

PC MOVA

For some time now the traffic industry has been using microscopic traffic simulation modelling to help design and (in particular) demonstrate proposed new traffic schemes. Many of the schemes include both proposed and existing signal controlled junctions. At such junctions, the signal control strategy has to be included within the simulation model if the traffic patterns in the network are to be realistically represented. The simpler strategies used in the UK can be simulated realistically within most commercially available microscopic traffic simulation packages. Until recently MOVA, which is now used at over 1000 junctions in the UK, could not be simulated in any microscopic simulation models. This was a significant drawback because it meant many of the most important parts of the UK road network could not be modelled with the degree of accuracy required.

Now it is possible to connect MOVA to microscopic traffic simulation models with a new package called PCMOVA. It is based on the current version of MOVA, which is M5. The initial release of PCMOVA (version 1.0) supports only S-Paramics, but a VISSIM compatible version is currently under development at TRL, and interfaces with other commercial microscopic traffic simulation models are planned.

PCMOVA consists of the MOVA Program Kernel, a simple signal controller emulator and a user interface program for linking MOVA to the microscopic traffic simulation model. The new package is very simple to use and only requires users to 'map' the MOVA detectors and the micro-simulation detectors so that MOVA knows which detector is which. MOVA can then control the simulated junction as if it were a real junction. Figure 1 shows the PCMOVA package controlling a junction in S-Paramics.

instances of the PCMOVA Kernel can be run simultaneously by the linker program, allowing several junctions to be controlled by MOVA at the same time. Figure 2 shows the PCMOVA package controlling three junctions in S-Paramics.

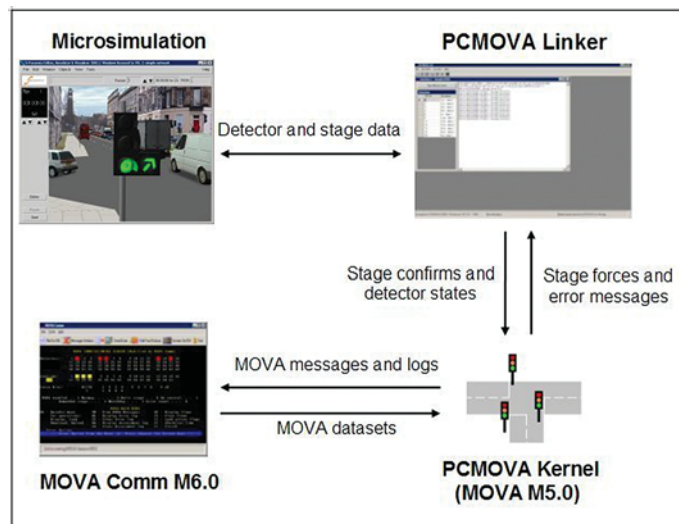


Figure 1: Controlling a junction in S-Paramics with PCMOVA

The simulation run can be at (approximately) real time to allow the user to inspect behaviour visually, or at many times faster than real time to allow assessment of performance without having to wait for many days-worth of data to be generated. PCMOVA and the simulation package can be run either on the same computer or on a separate computer with communications over a network. Many

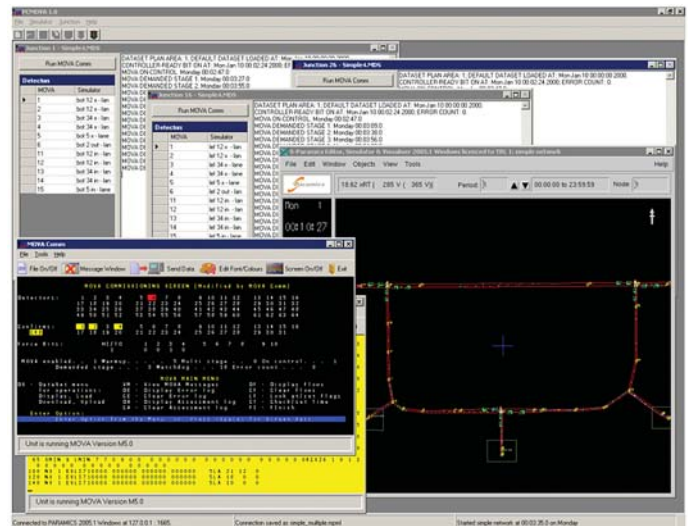


Figure 2: PCMOVA can control many micro-simulation junctions at the same time

With PCMOVA, assessments that previously were not possible can be carried out so that planners and engineers can design their road system more effectively and realistically. Existing MOVA installations can be assessed, and so can the benefits that MOVA can bring at existing trouble-spots. Engineers will also be able to test their MOVA configuration for a junction in advance of implementation on street.

