



Comet modular traffic management system

Traffic Solutions

SIEMENS

The scalable, modular design of the Comet system allows users to invest in a system initially addressing a particular need, whilst allowing future expansion as requirements change and evolve. In this way it is possible to invest for the future now, maximising the benefits that Comet can provide to address the needs of traffic management within the UTM environment.



Comet

Comet, the advanced traffic management and information system from Siemens, is the key component of a modern integrated traffic control centre. With a scalable, modular design, Comet integrates systems and information from a wide range of suppliers to manage the flow of traffic effectively through towns and cities in the UK and around the world. The use of a Comet UTM system allows traffic managers and operators to control and monitor their urban networks more easily, providing complete situational awareness while delivering meaningful, timely and accurate information to the travelling public.

Meeting the challenge

Developed in conjunction with local authorities to ensure that user requirements are addressed, Comet meets the actual day-to-day challenges and changing needs of traffic managers. The system's ongoing development is facilitated through a dedicated user group, and this, combined with Siemens' extensive knowledge of real-time traffic management and control systems, such as SCOOT, has resulted in a reliable, flexible and expandable system.

Siemens has been involved in the development of UTM since its inception, and at the heart of the Comet system is a UTM common database which uses Microsoft SQL server, both for simplicity of interfacing with existing IT systems and its proven ability to handle the largest database applications with ease. The system is structured to support all of the Comet application modules individually or combined, together with integration of other systems to meet the unique requirements of each network. Integration using the latest interface specifications and data objects from the UTM standards reduces the risk to project implementation and maximises the effect of the investment in managing congestion.

User interface

The display of network information in a clear, 'easy to use' graphical user interface provides managers and operators with an unparalleled view of the current network situation. The use of a powerful GIS map display provides a complete visualisation of the current network situation; combining the information from all connected sub-systems in a single unified presentation, including:

- Incidents and events
- SCOOT congestion
- ANPR
- Strategic control
- Car parks
- Variable message signs
- Equipment status
- Reporting and analysis

The modular, flexible design of Comet allows the user to interface with, and operate, the system in a variety of locations. This gives users access to the system from any location, at any time providing a more flexible approach to dealing with planned and unplanned incidents and events.

Integration of information with the user interface is streamlined by the use of UTM standards and a wide range of adapters to include network status from legacy, non-UTM systems.



- GIS User interface – Delivering the bigger picture
- UTMIC – Investing for the future
- Network monitoring – Complete network overview
- Incident and event management – Effective network management reducing delays
- Strategic control – Consistent, repeatable traffic management and control
- JTMS – Accurate journey time monitoring with ANPR
- Car park guidance – Reduced congestion and wasted journeys
- VMS management – Clear, concise, reliable traffic and travel information



Traffic and network management

The UTMIC database at the heart of the Comet system allows all of the day-to-day functions normally carried out in the control room to be recorded electronically. These can include system log messages and status, incident management and contact management for interfaces with other authorities and utilities.

The central system log within the Comet system provides a complete audit trail of incidents and events, along with the corresponding actions taken to deal with them for future analysis and refinement of the incident management process. Management of incidents from the map display allows information to be shown geographically, along with a pre-selected list of appropriate strategic responses determined by the location. Selected information, recorded during the course of the incident management process, can be easily output directly to a website by a simple enabling process, allowing operators more time to spend managing the incident rather than managing the systems.

Strategic control

The use of strategic control permits a single response to be made to regular or unpredicted events. The response brings together actions across any connected systems, that when combined together will address a particular occurrence in the network. Comet's strategic control provides a consistent and coherent plan, regardless of whether the response is provided to an unplanned incident, or by time of day for normal network management and control. Comet allows the operator to configure strategies for subsequent selection, either manually or automatically as a result of powerful logical expressions, which can be constructed from a range of trigger conditions from any data source.

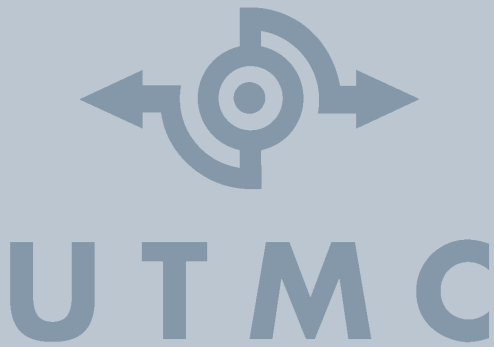
Strategies can also be actioned according to the day and time – allowing the system to provide a single schedule for all traffic management systems of regular, repeatable actions required to control and monitor the travel network.

