Korea has implemented ITS services in the country such as Advanced Traffic Management System, Electronic Payment System, Bus Information System, Auto Enforcement System, etc. based on National Transport System Efficiency Act which was enacted in 1999 and provided various services.

Since then, ITS has been contributed not only improving the quality of citizens’ life but also a positive influence of economy of Korea included the energy, environment and land use.

Now, we are making an efforts as the national level to introduce the next generation transportation system through connection and cooperation between vehicle and infrastructure based on the technology and knowledge accumulated for over decades. I would like to share information about ITS status and technologies of Korea with confidence that cooperation and harmonization of countries will create a great synergy effect.

This report is comprised of three parts; Introduction of ITS KOREA, Current Status of ITS in Korea, and Member’s profiles.

I am pleased to share information of Korean ITS with you all and hope to establish a mutual cooperative relationship among countries through these sharing.

I am looking forward to your cooperation and support.

Kichil Kwon
President, ITS KOREA
Contents

Part 1
Introduction of ITS KOREA

Part 2
Current Status of ITS in Korea

Part 3
Member's Profiles
Part 1

Introduction of ITS KOREA
Introduction of ITS KOREA

ITS KOREA, right in the core of ITS industry in Korea, reaching out to the world of tomorrow

Goals of ITS KOREA

ITS KOREA (Intelligent Transport Society of Korea) was established in year 1999 to leverage Korea’s advanced ITS technologies to drive new global trend of ITS products and services. As the bridge for private and public sectors and academia, ITS KOREA is open to digest the industrial opinion, to propose the policy and to promote ITS business, propose R&D and many other activities to boost up the industry.

• To establish close cooperation relationship among private sectors, public sectors, and academia.
• To provide the technical advice on the national ITS policy and strategies.
• To strengthen international status by leading various international cooperation and overseas marketing.
• To secure advanced technologies by conducting specialized and creative researches and strengthening core abilities.
• To vitalize the market and promote growth in ITS industry by organizing and attending conference, exhibition, congress, forum, and so on.

Relevant Laws and Regulations

• National Transport Systems Efficiency Act (Article 91. Foundation of Intelligent Transport Society of Korea, ITS KOREA)
• It states that ITS KOREA is founded to foster growth of ITS as well as to effectively establish and manage ITS including ground, maritime, air transportation accredited by Minister of Ministry of Land, Infrastructure and Transport (MOLIT) and ITS KOREA was appointed as official organization to take this role by law (Feb. 2011).
<table>
<thead>
<tr>
<th>Year</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>Initiate Study for National ITS Standardization</td>
</tr>
<tr>
<td>2003</td>
<td>Initiate ITS Standard Assembly</td>
</tr>
<tr>
<td>2005</td>
<td>Designated as National Organization for ITS Standard Observance Certification by MOLIT (#2005-139)</td>
</tr>
<tr>
<td>2008</td>
<td>Designated as National Organization for ITS Standards by MOLIT</td>
</tr>
<tr>
<td>2013</td>
<td>Cooperation Organization for Standards Development (COSD)</td>
</tr>
<tr>
<td>2014</td>
<td>Designated as Exclusive National Organization for ITS Standards by MOLIT</td>
</tr>
</tbody>
</table>

### Main Activities
- Supporting International Standardization Activities (ISO/TC 204) |
- Supporting ISO/TC204 WG 1, 5, 8, 9, 10, 18 Specialist Activities
- Develop the Technical Regulations and Support the Related Activities |
- Develop the Technical Regulations Compliance Test
- Standards De Facto Standards |
- Administer the Standards Assembly |
- Establish and Publish Total 57 Standards
- Operate the National ITS Data Registry and ITS Architecture Website
- Carry out the standardization training course and education class every year |
- Publish and distribute “Standard ITS” produce the only domestic ITS journal, Standard ITS publish and distribute twice a year, totally 21 journals issued
- Build and operate the website for National ITS Standards (National ITS Data Registry of Korea)
- http://dr.its.go.kr

### History of ITS KOREA’s Activities

**2000**
- Initiate Study for National ITS Standardization
- Initiate ITS Standard Assembly
- Designated as National Organization for ITS Standard Observance Certification by MOLIT (#2005-139)
- Designated as National Organization for ITS Standards by MOLIT
- Cooperation Organization for Standards Development (COSD)
- Designated as Exclusive National Organization for ITS Standards by MOLIT

#### Main Activities
- Supporting International Standardization Activities (ISO/TC 204) |
- Supporting ISO/TC204 WG 1, 5, 8, 9, 10, 18 Specialist Activities
- Develop the Technical Regulations and Support the Related Activities |
- Develop the Technical Regulations Compliance Test
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- http://dr.its.go.kr

#### Refer to p.27-29 for established standards
ITS KOREA has been appointed as ITS Standard Observance Certifying Organization accredited by MOLIT, Ministry of Land, Infrastructure and Transport on the basis of “National Transport System Efficiency Act” (Notification Publishing No. 2010-409 of MOLIT).

When ITS system is newly implemented or changed, those applied system should be tested whether they conform to the standards or not to ensure interoperability and compatibility.
ITS KOREA has been conducting ITS Project Management on the legal basis “National Transport System Efficiency Act”. ITS Project Management can be defined as managing the project with planning, building concept, ordering and contracting on behalf of project ordering body (e.g. local governments). It also covers the area of managing and operating of constructing project from start to completion by consulting and providing technology, administration, budget, and etc. Most organizations ordering the projects don’t have the skilled and experienced ITS experts. Therefore, ITS KOREA with high skilled ITS management experience is commissioned to monitor and verify all the procedure to realize high quality output of the project.

**Work Scope of ITS Project Management by Period**

<table>
<thead>
<tr>
<th>01 Planning of ITS Project</th>
<th>02 Conducting of ITS Project</th>
<th>03 Completing of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Consult the Ordering Body about Project Implement Action Plan Fundraising Method RFP and Bidding Guide Manual of Technology Proposal • Pre-research and Analyze the Current Condition of Implement site</td>
<td>• Manage the Implement Process • Report the Daily / Weekly / Monthly Process • Quality Control • Safety Management • Implement Management</td>
<td>• Verification Standard Observance • Inspection for Completion • Evaluation of Unit and Integration Test • Evaluation of System Performance • Post Research &amp; Analyze • Comparison Analysis of Before and After</td>
</tr>
</tbody>
</table>

**ITS Research & Development (R&D)**

[Manager Jun-Cheol LEE / email : jclee@itskorea.kr / Tel : +82-31-478-0437]

ITS KOREA researches and develops ITS-related technologies and collects and analyzes a variety of information in and out of the country. ITS KOREA supports establishment of national ITS technology policies, large-scale national R&D projects and implementation of ITS projects by the Korea Expressway Corporation and local governments. Major works of ITS KOREA include road and ITS-related policy tasks mainly by MOLIT, Ministry of Land, Infrastructure and Transport, large-scale national R&D tasks pushed by institutions such as the Korea Institute of Construction and Transport Technology Evaluation and Planning, support of R&D for ITS project implementation by the Korea Expressway Corporation and local governments, and feasibility survey and assessment for the Korean Standards Association and private companies. ITS KOREA will do its best to work as a bridge between the government and the private sector, by supporting technologies for private ITS companies to smoothly carry out projects, based on the effective implementation of ITS projects and establishment of government policies and will lay the foundation for the development of Korea’s ITS industry.

In the future, ITS KOREA will facilitate domestic ITS industry and promote Korean ITS technology on the global stage, by proposing the blue print for a better future of domestic ITS industry and deploying research results and related technologies world-wide, based on its rich research experience so far.
Overseas business & International Cooperation

[Manager Sue PARK / e-mail : hspark@itskorea.kr / Tel : +82-31-478-0411]

Since June in 2014, ITS KOREA is officially designated as Overseas Business Center by MOLIT, Ministry of Land, Infrastructure and Transport. ITS KOREA assists Korean ITS businesses that want to enter overseas market as well as promotes overseas business. For overseas countries hoping to introduce ITS or to work with Korea, ITS KOREA also provides the customized consulting, the opportunities for sharing Korean ITS technologies and experience, and business matchmaking. In addition, ITS KOREA helps overseas countries develop their finance strategies for project funding. (Notification Publishing No. 2014-267 of MOLIT)

Global Cooperation to Provide the Chance to Share ITS Knowledge and Experience

- Host ITS Roadshow hosted 16 times in 13 countries which are evaluated as potential export market
- Organize Exhibition and Seminars to promote Korean ITS technologies and services
- Hold Invitation Workshop to provide professional training course for sharing ITS policy and technologies

ODA Project Development in ITS

- Arrange EDCF loan and KOICA grant for carrying out overseas ITS projects
- Encourage overseas countries to establish ITS by using various Korea ODA like KSP and funding program proposed by government ministries (Ministry of Land, Infrastructure and Transport, Ministry of Foreign Affairs and etc.)
  - ODA for ITS projects in Colombia, India, Ukraine, Vietnam and Mongolia proposed for funding.
  - In case of insufficient budget for ITS projects in your country, take advantage of funding assistance in Korea
- ODA (Official Development Assistance), EDCF (Economic Development Cooperation Fund)
- KOICA (Korea International Cooperation Agency), KSP (Knowledge Sharing Program)
Objectives
- To understand concept, background and necessity ITS introduction in Korea
- To learn Korean strategies including laws and policies to effectively deploy ITS in Korea nationwide
- To learn individual ITS services in aspect of technology – Advanced Traffic Management Systems, Bus Information System, and Electronic Toll Collection System and etc.
- To learn the recent technological developments in ITS
- To exchange the statistical facts and ideas on urgent issues facing in each city and find out the customized solutions to deal with those problems
- To strengthen future cooperation in ITS area

ITS Workshop 2015
1. Title: Building Capacity for Better Transport Using ITS (Intelligent Transport Systems)
2. Duration: May 10 (Sun) ~ May 24 (Sun), 2015
3. Number of Participants: 15 participants from Colombia
4. Language: English
5. Detailed Program Schedule

### DETAILED PROGRAM SCHEDULE

<table>
<thead>
<tr>
<th>Date / Time</th>
<th>Program Description</th>
<th>Date / Time</th>
<th>Program Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 10 (Sun)</td>
<td>Arrival</td>
<td>May 13 (Wed)</td>
<td>Lectures</td>
</tr>
<tr>
<td></td>
<td>Move to KOICA</td>
<td>[Lecture 2] National ITS policy &amp; plan Lunch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hotel Check-in &amp; Free time</td>
<td>12:00-14:00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14:00-17:00</td>
<td>Lunch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17:00-18:00</td>
<td>[Lecture 3] ITS Standardization Discussion on action plan preparation</td>
<td></td>
</tr>
<tr>
<td>May 11 (Mon)</td>
<td>KOICA Orientation</td>
<td>May 14 (Thur)</td>
<td>Lectures / Study Visit</td>
</tr>
<tr>
<td></td>
<td>Introduction to KOICA &amp; Program Commemorative photos shooting</td>
<td>[Lecture 4] Transportation Policy in Seoul city Lunch</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ICC tour</td>
<td>09:00-12:00</td>
<td></td>
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<tr>
<td></td>
<td>Hompage registration</td>
<td>12:00-13:00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12:00-13:20</td>
<td>Move to TOPIS [Study Visit] Seoul TOPIS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Welcoming Luncheon</td>
<td>13:00-14:00</td>
<td></td>
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<tr>
<td></td>
<td>14:00-16:00</td>
<td>Move to KOICA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Introduction to daily life in Korea</td>
<td>16:00-17:00</td>
<td></td>
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<tr>
<td></td>
<td>14:00-16:30</td>
<td>Training on action plan preparation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Training on KDA or Gender issue</td>
<td>16:30-17:30</td>
<td></td>
</tr>
<tr>
<td>May 12 (Tue)</td>
<td>Orientation / Country Report / Lecture May 15 (Fri)</td>
<td>Field Trip</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orientation [Lecture 1] Current status of ITS in Korea Lunch</td>
<td>08:00-14:00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>08:30-09:30</td>
<td>Move &amp; Lunch (KOICA → Busan) * Visit Deokgyeong &amp; Sunsan Rest area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>09:30-12:30</td>
<td>[Field Trip] Busan Traffic Information Service Center</td>
<td></td>
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<tr>
<td></td>
<td>12:30-14:00</td>
<td>Move to Diamond Bridge</td>
<td></td>
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<tr>
<td></td>
<td>14:00-16:00</td>
<td>Yongkungsa (temple) Dinner &amp; rest</td>
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<tr>
<td></td>
<td>16:00-17:00</td>
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<td></td>
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<tr>
<td></td>
<td>Action plan methodology</td>
<td>16:30-18:30</td>
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<td></td>
<td>16:30-18:30</td>
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<td></td>
<td>16:30-18:30</td>
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</table>

<table>
<thead>
<tr>
<th>Date / Time</th>
<th>Program Description</th>
<th>Date / Time</th>
<th>Program Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>May 16 (Sat)</td>
<td>Field Trip</td>
<td>May 20 (Wed)</td>
<td>Lectures / Study Visit</td>
</tr>
<tr>
<td>10:00-12:00</td>
<td>[Field Trip] Diamond Bridge Lunch</td>
<td>09:00-12:00</td>
<td></td>
</tr>
<tr>
<td>12:00-13:00</td>
<td>Lunch</td>
<td>12:00-14:00</td>
<td></td>
</tr>
<tr>
<td>13:30-15:30</td>
<td>Haerundae (aquarium)</td>
<td>14:00-16:00</td>
<td></td>
</tr>
<tr>
<td>15:30-17:00</td>
<td>Nurmamu APEC House Dinner &amp; rest</td>
<td>16:00-21:00</td>
<td></td>
</tr>
<tr>
<td>17:00-19:00</td>
<td></td>
<td>16:30-17:30</td>
<td></td>
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<tr>
<td>May 17 (Sun)</td>
<td>Field Trip</td>
<td></td>
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<tr>
<td>09:00-15:00</td>
<td>Move to KOICA &amp; Lunch [Deokgyeong &amp; Sunsan Rest area] Free time</td>
<td>16:30-17:30</td>
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<tr>
<td>15:00-</td>
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<tr>
<td>May 18 (Mon)</td>
<td>Lectures / Study Visits</td>
<td>May 21 (Thu)</td>
<td>Lecture</td>
</tr>
<tr>
<td></td>
<td>[Lecture 5] Introduction of ITS in Expressway Lunch</td>
<td>09:00-12:00</td>
<td></td>
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<tr>
<td></td>
<td>12:00-13:30</td>
<td>Move to KEC</td>
<td></td>
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<tr>
<td></td>
<td>13:30-14:00</td>
<td>Move to KEC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14:00-15:30</td>
<td>[Study Visit] KEC Traffic Information Center</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15:30-17:30</td>
<td>[Study Visit] Smart Highway demonstration area</td>
<td></td>
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<tr>
<td></td>
<td>17:30-18:30</td>
<td>Move to KOICA</td>
<td></td>
</tr>
<tr>
<td>May 19 (Tue)</td>
<td>Lectures / Study Visit</td>
<td>May 22 (Fri)</td>
<td>Action Plan / Closing Ceremony / KOICA Evaluation</td>
</tr>
<tr>
<td>09:00-12:00</td>
<td>[Lecture 6] Traffic Signal Management &amp; Central Lunch</td>
<td>09:00-11:30</td>
<td></td>
</tr>
<tr>
<td>12:00-13:00</td>
<td>Lunch</td>
<td>11:30-12:00</td>
<td></td>
</tr>
<tr>
<td>12:00-13:00</td>
<td>Lunch</td>
<td>12:00-14:00</td>
<td></td>
</tr>
<tr>
<td>13:00-14:00</td>
<td>Move to Anyang</td>
<td>14:00-15:30</td>
<td></td>
</tr>
<tr>
<td>14:00-16:00</td>
<td>[Study Visit] Anyang U- Traffic Center</td>
<td>15:30-16:30</td>
<td></td>
</tr>
<tr>
<td>16:00-17:00</td>
<td>Move to KOICA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17:00-18:00</td>
<td>Establishment on action plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 20 (Wed)</td>
<td>Lectures / Study Visit</td>
<td>May 23 (Sat)</td>
<td>Seoul City Tour</td>
</tr>
<tr>
<td></td>
<td>[Lecture 7] Understanding of Public Transportation and Electronic Payment System Lunch</td>
<td>09:00-12:00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12:00-14:00</td>
<td>Move to KSCE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14:00-16:00</td>
<td>[Study Visit] Korea Smart Card Company (KSCE) &amp; experience of public transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Move to KOICA</td>
<td></td>
</tr>
<tr>
<td>May 21 (Thu)</td>
<td>Lecture</td>
<td>May 25 (Sat)</td>
<td>Action Plan / Closing Ceremony / KOICA Evaluation</td>
</tr>
<tr>
<td></td>
<td>[Lecture 8] Bus Information System Lunch</td>
<td>09:00-11:30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11:30-12:00</td>
<td>Action plan establishment &amp; final checking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12:00-14:00</td>
<td>Farewell Dinner - Seoul N Tower</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14:00-15:30</td>
<td>KOICA Evaluation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15:30-16:30</td>
<td>Departure Orientation</td>
<td></td>
</tr>
</tbody>
</table>

- KOICA Evaluation
- Seoul City Tour
- Field Trip to KEC center
- Award certificate
- System de Transporte Inteligente (Colombia)
Korea is now carrying out C-ITS pre deployment project which will expand nationwide by 2030. In addition, various R&Ds including Autonomous Diving are conducting to develop the future ITS technologies. Under this circumstance, the education programs on new and innovative technologies are required to build and enhance the ITS employees’ capacities. In this regard, ITS Korea is assigned as Dedicated ITS Educational Institute by Ministry of Employment and Labor and Ministry of Land, Infrastructure and Transport since Mar. 2015. ITS Korea is providing the systematic and professional education programs with the employees in ITS industry focusing on actual work and technologies. In addition, it provides ITS orientation program for newly hired employees to foster the professional ITS people.

