Johannes Björkgren

A modular and future proof HSI concept

Rio de Janeiro
April 23-25, 2006

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MicroSCADA Pro

Substation Automation and SCADA/DMS

- State-of-the-art monitoring and control system for transmission and distribution applications
- MicroSCADA Pro – product family
  - Control System SYS 600
  - Communication Gateway COM 500
  - Distribution Management System DMS 600

ABB ensures grid and network reliability through innovation, experience and commitment

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Application Areas

- Electrical applications in:
  - Utilities
    - SA and SCADA/DMS
  - Industry
    - SA and Industrial SCADA
  - Railway
    - SCADA/DMS
- Non-electrical applications in:
  - District heating
  - Water & waste water
  - Oil and gas

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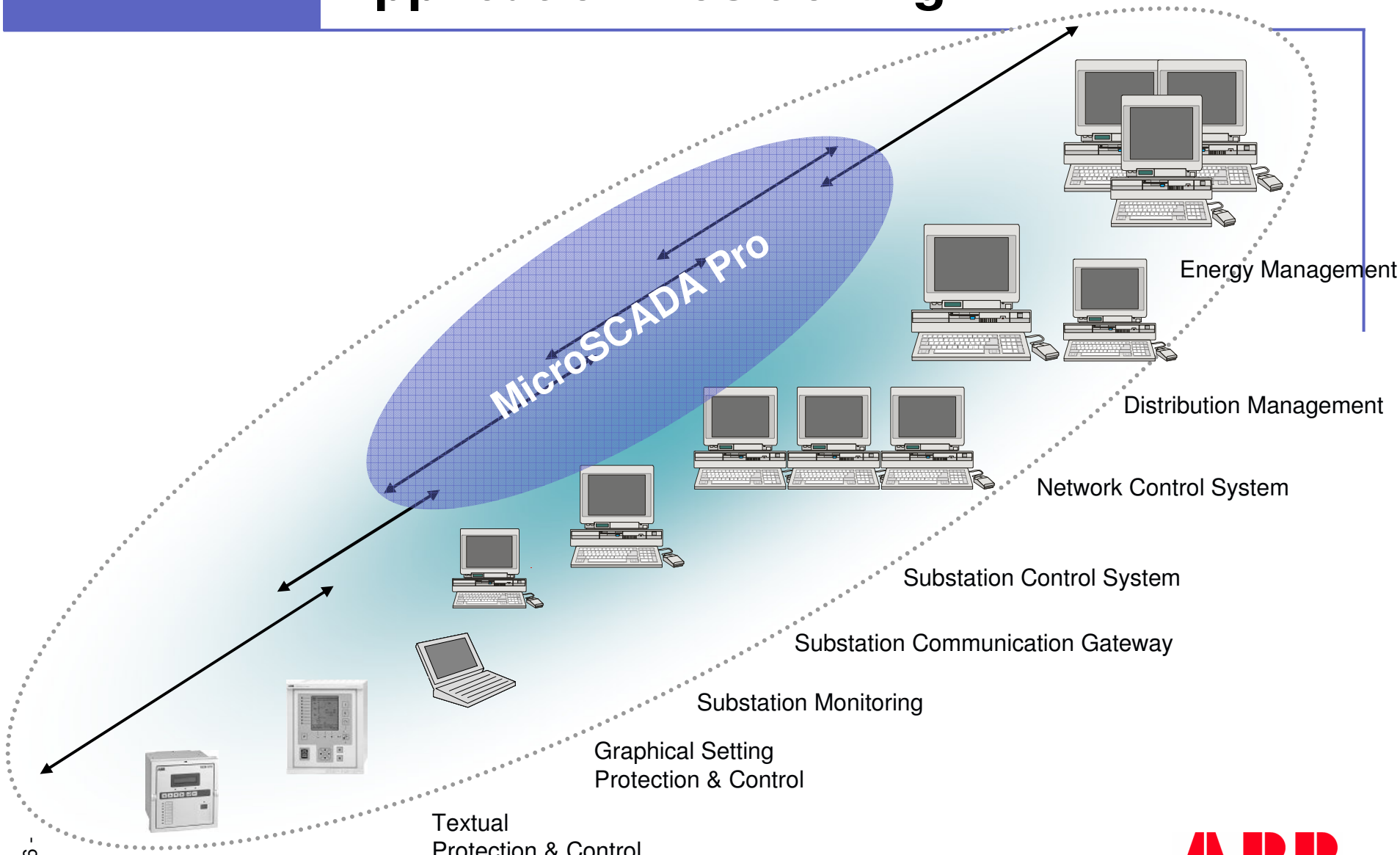
Application Positioning



