September 1997 **Issue 6**

The Dirt Digger

Welcome...

To the September 1997 issue of Dirt Digger, 4D Solutions' newsletter for our customers, distributors and partners.

In this issue we feature Queensland, where 4D Model is having some very pleasing successes with the help of our local support person, Peter Taynton.

We also look at how the RTA Wollongong won a Technical Merit Award for a very important presentation created with 4D Model, then move to the west, where Gutteridge Haskins & Davey are trialing 4D Model with a view to using it Australia-wide.

And, of course, Version 3.2 of 4D Model is now shipping, so we touch briefly on some of its new features.

Don't forget that Dirt Digger is your newsletter. Let us know what you would like to see in it, and send us your technical tips so that we can share them with other users. 4D Model is also soon to be making regular appearances in the Help Files in MultiCAD magazine, so your tips could appear there as well. We look forward to hearing from you.

Dr Lee Gregory
Managing Director

Mr Alan Gray
Technical Director

4D Model 3.2 now here

Version 3.2 of 4D Model is now available, with some exciting new features that have performed extremely well during Beta testing. Among these features are a new interactive front-end which is making design creation and modification much faster and even more flexible plotting. See page 3 for details.

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4D Model looks great in the sun

Things are looking bright for 4D in Queensland, with the latest customer to come on board being the Brisbane City Council, the largest council in Australia.

Brisbane City Council joins a rapidly growing number of 4D customers in our sunshine state and has purchased 4D Model for the use of its design section.

In other recent Queensland news, Queensland Main Roads Department is now the largest 4D Model user in Queensland with 50 4D Model copies, eclipsing the Gold Coast City Council, the second largest council in Australia, which has 30 copies. Other major customers include Queensland Rail, the Brisbane Port Authority, and a growing number of consulting and private engineering firms, ranging from small two-person companies to some of the biggest companies.

Local support is being provided for Queensland users by Peter Taynton, well-known to the 4D user community in Queensland due to his time at the Gold Coast City Council as well as his more recent support role for 4D. Peter is running 4D demonstrations, catering to all 4D training needs and providing technical support, including macro writing.

"Our users like the fact that there is now fast, local service available," said Peter. "I'm close enough to be able to visit people quickly if they have a problem.

"4D Model is well known up here now," he said. "When you have happy users, word gets around. People like its ease of use, its wide range of options and the fact that they can output to many different packages. I'm also talking to one of the big TAFE colleges which is interested in running corporate training classes in 4D at night, so this will make it even easier for new users to learn the software.

"All in all, we see a very bright future for 4D in Queensland."

4D Model presentation a winner

A presentation on the proposed North Kiama bypass, developed by the RTA (Roads and Traffic Authority) Wollongong's Technology Branch using 4D Model civil and surveying software, has won an RTA Technology Merit Award for outstanding achievement. The presentation, using a laptop computer and overhead screen, was produced for the Commission of Inquiry into the bypass and according to John Burns, Project Design Supervisor, RTA Wollongong, it was received extremely well by all present.

"And what was even more pleasing was that the whole presentation was developed in under four weeks to meet a very tight deadline," said Mr Burns.

The North Kiama bypass project had been going on for around 10 years, due largely to the fact that it impacted on an environmentally-sensitive wetlands area. The local council had refused to approve the project, so it had to be put in front of a public hearing, or Commission of Inquiry, in order to gain State Government approval. The RTA received notification that the Commission of Inquiry would take place in six weeks time.

"We had to decide in a hurry how we would prepare our presentation," said Mr Burns. "We had to come up with something which could be done quickly but which would be accurate and also be 'live' so that we could answer 'what-if' questions on the spot.

"We were long-term users of Moss for road design work," he said. "It's a good design tool but not one which you can use for quick and accurate concept work, which was what was needed as we had to present the Commission with options for the bypass route. We had seen 4D Model previously, so knew it was exactly what we needed to do such a job in a hurry. To make sure it could be done, we asked Lee Gregory from 4D Solutions to come down and carry out an on-site demonstration of the capabilities of 4D Model.

"We then produced a quick business plan submission and obtained approval to purchase the software. It was installed quickly but by now we only had four weeks left to go until the Commission of Inquiry. We knew that, with such an extremely tight time-frame, we would not have time to train-up on 4D Model ourselves, but we had a competent operator elsewhere in the RTA in the form of Ray Tester from our Wagga Wagga office, who was a very experienced 4D Model user. Ray was seconded, on a part-time basis, to help us out, and things got underway," said Mr Burns.

