

“EASI”: a new Earth Observation data Platform

EASI (Earth Analytics and Science Innovation) is a new high-performance data analytics platform that ‘turbo-charges’ the capacity to process and integrate huge amounts of Earth Observation data with other geospatial information and models.

CSIRO’s Earth Analytics Innovation

Earth Observation (EO), be it remotely sensed from space, airborne platforms, ground sensors, or generated through modelling or design, has a tremendously important role in society. In Australia alone, the value of remotely sensed satellite EO information is estimated to contribute \$3.8 Billion pa to the economy. With improvements in the quality and quantity of sensor systems, and better continuity of supply, this is expected to increase to \$8.8 Billion pa by 2025.

CSIRO has a strong, 25+ year record and capability in EO applications development, calibration and validation, integration with simulation models. The technological innovation spans the entire value chain: from sensor development and data collection, to publication, discovery, access, analysis and decision support.

Global trends in EO Information and Analytics

New sensors, spatio-temporal scales, science and algorithms

The challenge of collecting and assimilating geospatial and non-geospatial information requires the invention, adaption and use of new sensor technologies and methods for data integration and analysis. New methods must be capable of using both old and new observation types to deliver sensor-independent continuity.

Lower cost, small satellite launching capabilities (CubeSats) and airborne UAV platforms can create new business opportunities for custom sensor technology developers and associated data processing services for a range of end-users.

Weather forecasting, crop yield forecasting and climate-scenario modelling activities are examples of large users of analysis ready time-series EO data from numerous sensors in space, combined with sophisticated physics-based or statistical modelling tools, that support decision and policy making for use in research and value-added services for industry and government.

EO Big Data

The variety, velocity and volume of data now being collected as a result of intense sensor technology innovation has created significant pressure on existing methods of converting data into meaningful information that adds value and supports decision making.

New IP and business opportunities are resulting from innovative combinations of EO sensors with increased spatial and temporal resolution in disaster management and response, urban and environmental monitoring, agriculture, forestry and rangelands management.

Securing business growth in EO through innovation and partnership

In response to these global opportunities, CSIRO has developed a computational platform and business partnership model concept, the Earth Analytics Science Innovation hub (EASI), which is designed to provide:

- high-performance EO analytics capability (cf. the ‘EASI DataCube’), able to support concurrent, large scale satellite data processing
- EASI Industry Hub business model, with and for clients

Heritage of the EO Analytics Platform

EASI arises from an Australian innovation called the ‘Australian Geoscience Data Cube’, originally developed out of a partnership between CSIRO, Geoscience Australia and the National Computational Infrastructure (NCI). Since 2017, several international partners (NASA, USGS, CEOS, UK’s Satellite Applications Catapult) have also joined the partnership, now called the Open Data Cube (ODC) platform (www.opendatacube.org).

Operating in Cloud environments, as well as high performance supercomputers, the ODC makes comprehensive information about our Earth available as analysis ready data and open infrastructure. This streamlines R&D to industry, supports the digital economy, and enables downstream users, such as industry, to leverage it to create economic activity and employment.

