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Linking AuScope to the broader minerals industry value chain

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Terry Rankine, Guillaume Duclaux

National Research
FLAGSHIPS
Minerals Down Under



I'll touch on...

- The Minerals Down Under Flagship
- Our role in Auscope
- Exploiting the AuScope opportunity
 - Australia's positioning
- The developing "MDU Earth Model"
- Next steps
- Conclusions

National Research Flagships Program

- Major national research challenges
- Partnerships and collaboration
 - Focus on adoption of research outputs to deliver impact for the nation
- Different way of doing business
 - Longer term focus
 - Opportunity for renewal

Minerals Down Under Flagship



Discovering Australia's Mineral Resources

- contains all CSIRO's minerals exploration research

National data infrastructure and integration

Global leadership in pre-competitive
geoscience data

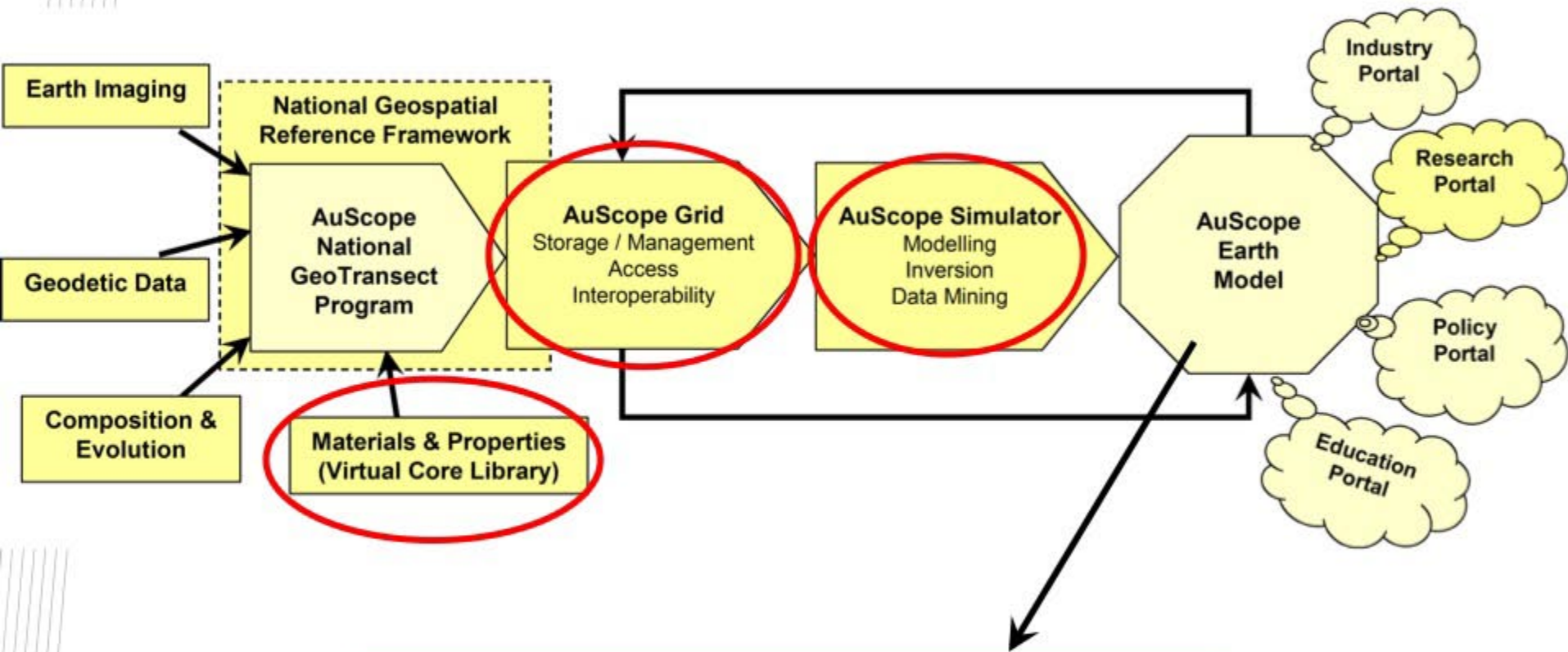
- **AuScope Grid**
 - **National data sharing infrastructure**
- **AuScope National Virtual Core Library**
 - **Hyperspectral mineral mapping**

AuScope challenges also reflected in broader industry issues with data integration...

