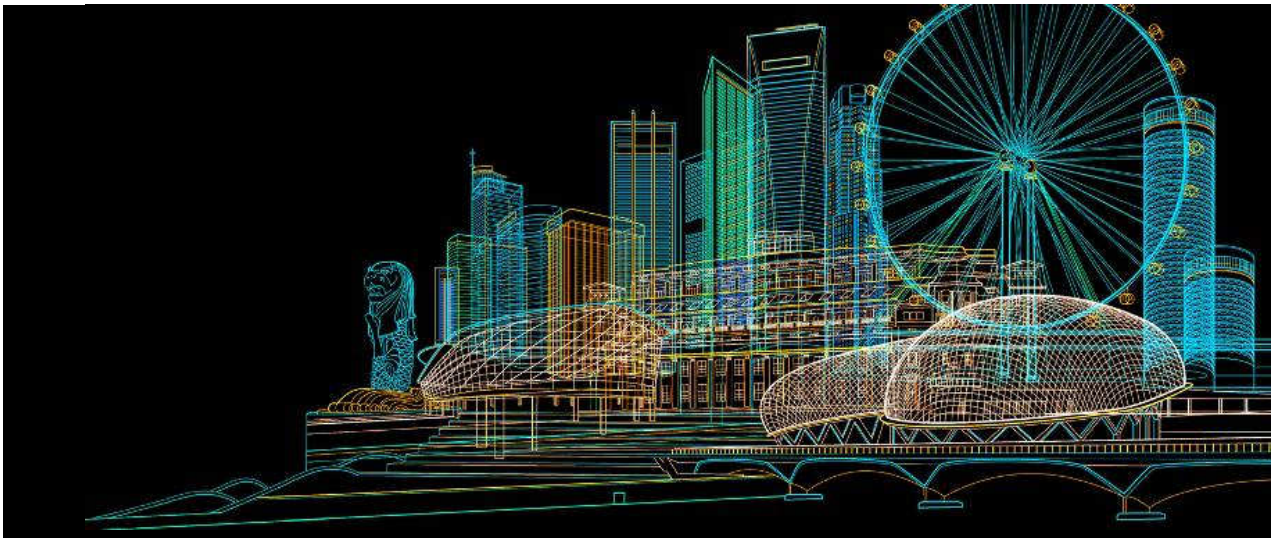


Gunnar Zank, Accelerate learning on low voltage switchboard, 19th February 2009

e*SI*
Electrical System Integration for low/medium voltage

Power and productivity for a better world™

Switchgears – really smart and intelligent ?

- Traditional Switchgears
  - Provides only limited data - Running, Stopped, Trip
  - Hardwired to DCS / ECS
  - Maintenance impact on process is high

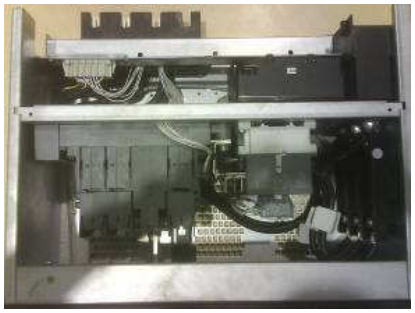


- Smart Motor Controller and Intelligent Electronic Devices (IED)
  - Improved information provides high amount of data
  - Challenge to transform data into information
  - Failure analysis still not improved

Traditional Starter vs Intelligent Starter

- Traditional Starter
  - 1 Main Isolator / Fuses
  - 2 Control fuses
  - 1+ Contactor
  - Current / Voltage transformer
  - Thermal Overload relay
  - Earth Fault relay
  - Thermistor relay
  - Am-meter
  - Counter (switching, running)
  - Pushbuttons and lamps
  - Interposing relays
  - Marshalling Cabinets

- Intelligent Starter
  - 1 Main isolator / Fuses
  - 2 Control fuses
  - 1+ Contactor
  - Current / Voltage transformer
  - 1 Intelligent Device



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Intelligent Switchgears – really smart and intelligent ?

- What about Information?



