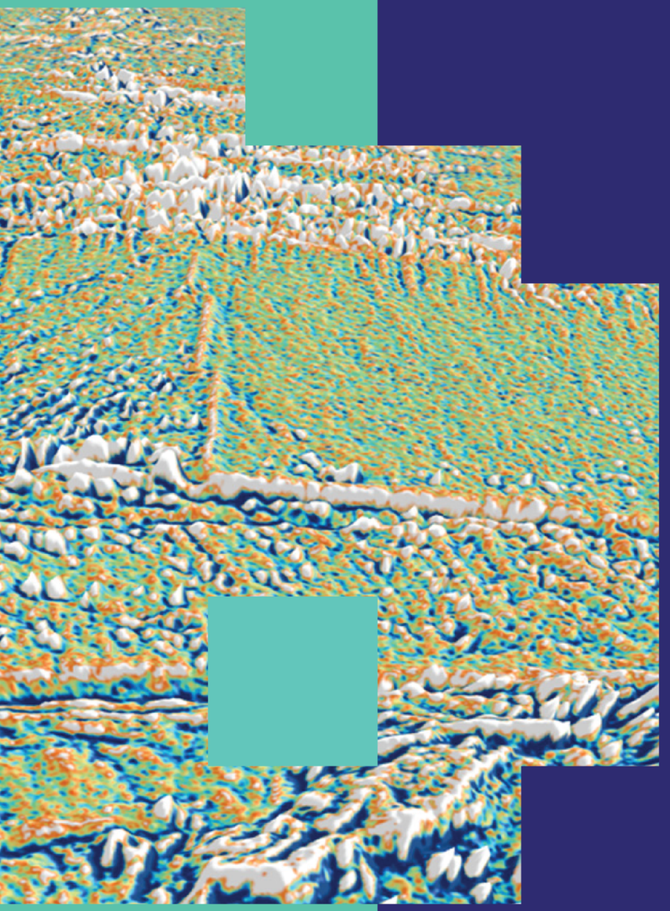
AuScope

Answering Australia's Geoscience Questions



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

Tim Rawling, **Lesley Wyborn**, Ryan Fraser, Ben Evans, Carsten Friedrich

NCRIS
National Research Infrastructure for Australia
An Australian Government Initiative

Introduction

What is AuScope?

AuScope History

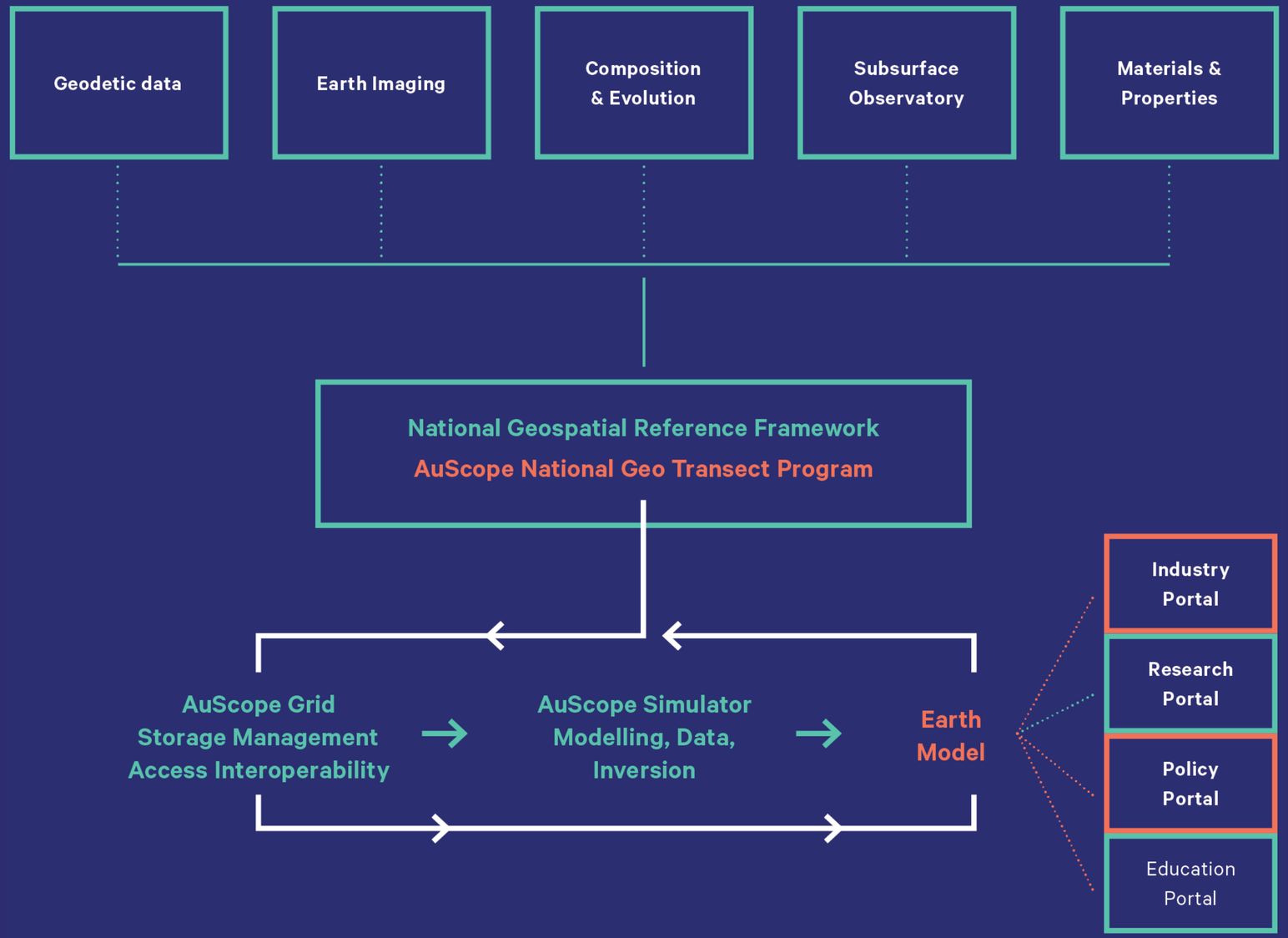
- Established in 2006 to implement an Earth and Geospatial Science Infrastructure program
- National Collaborative Research Infrastructure Strategy (NCRIS) Program “*Structure and Evolution of the Australian Continent*”
- $75M Commonwealth investment $34M cash and $128M in-kind co-investment from partners

