ITS KOREA

Annual Report 2015

ITS KOREA Intelligent Transport Society of Korea

Welcome

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.

권기칠

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

ITS KOREA

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).

Main Tasks

Standardization
- Build Standard Basis Environment
- Support Standard Development
- Disseminate and Maintain of Standard, Support Private Driving Standard Development

Standard Observance Verification & Certification
- ITS Standard Conformity Assessment
- ITS Testing / Inspection
- RSE ID Allocation

Performance Evaluation
- Inspection for Approval Construction & Regular Inspection
- Education, Public Relations, Training, Technology Exchange
- Regulation, Technology, Method Development
- Information, Collection & Dissemination

Project Consulting
- Project Action Plan
- Project Ordering, Contract Assist
- Project Launching and Processing, Quality Control
- Inspection for Completion

ITS KOREA

Designated by MOLIT as National Oranization for
- ITS Standards
- ITS Standard Observance Verification
- ITS Performance Evaluation
- International Cooperation
- C-ITS Deployment

COSD(Cooperation Organization for Standards Development)
by Korean Agency for Technology and Standards(KATS)

Dedicated ITS Educational Institute
by Ministry of Employment and Labor

ITS Inspection Body
by KOLAS(Korea Laboratory Accreditation Scheme)

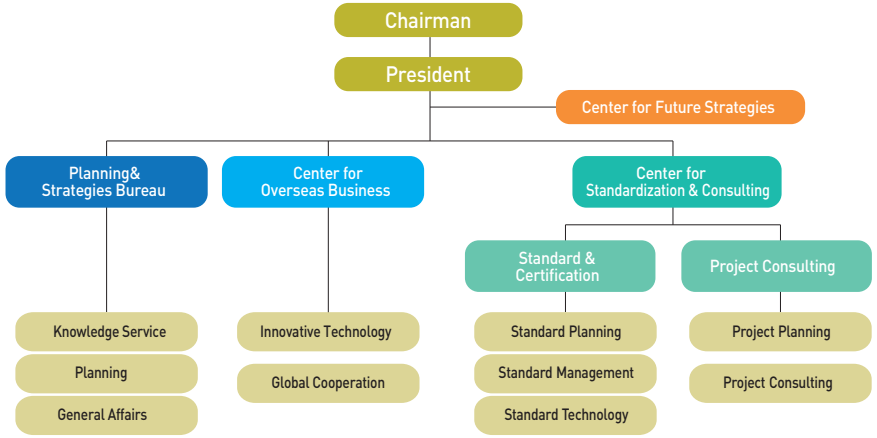
R & D
- Policy on Road and ITS
- Grand Scale of National R&D
- Projects Evaluation, Investigation, Analysis

Education
- Develop the Education Courses and Materials
- Conduct Basic and Professional Education
- Professional Instructors and Joint Education Program
- Manage Training Courses

Overseas Business
- Overseas Maketing Research
- Promote Korea ITS Technology
- Customized ITS Consulting
- 1:1 Business Matching
- ODA Project Development

Global / Domestic Alliance
- International Cooperation with the ITS Related Organization
- Assist Membership Company
- Organize Domestic & International Conference

Organization



History of ITS KOREA

2015
- Designated by Ministry of Employment and Labor for ITS Educational Institute
- KOLAS inspection body Accreditation for ITS Performance Evaluation
- Host ITS Invitational Workshop (Vietnam, Colombia)
- Host ITS Roadshow in Republic of Czech and Poland
- Host the Conference "Smart Vehicle&Smart Road 2015"
- Signed MoU with Ministry of Road and Transport of Mongolia and Road and Transport Society of Mongolia

2014
- Designated as National Organization for C-ITS Deployment by MOLIT
- Designated as National Organization for Overseas Business by MOLIT
- Host ITS Invitational Workshop (Vietnam, Malaysia)
- Host the Conference "Smart Vehicle&Smart Road 2014"
- Host ITS Roadshow in Mexico and Colombia
- Signed MoU with ITS Polska and Connekt/ITS Netherland

2013
- Designated as Exclusive National Organization for ITS Standard (Road Transport Sector) by MOLIT
- Designated as Cooperating Organization for Standards Development by KATS
- Host ITS Invitational Workshop (Mongolia)
- Host the International Conference "Smart Vehicle&Smart Road 2013"
- Host ITS Roadshow in India, Vietnam and Malaysia

2012
- Signed MoU with Young-san High School
- Host the Workshop "Strengthen the Expansion for the ITS Overseas Market"
- Signed MoU with ITS Malaysia
- Host the International Conference "Global ITS Market and Trend"

2011
- Signed MoU with ITS Russia, ITS Australia and ITS Japan
- Host the International Conference "Smart Vehicle&Smart Road 2011"
- Host the Symposium on Development of ITS Industry in Korea

2010
- Host 17th ITS World Congress in Busan
- Designated as National Organization for ITS Performance Evaluation by MOLIT
- Designated as National Organization for ITS Standards (Vehicle/Road Traffic Sector) by MOLIT

2009
- Signed MoU with ITS UK and ITS Sweden
- Conduct ITS Feasibility Test in Columbia
- Host "Hi-pass for Green Growth Environment Seminar"
- Host Mutual Exchange Conference with ITS Japan

2008 ~ 2007
- Signed MoU with ITS China
- Designated as National Organization for ITS Standards by MOLIT
- Host Cooperation Seminar between Japan and Korea

2006
- Host the 1st Forum on Advance Transport System (Annually Held)
- Signed MoU with ITS Hong Kong
- Host "ITS/Telematics Conference"

2005
- Start ITS Standard Education
- Signed MoU with ITS India
- Designated as National Organization for ITS Standard Verification by MOLIT

2004
- Host the Industry Meeting for ITS Development
- Host "Global Marketing for Smart Card&ETCS Conference"
- Start 1st ITS Technical Education

2003
- Host 1st &2nd ITS Global Marketing Forum
- Initiate ITS Standard Assembly
- Develop the Data Registry for National ITS Standards
- Publish 1st Issue of ITS Standards

2001~2002
- Host 5th Seoul ITS AP Forum
- Start ITS Education (1st, 2nd)
- Establish and Operate ITS Forum

1999~2000
- Establish the Master Plan of ITS KOREA
- Host ITS KOREA Telecommunication Tech. Workshop

ITS Standards

[Senior Researcher Min-Young KIM / e-mail : my1127@itskorea.kr / Tel : +82-31-478-0471]

ITS KOREA has been designated as the National ITS Standard Organization for Road Transport Sector accredited by the Ministry of Land, Infrastructure and Transport (MOLIT) on the legal basis. (Notification Publishing No. 2013-852 of MOLIT)

History of ITS KOREA's Activities

2000	2003	2005	2008	2013	2014
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 Conformity Test
- Standardize De Facto Standards
- Administrate 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

- Build and operate the website for National ITS Standards (National ITS Data Registry of Korea)

http://dr.its.go.kr

- Publish and distribute "Standard ITS" produce the only domestic ITS journal, Standard ITS publish and distribute twice a year, totally 21 journals issued

* Refer to p.27-29 for established standards

Verification & Certification of ITS Standard Observance

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[Researcher Sung-wha JUNG / e-mail : jsh1253@itskorea.kr / Tel : +82-31-478-0465]

ITS KOREA has been appointed as ITS Standard Observance Certifying Organization accredited by MOLIT, Ministry of Land, Infrastructure and Transporton the basis of "National Transport System Efficiency Act" (Notification Publishing No. 2005-139 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.

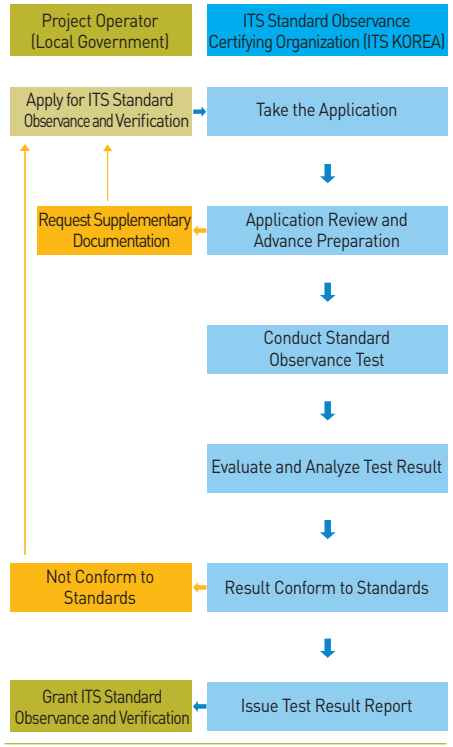
Verification of ITS Standard Observance

- The application of the national technical regulation "the basic traffic information exchange"
- The application of the national technical regulation "the basic traffic information exchange II"
- The application of the national technical regulation "the public transport (bus) information"
- The application of the national technical regulation "the basic traffic information exchange IV"
- The application of the national technical regulation "ETCS by DSRC"

Conformance Test of ITS Standard

- ETCS System Conformance Test
- OBU Conformance Test
- Traffic Information Collection&Provision by DSRC Conformance Test
- Toll Violation Enforcement System Conformance Test
- Tunnel Integrated Wireless Communication System Conformance Test
- Tunnel Incident Detection System Conformance Test
- Other ITS Related Conformance Test

Procedures of Verification



ITS Performance Evaluation

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ITS KOREA has been assigned as one of ITS Performance Evaluation Organization (June, 2010) 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). In addition, ITS Korea is accredited as ITS Inspection Body by KOLAS (Korea Laboratory Accreditation Scheme) in the field of ITS Performance Evaluation (Devices: VDS & AVI, Inspection for project completion, Regular inspection.)
Ministry of Trade, Industry & Energy, Korea Agency for Technology and Standards
(Notification Publishing No. 2015 – 0111, April 13, 2015)

Purpose

ITS Performance Evaluation is a calibration test evaluating the accuracy of the ITS equipment. The purpose is to improve traffic information and efficiency of ITS equipment maintenance. The accuracy of ITS equipment infield are closely related to the quality of traffic information in field. Therefore, ITS management through ITS Performance Evaluation is needed to increase reliability of ITS traffic information and to maximize cost effectiveness.

Outline of Evaluation

Category	Performance Evaluation for Inspection of Completion	Regular Performance Evaluation
Definition	To inspect the performance of roadway-based equipment for approval construction completion	To inspect the performance of roadway-based equipment every 2 year for maintenance & management
Evaluation Target (Equipment)	VDS : Traffic Volume, Speed AVI : Detection Rate (Including Vehicle Detection)	
Evaluation Target Range	All the Installed Objects	All Operating Objects
Evaluation Period	Before Construction Completion	Every 2 Years From 2 Years After Completion
Acceptance Level*	Above Superior Level	Above Superior Level
Re-Evaluation	From Revision Requirement Before Completion	Right After Completion
Evaluation System	Movable Standard Equipment (Collect Basic Data) and Analysis System	
Main purpose	Confirm Whether ITS Business Completion is Done or Not	Utilize Maintenance Consulting

* Level assignment : 4 level(Superlative, Superior, Intermediate and Pre-intermediate)

To issue KOLAS inspection report for ITS Performance Evaluation

- Target devices : VDS (Vehicle Detection System), AVI (Automated Vehicle Identification)
- Execution : : Inspection for project completion, Regular inspection
- Methods : In accordance with the guidelines of ITS project implementation – VDS and AVI Performance Evaluation (latest version)
- After the inspection is completed, the official KOLAS inspection report will be issued

ITS Consulting (Project Management)

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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.**

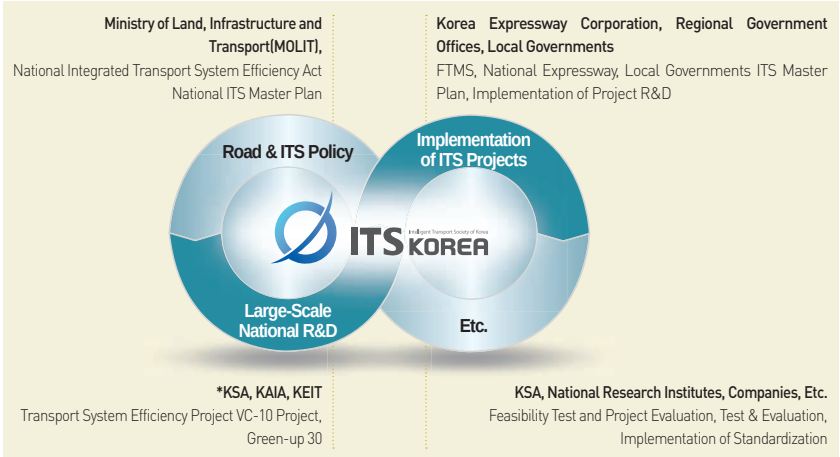
Work Scope of ITS Project Management by Period

01 Planning of ITS Project	02 Conducting of ITS Project	03 Completing of Project
• 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	• Manage the Implement Process • Report the Daily / Weekly / Monthly Process • Quality Control • Safety Management • Implement Management	• Verification Standard Observance • Inspection for Completion • Evaluation of Unit and Integration Test • Evaluation of System Performance • Post Research & Analyze • Comparison Analysis of Before and After

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.