PCMOVA version 1.0 (compatible with S-Paramics) can be purchased from the TRL Software Bureau. It is planned that a VISSIM compatible version of PCMOVA will be available later in 2006.

**Mark Crabtree
and Ian Henderson**
email: mcrabtree@trl.co.uk
or ihenderson@trl.co.uk

TRL launches the next generation of Carshare Software

Carshare Online, TRL's web based Carshare product has undergone a major rewrite after undertaking consultation with current administrators and users which helps the software reflect more accurately the changing face of commuter travel in the UK.

System measurability and increased promotional tools were highlighted top of the list of user requirements and this has prompted a complete reworking of the administration features allowing quick, easy access to real time information for administrators straight from the desktop.

The graphical front end has undergone a full re-write making it cross browser and fully DDA and WAI-AA compliant and allows full integration with company colours and logos to fit seamlessly within a company website or intranet. The journey planner now has a 'wizard' feel to it with full UK coverage of postcodes and place names that is not reliant upon remote 3rd party applications to be graphically represented. Once the journey details have been input the software uses the latest research on environmental pollution by TRL to calculate the amount of CO₂ reduction the journey could save as well as potential savings in miles driven and cost saved through sharing the journey.

One-off journeys, for example airport runs, visits to other office locations and even a bicyclebuddy scheme where people can register to find partners to cycle to work with have been incorporated to further increase the use and functionality of the system. Increased promotional tools allow system administrators to email all participants directly from their desktop while user administrators can access statistics for their own particular company without the need to go through a central administrator.

See below for the latest commission of Carshare Online in the Cambridgeshire region.

In all over 100 improvements have been made to make Carshare Online the most complete business Carshare package available in

The screenshot shows the 'CAMSHARE CAR SHARE SCHEME' interface. At the top, there's a navigation bar with 'HOME', 'PROFILE', 'SEARCH', 'CONTACT', 'STATS', and 'LOG OUT'. Below this, the 'Results' section displays a search result for a journey from Godmanchester PE29 to Cambridge South. The journey details include arrival and return times, flexibility, distances, travel days, and smoking preferences. A map on the right shows the route between the two locations. Below the map, there's a 'Request To Car Share' button and a 'Carbon Dioxide Emissions' section. The bottom of the page features a copyright notice for Crown copyright and a license number.

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the UK today. However, don't just take our word for it! Carshare Online is available to any organisation who is interested in setting up a Carshare scheme free of charge for a trial period. To register your interest please contact Chris Edge on 01344 770511 or email cedge@trl.co.uk.

Chris Edge
email: cedge@trl.co.uk

Carshare in the News

Employers in Huntingdon, Cambridgeshire, have joined forces to save commuters money, cut congestion and help the environment, using TRL's Carshare Online software.

CamShare, Cambridgeshire's online car sharing scheme welcomed employers from Huntingdon for the first time at a car-sharing launch on Monday 23 January. Cambridgeshire Police HQ, Huntingdonshire District Council and Luminus Group have all now joined Cambridge employers on CamShare which is managed by the Travel for Work Partnership (TfW).

On Monday 23rd January Police Central Division Commander, Simon Edens, Councillor Peter Bucknell, Vice Chair of Huntingdonshire District Council and Luminus Group Chief Executive, Chan Abraham met at Cambridgeshire Police Headquarters to share an environmentally friendly Honda Civic IMA (kindly provided by Marshalls Honda at Peterborough). They drove to Brook House, the Luminus Group offices via the Huntingdonshire offices at Pathfinder House.

Staff at all three employers are now logging onto CamShare to find somebody they can share a lift to work – reducing the number of cars on the road.

Commander Edens said: "I welcome this chance to support CamShare in Huntingdon. It is an important first step and we look forward to working with our partner employers in developing joint approaches to green travel."

Councillor Bucknell said: "The council has developed its travel initiatives over a number of years and we welcome the launch of CamShare in Huntingdon. We have good levels of car sharing at Pathfinder House and taking this a step forward with our partners shows that we can all do our bit to help reduce car usage."