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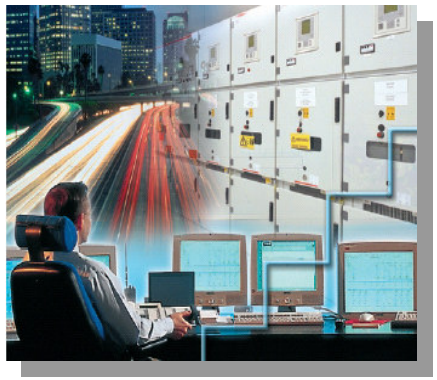
Substation Automation

- For automation of both transmission and distribution substations
- Scalable
  - From compact single system to distributed Hot Stand-by system
- Open communication
  - By standard and de-facto standard communication protocols including IEC 61850
  - Integrated gateway functionality towards SCADA level
  - OPC connectivity, to e.g. process control systems
- Tight P&C IED integration
  - Setting tools
  - Disturbance Collector tool
  - Power Quality tools



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IEC 61850 compliant

MicroSCADA Pro is compliant with the IEC 61850 standard for substation automation.
This means that it can operate together with IEC 61850 compliant IEDs, tools and systems, which simplifies system engineering.

It also features both OPC server and client interfaces to enable easy integration with market and application specific systems and devices.

With IEC 61850 support, MicroSCADA Pro creates seamless communication and connectivity opportunities for its users.

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MicroSCADA Pro engineering

All included for engineering

MicroSCADA Pro supports ABB's unique connectivity package concept, which simplifies system engineering and reduces the risks of errors in system integration. The connectivity packages contain a complete description of the IEDs, consisting of data signals, parameters, addresses and IED documentation.

MicroSCADA Pro automatically configures the signal data based on the information provided by the connectivity package, which significantly reduces engineering time.

The MicroSCADA Pro software package contains complete engineering tool set, connectivity packages and libraries including symbols and control dialogs. The copy and paste functions enable, for instance, easy system extension. Thus MicroSCADA Pro also offers a ready-to-use engineering environment for system integrators.

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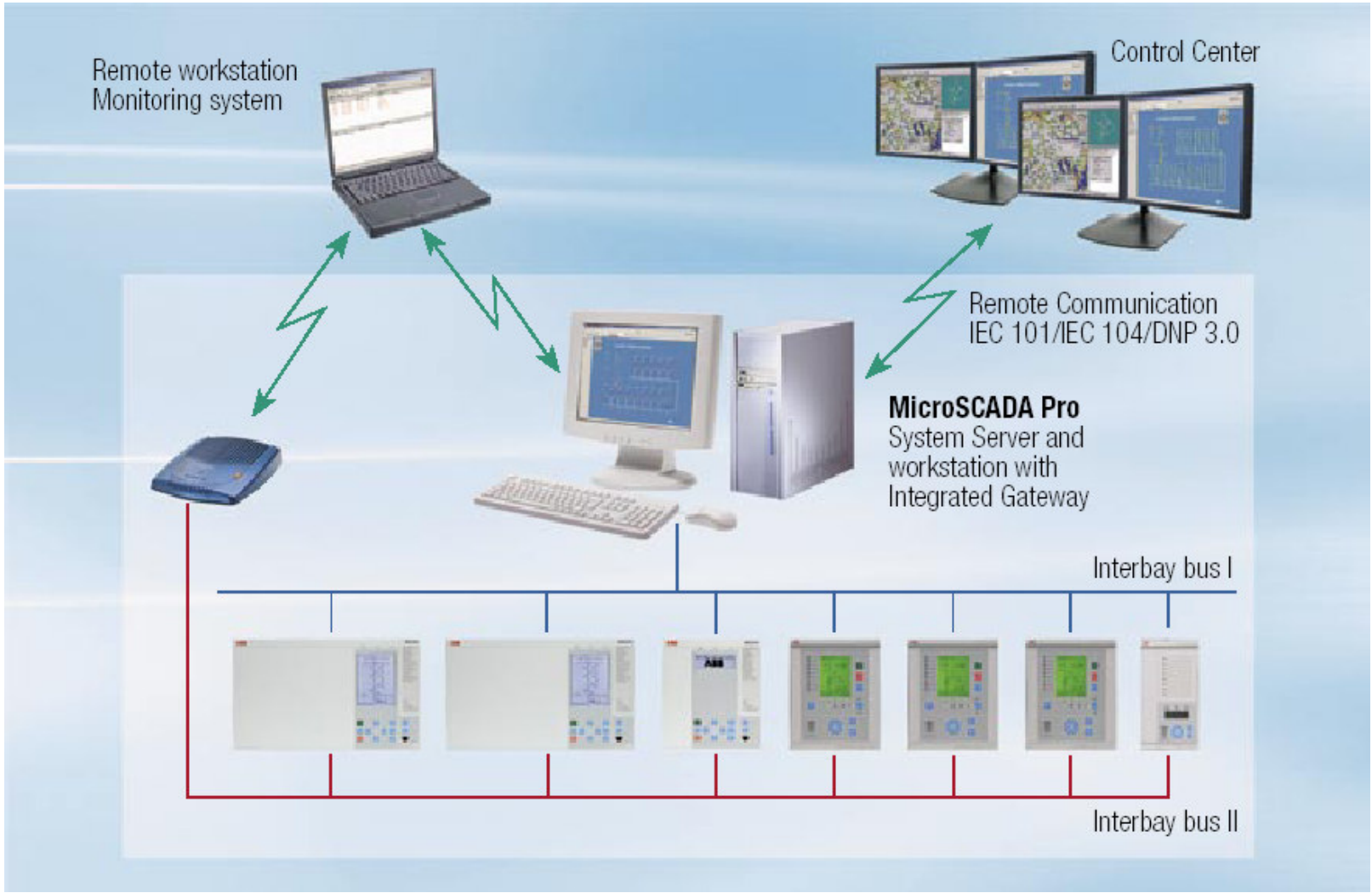
Substation Automation System