* KSA Korean Standards Association
KAIA Korean Agency for Infrastructure, Technology, Advancement
KEIT Korea Evaluation Institute of Industrial Technology

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

ITS Roadshow

Exhibition

ITS Invitational Workshop

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)

Providing the Customized ITS Consulting for Overseas Countries

- Conduct Feasibility Study to lay the groundwork for successful projects
  - ITS KOREA conducted F/S on ITS construction projected in 4 cities in Colombia and in Santo Domingo, the Dominican Republic.
- Establish Project Master Plan for actual ITS project execution
  - Review and analyze the local transportation conditions, relevant policies and technologies on behalf of the client country
  - Provide the budget and the detailed action plan for project implementation

Analysis of local traffic conditions

Site Inspection

Specification for ITS

Global Business Hub for Korean & Overseas ITS Projects

- Arrange 1:1 Business Matching and Networking (840 matching with 20 countries)
- Search and introduce the optimal business partner for both Korean and oversea companies, if required for ITS project
- Build business network and strengthen cooperation among international ITS agencies (Signed MOU 12 countries; India, Hong Kong, China, Sweden, U.K., Japan, Australia, Russia, Malaysia, Poland, Netherlands, Mongolia)
- Provide the best course of Technical Visits for introducing various traffic centers on demand

1:1 Business Matching

MoU Signing

Technical Visit

International ITS Workshop

• 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

Date / Time	Program Description
May 10 (Sun)	**Arrival**
	Move to KOICA
	Hotel Check-in & Free time
May 11 (Mon)	**KOICA Orientation**
09:30~10:20	Introduction to KOICA & Program
10:20~10:50	Commemorative photo shooting
10:50~11:20	ICC tour
11:20~12:00	Hompage registration
12:00~13:20	Welcoming Luncheon
13:20~14:30	Introduction to daily life in Korea
14:30~16:30	Training on basic Korean
16:30~17:30	Training on ODA or Gender issue
May 12 (Tue)	**Orientation / Country Report / Lecture**
08:30~09:30	Orientation
09:30~12:30	[Lecture 1] Current status of ITS in Korea
12:30~14:00	Lunch
14:00~16:00	Presentation on the Country Report (by each city)
16:00~17:00	Action plan methodology

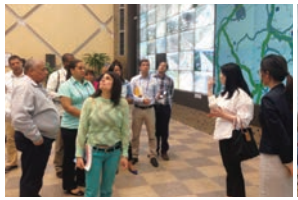
Date / Time	Program Description
May 13 (Wed)	**Lectures**
09:00~12:00	[Lecture 2] National ITS policy & plan
12:00~14:00	Lunch
14:00~17:00	[Lecture 3] ITS Standardization
17:00~18:00	Discussion on action plan preparation
May 14 (Thu)	**Lectures / Study Visit**
09:00~12:00	[Lecture 4] Transportation Policy in Seoul city
12:00~13:00	Lunch
13:00~14:00	Move to TOPIS
14:00~16:00	[Study Visit] Seoul TOPIS
16:00~17:00	Move to KOICA
17:00~18:00	Discussion on action plan preparation
May 15 (Fri)	**Field Trip**
08:00~14:00	Move & Lunch (KOICA → Busan)
	* Visit Deokpyeong & Sunsan Rest area
14:00~16:00	[Field Trip] Busan Traffic Information Service Center
16:00~16:30	Move to Diamond Bridge
16:30~18:30	Yongkungsa (temple)
18:30~	Dinner & rest

Date / Time	Program Description
May 16 (Sat)	**Field Trip**
10:00~12:00	[Field Trip] Diamond Bridge
12:00~13:30	Lunch
13:30~15:30	Haeundae (aquarium)
15:30~17:00	Nurimaru APEC House
17:00~19:00	Dinner & rest
May 17 (Sun)	**Field Trip**
09:00~15:00	Move to KOICA & Lunch
	(Deokpyeong & Sunsan Rest area)
15:00~	Free time
May 18 (Mon)	**Lectures / Study Visits**
09:00~12:00	[Lecture 5] Introduction of ITS in Expressway
12:00~13:30	Lunch
13:30~14:00	Move to KEC
14:00~15:30	[Study Visit] KEC Traffic Information Center
15:30~17:30	[Study Visit] Smart Highway demonstration area
17:30~18:30	Move to KOICA
May 19 (Tue)	**Lectures / Study Visit**
09:00~12:00	[Lecture 6] Traffic Signal Management & Control
12:00~13:00	Lunch
13:00~14:00	Move to Anyang
14:00~16:00	[Study Visit] Anyang U- Traffic Center
16:00~17:00	Move to KOICA
17:00~18:00	Establishment on action plan

Date / Time	Program Description
May 20 (Wed)	**Lectures / Study Visit**
09:00~12:00	[Lecture 7] Understanding of Public Transportation and Electronic Payment System
12:00~13:30	Lunch
13:30~14:30	Move to KSCC
14:30~16:30	[Study Visit] Korea Smart Card Company (KSCC) & experience of public transportation
16:30~17:30	Move to KOICA
May 21 (Thu)	**Lecture**
09:00~12:00	[Lecture 8] Bus Information System
12:00~14:00	Lunch
14:00~16:00	Action plan Establishment & final checking
16:00~21:00	Farewell Dinner
	- Seoul N Tower
May 22 (Fri)	**Action Plan / Closing Ceremony / KOICA Evaluation**
09:00~11:30	Presentation on Action plan by each city
11:30~12:00	Closing ceremony
12:00~14:00	Lunch
14:00~15:30	KOICA Evaluation
15:30~16:30	Departure Orientation
May 23 (Sat)	**Seoul City Tour**
May 24 (Sun)	**Departure**

Lectures

Field Trip to TOPIS


Field Trip to KEC center

Award certificate

ITS Education

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

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 THEIR 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

Courses	Main Contents
ITS Project Planning (3days/8hours/20 persons)	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
FTMS Installation and Operation (5days/8hours/20 persons)	To learn various FTMS services including Automatic Incident Management, ETCS, WIM, data collection and provision for Expressway
Urban ITS Installation and Operation (5days/8hours/20 persons)	To learn various urban ITS services including traffic detection, data collection and provision, traffic signal control, and electronic transportation card
Design and Installation of Traffic Information Center for Operators (4days/8hours/20 persons)	To learn how to build and operate traffic center system by integrating HW,SW, network and communication for the center operators
Analysis and Utilization of Traffic Bid Data (3days/8hours/25 persons)	Highly professional course to develop the new service contents by applying big data platform, processing and statistics methods to the traffic data
Professional Course of ITS Project Management (3days/8hours/20 persons)	To learn the detailed procedures by each stage, scheduling, and training for ITS Project Management
ITS Project Assessment (2days/8hours/25 persons)	To practice evaluation of ITS projects by the quantitative qualitative assessment and simulation
ITS Overseas Business (5days/8hours/20 persons)	To learn the basic knowledge for ITS overseas business, how to draw up project proposals, and case study on ITS exports
Next Generation of ITS (2days/8hours/30 persons)	To learn the essential factors such as communication, positioning, vehicle control, and sensors to introduce Cooperative ITS (C-ITS, Next generation of ITS)

• ITS orientation program (Targeted for newly hired employees)

Courses	Main Contents
ITS Practice (40days/8hours/15 persons)	To learn the working level practices by each stage to conduct ITS projects which includes transportation, electronics, IT, and automobile technologies

ITS Domestic / Global Alliance

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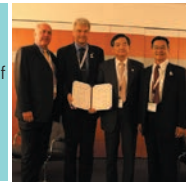
ITS KOREA is your best partner for Global Business

• International Cooperation Exchange and Cooperation with Overseas ITS Organization Promote the Advanced Korean ITS

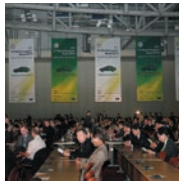
• MoU(Memorandum of Understanding) Signing



• Attend / Host ITS AP Forum and Exhibition
• Attend / Host ITS World Congress

Gateway to the Hub of the Global ITS
(Strengthen the Network and Meet the Right Contact Point for Your Business)

• Host the International/ Domestic Seminar
• Establish Forum Upon Members Needs and Request along with Market trend



• Business Matching (Find the Right Partner in Korea and Around the World)

• Membership Only Events (e.g. hope day, workshops, symposium and etc.)
• Arrangement for ITS Service & Technology Tour in Korea for Foreign Business Visitors

Member List of ITS KOREA

Chair
KOREA EXPRESSWAY CORPORATION

Audit
DAEBO C &S
GITSN. INC

Vice Chairs

KR INDUSTRY COMPANY / POSCO ICT / HYUNDAI MOBIS / HYUNDAI MOTOR COMPANY

Board of Directors

DAERO INC. / ERICSSON-LG CO., LTD. / ETRI(ELECTRONICS AND TELECOMMUNICATIONS RESEARCH INSTITUTE) / HANILSTM CO., LTD / HANWHA S&C / HYUNDAI AUTOEVER / ICONTROLS INC. / JINWOO INDUSTRIAL CO., LTD / KOROAD KYUNGBONG CO.,LTD / LG ELECTRONICS / NEIGHBOR SYSTEM / S.A TECHNOLOGY CO.,LTD / SD SYSTEM CO., LTD / SK HOLDINGS CO., LTD. / SMARTVISION / SOURCETEL CO., LTD / THINKWARESYS / UTOPIA TRAFFIC INFORMATION CO., LTD / VITZROSYS CO.,LTD.

General Members

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Part 2

Current Status of ITS in Korea

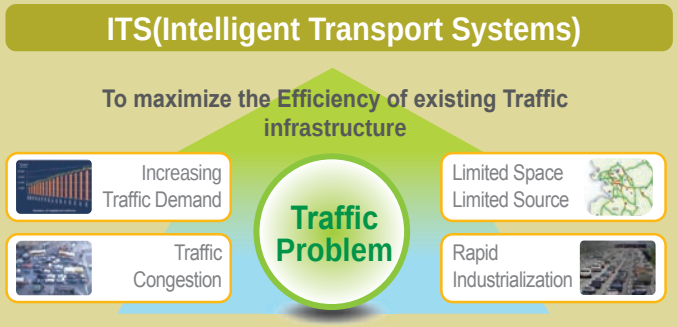
Facts & Background

Facts(Dec '14)

- Population: 51.3 million
- Territory: 100,267 km2
- Number of registered vehicles: 20.1 million
- Total length of Public Roads: 105,673 km
  - Length of Expressway: 4,044 km
  - Length of National Highway: 13,950 km

Background

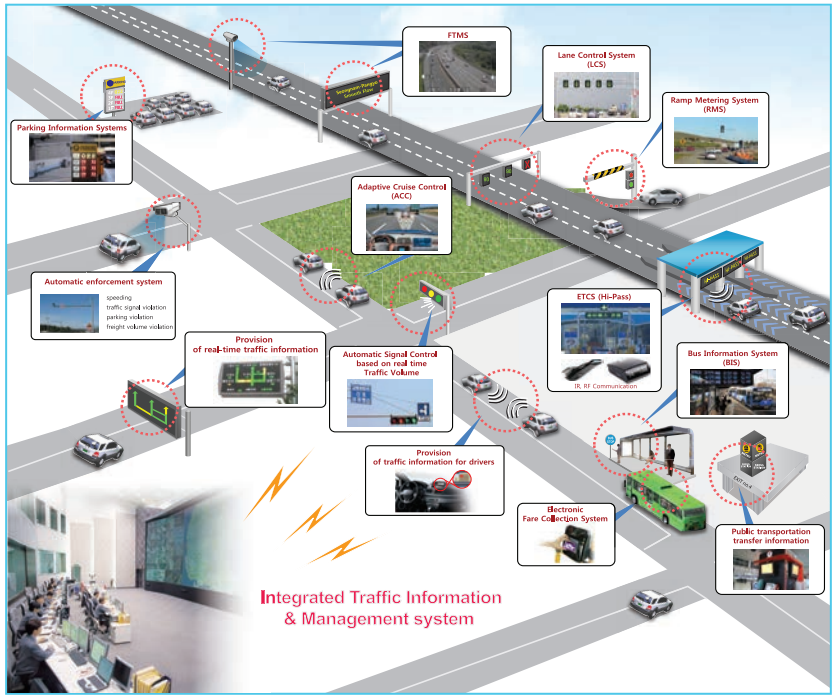
- Since 1990s, Korea's economy has grown rapidly as well as the number of registered vehicles. Due to the rapidly rising demand of traffic, a number of problems have been aroused such as traffic jam, accidents and air-pollution.
- ITS was introduced to solve the traffic problems with limited fund, restricted policies and to utilize the traffic infrastructure effciently.



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 CO_2 emission.



