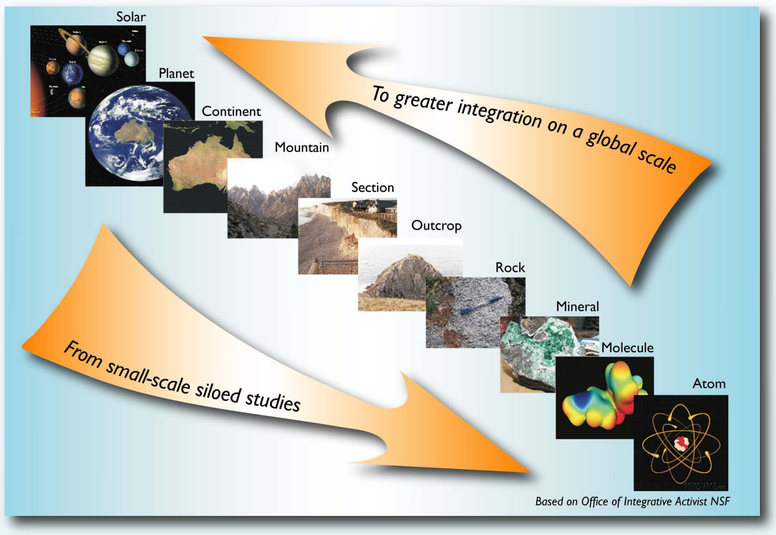
AuScope Grid: building an e-research Infrastructure for Australian Earth Sciences and beyond…



Why build an integrative Earth Science e-Research Infrastructure?

The Australian Continent is the platform on which we and most flora and fauna live. Its soils are derived from the rock base, most of our water resources reside within it as groundwater, and it is the storehouse of future clean energy, as well as a potential sink for the green house gas emissions. Hence, many of today's research challenges are geoscience related and include problems such as climate change, sustainable exploitation of energy, mineral and water resources, predicting living with extreme geological activity, and managing disaster reduction. Many of these problems can only be solved on a national, if not global scale. No single researcher, research institution, discipline or jurisdiction can provide the solutions. We increasingly need to embrace e-Research techniques and use the internet not only to access nationally distributed datasets, instruments and compute infrastructure, but also to build online, 'virtual' communities of globally dispersed researchers.

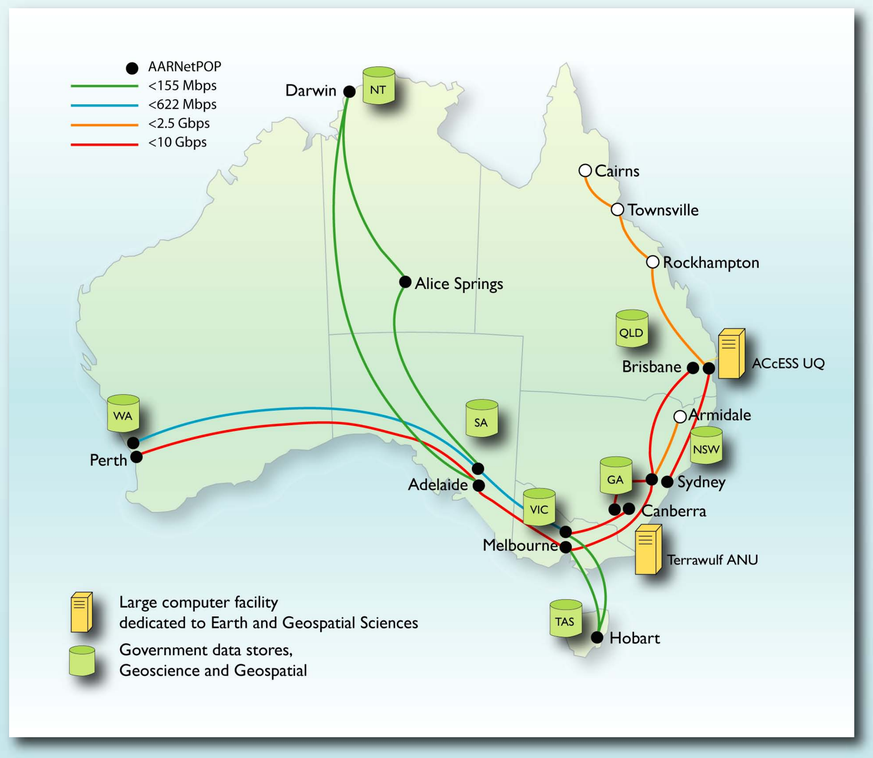
Beyond AuScope Grid: building links to NCRIS 5.16

