DragonTech
VISION • INNOVATION • CREATION

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Onboard Systems for Railways

Next Generation PIS and Dynamic Route Map System

INTELLIGENT PIS SYSTEMS

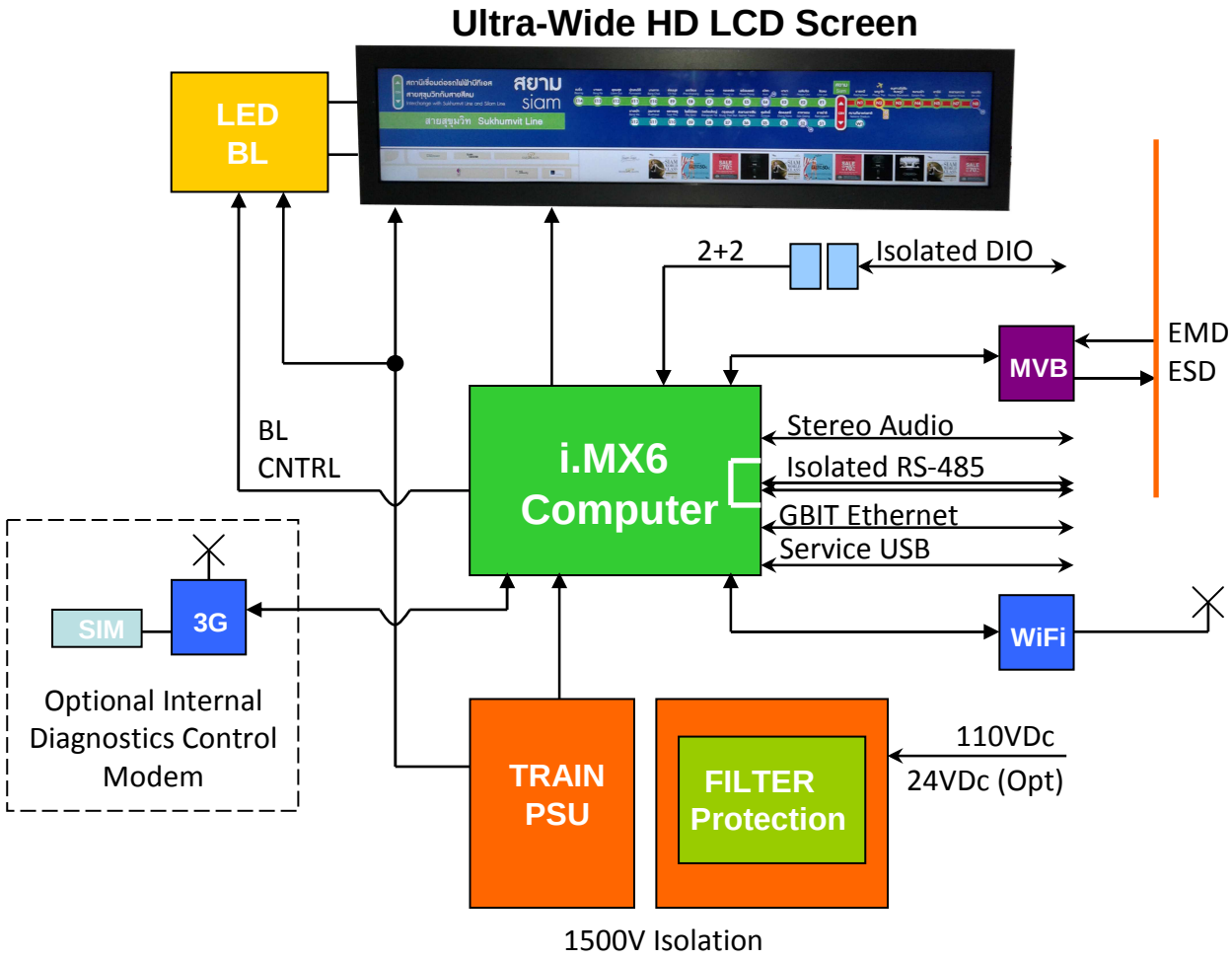
Dynamic Route Map System

Dragontech DRMS Features

- Sizes 28” (1920 x 357 resolution) and 48,4” (1920 x 358) resolution
- Active display area 28”: 698.4 (H) x 129.86(V) 48”: 1209.6 (H) x 225.5(V)
- Brightness 28” 1000nits, 48” 1600nits
- Operating temperature -25 to +55°C (+70°C for 15min)
- Input voltage range: 110VDc (66-137,5VDc) or 24VDc (9-36VDc) – Isolated power supply up to 1500VDc
- For DG-DRM28 vehicle power supply option with 8-32VDc input
- i.MX6 processor with Linux Firmware for system control
- Dragontech DURIGO Cloud data management platform
- Interfaces:
  - 10/100/1000Mbit Ethernet
  - Isolated RS-485, Optionally Isolated redundant RS-485
  - WiFi 802.11n
  - Maintenance USB2.0 interface
  - Optional MVB (Both EMD and ESD)
  - Optional 3G modem with internal SIM card
  - Optional CAN2.0
- Temperature monitoring and display overtemperature protection
- Isolated +24VDC signal level digital I/O (Option), HD Audio output with preamplifier
- Event and error logging
- Aluminium enclosure
- Certified to EN50155, EN50121, EN61373