Integrated Substation Control and Gateway. Remote workstation
for monitoring and service connections.

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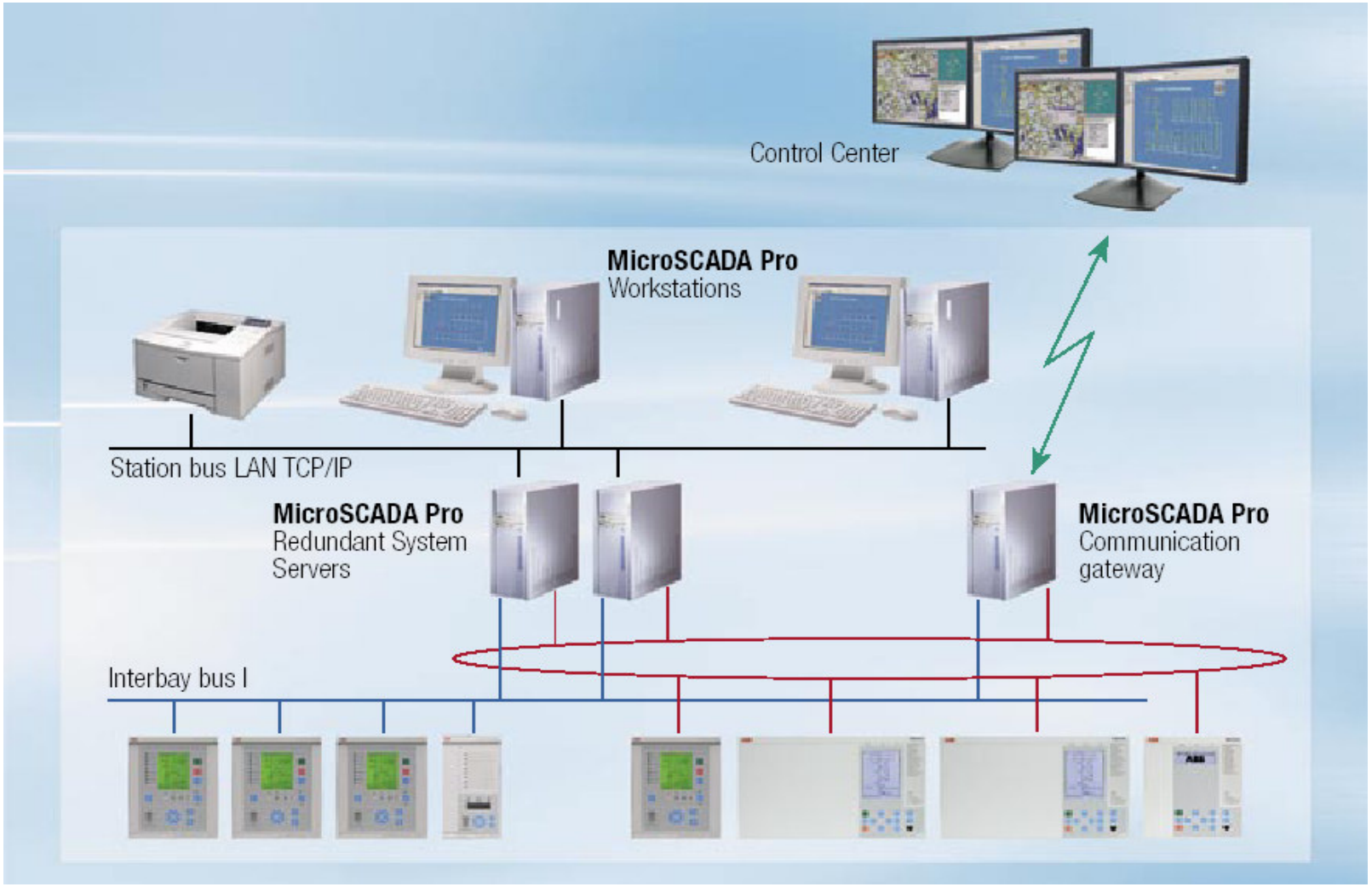
Substation Automation System



