

New Vehicle and Operator Services Agency Database System

TRL have recently completed new browser and data input systems for the Vehicle and Operator Services Agency (VOSA) Accident Database. This Department for Transport-sponsored project handles data collected for the VOSA Accident Defects and Recall programme, and uses it to improve transport safety.

VOSA is an Executive Agency of the Department for Transport that provides an impartial service to ensure motor vehicles are maintained and operated to the roadworthiness standards laid down by law. As part of this work, VOSA are responsible for the Accident Defects and Recall programme that operates in the UK. This programme of work operates to an agreed code, against which vehicles involved in accidents are examined, and vehicle defects assessed in order to determine if any remedial action is required. The data collected is used to guide and inform researchers on DfT

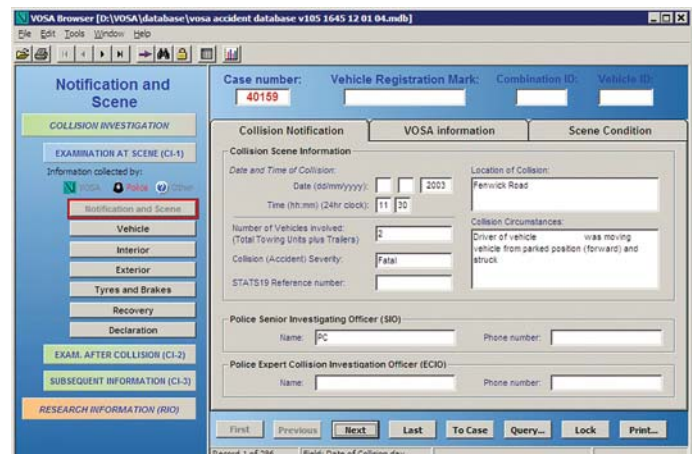
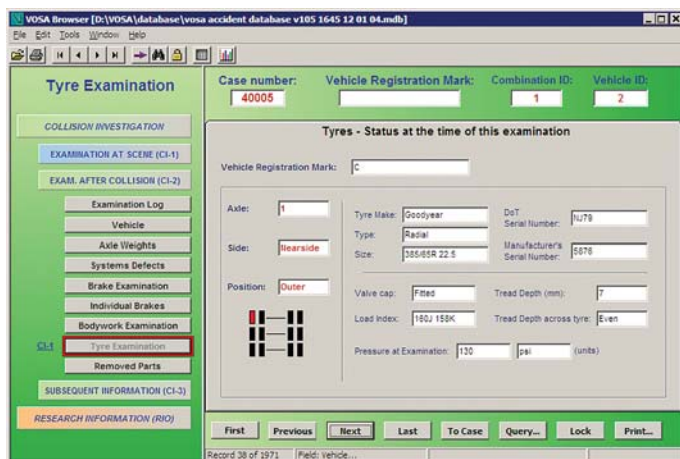
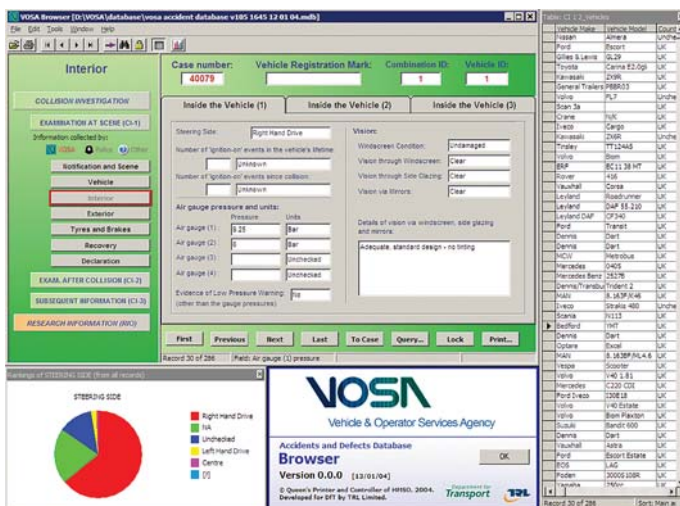
research projects and provide data for vehicle defect recalls to the motor industry, police, general public and other agencies.

Information collected is primarily concerned with the state of the vehicles' tyres, axles, brakes, lights, suspension, steering and other possible system defects. Each accident case, of which there are approximately 3,000 per year, has potentially 4 stages of investigation:

- Investigation at the scene, by the police or VOSA, jointly or independently;
- Vehicle inspection after the collision, by a VOSA inspector;
- Document search subsequent to the vehicle inspection, by a VOSA inspector;
- Research input after all of the above has been collected, by a VOSA inspector.