The Tipster

Many people are using the exact volume between two triangulations option to calculate volumes and colour the depth difference on screen and on plots but few realise that the same process is excellent for QA work.
Simply use the exact volumes option to compare the design and the as built triangulations and colour the differences when they are outside of spec.

The initial steps for the RTA were to obtain digitised contour maps of the area, plus cadastral information and aerial photographs to locate and define vegetation limits and sensitive wetland areas. This information was used to start building up layers using Microstation to create the base model. This base model was then put into 4D Model and detailed concepts, interchange layouts, earthworks, boundary details and options were established.

"We wanted to be prepared from the first day of the Commission to be able to answer any design questions and present alternatives for the Commissioner, the members of public and the RTA personnel present, in a quick, accurate format," said Mr Burns. "With 4D Model we were able to do this very quickly and present the updated information on screen.

"Everyone was very impressed with the speed and quality of the presentation," he said. "4D Model also allowed us to do a walk- and drive-through video presentation, which helped clarify everyone's perceptions of what the bypass would look like and, we believe, helped with the final decision. Ray Tester's skills in the use of 4D were crucial in the design and presentation of this project. He obviously did a great job, as not only was the reception at the Commission excellent, but we subsequently received the RTA Merit Award.

"We are, of course, still using 4D, and we now have two licences servicing 15 workstations," said Mr Burns. "I can't praise 4D enough and their product support is also great.

"We used to produce our initial concepts by hand from contour plans then go into Moss," he said. "This was satisfactory for simple jobs but created problems with complex projects. Now we start with 4D Model and produce the horizontal and vertical geometry, earthworks and cross-sections then go into Moss for the final design, and we obtain a much better result. We are currently investigating the purchase of software which will enable us to scan ortho/topo maps, build up a 3D model from this and then use 4D to produce an electronic, instead of a hand-produced, concept," he said. "Then we'll see an even bigger improvement."

V3.2 continues the functionality increase

4D Model V3.2 has now been released and continues to increase the functionality for designers and surveyors.

A new interactive front end for the design options has halved the time required for creating and modifying designs.

Extra commands have been added to increase the power for detailed road design. Crossfall can be rotated using circular reverse curves, and new apply commands allow template widths, heights, crossfalls and slopes to take their value from earlier template links.

Welcome Aboard

New and/or additional licenses at

Abigroup Contractors (Vic)
Barwood Parker (WA)
Baseline Consulting (Qld)
Brierty Contractors (WA)
Brisbane City Council
ByCAD (Qld)
CBD Surveying Services (NSW)
CCD Australia (WA)
CIVCADD (Darwin)
CIVDES (Qld)
Colless and O'Neill (Darwin)
Connell Wagner - Cairns
Dalton Consulting Engineers (Vic)
Department of Transport (WA)
Engineering Setout (NSW)
Fisher Stewart - Canberra, Echuca
Gutteridge Haskins & Davey - Geraldton
Halpern Glick Maunsell (WA)
HDS Australia - Pakenham, Bright, Whittlesea (Vic)
Hyder - Brisbane and Cairns
IR Perunding Sdn Bhd (Malaysia)
Kinhill Kramer - Cairns
Leeton Shire Council (NSW)
Malavoca (WA)
Michael Jensen (Qld)
Mishlaw (Qld)
Morton and Associates (Gold Coast)
Main Roads Queensland - Mackay, Metropolitan, Nerang , SE Survey, SE Design,
PKT Associates (Malaysia)
Ranhill Bersekutu Sdn Bhd (Malaysia)
RTA - Goulburn
Shire of Mundaring (WA)
Sinclair Knight Merz - Perth and Darwin
Tajul Ho & Ng Consultants (Malaysia)
Watsons Pty Ltd (Vic)
Wood and Grieve (WA)

4D Model's flexible plotting has been further enhanced by the addition of plot parameters for labelling cuts through strings in long sections, plus user defined symbols for labelling cuts through strings for long and cross section plots. Points on cross-sections can now be labelled with text, heights, offsets and user defined symbols. Parameters exist for independently setting the colour, size and text style of most text on long and cross-section plots.

For surveyors, the Topcon and Nikon data recorders join the growing list of supported recorders. New reduction routines allow 4D Model to emulate many of the existing coding schemes. Also Mick Gunter's popular TP-SETOUT software supports and is supported by 4D Model.

