

MAAP in Arriyadh, Saudi Arabia

TRL has recently completed a Strategic Road Safety Project for the City of Arriyadh. This 12 month project was commissioned by the Arriyadh Development Authority to develop a long-term strategy to improve road safety and reduce the number of fatal and serious injury accidents over the next 10 years.

The project was developed and delivered in partnership with TSTN Limited and was led by Mahmoud Al-Katib, TSTN's Managing Director.

As part of the safety strategy, an improved Arabic Version of the MAAP Accident Data System has been developed and last month saw the configuration and installation of the package at three organisations in the city, Arriyadh Traffic Police, Arriyadh Municipality and Arriyadh Development Authority by TRL's Sanjay Vadgama.

Training in using MAAP was also given to local staff. The package will be used to enter accident data by the Traffic Police, and as a powerful analytical tool to analyse the accident data and identify trends and locate accident hotspots.

The latest version of MAAP is now capable of running on Windows XP with Microsoft Access 2000 or Access 2002. It will work with the new GPS system recently introduced by the Traffic Police in Arriyadh. MAAP is also in use in Bahrain and Jordan.

For further information, Contact Sanjay Vadgama, email: svadgama@trl.co.uk.



Mr Abdulaziz Alghannam, Head of Strategic Studies, ADA, receiving the MAAP Package from Mahmoud Al-Katib

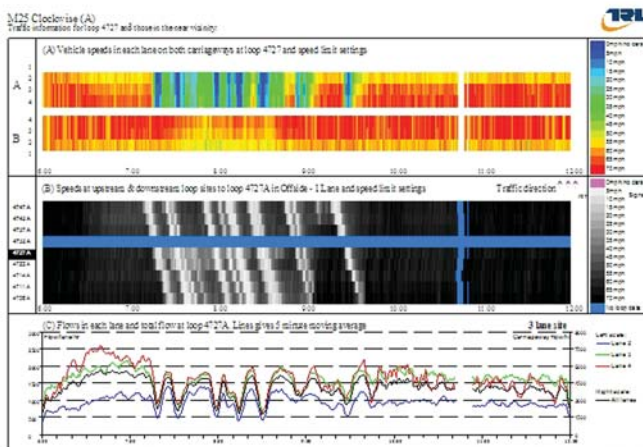
MTV2 is on the way

TRL's Motorway Traffic Viewer (MTV) is currently undergoing some new development work.

MTV is a visualisation tool designed for traffic researchers to analyse traffic patterns and automatic signal settings on motorways, used by the Highways Agency and its agents. MTV takes traffic data, signal alerts, and motorway geometry, processes the information in a specified form and produces detailed graphical outputs such as plots of flows and speeds etc. One of the new developments is the addition of several new plot types which include Junctions Flows, Lane Distribution, Incident Analysis and HGV Hard Shoulder Running.

Other new features will include a facility to export the plot as an image, run batch print jobs, and there will also be an optional Binary Converter plug-in.

These additional new features provide the researcher with more tools for visualising and understanding a particular scenario, thus making MTV2 an invaluable piece of software for understanding traffic behaviour and evaluating the performance of motorways.



Incident analysis plot showing the effect on the operation of the motorway



A new plot for junctions - showing speeds and flows



**SEASONS GREETINGS
TO ALL OUR READERS**



Modelling unsignalled entries to a signalised roundabout

At the recent JCT Traffic Signals Symposium, Stuart Maxwell presented a paper that considered an alternative way of modelling unsignalled entries to a signalised roundabout. The situation under consideration was a particular one in which the intergreen at upstream signals was deliberately long so that large gaps were created in the circulating flow. The assumption is that traffic entering at the priority arm can make good use of these gaps since they are predictable and easily seen. The idea that Stuart Maxwell had was to treat the entry as signal controlled, work out when in the cycle, and for how long, traffic can enter the roundabout and assume that high saturation flow applies.

The presentation of this paper led me to think that the model TRANSYT uses for priority situations may not be fully understood.

