



Fact sheet – GIS Applications in Transport

Number 7, 2014

Part of the [Tranzinfo Hot Topics](#) series, this fact sheet offers a selection of material on GIS applications in transport. A Geographic Information System (GIS) integrates hardware, software, and data for capturing, managing, analysing, and displaying all forms of geographically referenced information. It allows the user to visualise, question, analyse, interpret, and understand data to reveal relationships, patterns, and trends.

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Articles and Reports

[Systematic process to develop a strategic goods movement network in Peel Region, Canada](#)

Kruger, D; Plumeau, P; Murray, D; Pierce, D; Saiyed, S

Transportation Research Board 93rd Annual Meeting, 2014

This paper describes the creation of a strategic goods movement network. Using visual treatments the study integrated public and private stakeholder input with truck movement data, GIS layers and modelling outputs.

[Accurate and affordable location technology for New Zealand](#)

Barnston, D; Brill, R; Harding, A; Jamieson, N J; Ladd, M; Stillwell, N

New Zealand Transport Agency, Research Report no. 535, 2013

This research aimed to support the increased use of appropriate location technology by NZ Transport Agency's key providers. Mapping grade global

navigation satellite systems (GNSS) and consumer grade GNSS combined with mobile geographic information systems and imagery were found to be the most appropriate options for immediate use.

[Emerging digital mapping requirements for C-ITS](#)

Bennett, P.; Han, C.; Green, D.; Gaffney, J
Austroads Research Report AP-R432-13, 2013

This report formed part of the Austroads NT1632 Cooperative Intelligent Transport Systems (C-ITS) project and focuses on the emerging mapping requirements for C-ITS applications, particularly the assistance of digital road maps to provide location information of road entities relative to the road, and to potentially assist vehicle positioning through map matching algorithms.

[Development of an interactive GIS based work zone traffic control tool](#)

Bringardner, J; Gemar, M; Machemehl, R
Texas A and M University, Southwest Region University Transportation Center, 2013

The purpose of this study was to include consideration for intersections into a GIS traffic control planning tool, enabling capacity calculations at any signalized intersection, and informing users about the effects of a construction plan. Available data for making intersection control calculations were collected and integrated into the design of the tool.

[Beyond sharing: cultivating cooperative transportation systems through geographic information science](#)

Miller, HJ

Journal of Transport Geography, Vol 31, 2013, pages 296-308

This paper discusses the role of sensed transportation, geographic information science, and social media to cultivate transportation systems where participants share, cooperate and act collectively to solve operational, tactical and strategic mobility and accessibility problems.

[Uses of cloud technologies for geospatial applications: case studies of select transportation agencies](#)

Federal Highway Administration, Washington, DC, 2013

Report with US case studies of transport agency uses of cloud computing to support GIS applications.

[Assessment of the geographic information systems' \(GIS\) needs and obstacles in traffic safety](#)

Scopatz, B; Lefler, N; Eccles, K

Federal Highway Administration, Washington, DC, 2013

This project assesses GIS practices, obstacles, and opportunities in traffic safety programs and recommends ways to improve GIS use for safety analysis and decision making.

[Applications of geographic information systems \(GIS\) for highway traffic noise analysis: case studies of select transportation agencies](#)

Federal Highway Administration, Washington, DC, 2012

GIS enables users to more easily manage, analyze, and present geospatial information, helping transportation agencies evaluate noise impacts from highway traffic and identify noise mitigation options. This report synthesizes the observations from eight case studies to identify examples of noteworthy practices, consider the pros and cons of GIS applications for noise, and determine how these applications might be best utilized.

[Best practices in geographic information systems-based transportation asset management](#)

Federal Highway Administration, Washington, DC, 2012

Benefits, challenges, trends, research needs and case studies are among the areas covered in this overview of GIS applications for transport asset management.

[Case studies in Geographic Information Systems for internet portals](#)

Federal Highway Administration, Washington, DC, 2012

Five US case studies are documented in this report, which also offers a list of essential portal components and a 'lessons learned' section.