The advantage of having data from different sources collated into one database is that it enables researchers to undertake analysis of the stored data to identify where vehicle defects may have an influence on road safety, and to understand better their specific role in the accidents. Better understanding of the role of defects in accidents will help identify the likely countermeasures needed to prevent such defects.

The new software system is dependent on a Common Reporting Format that has been ratified and accepted by DfT, VOSA and the Association of Chief Police Officers. This project is managed by TRL on behalf of DfT. Project stakeholders use the Browser to view project data, as well as to quickly and easily print cases, perform complex queries and carry out simple data analyses. The associated Data Input software is used by TRL for case entry and includes a management system that allows users to create new cases and track their progress through to completion, validation and dispatch.



Subscribe to the TRL Software Bulletin - Simply go to www.trlsoftware.co.uk/newsletter.htm, enter your email address and click the subscribe button.

Graham Burtenshaw
Email: gburtenshaw@trl.co.uk

Modelling give-way entries on signalised roundabouts – a definitive answer(?)

From conversations during the recent user group and technical enquiries, it became clear that the whole issue of modelling give-way entries to (otherwise) signalised roundabouts in TRANSYT needed some explanation. To ensure the advice below is technically sound, a number of comparative runs of TRANSYT have been carried out.

The first situation that has been tested is where a single entry link gives way to either one or two circulating (major) links. The two models have been made to be equivalent in the following way. In Figure 1a, link 30 is giving way to link 31: the only give-way coefficient required in this case is A1. In figure 1b, link 35 is giving way to 31 and 32: in this case two give-way coefficients are required, A1 and A2. For the two situations to be exactly equivalent, A1 and A2 in 1b must both be the **same** value as A1 in 1a (not half or any other contrived value). ARCADY would normally be used to obtain the parameters. When modelled in this fashion, the results for link 30 are exactly the same. Shared links can be added as needed in either situation, although it is essential that the entry link gives way to **only** the master link(s). Specifying a minor link as a priority link will give the wrong results, but it will not lead to any run-time error or warning.

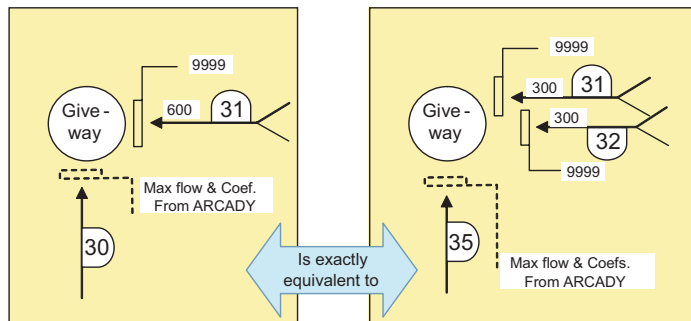


Figure 1a Single priority Link Figure 1b Two priority Links

The second situation is the reverse of the above, where the give-way entry is split into two links (see Figure 2). Using two links to model the entry has been considered by some to be more correct when traffic forms distinct queues in separate lanes. We have not been sure that this is the case and have for some while now wanted to see if a priority approach can be modelled with two or more give-way links.

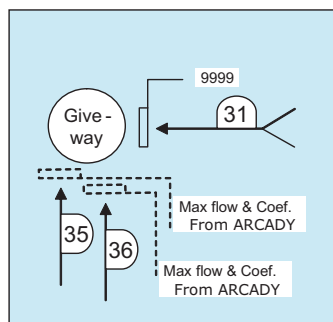


Figure 2 Two give way link model

To consider this I have split the single give way link (link 30 in Figure 1a) into two give-way links (links 35 and 36 in Figure 2). To engineer the two situations to be equivalent, the maximum flow values on links 35 and 36 need to total to the maximum flow on link 30. The coefficients on links 35 and 36 need to be reduced in proportion to the maximum flows. In the model set up for comparison, I halved both the maximum flow and coefficient for links 35 and 36 as compared with link 30. With half the traffic flows as well, the results from the two models might be expected to be

similar. It turns out that the capacity of the two situations is, indeed the same, with identical degrees of saturation. The uniform component of delay is also the same. However, differences occur in the random-plus-oversaturation part of the calculations, which, with two links instead of one, make the two-link model predict higher stops, delays and queue lengths. There are examples of figures from the final TRANSYT output table shown at the foot of this page.