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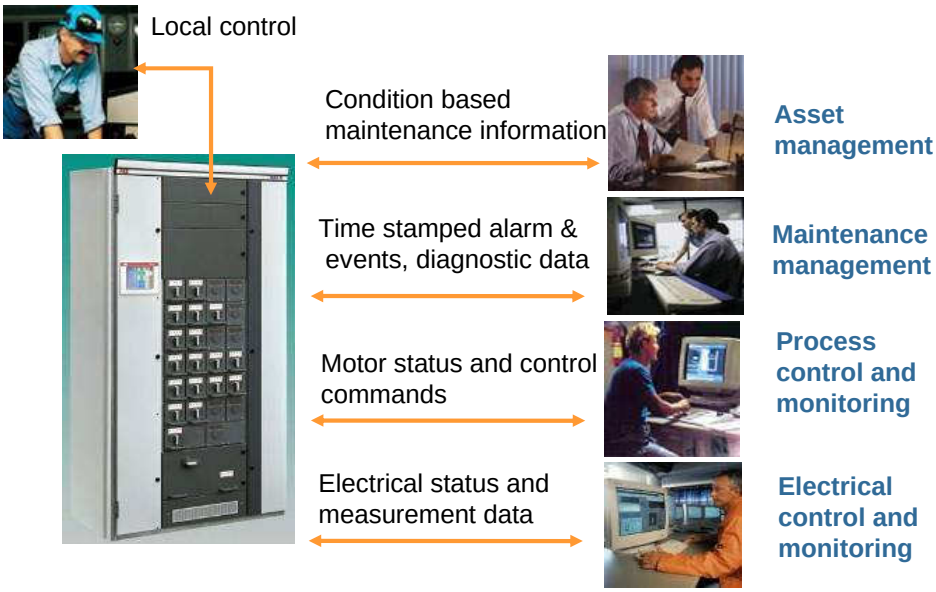
Intelligent Switchgears – really smart and intelligent ?

- Data are send Hardwired or via Fieldbus to DCS
- DCS decides which data to receive
  - Running, Stop, Trip
  - Current (sometimes Power)
- ECS information also limited to status only

- Intelligent devices can provide much more:
  - Detailed Alarms and Trips
  - Maintenance Counter (Running hrs, Switching cycles)
  - Current (3phase), Voltages, Power
  - Earth Fault Current
  - Power Factor
  - and and and and . . .

Intelligent Switchgears – really smart and intelligent ?

- Who shall handle all that?



Intelligent Switchgears – Today's Challenges

- Too many communication protocols (e.g. Modbus, Profibus, SPA, LON, IEC61850) and different engineering tools are used.
- Demand for electrical information in DCS
  (why is the motor not running).
- Demand for process information in ECS
  (what is the energy consumption of the plant).
- But: Different requirements between DCS & ECS must be managed with stable and separate non-intrusive networks.
- Requirement for quicker fault finding by simplified navigation to the required information from any equipment with web browser and remote access.
- Provide relevant information to operators for pro-active decisions and maintenance to keep higher plant uptime.

Running the process plant with lowest cost of ownership

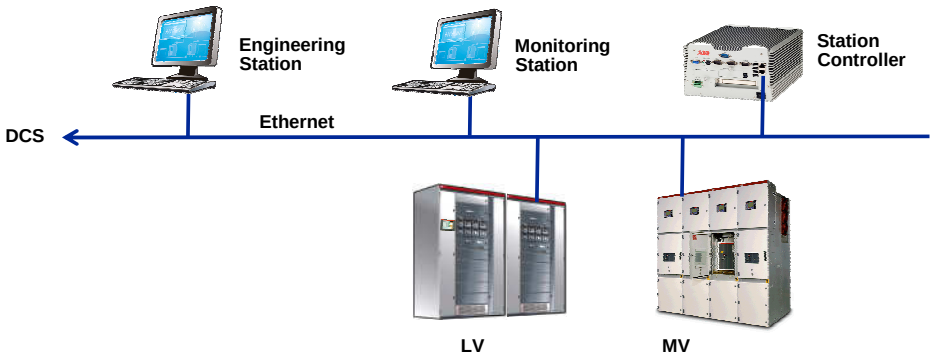
The Key to Success

- True Intelligent Electrical LV/MV Switchgear
  - Ensures a safe environment
  - Delivers information not data to the person who needs it
  - Provides failure analysis – fast and reliable
  - Enables predictive and pro-active maintenance to eliminate process impact
- Key is to select appropriate:
  - IED (intelligent electronic devices for LV and MV)
  - MCC (intelligent LV switchgear)
  - Solution (single tool concept)

e*SI* – Electrical System Integration

- Typical industrial plants are using distributed substations or power houses.
- Inside, information from different switchgears is available.
- Demand in information also required from remote.

