Explaining International IT Application Leadership: Intelligent Transportation Systems

January 27, 2010

Presenters:
Robert Atkinson, President, ITIF
Stephen Ezell, Senior Analyst, ITIF

Respondents:
Scott Belcher, President, ITS America
Riz Khaliq, Global Business Executive, IBM
Masahiro Nishikawa, National Institute for Land and Infrastructure Management, Japan
Today’s Presentation

1. What are ITS and what benefits do they deliver?
2. Which countries lead in ITS?
3. What factors have led to their success?
4. What can the U.S. learn from global leaders?
5. Policy recommendations for the U.S.
# Categorizing ITS Applications

<table>
<thead>
<tr>
<th>ITS Category</th>
<th>Specific ITS Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Advanced Traveler Information Systems (ATIS)</td>
<td>Real-time Traffic Information Provision</td>
</tr>
<tr>
<td></td>
<td>Route Guidance/Navigation Systems</td>
</tr>
<tr>
<td></td>
<td>Parking Information</td>
</tr>
<tr>
<td></td>
<td>Roadside Weather Information Systems</td>
</tr>
<tr>
<td>2. Advanced Transportation Management Systems (ATMS)</td>
<td>Traffic Operations Centers (TOCs)</td>
</tr>
<tr>
<td></td>
<td>Adaptive Traffic Signal Control</td>
</tr>
<tr>
<td></td>
<td>Dynamic Message Signs (or “Variable” Message Signs)</td>
</tr>
<tr>
<td></td>
<td>Ramp Metering</td>
</tr>
<tr>
<td>3. ITS-Enabled Transportation Pricing Systems</td>
<td>Electronic Toll Collection (ETC)</td>
</tr>
<tr>
<td></td>
<td>Congestion Pricing/Electronic Road Pricing (ERP)</td>
</tr>
<tr>
<td></td>
<td>Fee-Based Express (HOT) Lanes</td>
</tr>
<tr>
<td></td>
<td>Vehicle-Miles Traveled (VMT) Usage Fees</td>
</tr>
<tr>
<td></td>
<td>Variable Parking Fees</td>
</tr>
<tr>
<td>4. Advanced Public Transportation Systems (APTS)</td>
<td>Real-time Status Information for Public Transit System (e.g. Bus, Subway, Rail)</td>
</tr>
<tr>
<td></td>
<td>Automatic Vehicle Location (AVL)</td>
</tr>
<tr>
<td></td>
<td>Electronic Fare Payment (for example, Smart Cards)</td>
</tr>
<tr>
<td>5. Vehicle-to-Infrastructure Integration (VII) and Vehicle-to-Vehicle Integration (V2V)</td>
<td>Cooperative Intersection Collision Avoidance System (CICAS)</td>
</tr>
<tr>
<td></td>
<td>Intelligent Speed Adaptation (ISA)</td>
</tr>
</tbody>
</table>
ITS Deliver 5 Classes of Benefits

1. Safety
2. System performance
3. Mobility and convenience
4. A cleaner environment
5. Economic and employment growth
ITS Generates Positive Benefit-Cost Ratios

- The benefit-cost ratio of ITS-enabled systems-operations measures is 9 to 1, far above the addition of highway capacity, which has a benefit-cost ratio of 2.7 to 1.
  - Benefits of traffic signal optimization outweigh costs by 38-1.

- GAO estimates implementing a real-time traffic information system would cost $1.2B but deliver $30.2B in mobility, safety, and environment savings, a 25-1 benefit cost ratio.
Which Countries Lead in ITS: Japan

- VICS real-time traffic information. (24M VICS units; 35M vehicle navigation units shipped).

- Smartway–cooperative vehicle-highway system. Melds GPS, real-time traffic information, knowledge of specific roadways to deliver video and visual alerts to drivers.

- 68% of cars traveling on toll expressways have ETC capability.

- Implementing a nationwide bus location system.
Which Countries Lead in ITS? South Korea

- 9,300 buses and 300 bus stops have real-time bus location.

- Smart cards or mobile phones used for 30M contactless transactions per day on public transit.

- 31% of vehicles use on-board navigation systems.

- ETC system covers 50% of highway roads as of 2009, will cover 70% by 2013, and be nationwide thereafter.
Which Countries Lead in ITS? Singapore

- First country to implement electronic road pricing in 1998.
- Nationwide adaptive computerized traffic signals.
- Real-time traffic information collection and dissemination using 5,000 probe vehicles generating traffic information.
- Real-time bus arrival panels at all bus stops.
- National parking guidance system.
- Uses traffic input to predict future traffic flows.
What Factors Explain Country Leadership in ITS?