As can be seen, the differences between the two models are quite marked with the two-link model significantly worse in delay terms. It should be noted, however, that these two models probably are not directly equivalent after all. In this single link example, all lanes are equally used with queues being nearly equal. In the above two-link model, the average queue will be the same for both lanes, but the randomness of arrivals will mean that the links will 'take it in turns' to have the longer queue. Such unequal queueing is likely if lanes are used for different destinations, in which case the more pessimistic two-link model may be more appropriate. A single link model will be appropriate when adjacent lanes share a common movement so giving the opportunity for drivers to choose between two or more lanes. When using a two link model it will be necessary to derive the maximum flow and give-way coefficients using ARCADY by, in effect, modelling the two parts on an approach as separate entries. This will give the two sets of parameters required.

The final issue concerns the two-link model again (Figure 2). It might be argued that a nearside lane does not give way to all the circulating traffic, because drivers can see that some of the circulating traffic is not going to impede them. If using a single link model with parameters derived from ARCADY, this will not be an issue because ARCADY will have already accounted for this effect (if it exists). For a two-link model, it might be reasonable to increase the capacity of an entry if (and only if) it is clear that the nearside lane will not in practice have to give way to all the circulating traffic. However, you will need to be confident of this as there has been no work that we are aware of to calibrate or test this. It would, perhaps, be more justifiable to reduce the give-way coefficient for the nearside lane, rather than simply say it only gives way to a sub-set of the circulating traffic. How much to reduce it by needs careful thought, unless you are prepared to go to the trouble of measuring it on-street (and how to do that is a story for another day!)

In conclusion:

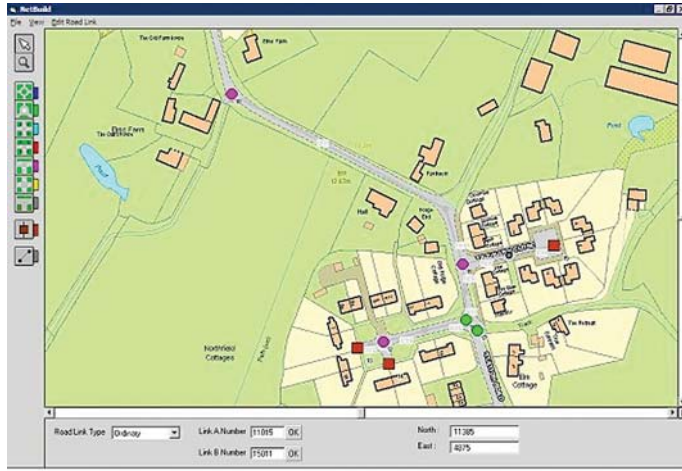
- There is no difference between modelling the circulating traffic with either one or two (master) links
- The give-way entry can be modelled with one, two or even more links, depending on how much choice drivers have as to which lane to use to reach their intended exit
- There is little research as yet about whether any particular entry stream gives way to some or all of the circulating traffic streams and whether it is acceptable to modify the parameters because (for example) a nearside entry lane can ignore (partially or wholly) traffic in a particular circulating lane.

Mark Crabtree
Email: mcrabtree@trl.co.uk

Link no.	Flow into link	Saturation flow	Degree of saturation	Delay (sec/pcu)	Uniform delay (pcu-h/h)	Rand+ oversat (pcu-h/h)	Stops/pcu (%)	Mean-max queue	Performance index
30	1000	2670	95	32	1.3	7.5	107	23	152.8
35	500	1335	95	57	0.7	6.5	131	14	117.9
36	500	1335	95	57	0.7	6.5	131	14	117.9

Expanding the scope of the SafeNET road accident prediction software

The TRL software team is currently working on an extension of the SafeNET road accident prediction program that will greatly expand its scope.



Building up a rural network with the aid of OS MasterMap
© Crown Copyright. Licence Number: AL100021177

SafeNET is a software product that implements as computer routines the latest versions of a number of empirical accident-risk models developed from different studies. These routines allow estimates to be made of the Personal Injury Accident frequency (number of personal injury accidents per year) for particular elements of a road network (junctions of different types and road sections).

