indicative document.

A second main risk is that EPOS products and services are perceived as having no particular value for society with respect to hazard and risk. In relation to this, there are risks related to the products and services addressing professionals outside the EPOS framework and/or members of society: that these are not well contextualized (guidance is needed for audiences less familiar with potential limitations or implications of the products or and services offered), that they do not meet the target audiences’ requirements (as opposed to the needs of scientist users), that the development and allocation of these products and services are not sufficiently funded and, finally, that the EPOS community cannot agree on to whom and to what terms they want to provide access to products and services.

The third main risk is that EPOS products and services do not adhere to FAIR principles and fall short of expectations regarding openness and Open Science. This could be the case if the development and allocation of products and services addressing professionals outside the EPOS framework and/or members of society are not sufficiently funded or if the EPOS community cannot agree on whom and to what terms they want to provide access to products and services.

#### 4.3.6 WP7

WP7 deals with the transversal subjects training, outreach and communication. The WP members had already filled in the risk forms prior to the very productive second-round meeting and final versions were delivered shortly afterwards. Regarding the training (task 7.1), the probability of risk occurrence is considered as very high with a considerable impact. One main risk is the fact that there is at the moment no

permanent mechanism to handle training in the EPOS ERIC structure post EPOS SP. To counter this risk, a mechanism needs to be created, and WP7 proposes three alternatives: training related activities handled by one or several external institution(s), within the responsibility of the Communication Unit in EPOS ERIC, or coordinated by the Communication Unit but handled through one or several external institution(s).

In all training related activities, the role of the existing bodies of EPOS ERIC needs to be clarified. These include the Communication Unit, the SCC, the IT-Unit and the IT-Board, as well as the ICS-TCS Interactions Coordination. WP7 also adds that the decision process regarding the training activities should be clearly defined.

First and foremost, the needs for training concern the users on technical aspects of EPOS services (ICS Data Portal, individual TCS Portals, metadata integration, technical preparedness for new thematic communities as well as data management and FAIR principles). There are also training needs for new communities on legal, governance and financial aspects of EPOS integration. Apart from the design and organisation of the training sessions, there are risks associated with the governance, legal and financial aspects (e. g. identifying the responsible bodies, allocating human resources, allocating financial support etc.). In addition to choosing the structure(s) that will handle the training, WP7 also suggests that the General Assembly endorses a financial support mechanism for training activities (i.e. including an activity plan and a budget annually).

A separate risk regarding the training material within task 7.1 was observed. Even in this field, the risk is high. The risk concerns the difficulties related to the maintenance (storage, access) of the training material and the updating of all relevant links online. It is also necessary to update the training material in line with new developments within EPOS. The strategy for dealing with this risk will entirely depend on the decision on how the previous training risks are handled. The corresponding training material should be maintained and updated by the relevant EPOS ERIC unit or external organisation(s). Regarding the updating of available training material links and media-channels, it should be the responsibility of the Communication Unit.

In terms of outreach (task 7.2), WP7 has identified several aspects that can be problematic from a sustainability perspective: the organisation of outreach activities in the future, strategic choices, outreach in the context of a changing landscape of EPOS interest and involvement in time, maintenance and updates of outreach material and the engagement of various bodies of EPOS and their coordination through the Communication Unit. WP7 suggests that the existing EPOS ERIC Communication Unit could probably handle all future outreach activities. There is however a need to engage various bodies of EPOS ERIC depending upon the content of each outreach activity. There is a need for maintaining and updating the outreach material. This can be handled well within the Communication Unit as long as there is a well-identified mechanism in place.

Regarding the communication (task 7.3), finally, it is observed that there is a moderate risk of the EPOS communication structure not receiving sufficient content to distribute. WP7 suggests the creation of a formal organisation that can link the content (knowledge) owners to the Communication Unit.

#### 4.4 EPOS long-term risk register

An intermediate version of the EPOS register for long-term risks (register C) can be found in Annex 2. Before the final version (register D) can be delivered, the register will be updated, during the second phase of task 8.2, with the input from the EPOS Delivery Framework group of stakeholders. The important input provided by WP:s through the risk forms will also be added to the register at that stage, but before that, their input must be processed further, especially the content on mitigation actions and contingency plans. Input from

some WP:s also needs to be completer and updated. Finally, the updated input will be discussed and validated by the Executive Board and the EPOS ERIC Executive and Coordination Office officers, probably in several steps in 2021 and 2022.

The evaluation of the long-term risks in the present EPOS ERIC risk register is a continuous process during the life span of EPOS SP. The final version of the EPOS register for long-term risks will be presented in D8.4, the final deliverable of task 8.2.

At the moment, the register is a 2023 projection of the EPOS ERIC risk register. The present version is the fruit of an internal WP8 analysis that was consolidated after discussions between WP8 and WP2. WP8 has assessed the risks listed in the EPOS ERIC risk register and preserved the ones that will still be relevant at the end of the project (2023), while updating and adapting the texts on mitigation actions and contingency plans according to a long-term perspective.

Some of the risks in the EPOS ERIC risk register concerned only a specific WP. These have been updated from a long-term perspective, according to WP input and WP8 analysis. Naturally, the connection to a certain WP will disappear after 2023 since the WP structure will not remain after the end of the SP project.

The EPOS register for long-term risks is designed using the same format and parameters as the EPOS ERIC risk register (that lists current risks), so that it can seamlessly integrate the EPOS ERIC risk management system. Just like the other EPOS risk registers, it is accompanied by a heatmap, displaying the risks in a clear manner.

#### 4.5 Lessons learned

The most important lesson learnt is that WP8 is in a position to develop a key action not only for the EPOS-SP project, but for EPOS ERIC and for the whole EPOS Delivery Framework. The first phase of task 8.2 has revealed some challenges that concern WP8 work in general, with important consequences. First of all, the work on sustainability needs to go further than EPOS SP. The entire set of actions, linked to the different thematic domains of the WP:s, that are needed for long-term sustainability cannot be done within strict contours of EPOS-SP, since each WP has tasks and activities that are predefined by the DoA. In short, the WP8 issues concern WP/task *themes* but not necessarily the WP/task *activities*. This means that even though the WP:s are concerned, there is a risk that they overlook some sustainability aspects. From a purely practical perspective, the question of WP resource management can be raised – is it possible for them to find time (and corresponding resources) to go beyond EPOS SP activities? Another issue is related to the structural organisation of the future work to enhance EPOS sustainability. At the moment, this work is organised in WP:s within the EPOS SP structure, but it needs to be decided how sustainability activities will be organised after the end of the project. WP8 will deliver recommendations for actions to carry out but these cannot be achieved if the corresponding actors do not exist or are too vaguely defined. Another challenge is the need to separate risks that are purely related to EPOS SP actions and objectives – risks that concern the short-term and that are the responsibility of EPOS SP Project Management Office (PMO)/WP1 as well as each WP – from long-term risks for EPOS sustainability; the core activity of WP8. This differentiation, not clear to all WP participants at the project's beginning, should now be understood by all following the two series of meetings. Finally, it is important that the cooperation between WP2 and WP8 is even more harmonised. As explained in section 3.2, WP2 has a special status in the sustainability work because of the strategic issues that it covers and alignment with WP8 for the work in tasks 2 and 3 is essential. These topics, which might create difficulties within the scope of WP8, need to be further analyses in D8.4.

The second most important lesson concerns the management of risks, both within EPOS SP and EPOS ERIC. The work in 8.2 does not stop at identifying the risks; the task is also responsible for developing a strategy for managing them. Task 8.2 examines if and how they can be avoided, what actions can be initiated already at the EPOS SP stage to limit the risks and shall propose contingency plans for the case that risks materialise in the future, limiting the impact. Focusing only on eradicating (or reducing) the risk might not always be the most efficient and economical strategy. In some cases, it is preferable to concentrate on *limiting the impact* of the risk if it becomes reality. This will be the case if the cost (financial or other) of avoiding the risk is higher than what is reasonable or if the likelihood of the risk happening is high but the expected impact is low. It is thus necessary to propose both contingency and mitigation actions within the EPOS risk strategy, and in some cases, it can be argued that one of them should be preferred. Such finetuning of the risk strategy can be done when needed, during the lifetime of EPOS. This issue will be further investigated during the second phase of task 8.2. Further, the approach of WP8 is that it is necessary to carry out the risk analysis in an unrestricted and free manner that allows for reconsidering the solutions chosen earlier on in EPOS's history. The circumstances of the infrastructure, the positions of national authorities and other stakeholders, political decisions and so on will necessarily change during the years to come and if this cannot be taken into consideration because of a system that is too rigid, it will be a risk in itself.