Firstly, let me explain, briefly, how we suggest (but not insist) a priority approach is dealt with on a signalised roundabout. To begin with, the coefficient and max flow needs to be deduced. The easiest way of achieving this is by using ARCADY. Enter all the geometric details of the junction under consideration and you will obtain a value for the y-intercept (the max flow in TRANSYT) and the slope (the coefficient in TRANSYT). It is necessary to know how ARCADY works to do this, of course. Having deduced the parameters for the priority approach this way, it is necessary to specify which link is to oppose the entry traffic. For this it is important to use **just one** link to model **all** the traffic that has priority. This may seem odd at first because you may be modelling two or more traffic streams, or lanes, and if the approach was signalised, you would need more than one link. However, using a single link is acceptable in this situation because it is unsignalled and we are not interested in how queues form and discharge: only the pattern of traffic as it passes the priority arm is needed. If it is necessary to model different movements on this link you can still use shared links, and you can use them to model different lanes if necessary in this case

(but don't even think of doing that on any signal controlled approaches!) Specify the master link as the priority link in the give-way data.

When the priority model has been specified, it is important to appreciate how it works. The relationship that is given by the give-way parameters is used in each step of the cycle, separately, to calculate the potential flow out of the give-way arm during each step. Thus, when there is little traffic on the circulating link, there should be (potentially) more flow getting out of the give-way link (assuming that there is traffic demand present). Conversely, when there is a larger flow on the circulating link, there is a limit to what can enter. This way a new cyclic profile is built up from the circulating and entry profiles to feed downstream links. The new profile will generally look like the circulating profile with the gaps filled in.

What the method above doesn't necessarily consider is the way upstream signals affect traffic behaviour, especially when long intergreens are injected to produce gaps that allow downstream give-way traffic to enter. When this is the case, it is likely that the give-way traffic can see that upstream traffic has been halted, anticipate the impending gap, and be able to discharge across the give-way line, almost as if it was a signal controlled stopline. Under these circumstances, it may be worth

considering Stuart Maxwell's method as an alternative to the normal give-way model. But the consideration has to be careful and the way to model it needs some additional explanation. Below I have suggested a method that should cover all eventualities. It is not the only way, but it combines give-way and signalised parameters.

In the diagrams below, arms (or phases) A and B (see Figure 1) are the circulating and entry arms at a signal controlled junction. These feed arm C which is a signal controlled arm associated with node 1 (not 2). D is in fact a bottleneck link and node 2 doesn't actually exist in the TRANSYT data. However, this bottleneck link also gives way to arm C. Now we can specify signal data on arm C that makes it red for the induced gap and arm D will use the specified standard saturation flow value during that period. The rest of the time, arm D will use the give-way parameters, with the (usually) lower maximum flow.

Figure 2 shows the timings to use when the journey time between nodes 1 and 2 is 7 seconds and the induced gap is 5 seconds (the time that A and B are both red). Both need to be adjusted to model each situation. Note that the example deals with the situation when there is one induced interstage. If there are to be two periods, simply insert another all-red stage in the way illustrated, using the

second-green facility to model phases A and B.

The main advantages of this method is that both the normal priority situation and the alternative 'neo signal controlled' situation are *both* modelled together, in an automatic fashion. It can be used to set the intergreen length to the minimum required, and allow a more accurate model of platoons further downstream. Make sure that you use the cyclic flow profile graphs to see how the model is working and adjust the lags and all-red time as necessary.

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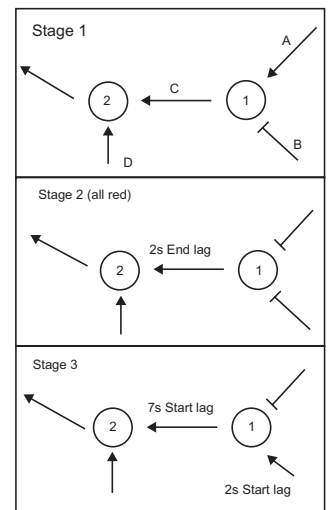


Figure 1. Stage sequence

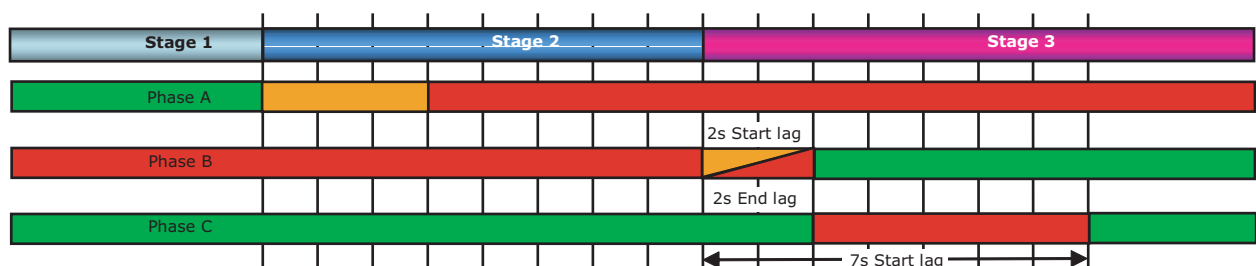


Figure 2. Timings for a 7 second induced gap

FAQ

This month's FAQ brings you a selection of Frequently asked questions covering ARCADY, PICADY, OSCADY and TRANSYT.



