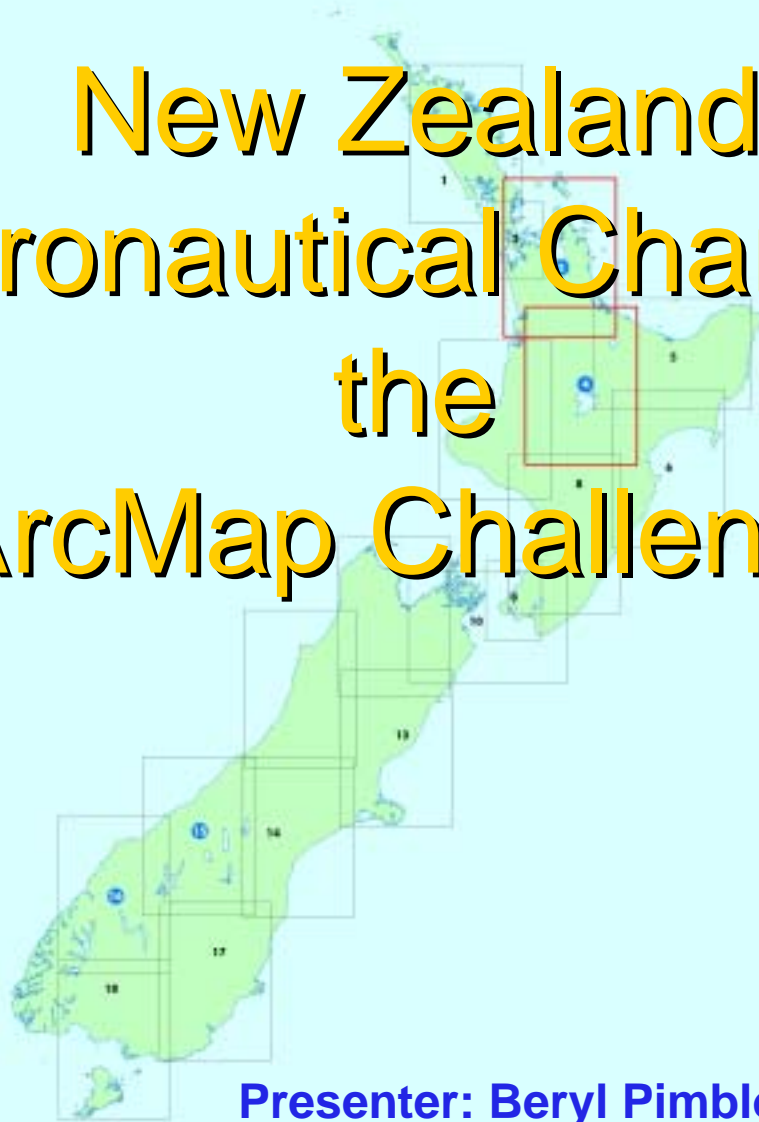


New Zealand Aeronautical Charting the ArcMap Challenge



**Presenter: Beryl Pimblott
Explorer Graphics Ltd**



Abstract

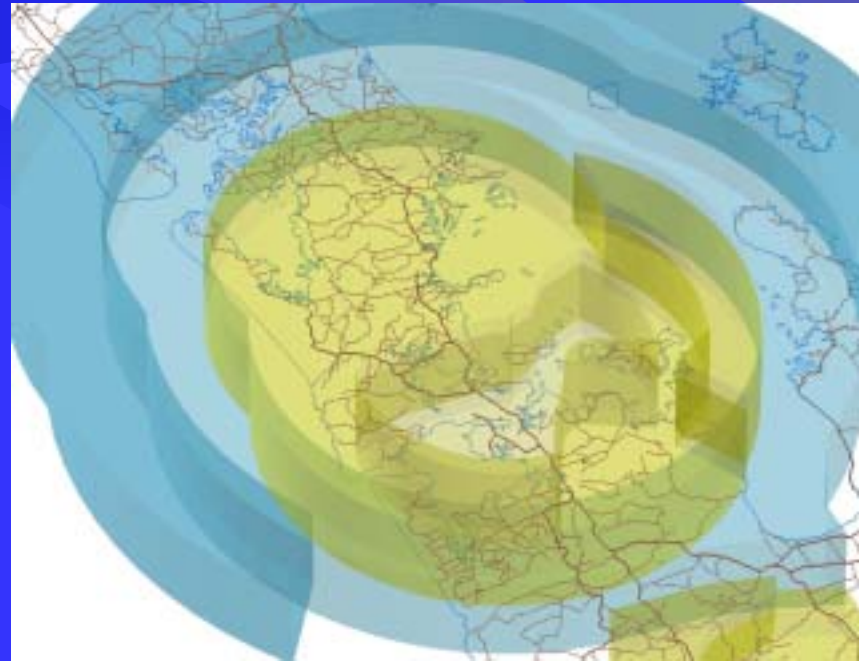
This presentation will be on the production of a national series of Visual Navigation charts covering New Zealand.

