"Fore-Sight"

"Fore-Sight"- Quarterly Newsletter of the Association of Surveyors of P.N.G.

LAE SURVEY CONGRESS ALL SET TO GO

2002 Congress Manager Luther Sipison is confident that the **Lae Survey Congress** will be one that will be long remembered.

Arrangements are in hand for all aspects of the Congress and the following information is for the benefit of delegates ...

Registration Fee - Full (tech + social) K350.00

Registration Fee - Student K 50.00

For PNG delegates traveling to Lae, a 20% discount is available from Air Niugini Travel Centres.

Note that if you want to be picked up from Nadzab Airport, you will need to contact the Congress Manager and inform him of your arrival time. Alternatively, you can catch the 'Balus Bus' into town for K20.00 transfer fee.

The venue for the 2002 Survey Congress is the Lae International Hotel, and if you want the convenience of staying at this venue, the cost for accommodation there on a per night basis is (a) Deluxe Single K200.00, (b) Deluxe Twin K216.00, (c) Executive Room K280.00, or (d) Suite K340.00.

Other accommodation in Lae is available at the following places :

Melanesian Hotel K 172.70 (Res. ph. 472 3744)

Lae Travellers Inn K93.00 (Budget) or K154.00 (Standard Room). Reservations phone 472 0411.

Huon Gulf Lodge K135.00 (Standard) or K154.00 (Deluxe). Reservations phone 472 4844.

Unitech Guest House - Single K66.00 or Double K88.00. Reservations phone 473 4488

Social Program :

President's Welcome Reception 7.00pm Thurs 11/07

ASPNG Annual Dinner 7.00pm Fri 12/07

Farewell Bar.B.Q 7.00pm Sat 13/07

ASPNG Annual General Meeting :

1:30pm on Friday 12 July 2002. All members are urged to attend.

Any enquires regarding the PNG 2002 Survey-Congress - please contact Luther Sipison on phone / fax no. 472 1440 or e-mail him at

sluther@global.net.pg

For those that like Lae and can afford to stay on for a while, the PNGIVLA is hosting a conference to be held at the Melanesian Hotel from August 16th to 18th. The theme of their conference is "Customary Land Issues in PNG".

Volume 3, Issue 2

June 2002

(Clip art courtesy of USMC, somewhere in Afghanistan)

COMING EVENTS :
36th PNG Survey Congress, Lae
July 11th - 13th

REMINDER : ASPNG Membership Fees must be paid prior to the AGM to be held at the 2002 Survey Congress in Lae.

INSIDE THIS ISSUE :

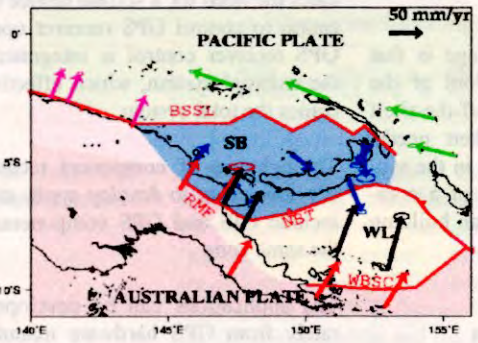
CORRECTION :

In *Fore-Sight Volume 2, Issue 3 (August 2001)* an article was presented with the title of "A Plate Full of .. Kai kai bilong ting ting" by Richard Stanaway .

Richard has been kind enough to inform me that plate velocities were stated incorrectly for the major tectonic plates in PNG. While we stated them in millimetres they should have been in centimetres !!!

The diagram opposite gives a graphical representation of what is happening in PNG (Paul Tregoning, Research Scholl of Earth Sciences, ANU, Canberra).

Richard is currently working on a project in Lae and has promised a future article for *Fore-Sight* that might leave a few of our Lae members wondering why they are still there. While not saying too much , let's just say that Lae is on the edge of a huge under-



water precipice that could give way. If that were to happen, then the tidal wave that hit Aitape could be likened to a ripple in a pond compared to the ensuing tsunami that would hit Lae.

Cheerful thought on the eve of our Congress but we survived an earthquake in Rabaul in 1985.

WHAT IS GPS / GIS INTEGRATION ?

Article by Andrew Harrington, Product Manager Mapping & GIS Systems Division, Trimble Navigation Limited (originally published in GIS Asia Pacific Magazine)

There are several ways to consider how GPS technology can be integrated into GIS environments. Because using GPS and GIS interests many people, it's worth thinking about what it means to integrate the two technologies.

There are three basic approaches to integrate GPS with GIS : data-focused integration; position-focused integration; and technology-focused integration.

1. Data-Focused Integration

Data-focused integration is traditionally focused on the need to collect data to populate a GIS. Off-the-shelf GPS packages are used in the data collection process.

