Improving National Transportation
Geospatial Information

December 14, 2007
The National Academies Keck Center
Washington, D.C.

Organizer
TRB Geographic Information Science and Applications Committee

Cosponsors
The National States Geographic Information Council
TRB Statewide Transportation Data and Information Systems Committee
TRB National Transportation Data Requirements and Programs Committee
TRB Critical Transportation Infrastructure Protection Committee

Supported by
Federal Highway Administration Office of Interstate and Border Planning

www.TRB.org/conferences/2007/Geospatial
Participating in National Initiatives

This workshop will examine the potential benefits and costs for the transportation community from improvements to the national geospatial information infrastructure for transportation. The information from the workshop should serve to inform both the transportation and mapping communities about potential strategies for transportation participation in national geospatial information. The specific workshop objectives are to:

- Investigate the likely applications, benefits and costs of an improved national geospatial information system for the transportation community;
- Identify likely users, beneficiaries, and funding sources;
- Discuss key data elements that could be included;
- Suggest potential roles, mechanisms for sharing data, and approaches to integrate required data for multiple sources; and
- Explore institutional arrangements that could facilitate such an initiative.

Highways and streets likely will be dominant in our discussions because of wider interest and more mature geospatial activities in these areas. I encourage all who are interested in the use of geospatial information to improve the performance of the transportation system to join in the workshop deliberations.

—Reginald R. Souleyrette
Planning Committee Chair and Cochair of the TRB Geographic Information Science and Applications Iowa State University

Who Should Attend

- Transportation professionals interested in access to better multipurpose spatial data;
- GIS-T managers interested in making the case for improved spatial data infrastructure; and
- State GIS coordinators interested in improving working relationships with transportation policy and decision makers.

Reginald Souleyrette, Professor, Iowa State University, Chair
Joseph Burns, National Transportation Liaison, U.S. Fish and Wildlife Service
Robert Denaro, Vice President, NAVTEQ
Peggi Knight, Director, Office of Transportation Data, Iowa Department of Transportation
Steve Lewis, Geospatial Information Program Manager, Research and Innovative Technology Administration
David Moyer, National Geodetic Survey (retired)
Roger Petzold, Team Leader, Office of Intermodal and Statewide Programs, Federal Highway Administration
Mark Sarmiento, Federal Highway Administration
Ronald L. Vibbert, Manager, Asset Management Section, Michigan Department of Transportation
Joyce Wenger, Manager, Federal Transportation Business, Booz Allen Hamilton, Inc.
Daniel K. Widner, Coordinator, Virginia Geographic Information Network, State of Virginia
Frank Winters, GIS Manager, New York State Office of Cyber Security and Critical Infrastructure Coordination, State of New York
Roger Petzold, Federal Highway Administration
Thomas M. Palmerlee, Associate Division Director, Transportation Research Board
David Floyd, Senior Program Associate, Transportation Research Board

WORKSHOP PLANNING COMMITTEE

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TRANSPORTATION RESEARCH BOARD

The Transportation Research Board is a division of the National Research Council, which serves as an independent adviser to the federal government and others on scientific and technical questions of national importance. The National Research Council is jointly administered by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The mission of the Transportation Research Board—one of six major divisions of the National Research Council—is to promote innovation and progress in transportation through research. In an objective and interdisciplinary setting, the Board facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation. www.TRB.org
Opening Session

- **Welcome and Workshop Objectives**
  Reginald Souleyrette, Professor, Iowa State University and Workshop Chair
- **Federal Highway Administration Comments**
  Jill Hochman, Director, Office of Interstate and Border Planning
- **Initiatives to Improve National Geospatial Infrastructure**
  Stu Davis, Administrator, Enterprise Shared Service, State of Ohio and President of the National States Geographic Council (NSGIC)
- **Geospatial Information to Improve Transportation Decision Making**
  David S. Ekern, Commissioner, Virginia Department of Transportation

Overview of the Breakout Sessions on Geospatial Information Application Topics

- **Emergency Management and Security**
  John Contestable, Director of Engineering and Emergency Services, Maryland Department of Transportation
- **Improving National Geospatial Safety Data**
  Thomas M. Welch, State Transportation Safety Engineer, Iowa Department of Transportation
- **Corridor Management and Congestion**
  Brian Rowback, Executive Director, Operating Division, New York Department of Transportation
- **Routing and Navigation**
  Robert P. Denaro, Vice President, NAVTEQ
- **Environment and Planning**
  Joseph Burns, National Transportation Liaison, U.S. Fish and Wildlife Service

Application Breakouts

*Pick up lunch and go to breakout sessions.*

**Emergency Management and Security**

Since emergency management and security activities are inherently related to location there are distinct benefits that could be gained from a national transportation geospatial application. Overall, use of such data would provide a common operating picture for decision makers, showing what relevant activities are occurring and where. In most current cases, decision makers either don’t have access to sufficient regional data, don’t have access to data in one place or from one source, don’t have data from multiple sources in the same format, don’t have access to data as quickly as is needed, don’t have data of the appropriate scale, or most significantly, don’t have geospatial information associated with much of the data they do have. Access to information through a single software application (which would draw on multiple data sources) could provide considerable benefits, such as convenience and speed, for assessing situations and making decisions.