- ABB solution is
  - e*SI*



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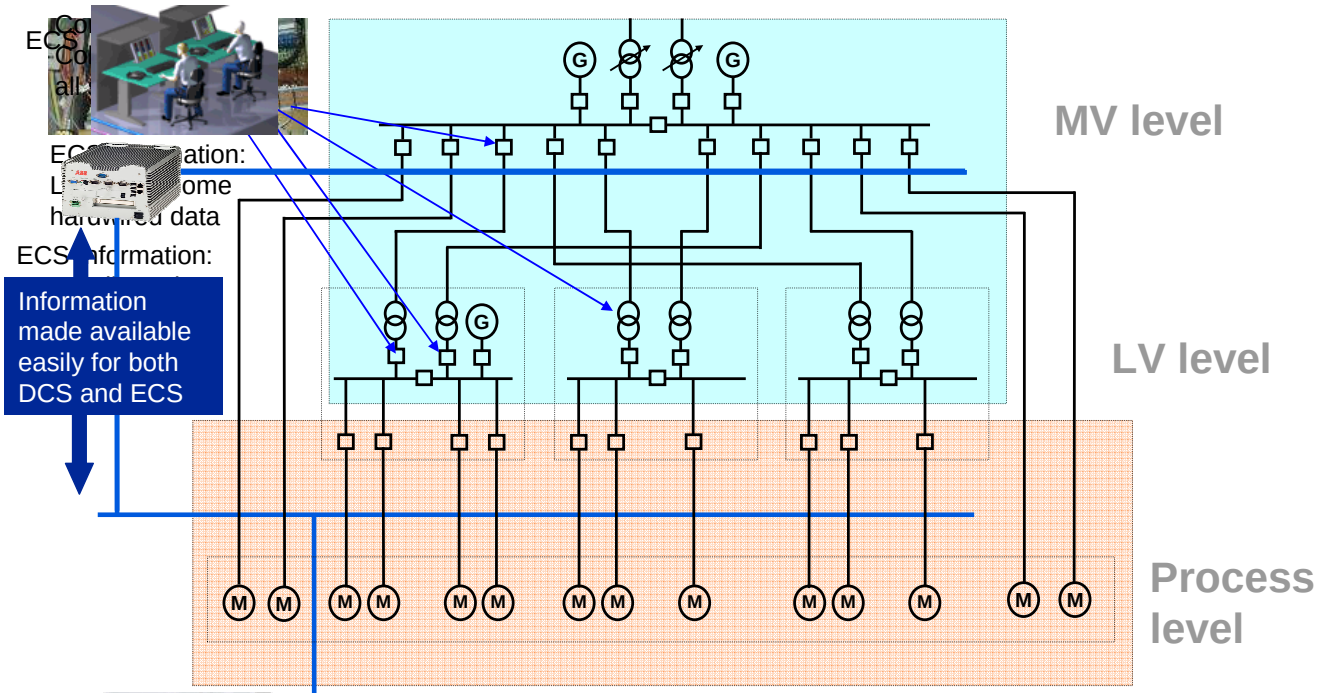
e*SI* – Electrical System Integration



