SMART CITIES – COREA

This case study is one of ten international studies developed by the Korea Research Institute for Human Settlements (KRIHS), in association with the Inter-American Development Bank (IDB), for the cities of Anyang, Medellin, Namyangju, Orlando, Pangyo, Rio de Janeiro, Santander, Singapore, Songdo, and Tel Aviv. At the IDB, the Competitiveness and Innovation Division (CTI), the Fiscal and Municipal Management Division (FMM), and the Emerging and Sustainable Cities Initiative (ESCI) coordinated the study. This project was part of technical cooperation ME-T1254, financed by the Knowledge Partnership Korean Fund for Technology and Innovation of the Republic of Korea. At KRIHS, the National Infrastructure Research Division coordinated the project and the Global Development Partnership Center provided the funding. Namyangju, a city of 650,000 populations in Korea has been promoting smart city project since 2008 as a response to recent growth of population, increased share of transport and crime rate.

Namyangju offers various civic services especially via smartphone such as customized real-time road CCTV images, traffic flow and incident information, as well as application for senior resident protection. Namyangju is also equipped with security system at bus stops and multifunctional ”smart pole”, which combines street light, CCTV, and traffic signal controller to promote efficient use of roadside facility. The city promotes local economy through online market system making use of its local organic farms and actively utilizes bus stops and roadside VMS in attracting advertisement to raise regular profit. Namyangju is in the process of installing 101km fiber-optic network and plans to complete the construction of Integrated Operation and Control Center (IOCC) by 2016. The city’s current focus is on citizen interaction and further business model development. - See more at:

https://publications.iadb.org/handle/11319/7724#sthash.cCqSiiZX.dpuf

Executive Summary

Namyangju city has a population of 650,000 and is located 25km northeast of Seoul in the Republic of Korea. Namyangju has been continuously promoting smart city project since 2008 with a target of becoming a low-carbon green transport city by 2020. This city has recently experienced rapid growth of population followed by large scale housing development which has increased the share of public transport to 60% as well as crime rate by 50% in the past 5 years. As a proactive response to such societal demand, the smart city project in Namyangju took place with focus on the implementation of intelligent transport system and crime prevention system.

Namyangju offers various civic services especially via smartphone that has rapidly increased its penetration in the past 5 years. The city offers real-time road CCTV images, traffic flow and incident information on frequently used routes through customized mobile service which enables the citizen to choose best route in real-time. Also, to secure the safety of its large senior population, the city offers services such as sending the protector the bus arrival information of the senior resident and emergency alert when the elderly leaves the safe zone to enable prompt response. Cutting-edge crime prevention system is installed at bus stops with emergency bells and CCTV to enable prompt connection with the crime prevention center in the outbreak of emergency. Another

innovative solution of Namyangju includes the multifunctional 'smart pole' which combines street light, CCTV and traffic signal to promote efficient use of roadside facility.

Perhaps the smart city service of Namyangju that attracts attention the most as a benchmark is the city's effort to promote local economy through online market system. Being a city that has both urban and agricultural regions, e-commerce of local organic farm products is realized through the smart city system. The city's active utilization of bus stops and roadside variable message signs in attracting advertisement to raise regular profit is another impressive factor that draws attention. Through such smart city system operation, the average traffic speed within the city has increased by 7.2km/h and the average delay time at intersections got reduced by 43 seconds. The citizen satisfaction level on the real-time traffic information provided by the city has yield an 80% survey result which demonstrates Namyangju's strive to provide substantive benefits to citizens.

Namyangju has now reached the maturity phase of the smart city project, having been through the periods of initiation and expansion. The current focus of the city is on the implementation of smart city infrastructure in order to provide more effective and beneficial smart city services in a more stable and efficient manner. The city is in the process of installing the fiber-optic communication network of 101km and plans to complete the construction of integrated operation and control center by 2016. Other areas that the city is increasing its focus are citizen interaction and business model development to raise operation and maintenance cost of the smart city system. It is anticipated that Namyangju will continue to develop its reputation as a model case study for smart city implementation under close collaboration among the city officials, related agencies and citizens.

Study Cases

NAMYANGJU. Corea

Namyangju is a city located in the northern-east part of Gyeonggi province. It is located 25km east of Seoul and 65km northeast of Suwon where the provincial government exists. The city combines both urban and rural areas and has a population is 642,958 as of June 2015 with an increasing trend of approximately 4.3% annually. 217,110 cars are registered as of December 2014 and is increasing by approximately 5.9% each year.

Development Background and History

Namyangju city is undergoing the smart city project with a goal to build a 'Citizen participating safe city' through ubiquitous computing. It plans to make a convenient and safe city by building a cutting-edge service that can meet the requirements of its citizens. The smart city project is based on the following three backgrounds.

