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Helix Nebula: Enabling federation of existing data infrastructures and data services to an overarching cross-domain e-infrastructure

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Helix Nebula has established a growing public private partnership of more than 30 commercial cloud providers, SMEs, and publicly funded research organisations and e-infrastructures. The Helix Nebula strategy is to establish a federated cloud service across Europe. Three high-profile flagships, sponsored by CERN (high energy physics), EMBL (life sciences) and ESA/DLR/CNES/CNR (earth science), have been deployed and extensively tested within this federated environment. The commitments behind these initial flagships have created a critical mass that attracts suppliers and users to the initiative, to work together towards an "Information as a Service" market place.

Significant progress in implementing the following 4 programmatic goals (as outlined in the strategic Plan Ref.1) has been achieved:
• Goal #1 Establish a Cloud Computing Infrastructure for the European Research Area (ERA) serving as a platform for innovation and evolution of the overall infrastructure.
• Goal #2 Identify and adopt suitable policies for trust, security and privacy on a European-level can be provided by the European Cloud Computing framework and infrastructure.
• Goal #3 Create a light-weight governance structure for the future European Cloud Computing Infrastructure that involves all the stakeholders and can evolve over time as the infrastructure, services and user-base grows.
• Goal #4 Define a funding scheme involving the three stake-holder groups (service suppliers, users, EC and national funding agencies) into a Public-Private-Partnership model to implement a Cloud Computing Infrastructure that delivers a sustainable business environment adhering to European level policies.

Now in 2014 a first version of this generic cross-domain e-infrastructure is ready to go into operations building on federation of European industry and contributors (data, tools, knowledge, . . .). This presentation describes how Helix Nebula is being used in the domain of earth science focusing on geohazards. The so called "Supersite Exploitation Platform" (SSEP) provides scientists an overarching federated e-infrastructure with a very fast access to (i) large volume of data (EO/non-space data), (ii) computing resources (e.g. hybrid cloud/grid), (iii) processing software (e.g. toolboxes, RTMs, retrieval baselines, visualization routines), and (iv) general platform capabilities (e.g. user management and access control, accounting, information portal, collaborative tools, social networks etc.). In this federation each data provider remains in full control of the implementation of its data policy. This presentation outlines the Architecture (technical and services) supporting very heterogeneous science domains as well as the procedures for new-comers to join the Helix Nebula Market Place.

Ref.1 http://cds.cern.ch/record/1374172/files/CERN-OPEN-2011-036.pdf