As usual for 4D Model, a host of smaller upgrades and features have also been added to increase performance and speed up the workflow. For existing users, one small but helpful upgrade is that the information panel never comes up under the cursor.

Hilly terrain no problem with 4D

The complexity of designing environmentally-sound subdivisions in hilly terrain has led leading consultancy Gutteridge Haskins & Davey to purchase the Australian-developed 4D Model civil engineering software with a view to using it Australia-wide.

4D Model has been installed at GHD's Bunbury, WA, office, which is heavily involved in land development.

"Although we have been using other software for 3D surface modelling, we needed a system which would better handle subdivision work and which could be more easily used by our draftspeople," said Wayne Edgeloe, Senior Manager, GHD and Manager of the Bunbury office. "A demonstration by Condor convinced us that we should give 4D Model a trial."

Gutteridge Haskins & Davey is a well established, Australian-owned consultancy with operations throughout Australia. It is involved in a diverse range of engineering and environmental projects and provides services covering all stages of a project from consultancy and planning to total project management as well as providing survey services though GHD Surveys.

In Western Australia the firm participates in industrial, mining and commercial projects through offices in Perth, Bunbury, Geraldton and Kalgoorlie.

"Because of the hilly terrain in this part of Western Australian, a key concern in many land development projects is optimising the design to best suit the terrain and keep the development in harmony with the environment," said Mr Edgeloe. “We always aim to go beyond the minimum environmental requirements and provide the best possible end-product. For this reason we needed a software package which would allow us to easily model a range of options to come up with the optimum design.

"From seeing a demonstration of 4D Model, we felt it may suit our needs, so agreed to give it a 12-month trial and really put it through its paces," said Mr Edgeloe.

4D Model is being used in three major areas - planning of preliminary road layouts for new developments; detail design of subdivisions; and also in dam design.

"On the planning side, we have used 4D Model in land development projects for producing preliminary road layouts," said Mr Edgeloe. "These projects have involved a lot of very hilly terrain so the aim has been to come up with the best road alignments to suit the area.

"With 4D Model it has been quick and easy to move the road both horizontally and vertically so that you can drive the road in the model and visualise how it will look. 4D Model very readily tells you where your cut banks are so that you can see how the road fits into the terrain, and it also quickly gives you volume outputs and quantities to enable better preliminary job estimations. These factors are very important at the feasibility stage, where getting the optimum design and costing is vital," he said.

GHD has also used 4D Model for the detail design of subdivisions such as the Marlston Hill development in Bunbury. This project involves the development of 150 residential lots from what was an industrial area of oil and fuel tanks.

"The aim of this project is to enhance Bunbury's inner city living areas," said Mr Edgeloe. "Again it is a reasonably hilly site and the design has involved the development of many retaining walls. It has been a good trial for 4D Model as it includes all the elements we need to test. The earthworks design was complex and we had to provide a wide range of options for the retaining walls. 4D Model's ability to quickly and easily recalculate quantities made this simple. We were very pleased with its performance."

GHD is also using 4D Model to design the large Southern Valley expansion of the bauxite residue and disposal areas (BRDA) at the Worsley Alumina refinery at Collie, WA. 4D Model is being used for the initial earthworks design and quantities and the modelling of the dam to give volumes and final geometries.

"4D Model is performing well throughout, and will also used be for visualisation for environmental rehabilitation purposes,” said Mr Edgeloe. “Its modelling abilities give us a much better picture than sketches could.

"There are several other features of 4D Model which have impressed us," he said. "One is that it is proving quite easy to use, and our operators are able to get productive with basic applications after only two to three days training. Another useful feature is that output from 4D Model is readily compatible with AutoCAD, which we use for final detailing and to produce presentation drawings. We can tailor the output to suit AutoCAD whereas with a lot of other packages the models are not readily compatible and need a lot of reworking before AutoCAD will accept them.

"We can also readily import most types of survey data formats, which is very useful as we use a lot of different surveyors and they use different systems," said Mr Edgeloe. "This has been a problem in the past with other software, but 4D Model's versatility means that importing and exporting data is now easy."

The Tipster

To quickly bring up the string inquire panel, simply click the left hand mouse button when over the strings option on the main 4D Model menu.

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:

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David Francis, *M Sc Civ Eng*, at Condor in WA, Tel (08) 9322 2377, Fax (08) 9322 2380;

Peter Strods, *B. Eng. Grad Dip Sys Anal Grad Dip Munic Eng*, at HDS Australia in SA, Tel (08) 8267 4577, Fax (08) 8239 0111;

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

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