AuScope Purpose

To create universal access to earth and geospatial research infrastructure (equipment, data, analytics) to drive:

- Innovative Australian scientific research
- Support scientific investigations in government and industry

AuScope Model



eResearch & Data

AuScope DeVL

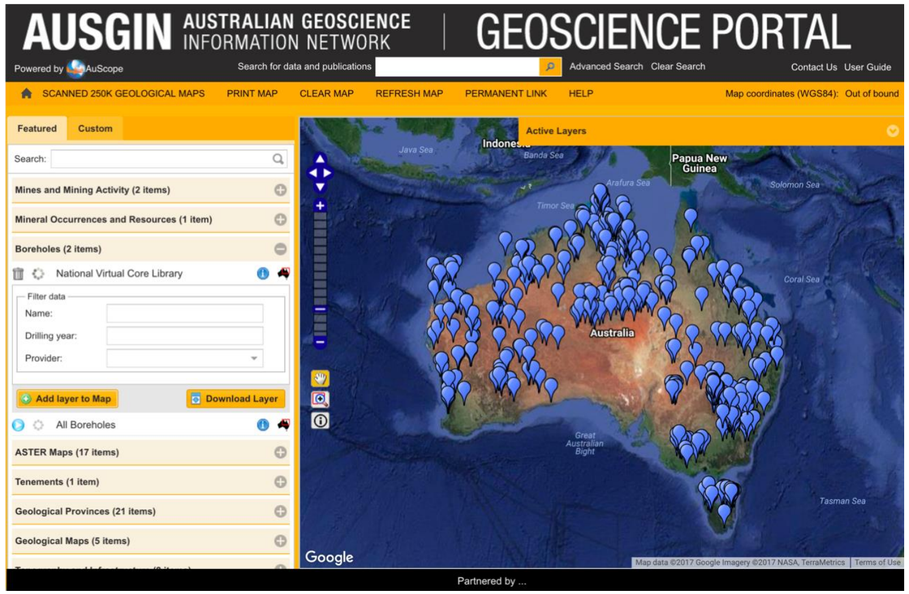
DeVL = Data-enhanced Virtual Laboratory

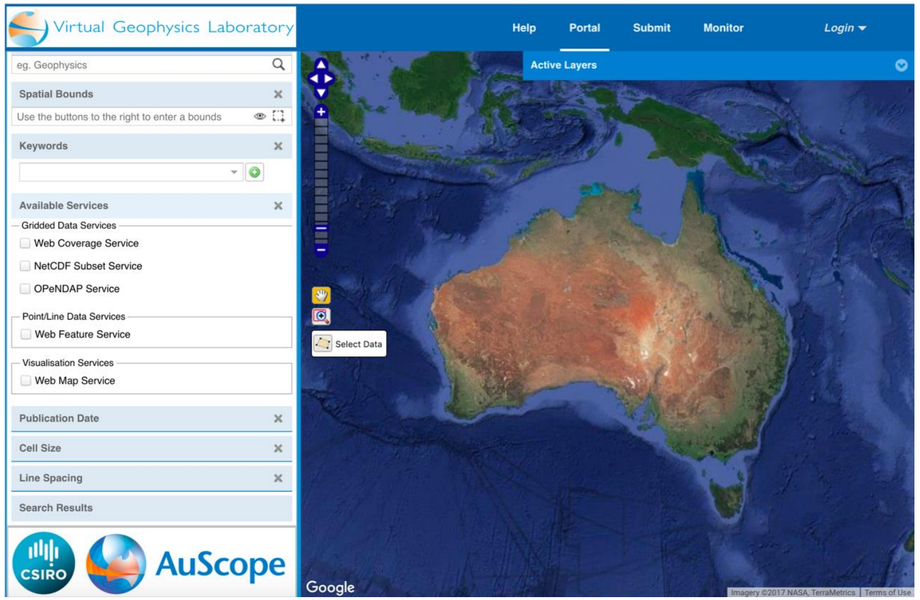
What we have now

— The existing AuScope eResearch infrastructure is currently comprised of 4 components:

1. **Data management, discovery, interpretability and delivery systems** based on the AuScope Spatial Information Services Stack (AuScope GRID and AuScope National Virtual Core Library (NVCL))
2. **A Portal** environment for data discovery and delivery (AuScope Discovery Portal)
3. **Simulation analytics and modelling tools** allowing data to be modelled and used to constrain simulations of earth processes (Underworld, GPlates, eScript, iEarth, etc)
4. **A VL-core and Portal core software** providing a generic base foundation that then allows discipline specific VL access to data, tools and compute resources (Virtual Geophysics Laboratory (VGL), Virtual Geochemistry Laboratory (VGcL)).

DeVL





AuScope Grid

— The **AuScope Portal**, the Virtual Geophysical Laboratory (**VGL**) and the Data Enhanced Virtual Laboratory (**DeVL**) provide access to data collected or generated by both AuScope and collaborating partners

— Data is freely accessibly, findable and interoperable

— New development with DeVL will ensure data is FAIR – Findable, Accessible, Interoperable and Reusable

Evolving to support for AuScope Data Assimilation and Geoscientific Discovery for the Australian Continent

— Geochemistry Discovery Network

- IGSN management and persistent ID's for national geochemistry data and sample discovery; and
- Facilitating development of domain-focused, National geochemical data aggregations from multiple research institutions.

— Geophysics Discovery Network

- Quality assurance and control workflows and support for Passive Seismic (PS) and Magnetotelluric (MT) data; and
- National PS and MT data storage linking with and augmenting international facilities such as the NSF-funded Integrated Research Institutions for Seismology (IRIS).

— Geoscience Data Analysis and Interpretation Network

- 3D data store for observational field data; and
- interoperable borehole data delivery.

— Geological model pilot project

- Providing a platform, workflow and mechanism for people to begin engaging interpretations with simulation.

— AuScope Virtual Research Environment

- To be supported by a multipurpose virtual research environment that can incorporate multiple geoscience use cases and varying skills levels of researchers

DeVL

Evolution to Virtual Research Environments

- Have moved on from data libraries to virtual laboratories
- Initially linking data to computation
- VLs are now instrumental in orchestrating transparent processing workflows
- Scientific Software Solution Centre (SSSC) provides registry for existing workflows that can be human and machine discoverable and executable on the fly
- Enable collaboration at the project, national and international scales
- VRE’s are more flexible and reuseable

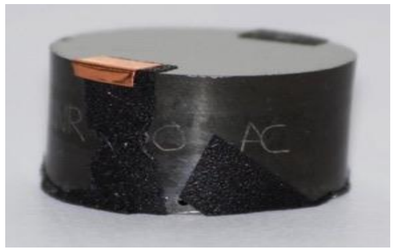
IGSN - Lims

IGSN: IECUR008F

IECUR008F.classification.png
(primary image)

