

DIMENSIONS

GLIMPING THE [NEAR] FUTURE

Jerry Cresp reports on the coming of the drones

Have you heard media reports about the use of 'drones' or unmanned aerial vehicles?

Known as UAVs, they conjure up scenes of mass destruction in distant places but they're rapidly leaving behind their military origins as they are adapted for all kinds of civil uses.

Aeroplanes flying around are a normal part of modern life. But have you spotted the small quadcopter UAV drones at surfing carnivals, capturing live HD-video for television and high-resolution photos?

In the very near future we'll be equally accustomed to seeing much smaller vehicles dart across the sky, taking photos, making deliveries, transmitting live video for traffic reports, monitoring sports events and doing a whole range of things.

A whole new world of surveying and mapping

The mini-flight technology can be applied to taking aerial photographs over any predefined area, snapping multiple images at low altitudes (<120 m) which are then 'stitched' together with software to create maps similar in quality to NearMap. Additional software can generate digital terrain models (DTMs).

UAVs are well-suited to surveying of open-cut mines, monitoring farm crops and creating DTMs. You can probably think of other applications.



Two types of UAVs

Basic UAVs are simply pre-programmed and sent up to work. Only one-way communication is transmitted to the vehicle, which typically stays within visible range of the controller.

More sophisticated UAVs use two-way communication which enables longer range, out-of-sight flights. The aircraft transmit location, speed and direction to the operator. If required, they can even transmit live video.

Geocomp's initial interest in this technology is purely for mapping, where the vehicle stays in visible range over open-cut mines and farm crops, golf courses and any other area up to 2 km long.

Remember: keep an open mind. Drones like these are about to proliferate in our airways—while writing this, I received an email

describing agricultural inspectors in the EU already using drones in preference to satellites to get more up-to-date and accurate images of land use. In the USA, a new federal law approves drones for all sorts of commercial endeavours. A far cry from the days when plane spotting was new and exciting!

Our experiments

We've been 'road'-testing the concept and our findings are surprising:

- For what can be done, the technology is cheap.
- There are virtually no running costs.
- Operations are relatively easy to undertake.
- Results can be produced quickly.
- The technology is safe to use.

(Continued page 4.)

WEBSITES

Set your priorities!

www.prnwatch.com/prio.html

The Windows multi-tasking system means a lot of applications are running simultaneously—some you know about and directly work with, but most work invisibly. This utility allows you to set the priority of applications permanently.

Play with virtual machines

www.vmware.com/products/player/

www.virtualbox.org/

www.microsoft.com/windows/virtual-pc/

Virtual machines allow you to run one operating system—say Windows XP—on another, like Windows 7 or Linux.

This means you can run Geocomp—which requires Windows XP—on a Mac, Windows 7 or Linux computer.

‘Survey stakes should only be used for tying up tomatoes in your backyard. That’s all they’re good for.’

An exasperated surveyor who’d rather be using machine control.

INDUSTRY NEWS

Hydrographic survey made simple



The rugged Hydrolite-TM from Seafloor Systems looks and feels like your traditional hydrographic survey pole, but this state-of-the-art system measures and logs depths rapidly and accurately, making fast work of ponds, rivers, lakes and more.

Compatible with Trimble, Leica, Topcon, Carlson, Sokkia, Magellan, Spectra, and more. Hydrographic Survey System includes GPS, echo sounder and software.

Contact Barry Smith at Geocomp Systems for more details about Hydrolite or any other Seafloor hydrographic survey product.



WHAT’S NEW IN TERRAMODEL 10.61H?

In October 2011, Geocomp Systems released Terramodel 10.61H on a yellow and white DVD. This DVD includes the full installation of Terramodel and our Geocomp Update for licences with current Customer Care Membership. Here’s a sample of new and updated features in 10.61H.

ASAPIMAG and ADDIMAGE

Place the same company logo jpg on multiple sheets.

COLORCON

Create isopach contours in bands of solid colour to indicate cut and fill.

DELBLKS

Delete those pesky missing external blocks.

F7, F8, F9 and F11

These function keys turn on or off point numbers, symbols, elevations and now, names.

2010 DWG import.

GCREDRAW

Click on the GCREDRAW toolbar button—the one with PT NO—to reset the view scale and refresh. If point numbers, symbols, elevations or names are turned

on, they will now be at a consistent legible size regardless of how much you zoom.

MENUS

The Geocomp menu has been reworked using submenus to add commands and make commands easier to find.

Our next update will add support for importing AutoCAD 2010, 2011, 2012 DWG files.

EXPERT ADVICE

TERRAMODEL

Renaming layers

To rename a layer in Terramodel, run LAYERSET, highlight the layer and overtyping the layername at the top of the command dialog and click OK.

Lost Windows

In any Windows application, you can find yourself opening a window off the screen. For example, the external monitor that Raw Data Editor was last displayed on is back in the office and you only have your laptop with you. The application waits for you to respond but you can't click anywhere. To get out of this jam, press Alt and Space bar together. This drops down a menu (off screen). If you then press M for Move, you can use the arrow keys to move the window around until it reappears.

New Shape Editor

If your Shape Editor does not have a tab to let you enter arcs, then you are running the old Shape Editor. Switch to the new editor using PROJECTV to delete the 'SHAPEEDITOR' project variable.