- **Have you ever:**
 - Battled to maintain versions of someone else's data, and don't know if it's correct or outdated?
 - Known there's useful information out there, but you can't find it?
 - Wasted time downloading and converting datasets?
 - Seen the data you want on a web map but can't download the real data for analysis?
- **Result: effective data integration remains elusive**
 - Cost of data integration is itself a barrier to the research required to justify the investment in data integration
- **True for geology but pervades the entire resource value chain**

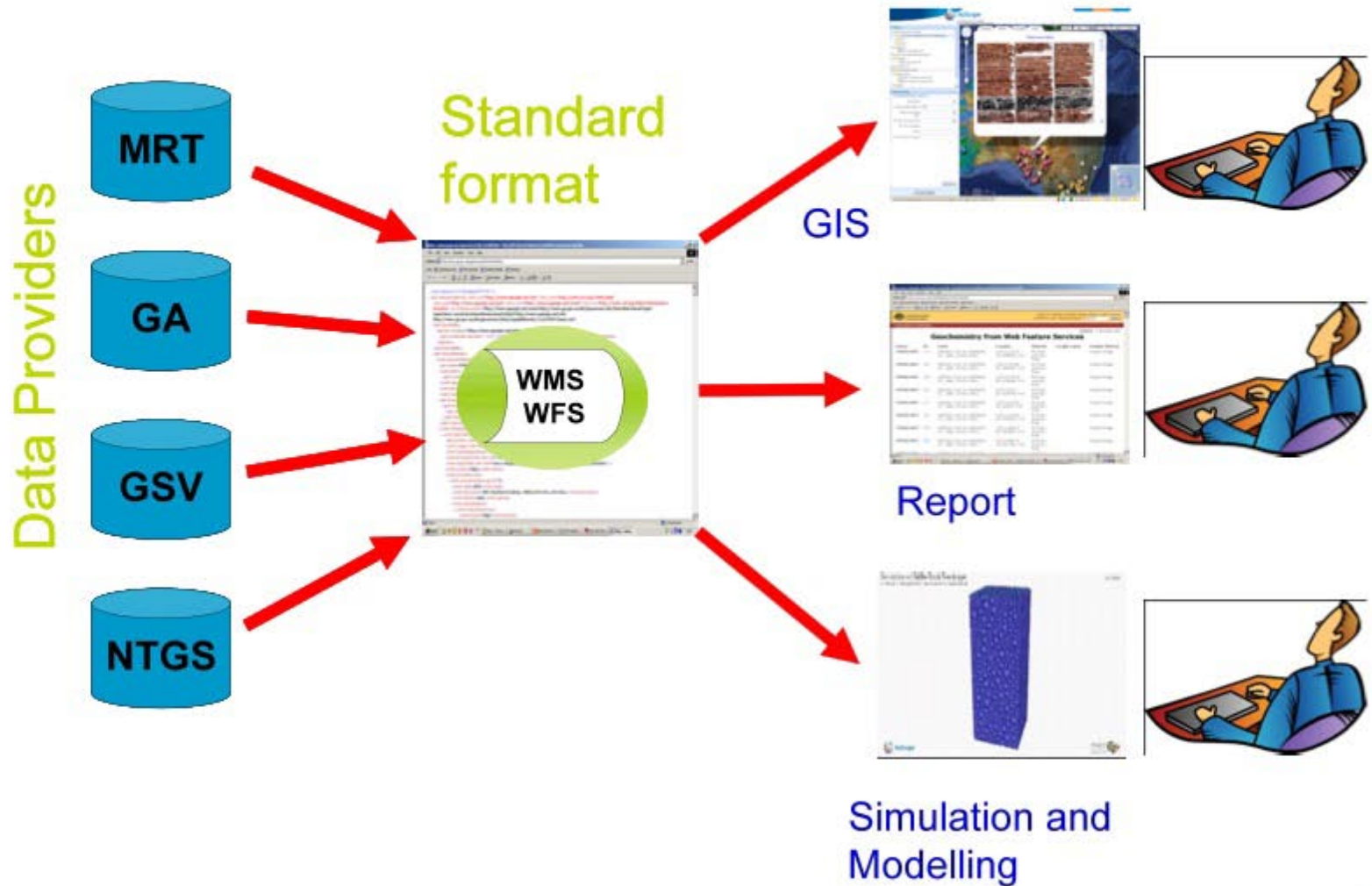
Terrane-scale Technology Applications

Auscope – a system for earth science

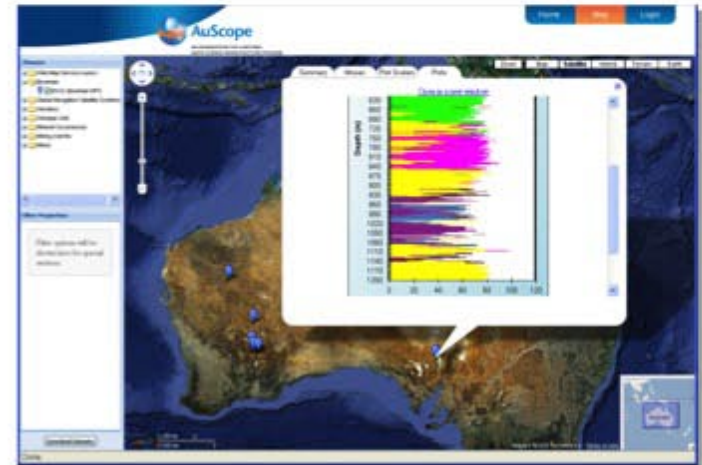


A platform concept for the entire industry!