The system consists of a GPS receiver with an attached antenna, with data stored in a data logger (Figure 1 below).
The data are then downloaded (or transferred) to an office computer for processing and export to a GIS database.

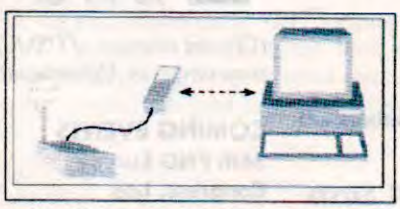


Figure 1: A conceptual example of data-focused integration.

Most data-focused systems concentrate on a one-way data flow from the GPS product to the GIS. As databases with GISs start to become complete, GPS tools that can receive data from existing databases will provide two-way data flow.

The approach's primary advantage is that users can operate the system 'out of the box'. For many GPS users, an off-the-shelf system will satisfy most of their needs. There's often more functionality in the system than required, but the cost of a complete system is generally less than building customised packages.

2. Position-Focused Integration

Position-focused integration focuses on the ability to incorporate a GPS-derived position with a customised application. One of the more common methods to transfer positions is through NMEA-0183 message strings. There are other formats, but NMEA - 0183, a strictly defined format that consists of several messages that can contain information that's packaged and sent to an external device, is probably the most common.

Figure 2, provides a general perspective on the limitations of position-focused integration.

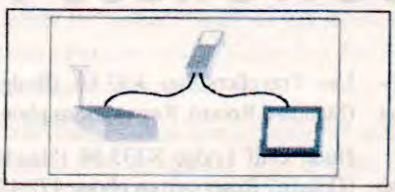


Figure 2: A conceptual example of position-focused integration.

The primary limitation is that there's often two field systems required, or at least two separate applications running on the same field computer. With two field systems, there's more equipment to contend with as well as complications associated with cabling. A second limitation is that the communication generally is in a single direction from the GPS product to the external field system. The advantage of this approach, however, is that users can control how external applications are developed.

This generally is a good approach if GPS positions are only required in the external application on an infrequent basis, and users have access to complete GPS packages.

3. Technology-Focused Integration

Technology-focused integration is similar to position-focused integration, but it eliminates the need for a second device or application to control GPS receiver operations. GPS receiver control is integrated within the external system, which effectively becomes the total system.

Through use of component technologies, it's now easier to develop applications that include GIS and GPS components within the same code.

The applications can be developed separately from GPS hardware manufacturers without losing the benefits of using 'top-of-the-range' GPS receivers.

However, it require someone who understands application development, which can end up costing more than an off-the-shelf system.

GPS can be integrated into GIS through several approaches. The most appropriate approach depends on the requirements of the GIS administrator and the GPS operator. Off-the-shelf GPS products provide an appropriate solution for most people for data collection and data maintenance purposes.

Position-based integration is good for 'one-off' occasions, but can result in cumbersome solutions that are difficult for field operations.

Technology-based integration provides the ability to combine positions and full GPS control with a complete GPS solution.

Users can make data collection and use as simple or complex as they want, because they control the GPS receiver, not just receive data from it. This capability provides users with opportunities to develop applications that include 'intelligence' appropriate to their needs.

GPS integration has come a long way in a short time, and it's worthy reflecting on how a customised approach to GPS may benefit your operations.

P.N.G. GIS USERS' GROUP LAPSES INTO RECESS

With the last meeting of the PNG GIS Users' Group being held in April 2001, one can only assume that it has lapsed into yet another recess.
This is regrettable as the Group had formulated some good approaches to digital data management and administration. Concerns such as the prices of digital data being maintained at a reasonable level ; and government sources of digital data that were jealously guarded and not being made available for public use were important issues being addressed. Already we have seen increases in the price of digital data doubling from some government departments. The fact that they could 'price themselves out of the market' may auger well for some private concerns. The availability of certain data, notably Census 2000 data, is vital for providing essential community services at an adequate level. Education and health related issues form an intrinsic part of the development of human resources, and require the latest datasets being applied.
It is hoped that the PNG GIS Users' Group can be quickly resurrected.

FIELD TEST : Garmin eTrex Summit Hand-Held GPS

Courtesy of Bassett & Associates Limited, Consulting Surveyors

The ***Garmin eTrex Summit*** hand-held GPS receiver is an affordable and handy tool for surveying applications that do not require a high degree of accuracy. Typical of these applications are initial road investigation surveys through tropical rainforest areas.

This 12-channel receiver features a built-in barometer for height acquisition and a digital magnetic compass. If required, the unit can be used in DGPS mode for greater accuracy.

Price : Around K1200.00 incl VAT with download software supplied as well.