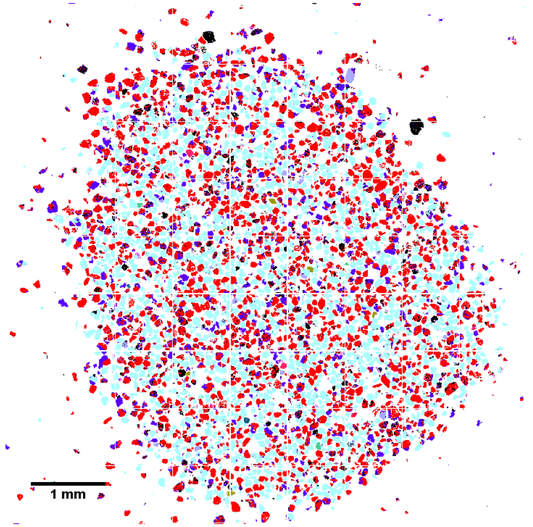
IGSN: IECUR008F
Sample Name: 143784M
Other Name(s):
Sample Type: Rock Powder
Parent IGSN: IECUR001B

Description	
Material:	Rock
Classification:	Sedimentary>Siliciclastic
Field Name:	Dovers Hills
Description:	The sample is the magnetic separa
Age (min):	Not Provided
Age (max):	465 million years (Ma)
Collection Method:	surface collection
Collection Method Description:	Not Provided
Size:	Not Provided
Geological Age:	Permo-Carboniferous
Geological Unit:	Paterson Formation
Comment:	Not Provided
Purpose:	The maximum depositional age fo
Geolocation	
Latitude (WGS84):	-23.11865
Longitude (WGS84):	128.7915
Northing (m) (UTM NAD83):	7443330
Easting (m) (UTM NAD83):	478651
Zone:	52K
Vertical Datum:	NAVD88
Elevation:	456
Nav Type:	GPS
Physiographic Feature:	Hill
Name Of Physiographic Feature:	Dovers Hills
Location Description:	Gibson Desert North
Locality:	Dovers Hills
Locality Description:	This sample was collected from th Dovers Hills, and 1.7 km north of
Country:	Australia
State/Province:	Western Australia
County:	Gibson Desert North
City:	Gibson Desert North
Collection	
Field Program/Cruise:	Geological Survey of Western Aust
Platform Type:	Not Provided