Milestone

Footprints of ITS in Korea

1991 ~ 1995

National Promotion Establishment Plan

- ITS Pilot Project
- Gwachon City Establishment of 1st National ITS Master Plan
- 5th ITS World Congress in Seoul

1996 ~ 1998

Beginning of ITS Pilot Project

- Development of Advanced Traffic Signal System
- FTMS Pilot Project (GyeongBu Expressway)

1999 ~ 2000

Enact ITS Legislation

- Formulation of National Transport Systems Efficiency Act
- Establishment of 2nd National ITS Master Plan

2001 ~ 2003

Deployment of ITS Model City

- Construction of ITS Model City
- ITS Wide-area Plan & Local Government Plan
- ETCS Pilot (Seoul Metropolitan Expressway)

2004 ~ 2012

Spread & Growth of ITS

- ITS development of expressway, national highway and arterial & local road
- BIS development of Local Governments
- Construction of ETCS on the whole expressway
- R&D for system improvement

2013 ~

Upgrading ITS

- Deployment of C-ITS
- One Card All Pass
- Public-Private Cooperation on traffic data collection

ITS Master Plan

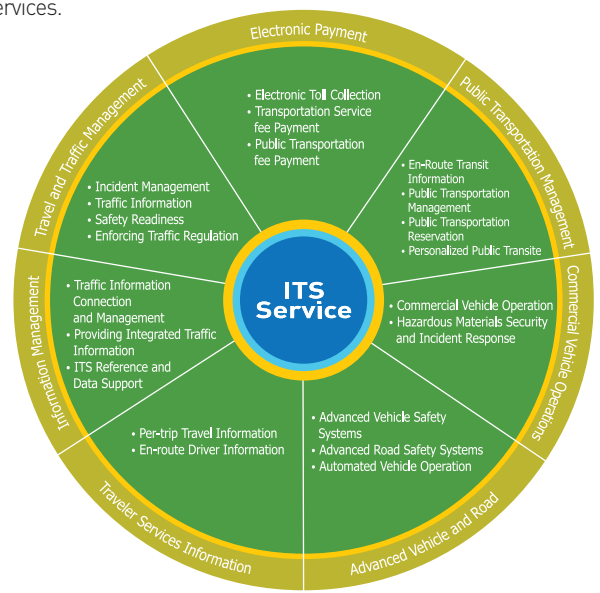
Backgrounds & Objective

- 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	• 1997. 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
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

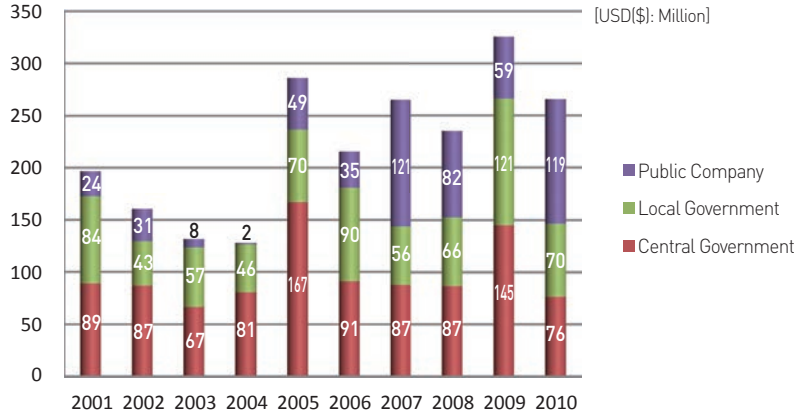
- The National ITS Architecture categorizes ITS services into 7 main-service areas, 22 services and 47 subservices.



ITS Master Plan 2020

Annual Investment Cost of ITS

- 1st Stage 2001~2005 : 903 million USD (19%)
- 2st 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



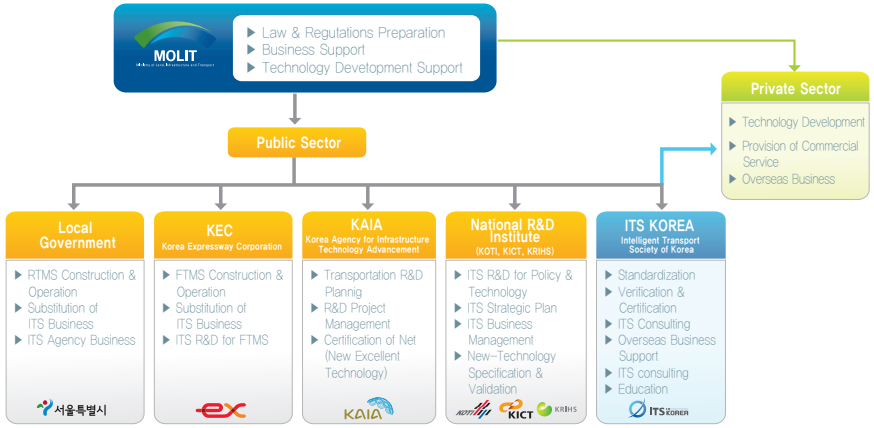
Budget of Each Service Section

[USD($): Million]

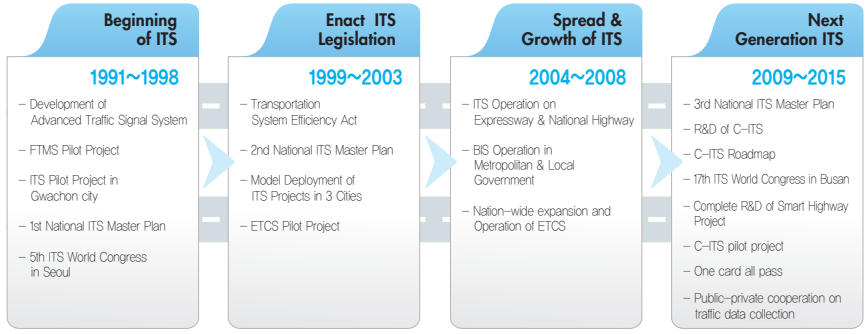
Category	Service	Mid Term (2011~2015)	Long Term (2016~2020)	Total
ATMS	Advanced Traffic Control Incident Management Traffic&Roads Information Service Hazardous Sites Management	1,070	1,175	2,246
APTS	Public Transportation Management Public Transportation Information Service	171	87	258
ETCS	Electronic Toll Payment Electronic Public Transport Payment	27	37	63
CVO	Hazardous Freight Vehicle Management	37	-	37
Total		1,305	1,299	2,604

Overview of ITS in KOREA

Organizations



Current Status & Future Plan in ITS



Effects of ITS

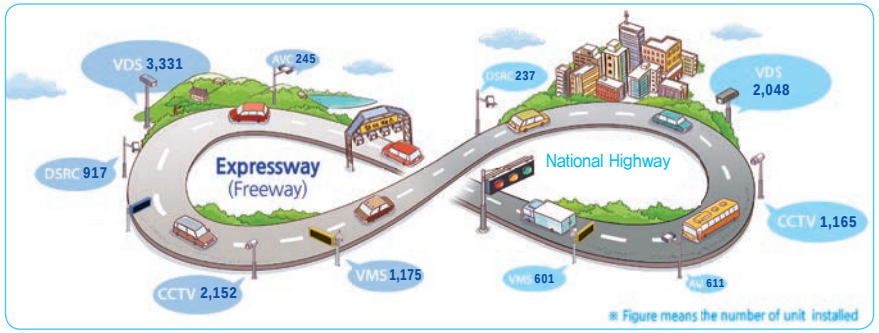
Current Status of ITS

Expressway

National Highway

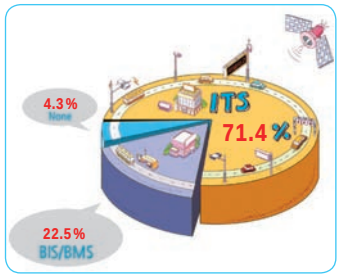
[updated date: 2013. 12]

Installation Status of ITS Equipment



[updated date: 2014. 01]

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

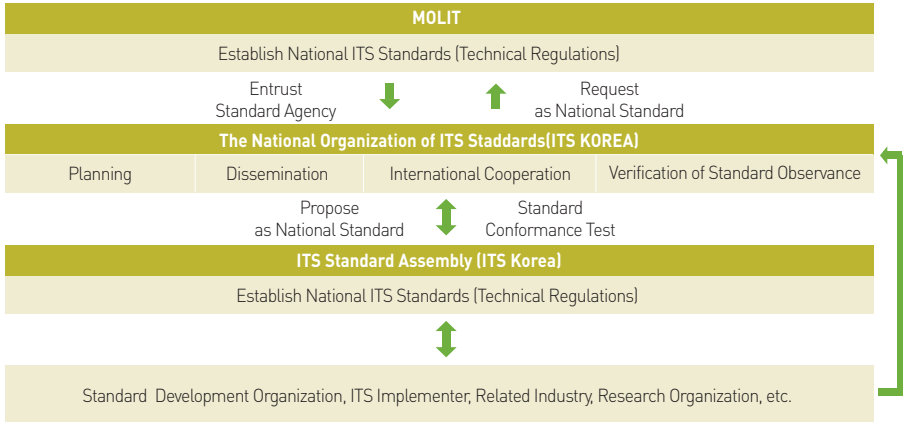
BIS/BMS

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

[updated date: 2013.12]

ITS Standardization

ITS Standardization System



List of Established Technical Regulations

MOLIT established 6 technical regulations as the national standards for nation-wide interoperability and compatibility between ITS systems. It also established 12 administrative rules for ITS development and management.

Category	MOLIT	Established / Revision
Technical Regulation	The basic traffic information exchange	2012.08.24
	The basic traffic information exchange II	2012.08.24
	The public transport (Bus) information exchange	2010.03.18
	The basic traffic information exchange IV	2012.08.24
	ETCS information exchange by DSRC	2013.04.11
	ITS standard Node&Link development criteria	2013.04.11
Administrative Rules	ITS work instructions	2012.08.20
	Traffic information provision instructions	2013.04.11
	ITS performance test instructions	2006.05.01
	ITS standard node&Link management guideline	2013.04.11
	ITS implementation guideline (VDS)	2013.04.11
	ITS implementation guideline (AVI)	2010.10.08
	ITS implementation guideline (VMS)	2010.10.08
	ITS implementation guideline (CCTV)	2010.10.08
	Guideline of ITS development and operation related with Crosswalk	2006.01.06
	Guideline of ITS government subsidy for Local government	2005.01.01
	BIS/BMS data management guideline	2013.04.11
	OBU certification system guideline for ETCS	2013.04.11

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.

