LG CNS offers two types of approaches to response transport business based on 20 years IT service experiences. Solution approach is composed of 3 solution packages such as Traffic Surveillance, Traffic Information Analysis, Public Transit Management. Consulting approach is recommended to clients who plan for improve the existing operation process. LG CNS provides high performance customized traffic systems with extensive transport expertise.

**Solution Approach**
- **Traffic Surveillance**
  - Advanced Traffic Signal Control System
  - Violation Enforcement System
  - Traffic Flow Monitoring
  - Incident Management
- **Traffic Information Analysis**
  - Traffic Data Collection
  - Traffic Data Fusion & Integration
  - Traffic Information Dissemination
  - Traffic Data Warehousing & Analysis
- **Public Transit Management**
  - Bus Management System
  - Bus Information Service (RTPI*)
  - Bus Rapid Transit
  *RTPI: Real-Time Passenger Information

**Consulting Approach**
- Traffic Environment Survey
- Traffic Management Strategies
- System Design
- Center Architecture Design
- Field Equipment Design
- Communication System Design
- Implementation
- Test & Operation

**Core Solutions and Technologies**

**Field Equipment**
- CCTV
- Vehicle Detection System
- Automatic Vehicle Identification
- RSE/OBE
- Road Side Equipment(RSE)
- On-Board Equipment(OBE)

**Display**
- Variable Message Sign
- Bus Information Terminal
- Kiosk

**Communications**
- WIFI, DSRC, Wibro
- Fiber Optic
- WAN
- RFID, USN

**Information Media**
- Internet
- Mobile Phone
- ARS
- DMB
Traffic Surveillance

01 Advanced Traffic Signal Control System

Advanced traffic signal control system controls traffic signals in real time. It had been developed and funded by Korean National Policy Agency since 1991. Advanced traffic signal control system has 3 types of control which are TOD(Time Of Day) mode, traffic adaptive control mode and traffic response control mode to optimize signal plan in real-time based on traffic flow counted by 3 types of vehicle detectors on the road. Also, GUI(Graphic User Interface) environment using GIS(Geographic Information System) technology can make easy to operate and control to show various traffic variables and graphical illustrations.

02 Violation Enforcement System

Traffic violation enforcement system enables to improve safety and traffic flow by moderating traffic flow. Enforcement process is executed in the manner of fully-automation from detection to issuing tickets.

Incident management system aims to detect unpredictable events such as traffic accidents, special events and road works to prevent secondary accidents and reduce traffic congestion caused by any incidents. Integration of various subsystems such as CCTV, detector and tip-off can make possible automatic processes to control detection, confirm and response of the incidents. Confirming incident by operators, system can decide range of traffic information will be served according to traffic influence and severity of the incident and accomplish provision of traffic information of the incident immediately.

03 Traffic Flow Monitoring and Incident Management System

Incident management system aims to detect unpredictable events such as traffic accidents, special events and road works to prevent secondary accidents and reduce traffic congestion caused by any incidents. Integration of various subsystems such as CCTV, detector and tip-off can make possible automatic processes to control detection, confirm and response of the incidents. Confirming incident by operators, system can decide range of traffic information will be served according to traffic influence and severity of the incident and accomplish provision of traffic information of the incident immediately.

04 Reference Sites

- Daejeon Metropolitan City
  - Traffic Information Center
  - Advanced Traffic Signal Control System
  - Data Collection: CCTV, RD, On-Board Equipment
  - Information Dissemination: VMS, WEB, Mobile
  - Violation Enforcement Systems: Speed, Signal, Bus lane

- Gunsan City
  - Traffic Information Center
  - Advanced Traffic Signal Control System
  - Data Collection: CCTV, VDS
  - Information Dissemination: VMS, WEB

- Seoul Expressway Traffic Management System
  - Traffic Information Center
  - Advanced Traffic Signal Control System
  - Data Collection: CCTV, VDS
  - Information Dissemination: VMS, LCS, WEB, Mobile

- National Highway Traffic Management System(NHTMS)
  - Traffic Information Center
  - Advanced Traffic Signal Control System
  - Data Collection: CCTV, VDS, AVI
  - Information Dissemination: VMS, WEB, Mobile
To make one reliable traffic information from various traffic sources, data fusion and integration process is essential and important. LG CNS has advanced data fusion processes and software which is evaluated in various road conditions and a lot of projects.

Dissemination of traffic information is regarded as public service of road authorities to assist route choice of drivers and to enhance traffic safety. The mean of traffic information is being extended from roadside infrastructures such as variable message signs to mobile devices, due to advance of information communication technology and popularization of in-vehicle devices.

