

The Architecture (A1) Project

*Presentation to pmd*²CRC Board*

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“What are the fundamental characteristics of mineralised (trans-lithospheric) fault systems?”

- ***Project Leader:*** ***Frank Bierlein, Monash University***
- ***Key Researchers:*** ***Peter Betts, Ivo Vos, Anthony Morey (Monash)***
 Bruce Goleby, Barry Drummond (Geoscience Aust.)
- ***Industry mentors:*** ***Jon Hronsky (WMC), Francois Robert (Barrick Australia), Mike Etheridge (SRK), Roric Smith (AngloGold), Graeme Broadbent (Rio Tinto)***
- ***Commencement Date:*** ***May 2002***
- ***Project Duration:*** ***3 years***

Project Aims (I)

- *To understand why some fault systems are mineralised, and why others are barren*
- *Determine set of critical parameters that can be applied to identify favourable conduits and faults that are well-endowed*
- *Better understanding of role, significance of deep-seated structures in generating major ore deposits*

Project Aims (II)

- Predictive mineral discovery at significantly reduced risk*

(fundamental shift)

drill here!



Approach (I)

- *Faults Data Base*

*...illustrating commonalities
between structures that host
major ore deposits*

- Global
- Independent of commodity or time
- Portable, searchable, expandable

e.g.,...

Alpine Fault
Ashanti Belt
Atacama
Boulder-Lefroy
Carlin trend
Colorado Mineral Belt
Gilmore-Indi
Henty
Mt Isa
Noril'sk – Kharayelakh
Pine Mountain Thrust
Redbank Zone
San Andreas
Tan Lu

etc.,...

Approach (II)

- *Key area studies*

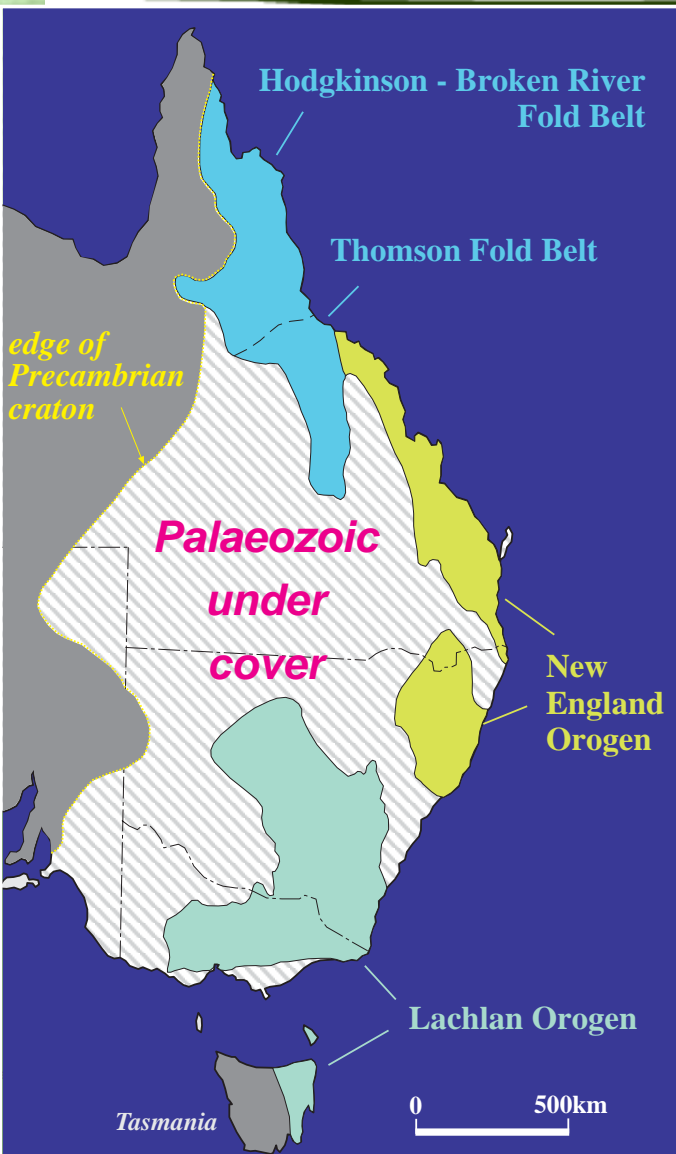
Investigate key faults

(e.g. Palmerville, Mt Isa; Bardoc-Boorara)

Field-test and ground-proof findings of data base

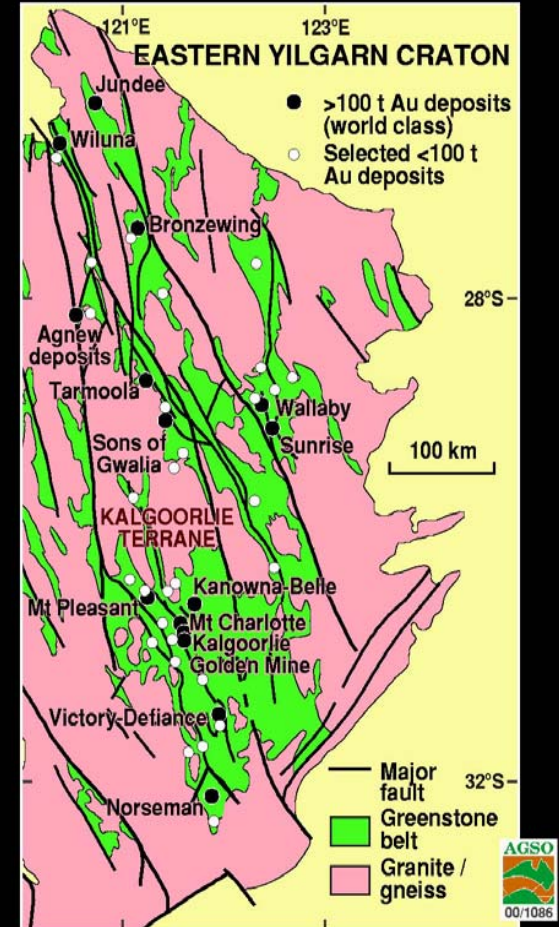
Provision of scenarios for numerical modelling

Approach (III)



**Tasmanides
(H1, H4, T1)**

Mt Isa (I1, I4)



**eastern Yilgarn
(Y1, Y2, Y3)**

Milestones and Future Directions (I)

- *Data base population (ongoing; open-ended) available on pmd*CRC web site & TWiki*
- *Data base protocol (web-enabling; since 04/03) GA, CSIRO; part of pmd*CRC data XML base network*
- *Key area studies (since August 2002) preliminary findings reported 03/03; 2 PhD projects underway*
- *Definition of ‘critical parameters’ (ongoing)*

Milestones and Future Directions (II)

- *Proposed merger with F4 deposits data base*
 - *integration of multi-scale data bases*
 - *data-driven prospectivity maps for specific key areas*
 - *powerful prospective tool*
- *Scenarios for modelling program*
- *Geophysical modelling*
- *Increased structural and geophysical input*

Linkages

James Cook University

Geoscience Australia

*University of Western
Australia*

CSIRO

Melbourne University

WMC

AngloGold

Rio Tinto

Placer Dome

Barrick Australia

MIM SRK

M2, M3

Y1, Y2, Y3

I1, I2, I4

F4

H1, H2, H4

T1

C1

A1