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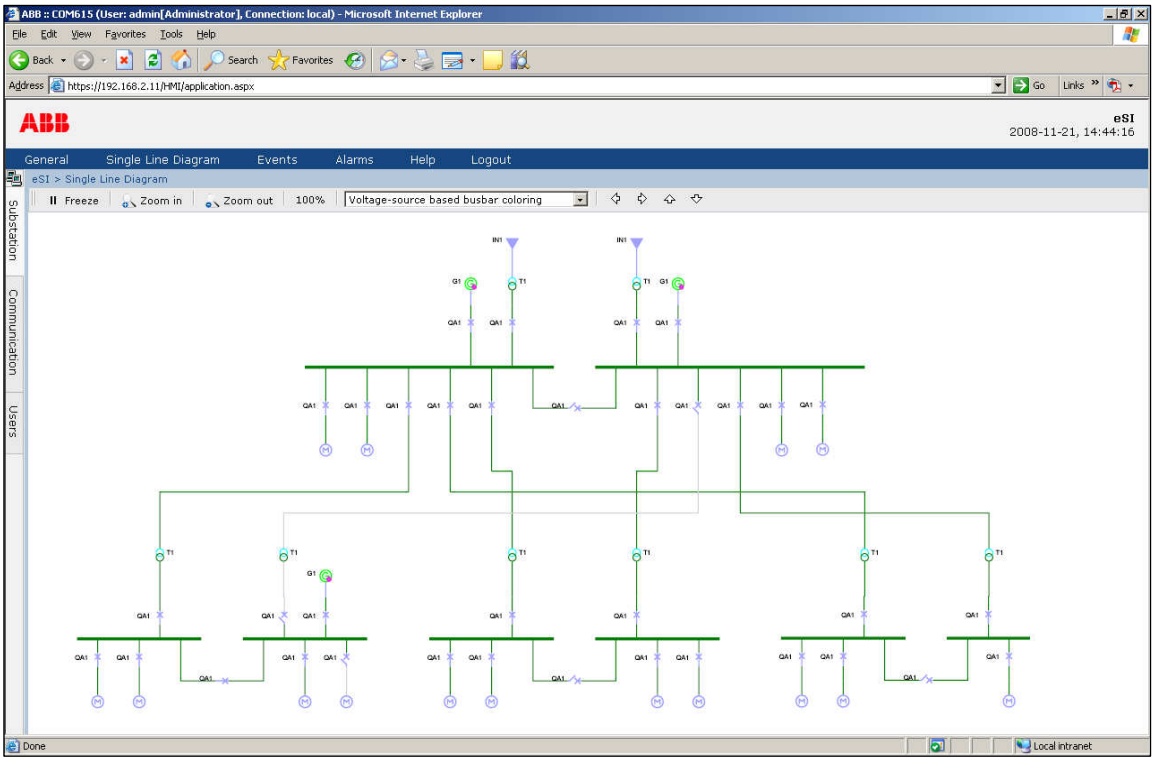
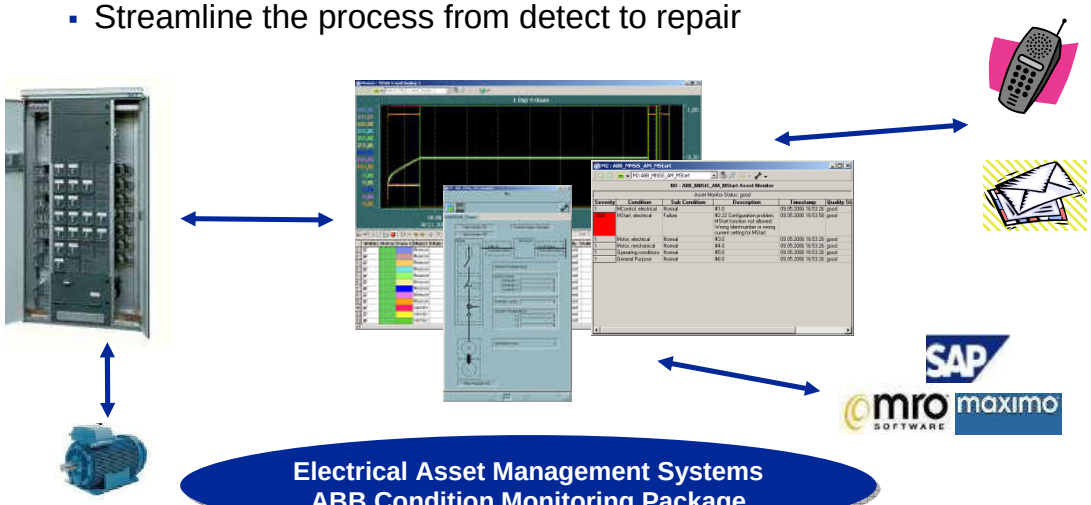
e*SI* HMI – an easy to use Web Interface