ARCADY only models roundabouts up to 7 arms - what recommendations are there for modelling an 8-arm roundabout?

You will need to do two runs to establish the queues and delays associated with all 8 arms: Remove the least significant arm. Lets call it Arm H. Assuming you are using ODTAB, re-assign the flows exiting Arm H to Arm G (i.e. the previous arm) and the entry flows to Arm A (the next arm). Measure the geometry as normal, as if the 8th arm still exists. This will allow you to model (to a reasonable level of accuracy) correctly the situation for 6 out of the eight arms (arm H is missing obviously and arm G has higher flows than reality.)

Now put Arm H back in and pick another arm (other than arm A, G or H) to remove. Do the same thing so that you can get queue and delay information for the two remaining arms.



Can I carry out calculations in ARCADY and PICADY using PCUs instead of vehicles?

Yes – In ARCADY and PICADY you can specify demand data in PCUs instead of vehicles. Firstly make sure that you have NOT specified default Heavy Vehicles and then enter your PCU flows instead of vehicles. Specify no heavy vehicles. This will mean that the results in the output file shown in vehicles are now, in fact PCUs. Any values already described in the output in PCUs will still be PCUs since, as far as the model is concerned, PCUs and vehicles are now the same.



'XXCADY font not installed' error message appears when OSCADY 5 is launched.

A: OSCADY5 uses a unique font file called XXCADY.TTF. If you do not have this installed on your machine in the fonts folder then errors will occur. To install the font file either reinstall OSCADY5 or alternately on the OSCADY5 disk extract the TrueType Font file from the file DATA.CAB, rename it to XXCADY.TTF and then copy it into the Windows font folder.



I am using the VA (vehicle actuating) mode in OSCADY and it is giving the same RFC values for every arm. Can this be correct?

The flow profile generated by using the ODTAB option is symmetrical, centred about the peak flow, which occurs in the middle of the modelling period. In VA mode OSCADY automatically optimises, for either delay or capacity (depending on whether the junction is under or over 100% saturation) the signals for each time interval individually. Since the demand data is symmetrical when using ODTAB, the results from the optimisation process will usually be symmetrical as well. E.g. the resulting RFCs in the first time segment will be the same as the RFCs in the last time segment.

In a particular time segment during optimisation, if the demand flows are such, it is possible for OSCADY to equalise the RFCs between arms, within certain restraints. This results in the RFCs for two or more arms being identical. This does not occur in non-VA mode because the optimisation is carried out for the entire demand data period, so there is less chance of equalisation between arms occurring.



In TRANSYT 12 is it possible to store more than one network diagram and what information does it contain?

Yes you can store more than one – Simply use the "Save As" menu option to save the file under any name you wish. Note: When NetCon is launched for the first time since loading a new TRANSYT data file, it searches in the same folder to see if there is an NCE (Network Construction Editor) file with the same name and, if found, loads that file. If this is not the file you want you can use the 'Open' button in NetCon to load any NCE file you have previously saved. The Network Construction Editor (NetCon) data file contains data gleaned from the TRANSYT output file, input data (direct from memory) and NetCon data the user has supplied such as the positions of the nodes and various user settings. This data is stored separately from the main TRANSYT input DAT file. The default file name for this NCE file is the same as the TRANSYT data file as this is the one that NetCon searches for when it is opened, but you may save the file under any name AND as many versions of the file as you like.



Looking at my TRANSYT output I see that my shared links (major and minor) all have the same degree of saturation (DOS) and mean max queue (MMQ) values. Do I assume that the queue has been split evenly between the links?

When shared links are specified there is only one DOS and one MMQ value for the combination of one major link and its associated minor links. The values are repeated next to each minor link purely for convenience. Therefore, the values have not been divided between the links, and so should not be summed together. Also note that the choice of which link is the major link is an arbitrary decision – it has no effect on the results.



If give-ways are giving way to only one controlling link, two controlling links should NOT be specified in TRANSYT:

LOGICALLY you might think that setting two controlling links and then specifying that 100% of the traffic gives way to just the first link would be the same as specifying only one link in the first place. The TRANSYT model is affected by whether one or two controlling links are specified and may give slightly different results. Therefore, when specifying the number of controlling links in TRANSYT that a give-way has to give way to, only specify two controlling links if some or all of the give-way traffic gives way to both links.