CSIRO's EASI Hub

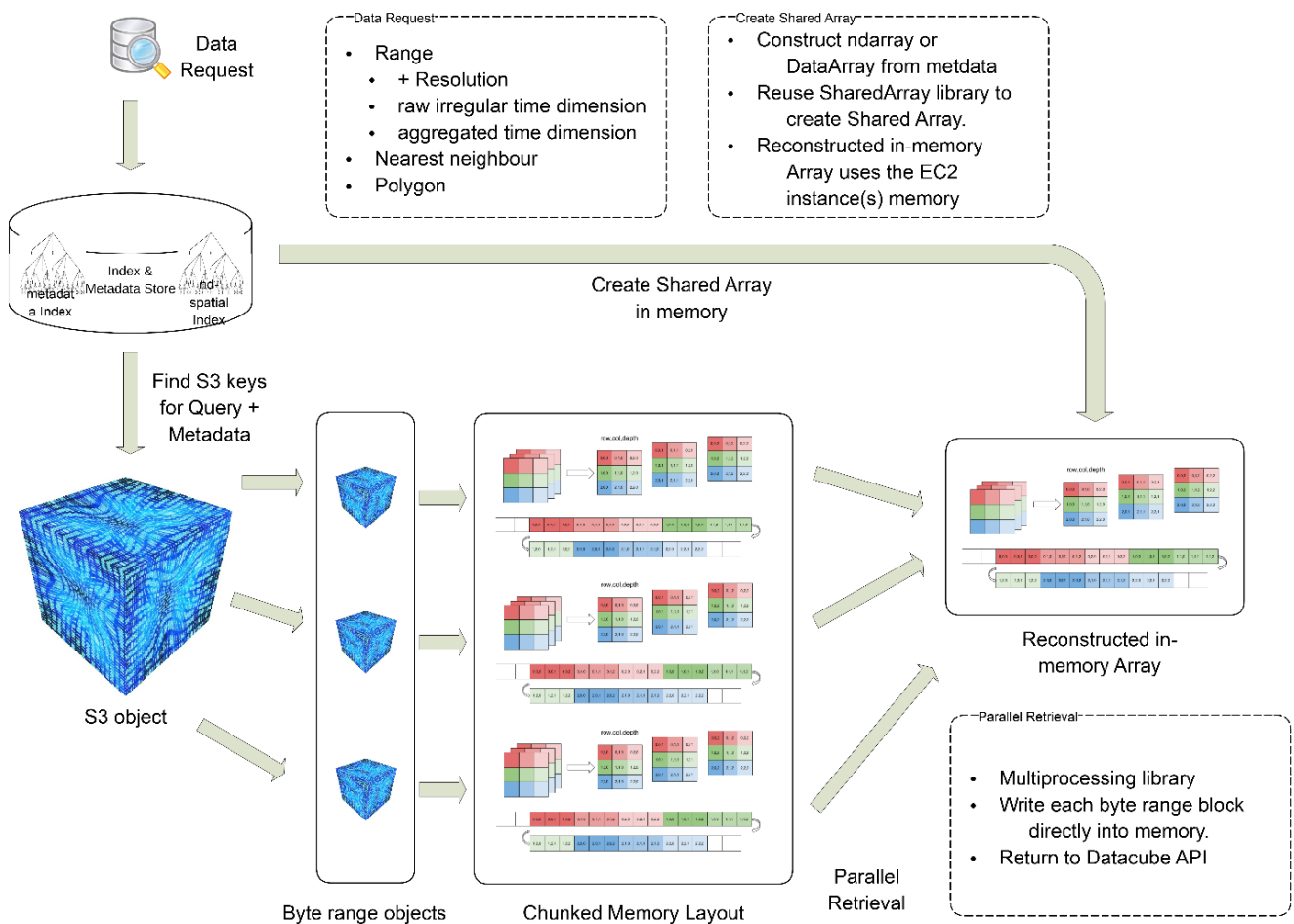
The EASI Industry Hub model is designed to achieve significantly better entrepreneurial engagement, including SMEs, using CSIRO-generated IP, accelerating technology readiness and transfer.

Key to this approach is the use of a Science-as-a-Service platform that readily supports scalable and low start-up cost access. The hub aids industry engagement and impact by addressing key innovation challenges. Benefits include:

- Data discovery and integration is simplified via appropriate shared data infrastructure – analysis ready data, in an EO Data Cube.
- Customisable analysis workflow supports diverse SME models – ie. choose your data, your algorithm, your parameterisation.
- 'Paddock to Planet' scalable data analysis and scenario outputs – via Cloud computing and automation you can

explore the whole innovation landscape, to the limits of your time and expense budget.

- Access to EO specialists and researchers in CSIRO who can assist SMEs and governments in developing new business products and ensuring their quality.
- SMEs can participate at lower upfront cost – subscribing to access and 'pay per use compute', to prove out new market opportunities.
- Removes costs of large-scale storage and compute infrastructure, data acquisition and data preparation 'pain points' for small companies.
- CSIRO-prepared and QA/QC'd data and computation infrastructure is located in a combined Cloud environment that businesses can afford to access during their start-up phase when exploring new business models.



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We innovate for tomorrow and help improve today – for our customers, all Australians and the world. We imagine. We collaborate. We innovate.

FOR FURTHER INFORMATION

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