Chan Abraham said: "Luminus is really pleased to be working with colleagues in other organisations in helping reduce the amount of traffic and help preserve our environment. We already have



Left to Right, Councillor Bucknell, Chan Abrams, Commander Edens and Mark Webb at Luminus Group HQ


encouraging signs that our employees are in favour of this scheme and we look forward to seeing other businesses support it as well."

Mark Webb, Development Manager at TfW, which manages CamShare and is hosted by the County Council, said: "To celebrate the launch of the new scheme we have organised a super prize draw for people from these Huntingdon employers who join CamShare.


Sharing cars saves money, reduces pressure on car parks and reduces greenhouse gas emissions. Car sharers make new friends too!"

FAQ

This month's FAQ brings you a selection of Frequently Asked Questions concerning ARCADY and PICADY and OSCADY.

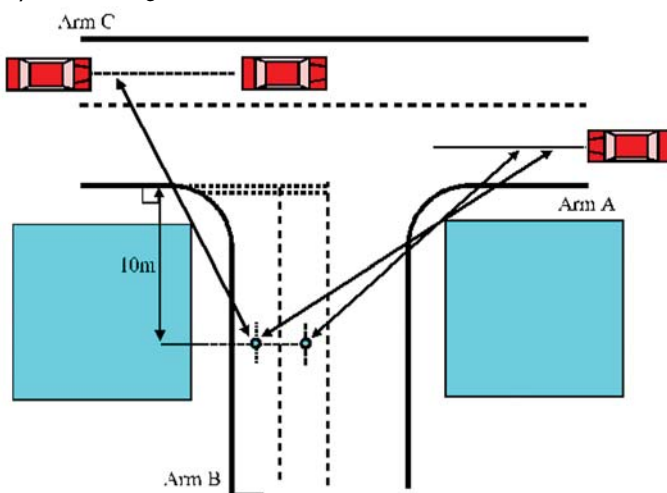
 **I have noticed that my PICADY 4 files imported into PICADY 5 are coming out with very slightly different results. Why is this?**

You will get slightly different results due to a small change in the calculated demand flows (about 0.3% - but it depends on the profile). This change has been made to make PICADY consistent with the next version of OSCADY. The flows are scaled in order to ensure that the central hour of specified flows (using ODTAB) equals that of the combined flows of the time segments that make up that central hour. This will result in slightly higher RFCs, queues and delays. N.B. This does not undermine the accuracy of either PICADY 4 or 5 as the difference is small in comparison with the inherent inaccuracy of the use of ODTAB in the first place.


 **When inputting the visibility available from the minor arm onto the major carriageway, PICADY requires a 10 metre setback visibility to be input. Can you tell me how/why this setback distance was decided upon and whether a shorter setback distance can be used for visibility input (i.e. 4.5, 2.4, 2m)?**

The 10 metre visibility position comes from the original regression analysis carried out by TRL. In the original study the measurement of visibility was measured from a number of different points. The measurement of 10 metres was found during the analysis to provide the strongest link between it and the capacity. Unfortunately this does not match up with the values that most traffic engineers will have.

There is unfortunately no possible way to translate this value so that it represents the visibility from another point as it depends on the proximity of the obstructions that make the parameters the value it is. You can use, say, a scale diagram but it is always best to do measurements on-site if possible so that ALL obstacles that are present during the time period you are interested in are taken account of. E.g. high-sided vehicles parked throughout the modelled time in such a way to reduce visibility should be taken account of, if you wish to gain accurate results.



Measurement of visibility to left and right

 **I have a technical query regarding modelling a staggered crossroads on a dualled section of road. The main road (Arms C and A) is a dual carriageway of national speed limit, and the two minor arms (B and D) meet the major road at priority junctions. The minor arms are fairly low trafficked, and the stagger distance between the junctions is approx 40m. The junction is an all moves junction, and the central reserve incorporates a right turn lane for traffic turning into the minor road (Arm A to B), and a storage area which is capable of storing vehicles turning right out of the minor road (Arm B to A).**

