



Smarter transport systems need smarter modelling tools

As demand for travel increases and congestion occurs over longer time periods and larger network areas, planners and engineers require models that can reflect the complex travel behaviour in these conditions as well as new and innovative ways of controlling traffic.

CONTRAM provides the advanced dynamic traffic modelling features that are needed for applications such as:

- ▶ Highly congested networks with time varying traffic flows
- ▶ Priority lanes for buses, high occupancy vehicles or HGVs
- ▶ Fuel consumption and emissions statistics
- ▶ Road user charging schemes
- ▶ Modelling incidents
- ▶ Driver information systems

www.contram.com

Overview ▶▶▶

CONTRAM has been the leading dynamic traffic modelling software used around the world for over 20 years. It has a wide range of modelling tools which are continually being developed. These can be used for representing a variety of situations from congested urban networks to regional inter-urban areas.

CONTRAM is designed to model the varying traffic demand and congestion that occurs during the day, and will represent the peaks of congestion as well as off-peak conditions within a single model. It is ideally suited to traffic management schemes and systems such as part time signals or charges variable by time of day.

CONTRAM's dynamic ability means it can model unexpected events such as incidents that reduce network capacity and the effects of driver information systems. It can also handle more specific requirements such as modelling special vehicle lanes for buses or HGV's or banning turning movements in certain situations.

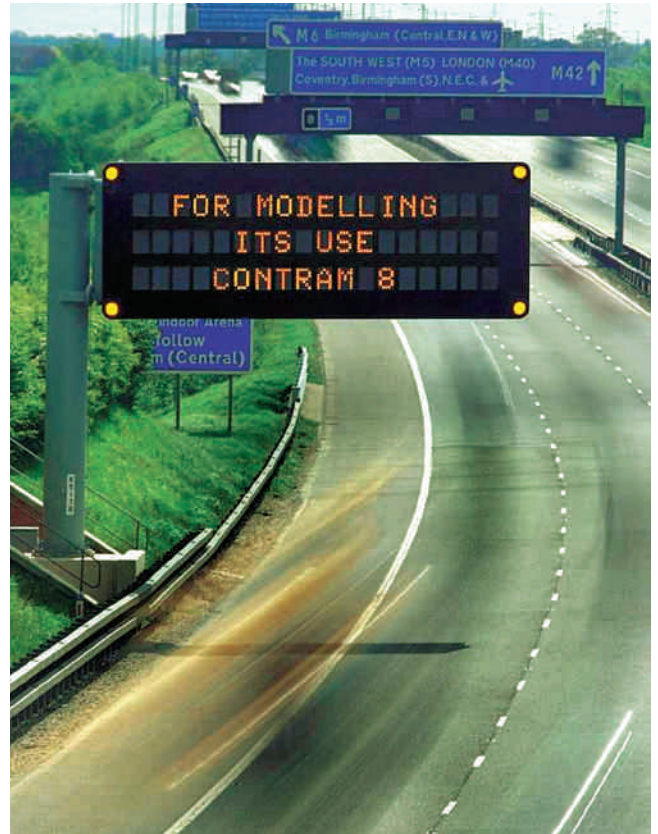
Formulae built into CONTRAM provide detailed statistics on fuel consumption and emissions. These use results of European research as the basis for the calculations. Default pollutants include CO, HC, CO₂, NO_x and particulates.

Cost benefit appraisal of new infrastructure or traffic control measures may be undertaken using TUBA which interfaces with CONTRAM.

Intelligent Transport Systems ▶▶▶

ITS modelling in CONTRAM has been developed over many years by TRL and, more recently, with the support of the Swedish National Road Administration which is using it in the development of driver information systems in Stockholm and other large cities. In the UK, CONTRAM is being used in the real time control system of the motorway network in Kent.

A standard assignment run represents an 'average' day. However, in the event of an incident, for example an accident that reduces network capacity for a period of time, drivers' behaviour may change in response to information displayed on Variable Message Signs or unexpected queues on their intended route.



Scenarios can be easily set up using CONTRAM's graphical user interface. Incidents, VMS signs and diversion routes may be defined and displayed on screen.