SafeNET is primarily designed for use by Highways Engineers who require a better understanding of the safety performance of an existing road network or the implications of design changes to the network at some point in the future. For example, SafeNET can be used to identify junctions or roads that are performing worse in

TRAFFIC SOFTWARE PRICES

Following the annual review of software prices, some of TRL's traffic software products are subject to price revisions which will come into force on 1st April 2004.

The prices of TRANSYT 12 and OSCADY 5, which have seen the release of major new versions this year, remain unchanged, as do the prices of TPM and BUNDLE.

	1pc	4pc	10pc	
TRANSYT 12	£1140	£1730	£2220	** unchanged
ARCADY 5	£980	£1500	£1900	
OSCADY 5	£1050	£1600	£2050	** unchanged
PICADY 4	£980	£1500	£1900	
JUNCTION +	£3880	£5850	£7400	
TPM	£950	£1450	£1850	** unchanged
SafeNET	£1000	£1520	£1940	
BUNDLE 3	£400	£600	£1000	£1500
** unchanged	5 user	10 user	25 user	Unlimited

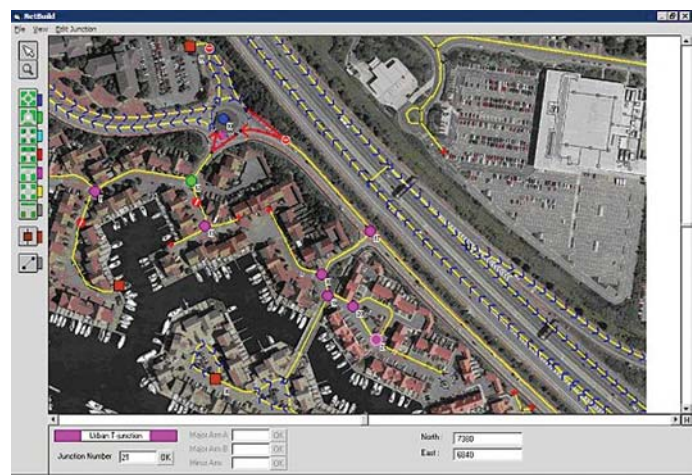
All prices exclusive of VAT
Educational licence prices as for 1PC licence

The remaining prices have been marginally revised to reflect increasing development costs. Those considering buying ARCADY 5, PICADY 4 SafeNET or JUNCTION+ should take advantage of this prior notification and order before 1st April!

safety terms than would be expected. It can also be used to evaluate planned developments and enhancements to the network before they are built, improve the management of roadworks and diversion routes, improve the targeting of remedial work and improve predictions of the benefits that would result from the remedial work.

In order to calculate the frequency of personal injury accidents on a road network a user enters the vehicle flow, pedestrian flow and geometric data for each junction and road within the road network. SafeNET then uses this information to calculate how many personal injury accidents would be expected to occur within a one-year period. These values are then summed to provide the number of accidents that would occur across the network as a whole. SafeNET contains various levels of modelling meaning that predictions can be made on limited input data, although the more information that is available the more accurate the predictions are likely to be.

SafeNET was originally developed with the support of the Department for Transport and it was primarily designed to predict the number of accidents per year that would occur on an Urban road network. As a result, SafeNET currently only uses accident frequency prediction models for urban features.



Using aerial OS MasterMap Imagery and the OS MasterMap Integrated Transport Network

© Crown Copyright. Licence Number: AL100021177

However, accident frequency prediction models for rural features have been developed. These are currently being incorporated by the Software Team into the program under a project sponsored by the Highways Agency. As a result Highways Engineers will soon have a powerful package which can be used to predict accident frequency on urban, rural or mixed road networks. As well as adding a rural capability to SafeNET, the software team is also developing links between SafeNET and Traffic Assignment packages such as SATURN and CONTRAM so that a rapid assessment of road network performance can be made in terms of capacity, delay and safety.