### ITS Education Courses in 2015

**• Advanced program**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Main Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITS Project Planning (3days/8hours/20 persons)</td>
<td>To review the laws, regulations, policies, national plans, and standard of estimates related to ITS projects To plan ITS projects, draw designs, set the strategies based on the relevant things mentioned above</td>
</tr>
<tr>
<td>FTMS Installation and Operation (5days/8hours/20 persons)</td>
<td>To learn various FTMS services including Automatic Incident Management, ETCS, WIM, data collection and provision for Expressway</td>
</tr>
<tr>
<td>Design and Installation of Traffic Information Center for Operators (4days/8hours/20 persons)</td>
<td>To learn how to build and operate traffic center system by integrating HW, SW, network and communication for the center operators</td>
</tr>
<tr>
<td>Analysis and Utilization of Traffic Big Data (3days/8hours/25 persons)</td>
<td>Highly professional course to develop the new service contents by applying big data platform, processing and statistics methods to the traffic data</td>
</tr>
<tr>
<td>Professional Course of ITS Project Management (3days/8hours/20 persons)</td>
<td>To learn the detailed procedures by each stage, scheduling, and training for ITS Project Management</td>
</tr>
<tr>
<td>ITS Project Assessment (3days/8hours/25 persons)</td>
<td>To practice evaluation of ITS projects by the quantitative qualitative assessment and simulation</td>
</tr>
<tr>
<td>ITS Overseas Business (5days/8hours/20 persons)</td>
<td>To learn the basic knowledge for ITS overseas business, how to draw up project proposals, and case study on ITS exports</td>
</tr>
<tr>
<td>Next Generation of ITS (2days/8hours/30 persons)</td>
<td>To learn the essential factors such as communication, positioning, vehicle control, and sensors to introduce Cooperative ITS (C-ITS, Next generation of ITS)</td>
</tr>
</tbody>
</table>

**• ITS orientation program (Targeted for newly hired employees)**

<table>
<thead>
<tr>
<th>Courses</th>
<th>Main Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITS Practice (4days/8hours/15 persons)</td>
<td>To learn the working level practices by each stage to conduct ITS projects which includes transportation, electronics, IT, and automobile technologies</td>
</tr>
</tbody>
</table>

### ITS Domestic / Global Alliance

[General Manager Claire HONG / e-mail : advanced@itskorea.kr / Tel : +82-31-478-0440]

**ITS KOREA is your best partner for Global Business**

- International Cooperation Exchange and Cooperation with Overseas ITS Organization Promote the Advanced Korean ITS
- Business Matching (Find the Right Partner in Korea and Around the World)
- Gateway to the Hub of the Global ITS
- Attend / Host ITS AP Forum and Exhibition
- Attend / Host ITS World Congress
- MoU (Memorandum of Understanding) Signing
- Member Only Events (e.g. hope day, workshops, symposium and etc.)
- Establishment Forum Upon Members Needs and Request along with Market trend
- Arrangement for ITS Service & Technology Tour in Korea for Foreign Business Visitors
- Membership Only Events (e.g. hope day, workshops, symposium and etc.)
- Host the International/ Domestic Seminar
- Strengthen the Network and Meet the Right Contact Point for Your Business
- Gateway to the Hub of the Global ITS (Strengthen the Network and Meet the Right Contact Point for Your Business)
Part 2

Current Status of ITS in Korea

Member List of ITS KOREA

Chair
KOREA EXPRESSWAY CORPORATION

Audit
DAEBO C&S
GITSN. INC

Vice Chairs

Board of Directors

General Members

Special Members

Part 1
Introduction of ITS KOREA
Introduction of ITS

What is ITS (Intelligent Transport Systems)?

- ITS is a 21st century transport system which collects, stores and provides real-time traffic information to maximize the utilization efficiency, provide convenient and safe transport and reduce energy by applying advanced electronics, information and telecommunication technologies into roads, automobiles and goods.
- The combination of transport and traffic facilities such as vehicles and highways are well-known to be a futuristic traffic system that would reduce traffic congestion through intelligent traffic management.
- This reportedly reduces 20% of traffic congestion through less than 5% input of the highway construction cost.
- ITS is a low cost and highly efficient system that attracts public attention not only because it contributes to fuel saving also reduces CO₂ emission.
### Backgrounds & Objective

- ITS has been introduced since the early 1990’s. In order to promote the ITS implementation more efficiently in an organized manner, the government established the First National ITS Master Plan in 1997.

#### Backgrounds
- 1999. 08 : National Transportation System Efficient Act
- 2000. 12 : 2nd National ITS Master Plan
- 2009. 12 : Renewal of National ITS Master Plan
- 2011. 12 : National ITS Master Plan 2020

#### Objective
- Provide Master Plan for the Deployment of ITS, effectively with newly defined user service areas, timetable, and budget

#### User Service
- ITS User Service of National ITS Architecture
- 7 Service areas - 22 Services - 47 Sub-services

### Service of ITS Architecture

- The National ITS Architecture categorizes ITS services into 7 main-service areas, 22 services and 47 subservices.

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### Footprints of ITS in Korea

#### 1991 – 1995
<table>
<thead>
<tr>
<th>National Promotion Establishment Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>- ITS Pilot Project</td>
</tr>
<tr>
<td>- Gwachon City Establishment of 1st National ITS Master Plan</td>
</tr>
<tr>
<td>- 5th ITS World Congress in Seoul</td>
</tr>
</tbody>
</table>

#### 1996 – 1998
<table>
<thead>
<tr>
<th>Beginning of ITS Pilot Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Development of Advanced Traffic Signal System</td>
</tr>
<tr>
<td>- FTMS Pilot Project (Gyeongbu Expressway)</td>
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</tbody>
</table>

#### 1999 – 2000
<table>
<thead>
<tr>
<th>Enact ITS Legislation</th>
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</thead>
<tbody>
<tr>
<td>- Formulation of National Transport Systems Efficiency Act</td>
</tr>
<tr>
<td>- Establishment of 2nd National ITS Master Plan</td>
</tr>
</tbody>
</table>

#### 2001 – 2003
<table>
<thead>
<tr>
<th>Deployment of ITS Model City</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Construction of ITS Model City</td>
</tr>
<tr>
<td>- ITS Wide-area Plan &amp; Local Government Plan</td>
</tr>
<tr>
<td>- ETCS Pilot (Seoul Metropolitan Expressway)</td>
</tr>
</tbody>
</table>

#### 2004 – 2012
<table>
<thead>
<tr>
<th>Spread &amp; Growth of ITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- ITS development of expressway national highway and arterial &amp; local road</td>
</tr>
<tr>
<td>- BIS development of Local Governments</td>
</tr>
<tr>
<td>- Construction of ETCS on the whole expressway</td>
</tr>
<tr>
<td>- R&amp;D for system improvement</td>
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</tbody>
</table>

#### 2013 –
<table>
<thead>
<tr>
<th>Upgrading ITS</th>
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</thead>
<tbody>
<tr>
<td>- Deployment of C-ITS</td>
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<tr>
<td>- One Card All Pass</td>
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<tr>
<td>- Public-Private Cooperation on traffic data collection</td>
</tr>
</tbody>
</table>

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**Milestone**

- **1991. 09 : 1st National ITS Master Plan**
- **1999. 08 : National Transportation System Efficient Act**
- **2000. 12 : 2nd National ITS Master Plan**
- **2009. 12 : Renewal of National ITS Master Plan**
- **2011. 12 : National ITS Master Plan 2020**

---

**ITS Master Plan**
## ITS Master Plan 2020

### Annual Investment Cost of ITS

- **1st Stage** 2001–2005: 903 million USD (19%)
- **2nd Stage** 2006–2010: 1,306 million USD (27%)
- **3rd Stage** 2011–2015: 1,305 million USD (27%)
- **4th Stage** 2016–2020: 1,299 million USD (27%), Total = 4,813 million USD

![Graph showing annual investment cost (USD$): Million)](image)

- Public Company
- Local Government
- Central Government

### Budget of Each Service Section

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<tbody>
<tr>
<td>ATMS</td>
<td>Advanced Traffic Control Incident Management Traffic&amp;Roads Information Service Hazardous Sites Management</td>
<td>177</td>
<td>87</td>
<td>258</td>
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<tr>
<td>APTS</td>
<td>Public Transportation Management Public Transportation Information Service</td>
<td>1,070</td>
<td>1,175</td>
<td>2,246</td>
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<tr>
<td>ETCS</td>
<td>Electronic Toll Payment Electronic Public Transport Payment</td>
<td>27</td>
<td>37</td>
<td>63</td>
</tr>
<tr>
<td>CVO</td>
<td>Hazardous Freight Vehicle Management</td>
<td>37</td>
<td>-</td>
<td>37</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td>1,305</td>
<td>1,299</td>
<td>2,604</td>
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</table>

## Effects of ITS

- **Create annual $10.7 billion worth Social benefits**
- **High B/C ratio of ITS deployment**
- **Low cost makes huge effects**
- **Eco-friendly technologies**

## Overview of ITS in KOREA

### Organizations

- **Private Sector**
  - MOLIT
  - KEC
  - KAA
  - National R&D Institute for ITS

- **Public Sector**
  - Local Government
  - KOREA

### Current Status & Future Plan in ITS

- **1999~1998**
  - Development of Advanced Traffic Signal System
  - ITS Pilot Project
    - ITMS Pilot Project in Gwangju City
    - 1st National ITS Master Plan
    - 1st ITS World Congress in Seoul

- **1999~2003**
  - Transportation System Efficiency Act
  - 2nd National ITS Master Plan
  - Model Deployment of ITS Projects in 3 Cities
  - ETCS Pilot Project

- **2004~2008**
  - ITS Operation on Expressway & National Highway
  - ITS Operation in Metropolitan & Local Government
  - Nation-wide expansion and Operation of ETCS

- **2009~2015**
  - 3rd National ITS Master Plan
  - R&D of c-ITS
  - 3rd ITS World Congress in Busan
  - Complete R&D of Smart Highway Project
  - c-ITS pilot project
  - One card all pass
  - Public-Private cooperation on traffic data collection
Current Status of ITS

Expressway
- Installed on 4,044km
- Installed on 100% of Expressway

National Highway
- Installed on 2,607km
- Installed on 20% of total length and will be installed on 45% by 2020

Installation Status of ITS Equipment

Local Governments
- 71% of Local governments are operating ATMS
- 90% of Local governments are operating BIS/BMS for cities with population over 200,000

ATMS
- Length: 5,488 km
- # of Units: VDS 2,697, AVI 331, CCTV 2,105, VMS 1,128, DSRC 1,846

BIS/BMS
- Route: 5,210 lines (service on 76% of total lines)
- BIT: 18,517 (installed on 23% of bus stop)
- OBE: 34,888 (mounted on 98% of Bus)

ITS Standardization System

MOLIT
- Establish National ITS Standards (Technical Regulations)
- Entrust Standard Agency
- Request as National Standard

The National Organization of ITS Standards (ITS KOREA)
- Planning
- Dissemination
- International Cooperation
- Verification of Standard Observance

ITS Standard Assembly (ITS Korea)
- Propose as National Standard
- Standard Conformance Test

Establish National ITS Standards (Technical Regulations)

List of Established Technical Regulations

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<thead>
<tr>
<th>MOLIT</th>
<th>Established / Revision</th>
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<tr>
<td>The basic traffic information exchange</td>
<td>2012.08.24</td>
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<tr>
<td>The basic traffic information exchange II</td>
<td>2012.08.24</td>
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<tr>
<td>The public transport (Bus) information exchange</td>
<td>2013.04.11</td>
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<tr>
<td>The basic traffic information exchange IV</td>
<td>2012.08.24</td>
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<tr>
<td>ETCs information exchange by DSRC</td>
<td>2013.04.11</td>
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<tr>
<td>ITS standard Node&amp;Link development criteria</td>
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<tr>
<td>ITS work instructions</td>
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<tr>
<td>Traffic information provision instructions</td>
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<tr>
<td>ITS performance test instructions</td>
<td>2006.05.01</td>
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<tr>
<td>ITS standard node&amp;Link management guideline</td>
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<tr>
<td>ITS implementation guideline (VDS)</td>
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<tr>
<td>ITS implementation guideline (AVI)</td>
<td>2010.10.08</td>
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<tr>
<td>ITS implementation guideline (VMS)</td>
<td>2010.10.08</td>
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<tr>
<td>ITS implementation guideline (CCTV)</td>
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<td>Guideline of ITS development and operation related with Crosswalk</td>
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<td>Guideline of ITS government subsidy for Local government</td>
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<tr>
<td>BIS/BMS data management guideline</td>
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<tr>
<td>OBU certification system guideline for ETCS</td>
<td>2013.04.11</td>
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</tbody>
</table>
### List of Established De-Facto Standards

65 de-facto standards oriented ITS industries are established and disseminated as of Dec. 2014. These are about Requirements, Message set, conformity and performance test and etc.

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<th>No.</th>
<th>Title</th>
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<td>ITSK-00001</td>
<td>ITS Basic Data Concept and Dictionaries Standard</td>
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<tr>
<td>ITSK-00002</td>
<td>Central DB of Road Digital Map Standard</td>
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<tr>
<td>ITSK-TR-00003</td>
<td>Data Concept of Location Referencing Method (Technical Report)</td>
<td>2003.07.15</td>
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<tr>
<td>ITSK-00005</td>
<td>Requirement for ITS Data Registry and Data Dictionaries Standard</td>
<td>2003.07.15</td>
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<td>ITSK-00006</td>
<td>Data Dictionaries of AITS Standard</td>
<td>2003.07.15</td>
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<tr>
<td>ITSK-00007</td>
<td>Data Dictionaries of ATMS Standard</td>
<td>2003.07.15</td>
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<tr>
<td>ITSK-00008</td>
<td>Data Dictionaries of APTS Standard</td>
<td>2003.07.15</td>
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<td>ITSK-00009</td>
<td>Data Dictionaries of CVO Standard</td>
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<td>ITSK-00010</td>
<td>Messagesets for Traveler Information Service Standard Part 1</td>
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<td>Messagesets for Electronic Toll Collection Systems Standard</td>
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<td>Messagesets for Exchange of Traffic Information Service Part 1</td>
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<td>Messagesets for Incident Management Standard</td>
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<td>Messagesets for Traffic Control Standard Part 1</td>
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<td>Messagesets for Exchange of Traffic Information Service Standard Part 2</td>
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<td>Messagesets for Traffic Control Standard Part 2</td>
<td>2003.07.15</td>
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<td>Messagesets for Traveler Information Service Standard Part 2</td>
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<td>Messagesets for Public Transport Information Standard Part 1</td>
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<td>ITSK-00020</td>
<td>Messagesets for Est. Electronic Toll Collection Systems Standard</td>
<td>2003.07.15</td>
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<td>ITSK-00020-13</td>
<td>The Standard Regarding a Performance Test Method of ETCS</td>
<td>2013.07.08</td>
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<td>ITSK-00028</td>
<td>Interface Standard on Vehicle Probe Data for Wide Area Communications</td>
<td>2016.12.13</td>
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<td>ITSK-00209-2011</td>
<td>ETCS OBU Basic Requirements</td>
<td>2012.10.11</td>
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<td>ITSK-00030</td>
<td>ITS Roadsides Modules Part 1</td>
<td>2005.10.19</td>
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<td>ITSK-00032-2012</td>
<td>ETCS Integrated Lane Controllers Specification Part 2. I/W</td>
<td>2012.02.05</td>
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<td>ITSK-00033-2012</td>
<td>ETCS Integrated Lane Controllers Specification Part 2. Interface</td>
<td>2012.02.05</td>
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<tr>
<td>ITSK-00034</td>
<td>Fundamental Software Structure for Public Transport Information based on Mobile Locations</td>
<td>2016.12.13</td>
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<tr>
<td>ITSK-00035</td>
<td>Service Classification Standard Using DSRC</td>
<td>2008.12.20</td>
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</tbody>
</table>
Next Generation ITS in Korea: C-ITS Master Plan

Overview
- Goal: Technical validation and service supplementation for the pre-deployment of Next-generation ITS (C-ITS)
- Project period: Jul. 2014 ~ Feb. 2017
- Budget: 18 million USD
- Scope
  - Various type of 3,000 OBUs, 95 RSEs
  - Deployed over 75km long on expressway, national highway, and urban road

Short Term (Introductory period, ~2020)
- Construct infrastructures on expressway
- Basic type of OBUs penetration up to 10% of vehicles

Mid Term (Expanding period, ~2025)
- Construct infrastructures on metropolitan area
- OBUs penetration up to 50% of vehicles
- Mandatory OBU installation in commercial vehicles

Long Term (Maturation period, ~2030)
- Construct infrastructures on small and medium-sized cities
- OBUs penetration up to 70% of vehicles
- Mandatory OBU installation in non-commercial vehicles

Next Generation ITS in Korea: C-ITS Pre Deployment

Overview
- Goal: Technical validation and service supplementation for the pre-deployment of Next-generation ITS (C-ITS)
- Project period: Jul. 2014 ~ Feb. 2017
- Budget: 18 million USD
- Scope
  - Various type of 3,000 OBUs, 95 RSEs
  - Deployed over 75km long on expressway, national highway, and urban road

Proceeding Details
- Development of technologies and standard
- Build a foundation for C-ITS (e.g. Project effectiveness analysis, Legislation)
- Application and verification of technologies and prioritization of services
- Planning C-ITS expand

Prioritized services: 6 sectors, 15 services are expected to provide
 ITS POLICY in Korea: PRIVATE–PUBLIC SECTOR COOPERATION

The current ITS deployment rate in Korea is only reaching at 21% for last 20 years. In case of expressway, ITS is equipped with 100% but for the urban roads, ITS is implemented on only 10.3%. However, along with the rapid smart phone penetration and IT technology development, the private companies are now providing the high quality of traffic information nationwide. So MOLIT (Ministry of Land, Infrastructure and Transport) decides to take advantage of traffic information collected by private sector in order to compensate the data in area with lack of ITS infrastructure. In addition, MOLIT will also share the data collected from ITS infrastructure with the private sector so that private companies can develop the upgraded services to meet the customers’ need, especially in safety area.

<table>
<thead>
<tr>
<th>Traffic Information Collecting and Providing System</th>
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</thead>
<tbody>
<tr>
<td>Public-Private Cooperation</td>
</tr>
<tr>
<td>• Collection Information</td>
</tr>
<tr>
<td>• Using traffic information collected by private sector (private)</td>
</tr>
<tr>
<td>• Providing Information</td>
</tr>
<tr>
<td>• Using smartphone and navigation increasing number of information on VMS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Direct Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>- It will be possible to collect traffic information includes ITS-uncovered 49,500Km road.</td>
</tr>
<tr>
<td>- ITS infrastructure construction won’t be necessary, so that USD 1.28 billion can be saved.</td>
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</table>

<table>
<thead>
<tr>
<th>Indirect Effects</th>
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<tbody>
<tr>
<td>- (regulations) Diversified management for road transportation will be realized, so that the feasibility analysis for road infra can be possible.</td>
</tr>
<tr>
<td>- (Social cost) Save USD 11 billion of congestion &amp; distribution cost through real-time diversified management, and reduce 0.81 million tons of greenhouse gas.</td>
</tr>
<tr>
<td>- (Security service) public provides real-time security information, and private develops and offers traffic security information service.</td>
</tr>
<tr>
<td>- (Lead the ITS technology) Maintain the top-class ITS technologies and export abroad.</td>
</tr>
</tbody>
</table>

One Card All Pass

- The first electronic payment system for public transportation was introduced in 1996, Seoul, Korea. Based on reform of Seoul bus system in 2004, with one transportation card, users can pay for most of public transportation modes such as taxi, bus, and subway.
- Over 95% of bus passengers and 100% of subway passengers uses this transportation card in Seoul, and the saved cost per person is 473 dollars in average a year.
- In 2014, One Card All Pass, an integrated card available paying for not only taxi, bus, and subway, but also train, expressway toll and even parking system was developed and introduced.