Traffic information is stored and translated in form of data analysis. We provide information between functions or subsystems to help traffic policy making such as new traffic demand for a new road, bottleneck analysis, variation of traffic congestion of whole road network and so on.
**Public Transit Management**

### 01 Bus Management System

The BMS help to maintain headway among buses though providing real-time bus location to driver and bus company and to improve quality of services by optimization of bus operation. Improvement level of service can raise satisfaction of bus rider, it also may improve financial results of bus companies and contribution of pollution reduction of whole city.

- **Drivers**
  - Receipt and transmission of location information
  - Interval between running vehicles
  - Estimated arrival time at bus stops
  - Traffic condition of bus route
  - Information about other running vehicles
  - Collection, processing and messaging of bus service information
  - Bus service management, bus running log analysis

- **BMS Center**
  - Bus route search
  - Information about bus arrival
  - Real-time information about bus location
  - Guiding optimized routes of public transportation
  - Offer of other content

- **Bus Riders**
  - Bus service monitoring
  - Bus running record analysis
  - Message transmission to bus

- **Bus Company**

### 02 Bus Information Service

Make feel more convenient and reliable for bus service with providing information such as estimated bus arrival time and bus location through Bus Information Terminal (LCD, LED type) and In-vehicle Display, mobile phone and so on.

- **Bus Information Terminal**
  - Internet
  - Mobile Phone

- **In-vehicle Display**
  - Vehicle Display

### 03 Reference Sites

- **Incheon Metropolitan City Bus Information & Management System**
  - Bus Information Center
  - Interected 2,500 buses
  - RTPI equipments at bus stops
  - Web/Mobile/ARS service for passenger

- **Daegu Metropolitan City Bus Management System**
  - Bus Information Center
  - Interected 1,633 buses
  - RTPI equipments at bus stops
  - Web/Mobile service for passenger

- **Chuncheon-Hongcheon Regional Bus Information System**
  - Bus Information Center
  - Interected 154 buses
  - RTPI equipments at bus stops
  - External/Internal Display on buses
  - Web/Mobile/ARS service for passenger
Primary References

Seoul TOPIS is the integrated transportation center that collects traffic information from related authorities and many related sub centers such as Bus Management Center, Korea Smart Card Co., Ltd and Seoul Expressway Traffic Center, etc. and manages traffic conditions and shares them with citizen since 2005. It serve traffic information through Traffic Broadcasting System, mobile phone, internet, variable message signs, etc. Also TOPIS combine various traffic data to accomplish scientific transportation decision making for example, analysis between travel fare data and bus running data and so on.

http://topis.seoul.go.kr

National Highway Traffic Management System (NHTMS)

Ministry of Land, Transport and Maritime Affairs of Korea operate 13,832km length of National Highway in Korea widely. NHTMS provide traffic congestion and incident information to road users through variable message signs, mobile phone and internet since 1995. NHTMS collect traffic condition by means of vehicle detectors, CCTVs, red light cameras to obtain travel time with vehicle number plate matching method. The system is under constructing but 30% of total length has been implemented where traffic demand is relatively high.

http://www.its.go.kr

Incheon Metropolitan City Bus Information & Management System

Incheon Metropolitan City has a total population of 2.6million and is rapidly developing into the third largest city in Korea. Bus management and real-time passenger information is regarded as most beneficial service among ITS services. The project had been implemented 500 bus information terminal installed at bus stop for providing bus real-time location and arrival time and over 2,500 on-board terminal for tracking bus location in real time. Also, bus location and arrival time is providing through ARS, mobile phone and internet. All buses on the road can be monitored on-line, and it is useful to schedule management and operation instruction for bus companies and bus administrative authorities.

http://bus.incheon.go.kr

About LG CNS

LG CNS and its 7,300 IT professionals have been providing superior IT services to more than 5,000 satisfied private and public enterprise clients around the world for the past 20 years.

Dedicated to clients’ growth, LG CNS provides expertise on front-end consulting and IT services for reliable system and network integration, e-business, e-outsourcing and other industry specific solutions.

Known as an outstanding IT services provider in China and Southeast Asia, especially for public services systems, LG CNS is servicing global clients in the United States and European countries, with seven subsidiaries and R&D Centers in China, India, US, Europe, Indonesia, Brazil and Japan. Since inception in 1987, LG CNS has attained an impressive 33% CAGR, nearly doubling sales every two years. In 2007, our revenue was over US$5 Billion dollars. Helping clients address their business issues and maximizing productivity and work efficiency through in-depth solutions, LG CNS is the first provider offering clients the most innovative solutions and services to multiply their value for years to come.

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