These charts were produced entirely with the ArcMap application in ArcGIS.

This paper explores the challenges associated with the specification, design and implementation of a database approach to this project.

Project Scope

- Create charts suitable for Visual Navigation
- For in-flight and pre-flight planning
- Assemble data from many sources
- Publication deadline (1 year)
- 20 chart series



Map Sheet Specifications

20 map sheet series

- 16 sheets @ 1:250 000
- 2 sheets @ 1:125 000
- 2 sheets @ 1:1 000 000
- Insets, enlargements and transfers at various scales
- Legends, title panels, operating procedure tables

The ArcGIS approach

Safety is of prime importance to the Aviation Industry

- Addressed by single authoritative database
- Ideal from a GIS perspective
- Totally database driven chart production
- Feature linked annotation

Specifications

AERONAUTICAL INFORMATION

- Airspace
 - Polygons, with associated attribute information
- Navaids, Aerodromes, Hazards, Obstacles
 - Point features, with associated attribute information



Available Data

Aeronautical Information

- Existing dataset in MapInfo format
- Provided by New Zealand Airways Corporation

Topographical Information

- Sourced from 1:50 000 topographical dataset

Digital Terrain Model

- Customised specifications for contour levels and colouring
- Generated by GeographX, New Zealand

New FLUID specifications

- Evolved as project developed
- Ongoing client consultation CAA, Airways Corp and print testing
- Reference to International Civil Aviation Organisation (ICAO) standards

Specification considerations

- Format and content of customised labelling
- Some colour shades are inappropriate under certain cockpit lighting conditions
- For this project, colours for Aeronautical Information were selected to portray their particular navigation procedures ie. Instrument-purple, Visual-blue, Danger/restricted-red

Data Processing

Aeronautical Information

- Processed to ArcInfo coverages
- Attribute tables built to support feature linked annotation
- Truetype fonts generated to display customised symbolisation of point features
- Label expressions to support stacked labelling

Customised labelling

Instrument Controlled Aerodrome

Aerodrome name

Alexandra AD

Radio frequency

119.3

Runway elevation,

Angle and length

ELEV 752, RWY 14/32


1200m

3500

Activity



Customised labelling Danger Area

Code / name	→	D620 Paekakariki
Upper elevation	→	<u>800</u>
Lower elevation	→	SFC
Activity	→	 DAY
Hours of operation	→	

Customised symbols



Aerodrome



Radar



Explosions



Firing



Gliding

Winch launching



Hang glider

Parachute



Flight training

Customised labelling Controlled Airspace

- Terminal control areas around major Airports, Intermediate and High level flight zones etc.

C LL 3500
WN 122.3 TM

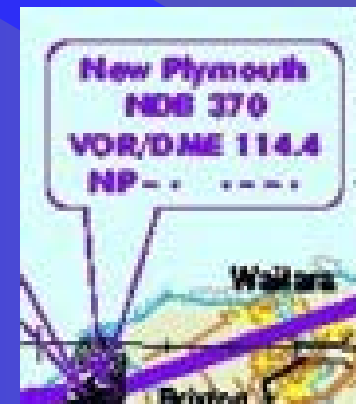


Customised labelling

Navigation Aids



- Can appear individually or grouped for a single point feature
- Can appear in various combinations in relation to a single point feature
- Run from one attribute table
- Required scripting to perform suitably as a stacked label