The Way to Go to my Hometown

- Mr. Kim living in Seoul is planning to visit his hometown, Ulsan and meet his parents after his business trip to Busan. Let’s see Mr.Kim’s trip with an integrated transportation card.
Current Status of Overseas Export

- Korea ITS exported approximately USD 1 Billion to 32 countries since 2006.
- As of Aug. 2015, a total of 80 projects are conducted including EFC, ATE, AFC, ATMS, PIS and WIN.

Export by Continent

<table>
<thead>
<tr>
<th>Continent</th>
<th>Number of Projects</th>
<th>Amount of Projects</th>
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<tbody>
<tr>
<td>Asia</td>
<td>47.5%</td>
<td>34.1%</td>
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<tr>
<td>Europe</td>
<td>18.4%</td>
<td>23.3%</td>
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<td>Oceania</td>
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<td>15.5%</td>
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<tr>
<td>Africa</td>
<td>6.2%</td>
<td>16.1%</td>
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<tr>
<td>North America</td>
<td>10.0%</td>
<td>6.2%</td>
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<tr>
<td>Latin America</td>
<td>2.5%</td>
<td>2.3%</td>
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<tr>
<td>Middle East</td>
<td>0.6%</td>
<td>0.6%</td>
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<tr>
<td>(based on number of projects)</td>
<td>(based on amount of projects)</td>
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## Chart of Membership Categories

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Traffic Management</th>
<th>Public Transportation</th>
<th>Electronic Payment</th>
<th>Traffic Information Integration/Management</th>
<th>Trawluer Information</th>
<th>Advanced Vehicle/Road Operation</th>
<th>Commercial Vehicle Operation</th>
<th>Others</th>
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<tr>
<td>AIRPOINT Co., Ltd</td>
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</table>
Company Overview
Airpoint's ETC (Electronic Toll Collection) Total Solution includes RSE (Road side equipment), OBE (On board Equipment), Chip Solution and DSRC protocol Communication Analyzer. Especially, using the chip solutions (RF IC & MODEM IC) which were developed and manufactured from Airpoint, the global leader of Radio Signal processing technology, the problem of ‘Delay’ has been solved. Variety of special OBE line such as Solar type and Hybrid type which were developed and manufactured from Airpoint are highly popular in global Market currently and it can be easily applied to world market. RSE, the one equipped on the road side for communicating with OBE, it also has lot of sales references to many local governments of Korea. Together with Communication analyzer for all the test like Protocol Conformance Analyzing, L2/L7 Test and S/W Reliability Test to get the certification, all the integrated and excellent solution relating ETC can be provided by Airpoint.

Business Area

1st category
- Traffic Signal/Control - Incident Management - Traffic Information - Safe-driving Support
- Traffic Enforcement - Parking Management

2nd category
- Electronic Toll Collection - Electronic Parking Payment - Electronic Fare Payment
- Traffic Information Integration/Management - Traffic Information Center Traffic Data Management
- Traffic Information Integration - Traffic Information Center Traffic Data Management
- Pre/On-Trip Traveler Information Service - Telematics Service
- Advanced Vehicle/Road - Safe-driving Vehicle & Road - Autonomous Driving - Drive Assistant System
- Others

Ongoing ITS project or R&D
Intelligent RF IC for OBE/RSE in ITS(ETC/TIS) ITS
- One chip solution [MODEM IC+ RFIC+ CPU] (will be released in second half of 2012)
- Joint Working with China OBE Manufacturer

General Information
Company Name: AIRPOINT Co., Ltd.
Website: www.airpointglobal.com
Address: #204 Miguntechnoworld II, 533-1 Yongsan-dong, Yuseong-gu, Daejeon-city, 305-500, Republic of Korea

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E-mail: rahnwoo@airpointglobal.com

IT’S KOREA Annual Report 2015
Company Overview
CEST Co., Ltd. has intensively developed the IT technology for a ubiquitous computing environment to achieve the highest level of technology in the short-distance wireless communication field. We aim to provide service based on new technology to various fields such as distribution, logistics, U-Tour, U-Hospital, safety facilities, and V2X solutions. CEST is the only company to offer complete V2X solutions – Road-Side Units, On-Board Units, Hardware products, and Software stacks from PHY/MAC to the Application Layer.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
  - Traffic Information Integration/Management
  - Traffic Information Center Traffic Data Management
  - Traveler Information
    - Pre/On-Trip Traveler Information Service
    - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
Low Cost, High Accurate Positioning system using WAVE communication

Others
Certification
- ISO 9001:2008
- CE
Patent
- Unmanned Vehicle Photographing Equipment
- Automatic Vehicle Number Recognition System
- Vehicle Speed Detection System
- Traffic Law Violation Enforcement System

ITS Product & Technologies
V2X communication performance Analysis system
- Automated measurement system development
- Real-time performance Measurement / Analysis / Views
- Overall V2X communication performance measurement
- Scalability considerations for increasing the module

Packet Analyzer
- WSMP/WSA/CSM Packet Capturing
- User define data formatted Packet analysis
- Real-Time Protocol Validation/Verification
- Real_Time Tx Packet Location tracking
  (if GPS data is in Packet)

Performance Analyzer
- In-Vehicle Real-Time Performance analysis
- Testing Scenario Creating/Customizing
- Test results monitoring & analysis Based Cloud system
- For WAVE Modules based linux OS, Testing Standardization
- Testbed setup & operation in KNU
- Adapted Common Safety Message of ITS Korea
- Adapted IEEE Std 1609.2

RT Tracking Analyzer
- Cloud based monitoring/data integration
- Big-Data analysis

General Information
Company Name: CEST Co., Ltd.
Website: www.cest.co.kr
Address: #301 Business Incubator Kyungpook National University 80 Daehak-ro
Buk-gu Daegu, 702-701 Korea

Contacts
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Phone (mobile): 82-10-4508-3631
E-mail: jilee@cest.co.kr
DAEBO COMMUNICATION & SYSTEMS

Company Overview

DBCS is the company specialized in traffic IT service. It was established in 1996 for efficient operation and enhancement of IT system installed for the convenient and safe use of highways. We are contributing to the development of national industries and improvement of national life through the sustainable development of techniques, fostering of talents and innovation activities, and etc. And we provide total services throughout the traffic IT field from designing the traffic systems of national roads and municipality roads, as well as highways to the establishment, operation, and management of them.

Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
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  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D

Project: C-ITS/ HI-PASS SYSTEM [ETCS] / DSRC Traffic data collection system / Maintenance ITS BIS, BMS SYSTEMS / Image-based Intelligent transportation system / AVI / UTIS / ETC

R&D: Real-time transfer transit system / Multi-functional CCTV / SMART Tolling system

Others

Certification
- Qualification as the Outstanding Company for Service Quality (Ministry of Knowledge Economy)

Patent
- Received an Achievement Award for a Maintenance Work of Merit Since 2007 (the Korea Expressway Corporation)
- Korea National Quality Award in 2011 (Presidential Prize)
- The Highest Standing Award in 2008 (Prime Minister's Award)

ITS Product & Technologies

Daebos leads New ITS Paradigm “C-ITS”

C-ITS[Cooperative-ITS], an advanced intelligent transport system, is a technology utilizing a communication system that enables to communicate among vehicles. It prevents congestion, accidents or any emergencies on the roads in advance. C-ITS will give a new service for road users, bring major social and economic benefits and values, and lead to greater transport efficiency and safety. Daebos is the initial company to develop and construct C-ITS in Korea. And it will give you a strong competitiveness and an advantage in the future market.
Company Overview

DAEYEONG UBITEC was established in March 1988, as a professional engineering company in Korea. Since then, we have been contributing an important part in ICT infrastructure building in and outside of the country by providing our clients with top quality engineering consulting services namely Planning, Feasibility Study, Design, Analysis, Supervision, Evaluation of ICT projects. Based on our accumulated experience and technology in the domain of Telecommunication Network, ITS, BRT, GIS, e-Government, e-Procurement, U-city, etc., our customized approach combined with our passion for customer value has enabled us to sustain our growth and lead the Korean IT service industry for more than 24 years. Daeyeong Ubitec is on its way to becoming the world’s leading consulting firm in ICT field. We will keep striving to provide quality expert services and to satisfy our customers’ needs.

Business Area

1st category
- Traffic Management
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- Commercial Vehicle Operation
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Pedestrian/Disabled Support System

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D

<table>
<thead>
<tr>
<th>Name of Project</th>
<th>Name of Authority</th>
<th>Project Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overseas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intelligent Transport System Consultancy Services in Kazakhstan (CSP-3)</td>
<td>ADB</td>
<td>12.01.02-12.07.01</td>
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<tr>
<td>Consultancy Services for Development of Intelligent Transportation System (ITS) in Kazakhstan</td>
<td>ADB</td>
<td>11.12.29-12.06.21</td>
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<td>Public Security Innovation Project in the Republic of Angola</td>
<td>ANP(Angola National Police)</td>
<td>11.11.30-14.05.31</td>
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<tr>
<td>Feasibility Study for Establishment of Intelligent Transportation System in the Addis Ababa in Ethiopia</td>
<td>KENCA (Korea Engineering &amp; Consulting Association)</td>
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</tr>
<tr>
<td>Technical Assistance of Public Transport Information and Communication Technology in Mongolia</td>
<td>ADB</td>
<td>11.06.15-11.12.15</td>
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<tr>
<td>Feasibility Study for Construction of ITS Project in the Dominican Republic</td>
<td>Korea Exim Bank</td>
<td>10.06.08-10.10.13</td>
</tr>
<tr>
<td>Consulting Service for Ulaanbaatar ITS Project in Mongolia</td>
<td>Ulaanbaatar City Government</td>
<td>07.12.07-10.06.30</td>
</tr>
<tr>
<td>Consulting Service for Toll Road ITS FS Project in Indonesia</td>
<td>KIPA/LG CNS</td>
<td>07.04.01-07.06.30</td>
</tr>
<tr>
<td>Establishment of ITS &amp; Bus Information Management System Project in Iran</td>
<td>KENCA (Korea Engineering &amp; Consulting Association)</td>
<td>07.03.08-07.11.30</td>
</tr>
<tr>
<td>Ongoing ITS project or R&amp;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervision on Installation of National Road ITS in Busan in 2011</td>
<td>Korea Institute of Construction Technology</td>
<td>11.11.28-11.12.30</td>
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<tr>
<td>Detail Design for Construction of Digital Traffic Management System in 2011</td>
<td>Korea Expressway Corporation</td>
<td>11.09.02-11.10.31</td>
</tr>
<tr>
<td>2nd Detail Design for Construction of Infrastructure U-Traffic Information Telecommunication Network-based</td>
<td>Seoul Metropolitan Government</td>
<td>11.08.02-11.09.20</td>
</tr>
<tr>
<td>Responsible Supervision on Construction of ITS in Mokpo-Dwangyang Line (1st)</td>
<td>Honam District of Korea Expressway Corporation</td>
<td>11.07.05-11.12.31</td>
</tr>
<tr>
<td>Supervision on Construction of TTMS in Jeonju-Dwargyung Line (2nd)</td>
<td>Honam District of Korea Expressway Corporation</td>
<td>11.01.18-11.06.20</td>
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<tr>
<td>Detail Design on Digital Traffic Management System FTMS, TTMS in 2011</td>
<td>Korea Expressway Corporation</td>
<td>11.03.11-11.11.15</td>
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<tr>
<td>Responsible Supervision on Construction of ITS in Iksan City (4th)</td>
<td>Iksan-si, Jeollabuk-do</td>
<td>10.12.09-11.05.23</td>
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<tr>
<td>Responsible Supervision on Construction of BIS (phase 3)</td>
<td>Seoul Metropolitan Government</td>
<td>10.03.01-11.02.20</td>
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<tr>
<td>Responsible Supervision on Construction of BIS (phase 2)</td>
<td>Seoul Metropolitan Government</td>
<td>10.10.27-10.11.05</td>
</tr>
<tr>
<td>Responsible Supervision on Construction of BIS (phase 1)</td>
<td>Seoul Metropolitan Government</td>
<td>09.10.14-10.02.28</td>
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</table>

Domestic

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<td>Responsible Supervision on Construction of BIS (phase 1)</td>
<td>Seoul Metropolitan Government</td>
<td>09.10.14-10.02.28</td>
</tr>
</tbody>
</table>
General Information
Company Name: DAEYEONG UBITEC Co., Ltd.
Website: www.dyeng.net
Address: 7F, 6th, Ace High-End Tower, #60-25, Gasan-dong, Geumcheon-gu, Seoul 153-801, Korea

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Department: Global Business Division
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Fax (office): 82-2-2633-5838
Phone (mobile): 82-10-8550-8231
E-mail: cookiejj75@hanmail.net

Others
Certification
- Overseas Construction Business - Int’l Organization Procurement
- Registration of Electricity Business - InfoSystem Supervision & ICT Engineering Business
- KS Q ISO 9001/ ISO 14001 - INNO-BIZ / MAIN-BIZ
Patent
- Certificate of Appreciation [Indonesia-MCIT], 2010.12.13
- Award of Honour [Mongolia – UCG], 2010.06.21
- Presidential Commendation, 2008.10.19
- Ministry of Construction and Transportation Commendation, 2008.07.19
- Korea Rail Network Authority Commendation, 2008.12.23
- Chairman of Korea Communication Commission, 2010.10.18

ITS Product & Technologies
Product Offerings
Intelligent Transportation System (ITS)
- Integration of traffic management center system (H/W and S/W)
- Development of S/W related to ITS
- Toll Collection System (TCS)
- Design / Supervision for Transportation Management System (TMS)
- Operation and Maintenance (O&M) of Traffic Lights
- On-line traffic survey and data processing

Technologies

<table>
<thead>
<tr>
<th>Category</th>
<th>Items</th>
<th>Registration No.</th>
<th>Established Date</th>
<th>Expired Date</th>
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<tbody>
<tr>
<td>Patent</td>
<td>High Linearity RF Mixer Applicable to Zigbee System</td>
<td>10-096581</td>
<td>2009-12-01</td>
<td>2029-12-01</td>
</tr>
<tr>
<td>Patent</td>
<td>Facility for Protecting Optical Cable used in Information and Communications</td>
<td>10-09593409</td>
<td>2010-01-28</td>
<td>2030-01-28</td>
</tr>
<tr>
<td>Patent</td>
<td>Rotary Joint Apparatus Having Multiple Channels for Transferring Data and Electric Current</td>
<td>10-0988549</td>
<td>2010-05-04</td>
<td>2030-05-04</td>
</tr>
</tbody>
</table>
Company Overview

EB CARD is a global Automatic Fare Collection System (AFCS) providing management, consulting, technology service, system installation and company operation. EB CARD is one of the LOTTE pre-paid Card Affiliated company with priority given to Seoul-metropolitan area. The LOTTE Pre-paid Card Affiliates is a digital payment platform that provides fare collection system and customer service across multiple transit authorities and modes of transportation. Combining unique service experience, comprehensive capabilities across all of the industries and business and extensive micro payment, EB CARD collaborates with clients to help them operate high-performance businesses and governments. EB CARD has an abundance of excellent specialist in the field of pre-paid payment business/ transit payment service/ pre-paid, credit, online, mobile payment system. We provides cutting-edge system to ensure customer convenience based on optimal and comprehensive technologies as a reputable and reliable supplier.

Business Area

1st category

- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
- Multi Modal Information/Management
- Bus Rapid Transit System/Solution
- Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Integration
  - Traffic Information Center Traffic Data Management

2nd category

- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

Ongoing ITS project or R&D

- Project of Automatic Fare Collection (AFC) system in Ferry Transportation in Korea
- L-PAY (LOTTE global payments platform)
- Consulting and Proposal of Automatic Fare Collection (AFC) system of Peru /THE KOREA TRANSPORT INSTITUTE

Others

Certification

Patent
- Automatic Traffic Card System Charging Mileage Points
- Method for managing a stolen or lost card and card reader therefor
- System for Managing for Non-payment Fees of Food Waste and Method therefor
- Traffic Law Violation Enforcement System
- Apparatus for charging a transportation card and method therefor
- Apparatus for compress credit card number and method of the same

ITS Product & Technologies

Pre-paid Payment Business

Domestic & international AFCS Business, NFC Business and U-city Business, Smart card

Pre-paid/Credit/Online/Mobile payment

Transit Payment Service

Payment for bus, taxi, subway and supply related equipment

General Information

Company Name: EB CARD
Website: www.cashbee.co.kr

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Department: Business & planning Team
Phone (office): 02-2-2028-7087
Fax (office): 02-2-2028-9001
Phone (mobile): 08-10-5298-0582
E-mail: twshin@lotte.net
Ericsson-LG

Company Overview

<About Ericsson-LG>
Ericsson-LG (formerly LG-Ericsson) was launched as a joint venture between Ericsson and LG Electronics, in July 2010. The company is a leader in the Korean telecommunication industry, providing customized solutions for operators and corporations, with a portfolio ranging from mobile, fixed network infrastructure and enterprise.

<About Ericsson>
Ericsson is the driving force behind the Networked Society – a world leader in communications technology and services. Our long-term relationships with every major telecom operator in the world allow people, business and society to fulfill their potential and create a more sustainable future.

With approximately 115,000 professionals and customers in 180 countries, we combine global scale with technology and services leadership. We support networks that connect more than 2.5 billion subscribers. Forty percent of the world’s mobile traffic is carried over Ericsson networks. And our investments in research and development ensure that our solutions – and our customers – stay in front. Founded in 1876, Ericsson has its headquarters in Stockholm, Sweden. Net sales in 2014 were SEK 228.0 billion (USD 33.1 billion). Ericsson is listed on NASDAQ OMX stock exchange in Stockholm and the NASDAQ in New York.

Business Area

1st category

- Traffic Management
- Traffic Signal/Control
- Incident Management
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- Safe-driving Support
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- Advanced Vehicle/Road
- Safe-driving Vehicle & Road
- Autonomous Driving
- Drive Assistant System

- Commercial Vehicle Operation
- Fleet Management System
- Hazardous Freight Management
- Logistics

2nd category

- Hardware
- Software
- SI
- Consulting
- Others (Managed Services)

ITS Product & Technologies

Communication technology and services are crucial parts of C-ITC, in this area, Ericsson has leading competence and market traction. Ericsson has been leading or acting in ITS related research projects like CoCar, CoCarX, Converge, HeERO, the Swedish roadmap for a connected and cooperative transport system, ELVIIS. Ericsson also invests heavily in research in relevant areas for ITS, such as communication technologies for the Networked Society, including Transport specific applications. Among CITS domains, Ericsson offerings are focusing on ICT Infrastructure, Traffic Management and Transport Transactions.