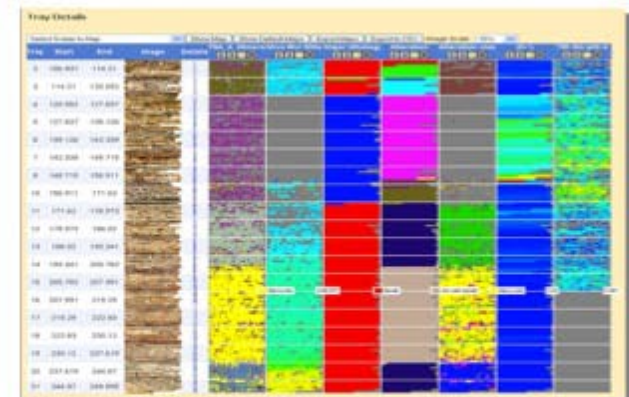
AuScope grid



AuScope National Virtual Core Library



<http://portal.auscope.org/gmap.html>



<http://nvcl.csiro.au>

AuScope has created an opportunity...

- Geo-metallurgy is a first step...
- ...ultimately real time integration across the resources value chain
- ... leading to new thinking on the types and characteristics of data sets collected

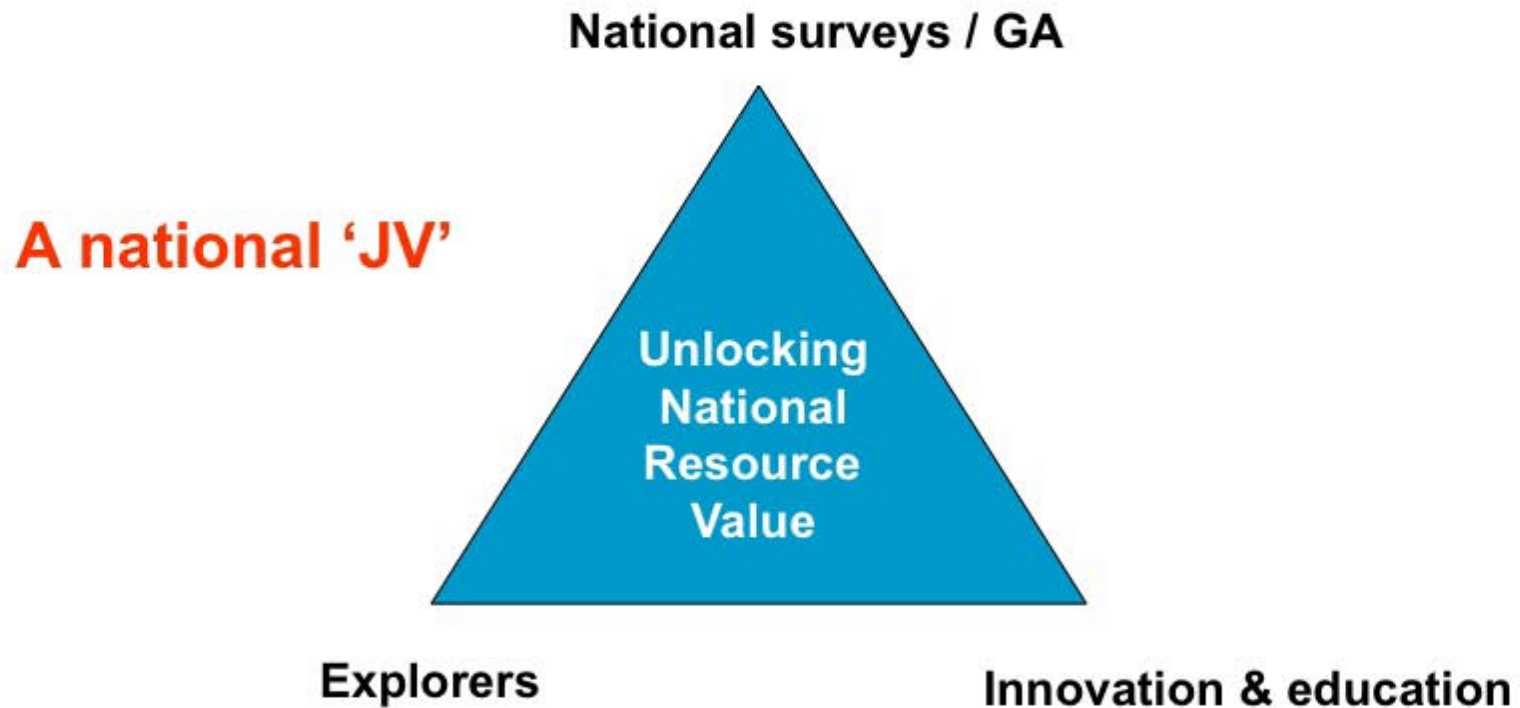
But our current data portfolio is tiny!

Australia is well positioned to lead...