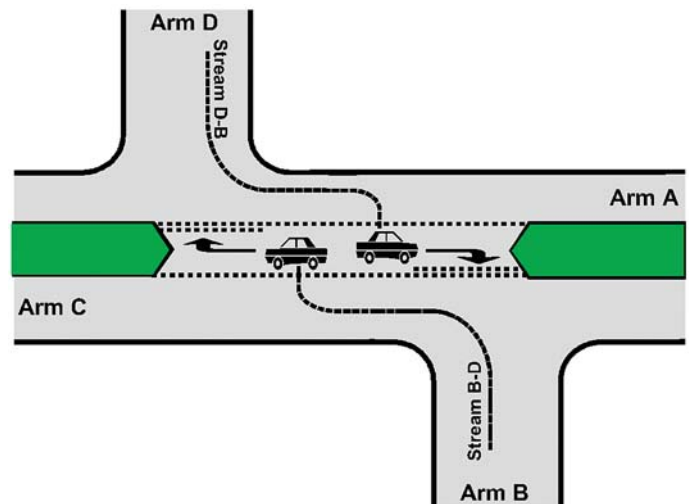
Does the width of the central reserve has any bearing on PICADY understanding that vehicles turning from B to A can store in the central reserve, and that the manoeuvre would in fact be carried out in two stages? OR does PICADY not understand this, and look for a simultaneous gap in the traffic in both directions before releasing the vehicle from Arm B to A?

PICADY does not take account of the two-stage manoeuvre when turning right across a dual-carriageway, BUT this is because the original research that defines what PICADY does, concluded that it did not have a significant effect on the capacity. If you want to read about it you can do so in TRL's report SR582.

The relevant phrase is... "At dual-carriageway sites right-turning minor road vehicles can interrupt their manoeuvre at the central reserve. In principal this might to some 'extent' 'decouple' the traffic interactions on either side of the major road carriageway and weaken the dependence of the max flow of B-A on C-A traffic. In practice, however, it has not proved possible to detect a significant difference in the traffic interactions determining the capacity of the single- and dual-carriageway sites."

So.. There you have it. You do not need to worry unduly about the fact that vehicles may or may not split the manoeuvre into two. Of course there may well be an effect but it seems that it was too small to detect. This of course may, in part, be due to the fact that there was not enough examples of this rare case in the original study.

The research also concluded that as the central reserve width increased there was a slight increase in capacity for that movement. This is built into the PICADY model.




Two-stage 'interrupted' manoeuvre at dual carriageway.

 **I've noticed that if I specify a flare length of zero it seems to have a similar effect to increasing the flare length to a very large number. Why is this?**

Yes - this is as expected. You can regard a flare of zero metres as the same as an infinitely long flare. A zero effective flare length should only be specified when the approach width and the entry width are the same value.


The latest release of ARCADY6 restricts the values in this way.

 **I am running ARCADY 6 at a roundabout which is grade-separated. After running it for future years I am getting some strange results. Each year the traffic has increased due to traffic growth. This normally means that the delay and queues will also increase on each arm due to the increased traffic flow. This has happened on 4 of the 5 arms modelled but on the other**

arm the delay has actually decreased (see attached output). I was hoping you could look to see if this is OK and what the reason for it could be.


Your data files indicate runs for 2005 and 2012. The 2012 is heavily oversaturated (queues of 700 veh+) and is grade-separated. The flow have been scaled for 2012 (from the base year of 2005). The CIRFLOW values (i.e. the peak 30-minute circulating flow) have been automatically calculated - here lies the problem! The initial automatic calculation of these values does NOT take account of suppressed demand and so the values used in the 2012 case are effectively wrong. The values for this case needs to be manually calculated as described in the Appendix of the Application Guide, taking account of the suppressed demand. The values for 2005 are probably OK. This will remove the effect described - i.e. increased delay in the 2012 case.

While on the subject of the effect of increasing demand flows, it is worth pointing out that increasing flows only on certain entries can have the effect of improving capacity on one or more entries. Let us take, for example, a simple three-arm roundabout where you are interested in the capacity of Arm A. An increase of entry traffic on Arm C will tend to increase the capacity on Arm A simply because traffic passing Arm B will be increased, which in turn, will reduce the capacity available to traffic entering on Arm B. This can reduce the circulating flow past Arm A hence result in an improvement in capacity on this arm. To summarise, if the changes in demand flow results in lowering the circulating flow past a particular arm, then the capacity for that arm will increase.