Network monitoring

The traffic management bill places many demands upon local authorities for the efficient management and control of their highway network, and journey times are seen as a major indicator of performance. There are many techniques available for calculating single and multiple link journey times and Comet allows data and information from a wide range of sources to be integrated, providing a complete overview of the current situation. Data can be combined from external systems such as SCOOT and the NTCC, as well as from other Comet applications such as JTMS using ANPR.

Configuration tools within Comet allow the user to define a route easily in terms of its constituent link segments and to identify how the journey time for the route will be calculated from the elements. Segments for which no real-time data is available can have time of day dependent values included, providing a complete overview of the current network status. Automatic alarms can be configured to provide early warning to operators when key performance monitoring indicators are likely to be exceeded, allowing timely action to ensure efficient network operation is maintained at all times.

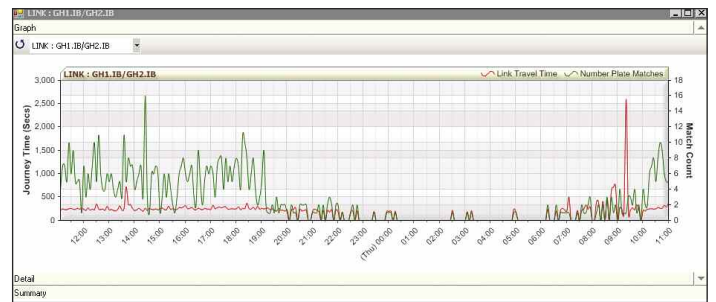
Comet reduces the workload of the operator significantly by creating and maintaining historic profiles of congestion, flow, journey time, car park occupancy and other parameters. These profiles are then compared with the current, real-time situation to alert the operator to any abnormalities and subsequently acted upon, either by the operator or the system automatically. The data stored within the system is categorised into different day types to allow for school holidays, public holidays and other special days. This can be used in conjunction with the current situation to generate a short-term future prediction. In the case of car park occupancy, this allows a website to offer information on both the immediate situation and the predicted situation in 30 and 60 minutes, enabling travellers to make an informed choice before setting off on their journey.



Journey time monitoring and Automatic Number Plate Recognition

Automatic Number Plate Recognition (ANPR) technology provides a new and accurate mechanism for monitoring journey times and presents the most accurate and meaningful measure of overall network performance. The data collected can also be used in the calculation of on-line origin and destination matrices to provide the local authority with a complete, up to date model of the major traffic flows in the urban environment for modelling new traffic management schemes.

The calculation and display of real-time journey information is invaluable to the operator in a modern traffic control centre to ensure that the network operates really efficiently. ANPR cameras linked to a traffic management system allow live journey time information to be displayed to the operator and also to the public via the Internet. This information provides details of the current traffic situation and can also be used in the selection of strategic control measures to ensure the network operates efficiently.