NCRIS 5.13 AuScope Components	AuScope community specific knowledge networks and environments for research and education *Customised for domain spcific applications in Imaging, Composition, Virtuall Core Library, Geospatial and Simulation*				
NCRIS 5.13 AuScope Grid	e-Science and e-Geoscience Layer				
	Data and Information Infrastructure	Data and knowledge Portals	Visualisation 3-D Portals	Application Portals	
	Base Computing Technologies				
NCRIS 5.13 Platforms for collaboration	Australian National Data Service	National Computational Infrastructure Service	Australian Research Collaboration Network	Australian Research Education	Australian Access Fedration

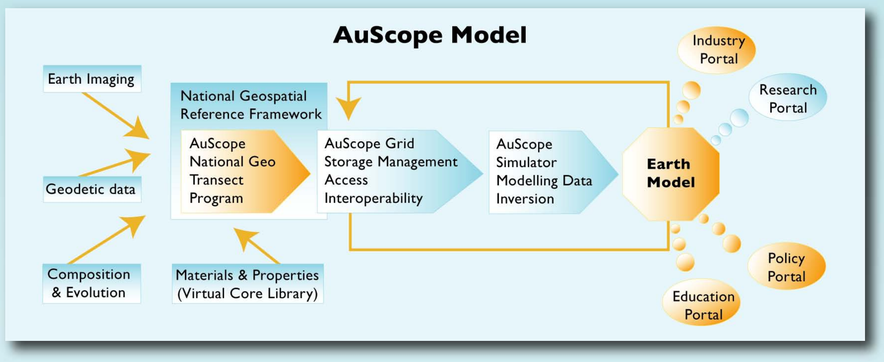
A coordinated approach to data acquisition, analysis and simulation and modelling within the Earth Science community by itself is not sufficient. There has to be crosscapability communication to enable integration of the new AuScope compute and data grids with those of other NCRIS Capabilities (e.g. IMOS, TERN, Atlas of Living Australia) as well as other research communities (Water, Spatial). To achieve this, AuScope Grid will be built and maintained in conjunction with NCRIS 5.16 Platforms for Collaboration and much of the base computing technologies will be shared across other NCRIS Capabilities to gain better leverage of resources.

AuScope Grid: building an Earth Science e-Research Infrastructure

To solve the more complex research challenges of today, we need to build an e-Research Infrastructure to federate nationally distributed data sets, to develop tools to manipulate large data volumes and to establish an appropriate governance framework to ensure sustainability. AuScope Grid will comprise distributed data storage hardware, high bandwidth network links, data management protocols, middleware and software and will be the 'glue' that enables AuScope to be substantially more than the sum of its parts. A key challenge will be to link the major geoscience and geospatial data stores of the government agencies with the HPC resources and high bandwidth networks of the academic community: none currently are.



AuScope Grid: part of a broader infrastructure

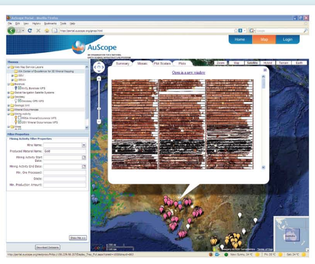


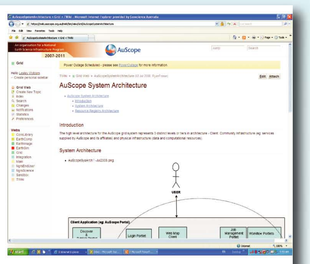
AuScope Grid is being built as part of a national geoscience and geospatial infrastructure system that combines traditional research infrastructure with applied science infrastructure. The other components in AuScope are: Earth Imaging and Structure; Earth Materials and Properties (Virtual Core Library); Earth Composition and Evolution; Geospatial Framework and Earth Dynamics; and Earth Simulation. A key principle is that AuScope facilities should be available on the basis of merit at reasonable prices wherever they are located in Australia.

AuScope Grid: building a 'virtual' Community of Practice

AuScope has established a collaborative website: https://twiki.auscope.org. This online collaboration environment will facilitate effective communication, coordinate project development and lead to rapid dissemination of results. Each project has its own virtual community in which researchers can participate and comment on project directions. This open approach facilitates linkages between each community and enables common elements and generic workflow patterns across the communities to be leveraged and exploited. The AuScope TWIKI will enable greater cohesion across geographic and discipline boundaries and lead to the creation of a true online, 'virtual' community of practice for geoscience and geospatial researchers.


AuScope Public Website


Auscope Research Portal


AuScope Public Twiki

AuScope Limited
School of Earth Sciences
University of Melbourne
Victoria 3010
Tel 03 8344 8351
Fax 038344 8359
info@auscope.org
ABN 33 125 908 376
www.auscope.org.au

Acknowledgements

CSIRO

Australian Government
Department of Innovation Industry, Science and Research

Contacts

Ryan Fraser
CSIRO Exploration and Mining
ryan.fraser@csiro.au
+618 6436 8760

Dr Robert Woodcock
CSIRO Exploration and Mining
Robert.Woodcock@csiro.au
+61 8 6436 8780

www.auscope.org.au
www.seegrid.csiro.au
www.csiro.au