- Strong industry
- State and Territory Surveys and GA
 - Precompetitive data and knowledge
 - Exploration initiatives
- World class research capability
 - Track record
 - DET CRC; CET; Universities

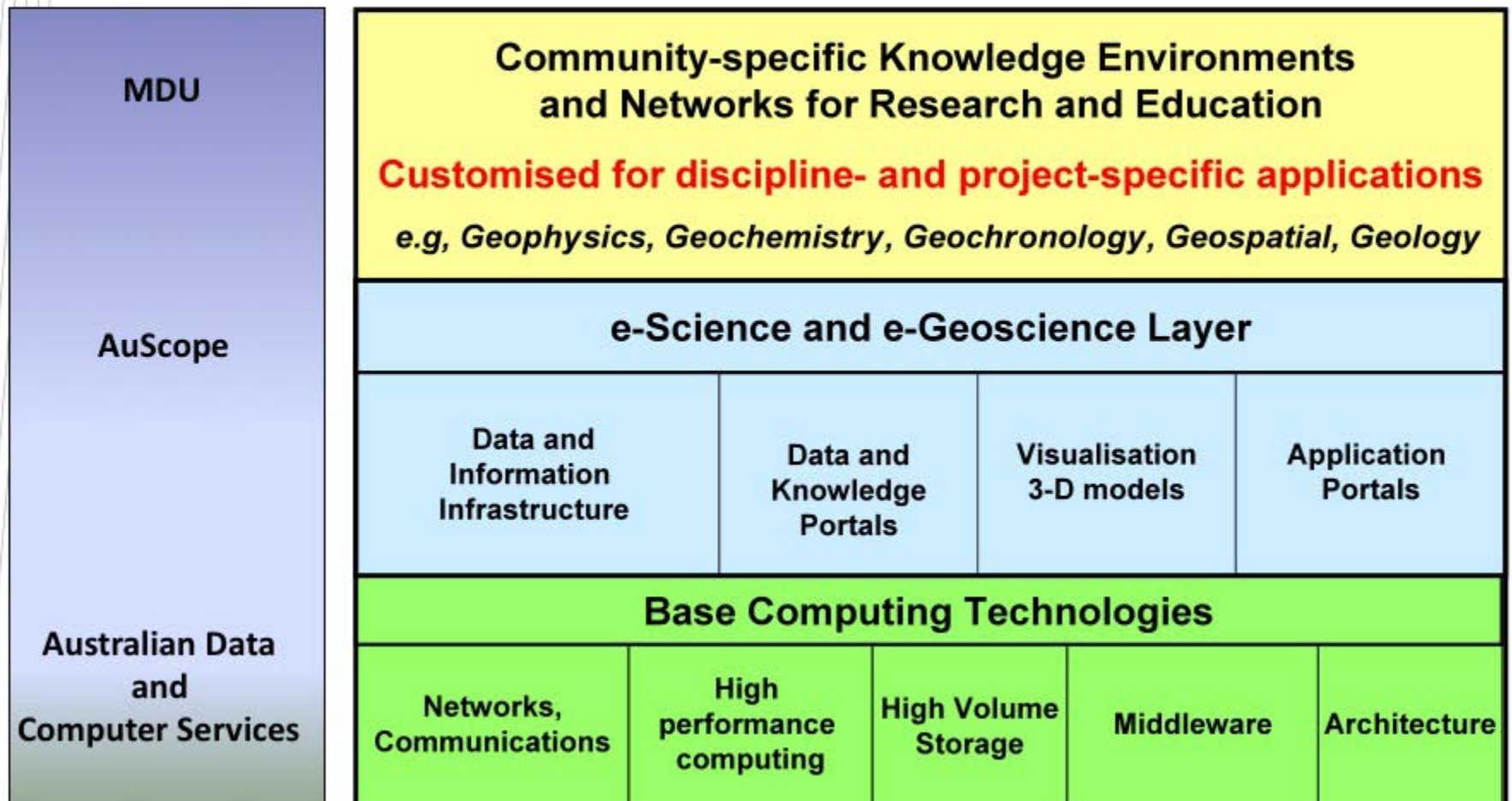
A national competitive advantage

Resource delivery value triangle: a role for AuScope

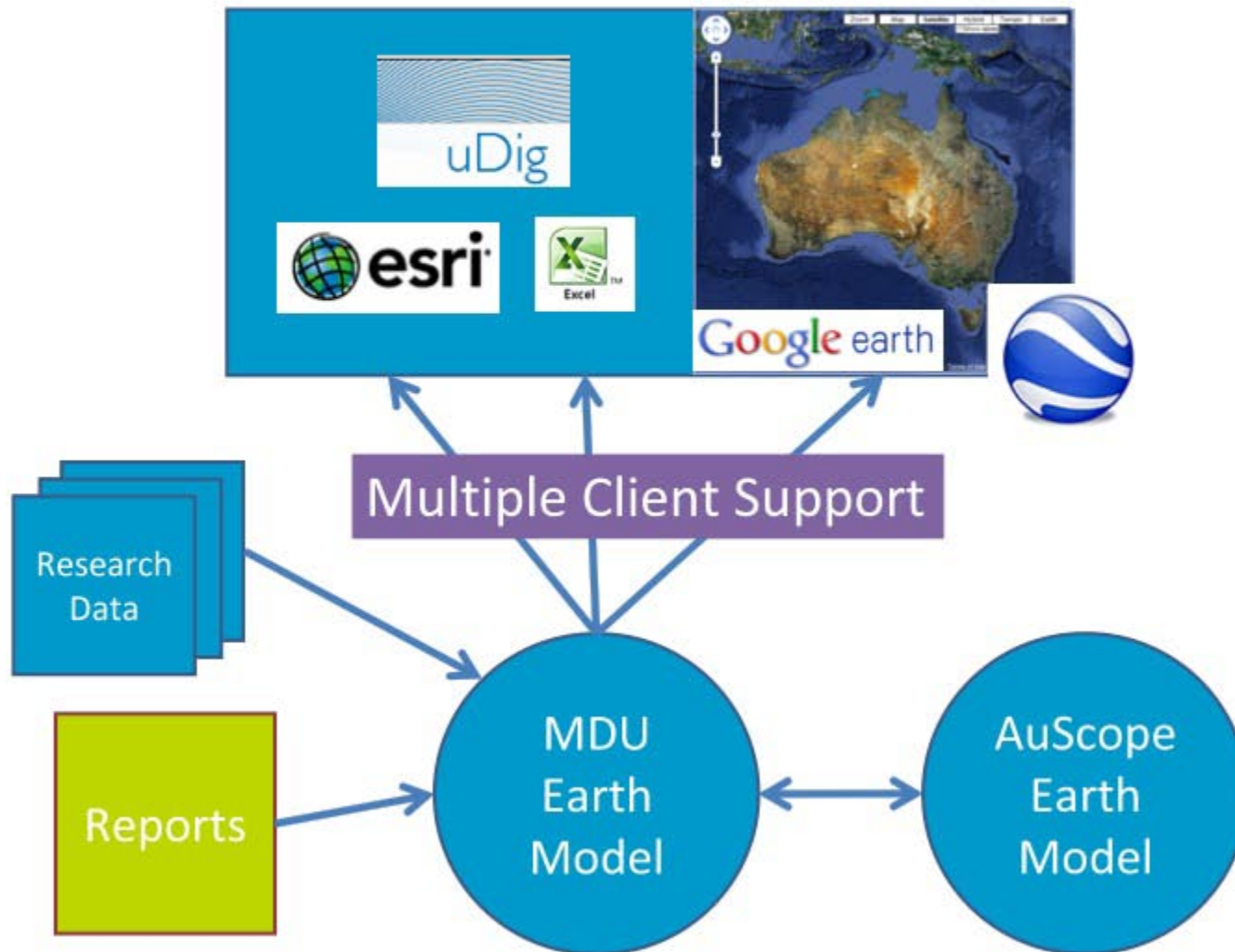


Exploration is a knowledge business

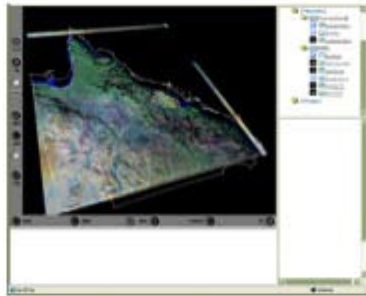
MDU Earth Model – Building on AuScope



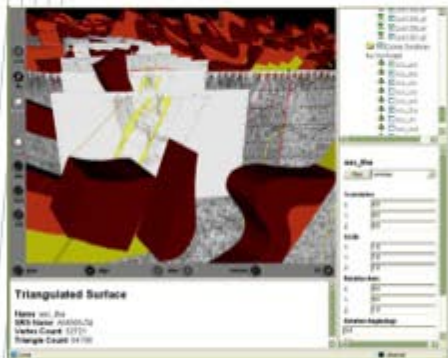
Inputs and outputs



...Data...Analysis...Publication...Collaboration



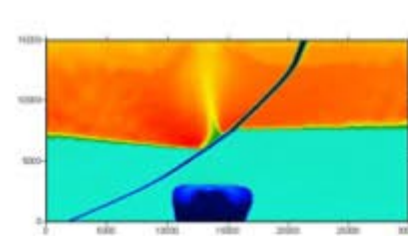
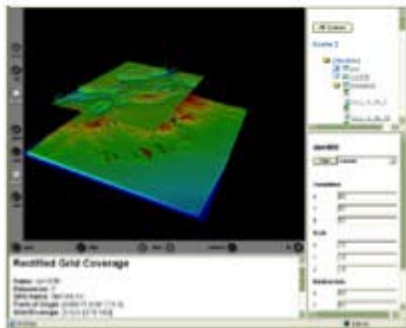
Name	Value	Location
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Login



Accessing historical reports

1. Login (points to Logout button)

2. Discover Layers (points to Map Layers tab)

3. Add Layers (points to Add Layer to Map button)

4. Select Item of Interest (points to map area)

5. Goto Full Record (points to Click here to view the full record link)

Page Header: National Research **FLAGSHIPS** Minerals Down Under **CSIRO** **csiro.au** **MDU Discovery Portal** **Logout**