As mentioned above, task 8.2 is not concerned with all possible risks encountered within EPOS. Only risks to long-term sustainability are included in the analysis, and only risks that are considered as *critical*. The question can therefore be raised if risks with a low impact score (1 or even 2) according to the scale used in the EPOS register for long-term risks, should be included in the register. The decision of WP8 is to keep risks with a low score in the register at this stage, since the final work on risks will be delivered in D8.4 and the risk assessment might evolve during the year to come.

Finally, WP8 made the following observations after the conclusion of the first phase of task 8.2 work: while the scientific and technical aspects of EPOS are quite clear and have had well-defined objectives from the beginning of the project, it was more difficult to foresee the consequences on the administrative/governance side. There are risks related to this administrative complexity and there is a need to find solutions within the concerned WP:s. At this stage, it is too early to judge which risks are the most serious or the most urgent and not only because the WP8 analysis is not yet finalised. Such a ranking of risks cannot be carried out without the strategical validation by the Executive Board and/or EPOS ERIC Executive and Coordination Office (ECO), since it will have important consequences for EPOS ERIC.

Considering the importance of the work on critical risks and the positive evolution following the work within task 8.2, it could be discussed whether the actions (risk forms, meetings with stakeholders...) regarding risks to EPOS long-term sustainability should be repeated later, for example at the same time in 2022. The WP:s' vision of the sustainability concept will be more mature at that time and the risk situation will probably have evolved. It could even be a regular exercise within EPOS, if the procedure is slightly modified.

## 5. Major risks to EPOS service provision

The fundamental concept of the EPOS research infrastructure, is to offer an integrated use of data, data products, software and services from the solid Earth science community in Europe. All these activities are in EPOS named Service Provision, and are carried out through the Service Providers of the Thematic Core Services, and through the EPOS ERIC Integrated Core Services. The TCS Service Provision is at the very heart of EPOS and therefore central to sustainability. Risks threatening the Service Provision will therefore be a

serious issue for maintaining EPOS on the best level possible in the long-term. At first glance, one could be led to think that Service Provision sustainability concerns only technical aspects, but in reality, it depends on many different aspects: the administrative, legal and governance organisation of the service and the involved institutions, the scientific support, the visibility of the service and of course the financial conditions. To resume, more or less the same factors that influence EPOS sustainability all-over, are the ones that matter for Service Provision sustainability.

Since Service Provision and Data Provision (through national research infrastructures) are fundamental for EPOS, they are both subject to a profound analysis within the EPOS SP project. The sustainability of Service Provision is studied in task 2.2 and the sustainability of data provision in task 8.1. That is also the reason why it is an important piece within the task 8.2 analysis and, in a later stage, for the EPOS Long-term Sustainability Plan. It should be mentioned that this analysis of service and data provision is part of the landscape analysis carried out in WP2. Because of the strong links between service and data providers (and between service and data provision), the two tasks work closely together and most of the work has been carried out in a joint manner, even though they belong to two different Work Packages. Common meetings are being organised regularly to plan the input on risks on the TCS level. This input will serve not only tasks 2.2. and 8.1 but also the SCC and EPOS ERIC directly.

As a main tool for measuring sustainability and risks to services in the long-term, it was decided to create a survey, intended for all EPOS Service Providers, that could be adapted to the data providers (both regarding organisational and other differences with service providers and depending on the outcome of the service provider survey). The service provider survey took place in April and May 2021 and the data provider survey is planned for Q4 2021. Since the service provider survey was carried out with some delays related to other delays within EPOS SP, the final analysis of the responses is not yet finalised. Some preliminary conclusions regarding risks can however be delivered already at this stage.

The survey on service provision can already be said to have been an important accomplishment for the EPOS SP project. 44 replies were submitted, representing approximately 280 services, covering all TCS as well as institutions from 16 countries and some pan-European organisations. In addition to replies to predefined questions, a large number of free text comments were submitted, allowing for a rich and vast analysis of the state of EPOS services. At this initial stage, it can already be concluded that the service provider survey will be an interesting tool for risk management within EPOS, if the results are exploited efficiently on the EPOS ERIC level. As a first positive result, 83% of the services are considered as being in a good state for daily operations, while they are more limited (mainly due to lack of resources and staff) for future developments. This information might help EPOS to channel funds to the right activities, considering that only a small part of TCS activities can be funded through EPOS ERIC membership fees.

Most service providers have identified risks to the operation of their services, without necessarily discussing this in the term of risks or long-term sustainability, or without having a dedicated work on risks. The management of risks differs considerably between service providers, ranging from a total lack of procedures, to formalised risk management plans, and everything in-between. The most serious threat to long-term sustainability, is related to financial issues; lack of resources, uncertainty about future funding and so on. There also seems to be a quite widespread problem of recruiting (or keeping) staff with the right profiles and skills, especially in the field of computer science, and lack of stability caused by the obligation to recruit personnel with fixed-term contracts. There are also issues with services not having enough support from the governmental/national level and an uncertainty of continued support as well as a fear of political decisions influencing science policies in new directions, including on the EU level. Technical issues creating risks to

sustainability are also mentioned by many service providers but there are less details provided regarding these, and they seem to be very much related to lack of funding. Other risks mentioned are the incapacity to develop new services, an administrative overload for data providers, difficulties to engage non-European institutions, a general uncertainty about the future, etc.

One risk that needs to be investigated further, is the lack of focus on science from EPOS. There is unanimity about the fact that EPOS is destined, while not exclusively, at least in its majority, at researchers in academia, and that its objective is to facilitate access to scientific data and results. However, it might be that within the EPOS work at present, there are not enough discussions about science and scientific objectives in their own right. This risk might concern not only the TCS and the service providers, but EPOS in a wider scope and should not be underestimated.

The final results of the service provider survey will be presented in the deliverable D2.4. The experience of the service provider survey will guide how the data provider survey will be carried out. And the results of the data provider survey will be provided in deliverable D8.2.

## 6. Roadmap towards D8.4 – and beyond

The analysis of the risk situation will be further developed in D8.4 *Final Report on adequate strategy for each critical issue identified*, that will be submitted in July 2022 containing the final results of task 8.2. In the second phase (September 2021-July 2022) and D8.4, not only will the analysis include also the input from the whole EPOS Delivery Framework and not only the Work Packages, but it will also go farther, building on the results from the first phase of the task work. In D8.4, WP8 will settle the definitive list of the critical risks to EPOS long-term sustainability and also propose appropriate mitigation actions and tools to EPOS ERIC. Together with the Long-term Sustainability Plan, this should create permanent mechanisms that will last after the end of SP.

The first step of the second phase of task 8.2 work will be the organisation of the collecting of input from the extended group belonging to the EPOS Delivery Framework. In association with the EPOS ERIC Executive and Coordination Office (ECO), the following list was established of the actors to include in the discussions:

Function/Title	Name
ICS-C Director	Helen Glaves
IT Board Chair	Daniele Bailo
ICS-C Hosting Organization: BRGM	Matthew Harrison
ICS-C Hosting Organization: GEUS	Mikael Pedersen
Coordinator of the TCS-ICS Interactions	Kuvvet Atakan
SCC Chair	Otto Lange
TCS Board members	TBC
EPOS ERIC Executive and Coordination Office (ECO)/Project Management Office	Lilli Freda Daniela Mercurio Giovanna Maracchia
EPOS ERIC Officers	Kauzar Saleh Kuvvet Atakan Daniele Bailo

Some of the persons listed above have double or even triple responsibilities within EPOS (WP leader and scientific officer, for example). WP leaders have already given their input on risks during the spring of 2021, but solely on risks related to the field of their WP. This is because the risk discussions were organised as team exercises where the focus was on the WP themes and the collective understanding on risks; there was no room for discussions outside of that frame. Considering this, it is necessary to include all of the above listed persons in the new round of input. On the other hand, as the involved people are already aware of the WP8 work for identifying critical long-term risks, and the development of the sustainability plan, these interactions will be efficient from the outset.