Displaying obscured objects

When you draw text then HATCH, the hatching obscures the text 'underneath' it. These tips might help:

- The object with the highest record number is displayed and plotted on top of the others.
- Terramodel gives new records the next available record numbers.
- When you DELETE objects, you leave gaps in the record numbering. When you SAVE a project, records are renumbered to remove these gaps.
- If you delete enough objects with low record numbers just before you HATCH, the record numbers of the hatching will be lower than those of the text.
- RECNUMREC copies objects to new record numbers, then deletes the old records.

- If you select Sort On Pen when you plot, the highest pen numbers are plotted on top.
- Some plotter drivers ignore pen order. Some let you sort or merge pens in the plotter or PDF.
- When you create hatching, include text in your Boundaries to avoid hatching over the text.
- You can also CLIP under text by exploding hatching then specifying text for clipping boundaries.
- You can give the same object different colours or pens by specifying Background Prominence in Dynaviews by the layer lists, provided you are not using Sort on Pen or Reference Files.

Windows 7 64-bit and Terramodel

- The better memory usage of Windows 7 allows Terramodel to work easily with larger images and up to 20,000,000 points.
- Download and install Windows Help and enable Windows Macros by following the instructions at www.geocomp.com.au/support/terramodel/10.61h/.
- If you copy your old tmodwin.ini from a 32-bit computer, run GC64BIT command to make it suit 64-bit.
- New computers usually don't have parallel ports. Contact us to swap your parallel port Terramodel and Geocomp dongles to USB versions.
- The Geocomp Data Interface component of Terramodel won't run as it is a DOS application. Use Terramodel import scripts and AUTODRAFT instead.

Give Terramodel more priority

On your lovely new Windows 7 computer, does Terramodel sometimes take much longer than it used to on Windows XP? While Terramodel



Allan Subritzky thought fellow Dimensions readers would appreciate this road sign in The Pilliga, New South Wales.

is working flat out on a big job, Windows can decide that some other applications should have a go for a while. Terramodel has to wait until Windows is good and ready before it can resume. If this happens to you, hit Control-Alt-Delete to start the Windows Task Manager, right-click on the process for Terramodel.exe and Set Priority to Above Normal or High for the current Terramodel session.

Applications such as Prio let you give Terramodel priority permanently (see Websites on page 2).

Control Panel

If you have jerky mouse movements in Terramodel, changing priority might help, but so might freeing up memory by avoiding Aero themes.

Set User Account Control to Never Notify to reduce annoying messages.

Change the Display text size if you cannot see the whole AutoCAD export dialog in Terramodel.

GEOCOMP

To run Geocomp on Windows 7, install it in a Windows XP environment. You could dual boot your computer but the usual approach is to use a virtual machine (see Websites on page 2).

Geocomp will always run on a virtual machine in a 640 x 480 pixel window. This will be small on a high-resolution display. The lower you set the screen resolution in Windows 7, the larger the Geocomp window will appear in the virtual machine window on that display. You could add a second low-resolution display for Geocomp.



GLIMPING THE [NEAR] FUTURE (CONTINUED)

We've built several vehicles and snapped thousands of photos to generate maps. Our autopilot hardware allows us to set a flight path using NearMap or Google Earth, and we can also capture near-infrared information for cropping purposes.

Affordable aerial survey

Even with all the components, it only takes a few days to put one of these vehicles together. The units are inexpensive—talk to us if you want to know the full cost.

The units are lightweight and somewhat fragile, but with careful transport, handling and regular and thorough maintenance, they can sustain long-term use. Components can be easily replaced as they wear out.

UAVs can be blown around by heavy winds, but because they can fly at 100 kph or more they can still perform well.

Flying backwards is not an option.

We've trialled hardware components that are more hobby-orientated than industrial and have found a huge range of reliability. Because the units are cheap, it's feasible to consider arriving at a site with a number of UAVs ready to go. For the value you get from them in aerial information, you could even consider them to be 'expendable'.

Civil Aviation Safety Authority (CASA)

I emailed CASA about our intentions. They're interested in what we're doing—rightly so—but unfortunately there are no regulations around what we're proposing. Technically, a UAV operator is required to pass all the Private Pilot Licence exams, among other hurdles.

CASA's primary concern is air safety, particularly when the UAV goes out of visual range. This is far less of a problem with the flights we are proposing. CASA replied that new rules will be out by July 2012.

How far do we take this?

Our testing has got to the stage where we need to know if there's any interest from our current clients in developing this technology further. Geocomp Systems is considering two main possibilities:

- Offering a mapping service, in which we fly, photograph and create maps and DTMs for projects.
- Constructing and supplying UAVs, and providing training (and documentation) to enable businesses to undertake their own work.

If you've got a project that might benefit from using UAVs, contact us to talk about the possibilities.



Well, it beats me how that dog-leg got in there!

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HELP HOTLINE

For Customer Care Members with queries about using our software.

We aim to respond to your call within 1 hour.

Toll free: 1800 800 754 (in Australia)

Email: support@geocomp.com.au

8.30 am–5.30 pm Melbourne time,
each working day

PRODUCTS

GeoCalc	GeoNav	Geocomp
Terramodel	Visualizer	Seafloor
TerraPos	iWitness	Paydirt Sitework

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We remember Dave Allen, our talented cartoonist since 1998, who died from lymphoma as we were posting our previous issue.

This cartoon from July 1999 illustrated a story heralding machine control.