Integrated Communication Management Systems

The Logical Solution for Safety
The success of a modern railway network is the ability to deliver a fast and efficient service to passengers. This increasing demand from rail operators is driving a strategy to provide simple and cost effective solutions. This demand covers not only the operation of the railway but the ongoing availability of assets.

Rail operators are increasing the number of intelligent electronic solutions throughout the rail network, specifically at stations and in operational control rooms where the safety of the railway and its passenger is of paramount importance. The traditional approach for this has seen systems delivered ad-hoc and independently leaving operators faced with a number of separate consoles from which to manage the railway. This can result in operator fatigue and impact the potential performance of the railway.

**Hima-Sella**, using its 35 years experience as a system integrator delivering safety critical control applications, has developed a solution that enables rail operators to centrally control all of its operational and retail telecommunication assets. Using proven ‘COTS’ software technologies, **Hima-Sella** has designed a solution capable of providing a simple and effective common point of control via a fully integrated human computer interface (HCI).

Utilising industry proven SCADA software and hardware, **Hima-Sella** has developed its ‘Integrated Communication Management System’ (iCMS) toolset. Designed to meet the requirements of numerous applications, the solution is based on a client server architecture allowing multi user capability.

System integrity is maintained by the use of a dual redundant RAID server architecture. The HCI user interface has been designed in line with well known industry standards to provide a flexible and fully configurable application. This ensures that the final solution will meet the necessary human factors requirement of a modern operational control point.

**iCMS Technologies**
The **iCMS** solution has been developed with the use of industry proven software and hardware technologies. The **iCMS** application utilises a ‘COTS’ software toolset, developed for a variety of industrial SCADA applications. Already in operation in the UK rail industry, the software product has been supplied for the integration of retail telecommunications assets.

To enhance its solution for operational communications, **Hima-Sella** has integrated its **iCMS** product with the DIKOS suite of rail telecommunication products. This provides effective control, routing and management of all operational telephony such as SPT, TT and PABX applications. The development of **iCMS** has been achieved by **Hima-Sella** through utilisation of proven market technologies, existing product partnerships and our experience in the delivery of integrated safety critical and control applications.
When developing the iCMS toolset, Hima-Sella wanted to ensure that the integration of new or existing communication systems resulted in a level of beneficial gain. These are defined as either Operational or Performance benefits.

### iCMS Operational Benefits:
- Common Point of Control
- Effective User Interface
- Simplified Routine of Operation
- Reduced Operational Training
- Retained Sub System Individuality

### iCMS Performance Benefits:
- Assisted Control Functionality
- Improved Monitoring of Assets
- Flexibility to undertake independent System Upgrades
- Engineered to Recognised Standards
- Improved System Reliability
Taking into account the engineering approach and observing the key beneficial objectives, Hima-Sella has developed its iCMS product as an integrated solution for two key applications. These are:

- Management of Retail Telecommunications
- Management of Operational Telecommunications

### iCMS for Line Management:

Line control rooms or Service Control Centres (SCC) also feature several operational communication systems. Typically, a line controller may have four or five communications assets to manage as well as dealing with the safe operation of the signalling system. Quick, effective and correct operation of these assets is essential to providing a good safe service.

For SCC applications, Hima-Sella limits integration to the communication systems. Adapted to meet the requirements for the line management, Hima-Sella utilises its iCMS solution for the common point of control for all operational communication systems. The flexibility of the HCI design means that the iCMS solution, even though supplied as a separate system, can be engineered so that its appearance is similar or identical to that of the signalling system.

This approach of commonality reduces the level of training required by personnel as mimic layouts, alarm & event regimes and menus are familiar. Typical operational communication assets that can be integrated include:

- Signal Post Telephones (SPT)
- Tunnel Telephones (TT)
- Train Radio (GSM-R)
- Long Line Public Address (LLPA)
- Long Line Closed Circuit Television (LLCCTV)
- Customer Information Systems (CIS)
- Standard Telephone Networks (PABX)

The application of iCMS for Line Management can be enhanced with the use of the HSD10000 RTU equipment to gather information on the performance and availability of assets such as:

- Traction Earth Detection
- Signalling & Telecommunications Power Supplies
- Traction Power Supplies
- Tunnel Ventilation Systems
- Station System Alarms

### iCMS for Station Management:

Typically rail stations and large transport interchanges are supplied with a variety of telecommunication systems. The approach from Hima-Sella to this environment is to utilise its iCMS application to provide a single point of control for all existing and new communications infrastructure.

Operators are presented with the direct control of station communications equipment via a touch screen HCI workstation. Simple station area maps are populated with active icons that respond to a strict alarm and event regime when an asset becomes active. These are controlled via dedicated operational menus for each sub system.

