Intelligent Transportation Systems for Sustainable Development:
An Emerging Trend in ICT Policy and Practice in the Asia-Pacific Region

- 4th Session of the ICT Committee (Oct. 15th, 2014)

GRADUATE SCHOOL OF INFORMATION
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01 BACKGROUND: THE BENEFITS OF ITS

Trends in ITS Definition

✓ Adopting ITS as an Efficient Transportation Solution
  ITS includes the use of ICT for rail, water and air transport and navigation devices.

✓ No Single or Unitary ITS Definition
  There is no unified definition of ITS between institutions and regions.
  • Leading ITS countries: vehicle safety and efficiency
  • Later ITS adopters: mitigation of traffic congestion

✓ The Co-operative ITS Paradigm
  C-ITS, extension of conventional ITS, betters comfort and safety through the real-time information from roads and other vehicles.

Impacts of ITS Implementation

✓ Improving Traffic Efficiency and Responsiveness to Congestion Problems
  ITS services lighten congestion and shorten the travel time. With ITS, public transportation will become more punctual and reliable.

✓ Reducing Carbon Emissions through ITS Functionality
  ITS can reduce fuel consumption and Green House Gases emission, easing traffic and preventing motor vehicles from idling.

✓ Economic Value of ITS Industries
  Delivering real-time information, ITS brings economic benefit from improving the efficiency of moving people and freight through the use of installed-base infrastructure and transportation systems.
02 ITS POLICY RECOMMENDATION

Policy Rec 1.
Increasing Investments in ITS Technologies to Foster a Cadre of ITS Experts.

Policy Rec 2.
Allocating and Improving ITS Frequency Bandwidth and Fiber Optics for Service Diversification.

Policy Rec 3.
Establishing a National ITS Master Plan.

Fostering Open Innovation through Open Data Initiatives and Collaboration.

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Building ITS Capacity through Private Partnership Eco-Systems at Regional Level.

Technology

Regulation

ITS Trends

Regional

Service
Technology - Policy Rec 1.

Increasing Investments in ITS Technologies to Foster a Cadre of ITS Experts.

**ITS Trends**

- Most leading ITS countries investing on V2X technologies prioritize passenger safety above traffic flow.
- A recent survey compares countries in terms of the number of original technologies and patents for ITS and indicates Japan, the U.S. and Germany as the top-three players.
  
  Ex) The United States has put $77 million into multimodal research related to V2X technologies which comprises $49 million.

- Late-starters in Asia should require assistance in developing ITS innovation capabilities and ITS experts.
ITS POLICY RECOMMENDATION

Technology - Policy Rec 2.

Allocating and Improving ITS Frequency Bandwidth and Fiber Optics for Service Diversification.

ITS Trends

- The development of a single frequency is hampered as each country has a different ITS frequent range.
- Due to a spectrum of data sources, ITS demands more network bandwidth for ever-increasing data rates.
- Increasing frequency interruption between ITS facilities calls for the allocation of standardized frequencies.
- Installing fiber optics for traffic aggregation will promote ITS and interconnectivity between countries.

Best Practice

- Members of the EU cooperates inter-regionally to make C-ITS live in Rotterdam-Frankfurt-Vienna in 2015. This comprises a Roadworks Warning (RWW) and a Probe Vehicule Data (PVD) using a short range communication.
- ESCAP can play a key role in promoting harmonization and standardization of frequencies and policies related to fiber optics installation in Asia-Pacific region.
Regulation - Policy Rec 3.

Establishing a National ITS Master Plan

**ITS Trends**

- A need for ITS planning at a national level, setting a holistic view of the specific ITS development.
- ITS master plan will secure the alignment and interconnectivity of ITS systems based on government cooperation, detailed principle and guideline.
- The scope of ITS implementation can be varied across different regions.
- The relevant master plan guidance will be useful from ITS Asia-pacific.
  - Basic Principle
  - Traffic Status
  - Outstanding issues
  - Issue-specific targets
  - Means and technologies for achieving targets
  - Implementation systems (Planning proposals and implementation organizations) & capacity building
  - Roadmap (a schedule for achieving targets)
  - Updated plans and processes
ITS Trends

✓ Smart city development and open government have provided an open innovation platform.

✓ A recent open data movement in Europe, U.S, and Japan as a business platform for a new ITS service.

✓ Open participation for service developments will build up ITS capacity and better analyze patterns of customer action using big data.

✓ With the services created, countries will be able to satisfy users and foster the development of ITS services better.

Best Practice

✓ A highly successful app in South Korea with more than 10 million downloads, ‘Seoul Bus’ allows users to find departure or arrival time of buses in Seoul utilizing APTS information.
ITS Trends

✓ To boost national economic competitiveness, countries tend to utilize functional reference architecture frameworks in arranging an integrated suite of ITS services.

ISO 14813-1:2007
Intelligent transport systems -- Reference model architecture(s) for the ITS sector -- Part 1: ITS service domains, service groups and services

This standard was last reviewed* in 2010.
*ISO standards are reviewed every five years.

Abstract

ISO 14813-1:2007 provides a definition of the primary services and application areas that can be provided to Intelligent Transport System (ITS) users. Those with a common purpose can be collected together in ITS service domains, and within these there can be a number of ITS service groups for particular parts of the domain. ISO 14813-1:2007 identifies 11 service domains, within which numerous groups are then defined. Within this framework, there are varying levels of detail related to definition of different services. These details differ from nation to nation, depending on whether the specific national architecture building blocks are based strictly upon services or on groups of functions. Thus, the intent is to address groups of services and the respective domains within which they fit. As these domains and service groups evolve over time, it is intended that this international standard be revised to include them.

ISO 14813-1:2007 is applicable to the working groups of ISO TC 204 and other TCI which are responsible for identification of the ITS sector and associated service areas.
ITS POLICY RECOMMENDATION

Strengthening Security and Privacy Policies to Complement Advanced ITS Services

ITS Trends

✓ As each entity needs to share information, and data from various entities are collected, stored, and analyzed, there is a possibility of users' privacy invasion.

✓ One form of big data from vehicle users, individuals' movement patterns and transport habits raises the risk of invasions of privacy.

✓ The government needs to establish a data processing practice regulating the use of personal data by defining legal rights and to establish procedures for enforcing the law to prevent the abuse of private information.

✓ In light of the evolution towards C-ITS, countries should pay attention to developing security and private policies setting limits on what is considered legitimate in collection, processing and use of data for fair use.
Technology - Policy Rec 7.

Building ITS Capacity through Private-Partnership Eco-Systems at a Regional Level

ITS Trends

✓ Automobile manufacturers have participated in R&D projects with government for commercialization of ITS services focusing on the safety of drivers, and pedestrians.

✓ Cooperation with leading ITS countries or international organizations helps countries build up ITS capacity.

✓ Developing ITS countries should cooperate with private sector partners with experience of ITS implementation.

✓ A new model of sustainable public-private partnerships: BTO (Build-Transfer-Operate) or PF (Project Financing) are types capable of fostering sustainable ITS investment.

Best Practice

✓ Japanese automobile companies are active in the development of a road-vehicle collaboration system (V2X). Nissan, Toyota, Honda, etc. have signed up to an ITS Safety 2010’ project with Japanese public agencies for testing road-vehicle collaboration systems.
Thank you

If you have any Question

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