Dynamic Route Map Systems

Block Diagram



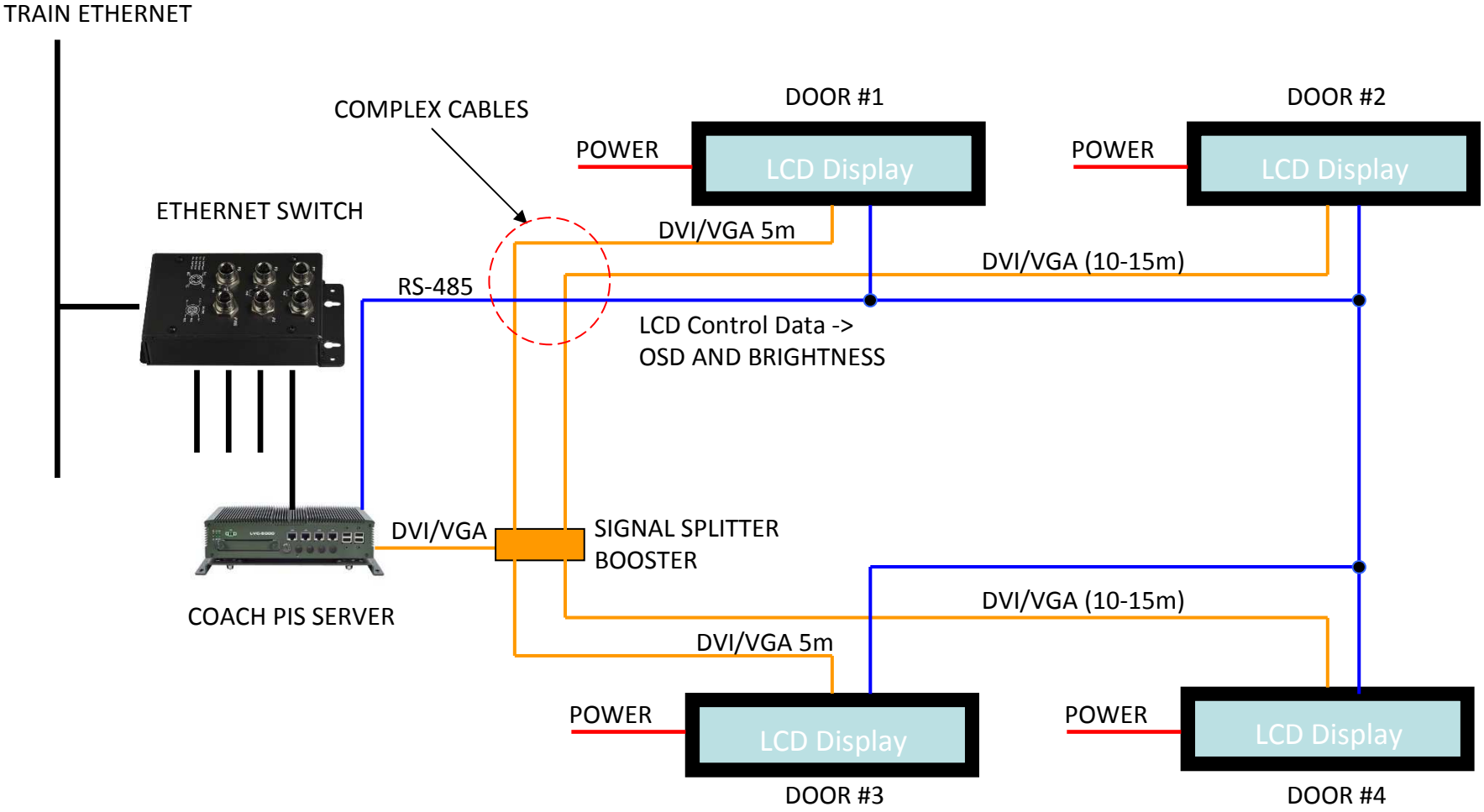
Dynamic Route Map System

Dragontech Solution Advantages

- **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**
- **Gateway** Mode (Master and Slaves) **and Client** Mode supported
- **Versatile interfaces**: Gbit Ethernet, MVB, Isolated redundant RS-485, WiFi for updates
- **Optional 3G modem** (Gateway Mode Master) for remote monitoring, configuration
- Powerful **CPU manages static images, animation, video and changing images**
- Full HD resolution with **no inteference from long cables**
- Control of content change managed my **internal CPU and Firmware**
- **Simplified wiring, no ground loops, easy maintenence** – fully isolated system (RS-485, MVB, Ethernet, PSU)
- **Internal diagnostics**, monitoring, error alert and reporting (Optional 3G modem access)
- **Reduced global cost**
- Easy integration with TCMS or Signalling systems – **ideal for modernization**
- Linux SW, support for creation of **project specific extensions, functions and controls**
- **Certified** for compliance to railway standards