Map Interface: Zoom, Map, Satellite, Hybrid, Terrain, Earth, Show labels

Map Layers Panel: Featured Layers, Generic Layers, **Map Layers**
Search: [input]
Title [input]
Provider: Geoscience Australia (20 Items)
AUS GA 1:2.5M Geologic Unit - Age
AUS GA 1:2.5M Geologic Unit - Lithostratigraphy
East AUS GA 1:1M Contacts
East AUS GA 1:1M Faults
Add Layer to Map
Active Layers
Title Visible
MDU:Reports [checked]
HighP-RE-PhosLayer [checked]
Laterite Western Yilgarn GeoC... [checked]
AuScope Geotransects Data [checked]
AuScope Passive Seismic Stat... [checked]
Remove Layer
Filter Properties
Filter options will be shown here for special services.
Apply Filter >>

Marker Information:
Click here to view the full record
wfs:FeatureCollection(xmlns:ogc=http://www.opengis.net/ogc xmlns:Geochem=urn:cgi:xmlns:DI4SMB:Yilgarn:0.1 xmlns:wfs=http://www.opengis.net/wfs)
gml:featureMembers
geonetwork:spatialIndex(gml:id=spatialindex.43)
geonetwork:the_geom
geonetwork:id = 10
geonetwork:Title = Geological Survey of Queensland Hodgkinson Province Numerical modelling project
geonetwork:Authors = Jamie Robinson, [CSIRO]; Weronika Gorczyk, [CSIRO]; Soazig Corbel, [CSIRO]; Peter Schaub, [CSIRO]
geonetwork:Date = 31 July 2008
geonetwork:Keywords = Final Report; Hodgkinson Province;

Map: Google search the map [input] Search
©2010 Map data ©2010 Terms of Use
Australia
Papua New Guinea



- Default view
- Advanced view
- XML view



GEOLOGICAL SURVEY OF QUEENSLAND HODGKINSON PROVINCE NUMERICAL MODELLING PROJECT



Full Metadata

Identification info

Title	Geological Survey of Queensland Hodgkinson Province Numerical modelling project	
Date type	Publication: Date identifies when the resource was issued	
Edition	31 July 2008	
Presentation form	Digital map: Map represented in raster or vector form	
Abstract	<p>The Devonian Hodgkinson Province in Far North Queensland is a strongly deformed turbidite-filled basin with a long history of gold production from several fields comprising small to medium sized deposits. The deposits are structurally controlled, mostly localised along a network of NW trending faults. Application of new predictive discovery techniques is required to aid in the identification of significant new discoveries in the region. A program of numerical modelling of coupled deformation and fluid-flow has been undertaken aimed at developing an improved understanding of the physical conditions that led to the localisation of gold bearing fluids within known deposits across the province. This understanding has been used to predict of new sites of potential mineralisation as well as optimisation of, and ranking of targets within known systems.</p>	
Status	Completed: Production of the data has been completed	

Point of contact

Individual name	Jamie Robinson	Electronic mail address	Jamie.Robinson@csiro.au
Organisation name	CSIRO		
Role	Author: Party who authored the resource		

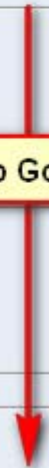
Point of contact

Individual name	Weronika Gorczyk	Electronic mail address	Weronika.Gorczyk@csiro.au
Organisation name	CSIRO		
Role	Author: Party who authored the resource		

Point of contact

Individual name	Soazig Corbel	Electronic mail address	Soazig.Corbel@csiro.au
Organisation name	CSIRO		
Role	Author: Party who authored the resource		

