Regional ITS Architecture Development in Rural and Small Urban Areas

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ABSTRACT

Intelligent transportation systems (ITS) have been used across the United States to improve safety, enhance operations, and boost customer service. Traffic signal timings automatically adjust to regulate traffic flow, electronic signs advise motorists of hazards and alternate routes, and computer and telephone systems keep drivers abreast of travel conditions along their intended routes. Sometimes, however, those systems are not so seamless. As traffic moves from one jurisdiction to another, for example from rural highways to city routes or across state lines, information flow can be interrupted or inconsistent. Drivers may become confused and traffic may slow to a crawl.

To avoid those situations, the Federal Highway Administration (FHWA) is requiring transportation planning regions nationwide to develop a Regional ITS Architecture, a plan and vision for ITS implementation and use. Regions that do not comply by the spring of 2005 will no longer receive federal highway funding for ITS projects. The regional architecture will serve as a roadmap guiding future ITS planning, detail system requirements, coordinate agency roles, and integrate functions across jurisdictional lines. Therefore, the architecture development brings together nontraditional stakeholders while it emphasizes interagency and interjurisdictional coordination and operations.

This paper will discuss North Dakota’s approach to meeting FHWA requirements and developing regional architectures that facilitate ITS in the state. It will report on four regional ITS architecture developments carried out by the Advanced Traffic Analysis Center at North Dakota State University. The paper discusses possible approaches that may be useful to other regions developing, using, and maintaining ITS architectures. It illustrates successful stakeholder participation strategies using a targeted small group format. The use of Turbo Architecture to generate architecture information and support stakeholder discussions is also explained. The paper also provides examples of using the architecture for a project involving two state transportation departments as part of the North/West Passage Pooled Fund Study.

Note: This research was still in progress at the time of publication; contact the lead author above for more information.

Key words: intelligent transportation systems—North/West Passage Pooled Fund Study—regional ITS architecture