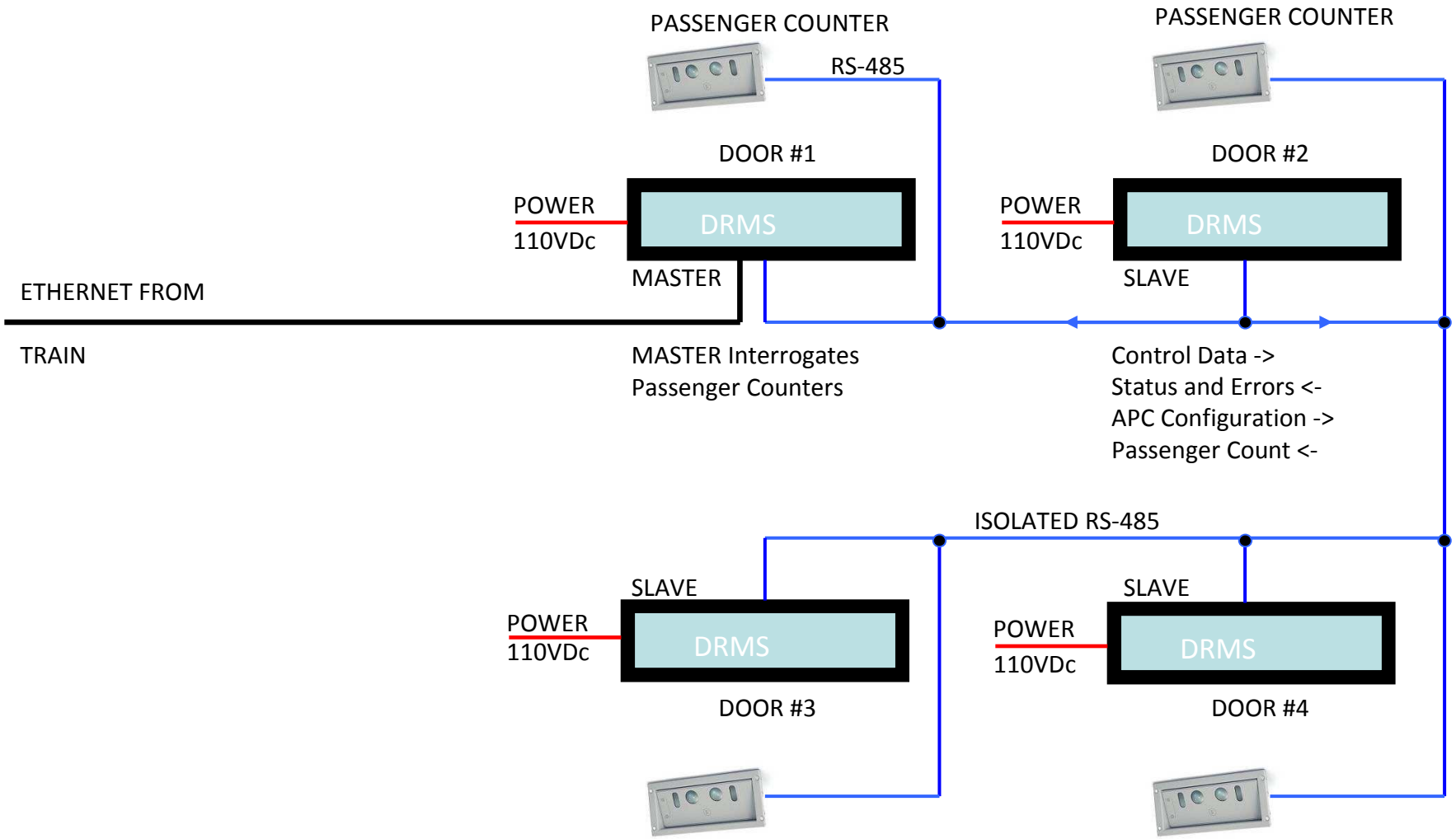
Dynamic Route Map Displays

Coach Solution Scenario – Legacy Approach



Dynamic Route Map System

Gateway Mode – Using DRMS (Ethernet + RS-485) with Passenger Counting



Dynamic Route Map System

Gateway Mode – Using DRMS (MVB + RS-485) and Remote Diagnostics

OCC

3G

STATUS DATA

2x EXT I/O