No.	Title	Established
ITSK-00001	ITS Basic Data Concept and Dictionaries Standard	2003.07.15
ITSK-00002	Central DB of Road Digital Map Standard	2003.07.15
ITSK-TR-00003	Data Concept of Location Referencing Method (Technical Report)	2003.07.15
ITSK-TR-00004	AVI/AEI for CVO Standard (Technical Report)	2003.07.15
ITSK-00005	Requirement for ITS Data Registry and Data Dictionaries Standard	2003.07.15
ITSK-00006	Data Dictionaries of AITS Standard	2003.07.15
ITSK-00007	Data Dictionaries of ATMS Standard	2003.07.15
ITSK-00008	Data Dictionaries of APTS Standard	2003.07.15
ITSK-00009	Data Dictionaries of CVO Standard	2003.07.15
ITSK-00010	Messagesets for Traveler Information Service Standard Part 1	2003.07.15
ITSK-00012	Messagesets for Eelectronic Toll Collection Systems Standard	2003.07.15
ITSK-00013	Messagesets for Exchange of Traffic Information Service Part 1	2003.07.15
ITSK-00014	Messagesets for Incident Management Standard	2003.07.15
ITSK-00015	Messagesets for Traffic Control Standard Part 1	2003.07.15
ITSK-00016	Messagesets for Exchange of Traffic Information Service Standard Part 2	2003.07.15
ITSK-00017	Messagesets for Traffic Control Standard Part 2	2003.07.15
ITSK-00018	Messagesets for Traveler Information Service Standard Part 2	2003.07.15
ITSK-00019	Messagesets for Vehicle-to-Roadside Communication Standard Part 1	2003.07.15
ITSK-00020	Messagesets for Public Transport Information Standard Part 1	2003.07.15
ITSK-00022:2013	The Standard Regarding a Performance Test Method of ETCS	2013.07.08
ITSK-00023	Messagesets for Exchange of Traffic Information Service Standard Part 3	2004.09.22
ITSK-00024	Messagesets for Public Transport Information Standard Part 2	2004.09.22
ITSK-00025	Messagesets for Traveler Information Service Standard Part 3	2004.09.22
ITSK-00028	Interface Standard on Vehicle Probe Data for Wide Area Communications	2006.12.13
ITSK-00029:2011	ETCS OBU Basic Requirements	2012.01.10
ITSK-00030	ITS Roadsides Modules Part 1	2005.10.19
ITSK-00031:2009	Test Standard for Conformity in the Application of Technology Standard for Basic Traffic Information Exchange	2009.12.16
ITSK-00032:2012	ETCS Integrated Lane Controllers Specification Part 2. H/W	2012.12.05
ITSK-00033:2012	ETCS Integrated Lane Controllers Specification Part 2. Interface	2012.12.05
ITSK-00034	Fundamental Software Structure for Public Transport Information based on Mobile Locations	2006.12.13
ITSK-00035	Service Classification Standard Using DSRC	2008.12.20
ITSK-00036	Standard for Automatic Parking Violation Control Systems - Part 1. Message Set	2006.12.13
ITSK-00040:2010	Test Procedure for Technical Regulation of Transit (bus) Data Exchange	2011.01.13
ITSK-00041:2008	Performance Test Method of Toll Violation Enforcement System	2008.04.10
ITSK-00042:2009	Standard of ETCS OBU Performance Test	2009.12.16
ITSK-00043:2009	Standard of ETCS OBU Performance Test - Part II : Built in Model	2009.12.16
ITSK-00044:2010	Standard of the Transport Information System using the DSRC - Part.1 Hardware	2011.01.13
ITSK-00045	Standard of the Transport Information System Using the DSRC-Application Interface Part 2. Collection of the Transport Information System	2008.12.20
ITSK-00046:2012	Standard of the Transport Information System Using the DSRC-Application Interface Part 3. Collection of the Transport Information System	2012.12.05
ITSK-00047	Standard of the Transport Information System Using the DSRC - Part.4 Performance Test	2008.12.20
ITSK-00048	Electronic Payment for Driving Convenience Based on DSRC	2009.12.16
ITSK-00050	Test Standard for Conformity in the Application of Technology Standard for Basic Traffic Information Exchange II	2009.12.16
ITSK-00051	Test Standard for Conformity in the Application of ETCS Application Interface with DSRC	2009.12.16
ITSK-00053	Standard of the Basic Requirements and Interface for the Cooperative Intersection Signal Information and Violation Warning Systems - Part 1. Dilemma Warning	2012.12.05
ITSK-00054:2011	Standard of the Dedicated OBU and Sub-Systems for Toll-Discounted Vehicles	2012.01.10
ITSK-00056:2013	Standard for Performance Test of Tunnel Integrated Wireless Repeater at Field	2013.12.20
ITSK-00062	Tunnel Video Incident Etection System Performance Standards for Test Methods	2012.01.10
ITSK-00065	The Standard Regarding a Performance Test Method of ETCS in Field Part II. IR/RF Integrated Control Unit	2012.05.11
ITSK-00069	Standard of Performance Test for OBU of Traffic Information Dissemination Using DSRC	2013.07.08
ITSK-00070	Standard of Estimate for ATMS Works	2012.12.05
ITSK-00071	An Integrated (A slim) Control Section-Lane Control System Standard of Electronic Toll Collection System (ETCS)	2013.07.08
ITSK-00074	Standard of Estimate for BIS/BMS	2013.07.08
ITSK-00077	Standard on the performance test method for Multi Lane Free Flow(MLFF) ETCS Part 1. freeway mainline(2 Lanes)	2014.08.21
ITSK-00087	VMS System Standard - Part6. Data Interchange Standard Between VMS and Traffic Information Center	2013.10.30
ITSK-00088	Performance test method of Toll Violation Enforcement System - Part 2. Shooting VideoITSK-00087	2013.10.30
ITSK-00089	Standard of the basic requirements for RRAP (Road Sign Recognition and Analysis Vehicle platform)	2014.12.11
ITSK-00090	Information Exchange Standard for Parking information collection, provision and integration	2014.12.11
ITSK-00091	Standard of Data Exchange for Integrated ITS Controller	2014.12.11
ITSK-00092	Standard of Data Exchange for Automatic Vehicle Identification	2014.12.11
ITSK-00093	Standard of Data Exchange for Vehicle Detection System	2014.12.11
ITSK-00094	Standard of Data Exchange for Closed Circuit Television	2014.12.11
ITSK-00095	Standard of Data Exchange for Bus Lane Enforcement System	2014.12.11
ITSK-00096	Standard of Data Exchange for Bus Lane Enforcement System	2014.12.11
ITSK-00099-1	A specification standard of a smart regulation system for driving restricted vehicles - part 1. System specification	2014.12.11
ITSK-00099-2	A specification standard of a smart regulation system for driving restricted vehicles - part 2. Interface specification for equipments	2014.12.11

Next Generation ITS in Korea : C-ITS Pre Deployment

Overview

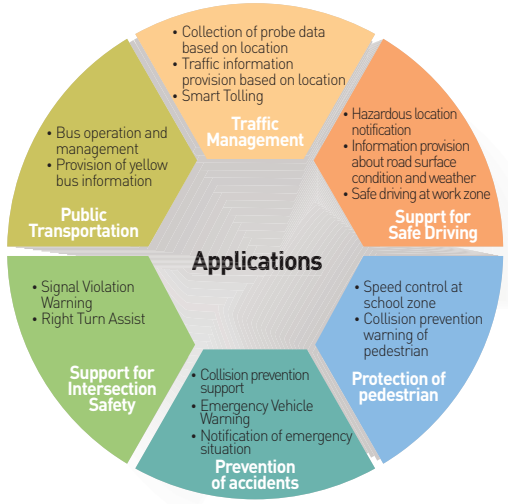
- Goal : Technical validation and service supplementation for the pre-deployment of Next-generation ITS (C-ITS)
- Project period : Jul. 2014 ~ Feb. 2017
- Budget : 18 million USD
- Scope
  - Various type of 3,000 OBUs, 95 RSEs
  - Deployed over 75km long on expressway, national highway, and urban road

Probe of Concepts	FOT (Public roads)	Pre-deployment	Deployment
Smart Highway U-Transportation	SH Experimental Road SH Test-Bed	C-ITS Pilot Project	C-ITS Deployment

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



Next Generation ITS in Korea : C-ITS Master Plan

Short Term (Introductory period, ~2020)

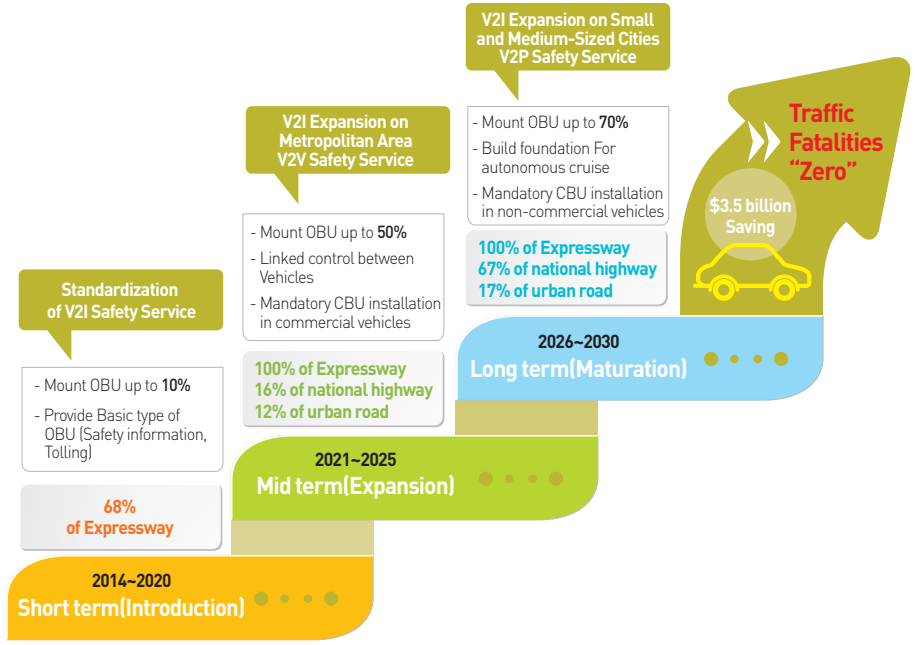
- Construct infrastructures on expressway
- Basic type of OBUs penetration up to 10% of vehicles

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



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.

Traffic Information Collecting and Providing System

Public-Private Cooperation

- Collection Information
  : Using traffic information collected by private sector (private)
- Providing Information
  : Using smartphone and navigation increasing number of information on VMS

Main Policy Directions

Maximizing Traffic Safety

- Collection Information
  : Installing detector for incident situation (public)
- Providing Information
  : Public safety service

Present			Reorganization		
Collecting	Traffic Flow	Public : 21% of nation	Collecting	Traffic Flow	Private : Using the LBS Info
	Safety	Public : low standard		Safety	Public : Incident Detector Inst
Providing	Public : VMS, Internet service		Providing	Public: VMS Private: Smart phone App, Navigation	

Direct Effects

- It will be possible to collect traffic information includes ITS-uncovered 49,500Km road.
- ITS infrastructure construction won't be necessary, so that USD 1.28 billion can be saved.

Indirect Effects

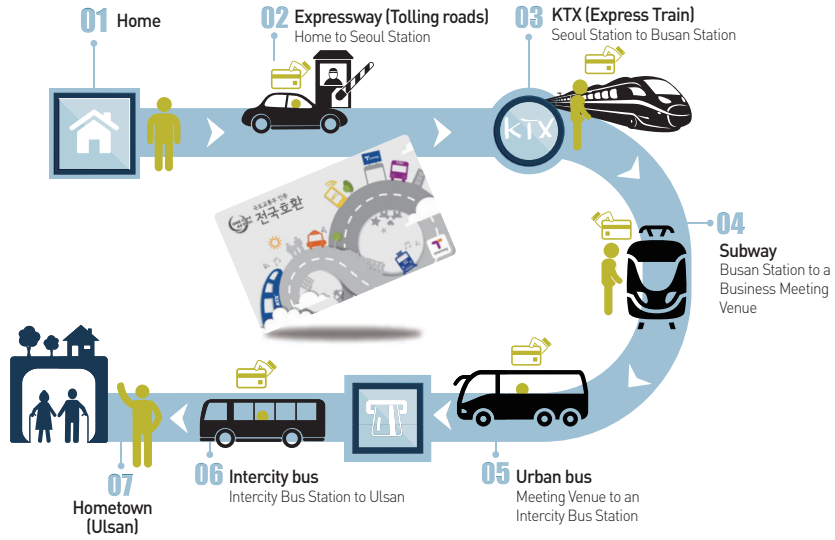
- (regulations) Diversified management for road transportation will be realized, so that the feasibility analysis for road infra can be possible.
- (Social cost) Save USD 11 billion of congestion & distribution cost through real-time diversified management, and reduce 0.81 million tons of greenhouse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

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

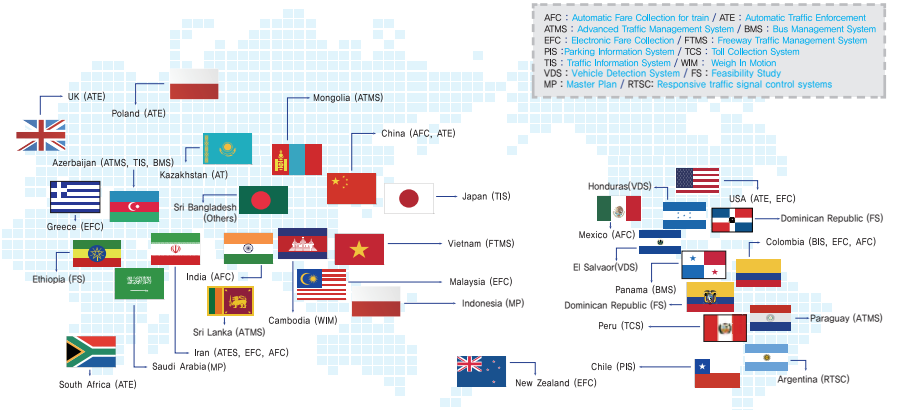
- Mr. Kim living in Seoul is planning to visit his hometown, Ulsan and meet his parents after his business trip to Busan. Let's see Mr.Kim's trip with an integrated transportation card.