The input will be collected during Q3 and Q4 2021, through meetings and by requesting written input through the form, as during the first phase. WP8 will also ask for reactions on the WP input from the first phase. The organisation of the meetings will be decided in September 2021 but it is reasonable to believe that the persons listed above will be divided into groups to avoid too many meetings and to create synergies between participants. Some adaptations to the questions asked and to the form may be necessary to take into account the fact that it is no longer Work Packages that are addressed. WP8 will also ask for input on the draft version of the EPOS register for long-term risks (register C); the whole register or parts of it, depending on the discussion partner. Input will be demanded on the risk itself, its importance for sustainability and the grading of its likelihood and impact.

Based on input from all WP leaders, new meetings with some or all of the WP:s could become necessary to make sure that the input from the second round is still valid, to take into account recent developments and actions towards sustainability within the WP:s or in order to get feedback on input given by other actors.

The second step of the second phase work will be WP8 assembling and analysing the input collected. The output will not be solely a list of risks, but a proper analysis done by WP8 jointly with EPOS ERIC as leader of Task 8.3, where priority is given to some of the risks. The input from all stakeholders will then be merged in order to become a whole and not remain two separate parts. The output will be the final deliverable, D8.4. In parallel, a consolidated version of the EPOS register for long-term risks (register D) will be created, following the input from all actors, and delivered within D8.4. During this work, input on EPOS service and data provision will also be provided by the analysis of the service and data provider surveys of tasks 2.2 and 8.1, as mentioned in section 5. The work delivered by task 8.2 will thus contain not only a list of risks in the EPOS register for long-term risks and an analysis of the risk situation and its relation to EPOS long-term sustainability, but also suggestions for actions in the short- and mid-term as well as mitigation strategies to put into place.

During the second phase, WP8 will continuously ensure that the coordination with the EPOS ERIC Executive and Coordination Office (ECO) runs smoothly since the long-term perspective will be taken over entirely by that structure at the end of EPOS SP. Seamless coordination is also important since the work on the main deliverable of the project, the long-term sustainability plan (EPOS SP deliverable D8.5) will start and advance more and more as the end of the project approaches, and the work of task 8.2 must be perfectly adapted to the needs of the plan. Not only will the contents of D8.4 serve directly as input to the plan, but it must also be strategically in line with what is proposed in it.

The Long-term Sustainability Plan created under Task 8.3 will integrate the outcomes of work in WP2-WP8, and concerns the EPOS Delivery Framework and data provision. This document will be fundamental during the second five-year funding period of EPOS ERIC. The plan will identify and prioritise key actions to be carried

out to ensure EPOS sustainability. In particular, it will capitalise on achievements in each of the Work Packages to evaluate which actions had and are expected to have the most effect on EPOS sustainability, helping to elaborate a substantiated long-term strategy.

Once D8.4 has been submitted, the mission of WP8 will not be over, but the remaining work can be done using the stable base provided by task 8.2, not only through its deliverables but also through the different actions and discussions carried out throughout EPOS SP, raising the awareness about long-term sustainability and organising the input from the other Work Packages.

## 7. Conclusion

This deliverable describes the work that WP8 has achieved since the beginning of EPOS SP, through discussions and concrete actions. Since the beginning of the project, the level of ambition has increased, which has an impact not only on WP8, but also on the other WP:s. At the current stage, the solid foundations are in place that will allow WP8 to produce final results to be used by EPOS-ERIC. Up to now, the collaboration with all stakeholders has been constructive and the success of the upcoming actions as well as the final outcome will depend on a close collaboration between WP8 and EPOS ERIC.

At the same time as the WP8 tasks progress, the work towards sustainability should advance within the whole of EPOS SP, including all WP:s. This will feed the Long-term Sustainability Plan to be developed within task 8.3, but at the same time in a more concrete manner participate to the process of preparing the Research Infrastructure for future sustainable operation and new challenges.

### Annex 1 – EPOS ERIC Risk register, May 2021 version (register B)

Risk N.	Risk description	Likelihood 1-5	Impact 1-5	Mitigation Action	Contingency Plan
<b>Finalize ICS-C Hosting</b>					
R1	Fail to finalize the ICS-C hosting and start the pilot operational testing	3	5	More HR and skills dedicated to establish an appropriate and effective legal framework for ICS-C Hosting.	i) Identify solutions for host premium provision coherent with the EPOS ERIC Governance. ii) Engagement of new IT provider partners in the Hosting Team and maintain the temporary operation of the ICS-C prototype at an operational provider.
R2	Lack of coordination among hosting organizations in IT management and poor coordination with EPOS ERIC IT Office	3	4	More HR dedicated to improve IT management and communication among hosting teams and between hosting teams and EPOS ERIC.	Rediscovering ICS-C Management with ICS-C Director and the Hosting Teams and empowerment of coordination within the IT development team for operating the ICS-C
R3	Lack of ICS-C robustness and low technological performances during EPOS POP	1	5	Analysis of low performances and robustness causes during operational testing pilots and support to IT development	Further implementation of the ICS- C prototype through internal and external resources
<b>Establish TCS Governance and Coordination</b>					
R4	TCS failure to adopt a reliable governance and legal framework	1	2	Support TCS construction through meetings providing legal assistance	Postponing activation of service for TCS Governance and Coordination and revise TCS Governance Structure
R5	Fail to update and maintain the TCS Cost Book	1	2	Updating costs in TCS Cost Book including the available in-kind contributions, taking into account the EPOS SP WP2 achievements. Continuous maintenance by EPOS ERIC.	Increase HR and skills for establishing a dedicated WG that will revise the TCS Cost Book, in addition to the EPOS SP Risk management.