DOOR #1

DOOR #2

POWER 110VDc

DRMS

MASTER

POWER 110VDc

DRMS

SLAVE

MAIN SYSTEMs

TCMS MVB

FROM TRAIN

ISOLATED REDUNDANT RS-485

Control Data ->

Status and Errors <-

2x 2-WIRE TWISTED PAIR

ISOLATED REDUNDANT RS-485

SLAVE

POWER 110VDc

DRMS

DOOR #3

SLAVE

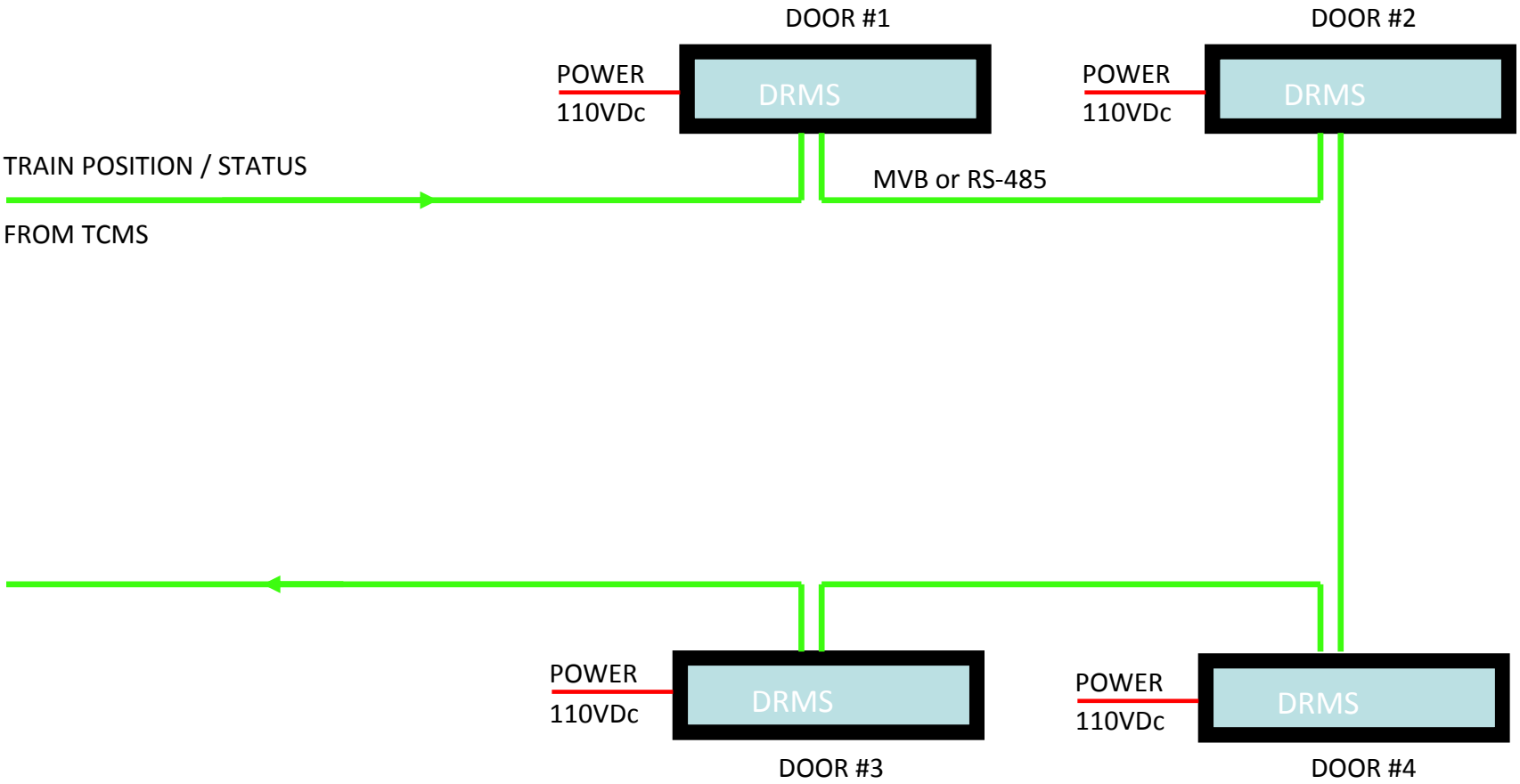
POWER 110VDc

DRMS

