ITS – New Directions ...to the Digital Economy

ITS Canada ACGM
June, 2012

Images from U.S. DOT RITA¹, The Economist² and the City of Toronto³
1. ITS Background and Objectives
2. ITS Framework and Results
3. The 2012 Context and Challenges
4. A different Paradigm
5. Your thoughts?
1. Initiated in the **early 90’s**

2. ITS responds to:
   - Congestion
   - Energy
   - Environment
   - Safety

3. **Cost/challenges** of deploying technology
   - (e.g. Traffic control systems)

4. Led by government (U.S., Japan, Europe, Canada)
   - Research
   - Planning
   - Pilots/Demonstration Projects

5. **World wide network of ITS Associations**
What is ITS?

- **Intelligent Transportation Systems**

  “the application of advanced sensor, computer, electronics, and communication technologies and management strategies – in an integrated manner – to improve the safety and efficiency of the surface transportation system”
What is ITS?
ITS FRAMEWORK (ARCHITECTURE)
1. Efficiency
   - Increase vehicular capacity
   - Strategic traffic management
     - Networks
     - Corridors
   - Route, time and mode choices
     - Traveller information

2. Safety
   - Collision avoidance
   - Roadway condition warning (traffic, weather, animals, etc.)
   - Mixed use warning (pedestrians, cyclists, etc.)

3. Environmental
   - Reduce Emissions and consumption
• **Reduce cost** and **time** to deploy
• Maximise value from the investments:
  – **Standards**
  – **Common data** structures
  – **Interchangeable** devices
  – **Interoperable** subsystems
• Framework for **interagency cooperation**
Scope of ITS

• Traffic Management (ATMS)
• Traveller Information (ATIS)
• Public Transportation Management (APTS)
• Commercial Vehicle Operations (CVO)
• Emergency Management (EMS)
• Advanced Vehicle Safety Systems (AVS)
What is an ITS Architecture?

“a common framework for planning, defining, and integrating intelligent transportation systems.”

Traffic Management Subsystem

Communications

Roadway Subsystem

IBI Group
ITS Canada

New Directions – to the Digital Economy
June 2012
New Directions – to the Digital Economy

IBI Group
ITS Canada

June 2012

Transit Management

Communications

Roadway Subsystem

Transit Vehicle

CAD / AVL + TSP + Traveller Information
Current Status

• National and Regional ITS Architectures/Strategic Plans

• Many standards developed

• Various solutions deployed
  • Agency specific
  • Implementation times often extended

• Significant developments in foundation elements:
  • Digital mapping
  • Mobile commuting
  • In vehicle/personal navigation systems
  • Communication infrastructure

• Outcome
  • A number of independent ITS systems
EXISTING ITS Systems

CAD/AVL | Brampton
TSP

TS| Mississauga
(2)

CAD/AVL |
TSP |

TS| Burlington
Oakville

CAD/AVL |
TSP |

MTO
ATIS | 511
ATIS | TRIP Portal
ATMS | NGCS
ATMS |NG Lite
CP| LEE Cons.

GO TRANSIT
TIS | Google-based
Trip Planner

Waterloo
TS

407ETR
TOLL |
ATMS | ?

Electronic Payment/Presto

TSP| CTCS (3)

CAD/AVL |

ATMS |
TS |

CAD/AVL |

ATMS| RESCU /

CP |

ATIS |
TS |

CAD/AVL | TTC CIS
CAD/AVL |

IIB Group
ITS Canada

New Directions – to the Digital Economy
June 2012
THE ITS CONTEXT – 2012
• Transportation Funding (VMT)
• Security
• Trade Corridors
• Rapid Technology Development
  • Smart phones
• Social Networks
  • Crowd Sourcing
• Public Expectations
  • Generation “Y”
• Connected Vehicle
• ‘Smart City’
• Costs
  • Responding to ‘unique’ needs (?)
• Funding models
  • Government – Capital versus Operating funds
• Time to deploy
  • Still measured in years (design, bid, build, fix, adapt)
• Agency/Mode centric
• Legacy limitations
  • Our system doesn’t do that
• Institutional inertia
  • IT rules and regulations
  • ‘we don’t do it that way’
THE OPPORTUNITY
• Outsource:

• Design, build and operate:

• P3:

• Services via “The Cloud”
New Directions – to the Digital Economy

The ‘Cloud’

• Non dedicated technology to deliver services to a wide array of end users (SaaS)

• End users access applications through a browser with the business application is housed at a remote location;

• Shared resources - economies of scale (e.g. a utility)

• Quickly access new services

• Payment is for the service
  • SLA’s

• Does it apply to ITS?
“The Cloud” Infrastructure as a Service (IaaS) (Communications)

IBI Group
ITS Canada

New Directions – to the Digital Economy
June 2012
“The Cloud” Hardware as a Service (HaaS)

IBI Group
ITS Canada

New Directions – to the Digital Economy
June 2012
“The Cloud” Software as a Service (SaaS)

**VEHICLES**
- Maintenance & Construction Vehicle
- Commercial Vehicle
- Intermodal Freight Equipment
- Transit Vehicle
- Emergency Vehicle

**CENTRES**
- Traffic Info
- Traffic
- Emergency
- Transit
- Toll

**FIELD**
- Roadway
- Security Monitoring
- Toll Collection
- Parking Management
- Commercial Vehicle Check
- Intermodal Terminal
- Border Inspections Systems

**USERS**
- Connected Vehicle

**Algorithm**
- Data

**ITSC Canada**
IBI Group
 ITS Canada

New Directions – to the Digital Economy
June 2012
Implementation Consideration

- Costs
  - Significant up front
  - Capital cost
- Process
  - Business Rules/Agreements
  - Procurement
  - Development
  - Integration
- Timing: 2-3 years
- Flexibility: Limited
Implementation Consideration

- Costs
  - Operating Cost
- Process
  - Business Rules/Agreements
  - Configuration
- Timing: Months
- Flexibility: Very
### And the Winner is?

<table>
<thead>
<tr>
<th>Consideration</th>
<th>Traditional</th>
<th>‘The ‘Cloud’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to deploy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agency Acceptance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public Expectations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adaptability</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Service Delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connected Vehicle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smart City</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Sector Leadership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexibility</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government Funding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(To be Continued)
Thank You!
Scott Stewart
Managing Director, IBI Group
IBI Group
(416) 596-1930
sstewart@ibigroup.com