I wish to transfer the licences for ARCADY, PICADY, OSCADY and TRANSYT to another PC. I first click on the program icon, hold down the shift key and while holding it down double-click on the icon to bring up the registration screen. I find that the "Transfer the license to another PC" option is disabled. Why is this? Have TRL stopped the transfer of licences for some reason?

No – the transfer of licences is still possible. The likely reason for why this option is disabled is that you are working under a "restricted user" regime where access to your PC is limited, usually by an IT department. If this is the case you can only transfer licences when you have administrator rights. Contact your IT department if you think this is the case.

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Using our copy protection system

Over the last few years, holding legal software has been a priority for many businesses. Large fines have been issued for those using illegal copies of software, leading to huge inventories being carried out by many to prevent fines in the future.

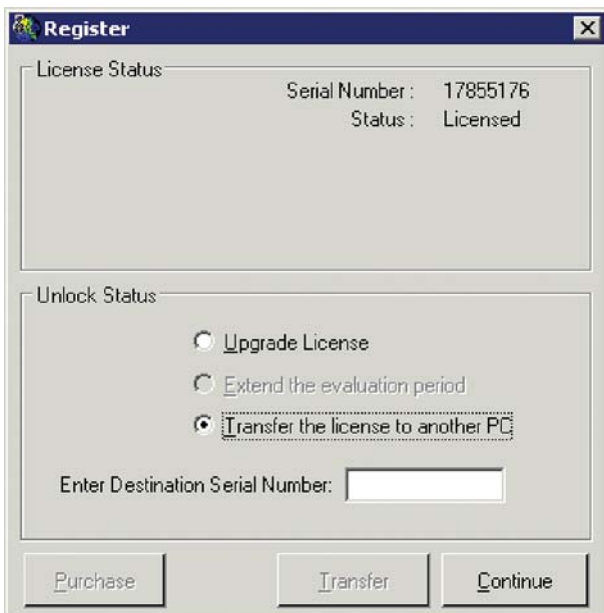
TRL is working hard to ensure that all customers have legal copies of our software. In order to do this, a copy protection system is used by all of our software products.

The system is simple to use and allows companies to keep an eye on how many users have installed the software. When first installing the software, the user should note the serial number that appears on the screen. They then need to contact a member of the Software Bureau either by phone, fax or e-mail and a unique unlock code for that PC will be created.

It is important that if software is removed from a PC, it should be transferred to another machine **or** the staff in the Software Bureau should be informed, to keep TRL's records in line with the number of copies in use.

Transferring the software is easy and only requires that you install the software on the new PC before removing it from the old machine:

1. Install the software on the NEW machine.
2. Once installed a licensing page will be displayed on opening the software. Make a note of the 8 digit serial number and return to the OLD machine.
3. Whilst holding down the SHIFT key, select the program you wish to transfer from the Start Menu or by double clicking on a shortcut to the program. **(Do not release the SHIFT key until the 'Licence Data' box appears, the box may be hidden behind any other windows that are open).**



4. Click on "Transfer the licence to another PC". This will give a box asking you to enter the serial number of the destination PC.
5. Enter the serial number noted down earlier and click "Transfer". You will be asked for confirmation and then you will be provided with an unlock code. Note this down and move back to the new machine.
6. Enter the unlock code on the new PC and click register.

Software Bureau
Email: softwarebureau@trl.co.uk

MOVA USER GROUP REPORT

MOVA User groups are held twice a year, with the September 2003 meeting coinciding with the annual JCT Traffic Signals Seminar. This arrangement ensures a good turnout, and almost 50 people attended the meeting. John Spence chaired the meeting which was funded equally by TRL, Siemens and Microsense, and thanks must also go to JCT staff for making all the arrangements.

As traffic engineers get more experienced and knowledgeable about MOVA, so the level of active participation by the delegates is rising. TRL were represented by John Peirce and Mark Crabtree, who outlined current development plans including the automatic on-line measurement of saturation flows, and who were also available to answer the many questions asked by delegates. The day's discussion was lively and detailed, and as well as presentations by TRL, Siemens and Microsense, users spoke about their achievements and difficulties. It was suggested that TRL staff should be added to the TCUG "free list", and a TCUG representative undertook to check out this possibility. As a result Mark Crabtree and John Peirce are now on this e-mail list, so we will be able to respond to any MOVA queries/problems entered into the system. TRL's MOVA experts can of course also be consulted by contacting us directly by e-mail, phone or Fax, or through the Software Bureau.

