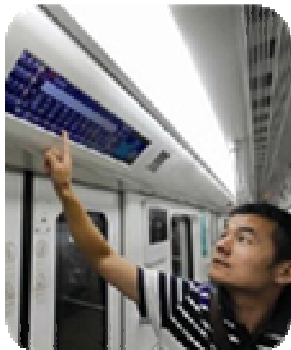






Onboard Systems for Railways

Next Generation PIS and Dynamic Route Map System



INTELLIGENT PIS SYSTEMS

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Dynamic Route Map Display

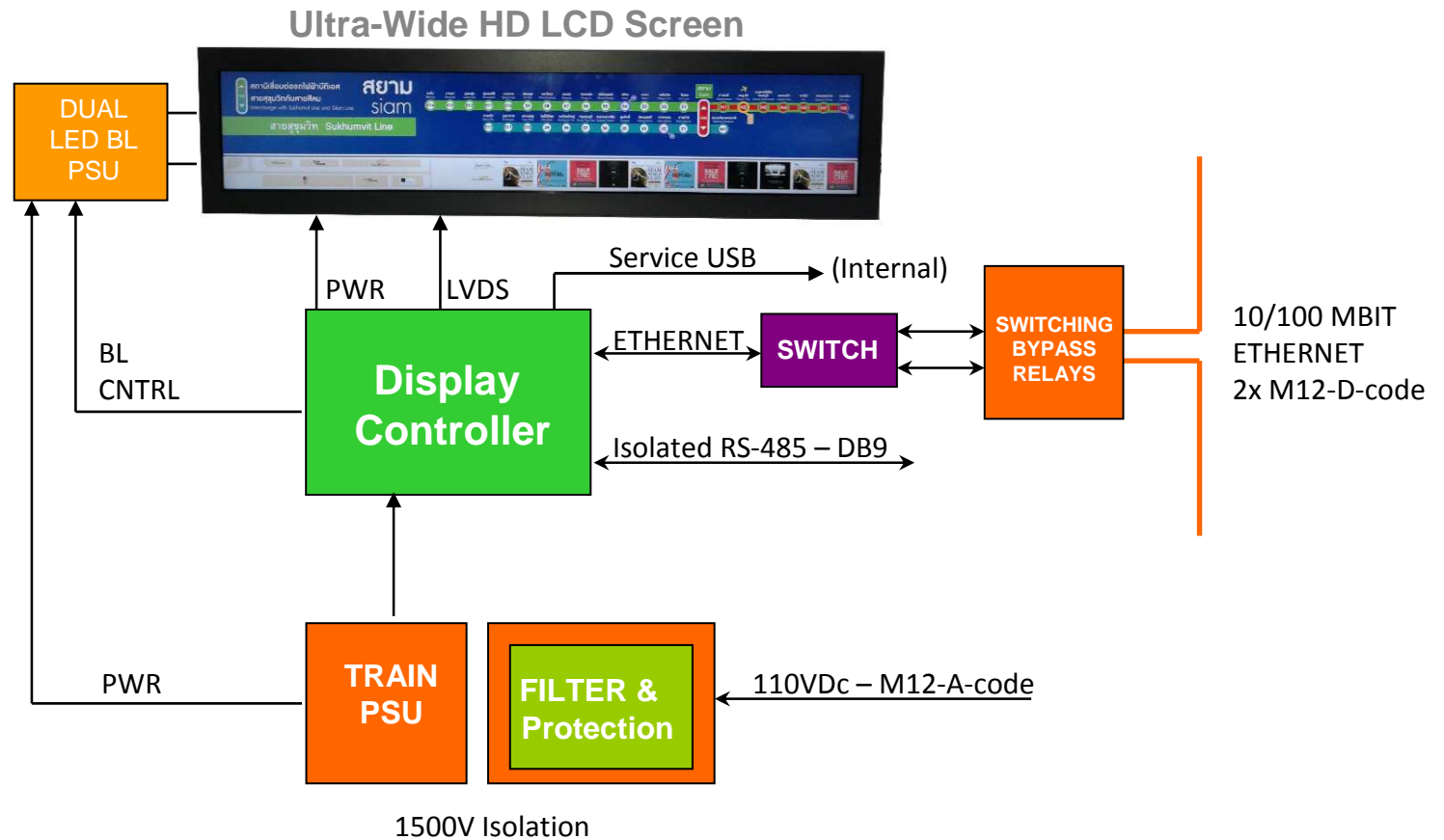
System Comparison Table

| FEATURE | DRMS-LITE | DRMS | NOTE |
|--------------------------|-----------|---------|---|
| Master/Slave modes (M/S) | S | M and S | Master mode includes Gateway functionality |
| Power Supply | 110VDC | 110VDC | LITE (Screw terminal plug), DRMS – A-Code M12 |
| Control Processor | Dedicated | i.MX6 | Freescale i.MX6, dual core 1GHz |
| Firmware | Fixed | Open | Linux+AMR Asia firmware, open Application SW |
| Sensors (accelerometer) | | √ | 3-axis sensor for inertial navigation |
| Wifi + BT | | √ | 802.11n standard, BT Option |
| Isolated RS-485 | Option | √ | LITE (DB-9), DRMS – A-coded M12 |
| MVB and CAN | | Option | ESD+ and EMD, CAN 2.0 |
| Audio I/O | | Option | Integrated preamplifier HD Stereo audio |
| Ethernet | 2x 10/100 | 1x GBIT | M12 connectors (D-coded or X-coded) |
| Temperature control | √ | √ | |
| Event Log, monitoring | | √ | EEPROM |
| GNSS | | Option | High accuracy uBLOX MAX8, active antenna |
| 3G/4G Modem | | Option | Onboard SIM socket |