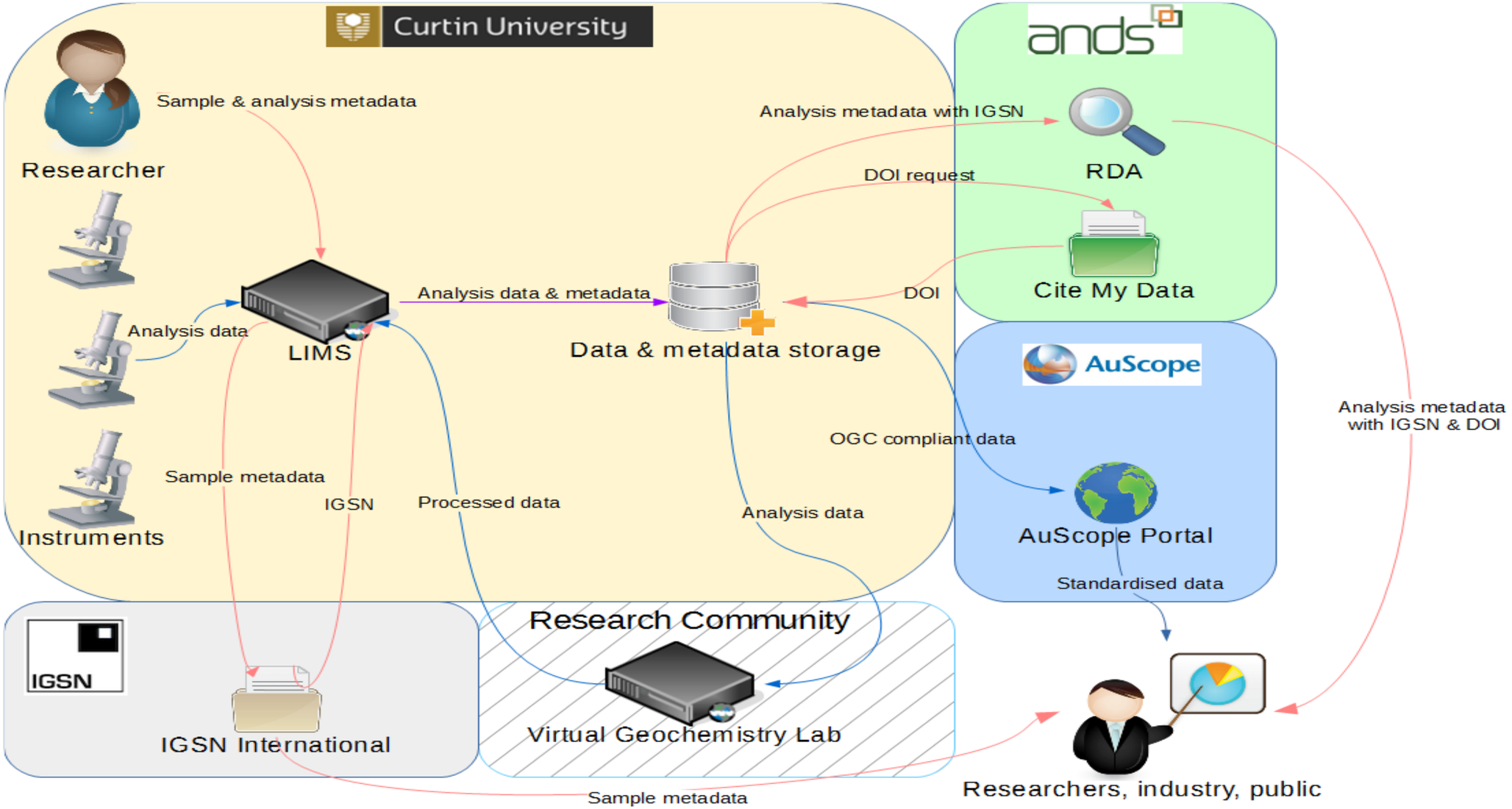


Geochemistry Network: IGSN and LIMS

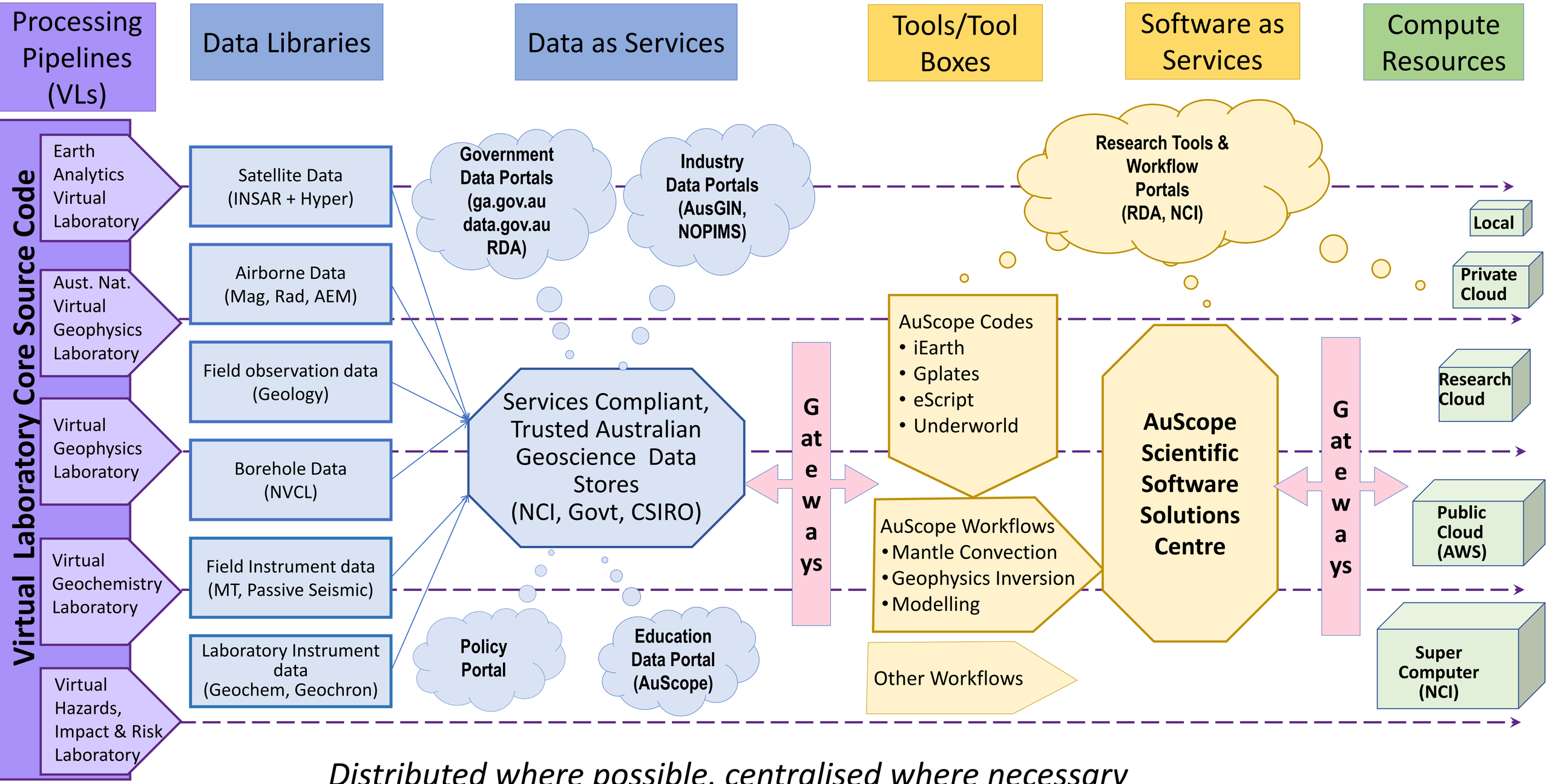
- IGSN is a unique alphanumeric code assigned to specimens and related sampling features to ensure their unique identification
- CSIRO, ANDS, Curtin/AuScope, GA