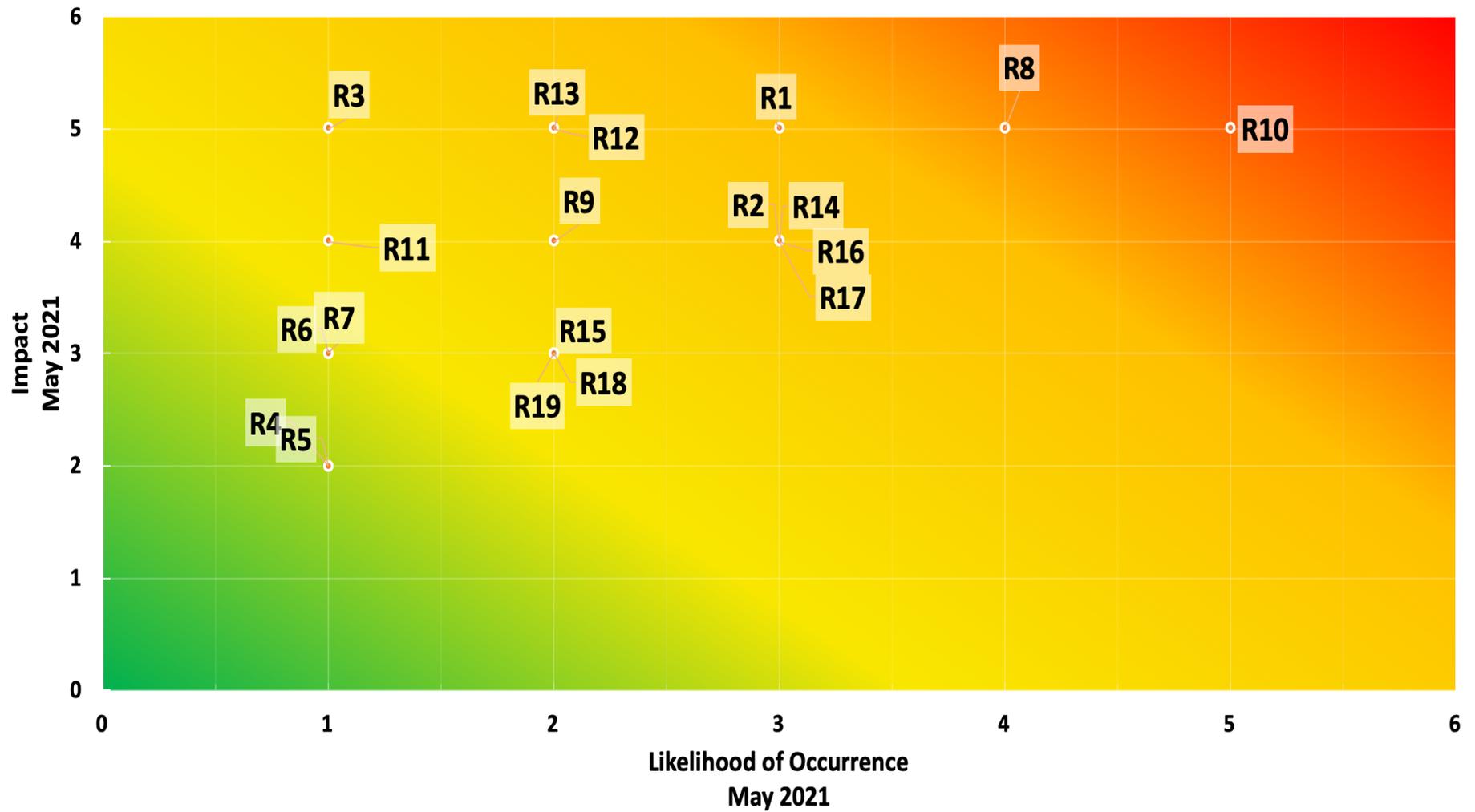
Enable TCS Data and Service Provision					
R6	Fail to create the appropriate legal framework for service activation	1	3	Support TCS construction through meetings providing legal assistance	Establishment of a dedicated WG for identifying a suitable legal framework for service agreements
R7	Fail to approve the Procedure for Service Activation	1	3	Involve the EPOS ERIC GA to elaborate an effective procedure and allocate necessary time for discussions	Establishment of a dedicated WG for identifying a suitable legal framework for service agreements
R8	Fail in approving the financial eligibility of the services through effective procedures	4	5	Approve the Service Activation Roadmap and Service Delivery Plan.	Revise the Service Activation Roadmap and further implementation of the EPOS ERIC Business Model to increase available resources, exploiting EPOS SP WP2-WP8 results.
Implement and Establish TNA Coordination and Provision					
R9	Fail to validate TNA as a service	2	4	Dedicated activity in EPOS POP to address this issue	Adopt existing standards for TNA management
R10	Lack of financial resources to support the activation of TNA services	5	5	Strengthening EPOS ERIC budget including national in-kind contributions	Limit TNA provision to the broker service for TNA Calls external to EPOS
Fostering IT Development of the TCS-ICS System					
R11	Fail to maintain and operate the metadata catalogue	1	4	Organize TCS-ICS interaction workshops to foster awareness and readiness. Ensure human resources and skills	Revise metadata structure
R12	Fail to maintain and operate TCS-ICS interoperability	2	5	Organize TCS-ICS integration meetings; strengthen communication between TCS and ICS development teams	Revise IT solutions and evaluate the possibility to outsource services

Harmonization of National Strategies					
R13	Fail to further engage governments and convince them to prioritize EPOS within their national programmes	2	5	Foster proactive participation of National Authorities to support the operation of the EPOS Delivery Framework, taking advantage of the activities planned in the EPOS SP project.	Organize tailored initiatives with national authorities; Adopting more effective approaches to foster the provision of in-kind resources to the operation of the EPOS Delivery Framework.
Exploiting EPOS SP Achievements					
R14	Fail in implementing and adopting the EPOS User Strategy	3	4	Support activities and initiatives in EPOS SP WP4 contributing with EPOS ERIC vision, mission and strategic actions to engage users. Use Pilot Operational Testing to engage users	Increase HR and skills and adopt more effective communication tools to engage the users. Use ICS-C operation to interact with users' communities. Use TCS data & service provision to engage users and stakeholders.
R15	Fail to establish the EPOS Global Dimension consolidating the participation to international cooperation	2	3	Support activities and initiatives in EPOS SP WP3 contributing with EPOS ERIC vision, mission and strategic plans.	Increase HR and skills from ECO to organize initiatives and communicate EPOS ERIC. Strengthening EPOS ERIC cooperation activities and financial support.
R16	Fail in engaging the Private Sector	3	4	Support activities and initiatives in EPOS SP WP5 including them in the EPOS ERIC strategic plans. Provide further contents to interactions with private sector.	Develop more effective plans to engage the private sector communicating the contents of the EPOS Delivery Framework strengthening the service provision of relevance for industry.
R17	Fail in explicating the EPOS added value for society	3	4	Support activities and initiatives in EPOS SP WP6 including them in the EPOS ERIC strategic plans. Provide further contents to interactions with key stakeholders describing the contents of the EPOS delivery framework.	Develop more effective plans to engage the key stakeholders communicating the contents of the EPOS Delivery Framework strengthening the service provision of relevance for society.
R18	Fail in adopting Ethical guidelines in EPOS ERIC	2	3	Support activities and initiatives in EPOS SP WP6 contributing with EPOS ERIC vision and strategic plans of relevance for defining the Ethical Dimension.	Involving the EPOS ERIC Ethics Board and other

R19	Fail in implementing a Training Programme	2	3	Support activities and initiatives in EPOS SP WP7 contributing with EPOS ERIC tools, contents and visibility.	Increase HR, skills and financial support to launch dedicated training initiatives. Adopt dedicated actions to harmonize the contributions for TCS, ICS and EPOS SP WPs 2-6 to implement training initiatives
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### EPOS ERIC Risk register heat map (May 2021)



**Annex 2 – EPOS long-term risk register (Draft version) (register C)**

Risk N.	Risk description	2023 Likelihood 1-5	2023 Impact 1-5	Mitigation Action	Contingency Plan	Status in 2023 + impact on sustainability
R1	Fail to finalize the ICS-C hosting and start the pilot operational testing	-	5	More HR and skills dedicated to establish an appropriate and effective legal framework for ICS-C Hosting.	i) Identify solutions for host premium provision coherent with the EPOS ERIC Governance. ii) Engagement of new IT provider partners in the Hosting Team and maintain the temporary operation of the ICS-C prototype at an operational provider.	ICS-C hosting and POT should be finalised by 2023
R2	Lack of coordination among hosting organizations in IT management and poor coordination with EPOS ERIC IT Office	-	4	More HR dedicated to improve IT management and communication among hosting teams and between hosting teams and EPOS ERIC.	Rediscovering ICS-C Management with ICS-C Director and the Hosting Teams and empowerment of coordination within the IT development team for operating the ICS-C	ICS-C hosting and POT should be finalised by 2023 but considering the distributed nature of EPOS, this risk (generally coordination issues related to the nature of EPOS), might not be completely gone. Keep the same mitigation action + contingency plan.
R3	Lack of ICS-C robustness and low technological performances during EPOS POP	-	5	Analysis of low performances and robustness causes during operational testing pilots and support to IT development	Further implementation of the ICS- C prototype through internal and external resources	ICS-C hosting and POT should be finalised by 2023
R4	TCS failure to adopt a reliable governance and legal framework	-	2	Support TCS construction through meetings providing legal assistance	Postponing activation of service for TCS Governance and Coordination and revise TCS Governance Structure	Governance/legal framework should be in place by 2023 but the future state of it needs to be monitored for efficiency, compliance, suitability for new members, etc.

R5	Fail to update and maintain the TCS Cost Book	1	1	Updating costs in TCS Cost Book including the available in-kind contributions, taking into account the EPOS SP WP2 achievements. Continuous maintenance by EPOS ERIC.	Increase HR and skills for establishing a dedicated WG that will revise the TCS Cost Book, in addition to the EPOS SP Risk management.	Tools might change but cost evaluation needs to continue; which system and objectives? If contracts are in place by the end of 2021, this needs to be established during 2022. Preferably a minimum effort system. Additional documentation to set up for a transparent and sustainable system. Several risks to monitor; which ones, impact...? Two actions are in place to reduce the likelihood: WP2+UiB+INGV work together to integrate the cost-book into an EPOS back-office tool, to merge the technical databases and cost-book, define roles for its maintenance, etc., so both system and procedures are being developed now.
R6	Fail to create the appropriate legal framework for service activation	-	3	Support TCS construction through meetings providing legal assistance	Establishment of a dedicated WG for identifying a suitable legal framework for service agreements	Legal framework for service activation should be in place by 2023
R7	Fail to approve the Procedure for Service Activation	-	3	Involve the EPOS ERIC GA to elaborate an effective procedure and allocate necessary time for discussions	Establishment of a dedicated WG for identifying a suitable legal framework for service agreements	The procedure for Service Activation should be approved in 2023.
R8	Fail in approving the financial eligibility of the services through effective procedures	-	5	Approve the Service Activation Roadmap and Service Delivery Plan.	Revise the Service Activation Roadmap and further implementation of the EPOS ERIC Business Model to increase available resources, exploiting EPOS SP WP2-WP8 results.	The procedures for financial eligibility of the services will be approved by 2023. However, the background risk will remain, meaning "failing to declare services as financially eligible" due to lack of resources.