Technical Specifications :

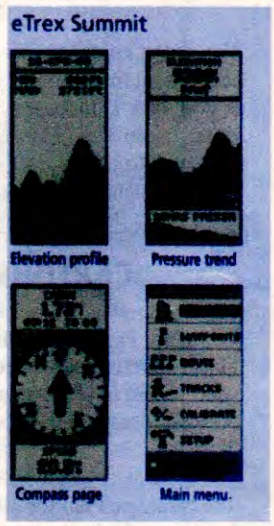
Navigation Features : 500 waypoints or icons with naming and graphic symbol idents ; Automatic track log - 10 saved tracks ; Reversible route with up to 50 waypoints ; Trip computer including average speed, current speed, sunrise / sunset, resetable maximum speed, trip timer and distance ; Allows for over 100 map datums ; Position Formats - Lat / long, UTM / UPS, Maidenhead, MGRS and other grids.

GPS Performance : Receiver - Differential ready, 12 channel, continually tracks and uses up to 12 satellites to compute and update position ; Acquisition Times - warm approx 15 seconds, cold approx 45 seconds, auto-locate approx 2 minutes ; Update rate - 1/ second continuous ; Elevation Computer - Current elevation, resetable max and min elevation, ascent / descent rate, total ascent / descent, average and max ascent / descent rte ; Interfaces - RS232 with NMEA 0183, RTCM 104 DGPS data format and proprietary Garmin ; Battery Life - typical, up to 16 hours.

Accuracies :
Position : 15 metres (49 feet) RMS
Velocity : 0.1 knot RMS steady rate
Electronic Compass : +/- 5 degrees (user calibration) with a resolution of 1 degree
Barometric Altimeter : 10 feet (with user or automatic calibration), resolution 1 foot, range -2,000 to +3000 feet

In actual field use during the recent Tabubil to Oksapmin road investigation survey, the ***Garmin eTrex Summit*** performed faultlessly recording consistent values through extremes of weather, terrain and vegetation cover.

Calibration checks of the ***eTrex Summit*** using a known PSM over a 5 day period gave positions to within 5 metres and heights to within 2 metres. Under heavy rainforest canopy, recordings were continuous without 'blindspots' returning a maximum error of 25 metres when fewer than the optimum number of satellites were available. A useful feature of this hand-held GPS unit is that it will give you a readout of the accuracy it is obtaining during the course of a survey.



By way of comparison, the use of the ***Garmin eTrex Suimmit GPS*** enabled 7 to 8 km of route survey to be carried out in a typical working day. Chain and compass (by engineers) through similar terrain would previously allow only 2 to 3 km of survey to be achieved per day.

Using ***Fugawi 3*** software (reviewed in the last issue of *"Fore-Sight"*), the survey data was downloaded in .DXF format for plan preparation using Civil-CAD software. Apart from a proposed road alignment being shown, the barometric heighting feature enabled a route profile to be produced.

Over the 36 km of road location survey, 3-dimensional coordinates were routinely recorded at 100 metre intervals. Additional points were recorded at changes of slope or gradient and bridge site locations. The limitation of 500 stored points was exceeded on the survey. However this situation did not present a problem as points can be downloaded into a 'laptop' in the field or extra points can be manually recorded.

The combination of this simple GPS surveying technique, when related to digital topographic data, can provide a civil engineer with sufficient information to provide an initial road design with relevant information for estimating construction costs.

SURVEYORS CPD QUIZ

What correction must *always* be subtracted from the measured length of a base line in order to obtain the correct geodetic distance between stations :-

A. Temperature Correction
B. Correction for Pull
C. Absolute-length Correction
D. Correction for Reduction to Sea Level

Answer B was the correct response to the last question - a geodimeter utilises the velocity of light waves (a tellurometer utilises the velocity of electromagnetic or microwaves).

OKay, Who's Got the Paddle ???

While this isn't necessarily the quest for the 'Holy Grail', there ain't no 'paddlin' Madelaine home' if you don't have the right implement to do the job. Also its well known that you can 'paddle your own canoe' - providing you've got a paddle. Now, we all have canoes in PNG, but where's the goddamn paddle ?
Last seen at the PNG Survey Congress in Port Moresby in 1999, the illustrious paddle and the proud recipient were photographed for posterity by one Isaac Tauno. However, Isaac partook so much of the renown **ASPNG** hospitality he cannot remember who was holding the paddle.
Council has in mind some other worthy recipients of the 'infamous' shit-stirrer's paddle that could be presented at the upcoming Survey Congress in Lae. So, come clean guys, and contact Council re there whereabouts of our famous icon.

