

Overcoming Barriers to ITS Deployment in Korea

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1. Introduction

This paper describes how we have overcome barriers to ITS deployment in Korea into the three parts. First, an overview of challenges & countermeasures in Korea, then case studies on how to overcome barriers, and finally close corporation for new ITS business.

Table1 shows a brief overview of the barriers and countermeasures taken to deploy ITS system in Korea. Consequently, these can be classified into 4 parts. We learned that the first thing you need to start an ITS system is to make legal and institutional preparations. It is a kind of general barriers. Secondly, enough budget is necessary not only to build ITS system but also to maintain the system. Thirdly, the standard and value-added contents are necessary to reduce trial and errors and to activate ITS service during ITS deployment. Finally, in order to upgrade ITS system and service, close collaboration is important between the domestic ITS society and the international ITS society as well.

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〈Table 1〉 Lots of barrier to ITS deployment and countermeasures

Barriers	Countermeasures	Remarks
Institutional inertia for ITS	Building up legal & institutional support	II. 1 General barriers
Need for policy governance	Building new vision and consensus	
Stable budget	Secure sustainable budget	II. 2 Economical barriers
Standardization	Increasing synergy with standards and system integration	II. 3 Practical barriers
Killer application & products	Development of value-added business model using advanced technologies	
Lack of awareness by stakeholders for collaboration	Domestic & worldwide close collaboration, and creation of new business area by promoting mutual interest	III. Close collaboration

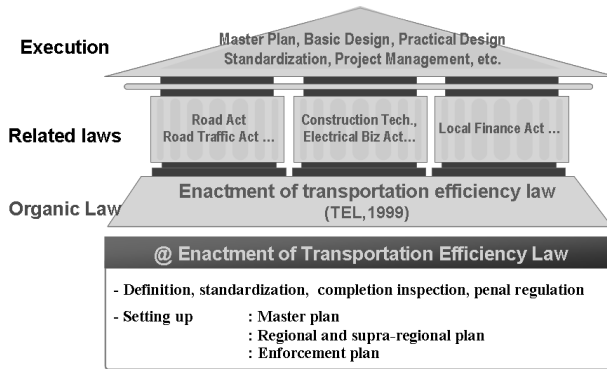
II . Overcoming Barriers

1. General Barriers

We learned that the key to overcome the barriers is legal and institutional supports from the government. In Korea, ITS business is under way based on the Enactment of Transportation Efficiency Law and other relevant laws such as road act, local finance act. So that, ITS business can be settled systematically through master plan, basic and practical design, standard and so on.

Building new vision and consensus on ITS are important point as well. The previous focus in Korea was vehicle and road oriented ITS service. However recently, it has been advanced to human-centered transportation service. The new vision is more focusing the service more on pedestrian, the transport vulnerable, and customized services of private purposes.

Ubiquitous technology is the tide of the time, and ITS business is moving to ubiquitous transport service for ubiquitous city, The concept of the u-Transport will be elaborated later.



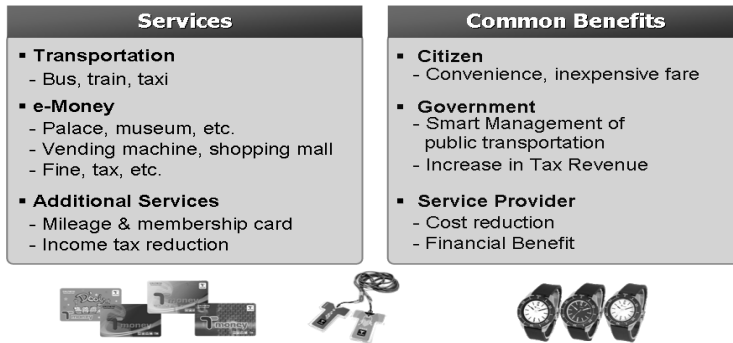
〈Figure 1〉 Legal and Institutional Supports

2. Economic Barriers

Second barrier is the economy. Before the ITS business came into its full swing, we executed ITS pilot projects and deployed model systems to 3 cities from 1998. These projects were fully financed by the government with 75.6 million dollars. They developed the various national standards and architectures.

As of 2007, a total of 25 cities have introduced ITS system with their own budget as well as financial support from central government. The financial subsidy from the central government and local governments amount to 30% ~ 50% of the total budget. However, in order to get a sustainable budget, project financing method and profitable business model such as advertising have been applied.