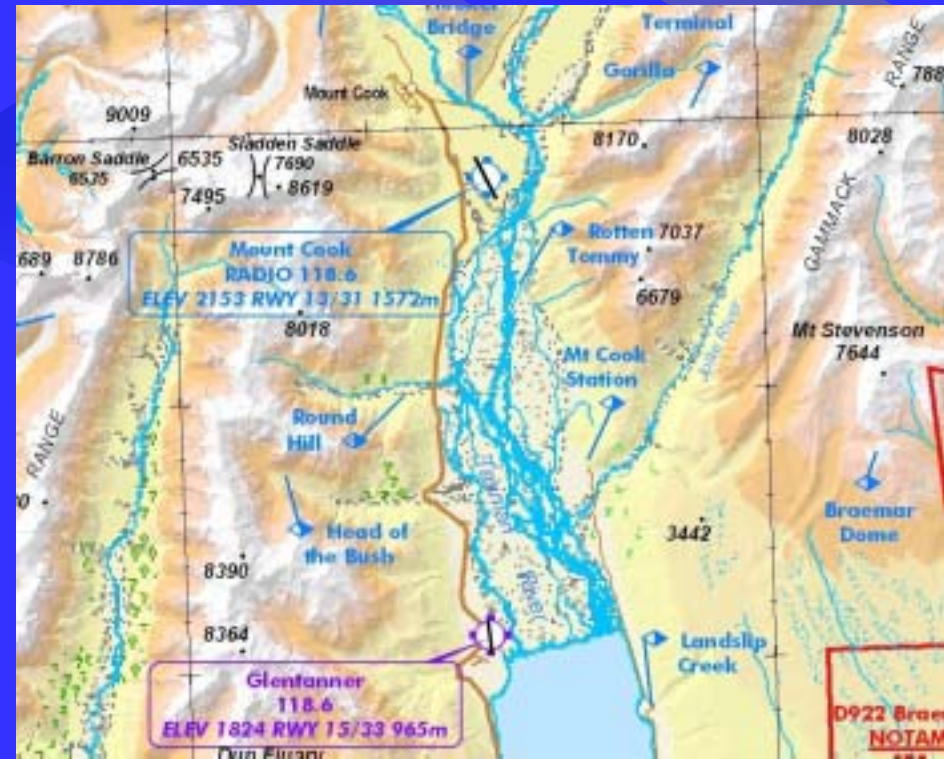
Data Processing

Topographical Data

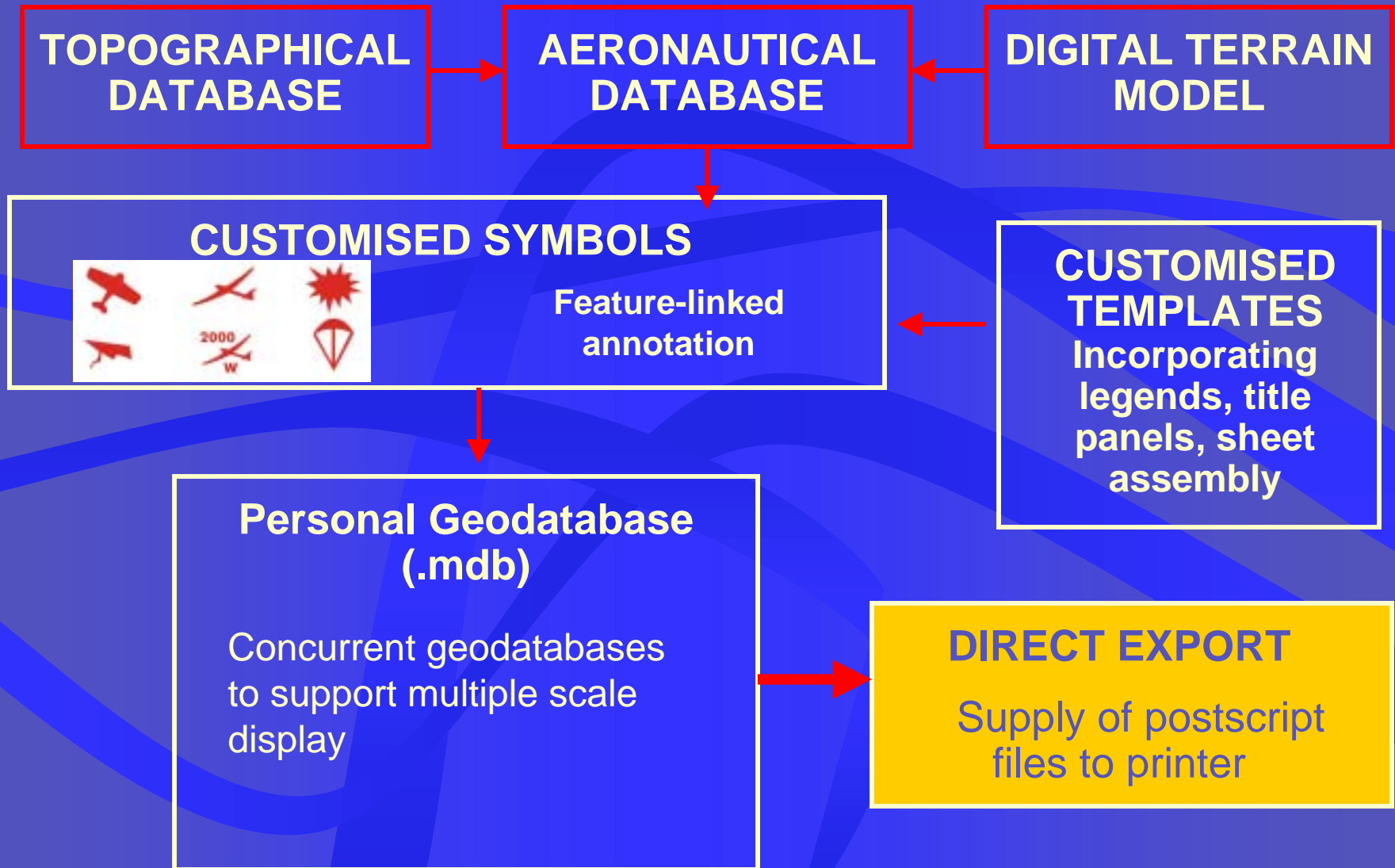
- Populated attribute tables to enable selection of detail at many scales and also to support feature linked annotation

