Current Canadian GIS-T Practice, Trends and Priorities

AASHTO GIS-T 2016 Symposium Session 3.3 Process Improvement

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Presentation Outline

- Background

- 2015 Canadian GIS-T Survey

- Current Canadian GIS-T practice, trends and priorities

- AASHTO GIS-T Task Force Liaison

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Background and Context (2015)

- AASHTO provides support for exchange of GIS-T best practice in the US:
  - GIS-T Task Force of the Subcommittee on Information Systems - sponsors the following initiatives:
    - Annual GIS-T survey of US states
    - Annual GIS-T Symposium: provides a forum to exchange ideas on current best practice
    - Proceedings are published on their website: **www.gis-t.org**
- No current equivalent Canadian forum for exchange of GIS-T best practice information
  - Canadian agencies can participate in the Symposium, but limited attendance recently
  - No annual survey of provinces / territories

Canadian GIS-T Survey

- Undertaken by Opus to assess current state of practice in Canada
- Target audience: provincial / territorial transportation agencies
  - GIS-T contacts confirmed in advance of survey
- Based on AASHTO GIS-T survey questionnaire
  - Received approval to use their questions
  - Agreed to provide copy of summary report
  - Some modifications made:
    - Fewer questions (31 vs 45)
    - Revised wording for Canadian geospatial environment
    - Added Asset Management specific questions (4)
- Conducted online using Survey Monkey
  - Initiated on Aug. 5, closed on Sept. 11

Canadian GIS-T Survey: Highlights

- 11 of 13 agencies responded
- Trends:
  - Consolidation of GIS data and services
  - Increased use of web applications / services
  - Increased use of mobile devices for field data collection
- Primary use of GIS-T to support AM applications:
  - Inventory management
  - Asset renewal and capital planning / programming
  - Highway maintenance management
  - Public communications (i.e. web portals)
- Support for creation of GIS-T Special Interest Group

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Current Projects and Priorities

- Asset Management: (10 of 11 respondents)
- LRS and Road Network Management Systems (RNMS): (8)
- Others:
  - Web mapping (5)
  - Asset inventory (5)
  - Mobile Mapping / GPS (4)
  - Data Integration / Maintenance (4)
  - Enterprise Architecture (4)

GIS Organization

- Most agencies (10 of 11) have a core group to provide GIS services
  - Only 2 have implemented enterprise GIS databases and applications
  - No consensus on location of group: IT and mapping / surveying most common
  - Many (7 of 11) agencies have recently made – or are actively discussing – organizational structure changes
- Staffing:
  - 5-10 FTEs most common, none have more than 20
  - Educational background: Geography / Cartography, Engineering / Surveying and IT
  - Little use of part-time employees and contractors
- Most agencies have either consolidated or are considering consolidation of GIS data and services across all offices
  - Also a trend toward further consolidation at provincial level

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GIS Technology

- ESRI most widely used, Intergraph by some
- RDMS: Oracle and SQL Server
- Spatial data management: Oracle Spatial, ArcSDE
- Web services being used by most
  - Move toward cloud based geospatial services
- Many either using or investigating the use of geospatial technologies on mobile devices in support of field data collection initiatives

GIS Data

- Most (8) agencies maintain an digital road network database, others leverage provincial / territorial data
  - Half contain all public roads, others only signed routes
  - Most databases conform to provincial / national standards, many are NRN based
  - Minimum accuracy: 10 meters
- Most agencies (8) distribute data free of charge to other government agencies
  - Some (4) make data freely available to all via web services

GIS-T Benefits and Costs

- Major benefits from projects supporting:
  - Enterprise data integration (5)
  - Asset management (4)
  - GIS / CAD integration (3)
- Most costly projects were those associated with Enterprise data integration
- Perceived priority areas for future benefits:
  - Asset management (7)
  - Corridor and/or system planning (4)
  - Enterprise data integration (4)

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Support for Asset Management

- Survey added 4 questions focussed on GIS-T support for asset management
- Top priorities:
  - Spatial management of asset inventories (7)
  - Asset renewal and capital planning / programming (7)
  - Highway maintenance management (7)
  - Public communications (i.e. web portals) (7)
- Primary issues and challenges:
  - Technology issues (software incompatibilities, ease of use, etc.) (4)
  - Integration with other corporate systems (4)
  - Organizational change management (4)
- No clear consensus on major future opportunities, but general theme of overall *enterprise data integration / management* enabled through geospatial technologies

Future Direction

- Most respondents (8) supported the creation of a Canadian GIS-T Special Interest Group

- Proposal submitted to the Asset Management Task Force (AMTF) of the Transportation Association of Canada (TAC)

- Key points of proposal:
  - A subcommittee of the AMTF
  - SIG focus: promote the use of GIS technologies in support of EAMS solutions for Canadian transportation agencies at all levels of government
  - Liaison with the AASHTO GIS-T Task Force
  - Conduct of an annual Canadian GIS-T survey

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Canadian GIS-T Subcommittee

- Proposal approved by TAC Chief Engineers Council
- Initial organizational meeting at TAC Spring Meetings
- First formal subcommittee meeting at TAC Fall Meeting
- Follow up discussions with AASHTO GIS-T Task Force:
  - TAC as a Sponsor of the GIS-T Symposium
  - Agree to provide results of the annual Canadian GIS-T survey

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Summary

- In general, Canadian GIS-T trends, priorities and practices similar to those reported by the US states through the AASHTO survey

- We hope to continue and strengthen our liaison with AASHTO through a formal Canadian GIS-T organization

- A special "Thank You" to the AASHTO GIS-T Task Force for their support and encouragement!

Questions?