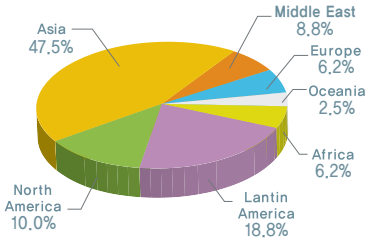
Cooperation(MOU)	Transport modes	Transport facilities
• Central & Local governments • Transport Corporations • Card Companies	• Urban bus • Subway • Railway(Express rail) • Regional bus(express bus) • Airport • Public bicycles	• Expressways(Tolling roads) • Public parking lots

Current Status of Overseas Export

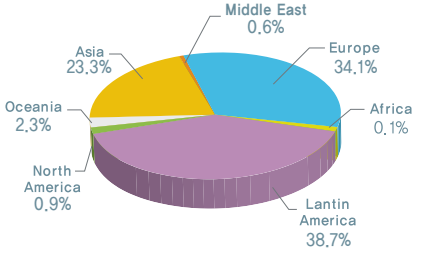
- Korea ITS exported approximately **USD 1 Billion** to **32 countries** since 2006
- As of Aug. 2015, a total of **80 projects** are conducted including **EFC, ATE, AFC, ATMS, PIS and WIN**



Export by Continent



(based on number of projects)



(based on amount of projects)

Part 3

Member's Profiles

Chart of Membership Categories

Company Name	Traffic Management	Public Transportation	Electronic Payment	Traffic Information Integration/ Management	Traveler Information	Advanced Vehicle/Road	Commercial Vehicle Operation	Others
AIRPOINT Co., Ltd			●	●				
CEST Co., Ltd						●		
DAEBO COMMUNICATION & SYSTEMS Co., Ltd	●	●	●	●			●	
DAEYEONG UBITEC Co., Ltd	●	●	●	●		●		
EB CARD	●	●	●	●		●		
Ericsson-LG	●	●	●	●	●	●	●	
essys Co., Ltd			●			●		●
ETRI						●		
GITSN Inc.		●	●	●				
HANATECH SYSTEM Co., Ltd.	●	●		●				
HANILSTM Co., Ltd	●		●	●				
HANWHA S&C CO., LTD	●	●	●	●	●			
HighGain Antenna			●			●		
Hitecom system Co., Ltd				●				
HYUNDAI MNSOFT	●					●	●	
Icontrols Inc.	●	●	●	●				
Inpeg Vision Co., Ltd	●	●	●	●				
IT TELECOM Co., Ltd	●	●	●	●	●	●		
ITRONICS CO., LTD			●	●	●			
Jin Woo Industrial Co., Ltd	●	●	●	●	●			
Keon-A Information Technology Co., Ltd	●							
Korea Consultants International Co., Ltd	●	●	●	●				
Korea Expressway Corporation	●		●	●		●		

Company Name	Traffic Management	Public Transportation	Electronic Payment	Traffic Information Integration/ Management	Traveler Information	Advanced Vehicle/Road	Commercial Vehicle Operation	Others
KOROAD	●			●		●		
Kyungbong Co,. Ltd	●	●		●	●			
METABUILD Co., Ltd	●					●		
MORU Industrial Systems Co., Ltd	●							●
NDS Corporation	●	●		●		●		
Neighbor System	●	●	●	●				
NOVACOS Co., Ltd	●			●				
POSCO ICT	●	●	●	●		●	●	
RANIX			●			●		
ROADKOREA Inc.	●	●						
SAMWON FA Co., Ltd	●	●	●					
SAT(Smart Application Technology) Co., Ltd			●			●		
SA TECH CO.,LTD	●	●		●				
SK Holdings Co., Ltd	●	●	●	●				
Songam Syscom Co., Ltd		●						
sTraffic	●	●	●	●	●			
THINKWARE Systems Corporation	●			●	●	●		
TmaxData Co., Ltd	●	●		●				
TOPES Co., Ltd	●			●				
TRACOM. Co., Ltd.	●	●		●				
VITZROSYS Co., Ltd	●	●		●				
Wayties Inc.					●	●		

AIRPOINT Co., LTD.

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 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

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

Others

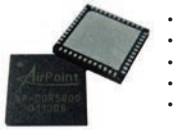
(Patent No) 10-0745014: Traffic Information Utilization Method by using Complex-type RSE
(Applied No) 10-2012-0012095: Smart Phone SW Architecture and Algorithms to exchange real-time video data between driving vehicles by using Smart-phone (or Smart-type terminal)
(Applied No) 10-2012-0158076: Vehicle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

ITS Product & Technologies

Modem IC

- Coretex-M3 Core – Memory : 512 KB internal RAM
- ASK/FSK DSRC modem embedded
- Smart card controller – Flexible memory interface
- 32 GPIO – 2 timer – 2 PWM
- 4 UART – SPI master – I2C/I2S interface
- 10 external interrupt source – USB Interface

5.8GHz DSRC RF Transceiver



- Frequency range: 5.3GHz ~ 6GHz
- Data rate: 128kbps ~ 1.024 Mbps
- Modulation: ASK/FSK modulation
- Modulation index control: 55% ~ 95%
- Sensitivity Control range: -78dBm ~ -44dBm
- OBE (On-Board Equipment) speed: 0~160 Km/h
- OBE temperature range: -40°C ~ +100°C
- Automatic Channel Search (ACS)
- Temperature Compensation Circuit (TCC)
- RX sensitivity level control
- Programmable output power control
- TX duty ratio control

OBE

RSE

Express Way Type | Downtown Type | Controller

1. Radio Signal Processing Technology
– Radio Signaling Processing
– CDMA/WCDMA/WiMAX/LTE Baseband Signal Processing Technology
– Radio Channel Control Technology

2. Radio Propagation Analysis Technology for Wireless System
– Digitalized RF Technology – Radio Propagation Analysis
3. Wireless System Technology
4. IEEE802.11n WiFi Access Point for Wireless Device
5. Operating Technology of Multi-functional Complex Unit in Car

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

Contacts
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Department : Overseas Marketing Team
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Phone (mobile) : 82-10-5596-9655
E-mail : rahnwoo@airpointglobal.com

CEST Co., Ltd

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/ 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

Low Cost, High Accurate Positioning system using WAVE communication

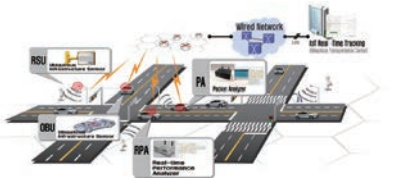
Others

Certification
- ISO 9001:2008 - CE

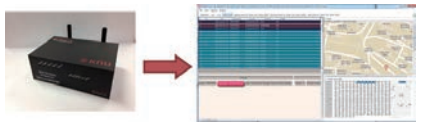
Patent
- Unmanned Vehicle Photographing Equipment
- Automatic Vehicle Number Recognition System
- Vehicle Speed Detection System
- Traffic Law Violation Enforcement System

ITS Product & Technologies

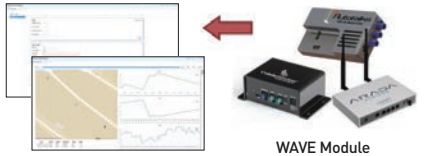
V2X communication performance Analysis system
- Automated measurement system development
- Real-time performance Measurement / Analysis / Views
- Overall V2X communication performance measurement
- Scalability considerations for increasing the module



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 ITSK
- Adapted IEEE Std 1609.2



WAVE Module

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 - 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 : 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
- ISO 9001:2008, ISO/IEC 20000, ISO 27001, CMMI(Capability Maturity Model Integration) Lev.3
- 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

Daebo 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.

Daebo 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.

General Information

Company Name : DAEBO COMMUNICATION & SYSTEMS
Website : www.dbcs.co.kr
Address : 6F, Rosedale B/D, 724, Suseo-dong, Gangnam-gu, Seoul, 135-744, Korea

Contacts

Name : Hyoung-Seob, Kim
Department : Transportation Business Team
Phone (office) : 82-2-3470-7787
Fax (office) : 82-2-3470-7799
Phone (mobile) : 82-10-3371-2511
E-mail : Hskim227@dbcs.co.kr

DAEYEONG UBITEC Co., Ltd.

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
- Traffic Signal/Control - Incident Management - Traffic Information - Safe-driving Support
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- Bus Information/ Management System - Public Transportation Information/Management
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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

Name of Project	Name of Authority	Project Period
Overseas		
Intelligent Transport System Consultancy Services in Kazakhstan (CSP-3)	ADB (Asian Development Bank)	12.01.02~12.07.01
Consultancy Services for Development of Intelligent Transportation System (ITS) in Kazakhstan	ADB (Asian Development Bank)	11.12.29~12.06.21
Public Security Innovation Project in the Republic of Angola	ANP(Angola National Police)	11.11.30~14.05.31
Feasibility Study for Establishment of Intelligent Transportation System in the Addis Ababa in Ethiopia	KENCA (Korea Engineering & Consulting Association)	11.09.01~11.12.31
Feasibility Study for Establishment of Intelligent Transportation System in the Addis Ababa in Ethiopia	KENCA (Korea Engineering & Consulting Association)	11.09.01~11.12.31
Technical Assistance of Public Transport Information and Communication Technology in Mongolia	ADB (Asian Development Bank)	11.06.15~11.12.15
Feasibility Study for Construction of ITS Project in the Dominican Republic	Korea Exim Bank	10.06.08~10.10.13
Consulting Service for Ulaanbaatar ITS Project in Mongolia	Ulaanbaatar City Government	07.12.07~10.06.30
Consulting Service for Toll Road ITS FS Project in Indonesia	KIPA/LG CNS	07.04.01~07.06.30
Establishment of ITS & Bus Information Management System Project in Iran	KENCA (Korea Engineering & Consulting Association)	07.03.08~07.11.30
F/S for Establishment of Traffic Signal System in Argentina	KOPIA (Korea Plant Industries Association)	06.12.01~07.04.30
Domestic		
Supervision on Installation of National Road ITS in Busan in 2011	Korea Institute of Construction Technology	11.11.28~11.12.30
Detail Design for Construction of Digital Traffic Management System in 2011	Korea Expressway Corporation	11.09.02~11.10.31
2nd Detail Design for Construction of Infrastructure U-Traffic Information Telecommunication Network-based	Seoul Metropolitan Government	11.08.02~11.09.20
Responsible Supervision on Construction of ITS in Mokpo-Gwangyang Line (1st)	Honam District of Korea Expressway Corporation	11.07.05~11.12.31
Supervision on Construction of TTMS in Jeonju-Gwangyang Line (2nd)	Honam District of Korea Expressway Corporation	11.01.18~11.06.20
Detail Design on Digital Traffic Management System FTMS, TTMS in 2011	Korea Expressway Corporation	11.03.11~11.11.15
Responsible Supervision on Construction of ITS in Iksan City (4th)	Iksan-si, Jeollabuk-do	10.12.09~11.05.23
Responsible Supervision on Construction of BIS (phase 3)	Seoul Metropolitan Government	10.03.01~11.02.20
Detail Design on Re-Construction of ITS Infrastructure in National road No. 1 (Public Administration-Daejeon Yooseong city)	Korea Expressway Corporation	10.10.27~10.11.05
Responsible Supervision on Construction of BIS (phase 2)	Seoul Metropolitan Government	09.10.16~10.02.28

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
- Minister of Construction and Transportation Commendation, 2006.07.19
- 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
- Design / Supervision for ITS in expressway
- 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 processin

Technologies

Category	Items	Registration No.	Established Date	Expired Date
Patent	Metho D For Converting Compressed Moving Pictures In an Image	10-0312411	1988-11-18	2018-11-18
Patent	A Restoration Method Using K-shortest Control Paths in ATM	10-0411247	2001-12-26	2021-12-26
Patent	Recording Device of Multiplex Data for Vehicle	10-0943410	2009-10-27	2029-10-27
Patent	High Linearity RF Mixer Applicable to Zigbee System	10-0966581	2009-12-01	2029-12-01
Patent	Facility for Protecting Optical Cable used in Information and Communications	10-0959409	2010-01-28	2030-01-28
Patent	Apparatus for Connecting Underground Tunnel CCTV Camera and Ground Monitor for Information and Communications	10-0977307	2010-01-28	2030-01-28
Patent	Rotary Joint Apparatus Having Multiple Channels for Transferring Data and Electric Current	10-0988549	2010-05-04	2030-05-04
Patent	Apparatus for Guiding Train Operation Information Using Mobile Communication Network	10-1214929	2012-05-04	2032-05-04

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

Contacts

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Department : Global Business Division
Phone (office) : 82-70-7432-3104
Fax (office) : 82-2-2633-5838
Phone (mobile) : 82-10-8550-8231
E-mail : cookiejj75@hanmail.net

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

□ 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 (Mobile Payment, Wearable pre-paid card)

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
- Proposal with consortium in Vietnam and Malaysia for Automatic Fare Collection(AFC) system
- Development of Mobile Payment Application including Smart-watch.

Others

Certification
- KS Q ISO 9001:2009 / ISO 9001:2008
- KS I ISO 14001:2009 / ISO 14001:2004

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

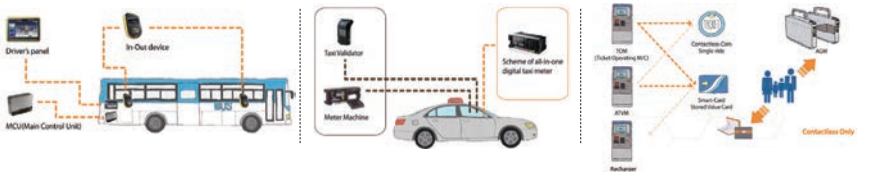
Pre-paid Payment Business

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
Address : 7FL, LOTTE CENTER, 179, Gasan digital 2-ro, Geumcheon-gu, Seoul, KOREA (Zip: 153-705)

Contacts
Name : Tae Won, Shin
Department : Business & planning Team
Phone (office) : 82-2-2028-9089
Fax (office) : 82-2-2028-9001
Phone (mobile) : 82-10-5298-0582
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 - 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 (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 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
- Fear collection
- Passenger information

General Information

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Contacts

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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
- 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 (Telematics Unit for Safety, Bluetooth/WiFi 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

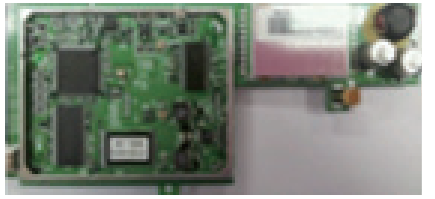
〈V2V, V2I 기반 도로 · 자동차 협업 서비스 예시도〉

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.

eSSys Co., Ltd.