Non-Policy Factors
- Cultural factors
- Population density
- Geography

Policy Factors
- National level vision & leadership
- Sufficient ITS funding
- Coordinated, nationwide ITS implementation
- Ability to forge public-private partnerships

ITS success

Non-Policy Factors

Policy Factors

Sufficient ITS funding

Coordinated, nationwide ITS implementation

Ability to forge public-private partnerships
Barriers to U.S. Deployment of ITS

- Reliance on states for deployment.
Barriers to U.S. Deployment of ITS

- Reliance on states for deployment.
- **Systemic barriers**: chicken-or-egg system interdependencies; scale challenges.
Barriers to U.S. Deployment of ITS

- Reliance on states for deployment.
- Systemic barriers: chicken-or-egg system interdependencies; scale challenges.
- ITS not politically compelling, in part because there is no assessment system to validate ITS benefits.
Barriers to U.S. Deployment of ITS

- Reliance on states for deployment.
- Systemic barriers: chicken-or-egg system interdependencies; scale challenges.
- ITS not politically compelling, in part because there is no assessment system to validate ITS benefits.
- Lack of funding, which also means vendors less willing to invest in ITS if they are uncertain there will be a market.
Barriers to U.S. Deployment of ITS

- Reliance on states for deployment.
- Systemic barriers: chicken-or-egg system interdependencies; scale challenges.
- ITS not politically compelling, in part because there is no assessment system to validate ITS benefits.
- Lack of funding, which also means vendors less willing to invest in ITS if they are uncertain there will be a market.
- Lack of sufficient federal vision and leadership. (By statute, federal role limited to ITS research, not ITS deployment.)
Policy Recommendations for ITS in the U. S.

- The federal government must assume a far greater ITS leadership role:
  1) ITS is the 21st century equivalent of the Interstate Highway System, and needs the same level of federal government leadership.
  2) U.S. needs a national ITS strategy and a clearly-articulated goal of ITS leadership.
Policy Recommendations for ITS in the U. S.

- The federal government must assume a far greater ITS leadership role:
  1) ITS is the 21st century equivalent of the Interstate Highway System, and needs the same level of federal government leadership.
  2) U.S. needs a national ITS strategy and a clearly-articulated goal of ITS leadership.

- **Significantly Expand Funding**
  - Reauthorization should include a dedicated funding stream of $1.5-$2B annually for deployment of large-scale ITS demonstration projects and $1B for states to deploy existing ITS and provide for ongoing operations, maintenance, & training.
The federal government must assume a far greater ITS leadership role:

1) ITS is the 21st century equivalent of the Interstate Highway System, and needs the same level of federal government leadership.

2) U.S. needs a national ITS strategy and a clearly-articulated goal of ITS leadership.

Significantly Expand Funding

- Reauthorization should include a dedicated funding stream of $1.5-$2B annually for deployment of large-scale ITS demonstration projects and $1B for states to deploy existing ITS and provide for ongoing operations, maintenance, & training.

- Expand remit of ITS JPO to move beyond R&D to include deployment.
Policy Recommendations for ITS in the U. S.

- The federal government must assume a far greater ITS leadership role:
  1) ITS is the 21st century equivalent of the Interstate Highway System, and needs the same level of federal government leadership.
  2) U.S. needs a national ITS strategy and a clearly-articulated goal of ITS leadership.

- Significantly Expand Funding
  - Reauthorization should include a dedicated funding stream of $1.5-$2B annually for deployment of large-scale ITS demonstration projects and $1B for states to deploy existing ITS and provide for ongoing operations, maintenance, & training.
  - Expand remit of ITS JPO to move beyond R&D to include deployment.
  - **Tie state funding to system performance.**
ITS Investment as a Share of GDP in Selected Countries

![Bar Chart](chart.png)
Policy Recommendations for ITS in the U. S.

- The federal government must assume a far greater ITS leadership role:
  1) ITS is the 21st century equivalent of the Interstate Highway System, and needs the same level of federal government leadership.
  2) U.S. needs a national ITS strategy and a clearly-articulated goal of ITS leadership.

- Significantly Expand Funding
  - Reauthorization should include a dedicated funding stream of $1.5-$2B annually for deployment of large-scale ITS demonstration projects and $1B for states to deploy existing ITS and provide for ongoing operations, maintenance, & training.

- Expand remit of ITS JPO to move beyond R&D to include deployment.

- Tie state funding to system performance.

- Require states to implement real-time traffic information systems on 80% of freeway and arterial roads by 2014.
Policy Recommendations for ITS in the U. S.

- The federal government must assume a far greater ITS leadership role:
  1) ITS is the 21st century equivalent of the Interstate Highway System, and needs the same level of federal government leadership.
  2) U.S. needs a national ITS strategy and a clearly-articulated goal of ITS leadership.

- Significantly Expand Funding
  - Reauthorization should include a dedicated funding stream of $1.5-$2B annually for deployment of large-scale ITS demonstration projects and $1B for states to deploy existing ITS and provide for ongoing operations, maintenance, & training.

- Expand remit of ITS JPO to move beyond R&D to include deployment.

- Tie state funding to system performance.

- Require states to implement real-time traffic information systems on 80% of freeway and arterial roads by 2014.

- Make publicly-funded real-time traffic data available to the public.
Thank you!

sezell@itif.org
202.465.2984
www.itif.org