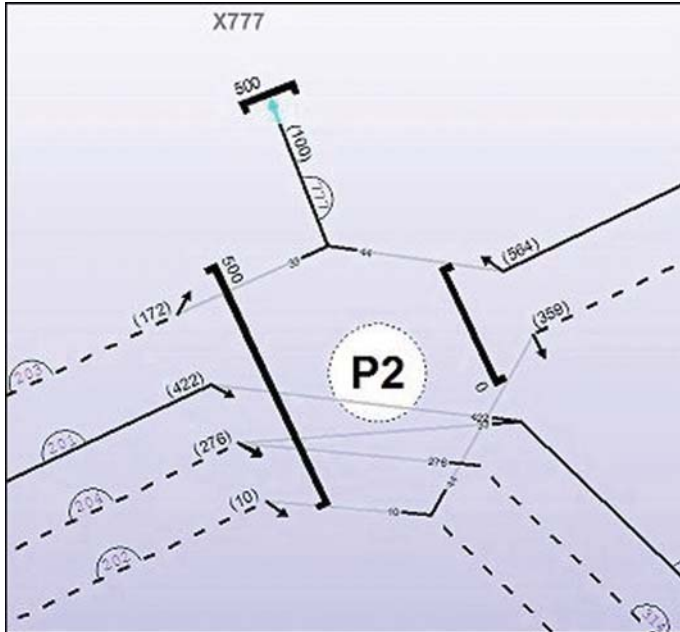
For some years now, TRL have been part of the Ordnance Survey licensed partner programme, and the software team have incorporated GIS analysis facilities using OS digital mapping in TRL's suite of software products, MAAP being a good example. As an aid to building up networks for the models, it is hoped that a facility will be added in the next release of SafeNET to enable the user to load mapping raster imagery and aerial photography as a background to the network. The possibility of using the new OS MasterMap and Integrated Transport Network product is under investigation by the team. The examples shown have been kindly sourced by the Ordnance Survey under their Developer Programme agreement.

Ryszard Gorell, Email: rgorell@trl.co.uk
Dave Savage, Email: dsavage@trl.co.uk

TRANSYT 12 - NetCon

As the TRANSYT 12 user base continues to expand, some minor issues with NetCon have come to light. These are summarised below. A revised version of TRANSYT 12 with these problems resolved will be available soon.

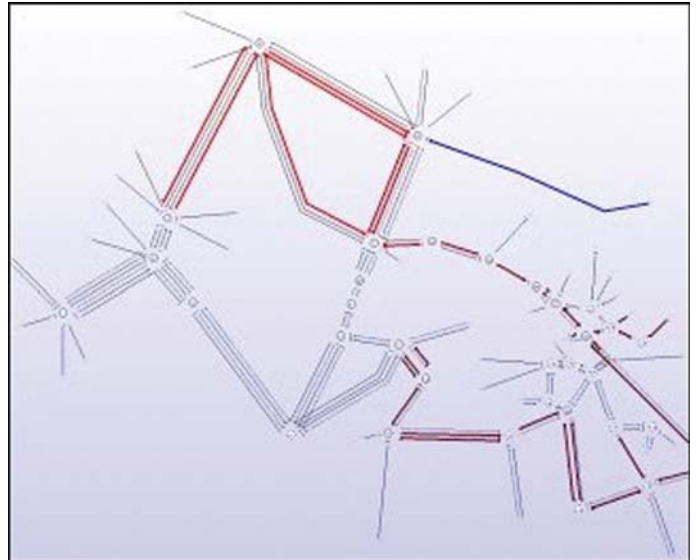
- If a link is connected to another link but not via a signalised node, then NetCon automatically inserts a 'Priority Node' (P2 in the diagram below). However, the diagram can be shown incorrectly if the link is a *minor shared link* and the major shared link has a different destination, or if one of the links leaves the network. Both problems have now been fixed.



- If a link enters a node and is also an upstream of another link entering the same node, the diagram will not be shown correctly. (There may be certain cases where you need to set up the network in this way, but NetCon will usually show one of the links as being 'inside' the node.) This type of link is now shown via a 'sub-node' of the signalised node, as shown below.



- The 'Highlight Downstreams' mode (shown below) can be slow if the network is very large. The program may appear to crash – it hasn't; it just takes a long time to find the downstreams. This is being investigated.



- The default node sizes and link scales tend to be too small for typically sized networks, and will be revised.
- We will be adding options to change the font size of link names and/or numbers, as they can be very small when the network is printed out.
- When you load a TRANSYT file and open NetCon, the program automatically loads any NetCon file with the same name as the main TRANSYT file. Usually this works well but can cause problems if you re-save lots of variations of a network with the same name. We are modifying the way this works but in the meantime recommend that you save the network under a different name every time you add/remove links or nodes.

Graham Burtenshaw
Email: gburtenshaw@trl.co.uk

TRL continues to enhance the Strathclyde STM

TRL has been commissioned by Strathclyde Passenger Transport to carry out further enhancement work on their Strategic Transport Model (STM). The work will include the development of a Cost Benefit Analysis module, improved modelling of future road infrastructure proposals, and research into the most appropriate treatment of surface transport trips to and from airports. The work will be completed by the end of March 2004.

