



The Dirt Digger

Welcome...

To the November 1998 issue of Dirt Digger, 4D Solutions' newsletter for our customers, distributors and partners.

In this issue we look at two more customer sites. One has used 4D on runway designs and the other has linked 4D to its global positioning system to more quickly extract survey data.

We will also take a look at our New Zealand sales and support operation that was established only this year but is already very successful due to the rapid acceptance of 4D Model by the New Zealand market place.

And we'll preview the next version of 4D Model which will be released in the first quarter of 1999. Version 4 will be fully Microsoft-compliant.

At 4D Solutions we believe in making good use of the latest technology and our use of the web, to quickly and easily provide up-to-date information, has been a resounding success. We take a look at these new services in this issue.

There are also the other usual features – technical tips, and welcome aboard.

The summer holidays approach at a gallop and so we would like to take this opportunity to send Season's Greetings to all our customers and partners. We look forward to continue working with you in the New Year.

If you have any suggestions or Technical Tips for Dirt Digger in 1999, do get in touch.

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Here come the Kiwis!

Auckland-based Salesoft CAD Solutions has been appointed New Zealand distributor for 4D Model and has hit the ground running.

There were already three sites using 4D Model in New Zealand and Salesoft quickly added another -- CLC Holdings Limited which is involved in land development and will use the software for subdivision design applications.

Salesoft's Sales Manager, Brian Bowler, said 4D Model complemented the company's existing product range and would assist Salesoft to achieve its objective of providing clients with a total CAD solution.

Established in 1988, Salesoft is an authorised Autodesk dealer and also develops its own software products for architectural, mechanical engineering and civil engineering applications.

"We have been impressed by the 4D software, in particular its speed and the seamless interface between its different modules," said Mr Bowler. "The fact that it now runs under a Microsoft interface instead of just Unix will also make it much more attractive to Autodesk users. It is very easy and quick to flick between AutoCAD and 4D Model, which should appeal to our customers.

"There is a very large AutoCAD market in New Zealand and we believe 4D Model can satisfy the civil engineering needs of these users," he said.

Happy Holidays!

As the year draws to a close we would like to take this opportunity to send Season's Greetings to you and your family. We thank you for your support in 1998 and wish you all success in 1999.

Please note the 4D Solutions Sydney office will close on Wednesday, December 23 and re-open on Monday, January 11.

Optimising GPS data

Barwon Water, the largest non-metropolitan water and sewerage authority in Victoria, has developed an interface to its survey and civil engineering software to allow it to take full advantage of the enormous time savings achieved using global positioning system (GPS) technology.

Ian McLachlan, Licensed Surveyor and Co-ordinator of Barwon Water's Land Information Unit, said the interface provides a seamless translation of its GPS survey data directly into 4D Model for design purposes.

"Use of GPS is maturing to where it can now be used for simple topographic surveys," he said. "As we've developed expertise with the technology, we're anticipating a 3 to 4 times improvement in efficiency over traditional surveying methods for some work types. But to fully optimise these benefits it was necessary for us to develop a seamless interface to 4D Model."

Barwon Water provides water, sewerage and river management services to the western side of Port Phillip Bay. The authority was one of the first users of 4D Model. Barwon Water installed the software in 1991 for surveying, terrain modelling and civil design.

A year ago the Authority's Land Information Unit purchased two Leica single frequency GPS receivers and is using them to co-ordinate water assets in rural locations using "code only" measuring at the sub-metre level.

"Because of our long experience with 4D Model, we were keen to interface it and the incoming GPS data," said Mr McLachlan. "Also, as more general surveying tasks like topographic mapping were being done with GPS instead of traditional total stations, access to a field coding system was required.

"We asked 4D Solutions if what we wanted was achievable, they examined our specifications and they delivered, as they always do," he said. "We then developed a solution with 4D based around the standard ASCII output available from Leica's SKI GPS post-processing software."

This solution consisted of a small field code system which tagged observed points with flags for stringing data with lines and arcs, double stringing, closing strings, nulling heights, creating points by radiation and creating circular features. These codes, and the observed points' feature code, are imbedded by the operator into the 16-character point description used by the GPS controller software, at the time of survey.

When the SKI ASCII output file is read by 4D Model, the user's mapping file and name library are automatically read to define string types, allocate string names and descriptions and allocate models.

