



The EPOS e-Infrastructure: metadata driven integration of data products and services in solid Earth Science

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The European Plate Observing System (EPOS) is an ambitious long term integration plan addressing the major solid-earth research infrastructures in Europe. For its large scale and extent it is an unique initiative which will foster new scientific discoveries and enable scientists to investigate the solid earth system with unprecedented ways. A key aspect of EPOS is to provide end-users with homogeneous access to services and multidisciplinary data collected by monitoring infrastructures and experimental facilities as well as access to software, processing and visualization tools. Such a complex system requires a solid, scalable and reliable architecture in order to accommodate innovative features and to meet the evolving expectations of the heterogeneous communities involved.

EPOS¹ ended its Preparatory Phase in October 2014 and, being included in the top three infrastructures in the prioritization list by Competitiveness Council, is – at the moment of writing this abstract – in the process of submitting the proposal for EPOS IP (Implementation Phase).

In this framework, the overarching objective of technical Working Package (WP7) is the design and implementation of the Integrated Core Service (ICS) platform, supporting the standardised, efficient, integrated and transparent access to data, data products and services of the EPOS community

EPOS architecture² envisages a main system, the ICS, integrating data and services provided by communities through the Thematic Core Services (TCS). TCS according to their level of maturity will build new interoperable services or make existing services interoperable with ICS through the use of software interfaces allowing the interchange of metadata with the ICS.

Therefore WP7 will develop the software for integration while TCS are responsible for provision of metadata describing their services and assets, testing and evaluation of the system, provision of use cases, and creation of software interfaces (APIs, web services, microservices architecture-based interfaces etc.) and testing and evaluation of the system,. Importantly, once the ICS-C host country will be selected, WP7 will collaborate with IT experts from the host country for facilitating the future operation of ICS.

One of the main elements enabling the system to integrate data, data products and services is the metadata catalog based on the CERIF³ metadata model. Such a model, modified to fit into the general e-infrastructure design, is part of a three-layer metadata architecture⁴. CERIF guarantees a robust handling of metadata, which is in this case the key to the interoperability and to the capability of orchestrating the distributed resources made available by EPOS data providers and stakeholders.

Contributions by external stakeholders as European Projects dealing with complementary issues (e.g. data management, data curation) or as computational infrastructures both at European and National level are envisaged in order to provide Computational Earth Sciences services to Thematic Communities and other EPOS users.

In this work we will present the lessons learned, the technical achievements of the EPOS Preparatory Phase and the plan for the Implementation Phase.

¹ www.epos-eu.org

² none[rgb]0.2,0.2,0.2 Keith G. Jeffery, Daniele Bailo. EPOS: Using Metadata in Geoscience, , Metadata and Semantics Research Communications in Computer and Information Science Volume 478, 2014, pp 170-184

³ www.eurocris.org

⁴ Jeffery, K., Asserson, A., Houssos, N., & Jörg, B. (2013). A 3-Layer Model for Metadata. Proc. Int'l Conf. on Dublin Core and Metadata Applications 2013, 3–5.