 **The link between ARCADY 6 and Vis is not active. The menu options (create VAV files etc) linking the two are greyed out. I have restarted my computer and it has made no difference.**

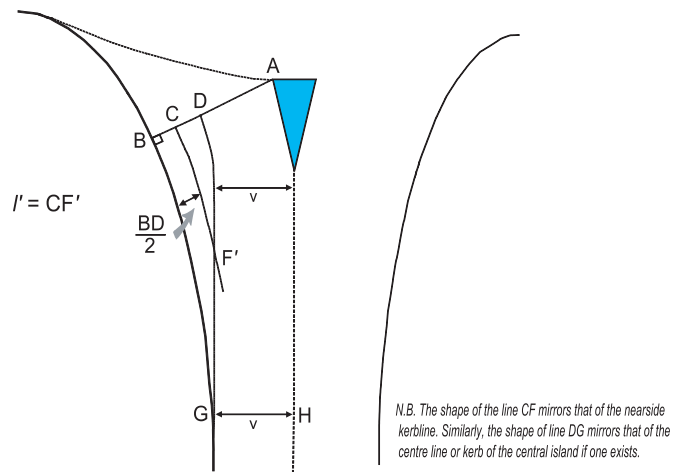
The commonest reason for this is simply that the visualisation package has not been installed, as ARCADY6 VIS is a separate application that needs to be installed separately from ARCADY 6. If ARCADY 6 VIS is installed, ensure that you have carried out a run of ARCADY as the menu options are only enabled once an output file has been created. Also check that the file you are running is a three or four arm standard or grade-separated roundabout – the current version of ARCADY 6 VIS does not work with mini-roundabouts or junctions with more than 4 arms. If this is OK, see if ARCADY VIS launches independently. If so, now look in the registry in the section: `HKEY_CURRENT_USER/Software/VB and VBA Program Settings/ ARCADY 6 Vis.`

This entry should contain the Key "Install Dir" which is created upon installation of ARCADY 6 VIS and the pathname and filename within this key is used by the main ARCADY program to locate where ARCADY 6 VIS is. If it cannot find it at this location then the ARCADY6 VIS menu items WILL be greyed out. The registry key can be added manually if it is missing. This should resolve the problem.

 **I have noticed that the diagram showing how to measure the effective flare length in the latest ARCADY 6 Application Guide (AG) is slightly different to the one in the DMRB (TD16/93) and the ARCADY 5 Application Guide. Has the definition changed? Also the TD16/93 diagram shows the line C-F' as a straight line. In ARCADY it is suggested that it follows the shape of the nearside kerb – Which is correct?**

Yes – the diagram has changed, but no – the definition has not changed. The diagram has been amended to try to make the measurement of the effective flare length more consistent for all situations. In particular, the old diagram indicated that the length of the line C-A was always the same as the approach width 'v'. This IS the case in the majority of situations but is not necessarily the case when the line B-A is not perpendicular to the centre line or island kerb at the point A. Remember that the line B-A is ALWAYS constructed so that it is perpendicular to the kerb at point B.

You will also notice that the advice accompanying the diagram has changed slightly too. E.g. the current accompanying text is as follows:



Measuring effective flare length


Effective flare length: The construction to be used to obtain the average effective length over which the flare is developed, l' , is illustrated in the above figure.

Where:

- AB = e (entry width).
- GH = v (the point G is the best estimate of the start of the flare).
- GD is parallel to AH and distance v from it.
- CF' is parallel to BG and $\frac{1}{2}$ BD from it.

The simplest way to do this is as follows:

1. If not already done so, draw the projection line AB as used to measure the entry width (see above).
2. Draw 'tram lines' parallel to the centre of the road, towards the give-way line, from the point G at the start of the flare.

 **Note** Tip: The point G can often be chosen by identifying the first point upstream of the give-way line where the nearside kerb and centre line of the road are parallel to each other.


Also note that on occasions when the line A-B is NOT perpendicular to the island kerb (or centre line) the line D-A is not always (v) wide

3. This line (GD) intersects the line AB, which is the line along which the entry width (e) is measured, at point D. The flare length (l') is measured from the point C, which bisects BD along a line parallel to the kerb and distance $\frac{1}{2}$ BD from it, to a point F' where it intersects line GD.

The effective flare length is then defined as $l' = CF'$. (The line over which l' is measured is often curved as it matches the curve of the nearside kerb.)

The effective flare length is recorded as zero if there is no flare.

Regarding the issue of the TD16/93 diagram showing line C-F' as straight. This is incorrect. The construction line shown in TD16/93 is in fact the line C-F (as defined in the original research report LR942) rather than C-F' as used in the ARCADY 6 capacity model. The dash makes all the difference! N.B. some issues of the ARCADY manuals also wrongly miss out the dash, although the text correctly refers to F'.

