Republic of Korea-ADB Urban Development Forum

Applications of Smart Technologies

Event Snapshots

The Asian Development Bank (ADB) and the Republic of Korea (ROK) e-Asia and Knowledge Partnership Fund (EAKPF), together with ROK's Ministry of Finance, Ministry of Land Infrastructure and Transport, Export-Import Bank of Korea (KEXIM), and Korea Agency for Infrastructure Technology Advancement, organized a week-long Republic of Korean ADB Urban Development Forum on Application of Smart Technologies. The event was designed to share knowledge and solutions to help with urbanization challenges focusing on Korean experiences and enterprises.

29 June 2021

Digital Solutions for Better Service Delivery

This session highlighted key challenges faced by Korean cities and some smart solutions to enhance service delivery and urban resilience, including digital twinning for real world simulations and forecasts (e.g., for flood management), and integrated platforms (e.g., Smart City Integrated Platform and Smart City Net Service) to respond to emergencies and other situations such as crimes, disaster, traffic, among others.

Seung-myeong Jeong, Senior Researcher at the Korea Electronics Institute (KETI), presented on Data Hub Platform for Smart Cities. He stressed how utilizing data can help solve complex problems and challenges in cities. He gave an overview of the architecture of the City Data Hub, and discussed how it can collect, process, analyze, serve, and manage data. He also shared some examples on how the City Data Hub has been helping track confirmed COVID-19 cases since April 2020. The COVID-19 Epidemiological Investigation Support System is being used by 254 community health centers.

Simon Jeon, Manager at the Global Business Department of the Korea Land and Geospatial InformatiX Corporation, presented the Digital Twin Project of LX. The project focuses on creating virtual digital works identical to the real world to simulate and forecast various situations. He also shared some examples on the practical application of the project such as flood management.

Joo-hyun Lee, Deputy General Manager at the Smart City Association, discussed the Smart City Integrated Platform and Smart City Safety Net Service. He explained the concept behind the smart city integrated platform, which is an integrated urban situation management tool that synthesizes and processes various situation events in city that can occur simultaneously in crime prevention and disaster, traffic, environment, and facility management, among others. He also shared the achievements of the integrated platform such as the reducing dispatched time from 7.26 seconds to 5.58 seconds and decreasing the crime rate by 6.2%. The integrated platform should be designed in consideration of integration, interoperability, standardization, and extensibility.

Key Takeaways

- In rolling out tech-based solutions, ensure that public data are secured.
- Anonymization will help protect sensitive information by erasing or encrypting identifiers that connect an individual to stored data.

30 June 2021

Integrated Water Management: Digital Solutions and Governance

This session shared how the Republic of Korea, through its K-City Network Global Program, utilizes integrated water management approaches, and smart technologies to restore and protect ecosystems and natural resources. The sessions also shared smart solutions such as AI-supported and cloud-based smart metering systems, intelligent water leakage management systems, and Seoul Water's asset management mechanisms that help sustain efficient service delivery to around 10 million residents of Seoul.

The session highlighted the challenges faced by Korean cities in the water sector and the corresponding solutions. It started with Sang-young Park, Principal at the Global Business Division of the Korea Water Resource Corporation (K-Water), giving context about the session. He talked about how water resource is being managed in the Republic of Korea since the inception of K-water. He highlighted how K-Water gas worked to introduce eco-friendly water infrastructure to restore and protect ecosystems and biodiversity. He also presented cases on how smart technology is being applied in the water sector in several smart city development projects.

Sam Kim, Director for Overseas Sales of Shindoga Electronics, discussed the company's Smart Metering Solution. He explained the importance of smart metering, particularly how it can help check leakage and ensure accuracy. He highlighted that the technology can also work in other countries such as India and Viet Nam.

Sang-hoon Cha, CEO of WI. Plat, shared an overview of the Intelligent Water Leakage Management System that they have developed. Using IoT, artificial intelligence, and cloud technologies, WI.Plat is helping non-professionals easily find water leaks. The technology has been verified in 15 locations and can potentially help a small town with 15,000 houses save $342,188 per year by detecting water leaks and savings costs on hiring professionals.

Dong-hoon Cha, Director for Water Planning and Development Center of Seoul Water (Arisu), presented about the Water Networks Management in Seoul. He mentioned how Seoul Water has been doing constant physical rehabilitation of pipe networks; using GIS monitoring system; and implementing resilience measures to respond to the impacts of climate change to the Han River Basin, the main water source of Seoul's 10 million residents.

Key Takeaways

- No size fits all. For these smart technologies to work, the actual context and needs of the project site should be considered.
- Use what is available and accessible. Innovation is not just about high-end technologies. Low-income countries with limited resources and access to high-end technologies may explore.

the possibility of using Bluetooth instead. This can work on any smart phone and can send data to the network provider.

- Climate resilience is a crucial aspect of managing water systems. Conducting awareness-raising campaigns is necessary to help manage the demand and promote sustainable consumption.

1 July 2021

Energy Management System in Urban Context: Advanced Metering Infrastructure and Smart Metering Management

This session discussed various initiatives for low-carbon transition (shifting to renewable energy, role of design and construction to achieve zero energy buildings); enhancement of efficiency and reliability of power systems (energy storage system); and monitoring and management of supply and consumption (Advanced Metering Infrastructure, Smart Metering Management).