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

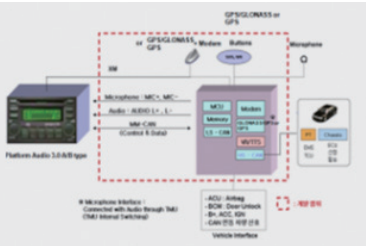
RSE stands for Road Side equipment. It provides a bidirectional short range communication with multiple OBE installed in the cars. The RSE controls the protocol, schedules the activation of the OBE, reads from or writes to the OBE, and assures message delivery and validity. RSE is typically, but not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



General Information

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Website : www.essys.co.kr
Address : Daerung Post Tower 5th 15F, Gasan-dong, Geumcheon-gu, Seoul, Korea
Factory : Bucheon Technopark, Ojungg-u, Bucheon, Kyung-ki , Korea

Contacts

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ETRI

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 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

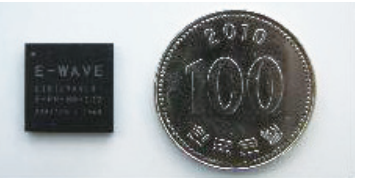
Others

WAVE Handover technology

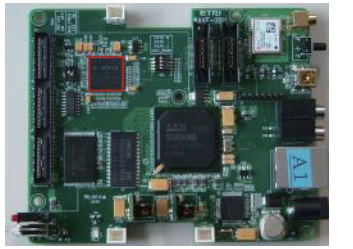
ITS Product & Technologies

- 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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GITSN Inc.

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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- Pedestrian/Disabled Support System

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☐ 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

2. Standard Communication S/W for Traffic System

- 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)

A. GN-B101 (Independent Type)

B. GN-B201 (Shelter Standing Type)

General Information
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HANATECH SYSTEM Co., Ltd.

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

1st category

■ Traffic Management
- Traffic Signal/Control - Incident Management - Traffic Information - Safe-driving Support
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- Bus Information/ Management System - Public Transportation Information/Management
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☐ Electronic Payment
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- 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

- Improvement of obsolescence equipment in New-DAEGU BUSAN Expressway
- Construction of u-City in Sejong City
- Construction of ITS in Jeju Province

Others

Certification - ISO 9001:2009 / ISO 9001:2008

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
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HANILSTM Co., Ltd.

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.

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

☐ Others ( )

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

Video server

Video server(Complex type)

Real time image improving machine

Multi-function control equipment

Surge protector

360°Camera

Subtitle overlaid camera

Position camera

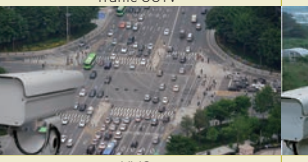
Muti-lane for ANPR

Integrated controller embedded pole

Technologies

Traffic information center

Traffic CCTV



AVI (ANPR)

VDS

VMS

Accident detection system

General Information
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Hanwha S&C Co., Ltd.

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 IOS9001, 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-Uiwang 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 - ISO 9001:2008 - ISO/IEC 20000-1:2005 - ISO/IEC 27001:2005

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

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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 satelite, moblie, telecommunications vehicle room mirror type Hi-Pass(ETCS) and WAVE device to hi-tech communications.

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

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- 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

- V2V, V2I communication Solution using WAVE Technology
- OBE for Korea ETCS - OBE for China ETCS - Compenser for Vehicle

Others

Certification
- 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

WAVE Inform

WAVE OBE

WAVE RSE

- 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).

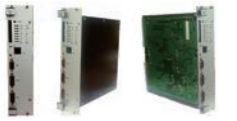
ETCS System OBE

Room mirror type ETCS

ETCS module

- 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

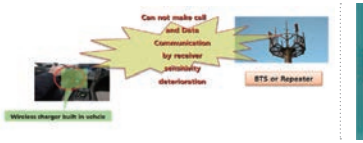

RSU-Korea

RSU-China

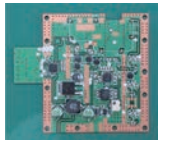
- It is mounted to main control unit and a communication unit that is responsible for communicating with OBU. Forwarding information to communicate with the RF OBU CCU board and uses the microprocess to give higher reliability.

Compenser

- If the Car Booster installed in the vehicle, it serives 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 is automatically shutdown, because of embedding shutdown auto recovery function. when the reception is poor, a vehicle enables reliable service because of changing the recovery.



Compenser Inform


Compenser module

General Information
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Hitecom system 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
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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

-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

Awarded as grand prize for digital technology (Ministry of Knowledge Economy 2007)/ Patent for method to measure vehicle density. (KO 0625678, 2009.06)/ Patent for contactless car detecting equipment (KO10-2009-0050979, 2009.06)/ Patent for standard multi laned car detecting equipment. (KO 10-2009-0057765, 2009.06) / Patent for equipment to distinguish the vehicle type(KO 10-2009-0058132, 2009, 11)

HTC HITECOM

ITS Product & Technologies

V2V, V2I Communication using WAVE Technology

AVI (AUTOMATIC VEHICLES IDENTIFICATION) / VES (VIOLATION ENFORCEMENT SYSTEM) / TTMS (TunnelTraffic 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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Contacts

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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.

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

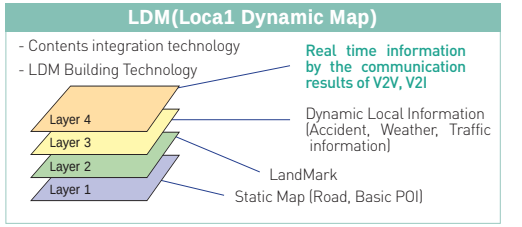
Digital map base ADAS (Advanced Driver Assistant System)
- ultra-high precision map for ADAS
- ADAS output system (solution)[V2V Device (After Market)] [Communication based ADAS (including V2V, V2I)]
- Developing/Producing WAVE Communications chip (cooperating with Hyundai Autron)
- Developing V2V Software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

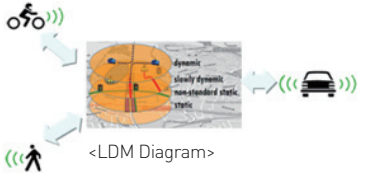
Developing Autonomous Vehicle
- Developing Autonomous vehicle related system (cooperating with Hyundai Autron)
- Processing/Analysing Big Data (Social Context Awareness, Intelligentism, etc.)
- Enhancing ultra-high precision mapping system
- Centron Industries(USA), DMC Wireless(Argentina), JCDC

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
- LOCAL TRANSPORTATION MANAGEMENT SYSTEM

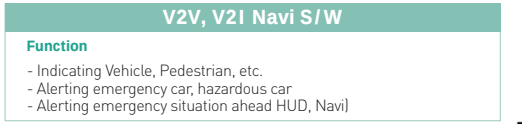
ITS Product & Technologies





<LDM Diagram>

* LDM : New conceptual Spatial DB concept which contained all information (Static, Dynamic, Moving Object, etc) about the road



<Navigation Display>

<Pedestrian Solution>

<Alerting emergency situation ahead on HUD>

General Information

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Icontrols Inc.

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

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. ITS and Tunnel TTMS/TGMS Project for Suseok-Hopyeong Expressway in Progress
2. Tunnel TGMS 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

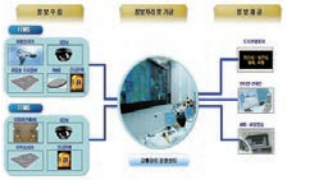
Others

1. Korean Civil/environmental engineer 2011 (Traffic infra system division)
2. Kyeongin 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

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InPEG Vision Co.,Ltd.

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.

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

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-ki Province 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

Others

Patent Status
- Retention : 38 cases (Country 32cases, Overseas 3cases, Brand 1case, Design 2cases)
- Application : 3 cases - PCT Enrollment : 4cases

Technical Certification - Total 72 cases
- CE / UL , AVI test (excellent grade : recognition rate 98%)
- NET (New Technology), Excellent Procurement Product 2 case , etc.

Management Certification - Total 33 cases

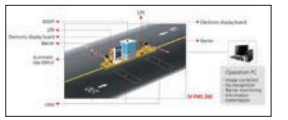
ITS Product & Technologies

Product Name : LPR device (for rear)
Model Name : IV-PIRR-100
Overview : This dust and water proof LPR device is installed small space and capture images of entering vehicles and improve recognition rate.

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

Product Name : iCLCU (Camera Lens Control Unit)
Model Name : IV-PIMS-400
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 : Parking management system
Model Name : IV-PMS 200
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 : 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)

General Information

Company Name : InPEG Vision Co.,Ltd.
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IT Telecom Co.,Ltd.

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
- 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

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
(Applied 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)
(Applied 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 27Mbps
- RF Frequency: 5.850 ~ 5.925GHz

SWAS(WAVE RSE)

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

WILLS-50001 (Wireless IP Link System)

- Less than 100ms for Channel Access
- Input Voltage: 12VDC
- Operating Temperature: -35° C to +85° C
- IEEE 802.11p applied
- Point to Point Communication
- Dara Rate: 3~27Mbps
- Communication Coverage: ≤1km (LOS Condition)

Technologies

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

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

General Information

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ITRONICS CO., LTD

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 Naviagtion Device and so on.

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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- 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

Certification

Project
- 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.

General Information
Company Name : ITRONICS CO., LTD
Website : www.itronics.co.kr
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Jin Woo Industrial Co., Ltd.

JINWOO Industrial Systems
www.jin-woo.com

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
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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

- 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, Inchon, 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
- ISO 9001:2008 / - ISO 14001:2004 / - OHSAS 18001:2007

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

ITS Product & Technologies

Product Offerings

Technologies

Design, Development (S / W,H / W), Civil Work, system construction, enginnering 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

General Information

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Contacts

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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 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

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- Traffic Information Integration - Traffic Information Center Traffic Data 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 (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.

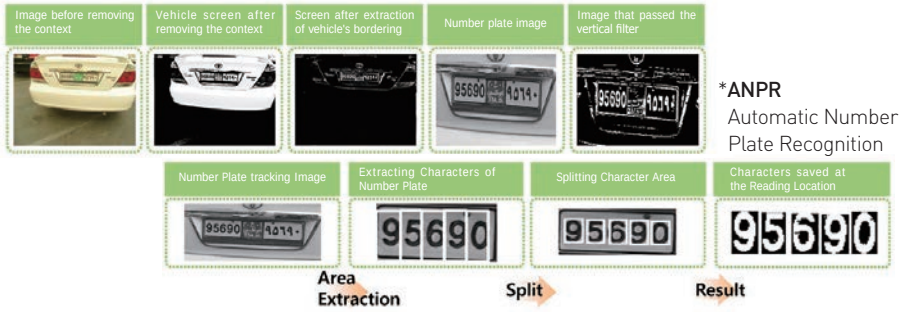
Specifications and Features

Camera	1.3M Pixel CCD Camera
Lens	Motorized 100mm to 120mm (include x2 Extender) Target Range : 80 to 120meters
Illuminator	Wire or Wireless Xenon Lamp 700nm IR Filter Life Time mort than 100,000 times
Sensor	Laser Sensor Measurement Speed : 10~300km/h Speed Error Rate : Less than ±1% 905nm, Class (Eye Safety)
Controller	Intel Embedded Atom 1.6GHz 5.7inch color TFT LCD monitor with touch screen Operating Temperature : -30˚C to 70˚C All-in-One compact module for easy maintenance USB Menory Device : Over 100,000 image storage ANPR(Automatic Number Plate Recognition) (Option)
Housing	Size : 507(L) × 175(W) × 165mm(H) Weight : 6kg
Battery	Sealed Lead Acid Battery, 12V

Keon-A Information Technology Co.,Ltd.

Technologies

ANPR(Automatic Number Plate Recognition) System



*ANPR
Automatic Number Plate Recognition

General Information

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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

■ 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

Trung Luong – My Thuan Expressway Construction Investment Project (Vietnam) – Technical Design of Traffic Management Systems and Toll Collection Systems, 2010~2011

Others

Ubiquitous Intelligent Disaster Prevention System, 2010, 1020080066210

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 Techotown 15, 224-5, Gwanyang-2dong, Dongan-gu, Anyang-si, Gyeonggi-do, Republic Of Korea

Contacts

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E-mail : spade5@kcieng.com

Korea Expressway Corporation

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

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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☐ Others ( )

2nd category

☐ Hardware ☐ Software ☐ SI ☐ Consulting ☐ Others ( )

Ongoing ITS project or R&D

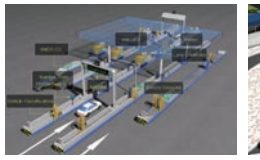
- Nationwide Establishment of the Comprehensive Traffic Information System
- Automatic Tunnel Accident Detection System
- High-Speed Weigh-In-Motion(HS-WIM)
- Smart Overloaded Vehicle Enforcement System
- Smart Toll Collection System
- Standard Slim Hi-Pass System
- Hi-Pass(NTCS, Nonstop Toll Collection System) Only Interchange(Smart IC)
- ITS Performance Evaluation & Certification

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)

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.

