

Urban Transit ITS Needs in Canada

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ITS Canada Workshop

Outline

- **Basic components and functionalities**
- **Development of Transit ITS in Canada**
- **Issues**
- **Transit ITS Needs**
- **Remarks based on:**
 - **Review for Transport Canada-TDC**
 - **ATLANTIC Network discussions**
 - **Working with Individual Transit Systems**

Basic Components of Transit ITS

- **Intelligent / Smart Vehicles**
 - with on-board computers / data storage
- **Mobile Communications**
- **Location (e.g. GPS)**
- **Control Centre**
- **Connected Services**
 - Call Centre
 - Garages
 - Archived Data

Transit ITS Functionalities

- **Communications / CAD**
- **AVL**
- **Security**
- **Schedule Adherence**
- **APC**
- **Advanced Fare Collection**
- **Transit Signal Priority**
- **Customer Information (En-route, Pre-trip)**
- **Analysis using Archived Data**

Transit ITS in Canada

Evolution

- **Early deployments of multi-function Transit ITS systems (1985-1995) - Leadership**
- **Severe financial restrictions on capital since early 1990's and little investment in ITS technology (through late 1990s)**
- **A few stand-alone Transit ITS systems (APC, TSP)**
- **Canada had fallen far behind in Transit ITS deployment compared to Europe and US**

Transit ITS in Canada Evolution



Incremental Turn-Around:

- **Planning for Transit ITS (starting late 1990s),**
- **Often in combination with more sophisticated BRT systems (e.g. Vancouver)**
- **Transport Canada's ITS Deployment and Showcase programs**

Transit and ITS Deployment Grant Program

- **Calgary-Traffic Signal Priority**
- **Go Transit-Rail Information Systems**
- **Ottawa-Intelligent Transit Vehicle Subsystem**
- **Outaouais-Dynamic Message Signs**
- **Peterborough-Integrated Traffic Control and TSP**
- **Richmond-Vancouver Rapid Transit Evaluation**
- **St John's Nfld-Metrobus GPS-based AVL System**
- **Toronto IMS Multi-Application Smart Card**
- **York Region-TSP**

Transit ITS in Canada

Observations

- Clearly much interest in ITS in the Canadian transit community
- Increased thinking, and some limited deployments (but only 1 new system-wide ITS since 1997)
- *But, highly constrained fiscal environment*
(among the most constrained in developed world)

Transit ITS in Canada- Issues Funding

- **Federal and Provincial programs create incentives and momentum**
- **Proposal writing occupying increasing amounts of transit staff time**
- **Evaluation times for Federal and Provincial competitions lengthy (difficult to integrate / mainstream)**
- **Business Cases remain important considerations**

Transit ITS in Canada - Issues

Lack of Information

- **Very piecemeal knowledge among transit systems:**
 - **What is out there?**
 - **What is future?**
 - **Where to start?**
- **Lack of dissemination**
- **Few project evaluations (and often hard to obtain)**
- **National Architecture and standards: implications for transit?**

Issues for Transit Systems

- **What are goals and priorities?**
- **What is business case?**
- **How to structure process?**
- **Implications for organization**
 - **expertise and staffing**
 - **management of technology**
 - **operations**
 - **maintenance**
 - **use of information**
- **Coordination with other departments, agencies**

Transit ITS in Canada - Issues

General

- **“Strategic” approach to Transit ITS**
- **Planning for ITS: Transit’s needs within municipal/regional architecture**
- **Proliferation of stand-alone systems**
- **Migration/Integration of ITS for segmented BRT systems to rest of fleet**

Canadian Transit ITS Needs

- **Transit ITS R&D Needs Related to Specific Applications**
- **Data-Related Issues and Applications**
- **R&D Needs Related to Transit ITS Deployment**

Transit ITS Needs Related to Specific Applications

- **Transit Signal Priority (TSP)-technical and institutional issues**
- **Communications strategy / Transit requirements in municipal trunk radio systems**
- **Real-time transit operations control models using AVL**
- **Transit customer information strategy (within transit and for higher-level ATIS initiatives)**
- **Transit contactless smart card AFC -institutional and technical barriers**
- **Dynamic routing and scheduling of demand responsive transit.**

Transit ITS Needs

Data-Related Issues and Applications

- **Information as “strategic” resource**
- **Role of GIS and location-based data in Transit**
- **Use of APC and AVL data for planning, management, and customer info**
- **Integrating ITS with standard transit planning methodologies and practice**

Transit ITS Needs Deployment



- **Dissemination of experience of Transit ITS deployments**
- **Benefits, cost-effectiveness, and business models of Transit ITS applications**
- **Planning and project management - model approaches**
- **Transit ITS and the Canadian ITS Architecture**

Conclusions

- **Growing interest in Transit ITS**
- **Many identified technical needs**
- **Programmatic Funding and mainstreaming ITS**
- **“Strategic” approach to Transit ITS**
- **Benefits, Costs, and Business Cases**
- **Building expertise within transit systems**
- **Dissemination and sharing of experience**