"Fore-Sight",
P.O. Box 1271,
Port Moresby, N.C.D.
Papua New Guinea

Phone: (675) 320 - 0231,
Fax: (675) 320 - 1539
Email address :
aspng@daltron.com.pg

Newsletter contributions can be sent to the Editor at P.O. Box 1, Jacksons, or via fax to 325 7735 or by e-mail to ;
mapper@daltron.com.pg

Members & Other News ...

Surveyor Livingstone Tabua has retired from the Elcom Survey Section and is currently taking it easy. Livingstone says he's getting a bit too old for fieldwork, but if the right job were to come along he'd be prepared to have a go at it.

So who hasn't got their copy of ***"Mastamak - The Land Surveyors of PNG" !!!*** Copies are still readily available from *Arman Larmer Surveys, Survey Haus, Gordons (POM),* or through the PNG Chamber of Mining & Petroleum, The Lodge Building, downtown Port Moresby.

Must be a year for setting out in private practice - we hear that **surveyor Jeff Sanderson** has a contract for surveying in the 100 or so 'bailey-bridge' sites in association with English Mabey & Johnson Ltd in conjunction with the K175 million "YuMiYet" bridge building project. Newly graduated **surveyor Shaun Pini** is hoping to get some fieldwork experience on this project as well.

Ex PNG **surveyors Ian McLean-Hodgson** (previously Chief Surveyor at the NHC) and **Max Muller** (formerly a partner with the firm Matheson & Tierney) are running a small private surveying practice in Queensland that specialises in 'outback' work on gas pipelines. They normally operate under sub-contract to the major survey and mapping consortium Keilor Fox McGhie. No need to guess who might be back if the PNG / Qld Gas Pipeline Project goes ahead.

PNG Surveyor-General Tony Luben was recently elevated to the position of Assistant Secretary Lands, while Milne Bay **surveyor Sam Kodawara** steps in as the new acting Surveyor-General. Congratulations to both these guys on their promotions.

Global Constructions' engineering **surveyor Mark Ainsworth** has a good choice in women, he's taking out the Editor's 19 year old grand-daughter.

CARTOGRAPHERS SET UP MASTER WORK PLAN FOR DEVELOPMENT IN 2002

While the President of the *PNGIC*, Raymond Bure, resigned from Placer to return to Unitech to do his 'Masters' in Cartography this year, he left in place a comprehensive work-plan so Council members can continue the good work from foundations put in place in 2001.

The Strategic Plan for 2002—2003 places emphasis on the following areas of priority :

Vision : The PNGIC is currently undergoing change to enable it to be professionally and ethically accountable and financially sustainable and it must contribute meaningfully to meeting challenges.

Mission : The PNGIC will conduct itself in a proactive, cost effective and transparent manner.

Goals

- Incorporate the Institute with the IPA in 2002
- Organise and host Inaugural Mapping Conference in 2004

Objectives

- Review and build on the Current Constitution to embrace changes
- Establish a Code of Ethics as standard guidelines for members
- Initiate the possibility of a name change & logo change for the Institute
- Establish a media publications unit
- Establish reporting, recording, financial guidelines and control

The PNGIC Council is meeting on a monthly basis to ensure the Work Plan is being carried out effectively.

Editorial Comment : Are You An Active Member ?

Many years ago I had the privilege of belonging to an association named the TSOA (Triumph Sports Owners Association) NSW Branch. Now that doesn't have a lot to do with surveying but we did have a saying "Drive a TR and be God for a Day" - so there are some similarities. During my stint with TSOA, I was conned in to being Editor of their newsletter - I did that job for the odd year or two. Like any Editor, you're always looking for worthwhile news items or articles relevant to what might be of interest to members. Like most Editors, you tend to steal articles from various sources. On one of those occasions I came across a poem - can't remember it all but I do recall the opening line - **'Are you an active member, or do you just belong?'**

On reflection, it seems that particular question can apply to any member of any association or club - even the **Association of Surveyors of PNG.** What prompted this editorial comment was a conversation I had with the Hon. Sec. Dickson Taunagita a week or so ago. We agreed that while some members do actively participate in the **ASPNG,** there are many that don't. I recall Rod Gould expressing his disappointment when he sent out a questionnaire to members and received only one response. Less than 10% of members responded to the last questionnaire that was sent out by the sub-committee formed to investigate what direction our Association might take in view of the impact and growth of spatial data in the surveying profession and allied fields.

Are we to assume that less than 10% of our members are able to provide the necessary requirements to satisfy the other 90% ??? I doubt that, but maybe that's the way things will go - if members are not willing to actively participate in the **ASPNG**.

PNG has its own way of asking the question - are you an active member or do you just belong (?) - ***"Saiso" !!!***

- Ed.