 **When I run ARCADY 6 with two flow demand sets added together does it automatically alter the percentage of heavy vehicles (HV).**

ARCADY 6 works out the actual number of HVs for each demand set and then combines them all together into a single set. E.g. if one demand sets has 10% HVs of which the flow is, say, 1000 pcu/hour and another set has 5% HVs out of 500 pcu/hour. ARCADY will know that the flow contains 125 (i.e. 100 + 25) heavy vehicles and 1375 light vehicles. In the capacity calculations the HVs contribute 250 PCUs to the total flow (one HV is equivalent to two Passenger Car Units) giving a total of 1625 PCU.

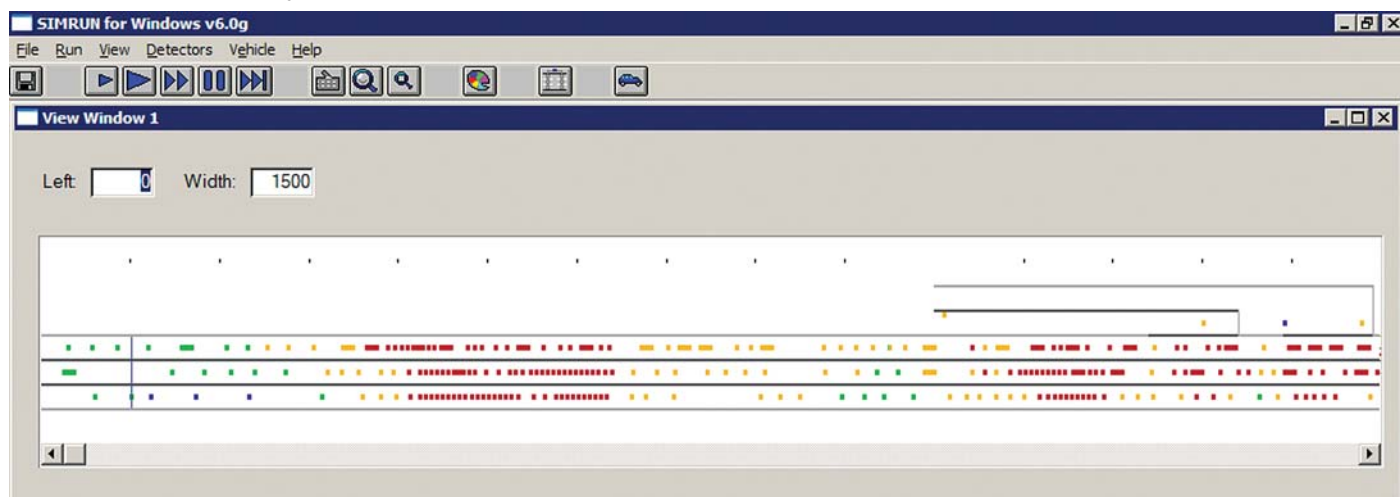
Jim Binning
jbinning@trl.co.uk

FURTHER DEVELOPMENTS FOR SISTM

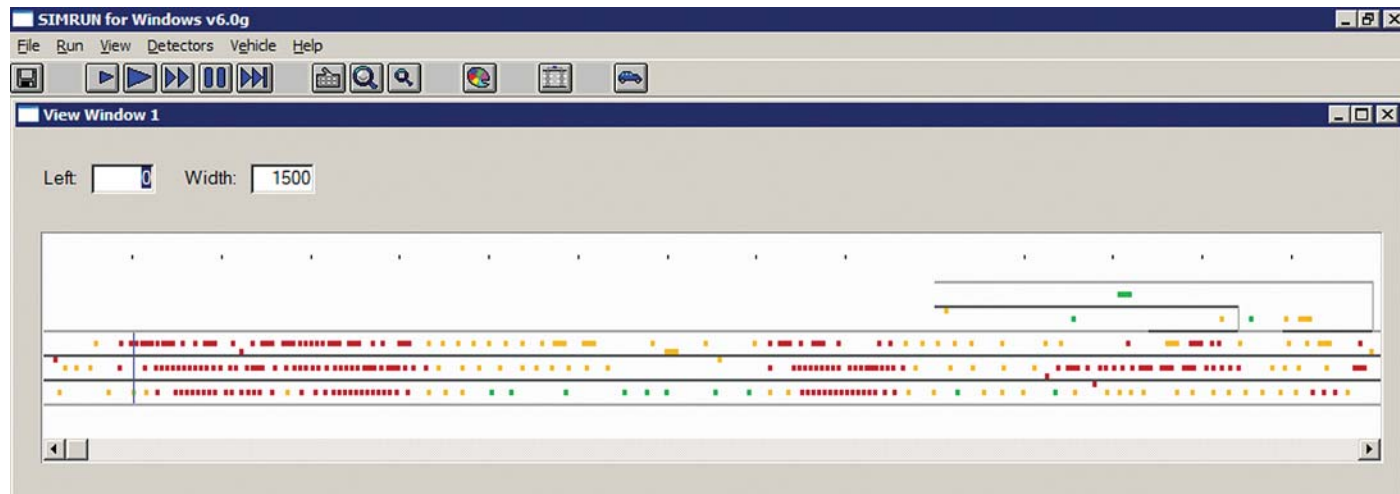
TRL has been carrying out further development of the Highways Agency's traffic micro-simulation model SISTM. This software has been designed for studying congestion on motorways and it can model different traffic management measures including modifications to junction layouts, ramp metering and variable speed limits. Following successful improvements to the lane changing algorithm the software has recently been further enhanced so that it can reproduce shockwaves in motorway traffic. These occur when the motorway is operating close to capacity and where a vehicle suddenly braking can cause a ripple effect which travels upstream. It is important for micro-simulation models to replicate shockwave characteristics as the traffic speeds close to capacity can be highly variable.

The following screen shot, where traffic is travelling from left to right, shows three shockwaves as characterised by vehicles bunching at low speed. Vehicles are coloured according to their speed: red below 30 km/h, yellow between 30 and 60 km/h and green above 60 km/h.

In the next screen shot, approximately one minute later, the shockwaves have moved upstream (from right to left), whilst the traffic continues downstream (from left to right).