ICT Infrastructure

The rapidly growing demand for communication and connected services for road, rail and public transport requires a strong and future-proof ICT Infrastructure. Ericsson delivers and operates ICT Infrastructure and services for a road, rail and public transport based on our leading products and services for telecommunication.

Connected Roads and Traffic for safety and more efficiency. Connected Public Transport for more attractiveness.

- Multi-service Backbone Networks
- Railway Telecommunications
- Road/Rail surveillance
- Tunnel/Metro Coverage
- Onboard Connectivity

Traffic Management

Road, rail and public transport is facing growing challenges regarding safety, efficiency and sustainability. By connecting vehicles, transport infrastructure, travelers and goods – new possibilities arise to manage traffic in a more efficient and safe way. Ericsson solutions enable a truly cooperative and intelligent transport system – based on our leading products and services for telecommunication.

Connected traffic can be managed more efficiently.

- Traffic Management Services
- Connected Traffic Cloud
- Connected Traffic Analytics

Transport Transactions

Ericsson creates better conditions for sustainable travel by supporting new business models and partnerships for travel service providers and giving the customers one-stop access to a range of travel services such as public transportation, car sharing, car rentals, bike rentals and taxi.

Smart fees and payment enabling multimodal transport

- Road user charging
- Fare collection
- Passenger information

Contacts

Name: Seonkeon Kim
Department: Growth Business Division
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Fax (office): 82-(0)2-2005-2311
Phone (mobile): 82-(0)10-5622-0714
E-mail: Seonkeon.kim@ericsson.com

General Information

Company Name: Ericsson-LG
Website: www.ericssonlg.com
Address: 508, Nonhyeon-ro, Gangnam-gu, Seoul, Korea
eSSys Co., Ltd.

Company Overview

eSSys vision is to become the global IT leader in Automotive Industry. Founded in the year of 2005, eSSys now reached the position of Korean Market Leader for Before Market DSRC OBE. eSSys is working on a joint venture project with leading ITS System Integrators of Korea for the realization of WAVE and working close with Korean Express way corporation and a consortium member for the WAVE ETCS in Korea. eSSys is the world best supplier for a global Information Technology component of Bluetooth and Wi-Fi modules & Telematics unit (e-Call, Cubis-T).

Lead by the Veterans of Automotive Industry, strictly following quality principles, and with tie up with International companies, eSSys will achieve its vision in the near future.

Business Area

1st category

- Traffic Management
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  - Traffic Information Center Traffic Data Management

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  - Telematics Service

- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System

- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics

- Others (Telematics Unit for Safety, Bluetooth/Wi-Fi for Automotive)

2nd category

- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D

- V2V, V2I Communication Solution using WAVE Technology
- ISRM OBE for Korea & China ETCS
- Road Side Equipment for Korea & China ETCS
- Bluetooth & WI-FI module for Automotive
- Telematics Unit for Safety & e-Call system Unit for EU

Others

- TS16949 / ISO9001 / ISO14000 / SQ (Supplier Quality) : Certified by Hyundai-Kia Motors / Inno-Biz Club
- Awarded with the Presidential Award for Best Company (2008)
- Awarded with the Best Venture Company of Korea (2008)

ITS Product & Technologies

V2V, V2I Communication using WAVE Technology

Wireless vehicular networks operating on the dedicated short-range Communications frequency bands are the key enabling technologies for the emerging market of intelligent transport system.

- ETCS OBE and RSE : Used for toll collection application.
- Safety OBE and RSE : Used for transferring safety messages between vehicles and between Vehicles and RSE.
ITS Product & Technologies

ISRM OBE for Korea & China ETCS

Before Market In Side Room Mirror OBU (ISRM OBU) for DSRC Based Electronic Toll Collection System. This is an OBU for before market application which is preinstalled in car before sales to user. That is when a user want to buy a car, they can choose the before market OBU option and will be preinstalled in the car before been delivered to user. It is of much convenient to user that they don’t need to install OBU by themselves.

OBE : It is used for electronic toll collection

Road Side Equipment for Korea & China ETCS

RSE stands for Road Side equipment. It provides a bidirectional short range communication with multiple OBE installed in the cars. The RSE controls the protocol, schedules the activation of the OBE, reads from or writes to the OBE, and assures message delivery and validity. RSE is typically, but not necessarily, installed at a fixed location on the roadway.

Bluetooth & WI-FI module for Automotive

Bluetooth and Wi-Fi Module for global AVN Application, eSSys is one of leading supplier of Bluetooth and Wi-Fi modules for Automotive Industry in Korea and across the globe.

Telematics Unit for Safety

e-Call system Unit for EU
Company Overview

ETRI (Electronics and Telecommunications Research Institute) is the largest government funded research institute in Korea, which strives to advance science by means of formulating innovative ideas; developing new techniques; and training professional individuals in the area of information telecommunications to ultimately enhance social and economical aspects of the modern society.

Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Traffic Enforcement
- Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics

2nd category
- Hardware
- Software
- SI
- Consulting

Ongoing ITS project or R&D
- SMART Highway

Others

WAVE Handover technology

ITS Product & Technologies

- Development of WAVE chip
- Development of WAVE Communication module prototype
- Development of WAVE Software
- Development & Research on advanced vehicular communication technologies [Physical/MAC/Networking/Application Layers]

WAVE chip

WAVE Communication module prototype

General Information

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Business Area

1st category

- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management

- Public Transportation
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  - Drive Assistant System

- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics

- Others ( )

2nd category

- Hardware
- Software
- SI
- Consulting
- Others ( )

Ongoing ITS project or R&D

- Construction technology Innovation Project
- Traffic system efficiency project

Others

1. Intelligence based smart shopping method using RFID
2. Data storage method according to the size of ASN.1 file
3. System and data linkage device which interlocks data using ASN.1, Outgoing data encoding method through heterogeneous system using ASN.1 & data linkage method with heterogeneous system
4. Integrated processing terminal for traffic data using ASN.1, Integrated processing method for traffic data using ASN.1 & Controlling method of integrated processing terminal for traffic data using ASN.1
5. Intelligent energy saving type BIT (Bus Information Terminal)

ITS Product & Technologies

1. BIT [Bus Information Terminal] Total Solution
   - Cutting edge functions such as information of bus location, bus service route search, bus stop search, and etc.
   - Installed
   - Patent technology based energy reduction function installed – Green BIT
   - It collects and processes real-time information of location, speed, and etc of running buses and provides relevant information to passengers, drivers, transportation companies, and person in charge in local government.
   - Structure of BIS: Bus information center, BIT (Bus Information Terminal), Vehicle terminal, Wireless Data Network, GPS

   - Gitsn is the only one to contain the original technology of ASN.1 Toolkit, which is the core standard S/W for ITS info-communication
   - Gitsn has joint ownership of the license with the MLTM [Ministry of Land, Transport, and Maritime Affairs]

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General Information

Company Name: GITSN Inc.
Website: www.gitsn.com
Address: #B11, Woorim-e-Biz Center 1, 170-5, Guro-Dong, Guro-Gu, Seoul, Korea

A. GN-B101 (Independent Type)
B. GN-B201 (Shelter Standing Type)
Company Overview
HANATECH SYSTEM has been growing and developing into a leading company thanks to our customer’s supporting and encouraging which inspired us to thrive with great strides in globalizing our business strategy and expanding our global presence in key emerging markets. Our growth vision embodies our commitment to achieving both quantitative growth and quantitatively building our brand and our human capital. We aspire to be an industry leader in our businesses as we strategically develop and invest in new enterprises and business engines that will drive future growth. We will continue to build a corporate culture that fosters mutual growth and prosperity for our employees as well our stakeholder alike.

Business Area

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  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
- Others

2nd category
- Hardware
- Software
- SI
- Consulting

Ongoing ITS project or R&D
- Improvement of obsolescence equipment in New-DAEGU BUSAN Expressway
- Construction of u-City in Sejong City
- Construction of ITS in Jeju Province

Others
Certification

Patent
- CCTV Camera Controller
- Virtual image displaying apparatus for load control
- Unmanned Vehicle Photographing Equipment
- Lighting controller in vision system
- Apparatus for vehicle regulation with vehicle black box
- FPCB (flexible printed circuit board) base plate eccentric test device

ITS Product & Technologies

General Information
Company Name: HANATECH SYSTEM Co., Ltd.
Website: www.hanatek.co.kr
Address: D-1412, Gwangmyeong Techno Park
1345, Soha-dong, Gwangmyeong-si
Gyeonggi-do, korea, 423-795
Company Overview

HanilSTM is an SI enterprise in the field of ITS (Intelligent Transportation System). HanilSTM provides one-stop solutions for building-up and managing ITS related businesses, which cover proposal, design, development and maintenance. HanilSTM has a branch in Vietnam that is playing an important role strategically in launching overseas business in the field of ITS. HanilSTM keeps on carrying out research and development with its own research institute. HanilSTM has accumulated a lot of know-how based on domestic and overseas experiences and has many experts specialized in various parts, so that it can provide better services, products and caring even after sales. HanilSTM will be a trustworthy business partner for you.

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  - Autonomous Driving
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  - Fleet Management System
  - Hazardous Freight Management
  - Logistics

2nd category

- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D

Ongoing ITS Project
- Build-up and maintenance (by WARRANTY) of intelligent highway system between Ho Chi Minh and Trung Luong in Vietnam.
- Seoul-Jemulpo tunnel project.
- Seoul-Gwangmyeong Highway FTMS (Freeway Traffic Management System) project.

R&D projects
- Development of ‘Smart Plug’ (power saving devices for ITS)
- Development of Multi-lane ANPR (Automatic Number Plate Recognition) using one camera (3 or 4 lanes)
- Development of integrated control technology for intelligent traffic facilities
- Establishing ‘Eco Mobility’ road map (pollution-free clean transportation to minimize smoke)
- Measuring visibility in foggy environment using CCTV image
- Development of service model for ‘Smart Car Talk’ (vehicle to vehicle communication)
- Development of smart road system for cooperative self-driving.

Others

Certification:
- ISO 9001:2008
- CE (Digital video server)
- Registered agency for traffic effect analysis and improvement measure establishment
- Certification for Eco Label
- Inno-Biz / Main-Biz

Patent: 25 patents registered including
- An apparatus for recognizing plate number of a vehicle
- A system for measuring velocity of vehicles

ITS Product & Technologies

Product Offerings

<table>
<thead>
<tr>
<th>Video server</th>
<th>Video camera</th>
<th>Complex type</th>
<th>Real time image improving machine</th>
<th>Multi-function control equipment</th>
<th>Surge protector</th>
</tr>
</thead>
</table>

Technologies

- Traffic information center
- Traffic CCTV
- AVI (ANPR)
- VDS
- VMS
- Accident detection system

General Information

Company Name: HANILSTM Co., Ltd
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Company Overview

Hanwha S&C was formed in 1994 with the original mission of managing and updating all of the integrated IT network systems and associated services for the entire Hanwha group. The unit was spun off in the spring of 2001 and has since emerged as a leading IT services provider offering world standard services. We offer services for all industries and provide IT consulting, IT outsourcing, SI(System Integration), NI(Network Integration), industry automation, cyber education, ITS and home network solutions as well as our own U-City technologies. We have ensured the quality of our services by establishing ITSM systems based on ITIL and acquiring ISO9001, ISO2000, ISO 27001 certifications. We at Hanwha S&C endeavor to create corporate value through client oriented management that will lead them to achieve success in this era of ubiquitous information.

Business Area

1st category

■ Traffic Management
  - Traffic Signal/Control  - Incident Management  - Traffic Information  - Safe-driving Support
  - Traffic Enforcement  - Parking Management

■ Public Transportation
  - Bus Information/Management System  - Public Transportation Information/Management
  - Multi Modal Information/Management  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System

■ Electronic Payment
  - Electronic Toll Collection  - Electronic Parking Payment  - Electronic Fare Payment

■ Traffic Information Integration/Management
  - Traffic Information Integration  - Traffic Information Center Traffic Data Management

■ Traveler Information
  - Pre/On-Trip Traveler Information Service  - Telematics Service

☐ Advanced Vehicle/Road
  - Safe-driving Vehicle & Road  - Autonomous Driving  - Drive Assistant System

☐ Commercial Vehicle Operation
  - Fleet Management System  - Hazardous Freight Management  - Logistics

☐ Others (               )

2nd category

■ Hardware  ■ Software  ■ SI  ■ Consulting  □ Others (               )

Ongoing ITS project or R&D

- Proposal of Bongdam-Songsan Expressway ITS design & construction project (FTMS/TCS/ETCS)
- Proposal of Asan-Pyeongtaek Expressway ITS design & construction project (FTMS/TCS/ETCS)
- West Suwon-Uiuang Expressway ITS design & construction project (FTMS/TCS/ETCS)
- Eco-Bike Service in Goyang (Public-bike system)  - Project of Vietnam ITS feasibility study
- Seoul Metro Line No.2 Vehicle Information System

Others

Certification

ITS Product & Technologies

Product Offerings
- To use the Eco-Bike 'Fifteen', join the homepage (Fifteen Life) and receive a card and membership. After obtaining certification at a station (Fifteen Park) nearby the subways or other areas where the public gather, rent a bicycle and enjoy riding. The bicycle rental status, station map, and bicycle route information can be obtained from the homepage and also through smart phones.
- Users are classified into members and non-members where the membership card is used to rent bicycles by identifying it through the KIOSK. Fifteen emerged by benchmarking the French public bicycle rental service named Velib; however, Fifteen is specialized for daily life through the advanced IT technology, design, health management, various services and a local area vitalization program.

Technologies

Real Time Traffic Control
- Gathering crossroad traffic information  - Real time traffic signal control

Gathering Traffic Information
- Gathering traffic information including traffic volume, speed, and share  - Real time monitoring of traffic and road status

Providing Traffic Information
- Providing real time traffic information
  - Regardless of time and place using various media such as Variable Message Sign (VMS) and the Internet

Traffic Law Violation Regulation
- Regulating parking violation vehicles, overspeeding vehicles, traffic signal violation vehicles

Providing Bus Information
- Gathering bus location information using wireless communication
  - Providing bus location and arrival information & Calculating station arrival time

Management of Emergency Situations
- Real time Monitoring of Traffic Situations
- Handling emergency situations with cooperation from related organizations

Toll Collection system / Electronic Toll Collection system
- Classification of vehicle type through vehicle detecting sensor
- Imposing toll according to vehicle type (cash/card)
- Toll collecting through wireless communication (DSRC: dedicated short range communications)

General Information

Company Name : Hanwha S&C Co., LTD
Website : www.hsnc.co.kr
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HighGainAntenna

Company Overview
Since its establishment in 1970, High Gain Antenna Co., Ltd. is the only company in Korea that has been in pursuit of a single path for the future of communication from satellite, mobile, telecommunications vehicle room mirror type Hi-Pass(ETCS) and WAVE device to hi-tech communications.

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  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
- V2V, V2I communication Solution using WAVE Technology
  - OBE for Korea ETCS
  - OBE for China ETCS
  - Compenser for Vehicle

Others
Certificate
- ISO 9001, TL 9000(Certificate obtained from TUV - Rheinland, Germany and KMA - QA, Korea)
- ISO 14001: 2004 (Certificate obtained from TUV - Rheinland, Germany)
Patents
- http://www.highgain.co.kr/eng/company/p1.asp?stat1=92&stat2=100&stat3=115

ITS Product & Technologies
V2V, V2I Communication using WAVE Technology
- Reducing accident rates through a chain collision accident status and warning of the front.
- Information of traffic jam and road conditions are given to drivers.
- Enabling rapid response to emergencies with connected car about vehicle diagnostics and location information.
- Can be linked to various devices (ex. Navigation HUD, Application(ex. easy tolling), etc).

ETCS System OBE
- Built-in vehicle Room mirror type ETCS device
- Internal speaker voice service for payment history and balance
- Checking Green/Red LED device state

ETCS System RSE
- It is mounted to main control unit and a communication unit that is responsible for communicating with OBU.
  Forwarding information to communicate with the RF OBU CCU board and uses the microprocess to give higher reliability.

Compenser
- If the Car Booster installed in the vehicle, it serves to shade area in the vehicle and also look good as a simple design. Installation is easy with simple plug & play method inside of wireless charging device. It consists of 800MHz ~ 2.7GHz Band. If a lot of input, a vehicle in good reception sensitivity automatically shutdown, because of embedding shutdown auto recovery function. when the reception is poor, a vehicle enables reliable service because of changing the recovery.

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Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
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  - Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
- Developed Software which distinguish the car type based on dimension of wheelbase
- Developed mobile standard car detecting equipment. /Developed small auto detecting air robot which featured as vertical takeoff and landing.

Others

ITS Product & Technologies

V2V, V2I Communication using WAVE Technology

AVI (AUTOMATIC VEHICLES IDENTIFICATION) / VES (VIOLATION ENFORCEMENT SYSTEM) / TTMS (Tunnel Traffic Management System) / ILLEGAL PARKING ENFORCEMENTS / BUSES LANES ENFORCEMENT

SDU SIGNAL DISTRIBUTOR
ELCB AUTO RECOVERY DEVICE
LPR (license plate reorganization)

MULTI FUNCTION POWER CONTROL DEVICE
INTELLIGENT FUNCTION POWER DEVICE
POWER TYPE SURGE PROTECTOR

General Information
Company Name: Hitecom system Co., Ltd.
Website: www.hitecom.co.kr
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Fax (office): 82-2-839-8072
Phone (mobile): 82-10-6412-6155
E-mail: dhlee@hitecom.co.kr
HYUNDAI MNSOFT, Inc.

Company Overview
A specialized digital map solutions provider established in 1998, HYUNDAI MNSOFT offers services in LBS and telematics to Hyundai Motor Group companies. The company developed maps for next-generation navigation systems in collaboration with Hyundai Motor Company. The company offers, in conjunction with Hyundai and Kia Motors, telematics services that apply wireless communications technology to automobiles. HYUNDAI MNSOFT seeks to acquire cutting-edge technologies, enhance in-house capabilities, and expands its LBS and telematics business to establish itself as a global vehicle information systems provider.

