POLICY AND ORGANIZATION GROUP

Committee Triennial Strategic Plan (TSP)

Committee Name and Number: Geographic Information Science and Applications (ABJ60)

Committee Chair: James P. Hall, University of Illinois Springfield

TSP Three-Year Period: April 2015 to April 2018

Date Prepared: April 2015

1. Committee Future Outlook Statement

Current Committee Scope

The scope of this committee includes all aspects of the spatial, locational and temporal data used in transportation. The committee is interested in both research into and applications of this information and its associated information systems, commonly referred to as Geographic Information Systems in Transportation (GIS-T). The committee will provide a focal point for and promote coordination of GIS- T activities within the TRB committee structure. Relevant activities include the application of spatial data and spatial sciences across the entire domain of transportation information systems.

Factors and Influences

The committee has identified the following trends over the next seven years, which will influence committee activities.

National

- MAP-21 emphasis on geospatially identifying and reporting all public roadways in the U.S. developing a comprehensive spatial transportation data layer
- Web distribution of national, state and local spatially referenced transportation resources

State and Local Transportation Agencies

- Enterprise deployment of geospatial data resources
- Increasing integration and use of spatial data collection and analysis for multiple transportation modes including roadway, transit, aviation, freight, bike, and pedestrian
- Integration of comprehensive three dimensional spatial information resources through design, construction, and operations processes

- Expanding geospatial products in executive level decision making activities
- Increased access and sharing of geospatial data resources across multiple jurisdictional and organizational boundaries
- Increasing public expectations for spatially referenced transportation information
- Emphasis on geospatial data stewardship and management
- Development of geospatial decision making products focused on internal and external decision makers
- Transportation agency utilization of spatially relevant social network and other crowdsourced information
- Availability of detailed, action-oriented operations information to policy makers, planners, and system managers.
- Use of geospatial information in real time transportation resource and asset management
- Evolving critical issues in transportation presenting ever more difficult challenges for transportation planners who are charged with envisioning, planning, and developing transportation systems to address these issues. As an example, preparing the transportation spatial information infrastructure necessary for use by automated and connected vehicles.

Spatial Technologies

- Expanding spatial data analysis tools and capabilities
- Rapid advancements in the capture and storage of a wide variety of geospatially referenced data for transportation asset inventory and performance analysis
- Increasing complexities in the integration of geospatial data with differing precision, accuracies and formats
- Transportation system performance monitoring using innovative spatial data mining and analysis techniques
- The development of specialized geospatial tools for data analysis and assessment in specific categories e.g. safety, environment

Critical Issues in Transportation

Past Committee efforts to develop a research agenda identified seven specific research focus areas with vision statements as follows:

Research Focus Areas	Vision Statement
Safety	To research and promote application of spatial data and information science technologies to improve safety on transportation networks.
Operations	To research and promote the use of spatial data / information science for distilling new transportation system performance data into useful information and enlightened understanding for decision-making. To research the measuring, monitoring, evaluating, forecasting, and reporting of spatial data / information for transportation system operations.

Environment	To develop universal applications and/or methodologies that can provide a coordinated and cooperative enterprise-based process for early detection of all facets of environmental constraints in transportation planning.
Planning	To enable planners to effectively utilize the rapidly growing wealth of geospatial data and information technologies in order to better address critical transportation issues.
Infrastructure	To advance the application of spatial analysis tools and technologies to add value and improve organizational decision-making practices in asset management and resource allocation. In essence, to meet the needs of practitioners and decision makers at multiple levels in public transportation agencies.
Security	To apply methods of geographic information science to problems of transport security including the development of tools for security enhancement, security related data management i.e. the collection, protection, and appropriate sharing of information, and the protection of individual rights with respect to transport information.
Science	To research evolving, high priority technological and implementation challenges facing the broader transportation geoscience community.

The committee notes that these focus areas closely fit with items identified in TRB's 2013 report on the critical issues in transportation: system performance, safety, energy/climate/environment, and innovation.

2. Committee Plan

Given the wide applicability of geospatial information science to activities of the Transportation Research Board committees and the broader transportation community, the committee has identified the primary goal of continuing to participate in outreach activities to develop timely and relevant research needs statements. The following is the committee's plan over the seven research areas.

Safety

Explore relevant spatial data and information science technologies and develop tools to improve data accuracy, evaluation, integration, and analysis in a wide range of areas such as engineering, emergency preparedness, enforcement, as well as education. The focus will be on addressing high priority safety needs and include spatially enabled methods such as automation, integration, and the use of advanced technologies. This would be accomplished through outreach efforts, such as peer exchanges and workshops, to reach the broader safety community represented by TRB Safety Section committees, NHTSA, AASHTO and US DOT.

Operations

Outreach to relevant committees and organizations to identify cross cutting research needs relevant to traffic monitoring and operations/congestion assessment. Relevant TRB committees include ABJ35 – Highway Traffic Monitoring, ABJ90 - Freight Transportation Data, and ABJ20 – Statewide Transportation Data and Information Systems.

Environment

Expand communication exchange, data integrity standards and cooperative training with the broader environmental science committee. This would be accomplished through the initiation of contacts with TRB Committee ADC30, Ecology and Transportation and through relevant sessions at TRB and the GIS-T conferences.

Planning

Expand on outreach activities with AASHTO through the GIS-T conference and the Standing Committee on Planning (SCOP) to identify research needs for enhanced geospatial-enabled planning tools and methods to address the critical transportation issues. Potential activities include peer exchanges and sessions at TRB and the GIS-T conferences. A primary goal is to increase state DOT representatives on ABJ60, and to hold a midyear meeting at the annual AASHTO GIS-T conference, and to partner with the GIS-T conference planning committee on research activities. Increase committee interaction with TRB Committee ABJ30 – Urban Transportation Data and Information Systems.

Infrastructure

Continue outreach activities with the Asset Management community to identify effective enhanced geospatial-enabled planning tools and methods to address the critical transportation issues. Continue to develop linkages with TRB Committees ABC40 – Transportation Asset Management and ABC30 – Performance Measurement. Participate in FHWA and AASHTO Asset Management activities through committee members.

Security

Establish a dialogue with relevant TRB committees, e.g. ABE40 - Committee on Critical Transportation Infrastructure Protection, and with the US Department of Transportation to identify potential areas of research.

Science

Identify areas of research in the broader transportation geospatial science community through active participation in the ABJ00 research subcommittee with the identification of cross cutting issues and developing relevant workshops and call for papers at TRB annual conferences. Continue to build on relationships with the ABJ95 – Visualization in Transportation.

3. Committee History

The committee's history over the last three years is summarized in annual reports submitted to TRB each year. These reports provide a permanent record of what the committee has accomplished in the last triennium. The 2012, 2013, and 2014 annual reports are provided below (Note: Double click on each icon to open the corresponding report). The annual report for the April 15, 2014 – April 15, 2015 will be submitted in March 2015. (TO BE ADDED)

	This report documents activities completed by the committee from April 15, 2011 to April 15, 2012.
	This report documents activities completed by the committee from April 15, 2012 to April 15, 2013.
	This report documents activities completed by the committee from April 15, 2013 to April 15, 2014.