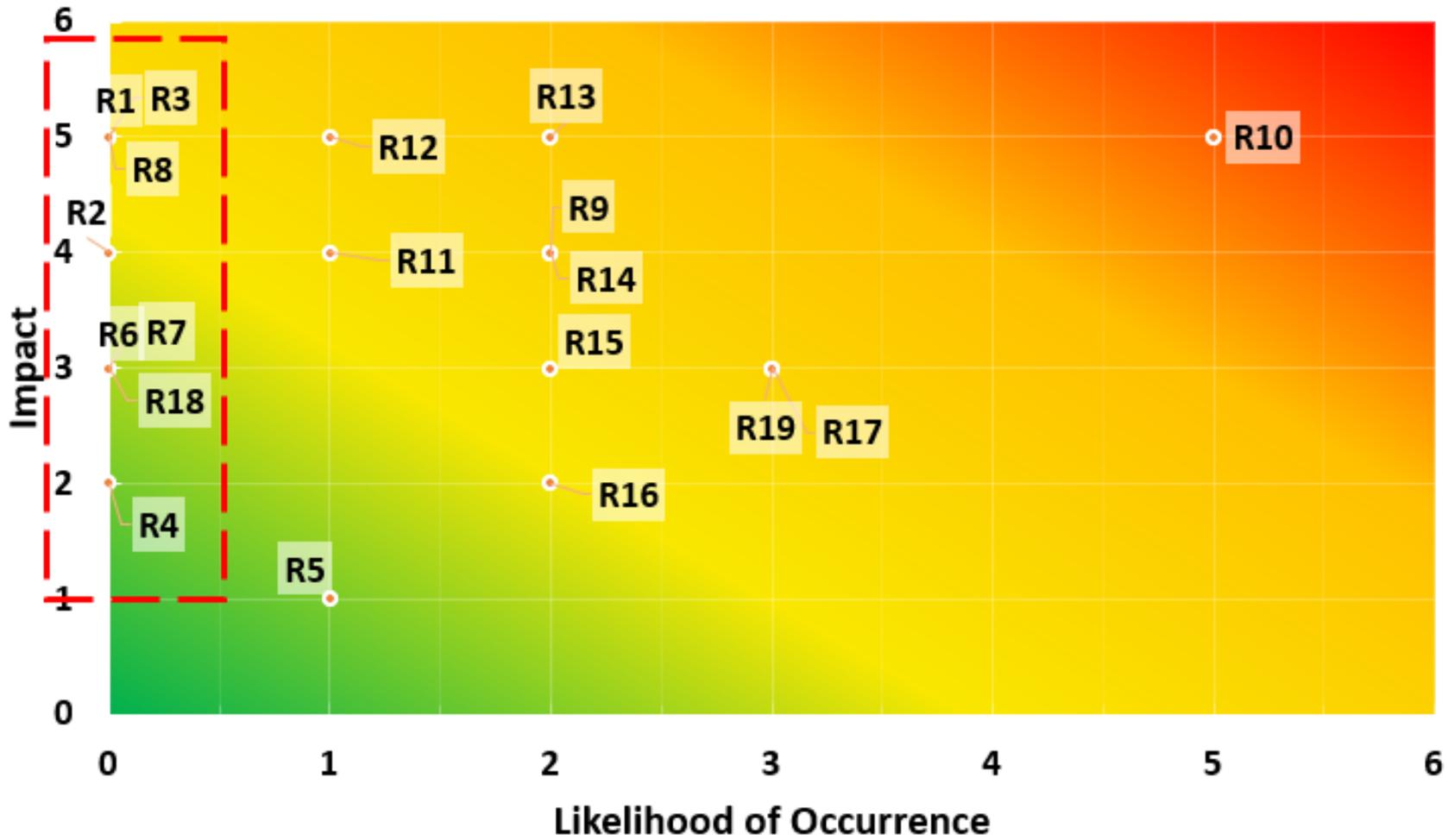
R9	Fail to validate TNA as a service	2	4	Dedicated activity in EPOS POP to address this issue	Adopt existing standards for TNA management	Some uncertainty on the evolution of TNA validation. Currently, action is taken with a joint proposal for all TCS providing TNA, and ongoing exchanges of the TNA WG & ECO on the IT aspects & financial/governance aspects.
R10	Lack of financial resources to support the activation of TNA services	5	5	Strengthening EPOS ERIC budget including national in-kind contributions	Limit TNA provision to the broker service for TNA Calls external to EPOS	Uncertainty of the criticality for sustainability if activation is not possible by 2023. However, a richer service portfolio (including TNA) most probably reinforces a broader use of the infrastructure.
R11	Fail to maintain and operate the metadata catalogue	1	4	Organize TCS-ICS interaction workshops to foster awareness and readiness. Ensure human resources and skills	Revise metadata structure	Can be considered as a permanent risk within EPOS, but the risk will depend on the mitigation actions put into place.
R12	Fail to maintain and operate TCS-ICS interoperability	1	5	Organize TCS-ICS integration meetings ; strengthen communication between TCS and ICS development teams	Revise IT solutions and evaluate the possibility to outsource services	Idem
R13	Fail to further engage governments and convince them to prioritize EPOS within their national programmes	2	5	Foster proactive participation of National Authorities to support the operation of the EPOS Delivery Framework, taking advantage of the activities planned in the EPOS SP project.	Organize tailored initiatives with national authorities; Adopting more effective approaches to foster the provision of in-kind resources to the operation of the EPOS Delivery Framework.	This risk will probably be present within EPOS for a substantial amount of time, because of the need for enlarging the number of country members, but also because we have no indication of the engagement to provide the nominal fee vs the current reduced fee as is the case in various members.

R14	Fail in implementing and adopting the EPOS User Strategy	2	4	Support activities and initiatives in EPOS SP WP4 contributing with EPOS ERIC vision, mission and strategic actions to engage users. Use Pilot Operational Testing to engage users	Increase HR and skills and adopt more effective communication tools to engage the users. Use ICS-C operation to interact with users' communities. Use TCS data & service provision to engage users and stakeholders.	It is assumed that the EPOS User Strategy will be adopted and implemented. However, need for reflection on how to prepare all permanent tools for the end of EPOS SP.
R15	Fail to establish the EPOS Global Dimension consolidating the participation to international cooperation	2	3	Support activities and initiatives in EPOS SP WP3 contributing with EPOS ERIC vision, mission and strategic plans.	Increase HR and skills from ECO to organize initiatives and communicate EPOS ERIC. Strengthening EPOS ERIC cooperation activities and financial support.	The risk will depend on how "establish the EPOS Global Dimension" is defined. Action planned within EPOS SP so risk will probably persist but decrease.
R16	Fail in engaging the Private Sector	2	2	Support activities and initiatives in EPOS SP WP5 including them in the EPOS ERIC strategic plans. Provide further contents to interactions with private sector.	Develop more effective plans to engage the private sector communicating the contents of the EPOS Delivery Framework strengthening the service provision of relevance for industry.	Depends on the exact objective. Is this substantial to long-term sustainability? Action planned within EPOS SP; risk cannot be eliminated but will probably decrease.
R17	Fail in explicating the EPOS added value for society	3	3	Support activities and initiatives in EPOS SP WP6 including them in the EPOS ERIC strategic plans. Provide further contents to interactions with key stakeholders describing the contents of the EPOS delivery framework.	Develop more effective plans to engage the key stakeholders communicating the contents of the EPOS Delivery Framework strengthening the service provision of relevance for society.	Action planned within EPOS SP; risk cannot be eliminated but will probably decrease. Still, the issue of new target audiences having specific requirements towards products and services that often do not coincide with those of previous users, e.g. scientists will persist.