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  - Logistics
- Others (  )

2nd category
- Hardware
- Software
- SI
- Consulting
- Others (  )

Ongoing ITS project or R&D
Digital map base ADAS (Advanced Driver Assistant System)
- ultra-high precision map for ADAS
- ADAS output system (solution) (V2V Device (After Market)) (Communication based ADAS (including VOV, V2I))
- Developing/Producing WAVE Communications chip (cooperating with Hyundai Autron)
- Developing V2O Software
- Building LDM (Local Dynamic Map), Developing Solutions

Developing Autonomous Vehicle
- Developing Autonomous vehicle related system (cooperating with Hyundai Autron)
- Processing/Analyzing Big Data (Social Context Awareness, Intelligentism, etc.)
- Enhancing ultra-high precision mapping system
- Centron Industries(USA), DMC Wireless(Argentina), JCDC

Others
- SYSTEM AND METHOD FOR PROVIDING DRIVING-PATH PRESENTATION SERVICE BY USING REAL TIME TRAFFIC INFORMATION
- System and method for partial updating keep reference data with adiacency map
- Traffic information generation system and method for intersection road considering enterance and exit
- Method of controlling home network using telematics terminal and telematics terminal for performing the same
- Car Navigation System and Method for Updating Map-Data of that
- Navigation and Method for Express Traffic Information

ITS Product & Technologies
LDM(Local Dynamic Map)
- Contents integration technology
  - LDM Building Technology
- Dynamic Local Information
  - Accident, Weather, Traffic Information
- LandMark
  - Static Map (Road, Basic POI)
  - Real time information by the communication results of V2V, V2I
V2V, V2I Navi S/W
- Indicating Vehicle, Pedestrian, etc.
- Alerting emergency car, hazardous car
- Alerting emergency situation ahead HUD, Navi

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General Information
Company Name: HYUNDAI MNSOFT, Inc.
Website: www.hyundai-mnsoft.com
Address: Hyundai Motor bldg., 74, Wonhyo-ro, Yongsan-gu, Seoul 140-711, Korea

www.itskorea.kr
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Company Overview

I-Controls is one of the best SI companies in Korea. Its business areas are IBS (Intelligent Building System), Home Network System, SI for Social Infrastructure (SOC), and LED. SI business for social infrastructure includes ITS, Railway E&M, and Container terminal automation.

Business Area

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- Others ( )

2nd category

- Hardware
- Software
- SI
- Consulting
- Others ( )

Ongoing ITS project or R&D

1. ITS and Tunnel TTMS/TGMS Project for Suseok-Hopyeong Expressway in Progress
2. Tunnel TTMS Project for Jinju-Masan (Sanin Tunnel) Expressway in Progress
3. Tunnel TTMS Project for Jeonju-Gwangyang Expressway in Progress
4. ITS Project for Changwon-Busan Expressway in Progress
5. ITS and Tunnel TTMS/TGMS Project for Seoul-Chuncheon Expressway in Progress
6. ITS and Tunnel TTMS/TGMS Project for Daegu-Busan Expressway in Progress

Others

1. Korean Civil/environmental engineer 2011 [Traffic infra system division]
2. Kyongin daily’s 2010 winner of systems award, Information/telecommunication system
3. Constructed integrated connected system of FTMS/TTMS/TGMS for the first time in Korea.
4. Execution experience in One Cycle such as highway ITS field planning, design, construction, maintenance and so on.

ITS Product & Technologies

1. FTMS (Freeway Traffic Management System) : The system performs various functions including real-time acquisition and processing of traffic information, processing and analysis of information creation, provision of processed information, efficient center operation, and facility maintenance for various field equipments.
2. TTMS (Tunnel Traffic Management System) : Tunnel traffic management system is for quick and proper handling through accident detection and emergency broadcast in case of emergency as well as collection of real-time traffic information for inside the tunnel in normal situations.
3. TGMS (Tunnel Group Management System) : Tunnel group management system for saving the cost for tunnel operation and maintenance and for maximizing the efficiency of management by managing multiple tunnels for one management office.

FTMS

TTMS/TGMS

Etc

General Information

Company Name : Icontrols Inc.
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E-mail : mky7807@icontrols.co.kr
Company Overview
Inpeg Vision has developed image processing and license plate recognition system by its own technology, and applied in various field of ITS (Intelligent Transport System), and provides core algorithm and technologies to a lot of customers in domestic and overseas market.

With the goals and continuous efforts to make the differentiation of recognition rate, reliability and technology, Inpeg Vision will always take a further step to develop sole image processing technology thereby positioning itself as a pioneer of techniques.

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  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Integration
  - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others ( )

2nd category
- Hardware
- Software
- SI
- Consulting
- Others ( )

Ongoing ITS project or R&D
KINTEX - Integrated Total Parking Management System (Parking Guidance/Parking Position Inquiry)
POSCO - Integrated Total Security System
Busan, Gangseo gu - Urban Integrated Traffic & Security System
Gyung-kı Providence national Highway ITS - Integrated Intelligent Traffic System
Busan Bank, Head Office - Parking Guidance & Parking Position Inquiry
Japan Gas station - Gas-Station CRM System (48 sites)
Philippines, Subic, Hanjin Apartment - Vehicle Access Control System

Products
Product Name: IV-PBR-100
Model Name: LPR device (for rear)
Overview: This dust and water proof LPR device is installed on vehicles to identify rear plate numbers to access control/manage them.

Advantage of product:
1. High recognition rate (over 98%)
2. Semi-permanent illuminator
3. Remote maintenance
4. Simple design and installation

Product Name: IV-PIMS-400
Model Name: Parking management system
Overview: LPR based advanced access control system enables high-efficient and user convenient parking lot operation overcoming all the weak points of legacy RF card type system.

Advantage of product:
1. High recognition rate (98-99%)
2. Vehicle access control
3. GOOD DESIGN certification
4. Durability (IP 45 certification)

Product Name: ICLCU (Camera Lens Control Unit)
Model Name: IV-PIRR-100
Overview: LPR based advanced access control system takes images of entering/leaving vehicles with high-definition mega pixel camera and it automatically recognizes plate number then access control/manage them.

Advantage of product:
1. High recognition rate (over 98%)
2. Semi-permanent illuminator
3. Remote maintenance
4. High speed recognition speed

Product Name: Road security camera
Model Name: IV-COHL-400 (for 1 line), IV-COHL-401 (for 2 lines)
Overview: LPR based road security camera system (ITS) capturing all the vehicles passing by the road and provide the real-time information to operator of wanted, stolen and related vehicles.

Advantage of product:
1. High recognition rate (98-99%)
2. Various vehicle detection by site environment
3. Semi-permanent IR illuminator
4. Durability (IP 66 certification)

Other Technologies
- Management Certification
  - NET (New Technology), Excellent Procurement Product 2 case, etc.
  - CE / UL, AVI test (excellent grade: recognition rate 98%)
- Technical Certification
  - Total 72 cases
  - Application: 3 cases
  - PCT Enrollment: 4 cases
- Patent Status
  - Retention: 38 cases (Country 32 cases, Overseas 3 cases, Brand 1 case, Design 2 cases)
  - Application: 3 cases
  - PCT Enrollment: 4 cases

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Company Overview

IT Telecom (ITT) is a leading ITS (Intelligent Transport System) solutions company in Korea. ITT has been grown up by specializing DSRC (Dedicated Short Range Communication) technology. ITT has provided ITS systems (DSRC RSE & OBU) for many metropolitan cities in Korea such as Seoul, Busan, Daejeon, Sungnam, Gwangju and Daegu. Also, ITT has proactively developed the next generation ITS communication technology, WAVE (Wireless Access in Vehicle Environment). And ITT successfully finished a field trial in 2010 ITS World Congress in Busan with its leading edge technology. ITT has currently been expanding its global marketing together with local SI and ITS companies in USA, Mexico, Australia, Jordan, Argentina, Vietnam, and Malaysia.

Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
- Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
- Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
- Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
- Fleet Management System
- Hazardous Freight Management
- Logistics
- Others ( )

2nd category
- Hardware
- Software
- SI
- Consulting
- Others ([ ]

Ongoing ITS project or R&D

Korea Government Project (“Smart Highway”)
- V2X pilot test: providing 100 sets of WAVE OBU’s
- WAVE OBU samples for Tier 1 Automotive Suppliers
  - Hyundai Mobis
  - Mando

Strategic Partnership with Telco’s and global ITS SI companies.
- KRT, POSCO-ICT, SK Telecom, Aldridge Electrical Pty(Australia), Telnorm(Mexico)
- Centron Industries(USA), DMC Wireless(Argentina), JCDC

Others

(Patent No) 10-0745014: Traffic Information Utilization Method by using Complex-type RSE
(Appplied No) 10-2012-0012095: Smart Phone SW Architecture and Algorithms to exchange real-time video data between driving vehicles by using Smart-phone (or Smart-type terminal)
(Applying No) 10-2012-0158076: Vehicle Management System Architecture and Algorithms to check real-time site situation and vehicle position in airports and harbors.

ITS Product & Technologies

ASVAD(WAVE OBU)
- Modulation: OFDM(BPSK, QPSK, 16QAM, 64QAM)
- Interoperability: meet the required products
  - Data rate: up to 27Mmps
  - RF Frequency: 5.850 ~ 5.925GHz
- Number of Channels: 7 Channel
- Channel Bandwidth: 10MHz

SWAS(WAVE RSE)
- Modulation: OFDM(BPSK, QPSK, 16QAM, 64QAM)
- Interoperability: meet the required products
  - Data rate: up to 27Mmps
  - RF Frequency: 5.850 ~ 5.925GHz
  - Number of Channels: 7 Channel
- Less than 100ms for Channel Access
- Input Voltage: 12VDC
- Operating Temperature: -33° C to +85° C
- IEEE 802.11p applied
- Point to Point Communication
- Data Rate: 3-27Mmps
- Communication Coverage: ≤1km
  (LOS Condition)

WILLS-50001
(Wireless IP Link System)

Technologies

5.9GHz DSRC WAVE(IEEE 802.11p, 1609.2~4)
- Baseband Modern & Mac
- Embedded software
- Hardware including RF transceiver

5.8GHz Legacy(Korea Standard) DSRC
- Baseband Modern & Mac
- Embedded software
- Hardware including RF transceiver

General Information

Company Name: IT Telecom Co., Ltd.
Website: www.it-telecom.co.kr
Address: #517, TheOvalley, 555-9, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, 431-763, Korea

Contacts

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Phone (mobile): 82-10-3101-6541
E-mail: billchoi@it-telecom.co.kr
Company Overview

ITRONICS CO., LTD is a leading Korean manufacturer who has its own technology for ITS system & OBU design, Digital Image Processing, ASIC & RF design. It offers full range of ITS system related products and Automotive IT products such as ETC OBU, Vehicle Driving Recorder, Personal Navigation Device and so on.

Business Area

1st category


- Electronic Payment - Electronic Toll Collection - Electronic Parking Payment - Electronic Fare Payment

- Traffic Information Integration/Management - Traffic Information Center Traffic Data Management

- Traveler Information - Pre/On-Trip Traveler Information Service - Telematics Service

- Advanced Vehicle/Road - Safe-driving Vehicle & Road - Autonomous Driving - Drive Assistant System


- Others

2nd category

- Hardware - Software - SI - Consulting - Others

Ongoing ITS project or R&D

Certification

- Hi-pass system(ETCS)
- RF antenna and Control unit for DSRC Traffic data collection/provision system

R&D

- WAVE RSE & OBE

ITS Product & Technologies

Product Offerings

Hi-pass system(ETCS)

- Original type Hi-pass system
- Slim type Hi-pass system
- Service area type Hi-pass system

- Specification

- Slim type system and Small size lane control unit (15' subrack)
- All in one CCU (CCU, IRCU, RFCU, SAM)
- All in one antenna (IR-DSRC 800-900nm, RF-DSRC 5.8GHz)
- RF antenna and Control unit for DSRC Traffic data collection/provision system
- All in one 5.8GHz RF-DSRC antenna and Control unit
- Range: 100~400m

Technologies

- Hi-pass system(ETCS)

ETCS means Electronic Toll Collection System using the IR / RF Dedicated Short Range Communication (DSRC) technology which enables communicate with between On-Board Unit (OBU) installed inside the vehicles and Stations (IR RSE, RF RSE) installed in Roadside.

- RF antenna and Control unit for DSRC Traffic data collection/provision system It is the system to deliver the traffic information collected by using Dedicated Short Range Communication (DSRC) technology between ETC based Roadside Equipment and OBU.

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Phone (mobile): 82-10-2314-2786
E-mail: sphong@itronics.co.kr

General Information

Company Name: ITRONICS CO., LTD
Website: www.itronics.co.kr
Address: 15, 14-gil, Joongbu-daero, Gheung-gu, Yongin-si, Gyeonggi-Do, Korea
Company Overview

JINWOO transportation system solution helps to build a faster, safer, more eco-friendly transportation system by incorporating cutting-edge technologies of electronics, electricity, control, and information communication fields into a transportation system, such as UTMS, DSRC, ATES, FTMS and TCS / ETCS. Experience our transportation system solution, the fittest of all in the ever-evolving ubiquitous environment.

Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Traffic Enforcement
- Parking Management
- Public Transportation
  - Bus Information/ Management System
  - Public Transportation Information/Management
- Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
- Pedestrian/Disabled Support System
- Electronic Payment
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  - Electronic Parking Payment
  - Electronic Fare Payment
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  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
- Toll Collection System implementation for Korea Expressway Corp. in 2014
- Toll Collection System implementation for Seoul Beltway Corp. in 2014
- Toll Collection System implementation for Daegu-Busan Expressway Corp. in 2014
- Toll Collection System implementation for Cheonan-Nonsan Expressway Corp. in 2014
- Freeway Traffic Management System implementation for Cheonan-Nonsan Expressway Corp. in 2014
- Traffic Law Violation Enforcement System implementation for Seoul, Incheon, Gyeonggi, GyeongNam. in 2014
- Vehicle classification system supply for Korea Expressway Corp. in 2013
- Unmanned Toll System development and supply for Korea Expressway Corp.

Others

Certification

Patent
- 8 patents registered in Toll Collection related technologies.
- Unmanned Vehicle Photographic Equipment.
- Automatic Vehicle Number Recognition System.
- Vehicle Speed Detection System.
- Traffic Law Violation Enforcement System.

ITS Product & Technologies

Product Offerings

Technologies
Design, Development IS / W/H / W, Civil Work, system construction, engineering for Intelligent Transport System (ITS)
- Toll Collection System (TCS)- open Type, Closed Type
- Electronic Toll Collection System (ETCS)
- Freeway Traffic Management System (FTMS)
- Urban Traffic Management System (UTMS)
- Dedicated Short Range Communication (DSRC)
- Automatic Traffic Enforcement System (ATES)
- Traffic Signal Control System

Certification

Patent
- 8 patents registered in Toll Collection related technologies.
- Unmanned Vehicle Photographic Equipment.
- Automatic Vehicle Number Recognition System.
- Vehicle Speed Detection System.
- Traffic Law Violation Enforcement System.

Contact Information

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Keon-A Information Technology Co., Ltd.

Company Overview
KEON-A is a leading manufacturer and exporter of Traffic Enforcement System with domestic market share No.1 in South Korea since foundation of 1987. KEON-A has key solution of traffic enforcement system such as Speed, Traffic Signal, Criminal Vehicle Capturing and etc by using Automatic Number Plate Recognition system (LPR or ANPR).

Business Area
1st category
- Traffic Enforcement - Parking Management

Public Transportation
- Electronic Payment - Electronic Toll Collection - Electronic Parking Payment - Electronic Fare Payment
- Traffic Information Integration/Management - Traffic Information Integration - Traffic Information Center Traffic Data Management - Traffic Law Enforcement System
- Traffic Information Integration - Traffic Information Center Traffic Data Management
- Traffic Law Enforcement System

2nd category
- Hardware - Software - SI - Consulting - Others

Ongoing ITS project or R&D
- Project of Traffic Signal Control System in Manila, the Philippines
- Project of Speed & Traffic Signal Violation Enforcement System in Almaty, Kazakhstan
- Traffic Signal Control Equipment and Vehicle Mounted Vehicle Plate Number Recognition System in Turkmenistan

Others
Certification
- ISO 9001:2008
- CE
Patent
- Unmanned Vehicle Photographing Equipment
- Automatic Vehicle Number Recognition System
- Vehicle Speed Detection System
- Traffic Law Violation Enforcement System

ITS Product & Technologies
Mobile Speed Camera is mobile type speed detection camera based on laser sensor. This mobile camera can automatically detect and recognize the vehicle number plate at the designated point.

Specifications and Features

<table>
<thead>
<tr>
<th>Camera</th>
<th>1.3M Pixel CCD Camera</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lens</td>
<td>Motorized 100mm to 120mm (include x2 Extender)</td>
</tr>
<tr>
<td>Target Range</td>
<td>80 to 120meters</td>
</tr>
<tr>
<td>Illuminator</td>
<td>Wire or Wireless Xenon Lamp</td>
</tr>
<tr>
<td>Life Time</td>
<td>more than 100,000 times</td>
</tr>
<tr>
<td>Sensor</td>
<td>Laser Sensor</td>
</tr>
<tr>
<td>Measurement Speed</td>
<td>10~300km/h</td>
</tr>
<tr>
<td>Speed Error Rate</td>
<td>Less than ±1%</td>
</tr>
<tr>
<td>905nm, Class (Eye Safety)</td>
<td></td>
</tr>
<tr>
<td>Controller</td>
<td>Intel Embedded Atom 1.6GHz</td>
</tr>
<tr>
<td>5.7inch color TFT LCD monitor with touch screen</td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-30℃ to 70℃</td>
</tr>
<tr>
<td>All-in-One compact module for easy maintenance</td>
<td></td>
</tr>
<tr>
<td>USB Memory Device</td>
<td>Over 100,000 image storage</td>
</tr>
<tr>
<td>ANPR (Automatic Number Plate Recognition) (Option)</td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>Size : 507(L) × 175(W) × 165mm(H)</td>
</tr>
<tr>
<td>Weight</td>
<td>6.8kg</td>
</tr>
<tr>
<td>Battery</td>
<td>Sealed Lead Acid Battery, 12V</td>
</tr>
</tbody>
</table>
Keon-A Information Technology Co., Ltd.

General Information
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Phone (mobile): 82-10-4280-5019
E-mail: mgkim@keona.co.kr

Technologies
ANPR (Automatic Number Plate Recognition) System

Korea Consultants International Co., Ltd.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Traffic Enforcement
- Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
- Pedestrian/Disabled Support System
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  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
Others
Ubiquitous Intelligent Disaster Prevention System, 2010, 102008006210

ITS Product & Technologies
Feasibility Study, Master Plan, Basic and Technical Design, Supervision

General Information
Company Name: Korea Consultants International Co., Ltd.
Website: www.kcieng.com
Address: 7F, Daerung Techno Town 15, 224-5, Gwanyang-2dong, Dongan-gu, Anyang-si, Gyeonggi-do, Republic Of Korea

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Company Overview

The Korea Expressway Corporation ("KEC") was established in 1969 and is responsible for the construction and operation of the nation’s expressways. It plays a pivotal role in national transportation policy. As a leading company in the nation’s road construction industry, the KEC has been involved in constructing main expressways, which increase the nation’s transportation cost efficiency by connecting key points, thus playing an instrumental role in the Korean economic growth.