Dynamic Route Map Display

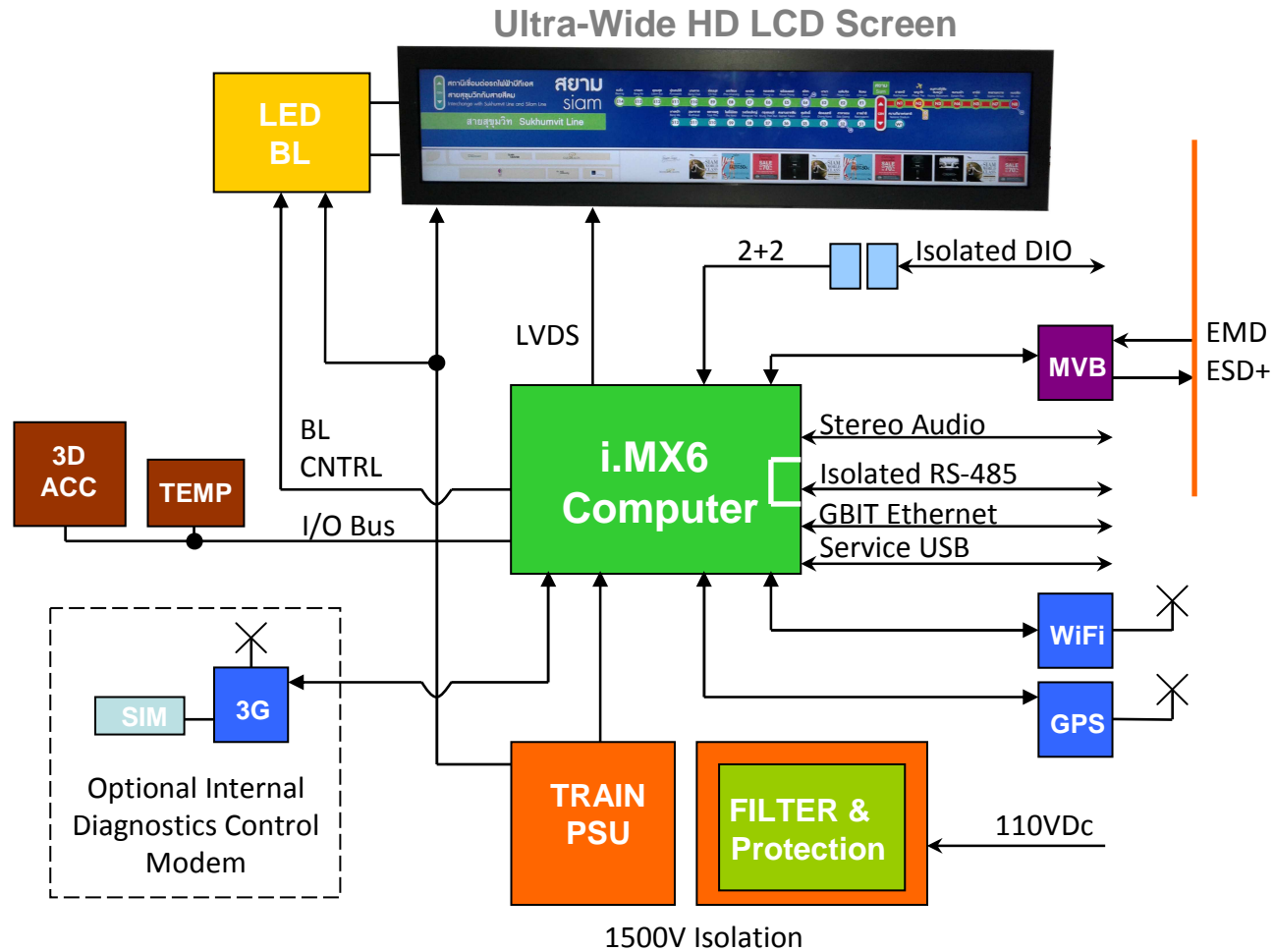
Integrated Block Diagram DRMS-LITE





Dynamic Route Map Display

Integrated Block Diagram DRMS





Dynamic Route Map System

Dragontech Solution Advantages

5

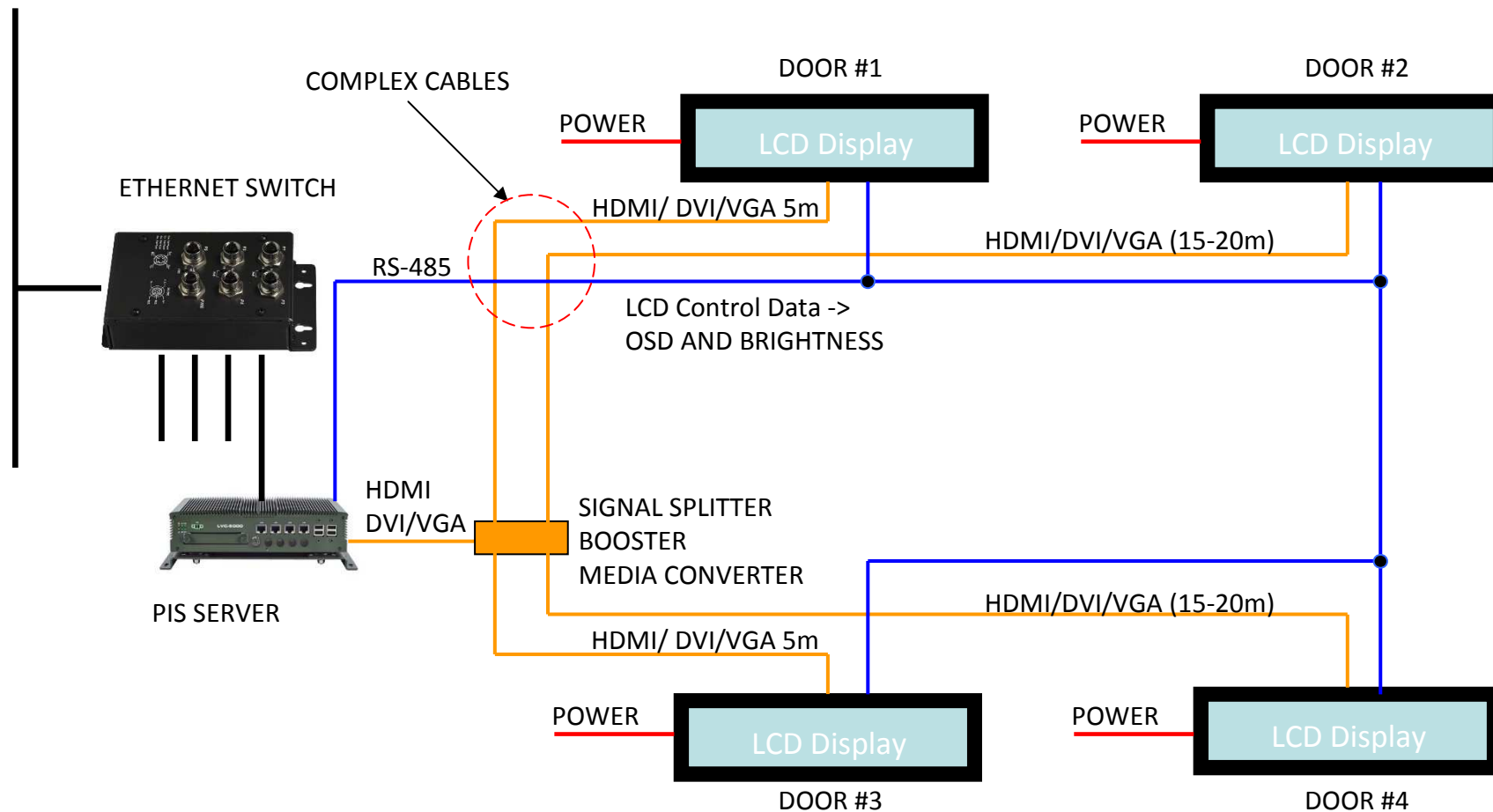
- **Autonomous operation of each DRMD**, different content can be shown on left and right side of the train at or approaching station
- Improved **customer experience**, HD resolution with **no interference from long cables**
- **Gateway** Mode (Master and Slaves) **and Client** Mode supported
- **Versatile interfaces**: Gbit Ethernet, MVB, Isolated RS-485, WiFi for updates
- **Optional 3G modem** (Gateway Mode Master) for remote monitoring, configuration
- Optional high accuracy uBLOX **MAX-8 GNSS receiver**
- Powerful **CPU manages static images, animation, video and changing images**
- Full HD resolution with **no interference from long cables**
- Control of content change managed by **internal CPU and Firmware**
- **Simplified wiring, no ground loops, easy maintenance** – fully isolated system (RS-485, MVB, Ethernet, PSU)
- **Internal diagnostics**, monitoring, error alert and reporting (Optional 3G modem access)
- Easy integration with TCMS or Signaling systems – **ideal for modernization**
- Linux SW, support for creation of **project specific extensions, functions and controls**
- **Certified** for compliance with railway standards