R18	Fail in adopting Ethical guidelines in EPOS ERIC	-	3	Support activities and initiatives in EPOS SP WP6 contributing with EPOS ERIC vision and strategic plans of relevance for defining the Ethical Dimension.	Involving the EPOS ERIC Ethics Board and other	The Ethical Guidelines will be adopted before 2023. However, there is a risk that the ethical guidelines remain a purely indicative document.
R19	Fail in implementing a Training Programme	3	3	Support activities and initiatives in EPOS SP WP7 contributing with EPOS ERIC tools, contents and visibility.	Increase HR, skills and financial support to launch dedicated training initiatives. Adopt dedicated actions to harmonize the contributions for TCS, ICS and EPOS SP WPs 2-6 to implement training initiatives	Should be accomplished within EPOS SP, but uncertainties remain. Will it be enough consolidated within EPOS SP? At the moment, there is no specific structure established within EPOS-ERIC regarding training.

### EPOS long-term risk register (Draft version) heat map

Risks that will have disappeared by the end of EPOS SP (2023).



### Annex 3 – Form for input on critical risks

EPOS SP WP8, task 8.2 – <i>Critical risks to long-term sustainability</i>					
WP number:			Date:		
<p><b>After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?</b>                      Describe the risk in detail.                      Please concentrate on risks that are critical to EPOS sustainability.</p>					
<p><b>Probability of risk occurrence</b></p>	<p>1 – Unlikely <input type="checkbox"/></p>	<p>2 – Rare <input type="checkbox"/></p>	<p>3 – Possible <input type="checkbox"/></p>	<p>4 – Likely <input type="checkbox"/></p>	<p>5 – (Almost) certain <input type="checkbox"/></p>
<p><b>Impact on EPOS long-term sustainability</b></p>	<p>1 – Minor impact <input type="checkbox"/></p>	<p>2 – Low impact <input type="checkbox"/></p>	<p>3 – Notable impact <input type="checkbox"/></p>	<p>4 – High impact <input type="checkbox"/></p>	<p>5 – Substantial impact <input type="checkbox"/></p>
<p><b>Corrective actions</b>                      Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.</p>					

## Annex 4 – Instructions for filling in the form for input on critical risks

### ***Guidelines for filling in the Long-term Critical Risk Identification form***

#### WP8, task 8.2 Identifying critical risks and solutions for sustainability

The risk identification form will be used as a call for input on critical risks to EPOS long-term sustainability from EPOS SP Work Packages, EPOS ERIC and actors within the EPOS Delivery Framework. In some cases, the filling-in of the form will take place after a meeting between the questioned group/person and WP8. The information collected will serve as main input for EPOS SP deliverables D8.3 and D8.4, but will also be used when developing the Long-term Sustainability Plan (D8.5).

This form and process concern only the risks to the sustainability of EPOS, and not risks that concern EPOS SP project actions. Long-term sustainability concerns everything that allows EPOS to stand on its own and continue to function in the future. We recall that the time horizon is, in this first phase, 5 years after the end of SP; i.e. 2023-2028.

The questions that we want answers to through the form, are the following:

1. Imagine a situation where all the planned EPOS SP work has been carried out successfully. After the end of EPOS SP (2023), what risks to sustainability will remain within the field of your WP?

For each risk, we would also like to know the following:

2. What corrective actions or tools could be used to mitigate the risks? Who should be responsible for the action(s)? Have they already (wholly or partially) been established?
3. What is the likelihood of the risk occurring?
4. What is the expected level of impact on EPOS long-term sustainability, if the risk occurs?

We invite you to fill in the form **once for each risk** and to respect the maximum space of **one page per risk**. As a rule of thumb, around half a page should be dedicated to explain the risk itself and around half a page to the corrective action(s). You can submit as many risks as you consider necessary, but please limit your input to *critical* risks. Try to define and limit every risk as much as possible.

Please provide your input by email to [karin.karlzen@univ-grenoble-alpes.fr](mailto:karin.karlzen@univ-grenoble-alpes.fr).

*This form has been indicated in the online EPOS survey register.*

## Annex 5 – Risk forms filled-in by WP:s 3, 5, 6 and 7

<b>EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability</b>	
<b>WP number: 3</b>	<b>Date of submission: 25/ 03/2021</b>
<p> <b>After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?</b>  <i>Describe the risk in detail. Please concentrate on risks that are critical to EPOS sustainability.</i> </p>	<p>                     A key aspect of EPOS sustainability are the new and existing partnerships that have been established with other RIs and similar relevant initiatives. These relationships position EPOS within the international landscape of solid Earth research, which is critical for maximising wider uptake of the EPOS services and encouraging greater participation/membership.                 </p> <p>                     WP3 has developed a strategy for establishing and formalising collaborative partnerships with these key initiatives that is partly reliant on proactive engagement with them through a range of activities where there is a common area of interest or objective.                 </p> <p>                     A risk is that these relationships are not maintained beyond the end of the project. The framework and strategy for establishing and maintaining these collaborative partnerships has been developed within the context of EPOS SP and needs to be translated into EPOS ERIC to ensure they continue beyond the end of the project.                 </p> <p>                     The failure to maintain these collaborative partnerships potentially undermines the position of EPOS within a global RI for the solid Earth. It also potentially limits opportunities for EPOS to contribute as part of consortia for new research activities/proposals.                 </p>
<p> <b>Likelihood of risk occurrence</b>  <i>Use the following scale:</i>                      1 – Low: Unlikely to occur                      2 – Medium: May occur occasionally                      3 – High: Is likely to occur                 </p>	2
<p> <b>Impact on EPOS long-term sustainability</b>  <i>Use the following scale:</i>                      1 – Minor impact                      2 – Notable impact                      3 – Substantial impact                 </p>	2
<p> <b>Corrective actions</b>  <i>Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.</i> </p>	<p>                     EPOS ERIC should adopt the strategy (or elements of it) for developing collaborative relationships as documented in D3.1 to ensure that these partnerships are maintained for the longer-term.                 </p> <p>                     The strategy for engaging with wider ecosystem of RIs includes the mechanisms for the formalising selected collaborative partnerships. These formalised partnerships should be established between EPOS ERIC and other relevant initiatives, and must include a clear plan for ongoing collaborative activities as part of any formal agreement.                 </p>

**EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability**
**WP number: WP5**
**Date:**

**After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?**

*Describe the risk in detail. Please concentrate on risks that are critical to EPOS sustainability.*

Communication and PS engagement issues

No significant risk is envisioned. EPOS infrastructure is created mainly for scientists, not for PS representatives, and the EPOS sustainability does not depend on links with PS. Thus, failing at establishing communication with PS will not have a huge impact on EPOS sustainability. However, establishing links with PS will strengthen EPOS and its sustainability.

**Probability of risk occurrence**

1 – Unlikely

2 – Rare

3 – Possible

4 – Likely

5 – (Almost) certain

**Impact on EPOS long-term sustainability**

1 – Minor impact

2 – Low impact

3 – Notable impact

4 – High impact

5 – Substantial impact

**Corrective actions**

*Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.*

WP5 aims at developing solutions to facilitate and enhance the interaction between EPOS RI and PS. The key issue is the information on EPOS services offered to the Private Sector, so the industry representatives are aware of EPOS services and ways they can be exploited. Increasing EPOS visibility and attractiveness of TCS-s and the entire EPOS for industry and SMEs is of key relevance. Based on our experience we see that an analogy of the Innovation Advisory Committee of TCS AH created at the entire EPOS level could support strategic activities at this level. It is also advisable to appoint an Industry Contact Officer responsible for contacts between EPOS / TCS and the industry. The communication strategy developed within EPOS should also include the bespoke solutions for approaching PS and communicating with PS. The Task 5.2 action plan, which assumed the consequent releasing information on EPOS to the PS, was strongly disturbed by the pandemic. Particularly, familiarization meetings of EPOS with the PS, planned in the first year of the EPOS SP project, could not occur. As a result, the process of developing EPOS's relationship with the PS needs to accelerate. Such acceleration can only be achieved by presenting the PS pilot offers representing the potential of EPOS to work with the PS. Therefore, it is essential to accelerate the work considerably within Task 5.1, i.e., to build pilots from this task as soon as possible.

**EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability**

<b>WP number: WP5</b>		<b>Date:</b>			
<b>After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?</b> <i>Describe the risk in detail. Please concentrate on risks that are critical to EPOS sustainability.</i>	Licenses  Risk of not providing sound legal setting that addressed rights, responsibilities and limitations of both EPOS and industrial stakeholders. Not addressing the rules for providing EPOS data/service to PS as well as for integrating industrial infrastructures with EPOS, external funding rules, securing the researchers and industry rights.				
	<b>Probability of risk occurrence</b>	1 – Unlikely <input type="checkbox"/>	2 – Rare <input type="checkbox"/>	3 – Possible <input checked="" type="checkbox"/>	4 – Likely <input type="checkbox"/>
<b>Impact on EPOS long-term sustainability</b>	1 – Minor impact <input type="checkbox"/>	2 – Low impact <input type="checkbox"/>	3 – Notable impact <input checked="" type="checkbox"/>	4 – High impact <input type="checkbox"/>	5 – Substantial impact <input type="checkbox"/>
<b>Corrective actions</b> <i>Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.</i>	Collecting information through in-depth interviews, questionnaires. Implementing appropriate metadata to expose licences Implementing appropriate AAI to authorise access based on licence conditions.				

**EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability**

<b>WP number: WP5</b>		<b>Date:</b>			
<b>After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?</b> <i>Describe the risk in detail. Please concentrate on risks that</i>	AAI issues				
	(This section is currently empty in the provided image)				

<i>are critical to EPOS sustainability.</i>					
<b>Probability of risk occurrence</b>	1 – Unlikely <input type="checkbox"/>	2 – Rare X <input type="checkbox"/>	3 – Possible <input type="checkbox"/>	4 – Likely <input type="checkbox"/>	5 – (Almost) certain <input type="checkbox"/>
<b>Impact on EPOS long-term sustainability</b>	1 – Minor impact <input type="checkbox"/>	2 – Low impact X <input type="checkbox"/>	3 – Notable impact <input type="checkbox"/>	4 – High impact <input type="checkbox"/>	5 – Substantial impact <input type="checkbox"/>
<b>Corrective actions</b> <i>Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.</i>	<i>EPOS has set up a policy group charged with writing policies, guidelines and specifications for IT implementation of the guidelines.</i>				

## EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability

WP number: 6  
TASK 6.1

Date: 28 June 2021

**After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?**  
*Describe the risk in detail. Please concentrate on risks that are critical to EPOS sustainability.*

The main objective of task 6.1 is to investigate which is the EPOS community perception of the ethical and social implications of its scientific and technological activities. Moreover, the task aims at establishing a shared ethical framework of reference, to be proposed to EPOS ERIC, for increasing the awareness of EPOS community on the importance of ethical aspects in its own activities, and for defining the perimeter of the EPOS responsibilities in decision-making and problem-solving. This will lead to the clarification of the ethical implications of the EPOS data and service provision, to analyse the ethical implications of cooperating with the private sector, and to reinforce the EPOS value for society.

The final outputs of the task 6.1 will be two deliverables: D6.1 (Report containing analysis of the data collected with the questionnaire) and D6.2 (Ethical Guidelines for data and service provision and scientific information to be discussed for adoption by EPOS ERIC, aimed at providing a general framework of values to be considered in research and for technological implementation).

Given these purposes, the risk that can affect the results of task 6.1 is that the released ethical guidelines remain a purely indicative document, which does not find further development in codes of ethics aimed at more specific roles, activities or issues concerning EPOS ERIC.

<b>Probability of risk occurrence</b>	1 – Unlikely <input type="checkbox"/>	2 – Rare <input type="checkbox"/>	3 – Possible <input checked="" type="checkbox"/>	4 – Likely <input type="checkbox"/>	5 – (Almost) certain <input type="checkbox"/>
<b>Impact on EPOS long-term sustainability</b>	1 – Minor impact <input type="checkbox"/>	2 – Low impact <input type="checkbox"/>	3 – Notable impact <input checked="" type="checkbox"/>	4 – High impact <input type="checkbox"/>	5 – Substantial impact <input type="checkbox"/>
<b>Corrective actions</b> <i>Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.</i>	<ul style="list-style-type: none"> <li>- Repetition of the survey through the ethics questionnaire to monitor if there have been any changes to the perception of ethical problems. In fact, the questionnaire also has the function of increasing the individual awareness about possible or real ethical issues affecting EPOS activities. To this aim, the current questionnaire could be drawn up in a light version, extended to a wider audience and repeated at regular time intervals, so that it can be progressively used as a sort of "indicator" about the perception of the existing ethical implications in EPOS ERIC.</li> <li>- Developing specific codes of ethics.</li> </ul>				

### EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability

<b>WP number: 6</b>		<b>Date: 24.06.2021</b>			
<b>After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?</b> <i>Describe the risk in detail. Please concentrate on risks that are critical to EPOS sustainability.</i>	<p><u>Products and services addressing professionals outside the EPOS framework and/or members of society are not well contextualized.</u></p> <p>When offering products and services to audiences less familiar with potential limitations or implications of the products or and services offered, additional guidance is required. In particular, when providing up-to-date products and services or products and services relevant for hazard or risk mitigation, providing an adequate context including understandable explanations is a necessity. Such guidance needs to be allocated.</p>				
<b>Probability of risk occurrence</b>	1 – Unlikely <input type="checkbox"/>	2 – Rare <input type="checkbox"/>	3 – Possible <input checked="" type="checkbox"/>	4 – Likely <input type="checkbox"/>	5 – (Almost) certain <input type="checkbox"/>
<b>Impact on EPOS long-term sustainability</b>	1 – Minor impact <input type="checkbox"/>	2 – Low impact <input type="checkbox"/>	3 – Notable impact <input type="checkbox"/>	4 – High impact <input checked="" type="checkbox"/>	5 – Substantial impact <input type="checkbox"/>
<b>Corrective actions</b> <i>Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.</i>					

**EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability**

WP number: 6

Date: 24.06.2021

**After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?**  
 Describe the risk in detail.  
 Please concentrate on risks that are critical to EPOS sustainability.

Products and services addressing professionals outside the EPOS framework and/or members of society do not meet the target audiences' requirements.  
 These target audiences have specific requirements towards products and services that often do not coincide with those of previous users, e.g. scientists.

**Probability of risk occurrence**

1 – Unlikely

2 – Rare

3 – Possible

4 – Likely

5 – (Almost) certain

**Impact on EPOS long-term sustainability**

1 – Minor impact

2 – Low impact

3 – Notable impact

4 – High impact

5 – Substantial impact

**Corrective actions**

Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.

**EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability**

WP number: 6

Date: 24.06.2021

**After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?**  
 Describe the risk in detail.  
 Please concentrate on risks that are critical to EPOS sustainability.

The development and allocation of products and services addressing professionals outside the EPOS framework and/or members of society is not sufficiently funded.  
 Addressing these target audiences is costly in terms of financial resources needed to develop and maintain data provision, but also in term of human resources ensuring the support and answering to requests.