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Mark Crabtree Email: mcrabtree@trl.co.uk

Future Development of the Software Bureau



Karen Beaumont (left) and Kathryn Smith (right)

Karen Beaumont has transferred from TRL's corporate marketing department to be Transportation's Divisional Marketing Manager. One of Karen's responsibilities will be to review the Software Bureau's marketing activities to ensure that these remain customer-focused and offer customers the best possible service. She will also be looking at opportunities for expanding the market for our products, both in the UK and internationally.

The maintenance operation will also reviewed to see if new services could add to the value that customers already get from the contracts – technical support, annual User Group meetings, discounts on workshop places and on purchases of new versions, as well as Traffic Software News.

Another important aspect of Karen's work will be improving our ability to identify customers' future requirements and feeding these through into our development programme. As part of this process Karen will be organising a customer satisfaction survey which will allow you to tell us both how well the software fits your requirements and how easy you find purchasing our software and accessing the necessary help and support in using it. Karen attended our recent round of User Group meetings, enabling her to talk directly with users.

Karen Beaumont
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A Simple Performance Indicator for Junctions

TRL is working on an interesting project for the Department for Transport (DfT). The objective of the project is to provide a tool to assist signal engineers, particularly less experienced engineers, to prioritise where their efforts are most needed to maximise the performance of their signals. Considerable effort has to be put into traffic signal maintenance, an essential part of maintaining and improving signal performance. The simple Performance Indicator (PI) tool aims to expand the objectives, from ensuring that the mechanics and optics are functioning correctly, to examining the effect of the junction operation on vehicles and bringing the overall performance of the junction to an expected level. For instance, to see that not only are the maximum timings set to the specified values, but that those specified values are optimal for the traffic.

Since the project was conceived to provide a PI for individual junctions to assist engineers, it has been recognised that individual junctions' PIs may be combined to lead to the use of the combined PI to compare local authorities. Such a formal PI for an authority may, however, be needed to obtain resources for traffic signal operation and maintenance within an authority. With the increasing use of PIs, there is a danger that only activities that are targeted towards improving a PI will be seen as high priority when resources are allocated within authorities. If there is not a PI for traffic signals, then there may be too few resources allocated.

TRL have produced a first list of indicators with possible threshold values to start to build a PI. The aim is for the indicators to be easy to measure to the accuracy required to select the appropriate category:

- good
- acceptable, adequate, no real need to improve
- in need of improvement soon
- urgent need for improvement

The indicators considered so far are:

- Poor safety record
- Unbalanced queues on different arms
- Excessive pedestrian or cyclist delay
- Excessive pedestrian or cyclist green time
- Right turners delayed for more signal cycles than other movements
- Poor availability of fully functioning traffic signals
- Inappropriately long or short cycle times
- Exit blocking
- Low flow conditions
- Active involvement of other bodies
- Not achieving local policy objectives

We are now looking to actively involve local authority engineers in refining and testing the method. For further details or if you would like to be involved contact Keith Wood, telephone 01344 770961, e-mail kwood@trl.co.uk.

Keith Wood

Email: kwood@trl.co.uk

TRAINING IN MALTA

Back in May this year, carrying on TRL's relationship with the Maltese, TRL visited Malta to train 14 people from the Malta Roads Authority office in the use of OSCADY. Two 2-day courses were run. The small but growing number of signals in Malta are at important junctions, including one signalised roundabout that is still running timings that TRL prepared in 1999 (TSN issue 12, December 1999). As all the signals are fixed-time, it is particularly important to keep the timings up-to-date.

Driving conditions are somewhat different in Malta and, as well as training the delegates in the use of OSCADY, they also wanted to understand the fundamentals of traffic signal design. The photograph below shows the delegates measuring saturation flow. They were using Bundle 3 in a Palm PDA and were learning what saturation flow is and the fundamentals of measuring it.

Response from the delegates and from their managers was very positive and hopefully they gained much from the courses.



Delegates measuring saturation flow in Malta

Mark Crabtree

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CAN WE HELP YOU?