Mi-young Kim, Assistant Director at the Low-carbon Policy Division of the Jeju Special Self-Governing Province, set the context for the discussions. Jeju Province, one of the nine provinces of the Republic of Korea, aims to become carbon neutral by shifting to new and renewable energy. Ms. Kim presented examples of their efforts and initiatives to realize their goal of becoming carbon neutral by 2030.

Hyeong-ig Kim, Senior Researcher at Hyundai Electric and Energy Systems Co. Ltd., shared how Hyundai Electric is expanding its ICT-integrated energy solutions business. He discussed the energy storage system (ESS) and how it can significantly help in reducing electricity bill and can serve as a back-up generator in cases of emergencies. ESS does not only reduce the cost of electricity but also increase the reliability of power systems.

Stephan Gug-won Youn, Senior Managing Director at NuriFlex, discussed Advanced Metering Infrastructure (AMI) and Smart Metering Management. He shared how NuriFlex uses telecommunication technologies and applied solution to supply convergent solutions. He mentioned how smart metering and pre-payment benefits consumers, especially in developing countries, as they could control their consumption. On the side of utility providers, the technology helps in revenue protection, tamper detection, and elimination of bribery. Similarly, it reduces complaints and settlement efforts.

In his presentation, 'Korean BEMS: Building Energy Management System', Jun-myong Park, CEO of ZeroEN, shared how the company supports the government's plan to transition to zero energy buildings. He shared how a building's design and construction could help minimize energy use. He also shared how the Korean government gives incentives in energy management system such as through tax credits.

Key Takeaways

- Tailor fit tech-based solutions to the needs of developing countries.
- Renewable energy systems are generally costly at the onset but cost-effective in the long run. Try to convince governments to invest in renewable energy systems by showing them the savings they could get.
- Setting policies on subsidy and infrastructure is crucial in reducing carbon emissions. To replicate the efforts of Jeju Island, developing member countries need to think projects holistically before pushing for energy solutions.
- Technology is a tool but not the end goal. The main objective is to invest on sustainable energy systems not just to use technology.

2 July 2021

Green Public Transportation and New Transit Smart City Development through K-City Network

This session presented insights and technologies on solutions to enhance safety, mobility, efficency, sustainability of transport systems including intelligent transportations systems (ITS), bus rapid transit (BRT), as well as Business Information System (BIS), and Automatic Fare Collection System.

Tae-hyung Kim, Director and Senior Research Fellow at the Korean Transport Institute, provided the context of the discussions on the challenges faced by Korean cities in the transport sector. He presented about the mobility revolution in the Republic of Korea (ROK). He shared how intelligent transportation systems (ITS) helped resolved transportation problems in the country. Mr. Kim also shared the new paradigm for the next generation ITS that focus on safety, mobility, and sustainability. He gave an overview of the Cooperative ITS Pilot Project in the cities of Daejon and Sejong that aimed to develop safety applications and security systems; analyze safety benefit evaluation; and improve technical standards, device certification system, and legal system.

Sue Park, General Manager of ITS Korea, introduced the Korean ITS Service and provided an overview of the Business Information System (BIS) and the Automatic Fare Collection System (AFCS).

BIS aims to promote convenience among commuters; encourage bus competitiveness; and facilitate public transportation. As of 2020, there are already 147 cities in the Republic of Korea using this system. The system has helped improved timeliness of bus arrival times by 35% and decreased bus accidents by 24%.

AFCS is a payment service that allows users to pay fares in all modes of transportation with only one card. More than 95% of bus passengers and 100% of subway passengers in Seoul use the One Card All Pass under the AFCS. The system benefits that not only the passengers or transport provider, but also the government as AFCS helps them incorporate public transportation initiatives using the collected data.

Philip Joo, CEO of ChargeEV, did a presentation on Electric Vehicle and Charging. Aside from sharing how the technology works, he also enumerated the things that should be considered in an electric vehicle project: understanding the local environment; differentiating the must-have and nice-to-have; connecting electric vehicles and charging points; and checking the government's policy directions.

So-young Iris You, Principal Researcher, Innovative Policy Division at the Korean Railroad Institute, discussed the Bus Rapid Transit (BRT) System in the Republic of Korea. She shared the Korean experience in building the BRT System and the elements they have incorporated to make the BRT System responsive to the needs of the commuters such as setting up the pre-fare collection system to save the passenger's collecting time, and setting up the sterilization and purification system.

In his presentation, Ryan Kwang-bok Lee, Director at the Korea Overseas Infrastructure and Urban Development Corporation (KIND), discussed how KIND aims to contribute to life quality improvement and sustainable growth in the partner countries. He discussed the structure of the KIND program, and presented 11 projects the programs aims to support for 2021. The program fosters government-to-government smart city collaboration, while enabling the Republic of Korea share its technologies and experiences to other countries.

Key Takeaways

- Technology can contribute greatly to improving the efficiency and safety of public transportation systems as well as enhancing mobility of the commuting public.
- Analysis of big data collected from smart city transport systems can provide valuable insights for developing new transport policies, helping improve mobility within cities.