As a successful case of public/private joint investment, The unified fare smartcard, T-money as we call it, is representative. KSCC(Korea Smart Card Corp.),T-money operator, is joint corporation of Seoul city, investors and SI companies. Citizens of Seoul can use the T-money as electronic money. So they can pay with it not only for transportation but also for vending machines and many more. So Citizen, the Government and service providers



〈Figure 2〉 Smartcard service and common benefits

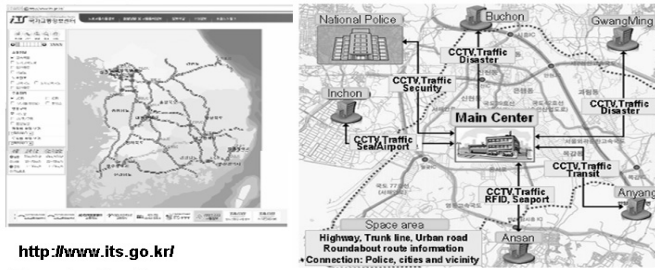
can get the financial and managerial benefits. In addition, the joint corporation receives commission on the sale of T-money, so that the corporation utilize the income as a budget for system operation and maintenance.

3. Practical Barriers

Next barrier is more practical one. Many of experts agree on the necessity of standardization, particularly when it is applied for nationwide applications.

ETCS, or Hi-pass system as we call it, is in operation on all highways in Korea. Several standards for tolling management protocol and wireless communication protocol have been established from 2002. With these standards, a total of 1.2 million passages, over 30% of the total tollgate passages, use Non-stop, Contactless and Cashless Hi-pass system.

Next standardization case is the integrated traffic information center. A total of 79 transport authorities including provincial governments, the national police agency are integrated together using ASN.1 data exchanging protocol and a standardized geographic map. So people in Korea can access Korean nationwide transport



<http://www.its.go.kr/>

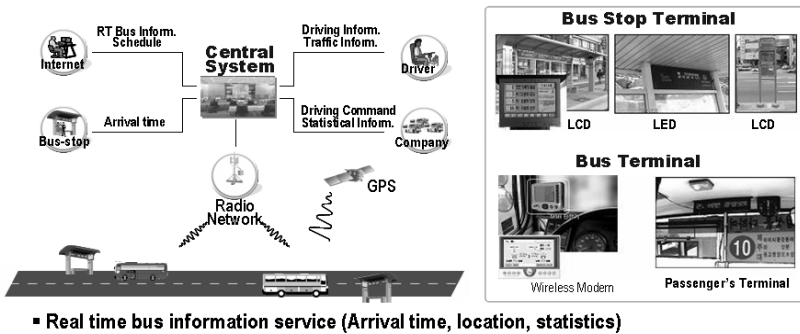
- **Standardization**
: Data Exchanging Protocol based on ASN.1 (Abstract Syntax Notation Number 1)
- **Integration of centers of neighboring cities**
: "National Transport Information Center" integrates 79 transport authorities

〈Figure 3〉 Integrated Traffic Information Center

information at anytime, anywhere through the national transport information center.

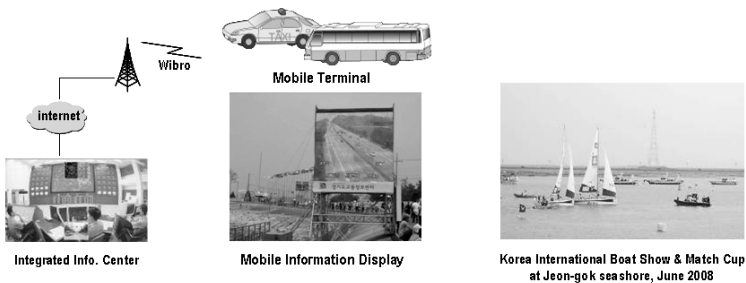
Next case is the general public transport service. Recently we applied ITS service to BIS, Bus Information System, for real-time bus operation information service. As of today, BIS system gives bus information to the total of 9,300 buses and 300 bus stations in Seoul city. In this BIS system, the central system runs after a bus location using GPS and radio communication network, Passengers waiting at a bus station can find out when the next bus arrives using various information display terminals.

And it is necessary to utilize new technologies in order to upgrade the ITS service. We developed WIBRO and are applying it to the mobile transport service. The WIBRO is the world's 1st mobile broadband communication service with high-speed wireless communication up to 3 mbps, and it is standardized as IEEE 802.16e mobile wimax. We are applying the WIBRO system to mobile vehicles for traffic information service, and for temporary VMS service, and so on. mobile VMS can provide a graphical traffic information and video information via WIBRO network from the traffic center.