The ability of SISTM to replicate shockwave characteristics is an important feature when assessing the quantitative effects of different traffic management measures and the new enhancements will lead to improved confidence in the model's results.



Contact: Ewan Hardman, email : ehardman@trl.co.uk or George Lunt, email: glunt@trl.co.uk

MTV 2 UPDATED

MTV 2, the latest software version of TRL's Motorway Traffic Viewer has been updated. As the Highway Agency progresses the national roll out of MIDAS (Motorway Incident Detection and Automatic Signalling) on the UK motorway network, a new format has been produced for the traffic counting data (TCD) file, called MIDAS 7.

The latest version of MTV 2 can now read both the old format of TCD file and also the new MIDAS 7 format. Retrospective compatibility is essential when handling traffic count data so that the user can analyse both the historic data and the present. The geographic information for a motorway site is embedded in the new MIDAS 7 format data header information and MTV 2 can utilise this information to negate the need for site data information when analysing traffic data only. The updated interface allows the user to specify whether or not to link the MTV site data database to the MTV session.

An upgraded version of MTV2 is due for release in early April 2006. All current MTV2 licence and maintenance holders will be offered a FREE version of the software. Further details about MTV2 and how to order your copy please contact the TRL Software Bureau. We would be very pleased to hear from you.

Carole Dixon, email: cdixon@trl.co.uk

TRAINING COURSES, SEMINARS & USER GROUPS 2006

TRANSYT

2 day Training Course at Moor Hall Conference Centre Cookham, Maidenhead 25th - 26th April 2006 Course Fee £575 (£525 Maintenance Holders)

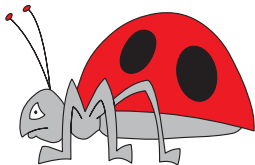
SCOOT

2 day Training Course at TRL 7th - 8th November 2006 Course Fee £775

All prices exclude VAT

For more information or Booking Forms Please contact the Software Bureau

BUG BOX

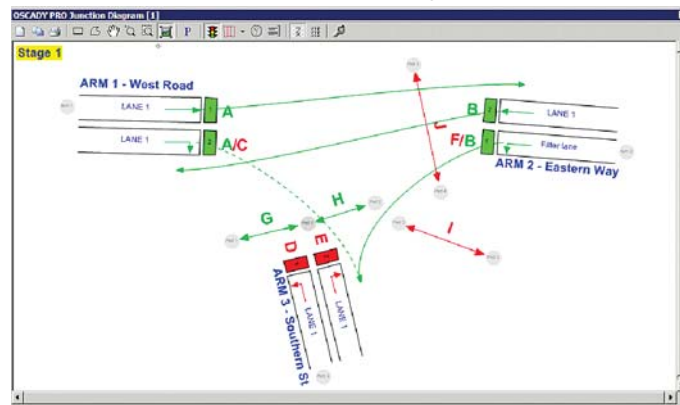


PICADY 5: A number of bugs/issues have been raised regarding Issue AA-1. It is recommended that all users use the latest release (Rel 5.0AB-2) which has been sent to all users.

