



Australian Government

Geoscience Australia

GGIPAC workshop on strategic issues for building, managing and delivering 3D geological maps

**Working group summaries and
recommendations**

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Workflows for building and updating

- **Difficult to generalise**
 - Different applications (petroleum, minerals, near-surface, etc)
 - Different styles (systematic regional map series, prospect maps, cartoons, etc)
 - Different software tools
- **Planning is critical**
 - Clients, purpose, scale, complexity, products, etc
- **Identify sources of input data, both primary and interpretive**
- **An audit trail of inputs and processes is required to facilitate update**
 - Allowing both the map and the inputs to be recovered
 - Would be beneficial to assign unique IDs to each input feature and to the maps
- **Uncertainty is difficult to quantify and communicate**
 - Proximity to (i) primary and (ii) interpretive input data are useful indicators
 - Assumptions must be clearly stated when discussing uncertainty
- **Separate workflows required for different applications**
 - Always deal with the large framework elements first, then progress to the finer details

Workflows for building and updating

Recommendations

1. We need to specify that models built must have input data and the processes used to create the model documented
2. We need to investigate using systems that provide unique identifiers in global name space to tag the model and the input components (e.g., DOI's, Science Commons, UUID)

Metadata and discovery

- A cultural change is required before metadata will be perceived as valuable
- Some automation will be required to achieve the goal of producing suitable metadata in less than 1% of the mapping project time
- ISO19115 and its XML implementation ISO19139 were put forward as suitable standards
 - Templates would help to promote uniform usage
 - BGS has found that extensions to the standard are required
 - Note that cross-referencing is possible
 - ANZLIC have a free metadata capture tool
- **Catalogues**
 - Both attribute and geographic searches are required
 - Links to the data from search results would be desirable
 - Catalogues could and should be managed at individual organisations unless a central organisation volunteers to host a community of practice node. A central gateway should allow registration of all catalogues and allow searching of them.

Metadata and discovery

Recommendations

1. We need to encourage organisations to value metadata
2. Geological Surveys should set the example by making metadata mandatory on all its outputs, and accessible with the data
3. Exemplars of best practice in metadata need to be publicised
4. Where ever possible, metadata generation should be automated
5. ISO19115 and the new ANZLIC metadata profile need to be tested against a variety of 3D models.
6. A TWIKI discussion page should be set up to facilitate discussion on any problems arising from this testing, with a view to extending ISO 19115 for a geological profile

Storage and delivery

- We need to consider both in-house and contributed 3D maps
- Some agencies have a requirement to store contributed maps in their original format
- No consensus on a generic storage format
- Access controls are required to manage confidentiality (GeoDRM can do this)
- GeoSciML is being developed as an interchange standard
 - Geometric aspects of the maps would be included as GML
 - *This is an ASCII format and data volumes could be prohibitive for delivery*
 - *Fast INFOSET could be used to make delivery faster*
- We could benefit from observations of best practice in other industries
 - Medicine, meteorology, etc

Storage and delivery

Recommendations

1. We will have to provide for models stored in proprietary formats until the standards are developed
2. We need to keep track of authentication, authorisation and accounting systems that are being developed in NCRIS 5.16 and in GeoDRM
3. We need to raise awareness that bandwidth into and out of the Geological Surveys is currently a major inhibitor of the delivery of 3D models
4. Movement of binary files via XML will need Fast INFOSET or a similar standard

Visualisation

- The geoscience agencies require a (free) viewer to allow clients to see the 3D maps on offer
- Display of the map and the metadata are the minimum requirements
 - Options to interrogate, analyse, perform computations, etc would be nice but not essential
- Data exchange standards would make it easier to develop cheap visualisation solutions
 - Many of the problems involve input of data
- A survey of approaches and options would be beneficial
- A browser application using X3D might be possible
 - GA is implementing X3D as a replacement for VRML

Visualisation

Recommendations

1. We should develop an Australian focus group to influence the X3D standards internationally (cf GeoSciML activities)
2. We need an audit of existing standards (particularly X3D) for suitability for geoscience visualisation
3. We need to look into collaborative viewing and annotation, particularly work that is coming out of NCRIS
4. We need to see if it is worth GGIPAC developing/proposing a set of specifications for a 3D viewer for data that complies with a specified standard
5. We need a coordinated 3D distributed system with catalogues, a viewing capability and a data/model download system.
6. We need to decide on what delivery data format should be used
7. Any GGIPAC type work needs to be formulated into a set of recommendations for CGGC.