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The AuScope Virtual Research Environment - a data enhanced virtual laboratory for the solid earth sciences

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AuScope has been delivering physical, software and data research infrastructure to the Australian Solid Earth research community for over a decade. In that time, many new data products have been developed across the geophysics, geochemistry and geodesy sectors, along with related software tools to enable value adding data manipulation through simulation and modelling. The data discovery, interoperability and delivery components of the infrastructure system have been provided by traditional portals and grid based technologies such as the Spatial Information Services Stack (SISS) with Virtual Laboratory based tools developed somewhat independently.

A broad change in usage requirements and the international move towards Findable, Accessible, Interoperable and Reusable (FAIR) data principles has provided AuScope with an opportunity to develop a new Data Enhanced Virtual Laboratory (DEVL) that will provide much closer integration of data products, analytics and simulation tools, as well as mechanisms for delivering FAIR and linked data. The DEVL will form part of the broader AuScope Virtual Research Environment (AVRE) which will be developed over the next 5 years.

Funding from Australia's National Collaborative Research Infrastructure Strategy (NCRIS) partners at the Australian National Data Service (ANDS), National eResearch Collaboration Tools and Resources (NECTAR) and Research Data Services (RDS) will be utilised with co-contributions from AuScope to develop this new platform.

In the first instance, the DEVL component of the AuScope Virtual Research Environment will deliver geophysical datasets, passive seismic and magnetotellurics from AuScope's AusLAMP and AusArray programs to support linked data workflows for laboratory information management systems for the Australian geochemistry and geochronology communities.

Subsequent development of the complete AuScope Virtual Research Environment will provide additional support for new data assimilation to enhance observational control on a priorimodels, as well as rapid three-dimensional geological model development, for Australia's simulation, analytics and modelling communities.