[A web-based pavement performance and maintenance management and GIS mapping system for easy access to pavement condition information](#)

Zhang, Z; Murphy, M R

Texas Transportation Institute, 2012

This web-based system consists of two major modules: a GIS module for displaying the PMIS information, and a decision-support module termed Pavement Performance & Maintenance Management that focuses on monitoring the pavement network and managing its maintenance and rehabilitation activities.

[Ohio's location based response system: how one set of highly accurate, shared mapping data is saving time, money and lives across the Buckeye State](#)

Ohio Department of Administrative Services and the Ohio Office of Information Technology

White Paper, 2011

A look at the Ohio Location Based Response System, which has become a reference tool for all levels of state government and private industry.

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Books

[Progress in location-based services](#)

Krisp, J. (ed.)

Springer-Verlag, 2013

This book aims to bring together knowledge and learnings from various disciplines on location-based services and their current and potential impact.

[Springer handbook of geographic information](#)

Kresse, W.; Danko, D. (eds.)

Springer-Verlag, 2012

An introduction to the concepts of GIS and their application, this book is organized in three parts: Basics, Geographic Information and Applications.

[Building a GIS: system architecture design strategies for managers](#)

Peters, D.

2nd ed., Esri Press, 2011

The book highlights a selection of GIS operations and is intended for IT experts adopting the technology, GIS professionals new to system design, and executives interested in change management.

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Organisations

[Australian and New Zealand Land Information Council](#)

ANZLIC is the peak government body in Australia and New Zealand with the core responsibility for the stewardship of spatial information, including policy formulation.

[Cooperative Research Centre for Spatial Information](#)

CRC SI is an international R&D centre set up in 2003 under the Australian CRC Program. It is a government, industry, and research joint venture that conducts user-driven research in areas of spatial information that address issues of national importance.

[Geoscience Australia](#)

Geoscience Australia is a Federal Government agency advising on all aspects of geoscience, and is custodian of the geographic and geological data and knowledge of the nation.

[INSPIRE: Infrastructure for Spatial Information in the European community](#)

The INSPIRE directive aims to create a European Union (EU) spatial data infrastructure, to enable the sharing of environmental spatial information among public sector organisations and to better facilitate public access to spatial information across Europe.

[The Office of Spatial Policy](#)

OSP is an organisation which exists within the Federal Department of Resources, Energy and Tourism (RET). It is a central policy unit, responsible for facilitating and coordinating spatial data management across Australian Government agencies.

[Transit GIS Clearinghouse](#)

The Transit GIS Clearinghouse was created by the (US) National Center for Transit Research (NCTR). The Clearinghouse's purpose is to share innovative GIS solutions and how they can improve public transportation

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Standards

There is a group of International Standards - [19100 series](#) - to support the management, acquiring, processing, analysing, accessing, presenting and transferring of data between different users, systems and locations for geographic information.

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Conferences

Forthcoming

[Locate14](#)

7-9 April 2014, National Convention Centre, Canberra

LOCATE is a new annual conference and exhibition for location information in Australia and New Zealand, consolidating the top Australian spatial industry events, including the *spatial@gov*® Conference and Exhibition and the national conferences run by the Spatial Industries Business Association (SIBA) and the Surveying & Spatial Sciences Institute (SSSI).

Proceedings

[GIS in Transit Conference](#)

16-17 October 2013, Washington, DC

This conference was jointly organized by the US National Center for Transit Research (NCTR), Transportation Research Board (TRB), and Urban and Regional Information Systems Association (URISA). The conference was aimed at transit planners, managers, researchers and GIS industry experts interested in sharing ways to use geographic and spatial analysis in planning, operations, and marketing to increase efficiency and effectiveness.

[Geographic Information Systems \(GIS\) in Transportation Safety](#)

National Transportation Safety Board

4–5 December 2012, Washington, DC

The National Transportation Safety Board brought researchers and practitioners in the transportation safety and GIS communities together to discuss how GIS data, technologies, and techniques are applied to improve transportation safety. The conference aimed to identify emerging themes, current challenges, and potential solutions in using GIS in transportation safety in all modes of transportation.

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