The EPOS Integrated Core Services

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The European Plate Observing System (EPOS) is integrating the diverse, but advanced Research Infrastructures in Europe for solid Earth Science, and will build on new e-science opportunities to monitor and understand the dynamic and complex solid-Earth System. This integration requires a significant coordination between, among others, disciplinary (thematic) communities, national RIs policies and initiatives, and geo- and IT-scientists. The RIs that EPOS will coordinate include at least, but not only: regionally-distributed geophysical observing systems (seismological and geodetic networks), local observatories (including geomagnetic, permanent in-situ and volcano observatories), experimental & analogue laboratories in Europe, integrated satellite data and geological information. EPOS is promoting open access to geophysical and geological data as well as modelling/processing tools, enabling a step change in multidisciplinary scientific research for Earth Sciences

The EPOS e-infrastructure is developed through strawman (initial design / architecture), woodman (refined design/architecture) and ironman (final design/architecture) phases. Midway in the project we are in the woodman phase based on extensive primary requirements from users and secondary requirements for interoperation with other geoscience systems, other European environmental research infrastructure projects and e-infrastructure projects (e.g. EUDAT).

The EPOS e-infrastructure is being developed along 3 parallel tracks: (a) an inventory of assets offered by organisations within the EPOS community. The RIDE (Research Infrastructure Database for EPOS) system from the strawman phase is being extended in the woodman phase to the metadata catalog describing computing and scientific resources, data, services (software), and users which will drive the EPOS e-infrastructure; (b) refining an architecture to meet the requirements. This is an iterative process with the working groups (organised thematically) within EPOS also including other work packages in EPOS such as those concerned with legalistics and financing; (c) a prototype based on the woodman architecture in one domain (seismology) to provide assurance that the architecture is valid.

The key aspect is the metadata catalog. In one dimension this is described in 3 levels: (1) discovery meta-data using well-known and commonly used standards such as DC (Dublin Core) to enable users (via an intelligent user interface) to search for objects within the EPOS environment relevant to their needs; (2) contextual metadata providing the context of the object described in the catalog to enable a user or the system to determine the relevance of the discovered object(s) to their requirement – the context includes projects, funding, organisations involved, persons involved, related publications, facilities, equipment etc and utilises CERIF (Common European Research Information Format) see www.eurocris.org ; (3) detailed metadata which is specific to a domain or to a particular object and includes the schema describing the object to processing software. The other dimension of the metadata concerns the objects described. These are classified into users, services (including software), data and resources (computing, data storage, instruments and scientific equipment).

The core services include not only user access to data, software, services, equipment and associated processing but also facilities for interaction and cooperative working between users and storage of history and experience. EPOS will operate a full e-Science environment including metadata and persistent identifiers.