LCD Displays for Passenger Information

Train Car Solution Scenario – Legacy Approach

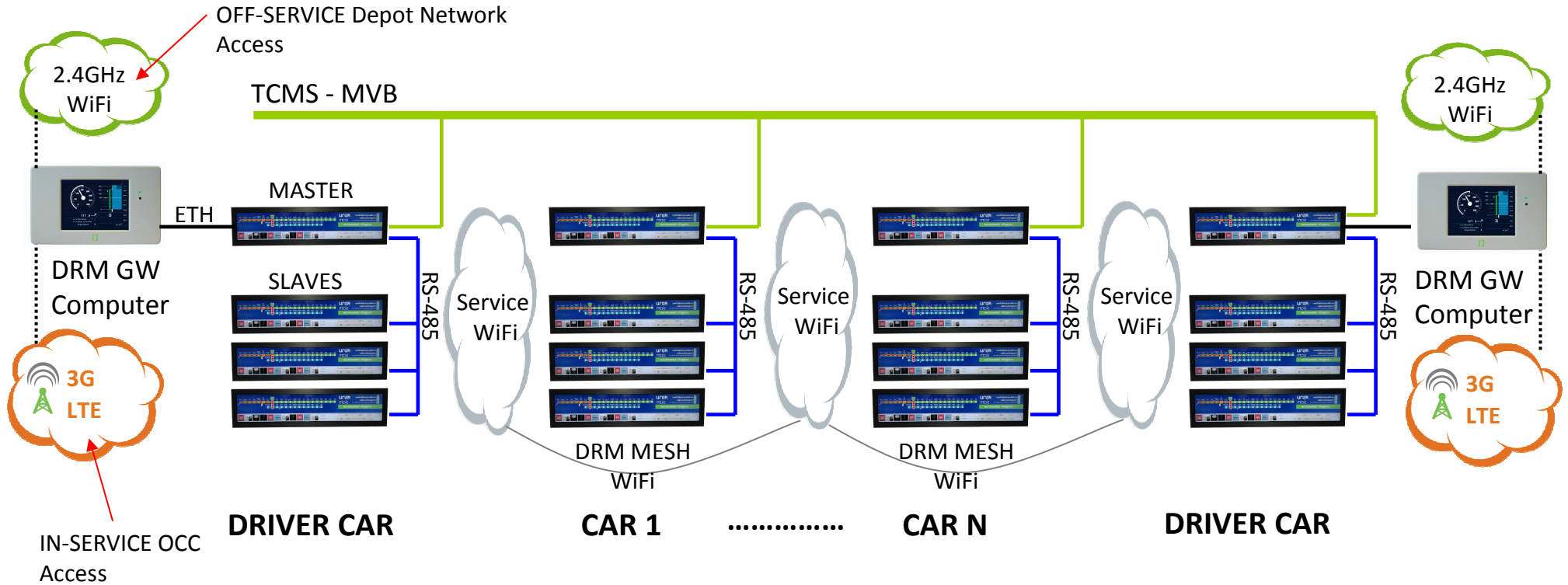
TRAIN ETHERNET