"The radiation entry option is particularly useful as a user can occupy a 'GPS friendly' point and observe magnetic bearings and distances to nearby data points," said Mr McLachlan. "4D Model's reduction process allows a magnetic angle correction to be applied.

"The main benefit is that we have achieved a field coding process similar to using a total station so that GPS operators do not have to learn new code concept and libraries," he said. "It also provides a seamless and standardised translation of the GPS output directly into 4D Model, which is particularly important as the GPS output is quite different from what surveyors are used to."

The resulting data allows the Land Information Unit to use 4D Model on a number of large terrain model development projects for internal and external clients.

"4D enables source data to be read from DXF files produced by aerial photogrammetry as well as data acquired by traditional or GPS field survey," said Mr McLachlan. "4D's global mapping power enables data to be very quickly re-arranged, merged or attributed to suit the modelling needs of a project.

"It is now commonplace to accrue data sets for reservoirs or other large civil sites, containing up to half a million points, each with a spatial accuracy of 0.1 metres horizontally and vertically," he said. "This provides real-world 3D modelling, virtually at ground scale."

Mr McLachlan said to calculate the interface of a complicated flood surface with a terrain model of this size might take a day to create the surface but only a minute to define the terrain interface.

"To calculate the incremental storage volumes of a 40,000ML reservoir at 100mm intervals takes less than a minute," he said. "To do a concept design for a 60ML irrigation dam, balance the earthworks and calculate the incremental volumes may take 15 minutes. To tinker with design templates or centreline and re-run the design takes just one minute. These are all things that 4D Model does very, very well."

The Tipster

Never fear the New Year! 4D Model is Year 2000 compliant. This compliance covers the program software, the hardware locks and drivers, and the authorisation code.

4D Model flies high

Aircraft movement on the north-south runway at Sydney's Kingsford Smith International Airport will soon become more efficient thanks to new taxi-way designs produced by leading engineering firm Sinclair Knight Merz.

The new designs will provide the runway with additional stacking spaces and interconnecting taxi-ways, allowing planes to leave the runway and move between runways more quickly. This will enable increased traffic while maintaining strict safety standards.

Sinclair Knight Merz produced the detailed design using 4D Model.

Tony Ingold, Executive Engineer, Sinclair Knight Merz, said 4D Model helped them develop and investigate options very quickly as well as carry out 3D visualisation during the design process in order to ensure the most effective design solution.

Sinclair Knight Merz is a multi-disciplinary engineering company working mainly in the fields of infrastructure, mining, environmental work and power and energy. It operates across Australia and in South-East Asia.

The company's Sydney office has had a copy of 4D Model installed for several years and has used that software and some other programs for its road and civil design. About 12 months ago the company had to reassess its design software requirements due to a rapid increase in its civil design workload.

"We had several different packages in-house and felt this was an opportunity to rationalise our systems as well as providing more design software seats," said Mr Ingold. "We invited several suppliers, including 4D Solutions, to demonstrate their software. 4D Model was chosen to best suit our other civil needs.

"The main reasons for choosing 4D Model were its speed and, because it is an Australian company based in Sydney, we felt they would provide the best training facilities and local technical support and be on the spot if we needed them."

The Sydney airport job has been a good test of 4D Model's capabilities. The design encompasses two rapid exit taxi-ways and seven other taxi-ways to improve the efficiency of the runway operations. 4D Model was used for the design and grading of the taxi-ways.

"The challenge on this job was to ensure the new pavements would shed water efficiently while tying into existing pavements," said Mr Ingold. "They also had to meet the strict Federal Aviation criteria for gradients and cross-falls.

"We used 4D Model to do the gradings, taking advantage of its ability to carry out 3D visualisation during the design process to ensure the fitness of the design for use," he said. "4D Model was also used to produce the stormwater drainage drawings and to calculate bulk earthworks. It handled all these tasks very quickly.

"4D Model also allowed us to develop and investigate options very quickly, a key advantage when you are doing a job to strict deadlines.

"Features of 4D Model which we have found useful on other jobs include its ability to model utility services as part of road design," said Mr Ingold. "This allows us to check for clashes and modify service depths if necessary.

"Also the speed with which drainage design can be taken from the conceptual stage to finished working drawings is a big advantage," he said.

