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EUDAT and EPOS moving towards the efficient management of scientific data sets

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This abstract presents the collaboration between the European Collaborative Data Infrastructure (EUDAT) and the pan-European infrastructure for solid Earth science (EPOS) which draws on the management of scientific data sets through a reciprocal support agreement.

EUDAT is a Consortium of European Data Centers and Scientific Communities whose focus is the development and realisation of the Collaborative Data Infrastructure (CDI), a common model for managing data spanning all European research data centres and data repositories and providing an interoperable layer of common data services. The EUDAT Service Suite is a set of a) implementations of the CDI model and b) standards, developed and offered by members of the EUDAT Consortium. These EUDAT Services include a baseline of CDI-compliant interface and API services – a "CDI Gateway" – plus a number of web-based GUIs and command-line client tools.
On the other hand,the EPOS initiative aims at creating a pan-European infrastructure for the solid Earth science to support a safe and sustainable society. In accordance with this scientific vision, the mission of EPOS is to integrate the diverse and advanced European Research Infrastructures for solid Earth Science relying on new e-science opportunities to monitor and unravel the dynamic and complex Earth System. EPOS will enable innovative multidisciplinary research for a better understanding of the Earth's physical and chemical processes that control earthquakes, volcanic eruptions, ground instability and tsunami as well as the processes driving tectonics and Earth's surface dynamics. Through the integration of data, models and facilities EPOS will allow the Earth Science community to make a step change in developing new concepts and tools for key answers to scientific and socio-economic questions concerning geo-hazards and geo-resources as well as Earth sciences applications to the environment and to human welfare. To achieve this integration challenge and the interoperability among all involved communities, EPOS has designed an architecture capable to organize and manage distributed discipline-oriented centers (called Thematic Core Services - TCS). Such design envisage the creation of an integrating e-Infrastructure called Integrated Core Service (ICS), whose aim is to collect and integrate Data, Data Products, Software and Services, and provide homogeneous access to them to the end user, hiding all the complexity of the underlying network of TCS and National data centers.
Therefore, EPOS can take advantage of EUDAT CDI at different levels: at the TCS level, providing technologies, knowledge and B2* services to discipline-oriented communities, and at the ICS level, by facilitating the integration and interoperability of different communities with different level of maturity in terms of technology expertise. EUDAT services are particularly suitable to facilitate this process as they can be deployed across the community centers to complement or augment existing services of more mature communities as well as be used by less mature communities as a gateway towards the EPOS integration.

To this purpose, a pilot is being carried on in the context of the EPOS Seismological community to foster the uptake of EUDAT services among centers and thus ensure the efficient and sustainable management of scientific data sets. Data sets, e.g. seismic waveforms, collected through the Italian Seismic Network and the ORFEUS organization, are currently replicated onto EUDAT resources to ensure their long-term preservation and accessibility. The pilot will be extend to cover other use cases such as the management of meta-data and the fine-grained control of access.