PIS System Integration

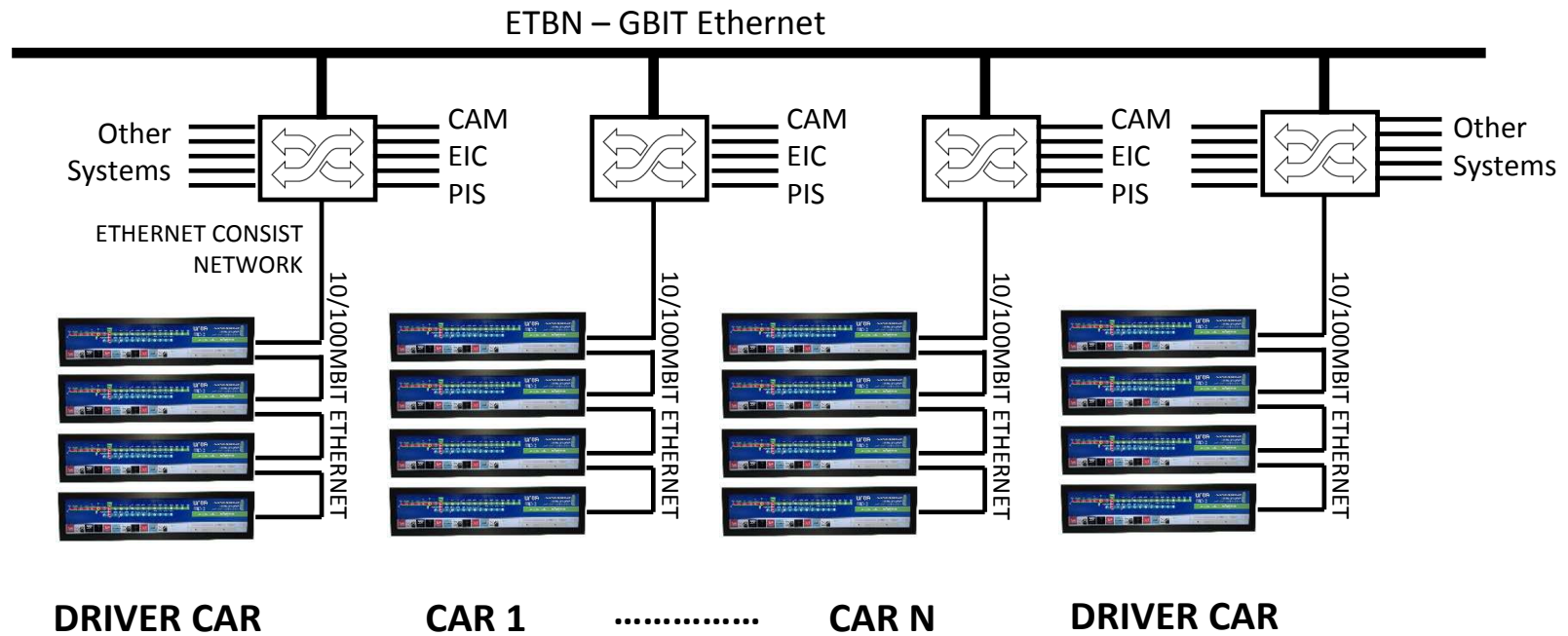
Gateway Mode – Using DRMS (MVB + RS-485) and Onboard DRMS WiFi