Sinclair Knight Merz is either using or evaluating 4D Model at a number of its offices. All offices operate independently and choose the best products for their local needs. Sydney now has seven 4D Model users, and the software is being used in the Melbourne, Perth, Brisbane, Gold Coast, Darwin and Cairns offices.

Web downloads

Over the last 12 months more and more of our customers have started accessing the web and communicating with us via email.

In response, we have made a number of 4D Model manuals, including the training and reference manuals, available on our web site. Customers can simply copy the documents to their own systems whenever they wish so they can have manuals that are easy to reference and constantly up to date.

We have also made available on the site the latest executables of the production and Practise versions of 4D Model so our customers can always access the latest features of our software.

For more information please visit our web site at www.4d.com.au

4D Model Version 4 coming soon!

The rumours are true – the Microsoft-compliant version of 4D Model is soon to hit the streets.

A number of customers are already testing Beta versions, and the full version is expected to be released by March 1999.

What does this mean to you? Well existing users of 4D Model will be able to have overlapping and iconising of views, ability to cut and paste panel fields, a more powerful macro language, superstrings, improved communications for supporting survey instruments, extra plot parameters, and more macros – just to name a few benefits.

The beauty of the new version is that we have been able to deliver all these new features without making the software slow and cumbersome. Also we have made very few changes to the core code so the program has remained stable and bug free.

All existing functionality is still supported including user-defined function keys, macros and screen layout files. And – unlike new versions of other products – no retraining is required because the new version has the same menuing system as our current version, 4D Model 3.2.

Practise Version

The 4.0 Practise Version will be released with the production program so that your staff can train in the new version.

Currently available for 4D Model 3.2, the Practise Version is a special free, 5000 point version of the program with no output options or plot outputs, but users can still plot to a model to preview any plots.

The 3.2 Practise Version is shipped on the 4D Model installation CD or is available from 4D Solutions.

The Tipster

Welcome Aboard

New and/or additional licenses at

*Abigroup Contractors - Brisbane, Sydney
 Alan Watson - Brisbane
 Aline Design - Perth
 Axis Consultants - Auckland (NZ)
 Baseline - Brisbane
 Brisbane City Council
 Bob Patterson - Sydney
 CLC Consulting Group - Auckland (NZ)
 Coomes Consulting Group - Melbourne
 Connell Wagner - Sydney
 District Council of Mount Barker - SA
 Engineering Design Consultants - Auckland (NZ)
 Engineering Setout - Taree
 Eurobodalla Shire Council - NSW
 Geerlings Highway Design - Perth
 George Callister - Tasmania
 GHD - Sydney, Darwin
 Good Crop Plantation Sdn Bhd - Malaysia
 Gundagai Shire Council - NSW
 Ian Lambert - Sydney
 Jeff Mouldsdate & Associates - Sydney
 John Holland & Barclay Mowlem - Brisbane
 Mail McDonald Barnsley - Canberra
 Morton & Associates - Gold Coast
 Narrandera Shire Council - NSW
 New Plymouth District Council - New Zealand
 PPK Environment and Infrastructure - Brisbane
 Queensland Main Roads - Metropolitan, Infrastructure Design, Roma, Townsville
 Sinclair Knight Merz - Brisbane, Darwin, Melbourne
 SMEC - Sydney
 Tonkin and Taylor - Auckland (NZ)
 WBCM - Melbourne
 Wood and Grieve - Perth
 Young Consulting Engineers - Canberra*

Top service & support

4D Solutions is committed to providing not only the best civil engineering software on the market, but also the best service and support.

Expert pre- and post-sales support is available from:

Dr Lee Gregory, Ph. D. (Maths), or Alan Gray, B. Eng (Civil), at 4D Solutions in NSW, Tel (02) 9970 7117, Fax (02) 9970 7118;

Alisdair McCrudden at 4D Solutions in WA, Tel (08) 9574 6816, Fax (08) 9574 6816;

Gayle Francis at 4D Solutions in SA, Tel 0418 958 608, Fax (08) 8272 3022;

Steve Crossley, B.Eng. (Civil), MIE Aust., at SCS Software in Vic, Tel (03) 9802 8849, Fax (03) 9803 1057;

Ian Cameron, B. Sc Ph.Eng.(I.T.C.), Registered Surveyor, at Technical Solutions in Qld, Tel/Fax 07 3378 8702;

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