

The research community services and their technical components

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Competence Centre ELIXIR /Biological Sciences

- Life Science Reference Data Sets as a Service within EOSC: Providing packaged 'ELIXIR Data Resources' in the EOSC applications marketplace that can be deployed within the EOSC by the user (or their service provider) to enable local optimised access to reference data. Data resources are critical to many genomic workflows as the core of this analysis is to find comparisons between new data and known data (the reference data sets). EMBL-EBI's reference data sets and the services provided to access them can be found on line - <http://www.ebi.ac.uk/services>. A subset of these have been proposed as ELIXIR Core Data Resources, and the most popular of these will be the initial candidates for these thematic services.
- The software will be maintained as a set of deployable appliances (containers) in the EOSC applications marketplace for institutional users or individual researchers to download and deploy as required.
- List of reference data sets and for users (individual researchers or more likely service providers) to subscribe and be notified of new releases or to start replication of the reference data set release to the desired site.

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Competence Centre Fusion / Physical Sciences

- Fusion unified data access service: enables users to access experimental and modelling data objects in a simple, generic way. The platform is designed to abstract away details of the underlying storage technology, data locality and data format, and is intended for tokamak scientists or other relevant research communities. The experimental data objects used in fusion research are constructed from a myriad of sensors and instruments (or 'diagnostics') surrounding the fusion plasma. The service includes: a metadata storage on file locality and structure, caching services, a set of server plugins for storage access, a distribute data archive.

Competence Centre Marine biological sciences

- Core data resources from observation services (e.g. SeaDataNet, Copernicus MEMS, World Ocean Database), Research Infrastructures (Argo, ICOS/Ocean, EMSO, Research Vessels, coastal observations) made available through an online file directory.
- Data analytics platform including science applications and computational clusters (HTC and/or Cloud), Jupyter for the creation and sharing of notebooks that contain live code, equations and visualizations, and a GUI web application to enable users to configure data subsetting or automated subscription to visualize and stage the data.
- Data preservation service to publish and preserve results, notebooks or output datasets.
- IFREMER/Sextant to document and identify relevant data streams as inputs to the Marine Competence Centre. Sextant is already used for Copernicus MEMS, SeaDataNet, AtlantOS and as such already contains the description of most of the required sources.
- Authentication and Authorization services

Competence Centre EISCAT-3D/Space Science

- EISCAT Agile Data Portal offering scientific use case configuration templates, automated deployment of required software stacks, and file discovery;
- Use-case specific analysis software;
- EISCAT_3D data repository with simulated radar data integrated with compute clusters delivering a complete file processing chain;
- Authentication and authorization services.

Competence Centre EPOS-Orpheus / Earth Science

- The European Integrated Data Archive (EIDA) portal for discovery and access to waveform data. EIDA currently federates 11 major European seismological data centres into a common organisational and operational framework which offers: (a) transparent and uniform access tools, advanced services and products for seismological waveform data; (b) a platform for establishing common policies for the curation of seismological waveform data and the description of waveform data by standardised quality metrics; (c) proper attribution and citation (e.g. data ownership).
- WFCatalogue: Catalogue service containing seismic waveform metadata including quality parameters continuously computed on raw data.
- The Station book: an interactive catalogue to register and browse through extended seismological stations characteristics (including site descriptions etc).
- Authentication and authorization services.

Competence Centre Radio Astronomy Competence Center / Astronomy and Astrophysics

- Scientific data generated by LOFAR stored in a distributed Long Term Archive (LTA) including observational and processed data (currently 28 PB). The competence centre will support the integration of the LTA with service and data registration capabilities via persistent identifiers. This service components includes the archive catalogue, and data selection, staging and retrieval components.
- Compute clusters and processing software available as containerized applications and user work space for storing and sharing temporary data and products from processing pipelines. Computational facilities for processing LOFAR data volumes need scalable access to the LTA.
- Federated identity provisioning Authentication and Authorization services.

Competence Centre ICOS Carbon Portal / Ecology

- A dynamic data query store, and associated couplings to metadata catalogues and data processing facilities, to enhance the abilities of end users of environmental observational data to access, download, and correctly cite the data products they use, regardless of where the data are stored or their analysis environments are running.
- Discovery interfaces for simple access to environmental data sets, and to avoid that end-users have to design and implement their own facilities for sub-setting or aggregating dynamic data.
- Storage and compute services offering Cloud, HTC and HPC capabilities.

Competence Centre Disaster Mitigation services / Environmental engineering

- iCOMCOT and gWRF scientific portals providing various data analysis capabilities like landslide simulation, risk identification analysis, weather forecast, flood risk simulation, storm surge modeling combining atmospheric and ocean models together, which has been verified by several historical events in Philippine and Taiwan. With case studies and open data from the portal, this service provides customization support to be applied to different places in the world, but also supports model refinement and comparison studies.
 - The WRF weather simulation services providing 128-thread or 256-thread MPI environment for each simulation run.
 - Storm surge simulation and compute capabilities providing multicore jobs with at least 10 CPU cores, and Matlab/Octave
- Open data archives, compute and storage services: Distributed collaborative data infrastructure supporting the access, backup, replication, catalogue, metadata, archive, various query schemes, and sharing with international partners of satellite data (e.g. Sentinel Asia, International Charter, JAXA, GISTDA in Thailand). Hundreds of TBs of data will be generated per year.