Digital Terrain Model

- Specified to ICAO standards for colour and elevation
- Incorporated vegetation into DTM
- Suitable for display at the various specified scales

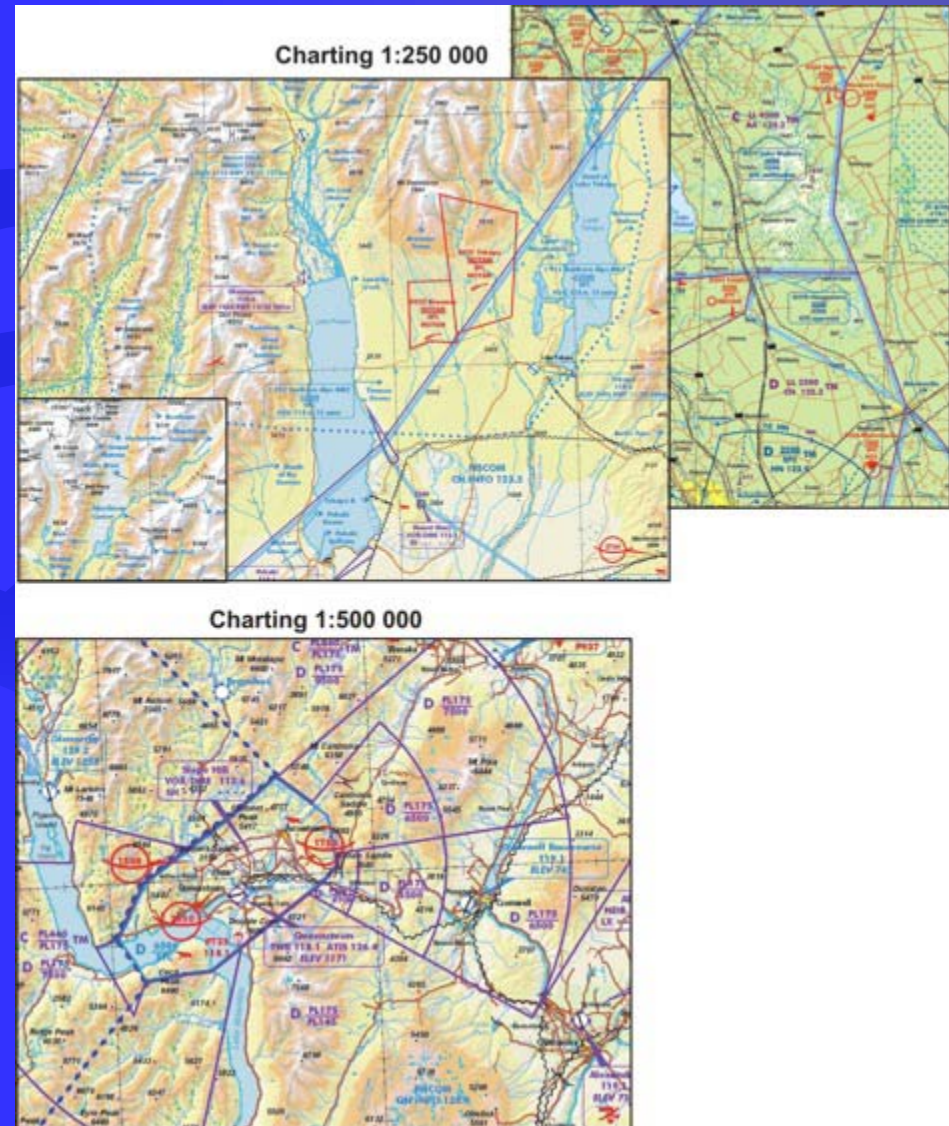


Visual Chart Project Structure



Conclusion

- Authorative database assembled
 - Production deadline achieved
 - Ease of update streamlined
 - Less margin for error
 - Fully documented procedure manuals created
- ESRI UC 2003 – 1st Place Map Series or Atlas



Where to from here?

- Specifications for Visual Charts have undergone an intense review
- A new series at 1:500 000 being incorporated
- Chart format size increased
- DTM reprocessed
- Topographical base information refined



Thank you

Any Questions?

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