Combined IEC 61850 and LON based system with redundant system servers, two workstations and separate gateway.

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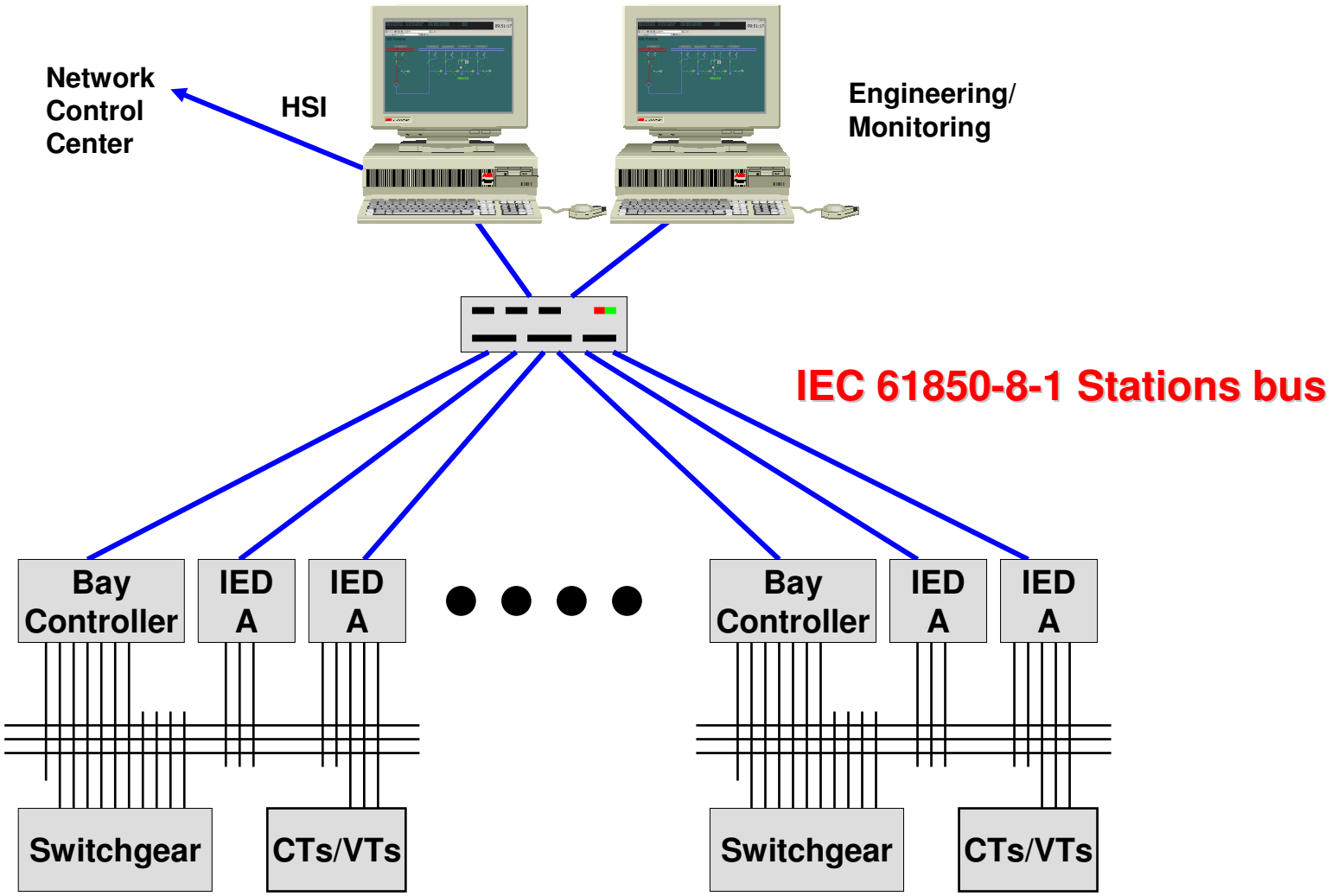
Station bus and conventional process