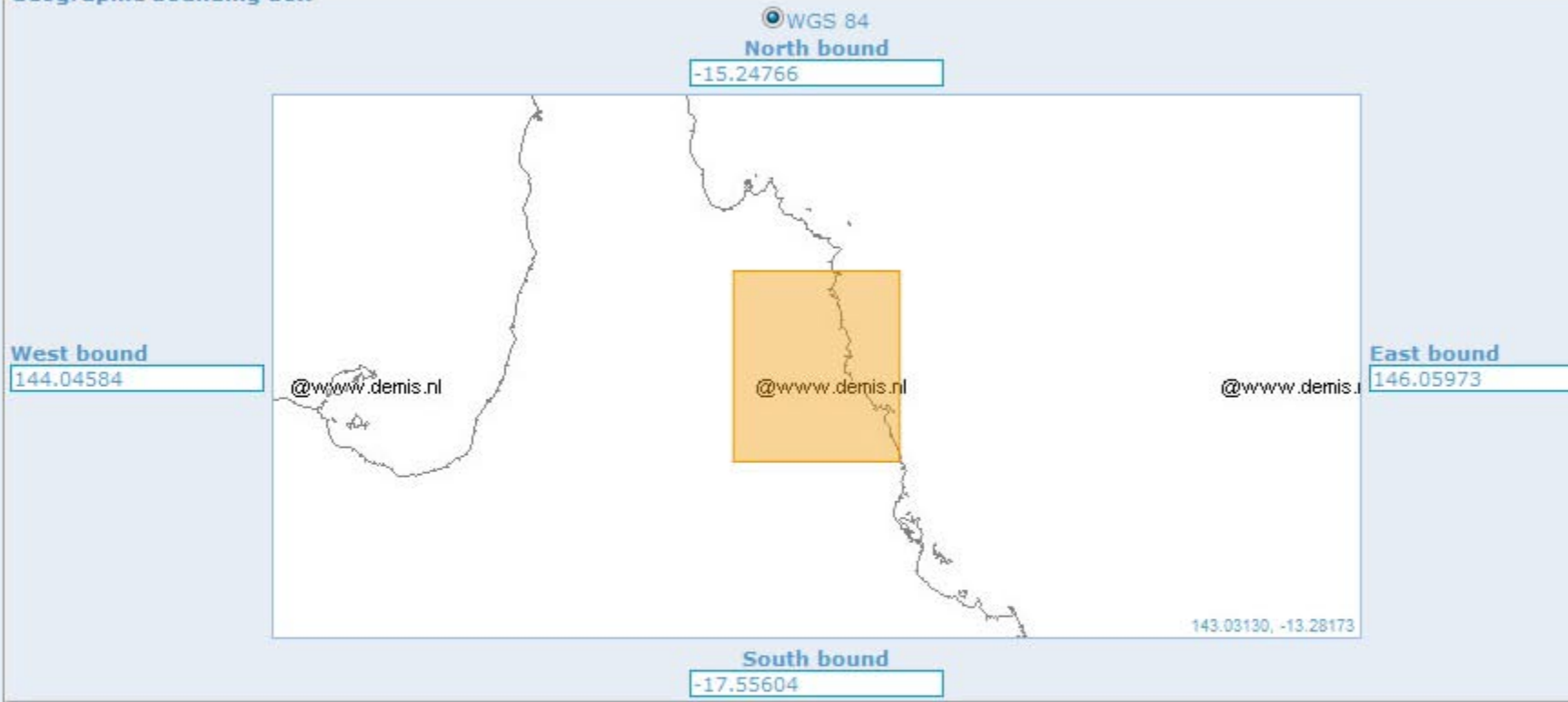
Keep Going...



Denominator: 5000
Language: English
Character set: UTF8: 8-bit variable size UCS Transfer Format, based on ISO/IEC 10646
Topic category: Boundaries
code

Extent

Geographic bounding box



Distribution Information

Download Summary

[Show File Download Chooser](#)

Transfer options

Data for download	Cover Page
Data for download	Hodgkinson_Basin_Final_Report.pdf
OnLine resource	CSIRO website

Report Available for Download

Reference System Information

Code: WGS 1984

Data quality info

Yilgarn Geochemistry



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MDU Discovery Portal

Logout

Featured Layers Generic Layers Map Layers

Search:

Click here to view the full record

Marker Information

- Geochem:Latitude = -27.3724100000
- Geochem:Zone = 50.0
- Geochem:Easting = 515631.140154999
- Geochem:Northing = 6950151.61017
- Geochem:MapReference250k = SG5015
- Geochem:MapSheet250k = CUE

derived from lateritic residuum

G102

47

4972

Raw XML

Remove Layer

Filter Properties

Filter options will be shown here for special services.

Apply Filter >>

Google search the map Search

Map data © 2010 Mapdata Sciences Australia, Esri, DeLorme, NAVTEQ, Swire, GEBCO, USGS, AeroGRID, IGN, Esri, Mapbox, etc.