Glyn Rhys-Tyler
Email: grhys-tyler@trl.co.uk

TRL is Moving!

TRL and the Software Bureau are moving in May this year. We are relocating to brand new purpose built offices on the existing TRL site. Our new address will be:

TRL
Crowthorne House
Nine Mile Ride
Wokingham
Berkshire
RG40 3GA

Our phone numbers and e-mail address will stay the same and it will be business as usual!

INTRODUCTION OF MAAP TO KYRGYZ REPUBLIC

TRL recently completed the introduction of MAAP in the Central Asian country of Kyrgyzstan. Installations were carried out at the Ministry of Transport and Communication (MOTC) and Department of Internal Affairs State Traffic Police (STP).



A Kyrgyzstan Policeman with a speed camera

The contract was carried out for BCEOM, as part of an Asian Development Bank program to improve the Almaty-Bishkek road, connecting the capitals of Kazakhstan and Kyrgyzstan respectively.

John Fletcher worked closely with local translators and road safety engineers to produce a Russian version of the MAAP program and the manual, as well as a Russian database for the accident records. Personnel from the STP were trained, and assisted greatly with the technical work.

The time available was extremely short and as such can only really serve as an initial introduction, but despite the brevity of the visit, the Kyrgyz authorities will be left with a useable and highly useful system.

In order to increase awareness of the work undertaken in this project, two seminars were given at the MOTC and STP Headquarters. Both meetings were well attended and were extremely useful exercises, serving to communicate clearly the aims of the work in this section of the project and also explaining what will be necessary in the future. There was a positive and lively discussion after both meetings.

The seminar covered the growing problem of road safety both worldwide in low motorised countries and directly in the Kyrgyz Republic. The importance of good road accident data and a good database and analysis program were discussed, as was the importance of the availability of good mapping. Practical examples of the use of MAAP for site specific safety work were demonstrated.

Although a lot was accomplished during the visit, further work is required to encourage and ensure the sustainability of the system and TRL is working with the clients to obtain funds for further inputs.

John Fletcher jfletcher@trl.co.uk
Sanjay Vadgama svadgama@trl.co.uk

Bug Box

TRANSYT 12 Analysis – All releases

Excluding Nodes from the node optimisation list can cause TRANSYT to lose the minimum green time data for those nodes after a run of TRANSYT. At the time of writing we are repairing the fault and will be re-issuing a new analysis program (Release 3) to existing customers as soon as a repair is ready. In the mean time if you have experienced this problem then please contact the Software Bureau as an interim version is available for those needing an immediate fix.

TRANSYT 12 GUI – Release AB

Since TRANSYT will be re-issued we will be taking the opportunity to supply a revised graphical interface (GUI Release AC) which enhances the capability of NetCon (as described in the TRANSYT 12 NetCon article) as well as resolving a variety of minor problems. An interim version is available for those needing an immediate fix.

A summary of the changes are:

- TRANSYT 11 files with small 'minimum + interstage' times now correctly imported.
- NetCon representation of shared links when major link exits the network corrected.
- NetCon representation of PI nodes with no downstream links correctly shown.
- NetCon dynamic refreshing of shared links when changes are made to the DAT file corrected.
- Minor shared links and bottleneck data-entry restrictions improved.
- Minor shared link satflows reset to zero to avoid confusion in the output file.
- Animation of link red and green times now shown correctly for larger networks.

COBA and QUADRO maintenance contract renewed

The Department for Transport has renewed its contract with TRL to provide support and maintenance for the COBA and QUADRO economic appraisal packages. The contract runs for a further 3 years until December 2006 and will cover all development work associated with the programs.

As part of the new contract, we will be dealing directly with all user enquiries. Technical enquiries will be passed to our development team, and queries regarding non-trivial modelling issues will be dealt with by one of our transport economic appraisal experts. (Previously, most modelling enquiries were passed to DfT.) If you have a query or wish to discuss any aspect of COBA or QUADRO, simply contact the Software Bureau or use the form at www.trlsoftware.co.uk/Postroom.htm. If you are a user of the programs and have comments or suggestions for improvements or enhancements, please let us know.

