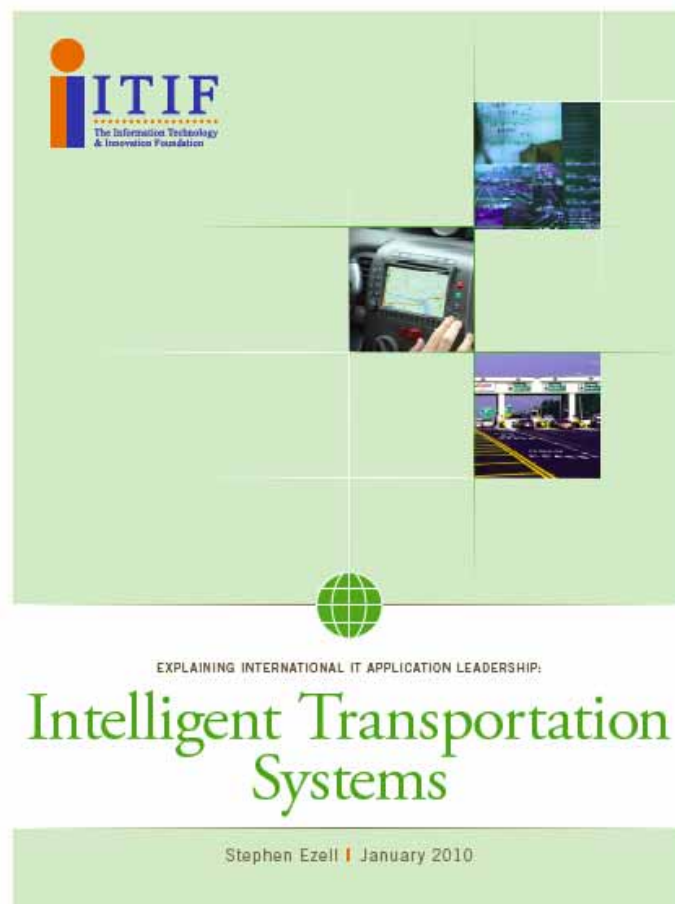


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The Three Pillars for ITS Development

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ITIF Report: Explaining International Leadership in ITS



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Categorizing ITS Applications

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

Why Intelligent Transportation Systems?

- ITS is the 21st century, digital equivalent of the highway system.
- Brings real-time, actionable intelligence to individuals and to assets in the transportation network.
- ITS drives economic growth by boosting productivity and serving as a platform for commerce.



ITS Deliver 5 Key Classes of Benefits By:

1. Enhancing personal mobility and convenience;
2. Increasing driver and pedestrian safety;
3. Improving operational performance of the transportation network;
4. Delivering environmental benefits;
5. Spurring broader economic and employment growth.



Maximizing Operational Performance

1) Benefits of traffic signal optimization outweigh costs 38:1.

- Chennai: 5%-30% improvement in network speed;
- 17% reduction in average travel time.



2) Provision of real-time, in-vehicle traffic information, Japan:

- 20% reduction in travel time;
- 17% decrease in CO₂ emissions.



- **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.**

Environmental Benefits

- Smart signals and bus prioritization can reduce fuel use by transit buses by 19% and emissions by 30%.
- Deploying nationwide computerized adaptive traffic signal lights would cut U.S. CO₂ emissions 22% per year.
- Since 2001, ITS has helped Japan ↓ CO₂ emissions 22M tons, 1/3rd of the countries' Kyoto targets.



ITS Drive Productivity, Economic, Employment Growth

Critical factor in national and regional economic competitiveness:

- Enables just-in time delivery business models; serves as a platform for innovations in other industries: logistics, agricultural, tourism, insurance.
- Enables efficient delivery of public services (police, ambulance, waste collection, road repair, etc.).
- Mitigates economic losses from traffic congestion and accidents/fatalities.
- Source of jobs: 1M in Japan by 2015; 600,000 in North America.

Who Leads the World In ITS?

1. Japan

- VICS
- Smartway (Cooperative vehicle-highway system).



2. South Korea

- \$3.2 billion investment in ITS 2008-2020.
- Use of ETC, on-board telematics, NextBus info.



3. Singapore

- Congestion charging system.
- Full ETC/APTS deployment.



The Three Pillars of ITS Success

1. Demonstrate national-level commitment and vision;
2. Feature strong government leadership, at all levels.
3. Make substantial investments in ITS.

Three Pillars of ITS Success

1. Demonstrate national-level commitment and vision.

- Comprehensively envision economic competitiveness, safety, and environmental benefits of ITS.
- Develop a National ITS Plan.
- Set ambitious goals.



Three Pillars of ITS Success

2. Feature strong government and political leadership.

- Include ITS into your transportation planning from the beginning, including developing interoperable standards.
- Align key government agencies at municipal, state, and federal levels (in ITS working groups).
 - Including between transportation and telecommunications regulatory agencies.
- Recognize that ITS won't always deliver photo-ops.
- Clearly define roles and responsibilities of public and private sector partners.

Role Differentiation Between Public/Private Sector

	Product/Responsibility	System
Public Sector Driven	<p>Infrastructure (Road side Devices including sensors, variable message signs, GPS, Geographical Data, etc.)</p> <p>Basic Research Create Common Platform (System Architecture, Standardization) Data Creation (Traffic, Meteorological)</p>	<p>Public Transport Systems Traffic Surveillance Systems Incident Management Systems Traffic Regulation Enforcement Systems Traffic Control Systems Road Maintenance Systems Border Crossing Systems Emergency Vehicle Management Systems</p>
Private Sector Driven	<p>On Board Devices, Portable units including cellular phone, PAD</p> <p>Commercialization Individual Application Data Processing/Provision</p>	<p>Pre-Trip Information Systems Driver Information Systems Electronic Toll Collection Systems Multi-Modal Payment Systems</p>

Source: World Bank

Three Pillars of ITS Success

3. Make substantial investments in ITS.

- Recognize that ITS delivers superior RoI over conventional transportation investments.
- 3-5% of transportation budget should go to ITS applications.
- Key area of investment is training & education for computer and electrical engineers.

Lessons for ITS Success

1. Don't reinvent the wheel; leverage what others have learned.
2. Build from the ground-up; start with ITS model cities.
3. Doesn't always take massive deployments to realize tremendous value.
 - Beijing/Sing.: 10,000 taxis enough to generate real-time traffic info.
4. Leverage the infrastructure you already have in place.
5. Make transportation data open and transparent.



Thank You

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