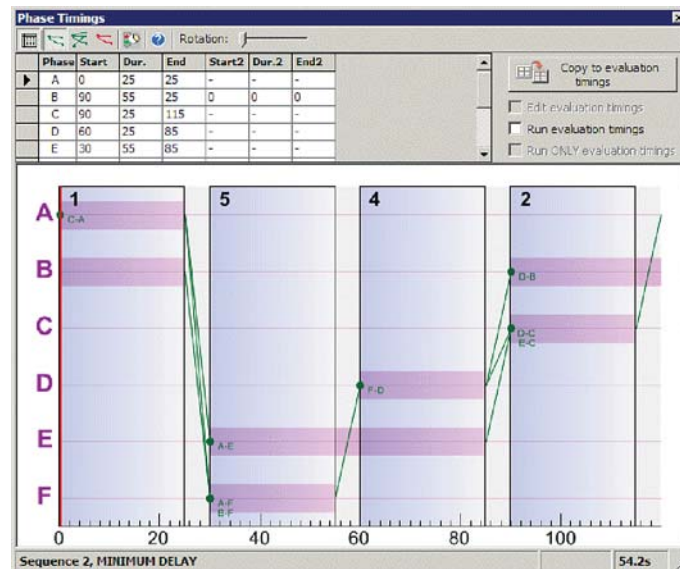
ARCADY 6: A new maintenance issue (Rel 6.0 AD-4) is available. It contains a number of improvements and bug fixes. It is available free to maintenance holders from the TRL Software Bureau.

OSCADY PRO is coming!

OSCADY has been a successful product for TRL over the years with many choosing it over other products because of its simplicity and its scientifically based optimisation routines. However, a significant limitation is the fact that OSCADY is very much a *stage-based assessment tool*. What engineers have come to expect is a *phase-based design tool*. Therefore we have been working on an exciting new product to complement OSCADY, which we will be calling OSCADY PRO.



OSCADY PRO is a completely new product based on a collaboration between TRL and our friends at University College London (UCL). OSCADY PRO is a rapid phase optimisation program (hence 'PRO') designed to lead the engineer to the best possible phase sequence through an ingenious optimisation facility. The objective is to show the engineer the optimum sequence, and avoid him/her having to eventually arrive at a satisfactory sequence by trial and error.



Apart from the phase optimisation, OSCADY PRO will still have optimisation routines and other features to help ensure the engineer arrives at the best solution. It will also be highly visual, as is expected of any modern product.

OSCADY PRO is expected to be ready to ship early summer, so watch out for it; we hope you will be impressed by its abilities. Watch this space!

Mark Crabtree

email: mcrabtree@trl.co.uk

CURRENT PROGRAM VERSIONS

ARCADY	V6.0 AD/4
PICADY	V5.0 AB/2
OSCADY	V5.0 AB/2
TRANSYT	V12.0 AD/4

(All above have Right/Left capability)

TPM	V2.1
STM	V4.4.5
BUNDLE 3	V3.1 Issue 4
PC MOVA	1.0
MOVA SETUP	M5.0.0
MOVA Comm	M6.0.0
CONTRAM 8	V 8.3
MAAP for Windows	4.3.0
SafeNET	2.03
PERS	1.1
MTV	V 2.0

Who's Who in Traffic Software



Alex Scarman

Alex joined TRL in August 2005 and is a member of the Traffic, Software, and Modelling Group in the Transportation Division.

He has a BSc in Computer Science from King's College London.

Alex has worked on website development, general maintenance of various TRL software products and is currently working on updates to SafeNET 2.



TRL Software Bureau
Crowthorne House, Nine Mile Ride
Wokingham Berkshire
RG40 3GA United Kingdom
Tel: +44 (0)1344 770758
Fax: +44 (0)1344 770864
E-mail: softwarebureau@trl.co.uk
www.trlsoftware.co.uk