TRL originally took over the COBA, QUADRO and URECA maintenance contract in 1998. (URECA has since been discontinued.) For a summary of recent changes made to the programs, see www.trlsoftware.co.uk/productCOBAQUADRO.htm. (This page also contains links to the current price list and to relevant DfT information pages.)

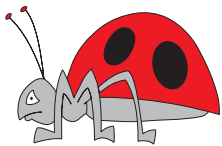
Graham Burtenshaw
Email: gburtenshaw@trl.co.uk

TRAINING COURSES, SEMINARS & USER GROUPS 2004

At the 2003 User Group meetings in York, users expressed a desire for more regional training courses at various locations throughout the UK. If you would like us to run a training course near you, please get in touch with the TRL Software Bureau. We can run training courses for individual local authorities or companies or, where there is demand, consolidate the requirements of a number of clients within a single course. This might be particularly appropriate for local authorities with term consultancy or partnership agreements with the private sector. If you are able to host the training course at your location, this will also help to keep costs down.

To discuss your training needs further, contact the TRL Software Bureau

BUG BOX

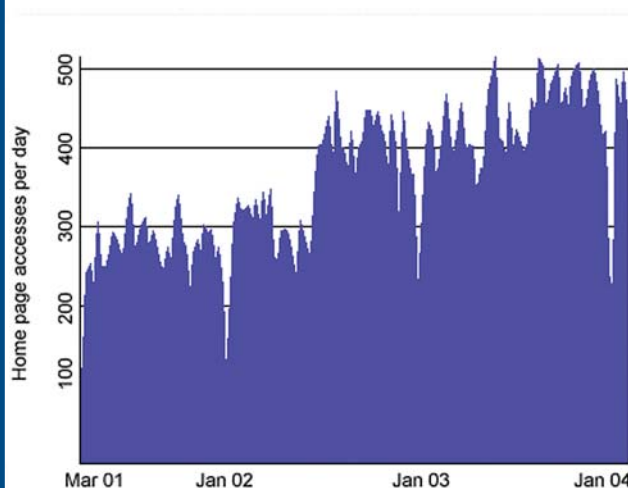


TRANSYT 12 ALL RELEASES

SEE PAGE 4

trlsoftware Website – major revamp

It is now nearly 3 years since the launch of the trlsoftware.co.uk website in early 2001. Since then, although information has been added/updated, the site has remained fundamentally unchanged. The site has achieved considerable popularity, with continuous growth in the number of 'hits' since its launch, with between 400 & 500 visits per day now, as shown in the accompanying figure. The annual dips in the 'hits' show that Christmas comes once a year, and appears to be the only time when users lose interest in TRL's traffic products!



Web site technologies and general know-how about setting them up have advanced enormously. TRL are taking the opportunity to update both the look, feel and content in a major revamp designed to bring the site fully up to date in terms of ease of use and services provided.

As part of this process, TRL would be delighted to hear from users of the site with your ideas about things that need changing, items/features/services you would like to see.

The re-development will include the following main areas, but please don't let that put you off suggesting others:

- Addition of E-commerce to enable on-line software purchases
- Easy navigation
- Better layout
- Improved Layout & User friendliness
- Sections for specific user interests e.g. Strategic Modelling, Junction Design.

If you have any suggestions to improve the current website or any topic or special interest you think should be included, please e-mail Chris Edge (cedge@trl.co.uk) or call 01344 770511. Alternatively you will find an easy to complete questionnaire on a special web page at www.trlsoftware.co.uk/questionnaire.

CURRENT PROGRAM VERSIONS

ARCADY 5	V5.0 AE/1.1
PICADY 4	V4.1 AN/4
OSCADY 5	V5.0 AB/2
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 8.2a
MAAP for Windows	4.20
SafeNET	1.03
MTV	V1.2.8

Who's Who in Traffic Software



Tewodros Wodajo

Tewodros Wodajo joined TRL in 2003. He has a 1st class (Hons) degree in Computer Science from Kingston University and has experience in Visual Basic, Delphi, SQL, Java, HTML, JSP and C++.

As part of the Software Development team Tewodros (known as Teddy) is responsible for the production of the monthly Software Bulletin and is working on major product developments. He also has involvement in TRL's product quality testing prior to release.



TRL Software Bureau
Old Wokingham Road
Crowthorne Berkshire
RG45 6AU United Kingdom
Tel: +44 (0)1344 770758
Fax: +44 (0)1344 770864
E-mail: softwarebureau@trl.co.uk
www.trlsoftware.co.uk