Dynamic modelling ▶▶▶

CONTRAM divides the day into time slices which are used to model the build up and decline of traffic. Vehicles are assigned to their minimum cost routes, taking account of the traffic interactions and delays caused by other vehicles on the network. A journey can cover several time slices during which traffic demand and network conditions can vary and over-saturated conditions may occur temporarily, as in real life.

Key modelling features include:

- ▶ An unlimited number of time slices
- ▶ Up to 32 user definable vehicle classes
- ▶ Advanced junction modelling
- ▶ Link-based speed-flow relationship and tolls
- ▶ Left or right hand drive
- ▶ Dynamic matrix estimation

These features are combined with a high quality graphical interface. Building, running and analysing models can be done from a single fully integrated program. The 32-bit software operates on Windows 95, 98, 2000 and NT platforms.

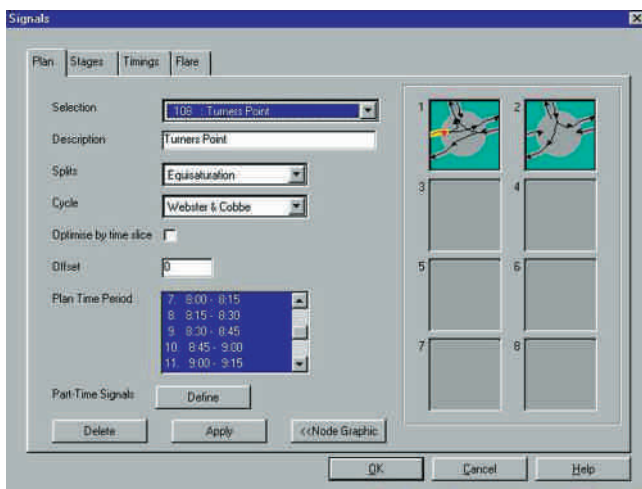
Junction modelling ▶▶▶

CONTRAM allows simple junctions to be coded in seconds, while complicated ones can be coded to a high level of detail and accuracy.

The time-dependent queuing relationships used are consistent with those in the TRL junction design programs ARCADY (roundabouts), PICADY (priority intersections) and OSCADY (signals).

Signal modelling features include:

- ▶ multiple plans
- ▶ part time signals
- ▶ optimised cycle time
- ▶ optimised stage lengths
- ▶ opposed turns
- ▶ approach flares
- ▶ phase delays

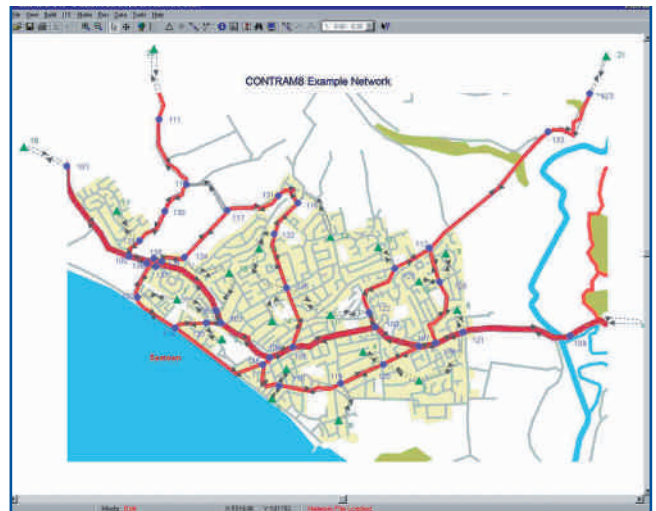


Signal timings are easily coded in CONTRAM with the template displaying stage diagrams

Building networks on-screen ▶▶▶

CONTRAM's functionality makes it very easy to use. Model networks may be built on-screen and edited by just a few mouse clicks. Templates guide the user through the input data required.

To aid presentation a background map may be used so that junctions, zones and links are accurately located and networks easily recognised.