General Information

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

Contacts

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KOROAD

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 charges 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 a 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

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■ Advanced Vehicle/Road
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☐ Commercial Vehicle Operation
- Fleet Management System - 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

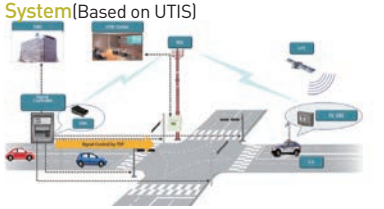
Others

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

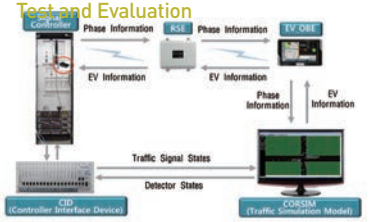
Patent
- total : 213 - a patent application : 27 - registration of patent : 186

ITS Product & Technologies

System(Based on UTIS)



Test and Evaluation



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

General Information

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Address : 160 Wangsimni-gil, Junggu, Seoul, South Korea, 100-789

Contacts

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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 - 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 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

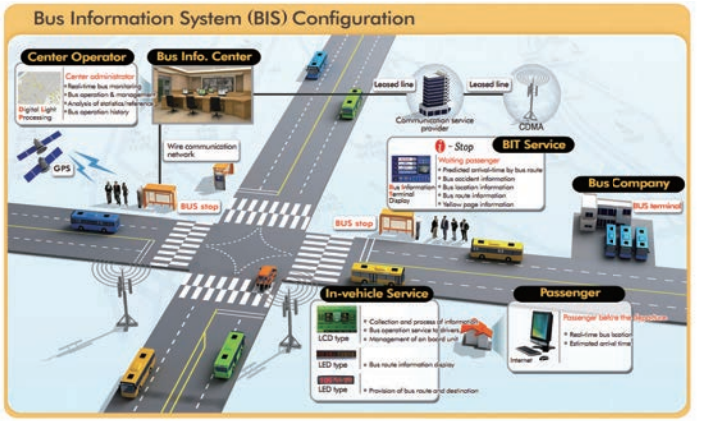
International exchange
- ISO 9001:2008
- CE

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.



General Information
Company Name : Kyungbong Co., Ltd.
Website : www.kyungbong.co.kr
Address : 899-5, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080

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METABUILD Co., Ltd.

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

Others

Certification
- ISO 9001 - INNO-BIZ (reword for Technological Innovation)
- Qualified as Software Development Leading Company of Venture Industry in Korea

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.
- Method for detecting obstacle of multi mode using radar and apparatus 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.

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

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

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.

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

Contacts

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Phone (mobile) : 82-10-3331-3252
E-mail : jklee@metabuild.co.kr

MORU Industrial Systems Co., LTD.

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

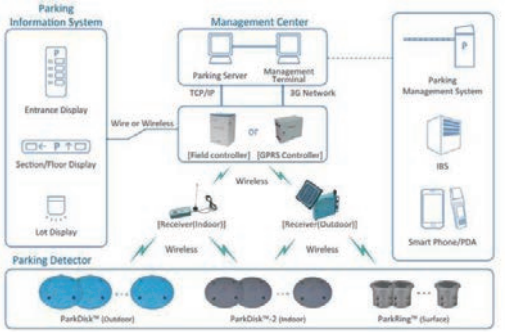
Certification
- ISO 9001:2008

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

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

Contacts

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Phone (mobile) : 82-10-2410-2428
E-mail : sinaks01@moru.com

NDS Corporation

Company Overview

NDS is 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
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☐ Others ( )

2nd category

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

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(IT service management)
- ISO 27001(information security) - K-ISMS(protect information) - CMMI (international quality certificate)

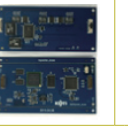
Prize
- Patent related water quality estimating device : 2 application
- NFC-related patent : 1 application - Digital door-lock patent : 1 application

ITS Product & Technologies

WAVE OBU(NDS-EW001)

OBU	Main Board	RF Board

WAVE RSE(NDS-EWR01)

Antena		Main Control Unit			Support Unit
GPS Ant	Wave Ant	Closure	Control Unit	Comm Unit	
					

C-ITS

Support for a Safe Drive

Support for Safe Public Transportation

Pedestrians Care

Inter-vehicle Accident Prevention

General Information
Company Name : NDS Corporation
Website : nds.nongshim.co.kr
Address : Seoul - Nongshim Doyeongwan, 11th and 12th floors, 112, Yeouidaebang-ro, Dongjak-gu, Seoul, Korea

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Phone (mobile) : 82-10-9009-4973
E-mail : brus007@nongshim.co.kr

NEIGHBOR SYSTEM

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

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☐ Others ( )

2nd category

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

Ongoing ITS project or R&D

- Ulsan-metropolitan city' 2013 Bus Information System (BIS) expanding and advanced constructing
- Korea Expressway Corporation' 2013 National Traffic Information Center service improvements
- Korea Expressway Corporation' ITS operating software advanced services
- Busan-metropolitan city' Bus Digital Tachograph Management System (DTMS) construct services
- Gumi-city' 2013 Maintenance of Bus Information System (BIS) services
- High-Pass of Sujung-san Tunnel and Kwang-an main road S/W development
- Ulsan-metropolitan city' Maintenance of Intelligent Traffic System(ITS) and Bus Information System (BIS) services
- Electronic Toll Collection System (ETCS) of Ma-Chang bridge additional development

Others

Prize
- 2007 Prime Minister's Commendation (National Records Management)
- 2012 KICTEP (Korea Institute of Construction & Transportation Technology Evaluation and Planning) Chairman Commendation (Construction and transportation industry development)

Patent
- Method of providing Traffic information pursuant to accident data on drive way
- Video transfer system
- Camera Select System and method of selecting camera using dual multi frequency
- Camera Select System and method of Selecting Camera using telephone numbers

ITS Product & Technologies

Product Offerings

EasyMapX

- As consisting of ActiveX component and Map server that help to develop GIS application, EasyMapX can apply to various fields including BIS, Traffic conditions control system, and so on.
- EasyMapX can provide the easy-to-use, effective map caches on the web as well as the basic functions requested by GIS application program such as display control, edit and thematic map.
- EasyMapX, easily possible to edit the user object through the API, can provide development environments appropriate to web application programs.
- Especially, EasyMapX can provide the optimized components for the bus stations and routes of BIS system.

NEIGHBOR SYSTEM

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

Bus Information System(BIS)

Bus route editing

Vehicle control

Traffic Display

Product Configuration

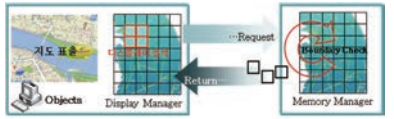
- EasyMapX Objects : Gis Viewer Client Engine of a C/S environment
- EasyMapX BrtEditor : Route and Bus stop editing Client Engine of a C/S environment
- EasyMapX Web : Gis Viewer Client Engine of a Web environment
- EasyMapX Manager : Gis Server Engine of a Web environment
- EasyMapX Editor : Spatial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

ActiveX Client

User Object Manager

- 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
Phone (office) : 82-2-2142-2617
Fax (office) : 82-2-6258-0145
Phone (mobile) : 82-10-4805-3645
E-mail : jjo3635@neighbor21.co.kr

NOVACOS Co., Ltd.

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

☐ 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

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

Others

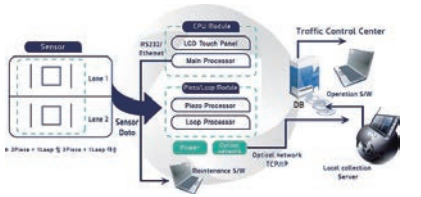
Certification
- ISO 9001:2008
- ISO 14001:2004

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

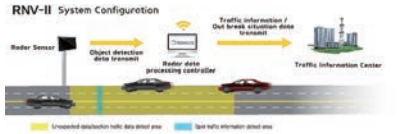
ITS Product & Technologies

Product Offerings

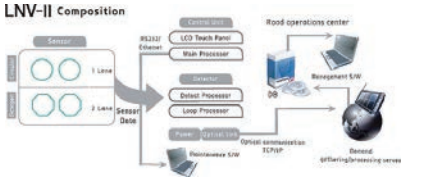
1. AVC(Automatic Vehicle Classification)



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)to 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

Company Name : NOVACOS Co., Ltd.
Website : www.novacos.co.kr
Address : Gwanyang Doosan Venture Digm 405, 250 Hangi-ro, Dongan-gu, Anyang-si, Gyeonggi-do, korea

Contacts

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POSCO ICT

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 se 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
- 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 ( )

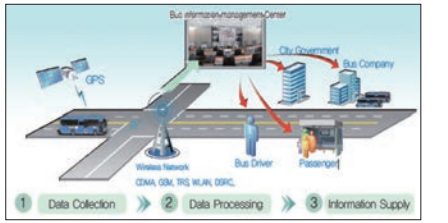
Ongoing ITS project or R&D

- 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)

General Information

Company Name : POSCO ICT
Website : www.poscoict.com
Address : POSCO ICT Smart Tower, 622, Sampyeong-dong, Bundang-gu, Seongnam-city Gyeonggi-do, KOREA ZIP: 463-400

Contacts

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Phone (mobile) : 82-10-5419-0145
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RANIX

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
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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

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.

Feature

Core
- More than performance of the ARM9

MAC
- Command-Response and Peer to Peer
- Control Frames (RTS / CTS / ACK frame function without S/W)
- 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

Modem
- Enhancement 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)

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. Builtin smart card buffer, regulator and serial flash controller are versatile for a small and low price product.

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 RNG 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

General Information

Company Name : RANIX
Website : www.ranix.co.kr
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Phone (mobile) : 82-10-8946-4985
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ROADKOREA Inc.

RK RoadKorea Inc.

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

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.
Website : www.roadkorea.co.kr
Address : Rm 1602, KDB U-Tower, 1029, Youngduk-dong, Giheung-gu, Yongin-si, Gyeonggi-do

Contacts

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E-mail : shinepower@nate.com

SAMWON FA Co., Ltd.

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 - Public Transportation Information/Management
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- Pedestrian/Disabled Support System

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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

- Constructing Gyeongnam intercity bus transportation card payment system
- Constructing Ui-Sinseol LRT(Light Railroad 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

Patent

No.	Category	Reg No.	Name of Patent
1	Patent	1020110062486	RFID Tag embeded inlay, Card comprising the inlay and method for fabricating the inlay thereof
2	Patent	1020110061948	System and method for processing subway tickets
3	Patent	1010386530000	Method for fabricating RF-ID tags
4	Patent	1020100008490	Method for fabricating a pattern structure
5	Patent	1020050002687	Master of Electro-forming
6	Patent	1009802170000	Master of Electro-forming
9	Patent	1006882590000	Method for managing street parking lot
11	Patent	1005433910000	An observation system of giving an injection of Ringer's solution
13	Utility model	2003408890000	Parking Fare Collection System
14	Utility model	2003436020000	Credit card settlement vending machine for selling for biddened items according to years
15	Utility model	2004108600000	System for making a call of condolence remotely using Internet

Certification

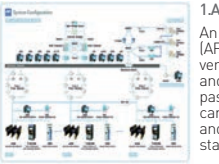
1) Wirelwss device for wireless data communication-KCC
2) Ticket Gate-KCC
3) Wide Ticket Gate-KCC
4) Portable Ticket Gate, Ticket Gate for KSPO-KCC
5) Bus card reader-KCC
6) Self Service Charger-KCC
7) Automatic Ticket Vending Machine-KCC
8) Automatic fare adjustment machine-KCC
9) Central Ticket Issuing Machine-KCC
10) Toll road unmanned card reader-KCC
11) Wireless device for RFID/USN - KCC
12) US Taxi (Electronic Payment System)-FCC

*** KSPO** - Korea Sport Promotion Foundation *** KCC** - Korea Communications Commission
*** FCC** - Federal Communications Commission

ITS Product & Technologies

Product Offerings

Technologies



1.AFC

An Automated Fare Collection (AFC) is to automatize the vending tickets, counting riders, and collecting revenues when passengers use a transportation card. It automatically creates and manages various kinds of statistics and accounting data.

2. BUS fare collection system

BUS fare collection system is to automatize the fare charging, collection, settling 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

Company Name : SAMWON FA Co., Ltd.
Website : www.samwonfa.com
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SAT(Smart Application Technology) Co., Ltd.

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

☐ 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

- 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 for 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.

General Information

Company Name : SAT(System and Application Technologies Co., Ltd.)
Website : www.satech.co.kr
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SA Tech Co.,Ltd.