Typical station communication sub systems include:

- Closed Circuit Television (CCTV)
- Public Address (PAVA)
- PC Digital Voice Announcers (PCDVA)
- Passenger Help Points (PHP)

The iCMS application can enhance operational awareness of assets not previously monitored by the use of its SCADA package. Hima-Sella, through its HSD10000 Remote Terminal Unit (RTU), can utilise PLC technologies to provide extensive remote monitoring of station sub systems equipment. These can be installed in equipment rooms around the station to gather performance and availability data on non communication assets such as:

- Fire Evacuation Systems
- Lifts & Escalators
- Ticket Machines
- Fan & Ventilation Systems
- Station Power Supplies

By centralising the provision of this information operational personnel can maximise the availability of all station assets, employing maintenance activities immediately, thus leading to the delivery of the more efficient and effective service required by the modern transport interchange.

All of the information generated within the iCMS whether supplied as a solution for station management or line management can be enhanced with the use of third party Data Warehouse and Performance Management and Information Systems (PMIS). These applications can be fed directly with the event and alarm data captured by the iCMS SCADA facilities and used to generate operational trending and reports. Although this level of engineering is yet to be delivered by Hima-Sella, many rail operators are already exploring the use of combining real operational data with IT performance tools to assess how well the railway is operating.
“...a flexible approach to successful project delivery...”

Hima-Sella has developed a strong reputation of proven expertise in the supply of safety critical and control systems to the UK transport industry. Through its partnerships with key product suppliers and its in-house engineering capabilities, the company offers complete turnkey project capability which includes design, manufacture, engineer, test, installation management and commissioning. Hima-Sella’s reputation as a proven service provider is also maintained through its team of dedicated technical support personnel.

Project Management & Delivery
Successful project management and delivery have a significant influence on the reputation of Hima-Sella in the UK transport market. All projects are assigned a dedicated project delivery team whose main role is to ensure that project milestones are achieved, client satisfaction is exceeded and that a philosophy of flexibility to delivery is constantly maintained.

Strong communication is the key to the success of projects and the Hima-Sella project teams are encouraged to develop strong relationships with the client team. This is strengthened by the company’s UK based project delivery teams.

On successful completion of all factory activities, the project teams have the necessary experience to provide site installation management and commissioning of the equipment.

Consultancy & Design
The success in providing sound engineered solutions for the transport industry has been achieved by the experience of the engineering teams. This experience is best utilised during the consultancy and design stages of a project. The engineering team’s valuable knowledge and experience can be called upon to improve the value of feasibility studies, risk assessment and whole life costing activities. In respect of safety applications, dedicated TUV approved functional safety engineers are on hand to advise and/or produce detailed functional design for many applications.

Systems Integration and Testing
The successful implementation of a system relies not only on thorough design processes but also extensive engineering and systems integration principles. The Hima-Sella engineering teams utilise simple engineering procedures that have been proven through the implementation of many projects.

Hima-Sella’s philosophy of a flexible, modular and open architecture design ensures simple integration of all equipment to third party applications. Detailed independent and fully integrated testing procedures are performed in-house proving system functionality in a safe environment before final commissioning tests are undertaken at site.

Systems Support
Hima-Sella has an established, dedicated team of technical support engineers who ensure that clients receive maximum benefit and reliability during the operational life of a system. These highly trained and skilled engineers provide a range of services including 24/7 technical support and site attendance, operational and maintenance training, system modifications and upgrades. All of these services are designed to ensure that individual clients are offered the most cost effective solutions to maintain system availability, and reliability.
Located in Stockport, Cheshire Hima-Sella has easy access to the motorway network, mainline railways and Manchester International Airport.

Hima-Sella has custom built offices and workshops providing:

- **Consultancy**
  - Feasibility • Risk Assessment • Reliability Studies
  - Whole Life Costing

- **Project Management**
  - On time delivery of project • Regular customer contact
  - Agreed milestones to monitor progress

- **Design**
  - Detailed Design • Functional Logic • Auto CAD

- **Engineering**
  - Functional Design Specification • Safety Requirements
  - Safety Requirements Specification

- **Manufacturing**
  - Panel Build • System Build • System Integration

- **Testing**
  - In-house • Factory Acceptance Testing • Site Acceptance Testing

- **Installation and Commissioning**
  - System Installation and Inspection • Support during Startup

- **Technical Support**
  - 24 hour call out support • Upgrades/Modifications
  - Maintenance (IEC 61508 life cycle)

- **Training**
  - Hardware/Software Design • Maintenance and Servicing
  - Customised courses