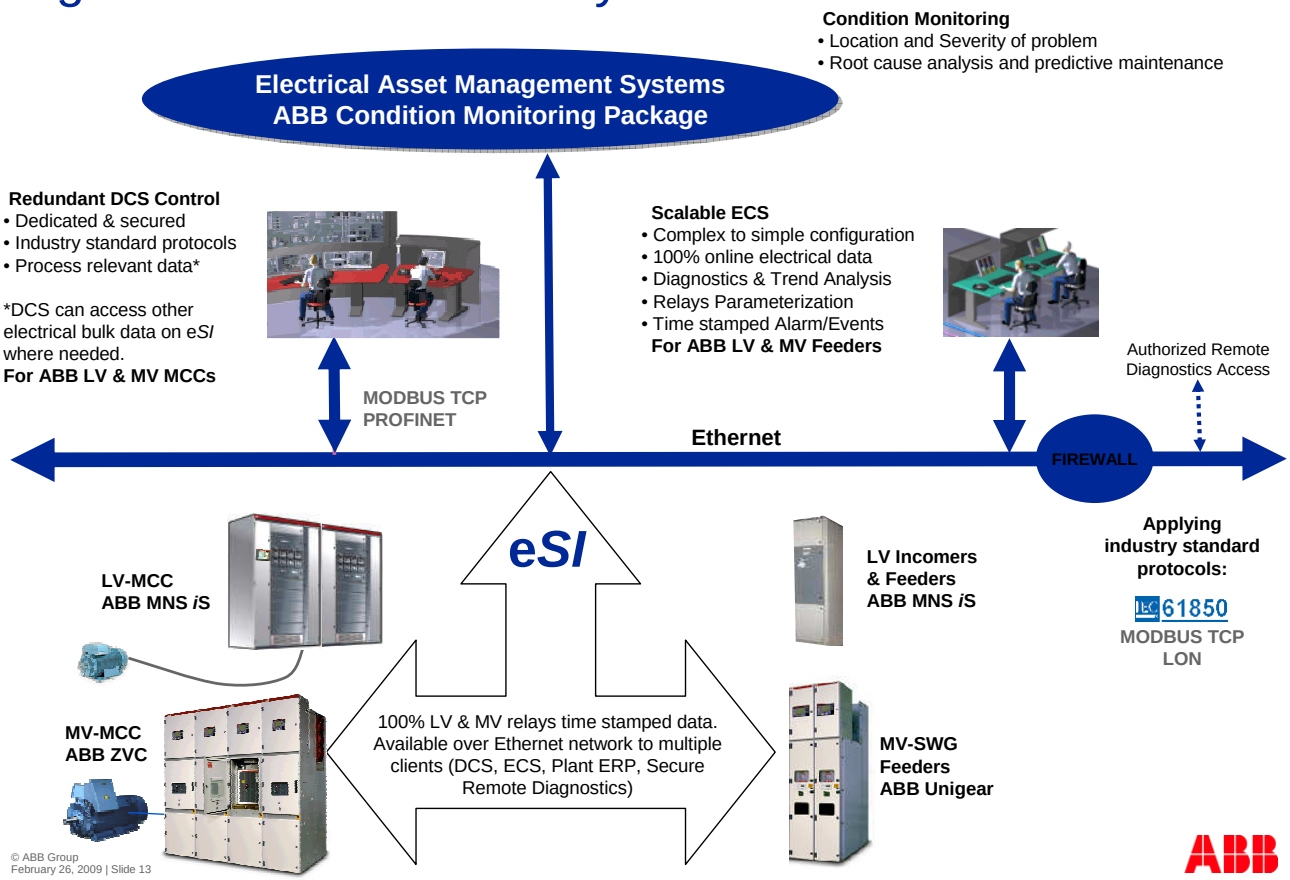


Condition Monitoring - Predictive Maintenance

- Collect data and convert it into information
- Predict device condition based on usage and consumption
- Provide maintenance information before it is too late
- Streamline the process from detect to repair