**Improving National Geospatial Safety Data**
Reginald Souleyrette, Professor, Iowa State University; and Ronald L. Vibbert, Manager, Asset Management Section, Michigan Department of Transportation, Facilitator

Traffic safety professionals make extensive use of the road network to plan and execute engineering, enforcement, education, and emergency response treatments for safety problems. Analyses range from site-specific studies to regional, statewide, and even national assessments. These require varying degrees of detail and attribution of the road network. Few states geocode crash information for all crashes on all public roads. For those states or local agencies that do geocode crashes, roadway attributes are similarly rare for all roads. While nonspatial data may be compiled to assess state performance, crash data by type and severity must be correlated to road type by attribute to “normalize” any comparisons. There is concern about the way the information is presented, because no single measure of safety covers all aspects that may influence the allocation of resources.

**Corridor Management and Congestion**
Frank Winters, GIS Manager, New York State Office of Cyber Security and Critical Infrastructure Coordination, Facilitator

Congestion and corridor management requires seamless GIS data which spans state lines and all jurisdictions of roads. The motoring public or freight industry really don’t care who owns the road they just expect that “government” has their act together to make the system work. As an example, a tie up on I-95 in New Jersey may send vehicles onto state, county, and local roads. This flooding of roads comes over the line to New York, which will affect a parade scheduled on Main Street of some small village. Good seamless GIS data, which provide a common operating picture for all levels of government is critical to putting in place the means to deal with congestion, both before and during events.

**Routing and Navigation**
Robert P. Denaro, Vice President, NAVTEQ; and Peggi Knight, Director, Office of Transportation Data, Iowa Department of Transportation, Facilitator

Routing and navigation make extensive use of the road network to solve the problem of shortest path to a selected destination from current vehicle position. The “shortest” path can be in terms of time or distance, typically time, and other constraints can be included such as avoiding known hazards, low bridges, sharp turns, legal vehicle restrictions, etc. Use of road network information for special operations such as emergency response or evacuations may require additional information about the road infrastructure such as key facilities, bridge and tunnel identification and classification, rail crossings, river crossings, and other data. Routing of vehicles is rarely restricted to a single state or smaller jurisdiction. In order to route successfully, an absolutely fixed standard format and content for the data is necessary. Not only does this enable seamless navigation across legal boundaries, but in-
vehicle systems need to access and interpret the data in a consistent manner. It is extremely costly to collect and process road data for navigation. There is little consistency and often lack of completion of road attributes by various municipalities, whether at the city, county, or state level. Standardizing the data collection within states and developing a method for sharing data between states would assist greatly in development of national geospatial data. Improved records, standard coding, and dissemination of road data by all authorities would be very useful. The freshness of the data and change management are issues.

Environment and Planning
Joseph Burns, National Transportation Liaison, U.S. Fish and Wildlife Service, Facilitator

Geospatial data can assist transportation specialists in understanding the ecological implications of an individual transportation project and the cumulative impacts of a larger regional or statewide transportation system on the natural environment. Increased understanding of the ecological relationships and the implication of those ecological relationships can improve transportation designs that minimize impacts to the environment, reduce mitigation costs, and project delivery delays due to environmental impacts. As individual environmental elements are influenced ultimately by ecological processes that are regional or even global in nature, data that provide a larger regional or national context can identify ecological relationships and pathways that may pass through the project planning area and design projects that minimize or avoid disruptions to these pathways and ultimately minimize environmental impacts. And, as individual transportation projects are part of a larger system, which occur beyond regional, state, and even national boundaries, regional and national context can improve the overall efficiency of the transportation system by improving multimodal connections that span regional or state boundaries.

2:30 p.m.–3:00 p.m.
Break

3:00 p.m.–4:00 p.m.
Reports from Discussion Breakouts
Key benefits from improved national geospatial information, efforts needed to obtain them, and potential next steps will be reported.

- Emergency Management and Security
  Joyce Wenger, Booz, Allen, Inc.
- Safety
  Ronald Vibbert, Michigan Department of Transportation
- Corridor Management and Congestion
  Brian Rowback, New York State Department of Transportation
- Routing and Navigation
  Robert Denaro, NAVTEQ
- Environment and Planning
  Joseph Burns, U.S. Fish and Wildlife Service

4:00 p.m.–5:00 p.m.
Conclusions and Steps to Increase Benefits to Transportation from Geospatial Information

- Observations from a Transportation Professional
  Anthony R. Kane, Director, Engineering and Technical Services, American Society of State Highway and Transportation Officials
- Observations from a Geospatial Professional
  Stu Davis, Administrator, Enterprise Shared Service, State of Ohio and Past President of the National States Geographic Council
- Discussion
  Reginald Souleyrette, Facilitator

REGISTRATION AND HOTEL INFORMATION

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* Includes State DOTs

Refund Policy
Refunds will be issued, less a $50 cancellation fee, for all cancellations received in writing by Friday, November 23, 2007. No refunds will be issued thereafter.

HOTEL INFORMATION
Hilton Garden Inn
815 14th Street, NW
Washington, DC 20005

Rates: $195 per night plus the current tax of 14.5%.
Hotel Cutoff: This rate is available until Saturday, November 1.
Reservations: Send an e-mail to Kimberly_Anderson-Felga@hilton.com and include the event name: TRB Improving National Transportation GIS.

CONTACT
For more information, contact Tom Palmerlee, tpalmerlee@nas.edu, 202-334-2907, or David Floyd, dfloyd@nas.edu, 202-334-2966.