PI System Integration

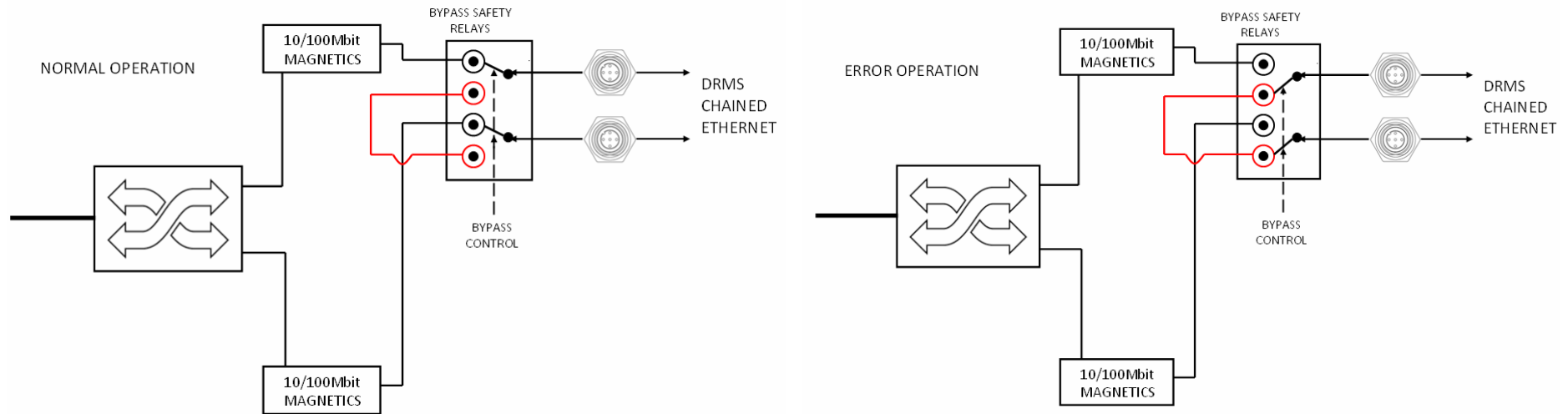
DRMS-LITE Connecting over Ethernet





PI System Integration

DRMS-LITE Ethernet Bypassing

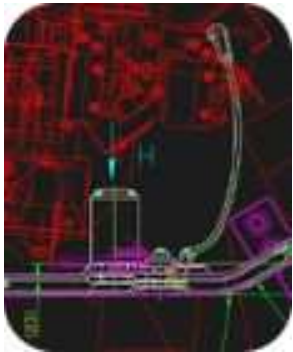




PIS and Dynamic Route Map Display

Systems Engineering Services

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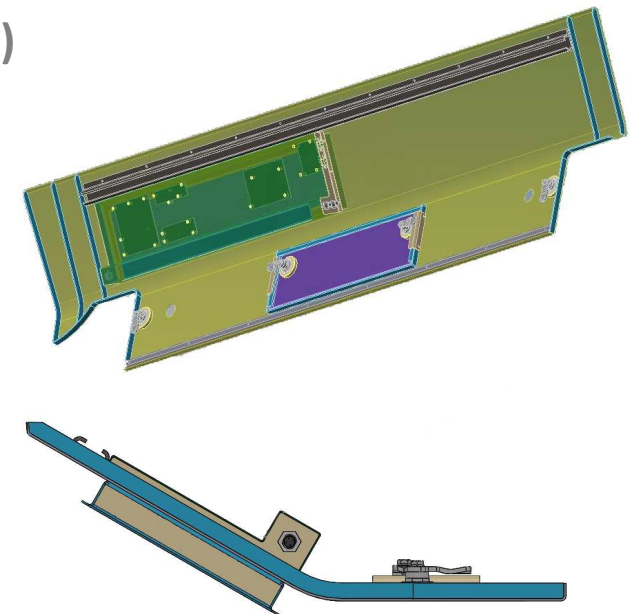
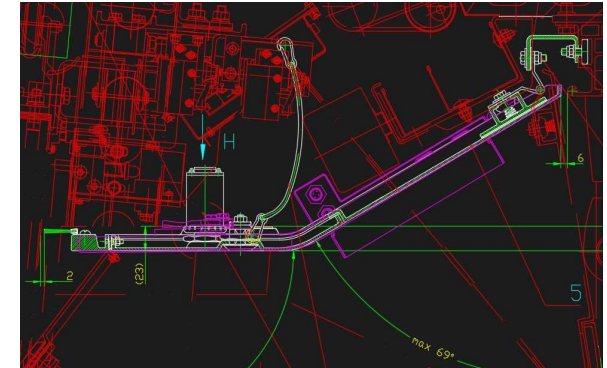
**PROJECT SPECIFIC
SYSTEMS ENGINEERING**

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Customization Options

1. Mechanical and Manufacturing
 - Mounting
 - Enclosure and material
 - Connectors
2. LCD Displays (28" and 48" aspect ratio, 16:3 standard)
 - 21" (16:2.6 aspect ratio, 531mm x 87mm active area)
 - 34" (16:2.2, 878mm x 118mm)
 - 43" (16:2.2, 1095mm x 153mm)
 - 47" (16:1.5, 1209mm x 112mm)
3. System Functionality
 - Power supply, 110VDC, 24VDC or other
 - Interfaces, MVB, CAN, 3G and GPS
 - Audio and Digital I/O