Curtin LIMS Pathfinder



AuScope Virtual Research Environment (AVRE) Platform



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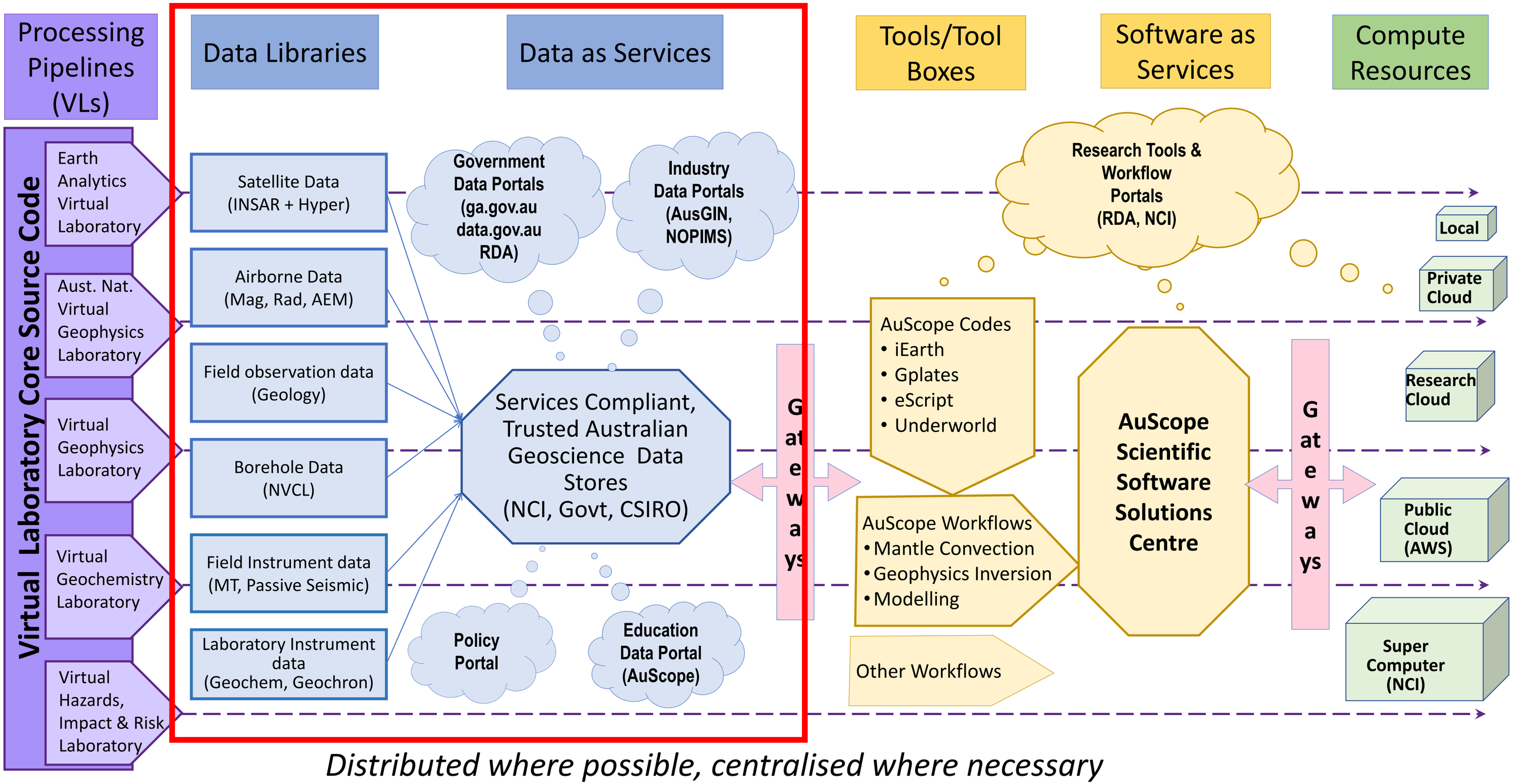

