



SIEMENS

Ingenuity for life

PC SCOOT®

Adaptive Traffic Control

PC SCOOT® manages traffic control in real time

The successful management of traffic in the 21st century places many demands upon traffic engineers and officials. As the volume of traffic on highways and roadways continues to grow at a greater rate than the capacity of the road network, the effect of traffic congestion is an ever increasing problem in towns and cities throughout North America. The traffic engineer in a modern traffic control center is continually working to maximize the efficiency of the traffic flow while minimizing any disruptions caused by incidents and events.

The implementation of an effective adaptive control system benefits traffic in the town or city as well as the local economy and environment.

Operating on Microsoft Windows®

The latest release of the SCOOT® adaptive control system – PC SCOOT® – combines proven adaptive algorithms with the enhanced functionality in the user interface, all operating on a Microsoft Windows® PC-platform. This combination of Siemens' proven SCOOT® software and the Microsoft Windows® operating system [OS] offers a solution which is flexible enough to meet the traffic needs of any municipality, from small towns to the largest urban metropolis.

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The introduction of PC SCOOT® by Siemens allows more cost-effective systems integration and commonality of hardware across the range of traffic management and control systems. This in turn reduces maintenance requirements and provides more opportunities for implementing a range of ITS solutions:

- World leading adaptive control
- Increased standardization within traffic control centers
- Microsoft Windows® OS
- Customized congestion management tool kit



- Reduced equipment and maintenance costs
- Real IP communications
- Maximizes network efficiency
- Improved access to management data
- Reductions in delay of over 20%
- Ease-of-use for new users
- Simple installation and migration
- SCOOT adaptive control
- Public transport priority
- Emergency vehicle green waves
- Car park management and guidance
- Fixed time signal control with automatic plan selection
- Traffic flow monitoring
- Queue and congestion detection
- Tidal flow control
- Pollution monitoring

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ITS is the keystone of urban traffic management and Siemens offers a variety of solutions ranging from a single system to a comprehensive integrated package including on-street equipment and complementary adaptive, central and regional systems networked together.

PC SCOOT® operates as part of a larger solution, working in tandem with other Siemens advanced transportation management systems [ATMS]. The ATMS provide traffic management and control, and prepares the controller's timing plans for interaction and adjustment by PC SCOOT®.

Features that maximize efficiency

ITS flexibility allows engineers to control and monitor traffic over a wide area, combining traditional traffic control with a host of additional functions to best achieve maximum efficiency:

Making better use of modern communication systems

Modern communications technology offers a range of flexible options, which until now have not been available for adaptive control. PC SCOOT® has been enhanced to enable the use of modern communications technology used by ITS solutions and, in turn, absorb inconsistencies and delays in data delivery with less impact on the system. This reduces dependency on traditional leased line communications techniques and opens up the potential to utilize a wide range of modern communications technologies previously unavailable to SCOOT® systems. This allows utilization of cost-effective communications infrastructures that can be optimized to individual system constraints and available infrastructure.

Improving public transport priority and pedestrian movement facilities

Public transport priority is increasingly seen as crucial in maintaining the effectiveness of buses and light rail systems as viable alternatives to the private car.

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PC SCOOT® introduces several enhancements in the control of traffic signals, improving public transport priority and increasing efficiencies in dealing with pedestrian movements. Enhanced bus priority phase skipping is now included in PC SCOOT®, reducing delays to buses waiting at the signals by skipping intermediate side road stages where appropriate. The system includes comprehensive guidance on when phase skipping is appropriate and when it may be inadvisable. The approach of a bus can be indicated by on-vehicle transponders activating special detectors, or the location can be provided by a bus management system using any automatic vehicle location system. On-street tests have shown benefits of up to four (4) seconds reduced delay per bus.

PC SCOOT® provides improved control of intelligent pedestrian facilities, using the traffic signal controller and special detectors to monitor pedestrians crossing the road and feeding this information back into the SCOOT® model optimizing the vehicle greens. This reduces wasted time where pedestrian crossings have long requirements for green times due to design constraints, by providing the appropriate amount of green time to pedestrians based upon detection.

Following the introduction of SCOOT®-based systems, 'before and after' studies have shown substantial reductions, both in journey times and delays.

Vehicles are detected on all approaches to each junction under PC SCOOT® control, with occupancy being measured every quarter second. This creates a profile for each link, which the SCOOT® model uses to predict queue behavior at each stop line. This in turn is used in the optimization calculation. The model also predicts delays and the build-up of congestion as part of the efficiency index.

PC SCOOT® models traffic detected on-street to adapt three key traffic control parameters continuously – the amount of green for each approach (Split), the time between adjacent signals (Offset), and the time allowed for all approaches to a signalled intersection (Cycle time). As a result the signal timings evolve with the changing traffic situation without any of the traditional disruption caused by changing fixed time plans on other traffic control systems.



Features

PC SCOOT® introduces a number of key new features which provide invaluable assistance to the traffic manager in maximizing the efficiency of traffic flow. A new Congestion Supervisor feature provides more early warning of congestion, as well as providing recommendations for action to reduce congestion as a result of repeatable, predictable conditions which occur within the network.

The Congestion Supervisor feature continuously monitors the SCOOT® network, evaluating overall performance levels and identifying congestion and wasted capacity. Where congestion levels exceed a defined threshold, the system automatically investigates the likely cause. It looks for the critical link and follows the congested route through the network, analyzing reasons for the degradation in performance and suggesting changes to system configuration to improve efficiency.

The Congestion Supervisor feature uses information already available within the PC SCOOT® system and does not require any additional equipment or detection. Having diagnosed a congestion problem, the recommended action to take will then be reported to the user either directly from PC SCOOT® or through an integrated ATMS. Overall, the PC SCOOT® Congestion Supervisor feature aims to target regularly recurring congestion rather than congestion caused as a result of incidents.

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