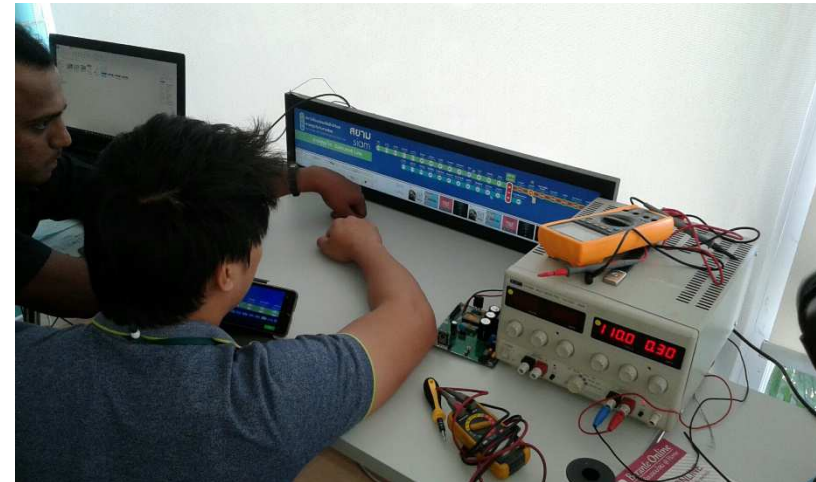
Systems Engineering

Software Solution

13

- Linux Based Firmware Engine
- Display content control, animations development using QT toolchain
- Standard development platform
- Ready to use interface functions
- Functions for backlight control, LCD power ON-OFF, temperature, accelerometer, monitor system status
- Tested interfaces to onboard signalling systems

- Integration, SW development services available for projects





Systems Engineering - Integration

Successful Project Execution

14

- Architectural design of onboard systems integration
- Mechanical and functional customization
- Testing and certification

- Dynamic Route Map (PIS) application SW development
- TCMS and/or train data interfacing
- Project specific OCC and content management SW

- Maintenance and repair services





Company Introduction

Our Global Footprint – Presence in Asia and Europe



Production



R & D - Engineering



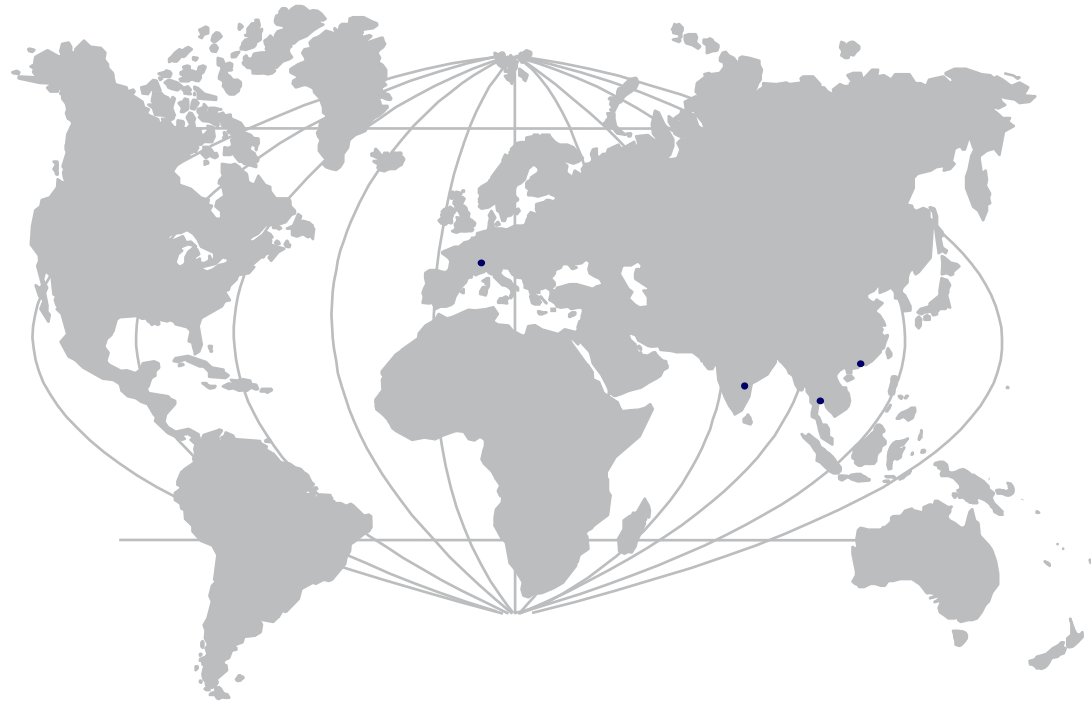
Sales



Logistics



Administration



Lyon -France



Bangalore



Bangkok



Hong Kong (HQ)