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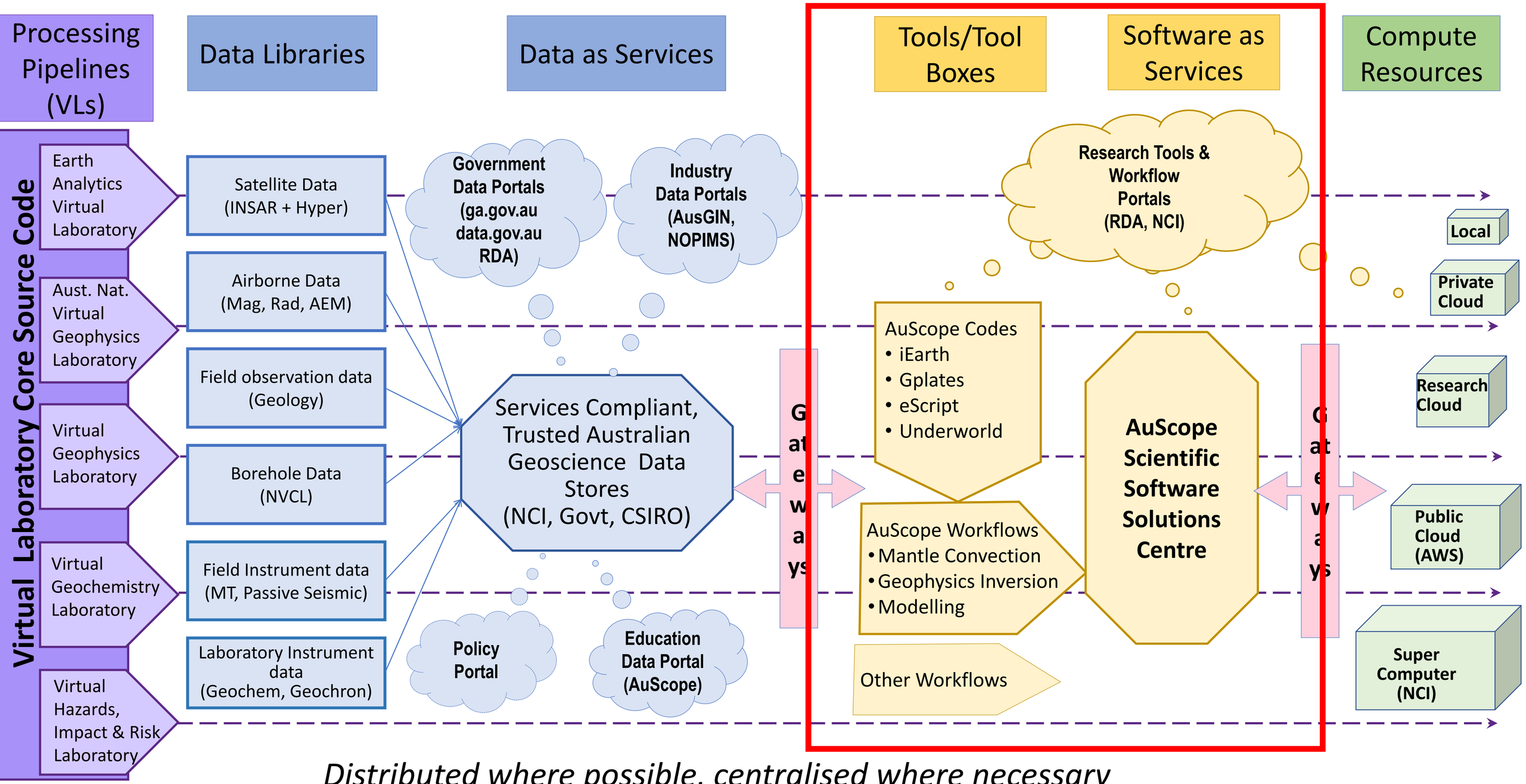

