TRAFFIC CONTROL CENTRE (TCC)
INTEGRATED INFORMATION SYSTEM
FOR BEIJING URBAN RAILWAY NETWORK

CUSTOMER
Urban Railway Authority of Beijing

GENERAL

Singapore Technologies Electronics Limited, in a joint venture partnership with Tsing Hua Tong Fang, was awarded a contract in 2006 to deliver an Integrated Information System (IIS) for the Traffic Control Centre (TCC), which manages the urban railway network operation in Beijing.

Currently, the Beijing municipal has four railway lines under construction, namely No.4, No.5, No.10 and the Olympic extension lines. There are also another three lines being planned. Together with those constructed, No. 1, No.2, No.13 and Batong Lines, Beijing will have 11 railway lines by 2008 and 17 lines by the year 2015.

IIS within the TCC will connect with the operation control center for eight lines with a capacity of up to the 17 lines as mentioned. It plays a central management role of Beijing’s urban railway traffic network, which serves to unify the human-machine interfaces, operation modes, integrated supervision and coordination of various lines.

The IIS comprises many other sub-systems such as Integrated Supervisory System (ISS), Operational Passenger Information System (OPIS), Business Information Dispatching System (BIDS), Closed Circuit Television System (CCTV), Decision Support Database System (DSSDB), Incident Evaluation System (IES), Line Equipment Appraisal System (LEAS), Maintenance Management System (MMS) etc.

The ISS provides for the centralised and localised supervision of electrical and mechanical subsystems remotely for various railway lines. These subsystems include power supply, environmental control, building automation, signaling, closed-circuit televisions, passenger information displays, automatic fare gates, master clock, fire alarm etc.

The system is designed to coordinate the Beijing railway traffic network, enabling it to operate smoothly, efficiently, ensuring that passengers arrive at their destinations safely, comfortably and on time.
SYSTEM OVERVIEW

The IIS interfaces with different railway lines within the Beijing urban railway network and provides:

Supervision Management
To supervise train operation and passenger flow status.

Operation Management
Based on data analysis to generate reports such as transfer rates of train traveling, on-schedule rates of trains and information on accident etc.

Planning Management
Help to formulate safety and integration plan for the management of daily rail traffic.

Emergency Preparation
To examine and approve incident emergency plans of all lines and make suggestion to enhance the capacity for meeting emergency response requirement for the entire rail traffic system.

Emergency Management
To supervise the progress state of rail traffic incidents management, to provide assistance and to supervise the implementation of traffic operators’ plan and response.

Data Analysis
To make optimised operation plans and to assess the service levels of all traffic based on train service status data and the state of station equipment.

SYSTEM ARCHITECTURE

The IIS main components are:

- An Integrated Information System (IIS) Main Computer System located at XiaoYing
- An IIS Development and Testing Centre located at XiaoYing
- CCTV System located at XiaoYing
- High speed local area communication and management network located at XiaoYing
- An IIS Backup Computer System and communication network located at XiZhiMen.

SYSTEM FUNCTIONS

1. Supervision of a combination of the following available systems and equipment in various lines:
   - Power System
   - Environment Control System
   - Building Automation System
   - Fire Protection System
   - Signaling System
   - CCTV System
   - Passenger information System
   - Automatic Fare Collection System
   - Account Clearing Centre

2. Management and control of Operational Information System (OIS) and Business Information Dispatching System (BIDS).

3. Monitoring and control of CCTV sub-systems.

4. Sharing of data information for normal railway operation and coordination, and its line equipment audits.

5. Sharing of data information for command and control of Beijing urban railway transportation during emergencies.

SCOPE OF WORK

- System Design
- Installation Design
- Manufacturing & Procurement
- Project Management
- Factory Test and System Integration
- Testing & Commissioning
- Documentation
- Training

Beijing TCC Network Infrastructure Diagram