



Digital refurbishment of Singapore North-South and East-West lines for SMRT

Project Overview

COE Ltd won the contract to provide a digital video CCTV solution for the North-South and East-West metro lines in Singapore. The project consisted of the upgrade and replacement of the CCTV systems for all 51 stations and 3 depots on the two lines over a period of 12 months with a master control centre for monitoring all station activity.

The refurbishment programme provided SMRT with a highly sophisticated CCTV system based on IP digital video technology. Each station has 20 to 50 cameras totalling around 1,100 cameras across the entire network. In order to manage this number of images local operators manage their own station complex with the Operational Control centre (OCC) having an overview of the entire system for emergency and general monitoring.



Technical overview

In order to provide a flexible solution that met the project budget COE designed a hybrid analogue-digital system utilising COE Telecommand, X-class and SEE-net GUI software. Each of the 51 stations, 3 depots and OCC camera sets are managed by a TCD-II control and video matrix with 10/100BT connection to the 1 Gb LAN for control and maintenance management. A special LCD keypad was designed to enable full control of the CCTV cameras and Quad image display. 14 images are fed to the 1Gb LAN via X-class MPEG4 digital video codecs hence OCC is able to see 14 images concurrently from any one location or a combination of images from several locations. The choice of image selection is controlled at OCC by SEE-net operators. A sophisticated video switching engine defines which codec and which matrix output is used to channel the right video image to the operator at OCC. This double-level switch technique removes the need for the operator to make multiple selections to view a camera. SEE-net client terminals provide a map and icon camera selection interface for rapid camera selection from any of the stations and depots.

Network and picture quality

The 1Gb LAN is designed around a dual ring structure at the core, with X-class providing a further 'outer' ring path for added protection. The ability of X-class to augment the core ring design ensured that the MTF specification of 99.999% was met with ease. Each MPEG4 codec provides image quality of 4CIF @ 25 fps to ensure the image quality is maintained across the entire network.

Network management and maintenance

In depth maintenance information is provided by the TCD-II controller, X-class video codec and ONU HTML interface as well as all alarms being gathered and managed by SEE-net in a master database at the OCC. SNMP is employed to provide network wide alarm visibility for the 1 Gb LAN and X-class elements. As each key component is connected via 10/100BT link to the LAN, all data is available to the maintenance team at any location thus helping to reduce repair times.

Key project objectives met by COE-net suite:

- Cost effective solution to specification
- Flexible, expandable system design
- High quality, low latency, video image transmission
- Seamless integration with existing infrastructure enabling fast switchover to new system
- Complete transmission, control and management solution from one vendor

Reference Sites:

Metro, Light Rail & Underground

Manchester Light Railway, London Underground (LUL), Strasbourg Tramway, Lyon Metro, Tyne and Wear Metro, Singapore KCRC WR & MRT, Singapore LRT, HK MTRC, St Louis Metro, JFK-NY LRT, Antwerp Metro and Malaga Light Rail.

Trunk Rail

Eurostation (Brussels), Railtrack Level Crossings (UK), SNCF (France), RENFE (Spain), Deutsche Bahn (Germany), High Speed Railway (Korea), Queensland Railways (Australia) and Channel Tunnel Rail freight Terminal (UK). Madrid-Barcelona High speed rail link

COE X-class



Telecommand TCD II



SEE-net GUI



For further information, visit www.coe.co.uk or contact:

Headquarters · COE Limited · Photon House · Percy Street · Leeds LS12 1EG · England
Sales Direct Tel: + 44 113 230 8801 · Fax: + 44 113 279 9229 · Email: sales@coe.co.uk

Asia Pacific Offices

Singapore · COE Limited · No. 3, International Business Park, #03-25 Nordic European Centre, Singapore 6099
Tel: +65 6325 6018 · Fax: +65 6223 0372 · Email: sales@coe.co.uk