



GEODATA INFORMATION SYSTEMS

ABN 40 094 894 345

GEODATA STATUS REPORT – January 2007

BACKGROUND

GEODATA INFORMATION SYSTEMS P/L is a Company formed in 2000 by a group of Hunter Valley Land Professionals to promote the development of Cadastral Adjustment (GeoCadastré) and Survey (GeoSurvey) software developed over the last 20 years by Michael Elfick & Michael Fletcher for a user group of Survey Companies throughout Australia. The software is now patented worldwide.

GEODATA promoted the software to the **ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE (ESRI) Inc** at Redlands, California, which is the world's leading GIS Software Company. ESRI focuses on large scale government mapping and database management and operates in over 100 countries. ESRI's decision to use the GeoCadastré methodology was made after reviewing many cadastral solutions from around the world to confirm that the software process and workflows provide the most effective model, and management system of a legal cadastré for use in GIS systems.

Geodata has sold exclusive world-wide rights to use the 'GeoCadastré' process within a GIS software package to ESRI for their cadastral management. Geodata has retained the rights to market the original software as a fully supported stand-alone product.

THE ESRI – GEODATA ALLIANCE

The process of integrating the 'GeoCadastré' software into the ESRI suite of programs is part of a much wider initiative to bring together the GIS & surveying worlds.

The need was outlined to ESRI to design and deliver an architecture which created or migrated a parcel network fabric into the GIS database and then allowed an adjustment and update of both survey points and features within the GIS while retaining the original survey Title data. The result for ESRI was a completely new data model for parcels built within a GIS database.

This development has taken several years of joint product development as ESRI had to incorporate cadastral storage in the geodatabase as defined by points and lines (survey methodology) rather than shape files (GIS/mapping methodology). The need to retain the original Title dimensions to describe any legal parcel rather than the dimensions from the adjusted cadastral model was also a move away from traditional GIS methodologies.

The new 'GeoCadastré' workflows in the ESRI Survey Analyst - Cadastral Editor will be released worldwide in 2007.

GEODATA and ESRI also jointly defined a new XML transfer format, based on the GeoCadastré file format which overcame deficiencies in existing XML formats which did not represent some elements of the GeoCadastré file format used in the adjustment process.

THE GEODATA CADASTRAL SOLUTION

The Geodata Cadastral Solution creates and manages a "Survey Accurate Coordinated Cadastral Database". The coordinate 'model' produced by the input of survey measurements and the adjustment process replicates the accuracy of the survey information entered from the Title Plans of survey.

In areas of old survey plans, boundary definition becomes an intuitive process for the surveyor, considering the Title Plan dimensions in comparison to what he or she finds and measures on the ground. This intuitive process cannot be completely replicated in a software package, however the coordinates created should consider all the survey information available and provide a model which is the best approximation of the legal cadastré. This is the basic philosophy of GeoCadastré.

Most spatial professionals are now aware of the benefits of a survey accurate Numerical Cadastral Database (NCDB) achieved through a total rebuild or a more cost effective 'partial upgrade' process which is subject to needs and budgets.

Different levels of development and utilisation of a survey accurate coordinated cadastre have been achieved in The Northern Territory, ACT, and many councils throughout NSW and Queensland. Outcomes from some of these various projects have promoted consideration of:

- Legislation for legal coordinates for Title boundary definition. (NT)
- use of coordinates in the chain of evidence for survey boundary definition. (ACT)
- mathematical checking of survey subdivision plans at lodgement. (ACT)
- coordinates as part of the solution to the shortage of surveyors. (ACT)

The Hunter Water Corporation also maintains a survey accurate cadastral database covering 5 Local Government Areas, which is kept up to date by one person. Other infrastructure projects (roads, pipelines, cables etc) have benefited from substantial savings in survey costs from the creation of a survey accurate coordinated cadastre to assist in planning, feasibility and design. An optic fibre cable project benefited considerably when the new coordinate model confirmed the cable was shown on incorrect properties on an existing cadastre.

The software also allows easy upgrading with modern electronic survey cadastral data from most industry standard packages.

The GeoCadastre/GeoSurvey cadastral solution is unique and powerful. It has been developed with the rigour and quality assurance protocols associated with survey practice to create a permanent upgrade path. Other cadastral adjustment engines may upgrade the spatial quality of the existing DCDB with added survey information. It should be noted that for the adjustment process, GeoCadastre utilises the stored current and historical Title survey measurements and also retains curved boundary parameters (ie, radius & chord).

The 'GeoCadastre' least squares adjustment engine has been rigorously tested by ESRI as part of their product development using an American comparative geodetic adjustment software. In 2006 Wagga Wagga City Council undertook a pilot study (2006) and confirmed its integrity with a comparison between GeoCadastre and the NSW Lands Department 'HAVOC' adjustments.

The benefit of the 'GEODATA' cadastral solution is that it can provide cost effective 'stand alone' platform to generate the cadastral database with full data interoperability, allowing cadastral datasets to be created, adjusted and then uploaded into the ESRI Geodatabase or other GIS industry standards.

ASSOCIATIVITY

Many feature datasets within the GIS are spatially created relative to the cadastral layer and when that layer is adjusted that relationship is affected. In 2002 Geodata produced an 'Associativity' tool to overcome that problem. That Associativity solution has a patent pending.

THE GEODATA DIRECTION

Whilst the focus for Geodata to this date has been delivery of the ESRI product, That focus is now changing to continuing software development, interoperability (ie LandXML) and the provision of cadastral database management services utilising our experienced team of Land Professionals.

The Geodata team is:

Roger Lee – Company Manager – 35yrs experience in Valuation & Land Administration in Australia and S.E Asia

Michael Elfick – Registered Surveyor – 40 yrs experience in surveying & survey software development

Ian Harper – Surveyor – 25 yrs experience in consulting cadastral surveying & land development.

Sharmane Jackson – GIS Manager – 4 yrs experience in cadastral mapping.

Many authorities see the option to upgrade their cadastral database 'in-house' as either the preferred, or in some cases, the only option, due to economic or other issues. Geodata can provide the cadastral solution from the most basic system, set up to move forward upgrading when electronic survey data is lodged or through to the complete upgrade of a Local Government Area and beyond.

For further details contact:

Roger Lee - 0407 333 078 lee@geodata.com.au or **Ian Harper** - 0412 453 170 harper@geodata.com.au

