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Geoscience data interoperability through a new lens: how designing a telescope that looks down changed our view of data.

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AuScope is the national provider of research infrastructure to the earth and geospatial sciences communities in Australia. Funded through the NCRIS scheme since 2006 we have invested heavily in a diverse suite of infrastructures in that time, from VLBI telescopes to geochronology laboratories, and national geophysical data acquisitions to development of numerical simulation and inversion codes.

Each of these programs, and the communities they support have different requirements relating to data structures, data storage, compute and access and as a result there has been a tendency in the past to build bespoke discipline specific data systems. This approach limits the opportunities for cross domain research activity and investigation.

AuScope recently released our plans to build an Australian Downward Looking Telescope (or DLT). This will be a distributed observational, characterisation and computational infrastructure providing the capability for Australian geoscientists to image and understand the composition of the Australian Plate with unprecedented fidelity.

The recent development of an investment plan for the construction of this National Research Infrastructure has allowed our community to reassess existing data deliver strategies and architectures to bring them in line with current international best practice.

Here we present the proposed e-infrastructure that will underpin the DLT. This FAIR data platform will facilitate open and convergent research across the geosciences and will underpin efforts currently underway to connect international research infrastructures, including EPOS, AuScope and IRIS and others, to create a global research infrastructure network for earth science.