**Probability of risk occurrence**

1 – Unlikely

2 – Rare

3 – Possible

4 – Likely

5 – (Almost) certain

<b>Impact on EPOS long-term sustainability</b>	<i>1 – Minor impact</i> <input type="checkbox"/>	<i>2 – Low impact</i> <input type="checkbox"/>	<i>3 – Notable impact</i> <input checked="" type="checkbox"/>	<i>4 – High impact</i> <input checked="" type="checkbox"/>	<i>5 – Substantial impact</i> <input type="checkbox"/>
<b>Corrective actions</b> <i>Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.</i>					

### EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability

<b>WP number: 6</b>	<b>Date: 24.06.2021</b>				
<b>After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?</b> <i>Describe the risk in detail. Please concentrate on risks that are critical to EPOS sustainability.</i>	<p><u>The EPOS community cannot agree on whom and to what terms they want to provide access to products and services.</u></p> <p>Products and services offered through the EPOS framework can potentially be used for a wide variety of applications in the scientific, commercial, public authority domain. Each use case sets different requirements and must be agreed on. Of course, in consequence, different regulations could be applied to different products and services, however, also this has to be decided on.</p>				
<b>Probability of risk occurrence</b>	<i>1 – Unlikely</i> <input type="checkbox"/>	<i>2 – Rare</i> <input type="checkbox"/>	<i>3 – Possible</i> <input type="checkbox"/>	<i>4 – Likely</i> <input checked="" type="checkbox"/>	<i>5 – (Almost) certain</i> <input type="checkbox"/>
<b>Impact on EPOS long-term sustainability</b>	<i>1 – Minor impact</i> <input type="checkbox"/>	<i>2 – Low impact</i> <input type="checkbox"/>	<i>3 – Notable impact</i> <input checked="" type="checkbox"/>	<i>4 – High impact</i> <input checked="" type="checkbox"/>	<i>5 – Substantial impact</i> <input type="checkbox"/>
<b>Corrective actions</b> <i>Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.</i>					

### EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability

<b>WP number: WP7</b>	<b>Date: 1 June 2021</b>
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<p><b>After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?</b>  <i>Describe the risk in detail. Please concentrate on risks that are critical to EPOS sustainability.</i></p>	<p>Task7.1: Training</p> <p>Current training activities are handled by the EPOS-SP partnership in this task lead by UiB. There is no permanent mechanism to handle training in the future in EPOS-ERIC structure.</p> <ul style="list-style-type: none"> <li>• Risks associated with the training related to users on technical aspects of services                             <ul style="list-style-type: none"> <li>○ For users of ICS                                     <ul style="list-style-type: none"> <li>▪ Risks associated with the training in ICS Data Portal</li> </ul> </li> <li>○ For users of TCS                                     <ul style="list-style-type: none"> <li>▪ Risks associated with the training in individual TCS Portals</li> </ul> </li> <li>○ For internal EPOS data providers                                     <ul style="list-style-type: none"> <li>▪ Risks associated with the training on metadata integration</li> </ul> </li> <li>○ For new thematic communities                                     <ul style="list-style-type: none"> <li>▪ Risks associated with the training on technical preparedness</li> </ul> </li> <li>○ Risks associated with the training in data management and FAIR principles</li> </ul> </li> <li>• Risks associated with the training related to new communities on legal, governance and financial aspects of EPOS integration.</li> <li>• Risks associated with the governance legal and financial aspects of training (e.g. identifying the responsible bodies, allocating human resources, allocating financial support etc.)</li> </ul> <p>Maintenance and update of training material is treated as a separate risk (see the associated template)</p>				
<p><b>Probability of risk occurrence</b></p>	<p><i>1 – Unlikely</i> <input type="checkbox"/></p>	<p><i>2 – Rare</i> <input type="checkbox"/></p>	<p><i>3 – Possible</i> <input type="checkbox"/></p>	<p><i>4 – Likely</i> <input type="checkbox"/></p>	<p><i>5 – (Almost) certain</i> <input checked="" type="checkbox"/></p>
<p><b>Impact on EPOS long-term sustainability</b></p>	<p><i>1 – Minor impact</i> <input type="checkbox"/></p>	<p><i>2 – Low impact</i> <input type="checkbox"/></p>	<p><i>3 – Notable impact</i> <input type="checkbox"/></p>	<p><i>4 – High impact</i> <input type="checkbox"/></p>	<p><i>5 – Substantial impact</i> <input checked="" type="checkbox"/></p>
<p><b>Corrective actions</b>  <i>Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.</i></p>	<p>Since there is not any specific structure established within EPOS-ERIC regarding training, there are several possibilities:</p> <ul style="list-style-type: none"> <li>• All training related activities are handled by one or several external institution(s).                             <ul style="list-style-type: none"> <li>○ All training activities related to ICS Data Portal are handled by the ICS-TCS interactions Coordination (i.e. current Collaboration Agreement between EPOS-ERIC and UiB).</li> <li>○ All training activities related to TCS Portals are handled by each relevant institution responsible for the portal.</li> <li>○ All training activities related to metadata integration are handled by the EPOS-ERIC IT-Unit.</li> </ul> </li> <li>• All training activities are handled within the responsibility of the Communication Unit in EPOS-ERIC.</li> <li>• All training activities are coordinated by the Communication Unit but handled through one or several external institution(s).</li> <li>• GA should endorse a financial support mechanism for the training activities (i.e. including an activity plan and a budget annually).</li> </ul> <p>In all training related activities, the role of the existing bodies of EPOS-ERIC should be clarified. These include the Communication Unit, SCC, IT-Unit and the IT-Board, as well as the ICS-TCS Interactions Coordination.</p> <p>Decision process regarding the training activities should also be clearly defined (i.e. who will make the decisions? ED, EC, GA or both).</p>				

**EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability**
**WP number: WP7**
**Date: 1 June 2021**

**After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?**  
*Describe the risk in detail. Please concentrate on risks that are critical to EPOS sustainability.*

T7.1: Training – training materials

- The risks associated to maintenance and update of the training material related to all identified training aspects (see the template on “training” for a complete list).
  - Maintenance (storage, access) of training material
  - Keeping the training materials online updated (updating all relevant links)
  - Updating the training material in line with new developments

**Probability of risk occurrence**

1 – Unlikely

2 – Rare

3 – Possible

4 – Likely

5 – (Almost) certain

**Impact on EPOS long-term sustainability**

1 – Minor impact

2 – Low impact

3 – Notable impact

4 – High impact

5 – Substantial impact

**Corrective actions**

*Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.*

Depending on the outcome of how the previous risks in “training” are handled, the corresponding training material should be maintained and updated by the relevant EPOS-ERIC unit or external organization(s).  
 Communication Unit should be responsible in updating all available training material links and media-channels.

**EPOS SP WP8, task 8.2 – Critical risks to long-term sustainability**

WP number: WP7

Date: 1 June 2021

**After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?**  
 Describe the risk in detail.  
 Please concentrate on risks that are critical to EPOS sustainability.

T7.2: Outreach

- How will the outreach activities be arranged in the future?
  - Currently there are two generic approaches:
    - Focusing in new geographical areas
    - Focusing in new thematic areas
- Who decides on which areas to focus (strategy documents)?
- Outreach related to the entire EPOS community (not focused in specific areas).
  - Could be part of the general “communication” activities (i.e. T7.3).
- Addressing the changing landscape of EPOS interest and involvement in time.
- Outreach material maintenance and updates.
- Risks associated with the engagement of various bodies of EPOS and their coordination through the Communication Unit.

In the following assessment, we consider all the above risks under one umbrella and give our initial evaluation.

**Probability of risk occurrence**

1 – Unlikely

2 – Rare

3 – Possible

4 – Likely

5 – (Almost) certain

**Impact on EPOS long-term sustainability**

1 – Minor impact

2 – Low impact

3 – Notable impact

4 – High impact

5 – Substantial impact

**Corrective actions**

Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.

- In general, the existing “Communication Unit” in EPOS-ERIC may handle all future outreach activities.
- There is also need, however, to engage various bodies of EPOS-ERIC (e. g. IT-Board, SCC, individual TCSs etc.) depending upon the content of each outreach activity.
- There is a need for maintaining and updating the outreach material. This can be handled within the Communication Unit. However, there should be a well-identified mechanism in place.

## EPOS SP WP8, task 8.2 – *Critical risks to long-term sustainability*

WP number: 7.3

Date: 1.6.21

**After the end of EPOS SP (early 2023), what risks to long-term sustainability will exist within the subject area of your WP?**  
 Describe the risk in detail. Please concentrate on risks that are critical to EPOS sustainability.

1. No risk from the structural point of view: the communication and dissemination unit is already part of ECO and it is supposed to be a permanent part of the organization
2. The real risk depends, e. g., from the previous tasks: if the communication structure is not fuelled by the content owner, it will not perform

**Probability of risk occurrence**

1 – Unlikely

2 – Rare

3 – Possible

4 – Likely

5 – (Almost) certain

**Impact on EPOS long-term sustainability**

1 – Minor impact

2 – Low impact

3 – Notable impact

4 – High impact

5 – Substantial impact

**Corrective actions**

Describe the actions, indicate if they have already (wholly or partially) been established, the expected outcome and success.

We definitely should create a formal organization that can link the content (knowledge) owners to the communication unit.