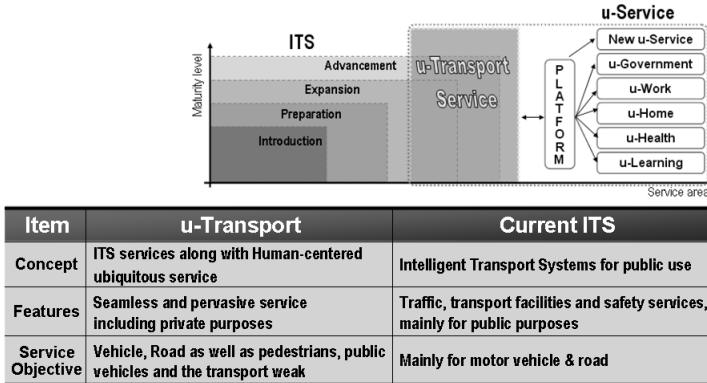
〈Figure 4〉 BIS, Bus Information System

In Korea, the ITS system is evolving into an advanced u-transport system. In a service point of view they are mutually similar, but a little advanced domain services. While the current ITS service is a vehicle-road oriented service, the u-transport service has a wider scope in the ubiquitous city. Running on a ubiquitous platform, it has a more human-centered services for pedestrians, public vehicles, the transport vulnerable and more. This ubiquitous platform of the u-City has various ubiquitous service categories as well as u-transportation.

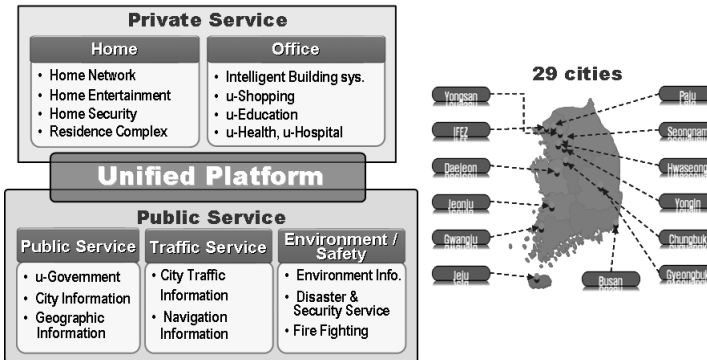


- **Wibro (Wireless Broadband Internet)**
 - The world's first commercialized mobile broadband service
 - Mobile WiMAX (IEEE 802.16e) Standard
 - Upload(1.2 Mbps), Download(3.0Mbps)

〈Figure 5〉 Mobile Service using New Technology



〈Figure 6〉 Next Generation : u-Transport Service at Ubiquitous City



〈Figure 7〉 Various Private/Public Service of Ubiquitous City

Ubiquitous City contains Information Technologies in all city elements that enable citizens to access and utilize them at anytime, anywhere and from any device through Unified Platform. 29 cities in Korea including sunghnam city prepare for the Ubiquitous City project setting up the various private/public services.

III. Close Collaboration

So far we have introduced several barriers to ITS deployment. The very important is a close collaboration between the domestic



〈Figure 8〉 Promotion of World ITS Society

ITS society and the international ITS society.

First, in order to make ITS system stable and upgrade ITS service, it is necessary for the domestic ITS society to promote a close cooperative relationship. The stake-holders such as government bodies, forums, institutes, academia and related private companies should make every effort to overcome the barriers.

And furthermore, our countries in ASIA-Pacific region have common issues, such as overpopulation and heavy congestion, excessive traffic congestion and so on. I would like to propose that all countries of the region collaborate closer through ASIA-Pacific Forum. On the strength of the shared experiences and joint R&D in the Forum, we would be able to accomplish early stabilization and advancement of ITS service.

VI. Conclusion

In conclusion, we can sum up the several lessons-learned from Korean case studies. The most important thing for us to overcome barriers is a positive supports from government, and aiming for a shared vision. Secondly, we should secure enough budget as much as possible through

financial aids and profitable business models. And Practically, standardization, improvement of the general public service and positive efforts to adapt new technology are necessary too.

And furthermore, close relationship as well as the above mentioned barriers is necessary to achieve an early stabilization and advancement of ITS service. We would like to propose close collaboration in this region through ASIA-Pacific Forum.

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허완철



이용택