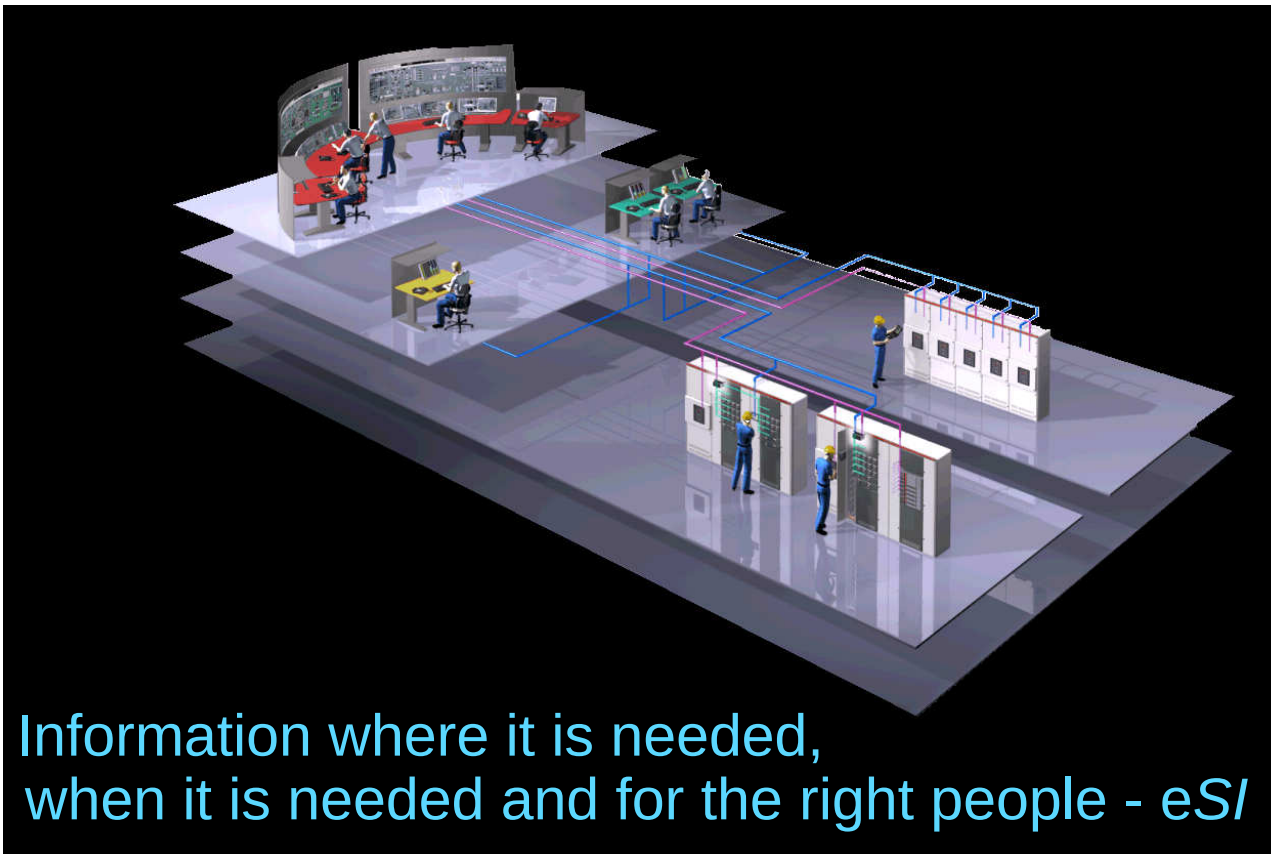
Higher Process Availability



eSI - Customer Value Add

Challenges	What eSI offers	Benefit
Handling communication protocols with just 1 engineering tool.	Common platform COM600 using OPC based communication MV-LV modeled accordingly to IEC 61850 standard	Easy hassle-free zero-engineering integration of automated electrical equipment
Handling and manage different requirements between DCS & ECS [illegible] networks.	Time stamped alarm & events, diagnostic data [illegible] commands (if applicable)	Ensure [illegible] speed Processes can be streamlined (electrical and instrumentation teams)
Simplified navigation to the required information from equipment for end user with web browser and remote access.	Condition based maintenance information, process information and measurement data	Network security Asset management & Predictive plant maintenance Remote accessibility for quicker fault finding and fixing

eSI - Running the process plant with lowest cost of ownership



Information where it is needed,
when it is needed and for the right people - e*SI*

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for a better world™