

Tranzinfo HotTopic

Number 12 2007

GIS / GPS in transport

A selection of recent publications and resources on the application of Geographic Information System (GIS) and Global Positioning System (GPS) technology in transportation.

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Current as at 2007. Please contact your nearest transport library if you are looking for more recently published items on this topic.

Asset management

1. Advancing pavement management techniques in South Africa's largest city, Johannesburg

Olivier PA, Agaienz A, Hattingh J, Van Zyl G and Drenth, K
Proceedings of the International Conference on Managing Pavements, 6th, 2004,
Brisbane. Queensland. Australia

This paper details the challenges in the management of urban roads and pavement systems and innovative techniques used to overcome them, with the aim of providing an improved platform for the way ahead.

Traffic management

2. Advances in GPS technology for measuring travel

Stopher P, FitzGerald C and Zhang J
Institute of Transport and Logistics Studies, University of Sydney, 2006
Working Paper number : ITLS-WP-06-15
14 pages

This paper describes some of the tests conducted on GPS devices and demonstrates the capability of these devices to provide detailed and accurate data on travel movements.

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3. Distance based charging: report on Transport for London's GPS OBU trial

Transport for London, United Kingdom, 2006
28 pages

This report concerns the results obtained from an extensive trial of satellite-based navigation equipment and systems capable of providing viable distance-based charging systems.

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4. Estimating intersection control delay using large data sets of travel time from a global positioning system

Hoeschen B, Bullock D and Schlappi M
Transportation Research Record, 2005
Number 1917, pages 18-27

During the past decade, the traffic engineering community has moved away from using stopped delay and now uses control delay. This paper evaluates two procedures for estimating control delay.

5. Integration of geographic information system for transportation with real-time traffic simulation system: application framework

Zhou M, Korhonen A, Malmi L, Kosonen I and Luttinen T
Transportation Research Record, 2006
Number 1972, pages 78-84

Traffic simulation systems have the ability to improve the efficiency of traffic analysis, prediction, and control. This paper presents an application framework that integrates a real-time traffic simulation system with real-time traffic information applications.

6. Monitoring traffic and emissions by floating car data

Thiessenhusen K and Wagner P
Institute of Transport Studies, University of Sydney, 2004
Working paper number: ITS-WP-04-07
17 pages

An example of intelligent traffic management using data collected from a fleet of taxis equipped with GPS and acting as floating-car-data (FCD) providers in order to generate accurate real-time traffic information.

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7. Practical procedure to collect arterial travel time data using GPS-instrumented test vehicles

Hunter MP, Wu SK and Kim HK
Transportation Research Record, 2006
Number 1978, pages 160-168

This paper presents a practical procedure to collect and analyse travel time data, based on GPS, that readily reflect measures of performance for both segments and extended arterial sections.

8. Utilizing GPS and GIS in traffic signal coordination

Rhyne S
Proceedings of the Institute of Transportation Engineers (ITE) Annual Meeting, 2005, Melbourne
Institute of Transportation Engineers, Washington DC, 2005
5 pages

This paper compares some of the methods used to collect travel time information, and gives reasons as to why GPS is a better solution for collecting travel time data.

Environmental issues

9. Driven to injustice? Environmental justice and vehicle pollution in Christchurch, New Zealand

Kingham S, Pearce J and Zawar-Reza P
Transportation Research Part D: Transport and Environment, 2007
Volume 12, Issue 4, pages 254-263

Exposure to an array of air pollutants varies between different social groups. This inequity is one possible explanation for the disparities in health between areas of varying socioeconomic status. Using geographically-detailed estimates of traffic-related air pollution, this study investigates whether exposure to pollution in Christchurch, New Zealand varies significantly between areas of different socioeconomic status.

10. Variability of personal exposure to fine particulates for urban commuters inside an automobile

Greaves SP and Bertioia T
Institute of Transport and Logistics Studies, University of Sydney, 2006
Working Paper number ITLS-WP-06-06
16 pages

The current paper reports on a study in which the capabilities of GPS and real-time particle monitors are combined to address this problem for an urban commute trip in Sydney.

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Road safety

11. Identifying high frequency crash locations: empowering end-users with GIS capabilities

Smith RK, Graettinger AJ, Keith K and Parrish A
ITE Journal, 2007
Volume 77, Issue 1, pages 22-27

This paper describes a project to provide end-users of traffic crash data such as traffic safety professionals, transportation engineers and policymakers with straightforward and intuitive access to GIS capabilities.

12. Improving road safety with mobile GIS

Corbley, KP
Geo Spatial Solutions, 2006
Volume 16, Issue 7, pages 22-27

As the title suggests, this article focuses on the improvement of road safety through mobile GIS technology.

13. Using GIS for law enforcement

Smith R, Graettinger AJ, Keith K, Hudnall M and Parrish A
Journal of Safety Research, 2005
Volume 36, Issue 5, pages 477-479

This paper describes the use of geographical information systems to map vehicle crash and traffic citation locations.

Transport planning

14. Geospatial technologies improve transportation decision making

Banks L and Sarmiento M
Public Roads, 2006
Volume 69, Issue 5, pages 32-37

Geographic information systems enable State Departments of Transport to streamline tasks and projects related to functions and operations including road routes, safety, engineering and conservation.

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15. Site accessibility assessment of new developments with GIS capabilities

Zulkiple A
Proceedings of the Malaysian Road Conference, 6th, 2004, Kuala Lumpur, Malaysia
Paper Number 3
Engineering Association of Malaysia, Kuala Lumpur, Malaysia
8 pages

Transport planners and engineers have the challenging task of formulating cost effective road network system to facilitate efficient and safe movement of goods and people. This paper lays out the framework for development of site accessibility assessment with GIS capabilities to update the regional traffic model.

16. Use of automatic position reporting system data for enhancing transportation planning operations

Meaker J and Horner MW
Transportation Research Record, 2004
Number 1870, pages 26-34

This paper describes a new source of data and an acquisition approach that provides both vehicle speed and travel time measurements from ad hoc probe vehicles at modest cost. In this system, probe vehicles collect global positioning system speed, heading, and position data and transmit them over amateur radio frequencies. Frequencies are monitored by personal computers, which are used to receive and process the probe data.

Traveller information

17. Developing location-aware navigation guides that use mobile geographic information systems

Huang B and Li H
Transportation Research Record, 2004
Number 1879, pages 108-113

This paper describes a location-aware travel guide for pedestrians that was designed and implemented with the aid of mobile geographical information systems. The digital travel guide offers a customized user interface and a location-specific travel service.

18. Enhanced system for link and mode identification for personal travel surveys based on global positioning systems

Tsui SYA and Shalaby AS
Transportation Research Record, 2006
Number 1972, pages 38-45

This paper describes a project that developed an integrated global positioning system geographic information system (GPS-GIS) to automate the processing of GPS-based personal travel survey data.

19. Food for thought: catching transport information in a web

Ramsey B and Bates I
Traffic Engineering and Control, 2005
Volume 46, Issue 3, pages 95-97

The paper shows how the latest web based technologies can assist in the understanding, analysis and dissemination of travel planning information.

20. Google Transit

Faludi J
Word Changing, 2005

A review of the transport data service launched by online company Google in 2005.

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See the update of this article from June 2007

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