The KEC has thus far laid 4,139km of domestic expressways. By 2020, the total length of the expressways nationwide will be 6,160km. The KEC has also established the Intelligent Transport System ("ITS"), which employs road construction and management technologies together with state-of-the-art information technology. It continues to make every effort to prepare the nation for a bright future of intelligent roads that are both faster and safer.

Business Area

<table>
<thead>
<tr>
<th>1st category</th>
<th></th>
</tr>
</thead>
</table>
| Traffic Management | - Traffic Signal/Control  
- Incident Management  
- Traffic Information  
- Safe-driving Support  
- Traffic Enforcement  
- Parking Management  |
| Public Transportation | - Bus Information/Management System  
- Public Transportation Information/Management  
- Multi Modal Information/Management  
- Bus Rapid Transit System/Solution  
- Pedestrian/Disabled Support System  |
| Electronic Payment | - Electronic Toll Collection  
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- Electronic Fare Payment  |
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- Telematics Service  |
| Advanced Vehicle/Road | - Safe-driving Vehicle & Road  
- Autonomous Driving  
- Drive Assistant System  |
| Commercial Vehicle Operation | - Fleet Management System  
- Hazardous Freight Management  
- Logistics  |
| Others | -  |

<table>
<thead>
<tr>
<th>2nd category</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>-</td>
</tr>
<tr>
<td>Software</td>
<td>-</td>
</tr>
<tr>
<td>SI</td>
<td>-</td>
</tr>
<tr>
<td>Consulting</td>
<td>-</td>
</tr>
<tr>
<td>Others</td>
<td>-</td>
</tr>
</tbody>
</table>

Ongoing ITS project or R&D

- Nationwide Establishment of the Comprehensive Traffic Information System  
- Automatic Tunnel Accident Detection System  
- High-Speed Weigh-In-Motion(HS-WIM)  
- Smart Overloaded Vehicle Enforcement System

ITS Product & Technologies

Traffic information is provided through (1) collection of traffic data, (2) data processing, and (3) provision of traffic information. Traffic data including that on traffic flow or accidents are collected through such traffic management facilities as VDS, CCTV, AVC, and DSRC, as well as patrol teams and customers. The Traffic Information Center then combines and processes the data to provide traffic information to customers through the Internet, Traffic Broadcasting Services, Smart phones, VMS, and other devices.

Hi-pass is the KEC’s proprietary brand for the unmanned electronic toll collection system (ETCS). If an electronic card is loaded into the Hi-pass device (On-Board Unit) in a vehicle, the vehicle is not required to stop at a tollgate to pay the toll as the toll is automatically paid through wireless communication between the device and the antenna installed on the lane. In short, it is an unmanned, no-stop, and non-cash toll payment system.

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General Information

Company Name: Korea Expressway Corporation  
Website: www.ex.co.kr  
Address: (39660) 77, Hyeksin 8-ro, Gimcheon-si, Gyeongsangbuk-do, Korea

Others

- Apparatus for sensing number of axles in vehicle(1999)  
- Apparatus for determining tire width and wheel track of vehicle and method thereof(1999)  
- Pass ticket withdrawal control device in ticket issuing unit(1999)  
- Ticket issuing unit enabling continuous pass ticket issuing(1999)  
- Ticket issuer for preventing double issuing(2000)  
- Passport issuing device equipped with plural printing units(2000)  
- Device for controlling printer head position of pass checking machine(2000)  
- Driving control method of fixed amount pass confirming device(2000)  
- Passage receiving apparatus for passage publisher(2000)  
- Smart card for toll collection system installed at toll gate(2005)  
- Hi-Pass(NTCS, Nonstop Toll Collection System) becomes available nationwide (2007)  
- Implementing C-ITS pilot project of government(2014)
Company Overview

Road Traffic Authority (KoRoad) has been doing its best to reduce traffic accidents by providing traffic safety education, checking safety facilities, developing traffic technologies, broadcasting traffic information and so on. Especially from this year, 26 of driver’s license test courses around the nation take charge of license work and it became the road traffic safety total service provider.

KoRoad will maximize organization’s competence to save more citizens from traffic accidents, and through ‘Serving Management’, ‘Science Management’, ‘Moral management’ KoRoad will grow as an organization that is representing Korea on road traffic safety, and will take full response as a life saver and road guide.

Business Area

1st category

- Traffic Management
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- Commercial Vehicle Operation
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  - Hazardous Freight Management
  - Logistics
- Others ( )

2nd category

- Hardware
- Software
- SI
- Consulting
- Others ( )

Ongoing ITS project or R&D

Research of Traffic Science
- The operation of international certified test agency (KOLAS)
- R&D of testing and specifications for safety facilities
- R&D of traffic equipment and traffic information management systems using (ITS) Traffic Broadcasting Network (TBN)
- Provides fast and accurate traffic information to prevent traffic congestion and accidents

Public Relations for Traffic Safety
- National public relations campaigns aimed at enhancing the national understanding of traffic order principles and preventing traffic accidents
- Pan-national campaign, ‘Reduce Traffic Accidents’
- Children’s Traffic Safety Public Relations Center

Technical Support for Traffic Safety
- Improving traffic safety in frequent accident areas and providing statistical analysis
- Technical support for traffic accident investigations
- Suggestions for the design, supervision, inspection, and improvement of traffic safety facilities
- Improvement of the ‘Safety Zone’
- Technical support, design, and supervision for traffic signal systems
- Management and inspection of automated traffic enforcement systems on consignment

Others

International exchange
- PRI (La Prevention Routiere Internationale) regular member
- TR B (Transportation Research Board) regular member

Patent
- total: 213 - a patent application: 27 - registration of patent: 186

ITS Product & Technologies

System (Based on UTIS)

- Test and Evaluation
  - Evaluation System based on HILS using existing devices (I/C, RSE, EV_OBE, LC_OBE etc.)
  - Using CORSIM traffic simulation model
  - Debugging the algorithm of TSP
  - Evaluating the effectiveness of TSP

Contacts

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E-mail: kshong@koRoad.or.kr
Kyungbong Co., Ltd.

Company Overview

Kyungbong, one of leading companies in the field of Transport Information System solution in Korea, has a strong position especially in the SOC (Social overhead capital) project, which is associated with the Korean government, local governments and public institutions. Kyungbong has been providing with a systematic integrated transport information solution by reprocessing data from various individual transport solutions with accumulated technology and lots of years-experienced employees and also has enjoyed a good reputation by concertizing and realizing the various and complicated demands of transport information for over a decade.

Sans doute, we, Kyungbong, is your perfect partner in highly technology-intensive business of Transport Information system solution.

Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
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  - Hazardous Freight Management
  - Logistics
- Others ( )

2nd category
- Hardware
- Software
- SI
- Consulting
- Others ( )

Ongoing ITS project or R&D
- Project of Traffic Violation Fix System in Almaty, Kazakhstan
- Pilot of Speed & Traffic Signal Control Equipment and Vehicle Mounted Vehicle Plate Number Recognition System in Turkmenistan

Others

International exchange
- ISO 9001:2008
- CE

Patent
- Unmanned Vehicle Photographing Equipment
- Automatic Vehicle Number Recognition System
- Vehicle Speed Detection System
- Traffic Law Violation Enforcement System

ITS Product & Technologies

Technologies

Bus Information System (BIS), which actives public transportation with intelligent transportation system, recently has been promoting around the Metropolitan area. BIS provides related information such as route information, transit information, public transportation information and waiting period information to bus users during before and after transit period and helps passengers with effective transit decision. In addition through this system, a bus driver is able to precisely allocate the dispatching time and a passenger is able to safely and comfortably use public transportation.
Company Overview

Metabuild Co., Ltd. is a professional middleware solution company which has researched, designed and developed EAI and BPM product for business industries with plenty of experiences over 15 years since 1998. We are as one of the leading software development companies in South Korea, successfully deployed ITS solutions over 2000 organizations including government administrations such as the Ministry of Information and Communications (currently the Ministry of Science, ICT and Future Planning), the Ministry of Defense and etc. We are expanding fast, firmly based on proven technologies and customer satisfaction, maintaining reputation of being the most recognized products and use of highly advanced technology. Our dedicated teams share a vision of creating truly superior technology.

Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Integration
  - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others ( )

2nd category
- Hardware
- Software
- SI
- Consulting
- Others ( )

Ongoing ITS project or R&D

Smart highway R&D
- Development of technology to link road-vehicle

Prize
- The leader of Software Development Industry in 2010
- The reward for Smart Highway Research in 2010
- The reward for Korean Intellectual Property Office System Development in 2005 (XML DBMS)
- The best B2B product in 2005 (Indigo EAI)
- e-Government Solution Company in 2003

Patent
- Apparatus, method and system for detecting objects using hand-over between antennas of RADAR device.
- Apparatus, method and system for detecting objects using Radar device and image mapping.
- Method for preventing invasion of wild animal using RADAR and system thereof.
- Road monitoring method using RADAR and apparatus thereof.

ITS Product & Technologies

Product Offerings
Road Watch Radar System (RWRS) is incident detecting system at any time and environment. The multiple detection, long detecting range and high resolution performance combined with a small size makes the RWRS ready to apply various applications.

Function
- All weather operation
- Remote control function
- Detecting fixed/moving object on the road
- Automatic checking risk factors and providing the information
- Providing all statistical analysis information
- Sending detecting information to center

Technical Specifications
- Frequency: Ka-band
- Detection Range: Max. 1km
- Detection Velocity: Max. 200km/h
- Update Time: < 100ms
- 100Mbps Ethernet Interface
- Supply Voltage: 12~32Volts
- Weight: 10kg

 Technologies
Road Watch Radar System (RWRS) is incident detecting system at any time and environment. The multiple detection, long detecting range and high resolution performance combined with a small size makes the RWRS ready to apply various applications.

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E-mail: jklee@metabuild.co.kr

General Information
Company Name: METABUILD Co., Ltd.
Website: www.metabuild.co.kr
Address: Metabuild B/D, 1487-6, Seocho-3 dong, Seoul, Korea, 137-869
Company Overview
MORU Industrial Systems is a typical ITS (Intelligent Transportation System) base solution provider in Korea. MORU Industrial Systems developed a new Vehicle Detect Technology and provides related products; Wireless Loop Detector etc.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Integration
  - Traffic Information Center
  - Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others (Parking Information System)

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
Wired Loop Detector [K-LOOP Series for Barrier Interlock & LPR Trigger]: Compact, Strong, Reliable

Others
Certification
- ISO 9001:2008

Prize
- THE COMBINED LOOP TYPE AUTO-MOBILE SENSOR USING LOOP COIL AND PARKING INFORMATION SYSTEM THE SAME
- TRAFFIC INFORMATION DETECTION SYSTEM AND METHOD THEREOF

ITS Product & Technologies
Wireless Loop Detector (ParkDisk, ParkRing) for Parking Lot
- All-In-One type Wireless Loop Detector
- Micro Power Consumption Technology Based Wireless Parking Detector
- Wireless Data Communication (ISM Band, Sub 1GHz)
- Very Long Battery Life (10 Years)
- Easy Installation
- Automatic Compensation Algorithm for Temperature
- Waterproof & Heavy Duty Design for Outdoor Parking Lot

Wireless Inductive Loop Vehicle Detector for Intersection Traffic Signal
- Traffic Signal Control Purpose Optimized
- World First Wireless Inductive Loop Vehicle Detector
- 1st NexLoop Series Product

Contacts
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E-mail: sinaks01@moru.com

General Information
Company Name
- MORU Industrial Systems Co., LTD.
Website: www.moru.com
Address: 166 [SK ventium] 101-402, gosan-ro, Gunpo-si, Gyeonggi-do, Korea

94 www.itskorea.kr

ITS KOREA Annual Report 2015 95
Company Overview

NDS is an IT service provider which has led informatization in various industrial fields including public works, manufacturing, distribution/logistics and development and operation of information system of Nongshim Group for last 30 years. NDS has a capability of global standard information service which provide customers with the best solution based on rich experience accumulated so far. NDS is planning to be realized as ‘Next Generation IT Service Provider’ by enhancing capability of cloud service and ICT construction in preparation for the future, best to secure world class IT skills through continuous investment in R&D.

Business Area

1st category

- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management

- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment

- Traffic Information Integration/Management
- Pre/On-Trip Traveler Information Service
- Telematics Service

- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Fleet Management System
  - Hazardous Freight Management
  - Logistics

2nd category

- Hardware
- Software
- SI
- Consulting

Ongoing ITS project or R&D

- Song-Do U-City Construction Project
- Project for a Construction of BIS(Bus Information System) and BMS Link System
- C-ITS Project for a Korea Expressway Corporation
- CUPPS Project for a Incheon Internatinal Airport including a BRS(Baggage Reconciliation System)
- ATFMS(Air Traffic Flow Management System) Project
- GangNam Circuit Highway ITS Project for Seoul
- C-ITS Project for Pyeong-Chang

Others

Certification
- ISO 9001(quality management)
- ISO 14001(eco-management)
- ISO 20000(1T service management)
- ISO 27001(information security)
- K-ISMS(protect information)
- CMMI (international quality certificate)

Prize
- Patent related water quality estimating device : 2 application
- NFC-related patent : 1 application
- Digital door-lock patent : 1 application

ITS Product & Technologies

WAVE OBU(NDS-EW001)

WAVE RSE(NDS-EWR01)

C-ITS

Support for a Safe Drive

Support for Safe Public Transportation

Pedestrians Care

Inter-vehicle Accident Prevention

General Information

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Address: Seoul - Nongshim Doyeongwan, 11th and 12th floors, 112, Yeouidaebang-ro, Dongjak-gu, Seoul, Korea

Contacts

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Company Overview

Neighbor System has had top class competitiveness in the IT industry by performing lots of various projects related to Intelligent Transport System (ITS). Neighbor System has an abundance of excellent employees who have a wide range of background and experiences on developing software, and has accumulated a variety of professional technologies of Multimedia / Mobile /LBS such as a technology to construct many kinds of Information Center connected with LBS /Telematics /Visualization System and develop solutions of its terminals, a technology of Visual Communications, applied technologies of GIS / GPS, and so on. Neighbor System has supplied quality technologies and services combined with ITS and has satisfied our clients very highly. Especially, Neighbor System has been providing self-developed softwares and construct systems for cutting-edge traffic infra construction business of Korean local governments and has been leading ITS business by cooperating with Korean major companies and developing technologies together. Neighbor System promises to provide hi-quality products and services based on its corporate culture: trust and responsibility.

Business Area

1st category

- Traffic Management
  - Traffic Signal/Control - Incident Management - Traffic Information - Safe-driving Support
  - Traffic Enforcement - Parking Management
- Public Transportation
  - Bus Information/ Management System - Public Transportation Information/Management
  - Multi Modal Information/Management - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection - Electronic Parking Payment - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Center Traffic Data Management
  - Pre/On-Trip Traveler Information Service - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road - Autonomous Driving - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System - Hazardous Freight Management - Logistics
- Others

2nd category

- Hardware■ Software■ SI■ Consulting■ Others（ ）
Application fields
- BIS/BMS, ITS (Facility Management, etc) Map Application Terminal
- Vehicle position control (Taxi, rental cars, vans, company cars, etc.)
- For communicating information expressed Traffic Display
- Control of the center of the display throughout the project

Product Configuration
- EasyMapX Objects: Gis Viewer Client Engine of a C/S environment
- EasyMapX BrtEditor: Route and Bus stop editing Client Engine of a C/S environment
- EasyMapX Web: Gis Viewer Client Engine of a Web environment
- EasyMapX Manager: Gis Server Engine of a Web environment
- EasyMapX Editor: Spatial and Nominal Data editing

Product Description
- Client/Server, Supporting WEB-based environment and integration management
- Providing ActiveX component form in order to support development environments of various applied programs such as web, Visual Basic, Visual C++ and Delphi
- Providing theme changing service through the management of layer component

Key Features
- Upgrade speed of display through management of memory.
- Point continuous selection function, Automatic search function selectable link.
- Function through caching, version control and Off-Line Operation.
- Registered users of the object / Edit Bitmap express / Mouse Support.

System Configuration
Active Client Moodle Configuration
External interface
- EasyMapX_Objects Control
- User Object Display
- Map Display
- Shap Loader
- Map Cache
- Communication Client

Map Server Moodle Configuration
Communication Server
- Map Manager
- Map Format Transfer
- Map Loader
- File I/F

General Information
Company Name: Neighbor System
Website: www.neighbor21.co.kr
Address: 16th Fl. IT Venture Tower East Wing, 78 Garak-Dong, Songpa-Gu, Seoul, Korea, 138-950

Contacts
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Department: Mobile Business Development
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Company Overview
June 2010 NOVACOS co., Ltd. was established in specialize in the field of road traffic and environmental technology, which is based on AVC(Automatic Vehicle Classification) and Radar, Loop VDS(Vehicle Detection System) and WIM(Weight In Motion) management system development, production and business sectors.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/ Management System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
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  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Read
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
KICT & Korea Expressway Corporation AVC Business, Radar VDS and an unexpected VDS project Ansan-si Flitted CCTV design, Private Freeways VDS & AVC project, Dae-gu UTIS / ATMS VDS System

Patent
- Vehicle classification method
- Load sensor and the manufacturing method
- Driving vehicle automatic weight measurement system
- Piezo sensor manufacturing method

ITS Product & Technologies
Product Offerings
1. AVC(Automatic Vehicle Classification)

2. Radar VDS(Vehicle Detection System)

3. Loop VDS(Vehicle Detection System)

Technologies
An analysis for the traffic situation makes AVC, traffic volume, rate, share, such as the width of the vehicle, vehicle information, real-time leap detection and processing by the road system is sent to the operations center.

Radar VDS based on the Doppler-based motion detection technology, reliable traffic information(car selector speed, traffic volume, location, vehicle length, etc.)and the data surprises(sprinting, pedestrian stops, Accident State information, side street) collect and transmit the data collected for traffic information center.

Loop VDS is a road traffic transportation vehicle sensor systems to provide the Center upon entry of the vehicle by vehicle — one of conductor inductance loop of interaction information for each car traffic(Volume), share(Occupancy), speed(Speed), and the collected data, such as classification schedule cycle makes much of the transport system.

General Information
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Phone (mobile): 82-10-2685-2165
E-mail: glance14@novacos.co.kr

Certification
- ISO 9001:2008
- ISO 14001:2004
Company Overview

POSCO ICT delivers a comprehensive ICT service, from diagnosis and design of government or enterprise info systems, development of software applications and establishment of hardware and network solutions to operation and maintenance of info systems. Our service scope includes national defense, transportation and manufacture, and so we offer systems, top of the line. We build the right system optimized for the business environment and needs; existing systems are integrated into the new one.

Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Traffic Enforcement
- Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
- Multi Modal Information/Management
- Bus Rapid Transit System/Solution
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  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others ( )

2nd category
- Hardware
- Software
- SI
- Consulting
- Others ( )

Ongoing ITS project or R&D
- ETCS, TCS / Construction project of Changwon – Busan private freeways.
- U-traffic System / Construction project of Chung-ju city.
- Tunnel ITS / Facility management project of San–sung private freeways Tunnel in Busan
- ETCS / Korea Expressway Corporation : hi-pass system maintenance
- Survey of DSRC traffic information on the ITS section
- F.S. / Project of Russia ITS feasibility Study
- Proposal of India Hyderabad city ITS Project.
- Proposal of Brunei ITS project.

ITS Product & Technologies

ETCS (Electronic Toll Collection System) & Multi-Lane Free Flow
TCS (Toll Collection System)
C-ITS (Cooperative-ITS)
ATMS (Advanced Transportation Management System)
BIS (Bus Information System for BRT)
FMS (Fleet Management System)

1. BIS (Bus Information System for BRT)
2. ETCS & Multi-Lane Free Flow
3. C-ITS (Cooperative – ITS )
Company Overview
RANIX is an expert group developing the non-memory semiconductor, and strives to develop the high quality products with great enthusiasm. After establishment, RANIX successfully commercialized ASIC / SoC chips in Multimedia / Automotive / Security / Power IC which are recognized performance. RANIX is noted for its perfect technology through successful one-time commercialized chips . Also its professionalism considering from detail specifications to perfect verification, enables it to grow strong and trustworthy.

Business Area

1st category
☐ Traffic Management
 - Traffic Signal/Control  - Incident Management  - Traffic Information  - Safe-driving Support
 - Traffic Enforcement  - Parking Management
☐ Public Transportation
 - Bus Information/Management System  - Public Transportation Information/Management
 - Multi Modal Information/Management  - Bus Rapid Transit System/Solution
 - Pedestrian/Disabled Support System
☐ Electronic Payment
 - Electronic Toll Collection  - Electronic Parking Payment  - Electronic Fare Payment
☐ Traffic Information Integration/Management
 - Traffic Information Integration  - Traffic Information Center Traffic Data Management
☐ Traveler Information
 - Pre/On-Trip Traveler Information Service  - Telematics Service
☐ Advanced Vehicle/Road
 - Safe-driving Vehicle & Road  - Autonomous Driving  - Drive Assistant System
☐ Commercial Vehicle Operation
 - Fleet Management System  - Hazardous Freight Management  - Logistics
☐ Others (    )

2nd category
☐ Hardware  ☐ Software  ☐ SI  ☐ Consulting  ☐ Others (    )

Ongoing ITS project or R&D
1. Enhanced DSRC SoC
2. WAVE [Wireless Access in Vehicular Environments] SoC

Others
Certification
- INNO-BIZ
- Certification of Standard of DSRC SoC TTA
Prize
- The 5th Semiconductor Day (Ministry of Knowledge Economy)
Patent
- Common Interface Controller having easy interface and Digital broadcast receiving apparatus.
- Synchronization apparatus and method for multiple CODEC DVR system
- Multi-channel motion Estimator and Multi-channel video Encoder

ITS Product & Technologies
Product Offerings & Technologies

1. E-WAVE
RANIX E-WAVE is modem device optimized for vehicle-to-vehicle and vehicle-to-infrastructure communication. This high performance WAVE modem has developed for safety, convenience, and commercial applications in vehicular environment. With low latency and robust TX/RX capability under harsh automotive mobile condition, E-WAVE modem will serve cooperative road safety and traffic efficiency. RANIX’s V2X technology will integrates crypto engine for advanced security, RF transceiver, high speed application processor as well as modem device to provide the lowest cost for new ITS solution worldwide.
2. MaaT IV

The MaaT IV is the best optimized DSRC baseband SoC for various ITS services, such as ETCS, BIS and ATMS. Through ARM Cortex-M3, system peripherals and H/W DSRC transceiver, it provides the most cost-effective solution for DSRC based applications. The proprietary DSRC transceiver makes robust communication possible due to outstanding TX/RX performance and auto frequency scan function. The MaaT IV can be easily certified by Korea Expressway ETCS, TTA DSRC and automotive AECQ-100 with its features. Built-in smart card buffer, regulator and serial flash controller are versatile for a small and low price product.

### Feature

**Core**
- More than performance of the ARM9
- Command-Response and Peer to Peer
- Control Frames (RTS / CTS / ACK frame function without SW)
- EDCA with 4 access categories (IEEE802.11e)
- Retransmission (Short / Long Frame Retry Limit, Internal Collision Retry)
- Multi-channel operation (IEEE1609.4)
- TSF timer & GPS / UTC sync.

**ARM9**
- Clock : More than 500MHz
- 802.11p + 1609.4
- 1609.1 + 1609.3 + 1609.2
- Enhanced for Multi-paths and mobility (Support Mobility Environment up to fastspeed (< 200kmh) )
- Good performance under outdoor, mobile conditions
- Low latency Multi-hop (<10ms)
- Dual antenna diversity & MRC combiner
- RF Module (5.9GHz support)

### Feature

**Core**
- Embedded ARM Cortex-M3 processor core
- On chip PLL (32MHz input/80MHz output)

**DSRC**
- H/W DSRC Core with Auto Frequency Scan Function and RNS Interrupt interface
- Vectored Interrupt controller

**Peripherals**
- UART blocks (2 channel support)
- SPI (Serial Peripheral Interface) : 2CH
- I2C (Inter-IC bus Interface) : 2CH
- I2S (Inner-IC Sound bus Interface)
- 3 channels of 32-bit timer
- ISO7816-3 Smart Card Interface
- 32 general purpose I/O ports
Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
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  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D

National Project
- SMART-I -> Automatic Tracking CCTV System Research and Development
- KICTEP (Korea Institute of Construction & Transportation technology Evaluation and Planning) -> SMART Highway Project

ITS Product & Technologies

OSCA : Omnidirectional Surveillance Camera
- 360 degree Surveillance with one lens (about 100~140M)
- Automatic Object Tracking
- Divided Screens (up to 4 Screens)

General Information

Company Name: ROADKOREA Inc.
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Address: 1602, KDB U-Tower, 1029, Youngduk-dong, Gheung-gu, Yongin-si, Gyeonggi-do

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Phone (mobile): 82-10-2282-6852
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Company Overview
SAMWON FA has been successfully implementing and operating BIMS (Bus Information/Management System), AFC (Automatic Fare Collection), Electronic Payment System and participating SI projects. SAMWON FA provides highly reliable products and advanced total solution in public transportation sector with 36 years of extensive experiences in manufacturing H/W and designing S/W. Furthermore, intensive investing in R&D, constant challenges and innovations will fertilize SAMWON FA and the Partners to the next level of high technology in transportation sector.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Traffic Enforcement
- Parking Management
- Public Transportation
  - Bus Information/Management System
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  - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
- Constructing Gyeongnam intercity bus transportation card payment system
- Constructing Ulsan City light rail transit AFC system
- Constructing Daejeon Riverside Expressway Electronic Toll Collection system
- constructing Gwangju City intra-city bus transportation card payment system
- Manufacturing US TAXI PIM(Passenger Information Monitor)

Others

<table>
<thead>
<tr>
<th>No.</th>
<th>Category</th>
<th>Reg No.</th>
<th>Name of Patent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Patent</td>
<td>1020110062486</td>
<td>RFID Tag embedded inlay, Card comprising the inlay and method for fabricating the inlay thereof</td>
</tr>
</tbody>
</table>

Product Offerings

Technology

| 1  | AFC | An Automated Fare Collection System (AFCS) is an automated fare charging device that can automatically create, manage and account various kinds of statistics and accounting data. |
| 2  | BUS fare collection system | BUS fare collection system is to automatize the fare charging, collection, settlements and managing various kinds of statistics and accounting data. |
| 3  | Toll road fare collection system | Toll road fare collection system provides fare collection, settlement and statistical data management. It is the highest installed toll road fare collection system in Korea. |

General Information
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Address: 66-25, Bansieng-ro, 513 Beon-ji, Haeundae-gu, Busan, Korea

Contacts
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Department: E-Solution Biz Team
Phone (office): 82-2-6263-3000
Fax (office): 82-2-6263-3001
Phone (mobile): 82-10-4488-2295
E-mail: hsjung@samwonfa.com
Company Overview
SAT (System and Application Technology) Co., Ltd. is a manufacturer and supplier of Low Speed WIM System, High Speed WIM System, Automatic Traffic Classification System, Static Weighbridge System, Software relevant to traffic system and Maintenance & Calibration Service for traffic control and management systems. SAT has the biggest market share for LS-WIM System in Korea more than 99% and have stepped into worldwide markets.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
- Multi Modal Information/Management
- Bus Rapid Transit System/Solution
- Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
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- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
- Development of Smart WIM Controller
- Load Condition Surveillance System
- Automatic Overloading Enforcement System with High Speed WIM

Others
Certification
- ISO 9001:2008
- ISO 17025:2005
Patent
17 patents for WIM system

ITS Product & Technologies
Product Offerings
WAVE modem has developed for safety convenience, and commercial applications in vehicular environment.

LS-WIM: ±5% accuracy at 0-10km/h
  ±5% accuracy at 0-10km/h
HS-WIM: ±7% accuracy at 10-200km/h

Automatic Vehicle Classification System: More than 95% accuracy in vehicle classification

Weighbridge System: 3 to 7 platforms, ±1% weighing accuracy

Technologies
Multi rows of weighing sensor using Bending Plate, Quartz Sensor, Piezo Sensors, Load cell to increase the accuracy of WIM system.
Company Overview
SA Tech Co., Ltd. have an ITS Total Solution of ITS Consulting design, construction, deployment, operation, and maintenance.
In addition, SA Tech Co. are continuing to try to go to open the Smart Traffic World.
And SA Tech Co. implementing a sustainable transportation system through excellent technology and the best professional and technical personnel.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Traffic Enforcement
- Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Center Traffic Data Management
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
R&D
Korea Agency for Infrastructure Technology Advancement
<Improvement of assistive technology for mobile convenience the elderly>

Others
Certification
- ISO 9001:2008
- ISO 14001:2004

ITS Product & Technologies

ITS (Intelligent Transports system):
- Intelligent traffic control system with leading edge technologies of electronics, communications and control supervises traffic participants and elements, i.e. road, vehicle, freight, etc.
- ITS covers real-time traffic data gathering, data mining and providing optimal traffic condition.
- ITS reduces fuel consumption and achieves eco-friendly traffic environments.

1. Traffic signal controller
- Local traffic controller equipped with Microprocessor is installed on road cross to control traffic signal lamps.
- Standard LTC monitors traffic volume of each direction via vehicle detector, builds traffic signal plan and controls signal pattern to make optimal traffic flow.
- Whereas previous LTC runs only predefined signal pattern on the basis of time-of-day, day-of-week and special day plan without considering traffic condition changes.

Features
- Real-time traffic signal control using vehicle detectors
  - Powerful microprocessor provides numerous functions for best suited traffic signal control
  - Built-in large scale memory for stable operation
  - Database synchronization by periodic data exchange
  - Endurable structure for harsh environment

2. Loop Detector
- Basic sensor for real-time traffic condition data collection of vehicle detection system
- Reliable, maintainable, endurable inductive loop
- Data from inductive loop detector is conveyed to VDS server after processing at Central Processing Unit

Features
- Reliable sensor immune to weather and light condition
  - Low installation cost
  - Sensitivity tuning as to pavement condition
  - Errorless data purging algorithm embedded

3. BIS (Bus Information System): It’s a system that provides peoples about bus information through identifying real-time position of the bus from the bus using GPS and analysis and processing

Features
- It can predict the destination arrival time and it can make sure peoples can ride the bus a few minutes real-time updates by Internet, BIT.

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Company Overview
SK Holdings is the holdings company of Korea’s most recognized “SK” brand and has ranked 57th in the 2015 Fortune Global 500. As a unique “business driven holdings company,” we possess capabilities in value portfolio management and ICT driven new growth business development. With focus on creating value for our clients and challenging the future, SK Holdings aims to become a Global Top Tier IT Services Company.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Traffic Enforcement
- Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
- Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
- Pedestrian/Disabled Support System
- Electronic Toll Collection
- Electronic Parking Payment
- Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Integration
  - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
- Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
- Logistics
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
Hanoi-Haiphong Expressway ITS Project

Others
Certification
- Inclusion in the DJSI World (As the Best Company in computer service/internet/SW industry by DJSI Korea)
- KRCA Award (Korean model for RCA, the world’s most prestigious corporate sustainability reporting award given by GRI)
- Selected on the KRX SRI Index
- ISO 9001, 14001, 27001, OHSAS 18001
- CMMI-DEV Level 3 v1.3

ITS Product & Technologies
Product Offerings
- SK Holdings offers over 60 products in 11 ITS service areas including: Traffic Signal Controller/Vehicle Detection System/Automatic Vehicle Identification/ CCTV/Variable Message Signs/Automatic Number Plate Recognition/ Vehicle Enforcement System/Traffic Signal Lights/Fog Protection System/ Electronic Toll Collection & Automated Fare Collection
- SK Holdings’ very own Nexcore ITS Platform enables greater efficiencies for ITS implementation

SK Holdings ITS Products

Technologies
SK Holdings offers 12 services in all 5 core ITS business areas and have served clients world wide with top quality systems.
1. Traffic Management (Control Center, Traffic Flow Control, Violation Enforcement, Parking)
2. Public Transport Management (Bus/Taxi Management)
3. Electronic Payment (Electronic Toll Collection, Electronic Public Transport Fare Collection)
4. Freight Transport Management (Truck Management)
5. Convergence Business (Smart Cities, Multi-modal Transport Info., Customized ITS Packages)

SK Holdings Business Areas and Services

References
- SK Holdings provides comprehensive ITS services for its clients and have successfully completed over 33 projects globally including Baku, Azerbaijan (USD 138M) and Ulaanbaatar, Mongolia (USD 12M)
- 40% of Korean ITS enabled cities currently utilize SK’s system including Seoul and Jeju Island.

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Company Overview

Songam Syscom is specialized in the power grid ICT and ITS. Since established 1991, 23 years has focused on building multimedia infrastructure. We delivers high quality, reliable and cost-effective ICT & ITS products by constantly exploring and implementing innovative and intelligent solutions that drive long-term value to customers.

Business Area

1st category

- Traffic Management
  - Traffic Signal/Control - Incident Management - Traffic Information - Safe-driving Support
- Public Transportation
  - Bus Information/Management System - Public Transportation Information/Management
  - Multi Modal Information/Management - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection - Electronic Parking Payment - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Integration - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road - Autonomous Driving - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System - Hazardous Freight Management - Logistics
- Others

2nd category

- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D

- Bus Information System Maintenance - Urban Traffic Information System Maintenance
- Surveillance System Setup & Installation (CCTV) - Development of Intelligent Video System

Others

Certification
- ISO14001, ISO9001
- CERTIFICATE OF SINGLE PPM QUALITY
- CE

ITS Product & Technologies

Product Offerings

1. Industrial Optical Switch (L2)
   - Line speed : 1.25 Gbps ± 20ppm
   - Line symbol : Scrambled NRZ
   - Optical source : Single mode LD
   - Peak wavelength : 1310nm
   - Connection type : SC/PC
   - Optical type : 2 Core
   - Transmittal distance : 20Km or 40Km
   - Specification : Meeting ITU-T G.957, G.958

2. Multi controller for CCTV & VDS
   - HD/Full HD, H.264
   - Stored for more than 24 hours
   - Backup function
   - Always store, Event video storag

Technologies

1. This industrial L2 switch equipment L2 switches 1000Base-T Ethernet signal, coverts to 100Mbps or 1Gbps optical signal and transmits. When it is optically linked, various networking is available, such as Ring, Star or Line, provides various interface such as RS- 232, 10/100Base-T or 1000Base-T, and monitoring and control of external sensor are available through Telemetry Port(DI/DO).

2. CCTV controller and VDS controller is combined to one device and additional smart functions applied.
   - CCTV controller Improves
   - CCTV controller and VDS controller is combined to one device
   - Incident Detection and Alarm function

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General Information

Company Name : Songam Syscom Co., Ltd.
Website : www.songam.co.kr
Address : H03Factory 32,Donghwagondan-m 32, Donghwagongdan-ro, Munmak-eup, Wonju-si, Gangwon-do, Korea
R&D Lab : 8F 1 Donghwagondan-ro, Pange Seven Venture Valley 17, Pange-ro 121-beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
Company Overview

sTraffic provides the fast and safe transportation infrastructure for human and nature and applies the latest technologies in electronics, information & telecommunication to existing transportation infrastructure and components such as road and vehicle to operate transportation facilities efficiently and provide useful information to users.

Business Area

1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
- Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
- Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Integration
  - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
□ Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
□ Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
□ Others ( )

2nd category
- Hardware
- Software
- SI
- Consulting
- Others ( )

Ongoing ITS project or R&D

1. Toll Collection System implementation for Korea Expressway Corp. in 2013
2. Unmanned Toll System development and supply for Korea Expressway Corp.
3. Vehicle classification system supply for Korea Expressway Corp. in 2013
4. Electronic Toll System implementation for Sujung tunnel in Busan
5. Toll Collection System implementation for Bukhang bridge in Busan
6. Electronic payment system implementation for Gwangan bridge in Busan
7. Toll Collection System and Traffic management system for Guri-Pocheon expressway
8. Improvement Toll System and Expressway Toll System for Misyreong Corp. in 2014
9. ETCS Feasibility Study for Mongolia in 2015
10. A study on the improvement of Hipass image recognition and communication quality for Korea Expressway Corp Research institute in 2015

Others

Certification
- ISO 9001:2008
- CE

Patent
- Unmanned Vehicle Photographing Equipment
- Automatic Vehicle Number Recognition System
- Vehicle Speed Detection System
- Traffic Law Violation Enforcement System

ITS Product & Technologies

Product Offerings

sTraffic provide Toll Collection System and Hipass, Freeway Traffic management System and Urban Traffic Management System for the fast and transportation infrastructure for humans and nature.

Technologies

LFF (Multi-lane Free Flow Tolling System)
MLFF is Multi-lane free-flow toll collection system using DSRC* technologies. There is no need for complicated tollgate structure any more. MTS ensures safety and smooth traffic flow by eliminating the need for lane change or speed decrease to pay a toll. In addition, MTS helps reduction of fuel consumption and carbon dioxide emission around the tollgate ensures the comfortable city environment. MLFF is the latest toll collection system developed by sTraffic, leading company of tolling market during last 20-years in Korea. MLFF would be change the future expressway more safe and environment-friendly.