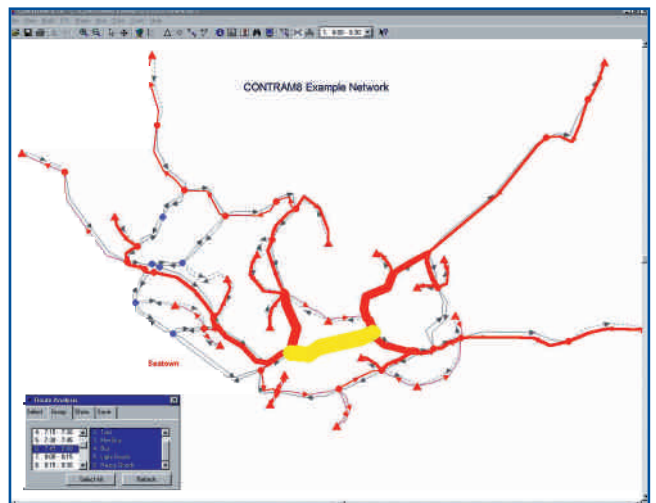


CONTRAM network built using a map background

Links can be shaped to reflect network topology and text can be added to provide road junctions with recognisable names.

Analysing model results ▶▶▶

Link data, whether input data or results, can be displayed using a number of different methods including data boxes, variable bandwidths and colour coding. Time slice and user class grouping enables results to be aggregated for presentation.



CONTRAM route analysis

Advanced route analysis allows detailed examination of model results. Animation can be used to show the build up and decline of congestion.

Additional data can be easily imported into CONTRAM for displaying, and model results exported for further processing in spreadsheets. For example, modelled link flows can be displayed alongside traffic counts and a statistical measure of goodness of fit.

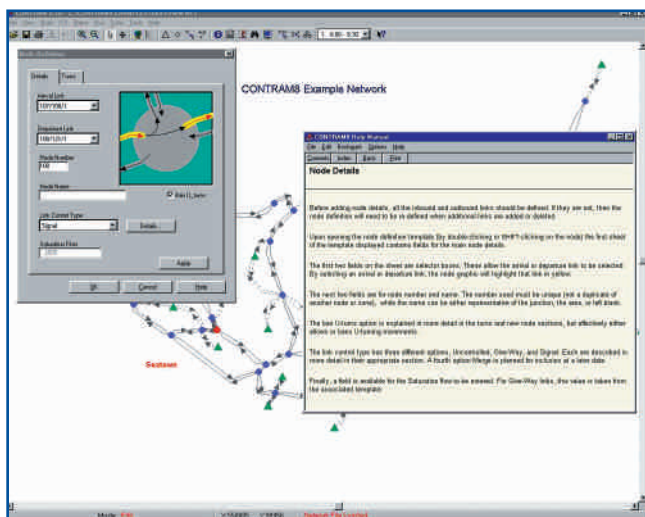
Matrix estimation >>>

A successful assignment model needs an accurate trip matrix. Matrix estimation is a technique for modifying a trip matrix so that, when assigned to a network, the modelled link flows are a closer match to observed link counts. Typically it is used to update an old trip matrix using a recent set of traffic counts.

Time-dependency is at the heart of the way CONTRAM works so there is a facility to define counts by time slice or combinations of time slices. Weights can be applied to counts, reflecting that some counts may be less accurate than others.

Documentation and help >>>

CONTRAM comes with a comprehensive user manual that gives a step by step guide to running the system, model building, and analysing model results. The manual is fully integrated into the software via the Windows help system. Help buttons from each template will launch you automatically into the appropriate section of the help file and hyperlinks will direct you to other relevant sections



The CONTRAM help file

User support >>>

An excellent support service is provided to answer queries speedily via e-mail, telephone or fax.

The CONTRAM Transport Forum is held every year to present new developments, exchange ideas and debate advances in transport modelling.

Web site >>>

www.contram.com

The CONTRAM web site contains up to date news and further information on the system. All updates are put onto the site so that new versions can be downloaded as soon as they are available. A demonstration version containing all the latest modelling features can be downloaded by anyone interested in trying CONTRAM for the first time.

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