TRL Traffic Consultancy Services

- Traffic Impact Assessment
- Review TIA
- Junction/Network Modelling
- Traffic Signal Design
- MOVAVerification Service, design and installation

TRL Safety Consultancy Services

- Accident Prediction Models
- Route Treatment
- Safe Route to Schools
- Safety Audit
- Speed Management
- Traffic Calming
- Accident investigation and Litigation

BUG BOX

TRANSYT 11 – All releases

In some cases the use of extremely small "preceding intergreen + minimum green" timings can cause the optimisation process to fail. Such failures are indicated by an overlap of the stage change times, e.g. stage 1 starts after stage 2. This latest release of the analysis program (1.7) resolves this problem allowing values as small as 1 second to be chosen (Full Release Name: 11.1 AJ/1.7).

TRANSYT 12 GUI – Release AA

A few teething problems have been reported with this first release of TRANSYT 12. These have now been resolved and a replacement Release AB is now available. Please note that this is being automatically sent to all current users of TRANSYT 12 so there should be no need to request this release from us.

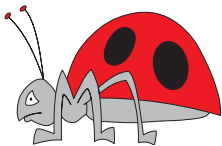
COURSES, SEMINARS & WORKSHOPS 2003

FUTURE
DATES
FOR
COURSES
SEMINARS
AND
WORKSHOPS
FOR
TRANSYT
ARCADY
PICADY
OSCADY
TO
BE
ANNOUNCED

TRL Software Bureau
Christmas Holiday
Period

The Software Bureau
will be closed
from 12.00 noon
Christmas Eve
until 9.00am
2nd January 2003

BUG BOX



TRANSYT 11
All releases

TRANSYT 12 GUI
- Release AA

SEE PAGE 5

Recent Developments in the Strategic Transport Model

TRL's Strategic Transport Model (STM) is always undergoing enhancements and extensions, either as a result of the in-house inspiration of its key developers or in response to growing client needs. At last month's successful Strategic Transport Modelling Seminar, some of these developments were discussed.

A significant recent development has been the linkage of the DELTA land-use model produced by David Simmonds Consultancy with TRL's Strategic Transport Model. This project was carried out for Strathclyde Passenger Transport, extending the existing Strathclyde STM created by TRL, to produce the Strathclyde Integrated Transport and Land Use Model (SITLUM).

The underlying STM framework will permit interaction with other land-use models, and the user may still run the transport model with exogenous planning data, as in previous STM versions. The latest STM also offers advanced functionality for the general STM user whereby runs for several forecast years may now be performed via a 'batch mode' facility without user intervention.

TRL intend to replace all current versions of STM with the new improved STM specification in the near future.

Improvements to the calculation of interzonal generalised costs have also been made. The model previously used a simple 'crow-fly' estimate of travel distance and route, and zonal road speeds used only a single 'urban' or 'rural' speed-flow relationship for each zone. The new model uses pre-calculated strategic routes based on the actual road network, and speed-flow relationships are now defined for a range of road types separately within each zone. This allows the model to represent, albeit implicitly, the underlying road network more realistically.

For further information contact: Dr Mark Hudson, Dr Andrew Ash and Dr Xiaoyan Zhang.

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CURRENT PROGRAM VERSIONS

ARCADY 5	V5.0 AD/1.1
PICADY 4	V4.1 AM/3.0
OSCADY 5	V5.0 AA/1
TRANSYT 12	V12.0 AB/2

(All above have Right/Left capability)

TPM	V2.1
STM	V3.1
BUNDLE 3	V3.0 Issue 2
MOVASETUP	V 4.0c
CONTRAM 8	V 8.1f
MAAP for Windows	4.22
SafeNET	v1.03

Who's Who in Traffic Software



Mark Hudson

Dr Mark Hudson joined TRL in 2001. He is currently a Scientist in the Software Development Group, and was recently made a TRL Associate Research Fellow.

Since joining TRL he has worked mainly on the development of TRL's multi-modal Strategic Transport Model (STM). Most recently, this has involved a major role in facilitating a link between the DELTA land-use model and STM for Strathclyde Passenger Transport. His other work has included investigating the design of Optimal Transport Strategies for the EPSRC.



NEW! Monthly Software Bulletin

In November we released the first issue of a new monthly **Software Bulletin**. The bulletin is sent automatically by e-mail to all subscribers. The bulletin will always carry updated lists of the latest releases of all TRL's Traffic & Transport software products. It will also carry information about any forthcoming workshops, User Groups and seminars that TRL is organising, as well as information about new products. Another key reason for issuing the bulletin is to ensure that all users become aware at the earliest possible moment of any new releases or bug fixes.

To sign on for this free service, go to the software web site www.trlsoftware.co.uk and click on the "mailing list" link.



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