General Information

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Company Overview
THINKWARE Systems Corporation develops, manufactures, licenses and supports a range of LBS solutions and products, including scalable intelligence map and navigation systems, in-vehicle infotainment systems, mobile applications, road network information data and statistical analyzing engine technologies. THINKWARE is now well positioned to provide total LBS solutions to worldwide markets with having number one spot in the Korea LBS industry.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
- Traffic Enforcement
- Parking Management
- Public Transportation
- Bus Information/Management System
- Public Transportation Information/Management
- Multi Modal Information/Management
- Bus Rapid Transit System/Solution
- Pedestrian/Disabled Support System
- Electronic Toll Collection
- Electronic Parking Payment
- Electronic Fare Payment
- Traffic Information Integration/Management
- Traffic Information Integration
- Traffic Information Center Traffic Data Management
- Taxi Information
- Pre/On-Trip Traveler Information Service
- Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Electronic Toll Collection
- Electronic Parking Payment
- Electronic Fare Payment
- Traffic Information Integration/Management
- Traffic Information Integration
- Traffic Information Center Traffic Data Management
- Taxi Information
- Pre/On-Trip Traveler Information Service
- Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others ( )

2nd category
- Hardware
- Software
- SI
- Consulting
- Others (GIS, GPS, DR, LBS)

Ongoing ITS project or R&D
Automotive AVN system projects - In-vehicle audio video navigation S/W and solutions
- Intelligent Map S/W solution business – Air 3D / real 3D (web, app.)
- Customer Experience Navigation Cloud R&D, projects – Cloud navigation solutions(Web, Mobile) for every stage of the customer journey with Data-driven experiencesExpressway Corp Research institute in 2015

Others
Certification - ISO 9001:2008 (Q347012) certified

Patent (1000-odd worldwide)
- Method and system for providing analysis index associated with drive section based on road and traffic conditions
- APPARATUS AND METHOD FOR PROVIDING REAL-TIME INFORMATION USING ANALYSIS FACTOR BASED ON ROAD AND TRAFFIC CONDITIONS
- APPARATUS AND METHOD FOR CONTROLLING VIDEO RECORDING IN BLOCKBOX FOR VEHICLE
- SERVER, NAVIGATION SYSTEM, VEHICLE NAVIGATION SYTEM, AND METHOD FOR PROVIDING IMAGES OF VEHICLE NAVIGATION SYSTEM
- SAFETY PHOTO SERVICE PROVIDING METHOD AND SYSTEM
- METHOD FOR SENSING COVERING STATE ACCORDING TO VELOCITY AND SYSTEM FOR PROVIDING TRAFFIC INFORMATION USING THE SAME METHOD, etc.,

ITS Product & Technologies
Product Offerings
GPS:
- Map software (European and Asia map solutions, supporting GPS devices and mobiles)
- PCNA (Navigation devices, No.1 market share)
- InAVI, ThinkNAVI
- In-Dash
- Car DVR (Dash-Cam): Time, Speed, 2Ch (Full HD), Safety Photo, Drive assistance
- Tablet PC: Dual/Quad Core, 10.1"/8.9"/8", Android Jelly bean, PLS LCD, GPS, Wifi
- In-Vehicle Infotainment system: Android AVN platform
- LBS: LBS system integration and software solution

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THINKWARE CO., LTD.
Company Overview

DBMS vendor that provides the best database software in Korea TmaxData Co., Ltd. (hereafter TmaxData) is a DBMS vendor that researches and develops data-related core technologies and data-based technologies. In 2003, TmaxData successfully launched its own DBMS product ‘Tibero’ to commercialize the large DBMS in Korea, and has become one of the leading companies in the domestic DBMS market. In 2008, TmaxData developed ‘Tibero Active Cluster (TAC),’ which is a shared DB cluster technology. It was the first time in Korea, and the second in the world. TAC exhibits stability and high performance enough to replace DBMS products of other global companies. In October 2011, TmaxData strengthened its product competitiveness by launching a new DBMS product ‘Tibero 5’ which had been designed to be used as the core system of a large business system. The product can be applied to not only a unit business system but also a core business system or an enterprise system. Gradually upgrading technology, TmaxData now leads the domestic DBMS market with its competitive products that display outstanding performance, stability, and distinctive technical support. TmaxData has made efforts and passion in developing new database technology and products to meet the needs of the market and customers. As the result, TmaxData has grown as Korea’s leading DB service company with high quality products and original technology which can compete with foreign products.

Business Area

1st category

- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/ Management System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Toll Collection
- Electronic Parking Payment
- Electronic Fare Payment
- Traffic Information Integration/Management
- Traffic Information Center Traffic Data Management
- Pre/On-Trip Traveler Information Service
- Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others ( )

2nd category

- Hardware
- Software
- SI
- Consulting
- Others ( )

Ongoing ITS project or R&D

- Seoul Transportation Operation & Information Service - Integrated traffic management and analysis system building
- Cheongju City Hall - Advanced Traffic Management System (ATMS) building
- Namyangju City Hall - Bus Information System (BIS) building for Namyanju-Gapyeong-Chuncheon
- International Airport Corporation - U-Signage replacement and installation business
- Gimhae/Changwon/Yangsan/Uijeongbu/Ulwang/Namyangju/Gunpo/Gyeonggi-do Gwangju City Hall - Urban Traffic Information System (UTIS) building
- Daegu Metropolitan Transit Corporation - System building for the line no. 3
- Gumi City Hall - BIS building
- Busan-Gimhae Light Rail Transit Corporation - Automated Fare Collection (AFC) system building
- Gwangju Metropolitan City Hall - BIS building
- Korea Institute of Construction Technology - 5th Transport Advice on GOing anywhere (TAGO) system building
- Metropolitan Transport Association - Intelligent Transport System (ITS) building for Seoul-Hanam as part of the Bus Rapid Transit (BRT) pilot project Ministry of Land, Transport and Maritime Affairs - BIS building for the southeastern part of the capital area Yongin/Busan Metropolitan City Hall - ITS building
- Korea Express Corporation - TCS server adoption for business/branch offices Tongyeong City Hall - Bus Management System (BMS) building

Others

Certification

Tibero proved its stability and performance by gaining GS certificate from Telecommunication Technology Association (TTA) and gained ‘Open GIS’ certificate, the international GIS standards, from OGC (Open Geospatial Consortium) for the first time in the domestic DBMS market.

GS (Good Software) Certificate Statute

- Tibero 4 Certificate (Code : 09-0208, November of 2009)
- Tibero 5 Certificate (Code : 13-0029, February of 2013)

Open Geospatial Consortium Certificate Statute

- Spec. : OpenGIS® Simple Features Specification for SQL, Revision 1.1, Types and Functions Alternative

Major Awards

- Oct. 2010 Award of DB Solution Innovator
- Dec. 2008 Korea Software Technology Excellence Award
- Nov. 2008 New technology/Excellent IT product Presentation selected by public Institutions Won the best product Award

ITS Product & Technologies

Product Offerings

- Maximizes performance of processing increasing multiple users with a multi-process and multi-thread based architecture and the latest methodology for efficient resource management.
- Offers a compatible development environment by complying with ANSI SQL standards and supporting data access standard APIs & tPSM (Tibero’s Persistent Stored Modules), and embedded SQL.
- Maximizes business continuity by offering an environment for convenient and stable operation with high availability, database structure modification, and various backup/recovery functions.
Technologies

Stability

In order to protect a database against various types of failures, Tibero offers a variety of logical/physical backup methods and provides the RMGR (Recovery Manager) utility that implements flexible recovery depending on each failure situation.
- Backup: Nonstop service through online backup, and rapid backup through offline backup and incremental backup.

Recovery

- Crash Recovery: Automatically performed while Tibero is restarted after abnormal termination.
- Media Recovery:
  - Complete recovery: Restores all lost data in the event of data loss.
  - Incomplete recovery: Restores the database to a particular point of time.
- High Availability

Tibero supports Tibero Active Cluster (TAC), which corresponds to Oracle RAC, for its high availability. TAC guarantees stable system operation and convenient scalability with cluster-related functions including the failover function.

Compatibility

Tibero supports standardized SQL and interfaces to integrate with various applications, is fully compatible with almost all components of Oracle, and thus it enables rapid and easy DB migration.

- Compatibility
  - Supports the standardized SQL (SQL-92 and SQL-99), a variety of character sets, and XA interface which complies with X/Open standards.
  - Supports various standard interfaces: JDBC, ODBC, OLE DB, and CLI (Call Level Interface)
  - DB Link (Sybase, Oracle, DB2, MS SQL)
  - Compatibility with Oracle
    - Supports non-standardized SQL (Complete support of Oracle-modified SQL).
    - Application compatibility: Compatible with Oracle’s stored procedures (PL/SQL) and embedded SQL
  - Data type: Supports CHAR, VARCHAR, NUMBER, DATE, TIMESTAM, BLOB, CLOB, LONG, RAW, ROWID, NVARCHAR, and NCLOB.

High Performance

Tibero ensures the best performance in mass transaction system via various mechanisms for high performance processing.
- Multi Process - Multi Thread: Creates required threads beforehand and makes them stand by to respond to user access requests immediately and uses the minimum system resources.
- Row-level Locking: Minimizes loads by reducing a lockable range and avoiding lock escalation.
- MVCC (Multi Version Concurrency Control): Processes multiple users at once, and offers a structure in which blocking does not occur between read and write processes.
- Parallel DML: Realizes quick response time as multiple threads execute a single query in parallel, and automatically forms operation groups, which can be executed independently to process them in parallel.
- Parallel Data Loading: Uses the tbLoader utility which loads mass text data to a database, and enhances loading speed as multiple threads within the utility are operating concurrently.
- Partitioning: Supports various partition types such as Range, Hash, List, and Composite partition, and also provides global index and local index.

Function/Convenience

Tibero offers various utilities for developers and administrators in order to develop and manage a database more efficiently.
- tbAdmin
  - Input, modification, and execution of SQL statements, and DML SQL statements’ execution plan view
  - Partial Data Fetch for performance improvement, Open File, and Save As... functions
  - Describe Object (table, view, synonym) function, and various monitoring functions
- tbMigrator: Supports tbExport, which is a tool that exports some or all of the data and schema objects in a database to a file, and tbImport, which can import this file back into a database.
  - Migration target: All schema objects such as table, index, view and synonym, constraints, privileges, and roles
- Parallel migration processing enables speedy data migration.
- tbLoader: Loads massive data files to a database at high speed.

General Information

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Prize
- Korea Expressway Corporation: Appreciation Award for ITS Project in 2010. (#10-231)
- Chief of the Ulaanbaatar City / Traffic Control Center: Appreciation Award Of Honor for Ulaanbaatar City ITS Project in 2010.

ITS Product & Technologies

Traffic information system
- Automatic Vehicle Identification System (IMAGEPRO 6100)
- Vehicle Detection System (IMAGEPRO 1100)
- CCTV for Traffic Information System (IMAGEPRO 4000)

Vehicle Enforcement System
- Mobile Enforcement System (TOPCAM 1000)
- Speed Enforcement System (TOPCAM 2012)
- Red-Light Enforcement System (TOPCAM 2012)
- Point to Point Speed Enforcement System (TOPCAM 2002)
- Illegal Parking Enforcement System (TOPCAM 3000)

Security System
- Crime Prevention & Prevalence System (IMAGEPRO 5000)
- Transport Safety System (IMAGEPRO 6000)
- Protection Area Safety Improvement Intelligent CCTV System (IMAGEPRO 7000)

CCTV System
- I-TV (Industrial CCTV)

SI(System Integration)
- ITS Integration

Business Area

1st category

- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/ Management System
  - Public Transportation Information/Management
- Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
- Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Integration
  - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics
- Others

2nd category

- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D

Project: Nationwide Speed Violation & Red-Light Enforcement System
R&D: Feasibility Study for Expressway Traffic Management System in Ethiopia

Others

ISO

CE
- CR200 [TOPCAM200C] - Vehicle Enforcement System (#K1651/L07)
  : EN 60950-1:2001
- CR200 [TOPCAM200C] - Vehicle Enforcement System (#K1652/E07)
  : EN 61000-3-2:2000 + A2:2005
  : EN 61000-3-3:1995 + A1 + A2:2005
  - Surge Protection Equipment (#NV 07 04 63165 001)
  : CPSAD113247

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General Information
Company Name: TOPES Co., LTD.
Website: www.topes.com
Address: 31, Nokchon-ro 10beon-gil, Hwado-eup, Namyangju-si, Gyeonggi-do, 12187, Rep. of KOREA
Company Overview
TRACOM, established in November 2004 as a ITS service company. Leads the revolution of service with its software and hardware solution, integrated ICT and Traffic-infra Businesses. For 10 years, We have been working with companies, cities and communities around the world to build ITS and constantly making efforts for creating value through the continuous R&D.

Business Area
1st category
- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management
- Public Transportation
  - Bus Information/Management System
  - Public Transportation Information/Management
  - Multi Modal Information/Management
  - Bus Rapid Transit System/Solution
  - Pedestrian/Disabled Support System
- Electronic Payment
  - Electronic Toll Collection
  - Electronic Parking Payment
  - Electronic Fare Payment
- Traffic Information Integration/Management
  - Traffic Information Integration
  - Traffic Information Center Traffic Data Management
- Traveler Information
  - Pre/On-Trip Traveler Information Service
  - Telematics Service
- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System
- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
- Others

2nd category
- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D
Overseas Project
- Intelligent Transportation Systems for Metro Manila Public Transport(Consulting)
- Detail Engineering Design work for Bus Rapid Transit Line-3 Corridor in Dhaka[intelligent transport system Consulting]
- The Establishment of Advanced Traffic Management System (ATMS) in Asuncion, Paraguay
- The Master Plan for public transportation system in Lima and Callao, Peru [Technical support to Automatic Fare Collection and ITS]
- Paraguay Asunción City Child Traffic Education Park revitalization project(CSR)

Domestic Project
- Traffic Information System project in Jamsil Seoul
- Design project for Wonju ITS
- TOPIS Management & Maintenance in Seoul City
- Suwon Public Bike System Consulting

R&D
- A Development of Integrated Platform for Commercial Vehicles
- Development of a maintenance platform based on asset management for underground structure of plants and large-scale utilities[foecuing on energy production and supply plants]

Others
Certification
- ISO 9001:2008
- CE
Patent
Certificate of Software Quality
- BIT for ITS/BIS AYBIT2013
ETC
- S/W registration : 10 programs [2005 ~ 2011]
- Winning a 4th Korea Internet Award 2010 [Special Mention Award]
- Confirmation of Innovational Technology Small Business[INNO_BIZ]

ITS Product & Technologies
Product Offerings
General Information
Company Name: TRACOM Co. Ltd.
Website: www.tracom.co.kr
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Company Overview

Vitzrosys is strengthening its foothold as the ITS, SI leading company in ‘Consult, Design, Products, Construct’ at this whole progress. We have technology in the field of ITS like ATMS, UTIS, BIS, etc. as well as long experience and R&D records of DCS, SCADA. The company, in order to become the leader in the future high technology society, is expanding its business into advanced ITS like CCTV, signal controller, and also certificate and product line.

Business Area

1st category

- Traffic Management
  - Traffic Signal/Control
  - Incident Management
  - Traffic Information
  - Safe-driving Support
  - Traffic Enforcement
  - Parking Management

- Public Transportation
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  - Public Transportation Information/Management
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- Advanced Vehicle/Road
  - Safe-driving Vehicle & Road
  - Autonomous Driving
  - Drive Assistant System

- Commercial Vehicle Operation
  - Fleet Management System
  - Hazardous Freight Management
  - Logistics

- Others

2nd category

- Hardware
- Software
- SI
- Consulting
- Others

Ongoing ITS project or R&D

Project
- Construction of UTIS(Urban Traffic Information System), City of Geoj, Pohang, Kimhae, Changwon
- Construction of ATMS(Advanced Transportation Management System), City of Paju
- Construction of u-City(Ubiquitous City), Sungsan GREEN city, Magok u-City
- Construction of BIS(Visitor Information System), Expanding BIT of Seoul, Yongin-Seongnam, Mokpo-Muan R&D
- SITMS Transport information center [design and implement]
- Development of 3rd dimensional landfill management system
- Development high precision power metering SOP for Smartgrid, Home energy platform
- Development of hybrid remote processor

Others

Certification
- Verification of manufacturer (VMS, Signal Control Unit, DCS)
- GS-certification, ISO 9001 / 14001, Inno-Biz, EN-241, and etc

Patent and utility model
- Discharge-lamp tracking system through the image recognition
- Index finger auto configuration for panning, tilting, zooming conversion
- Surveillance, tracking system and the method of lane violation on the road
- Traffic signal control system at the division of area, the method and image recognition system
- Surveillance and tracking system and the method for the cars which do an illegal U-turn
- Information indicator for the parking-lot and the method
- Blind information indicator of the crosswalk
- Signal control system used of the laser sensor
- Tracking system of a traffic offense through the image fusion
- Remote controller for the traffic signal

ITS Product & Technologies

1. Violation Enforcement System

Collection and management system for the efficient control of the road/preventing from the traffic accident through the car information committed speed, lane, traffic signal violence

Solution
Tracking enforcement system for speeding, illegal stopping and parking, traffic signal/bus driveway / crashing the line violation

Performance
On-going maintenance and implement more than 500 systems all over the country

2. Bus Information System

Information system for providing the route/arrival information to the bus manager and user through collecting the bus(in-service) data in real-time

Solution
Integrated solution of field equipment and centers for bus information to collect /manufacture / provide itself

Performance
Implement of Seoul / Gyeonggi province BIS, etc.
Wayties Inc.

Company Overview
Wayties Inc. is a small but powerful and innovative company consisting of creative members who have comprehensive experiences in web, mobile, automotive and vehicle-to-X (V2X) communication technologies. We offer customized software solutions related to V2X and Cooperative-ITS (C-ITS) systems for improving customer value and satisfaction. We have developed V2X and C-ITS field test solutions which provide various test scenarios, automated data collection from test vehicles and the convenient tools for analyzing the results.

Business Area

1st category
☐ Traffic Management
- Traffic Signal/Control
- Incident Management
- Traffic Information
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☐ Advanced Vehicle/Road
- Safe-driving Vehicle & Road
- Autonomous Driving
- Drive Assistant System
☐ Commercial Vehicle Operation
- Fleet Management System
- Hazardous Freight Management
- Logistics
☐ Others ( )

2nd category
☐ Hardware
☐ Software
☐ SI
☐ Consulting
☐ Others ( )

Ongoing ITS project or R&D
Development of field test solutions for V2X and C-ITS services
- Evaluating the performance of V2X system and the application and communication performance
- Providing validation and verification test for C-ITS services
- Open-source projects for developing V2X service platform
ITS Product & Technologies

1. Connected Car
   - Developing the smartphone applications and embedded software for vehicle telematics service using V2X communication
   - Engineering and consulting C-ITS services

2. V2X communication analysis system
   - V2X Field Test System (FTS)v1.0
   - Real-time Data Logging & Analysis using vehicle-to-Cloud Technology
   - 1:1, 1:N, N:N Performance Analysis
   - High Usability & Accessibility by Web-based UI
   - Extending with ADAS sensors (OBDII/CAN, Stereo Vision, Lidar, …)

General Information
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