Company Overview

SATEC Corp. have an ITS Total Solution of ITS Consulting design, construction, deployment, operation, and maintenance.
In addition, SATEC Corp. are continuing to try to go to open the Smart Traffic World.
And SATEC Corp. 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
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☐ Others ( )

2nd category

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

Ongoing ITS project or R&D

R&D
Korea Agency for Infrastructure Technology Advancement
<Improvrment 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, freights 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. LTC collects traffic Volume, Speed and Occupancy, controls optimal traffic signal after data analysis.
- 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
- Erroneous data purging algorithm embedded

3. BIS(Bus Information System) : It's a system that provides to 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.

General Information
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Contacts
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Fax (office) : 82-502-789-0003
Phone (mobile) : 82-10-2262-8971
E-mail : cellulian@naver.com

SK Holdings Co., Ltd

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
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☐ 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

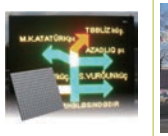
Product Offerings

- 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

TSC

CCTV


VMS

VES

ETC(Multi-lane Free Flow)

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.

General Information
Company Name : SK Holdings Co., Ltd
Website : www.sk.com
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Songam Syscom Co., Ltd.

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 inteligent solutions that drive long-term value to customers.

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

- 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

Patent
- RING TYPE OPTICAL MODEM DEVICE, AND COMMUNICATION METHOD USING THE SAME
- System and method for management of measuringinstrument based on RFID
- Corporate body for cable using equipment of communication
- wire and wireless communication system for watching a state of the power distribution pole having a changing function using an induced current of the power wire
- The apparatus and system for managing the utility pole and method for managing the utility pole

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).
This device can be installed and operated stably in industrial environment including power plant, substation or factory, and can be applied in various area including ITS.

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

General Information

Company Name : Songam Syscom Co., Ltd.
Website : www.songam.co.kr
Address : HQ(Factory) : 32, Donghwagongdan-ro, Munmak-eup, Wonju-si, Gangwon-do, Korea
R&D Lab : 8F 1Dong 2Danji, Pangyo Seven Venture Valley 17, Pangyo-ro 228beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea

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sTraffic

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
- Traffic Enforcement - Parking Management

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☐ 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 Misiryeong 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

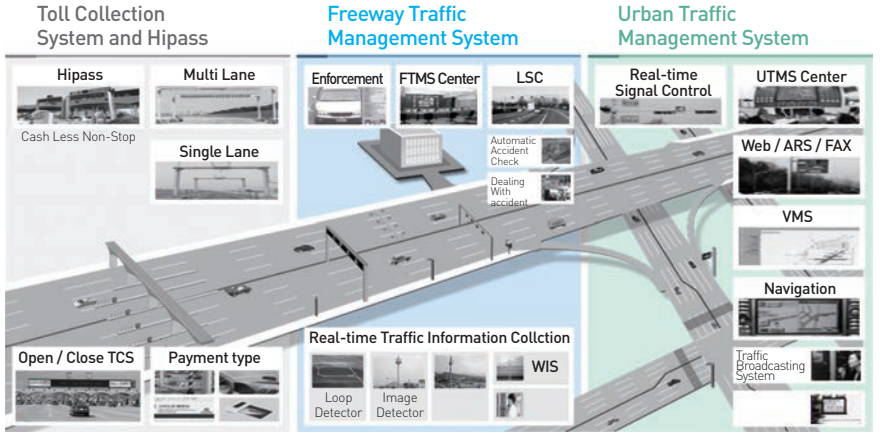
Certification
- ISO 9001:2008 - CE

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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THINKWARE CO., LTD.

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.

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- 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
- APPRATUS 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)
- PND (Navigation devices, No.1 market share)
- iNAVI, ThinkNAVI
- In-Dash

Car DVR(Dash-Cam) : Time, Speed, 2Ch(Full HD), Surveillance, 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

General Information

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TmaxData 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

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

Open Geospatial Consortium Certificate Statue
- 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

TIBERO DataBase

- 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, tbPSM (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.

TmaxData Co., Ltd.

Technologies

Stability

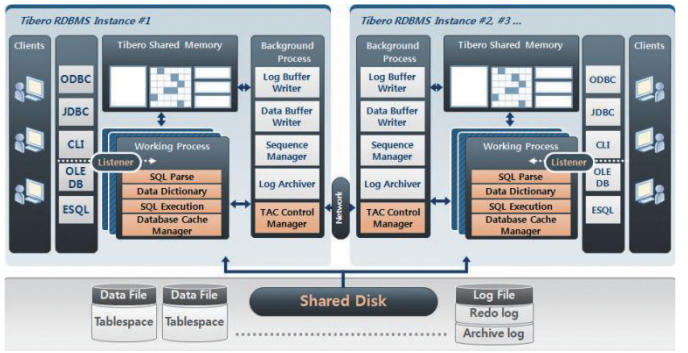
In order to protect a database against various types of failures, Tibero offers a variety of logical/physical backup methods and provides the RMGR (Recovery Manager) utility that implements flexible recovery depending on each failure situation.

- 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.

- Compliance with Global Standards
  - Supports the standardized SQL (SQL-92 and SQL-99), a variety of character sets, and XA interface which compiles 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, TIMESTAMP, 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.
  - Migrates data and application from another DBMS to Tibero without modification.
  - 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

Company Name : TmaxData Co., Ltd.
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TOPES 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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- 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
- ISO 9001 : 2009 / ISO 9001 : 2008 - ISO 14001 : 2004 / ISO 14001 : 2004

CE
- CR200 (TOPCAM200C) - Vehicle Enforcement System (#K1651/L07)
  : EN 60950-1:2001
- CR200 (TOPCAM200C) - Vehicle Enforcement System (#K1652/E07)
  : EN 55022:1998 + A1 + A2:2003
  : EN 55024:1998 + A1 + A2:2003
  : EN 61000-3-2:2000 + A2:2005
  : EN 61000-3-3:1995 + A1 + A2:2005
- Surge Portection Equipment (#N8 07 04 63165 001)
  : CPSA0113247

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 1000)
- 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

General Information
Company Name : TOPES Co., LTD.
Website : www.topes.com
Address : 31, Nokchon-ro 106beon-gil, Hwado-eup, Namyangju-si, Gyeonggi-do, 12187, Rep. of KOREA

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TRACOM Co. Ltd.

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

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☐ Others ( )

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■ 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 porject 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 utilites(focusing on energy production and supply plants)

Others

Certification
- ISO 9001:2008 - CE

Patent
- Technical Patent Registration: Navigation System using RFID Tag. (2011)

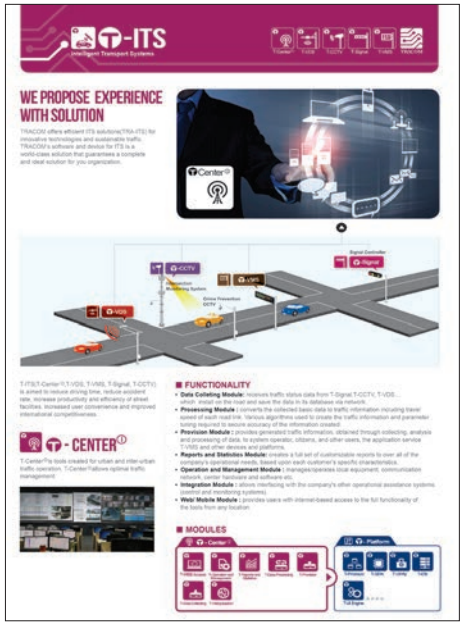
Certificate of Software Quality
- BIT for ITS/BIS AYBIT2013

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

Product Offerings



Product Offerings

General Information

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VITZROSYS Co., Ltd.

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.

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Ongoing ITS project or R&D

Project
- Construction of UTIS(Urban Traffic Information System), City of Geoje, Pohang, Kimhae, Changwon
- Construction of ATMS(Advanced Transportation Managesystem), City of Paju
- Construction of u-City(Ubiquitous City), Songsan GREEN city, Magok u-City
- Construction of BIS(Bus Information System), Expanding BIT of Seoul, Yongin-Seongnam, Mokpo-Muan

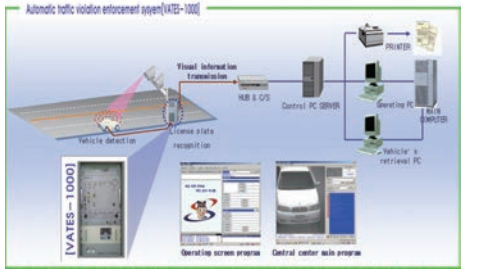
R&D
- SITMS Transport information center(design and implement)
- Development of 3rd dimensional landfill management system
- Development high precision power metering SOP for Smartgrid; Home energy platform
- Development of hybrid remote processor

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
- Surveilance, 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
- Surveilance 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

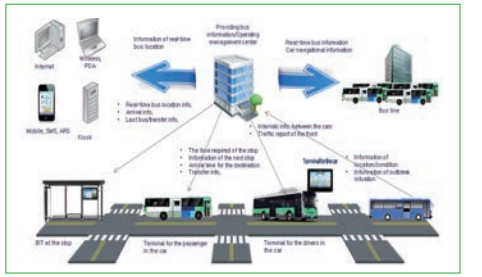
Collection and management system for the efficient cotrol of the road/preventing from the traffic accident through the car information committed speed, lane, traffic signal violence

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.

VITZROSYS Co., Ltd.

3. Signal control system

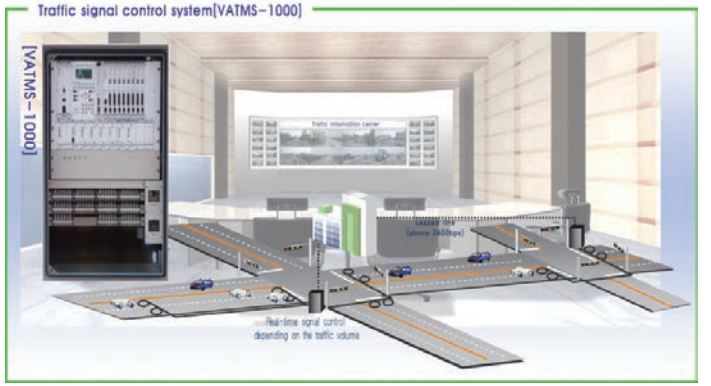
Collected data based on the detecting device established near the intersection will calculate the optical variables in the center, regional controller. It is the control system which manages traffic condition in real-time and period system of ITS as well

Solution

Traffic-actuated control, Left-turn actuated control, On-line remote control, On/off control, Manual control

Performance

Signal control system implement in City of Cheonan, Jeonju, Changwon, Choongju, Yeosu, Goonsan



General Information

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Wayties Inc.

Company Overview

Wayties Inc. is small but powerful and innovative company consistingof creative members who have comprehensive experiences in web, mobile, automotiveand vehicle-to-X (V2X) communication technologies. We offer customized softwaresolutions related to V2X and Cooperative-ITS (C-ITS) systems for improvingcustomer value and satisfaction. We have developed V2X and C-ITS field testsolutions which provide various test scenarios, automated data collection fromtest vehicles and the convenient tools for analyzing the results.

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

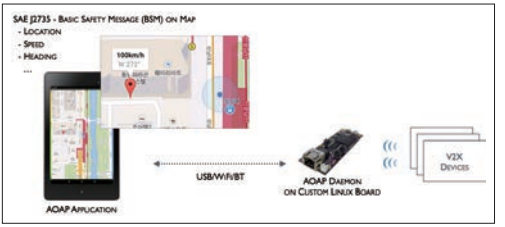
Development of field test solutions for V2X and C-ITS services
- Evaluating the performance ofV2X system and the application and communication performance
- Providing validation andverification test for C-ITS services Open-source projects for developing V2X service platform

Wayties Inc.

ITS Product & Technologies

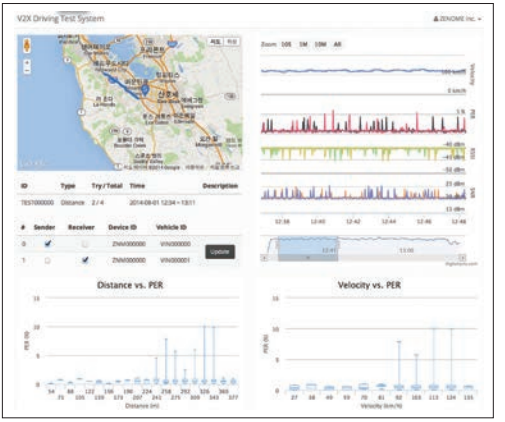
1. Connected Car

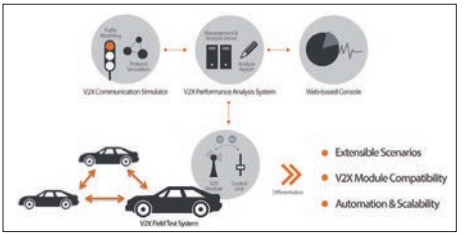
- Devoping the smartphone applications and embedded software for vehicle telematics service using V2X communication
- Engineering and consulting C-ITS services



2. V2X communicationanalysis system

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





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