Meekathana

Chemical Composition

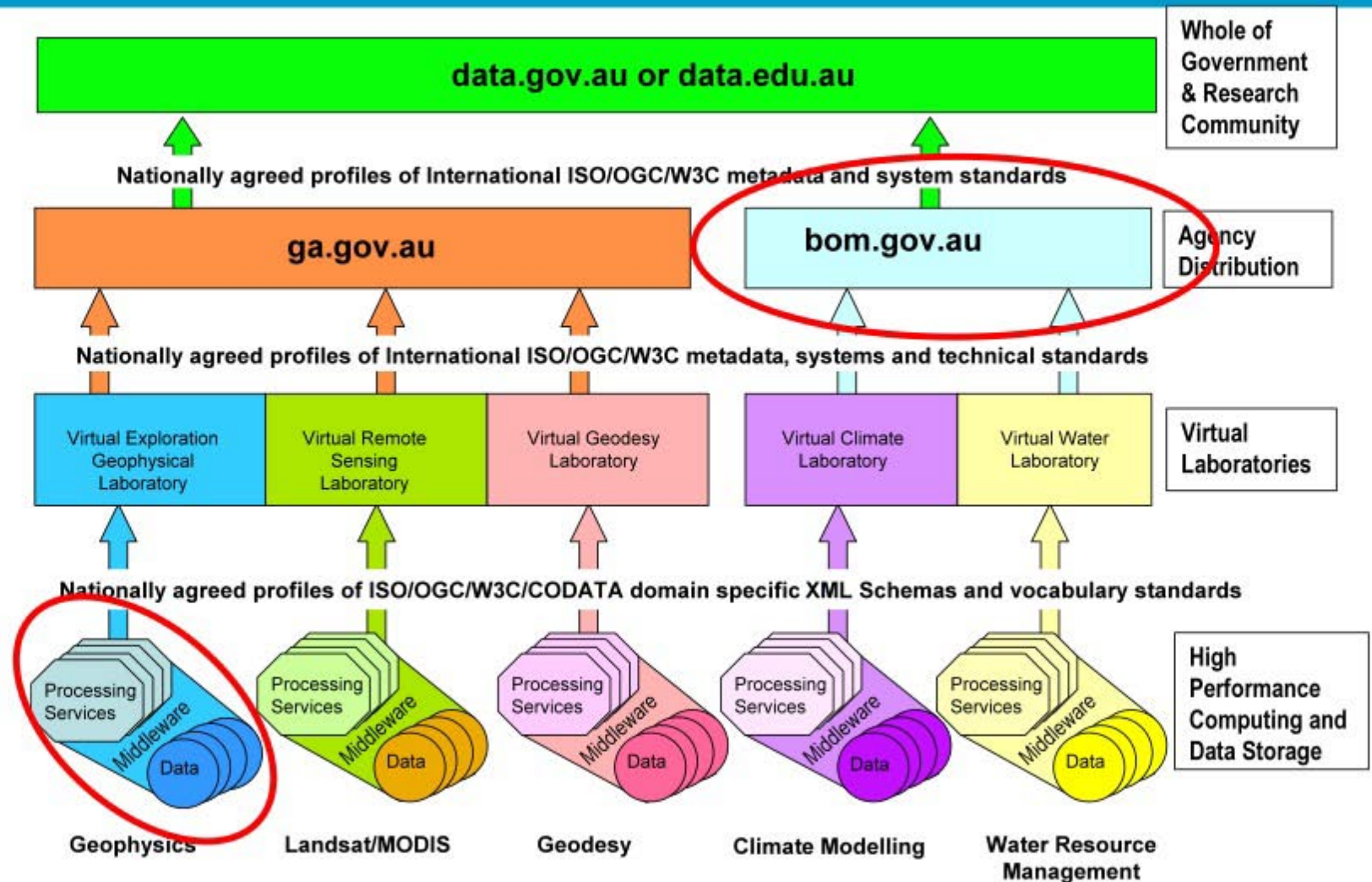
Simple Feature Profile Level 0 ←

78 Variables , 3100 Sample points

Next steps

- Add the data to the infrastructure
 - Massive task
 - Quality benefits
- Provide on-demand secure computational services directly to industry
- Add 3D and 4D data models
 - An opportunity for AuScope 2
- Integrate data beyond the earth sciences
 - And across the minerals value chain

Australian Spatial Research Data Commons



Conclusions

- AuScope has provided data infrastructure
- The community must embrace the opportunity
 - We have only scratched the surface
- We can transform the way that data and data products are identified, shared, integrated, and reused, to unlock the benefits of true integration of research efforts across the minerals value chain



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Thank you

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Theme Leader: Discovering Australia's Mineral Resources

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From constrained conceptual models ... to testable predictions and new conceptual targets

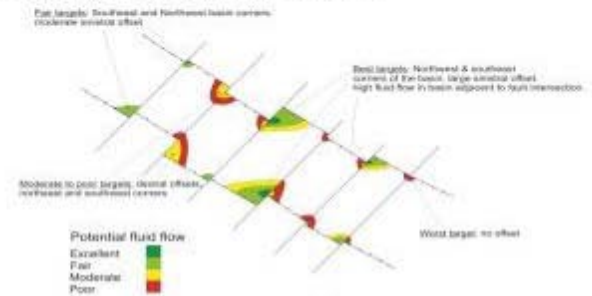
1. Data collection & analysis

- System architecture
- Deformation history
- Depths of mineralisation
- Mineral distribution
- Stress fields



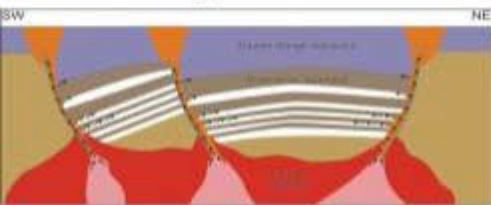
5. Targeting criteria

- How do we use the results to target mineralisation?



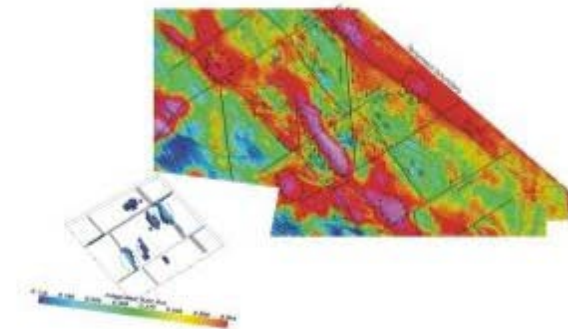
2. Conceptual model

- What questions are we addressing with the models?



4. Interpretation of result and comparison with geological inputs

- How do the model results fit with the what we know of the system?



3. Numerical simulations

- Design
- Testing/calibration
- Mechanical properties
- Visualisation and presentation of results

