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The EPOS e-Infrastructure for solid Earth sciences: architeture and collaborative framework

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Integrating data from Solid Earth Science and providing a platform for the access to heterogeneous datasets and services over the whole Europe is a challenge that the European Plate Observing System(EPOS)is tackling.EPOS will enable innovative multidisciplinary research for a better understanding of the Earth's physical processes that control earthquakes,volcanic eruptions,ground instability and tsunamis as well the processes driving tectonics and Earth surface dynamics.To meet this goal,a long-term plan to facilitate integrated use of data and products as well as access to facilities from mainly distributed existing and new research infrastructures(RIs)has been designed in the EPOS Preparatory Phase(EPOS PP).In the EPOS Implementation Phase(starting in October 2015)the plan will be implemented in several dimensions: the Legal & Governance,with the creation of EPOS-ERIC and the implementation of policies for data and transnational access;Financial,by adopting a financial plan to guarantee the long-term sustainability of infrastructure;Technical,with the implementation of Thematic services(TCS)in the several EPOS domains(e.g.seismology,satellite data,Volcanic observatory and others)and the creation of the Integrated Core Services(ICS)platform to integrate data and services.In this presentation we will deal with the technical aspects and the synergies with e-Infrastructure providers such as EGI,required to build the EPOS ICS platform.We will focus on the EPOS e-Architecture,based on the ICS integration platform and the European community specific TCS services,and its main components: a)the metadata catalogue based on the CERIF[1]standard,used to map and manage users,software,datasets,resources,included datasets and access to facilities;b)a compatibility layer to enable interoperation among ICS and the several TCSs,which includes the usage of web services or other APIs over a distributed VRE-like environment;c)the ICS-D distributed component,to provide computational and visualization capabilities to end-users;d)the implementation AAI module,to enable a user to have a single sign-on to the EPOS platform and retrieve and use resources from TCSs,and the synergies with the EGI-Engage EPOS Compentence Center pilot;e)a computational Earth Science module,where a contribution by VERCE[2]is expected;e)mechanisms to provide persistent identifiers both at ICS and TCS level,and the synergies with other European projects.The building of such complex system,which will hide to the end-user the technical and legal complexity of accessing heterogeneous data,is based on four main principles: 1.ICS-TCS co-development,2.do not reinvent the wheel,3.microservices approach,4.clear long-term technical goals but iterative short-term approach.We will discuss,in the framework of EGI,which are the synergies required with EGI and other e-Infrastructure providers,and which are the issues to be tackled in the short-mid term in order to optimize resources at European level and make the collaboration among ESFRIs,EGI and other relevant initiatives real and active.

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