DOOR #4

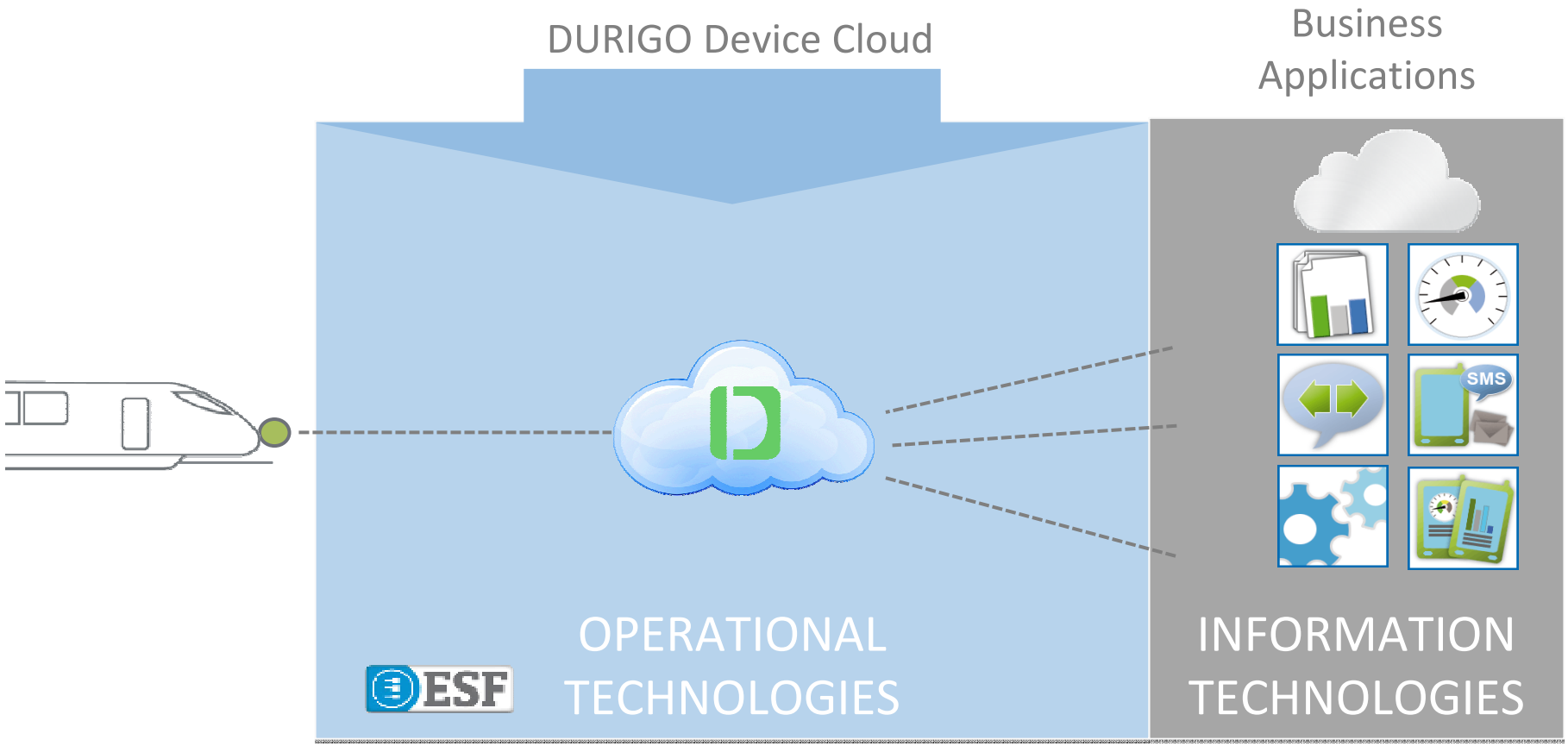
Dynamic Route Map System

Client Mode – DRMS MVB or RS-485



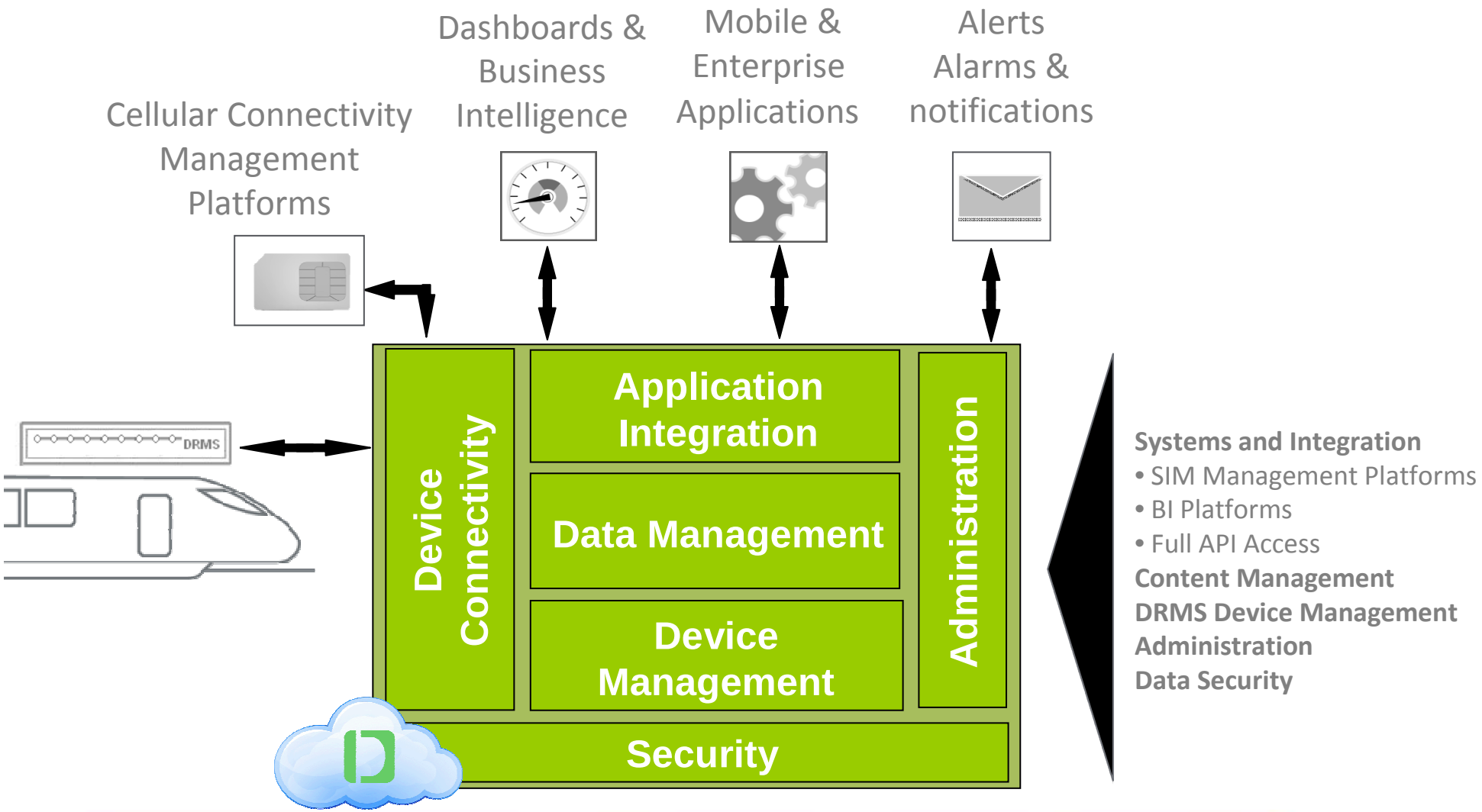
DURIGO Systems Integration Platform

Joining Operational Technologies with IT



DURIGO Systems Integration Platform

Functional Overview

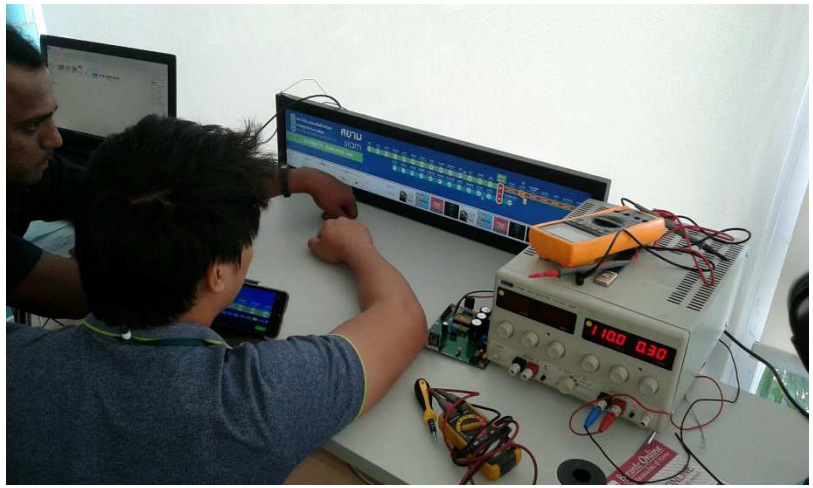


