The EPOS vision on EOSC

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What is EOSC?

The European Commission in its communication to the European parliament, the council, the European economic and social committee and the committee of the regions on the “European Cloud Initiative - Building a competitive data and knowledge economy in Europe” has identified several reasons to explain why Europe is not fully exploiting the potential of data. The communication identifies three actions to overcome the existing bottlenecks:

The European Open Science Cloud (EOSC),
The European Data Infrastructure (EDI),
Widening access and building trust.

According to the Commission the EOSC aims to give Europe a global lead in scientific data infrastructures, to ensure that European scientists reap the full benefits of data-driven science. The European Open Science Cloud will start by federating existing scientific data infrastructures, today scattered across disciplines and Member States. This will make access to scientific data easier, cheaper and more efficient.

These strategic actions meet the core activities and objectives of numerous ESFRI research infrastructures, including EPOS. Indeed, it
is expected that pan-European Research Infrastructures will play a central role in developing both EOSC and EDI.

EPOS Architecture and EOSC

EPOS architecture has been designed to integrate data, data-products, software and services (DDSS) for solid Earth science in order to provide virtual access as well as physical access to facilities for different users and stakeholders. The key objectives of EPOS are: Implementing Thematic Core Services (TCS), the domain-specific service hubs for coordinating and harmonizing national resources/plans with the European dimension of EPOS; Building the Integrated Core Services (ICS) to provide a novel research platform to different stakeholders; using a metadata catalog, being populated from the DDSS supplied by the TCS, ICS virtualise access to TCS assets; Designing the access to distributed computational resources (ICS-D) and Computational Earth Science facilities (CES); Ensuring sustainability and governance of TCS and EPOS-ERIC.

EPOS has designed the architecture of its integrated core services (ICS) in order to manage and further implement three interfaces: (i) the data-metadata integration to ensure integration and interoperability of data and services; (ii) the user interface to foster access, use and re-use of data and products; (iii) the access to computational resources through a federated approach to allow processing, modelling and visualization of data as well as data storage, preservation and traceability. According to its architecture, EPOS users can take advantage of e-infrastructures such as EOSC - or for that matter - commercial public CLOUD providers because they might represent an effective and sustainable solution to federate IT providers. EPOS has been working with EUDAT and EGI on pilots and demonstrating activities to benefit of e-science innovation for developing its core services as well as to ensure the full understanding of the capabilities and limitations of these offerings. In this sense EOSC represent an opportunity to implement EPOS ICS-D.

The EOSC Proposal

EPOS is participating in the pilot proposal to the EC (European Commission) to build and utilise the EOSC (European Open Science Cloud). The proposal includes many other RIs (e.g. ENVRIplus, ELIXIR, EUT0, ICOS,...) but also the e-infrastructures such as GEANT (networking), EUDAT (data management), OpenAIRE (open publications management), EGI (Grid and now Cloud computing). The concept behind EOSC is open and easy access to CLOUD computing facilities and interoperability of data from different scientific domains. In this concept it is important that the domain specific integration and interoperability needs to be handled by the domain specific RIs such as EPOS. EOSC is therefore complementary and, thus, aligns well with the EPOS vision.
If the EOSC project, funded by the EC, will be successful, we shall construct one or more entries in the EPOS catalog attached to the ICS to describe EOSC (its capabilities but also any rights, security, privacy or costs aspects). As a partner in the EOSC Pilot Project EPOS will work closely with the team to deliver results for EPOS and represent other RIs.

In addition to gaining access to powerful ICT infrastructure there are two other significant advantages:

EPOS can influence (especially working together with the other RIs such as ENVRIplus and ELIXIR) the strategic development and direction of EOSC to ensure that – especially in non-functional requirements such as rights, security, privacy, costs – EOSC fits with its philosophy;

EPOS team can work with the other RIs to share the work of interfacing to EOSC: as a side effect this may mean that the EPOS architecture is adopted by or influences the way the other RIs interface to EOSC.

The launch of EOSC represents an unprecedented opportunity for EPOS, as well as many others RIs, to fully exploit the potential of data, in particular solid Earth data for EPOS. However, EPOS has developed services to integrate data (and metadata) and to engage users (and stakeholders). Although EOSC might represent a solution for federating existing and new e-infrastructures and technological providers, EPOS is not going to delegate EOSC the maintenance of its integrated and thematic core services. Similarly to EOSC, the EPOS vision concerning the European Data Infrastructure consists of assigning a key role to pan-European research infrastructures with dedicated efforts, resources and skills to federate data providers and infrastructures within individual scientific domains. EDI should not be solely considered as an opportunity for implementing supercomputing facilities; rather it might represent an opportunity to adopt a coherent model for federating research infrastructures in synergy with the efforts of EOSC for federating e-infrastructures.