First, according to a survey of Namyangju citizens the need to build and implement a cutting-edge service that is suitable to manage transportation needs, regenerate and develop the city, and activate the local economy, was emphasized. Second, the problem of traffic congestion and safety due to rapid city development came to focus. Following the massive development of housing land, a large population inflow occurred. As a result, the usage rate of public transportation grew to ap-

proximately 60%, hence a transportation service centered on public transit is necessary. The crime rate in crime-prone areas has indicates that over the past 5 years, it has increased by 50%. Third, citizen participation in campaigns such as 'small shops & wide streets', 'invigoration of shopkeepers' co-op' has increased to revitalize the local economy. Tourism demand has increased after designating the area around Bukhan River as a slow city, reorganizing the bicycle road, and hosting international contests. Therefore, there is now need for a cutting-edge technology service that can correspond well to the special traits of 'urban-rural integrated cities', and lead citizen participation.

Based on these backgrounds, the following four categories have been prepared to proceed with Namyangju city's smart city project. First, a plan to build a citizen based project promotion organization and project plan has been made. In other words, citizens will participate as a working group and project plans have been made in connection to citizen projects. Second, a cooperative system with related institutions has been built. Extreme care has been devoted to receive national and provincial subsidies. As a result, the city has attracted various demonstration/model projects. Third, service models that can differentiate Namyangju from other local governments have been discovered and made. In other words, services are made where the ICT technology is converged with the plans and alternatives regarding traffic, crime prevention, and local economy revitalization. Also, efforts were made to actively implement services that are citizen centered and tangible. Fourth, a group that is exclusively in charge of the traffic sector has been formed and the UIntegrated Traffic Information Center has been established. The Traffic Planning Division and Public Transportation Division have been made and 7 new professionals have been scouted. In addition, A U-Integrated Traffic Information Center that comprehensively manages transportation, crime prevention and disasters has been fully established.

Namyangju city's smart city project has been divided and carried out into 3 categories. The 'Intelligent Transportation Service (ITS)', 'Bus Information Service (BIS)', and 'Ubiquitous' project. Up to now the city has built an ITS system, including Advanced Traffic Management System (ATMS), that covers approximately 101 km of major national highways and 50km of local roads. The city plans to continuously carry forward with related projects and expand ITS to broader areas including housing zones.

Vision, Current a Future Projects

Namyangju city's goal is to build a smart traffic city that leads the way of low-carbon green traffic by 2020. The city plans to establish a smart city with ubiquitous cutting-edge technology so that it can enhance the living quality of its citizens and identify with them. In order to achieve this, it is focusing on building systematic traffic management, strengthening the connection and flow of traffic information, and establishing a pleasant traffic environment. Namyangju's smart city project can be chronologically divided into 3 stages.

The first stage is the introductory period from 2008 to 2011. During this period demonstration projects took place and infrastructures were built. Unit-based systems were established around major roads. The second stage is the expansion period from 2012 to 2015, where services are being expanded and connected systems are established. In terms of space, the systems built at stage 1 have expanded to all of Namyangju and in terms of contents, unit systems have been integrated and expanded along with service scope.

The third stage is from 2016 to 2020 where the city plans to continue expanding services from stage 2 and improve the system by modifying and supplementing existing systems. In terms of space, Namyangju plans to connect with close traffic zone areas such as Guri, Hanam, Uijeongbu and Gwangju etc. Also, it plans to strengthen information exchange and connections with centers of Gyeonggi province, Seoul, and Gangwon province. As the technology of smart phones and individual owned devices continue to advance, the city plans to diversify mediums to provide information and to implement new high technology such as C-ITS. The Namyangju smart city project is participated in by its citizens. Through this the city looks to activate the local economy. Economic effects are maximized as local industries are developed by citizens and local cultures are reinvented. Also, communication with citizens is endlessly ongoing with no restraints of time and space whatsoever due to the ubiquitous platform. Namyangju city has made a service brand called 'i-bbang bbang' and is working to expand it.

The city is progressing to build a new UIntegrated Traffic Information Center building. The building is located at Byeollae new town and is planned to open in 2016. The integrated center will support the safe and convenient lives of Namyangju citizens through efficient management and operations.

Overview of the Smart services and hight level functions

Namyangju city has continuously pushed forward with the Bus Information System (BIS) and U-city business starting with the Intelligent Traffic System in 2009. In September 2012, the existing integrated traffic information center was expanded and combined with the crime prevention control center and illegal parking & stopping management center. Through this, the U-Integrated Traffic Information Center was established. Combined operations and management has unified tasks and increased overall efficiency. Namyangju city's U-Integrated Traffic Information Center is in charge of traffic, safety, and disaster prevention.

- Transportation and Urban Mobility
- Safety and Citizen Security

- Environment
- Energy Efficiency
- Citizen Interaction and Communication Mechanisms
- Profitable Advertisement and local Economy Activation