Dynamic Route Map Systems

Software Solution Engineering

- 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 monitoring and system status
- Tested interfaces to onboard signalling systems

- Integration, SW devlopment services available for projects



Systems Engineering and Integration

Successful Project Execution

- Custom display sizes and formats 16:3, 16:4.2
- Mechanical customization
- Project software engineering
  - MVB and RS-485
  - Display content
- Project specific OCC and content management systems
- Dynamic Route Map (DRM) application software development services
- Data integration using DURIGO Cloud Platform
- Integration with other onboard systems
- Testing and certification for project specific system
- Maintenence and repair services

Company Introduction

Our Global Footprint – Presence in Asia and Europe

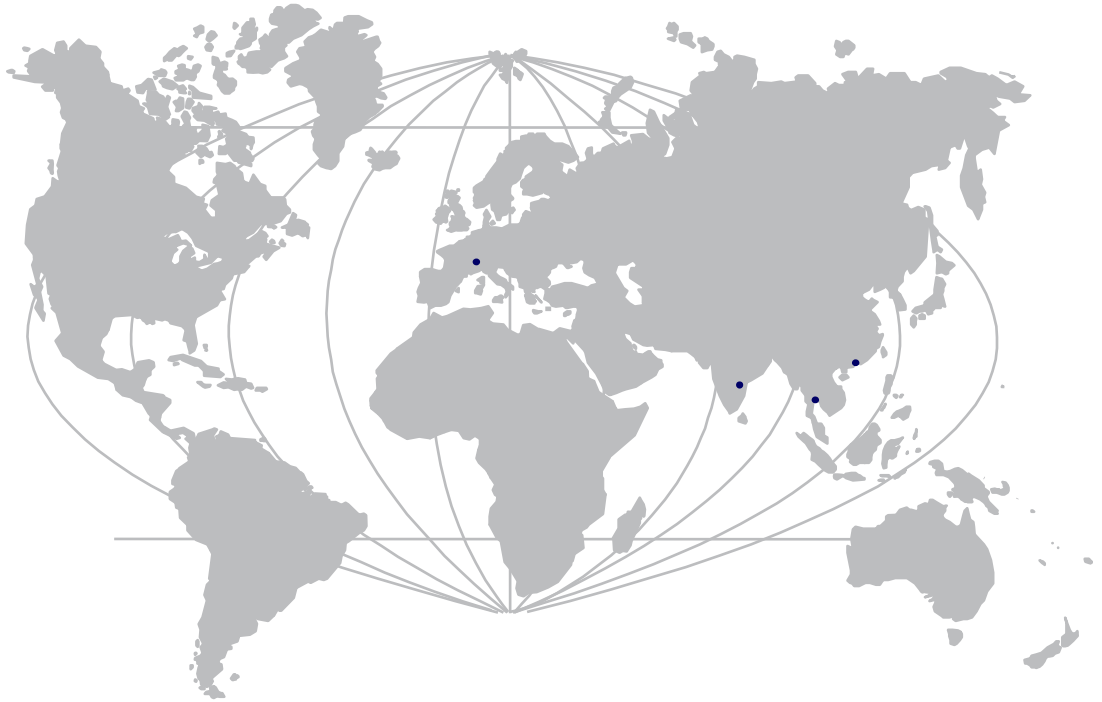
Production

R &D - Engineering

Sales

Logistics

Administration



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