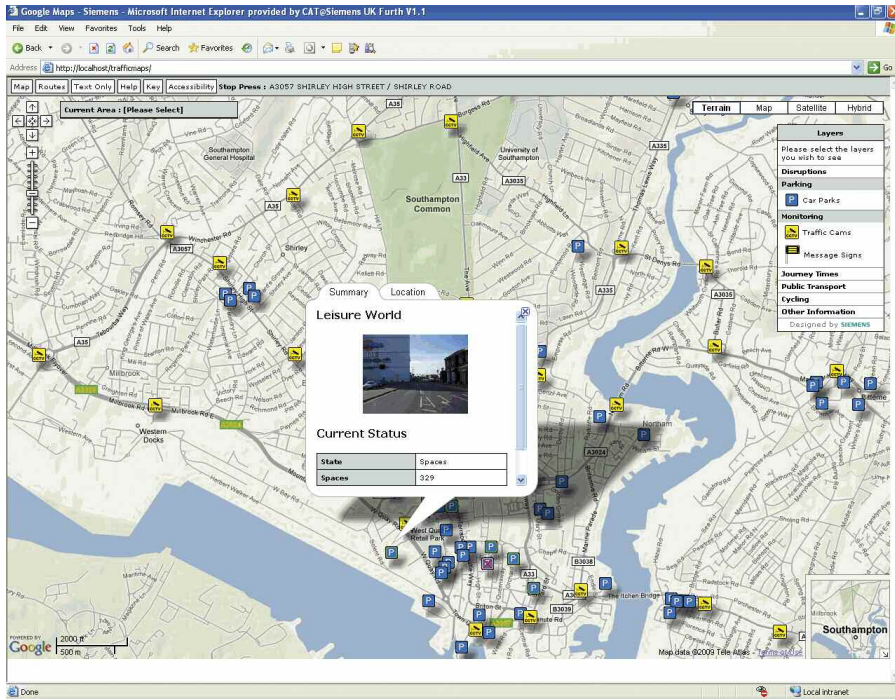


As well as providing real-time information on network performance through the calculation of journey times, the data collected by the camera network is invaluable to the user. A continual review of traffic flows on all major routes into, and out of, the urban area are presented. In addition, this data collected can be used for network analysis through the calculation of origin and destination matrices for the urban area. It is no longer necessary to carry out expensive, manpower intensive surveys at infrequent intervals to determine major traffic flows.

The communications architecture of Comet's JTMS application is flexible and supports the most appropriate method of communication for each element of the system. The ANPR cameras support a wide variety of different communications methods including GPRS, DSL and Ethernet.

The Siemens ANPR outstation is a one-box solution that is easy to install and maintain. The outstation provides IR illumination, video image capture, character recognition and transmission of data within a single enclosure. The outstation can be mounted on any suitable item of street furniture, such as a bridge, walkway, lighting column, traffic signal pole or other similar structure.





Car park guidance and VMS management

The use of car park guidance systems is widespread throughout the UK, to direct drivers to vacant parking areas, avoiding incidents and delays. When used with variable message signs, Comet provides motorists with accurate and up to date information, allowing an informed choice to be made about the best parking options and traffic conditions.

When operating purely for car park guidance, Comet analyses the number of free spaces in each car park or zone, and determines the most appropriate messages to be displayed on variable message signs. This information is automatically integrated within the UTM database, and is available for use by third party systems as well as for analysis of car park performance and related congestion. As well as providing information specifically relating to car parks or parking zones, Comet can also drive variable text information signs located at strategic sites, to provide additional information on local pollution levels, diversions and anticipated journey times derived from the network monitoring application. The messages stored within the system for display on the signs are categorised by size and type, and can be selected manually by the operator or automatically as part of a wider strategy.

The communications architecture for the car park and VMS application is flexible and supports a wide range of options for each piece of equipment. In addition to the standard UTM communication protocols, a number of additional sign communication protocols are supported. These allow communication to several different types of VMS on the same system using a wide variety of different media, including GPRS, Paknet, leased lines, fibre-optic and low power radio links.

Where a Siemens UTC system is installed, Comet is able to utilise the existing communication links to collect both car park data and to control variable message signs, thereby minimising revenue costs.

Web publishing

The internet is a powerful resource in providing live, accurate and timely information to the travelling public. The eMerge module within Comet creates live traffic and travel web-pages which can be embedded in personalised web page designs. These provide real-time and predicted journey-critical information to travellers in a 'simple to read' and 'easy to understand' geographical format using Google or other similar, web-based mapping displays. eMerge provides fully-accessible displays to the latest standards of web-design allowing access for all regardless of location or method of access. The emphasis is on user-friendly access, with simple routes to easily obtain the most up-to-date traffic and travel information. The displays can include any of the data items available on the user interface as well as other related traffic and travel information and are generated at one-minute intervals to give the very latest information.

The eMerge software resides on your web server and is protected from the Internet by a firewall. The eMerge map software is embedded in a standard template which can be customised or branded with individual colour schemes and logos. This enables authorities to provide real-time travel information over the Internet, without having to go through the long process of web development and design.

Other applications of eMerge allow local intranet access and thin clients for remote users of the system who do not need the full capabilities available within the complete Comet client.

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