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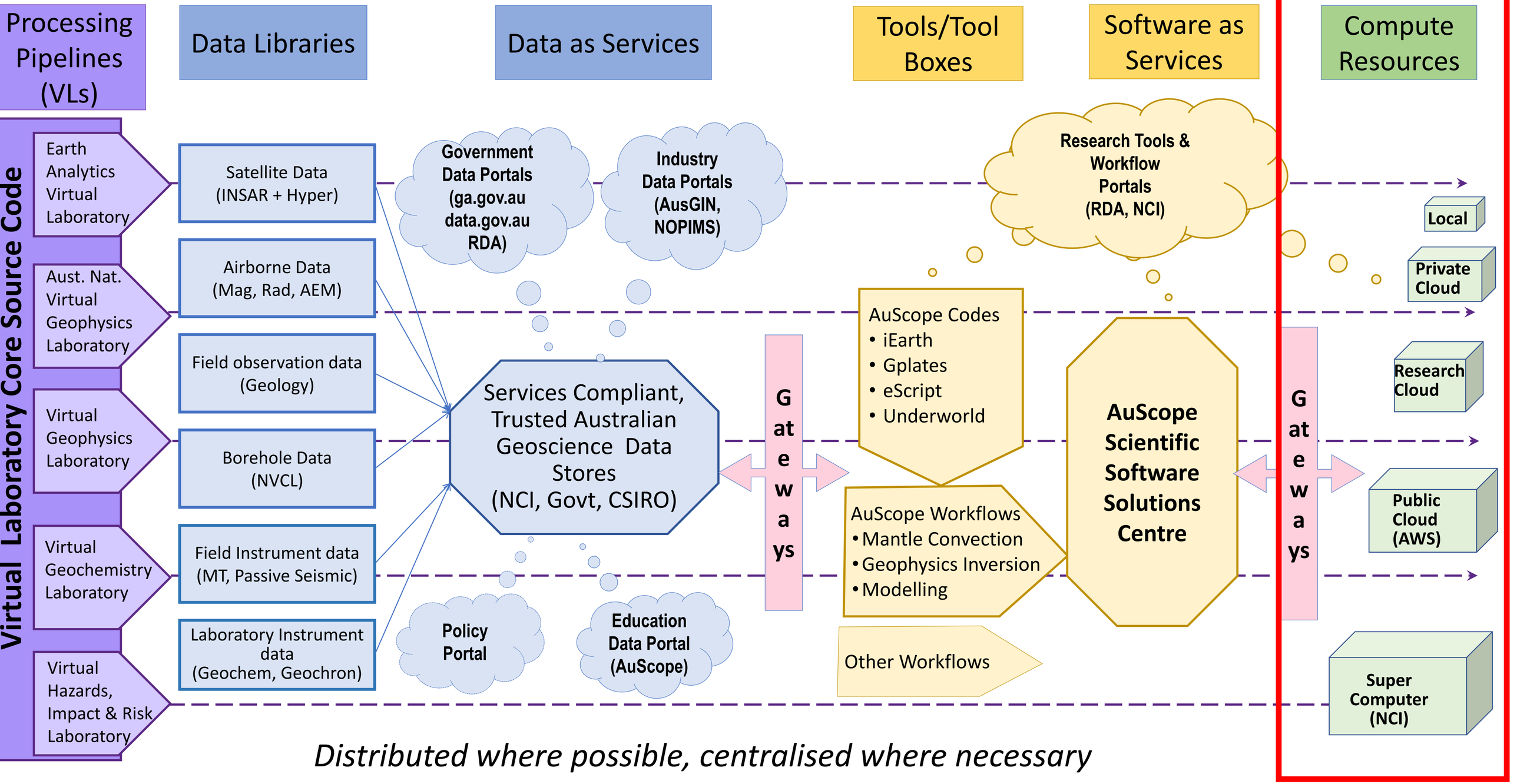

Distributed where possible, centralised where necessary

Conclusions

Conclusions

Future Focus

1. The AuScope DeVL represents the first stage in an integrated development program
2. This will develop a suite of eResearch resources for delivering and discovering a variety of geoscience data, as well as the tools to manipulate and analyse this data
3. Resources will be distributed where possible, centralised where necessary
4. All will be accessible online and wherever possible, open and free
5. There is enormous potential for international collaboration: we do not want to reinvent any wheels

Connect with AuScope

Thank you

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auscope

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