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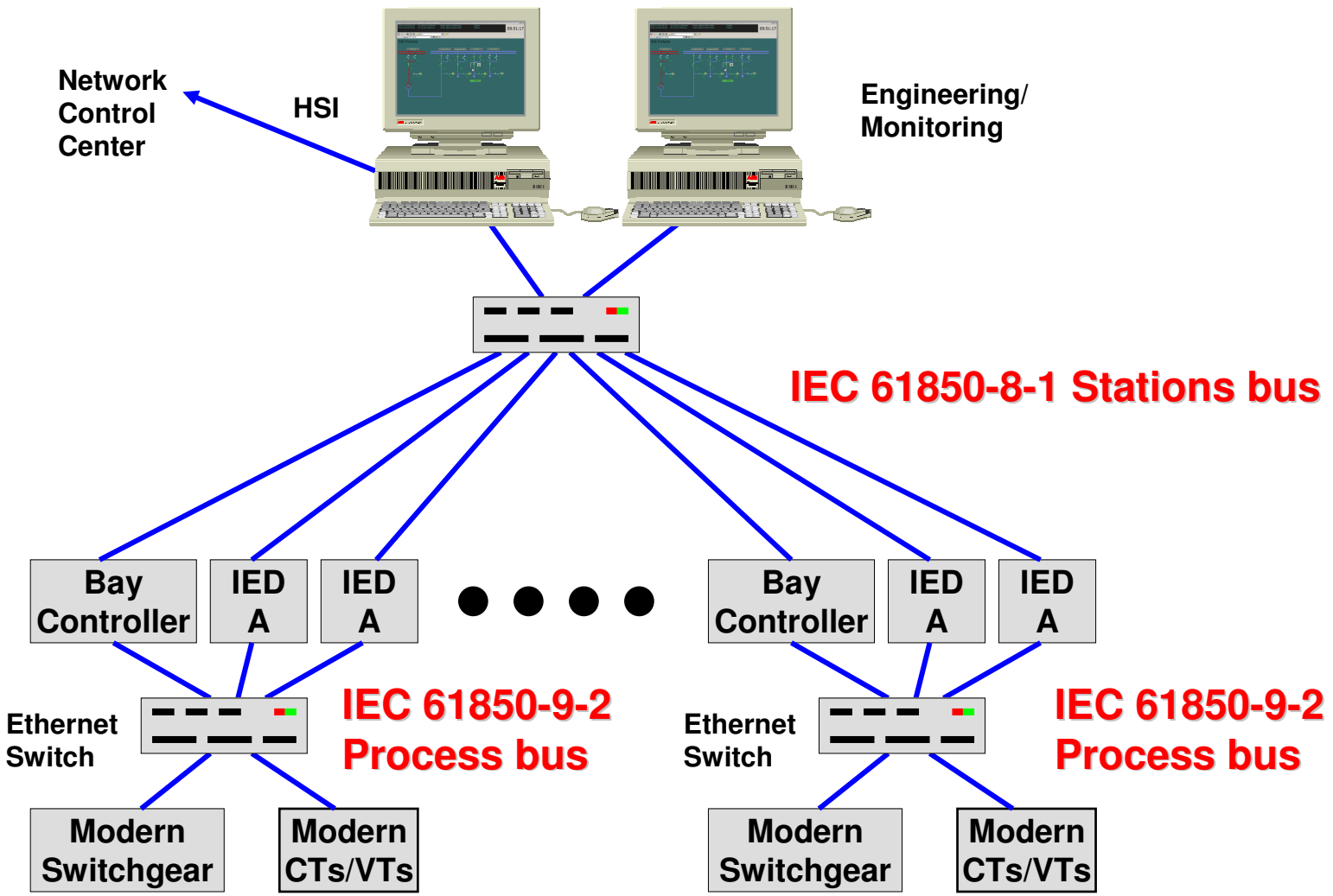
Separate station and process busses



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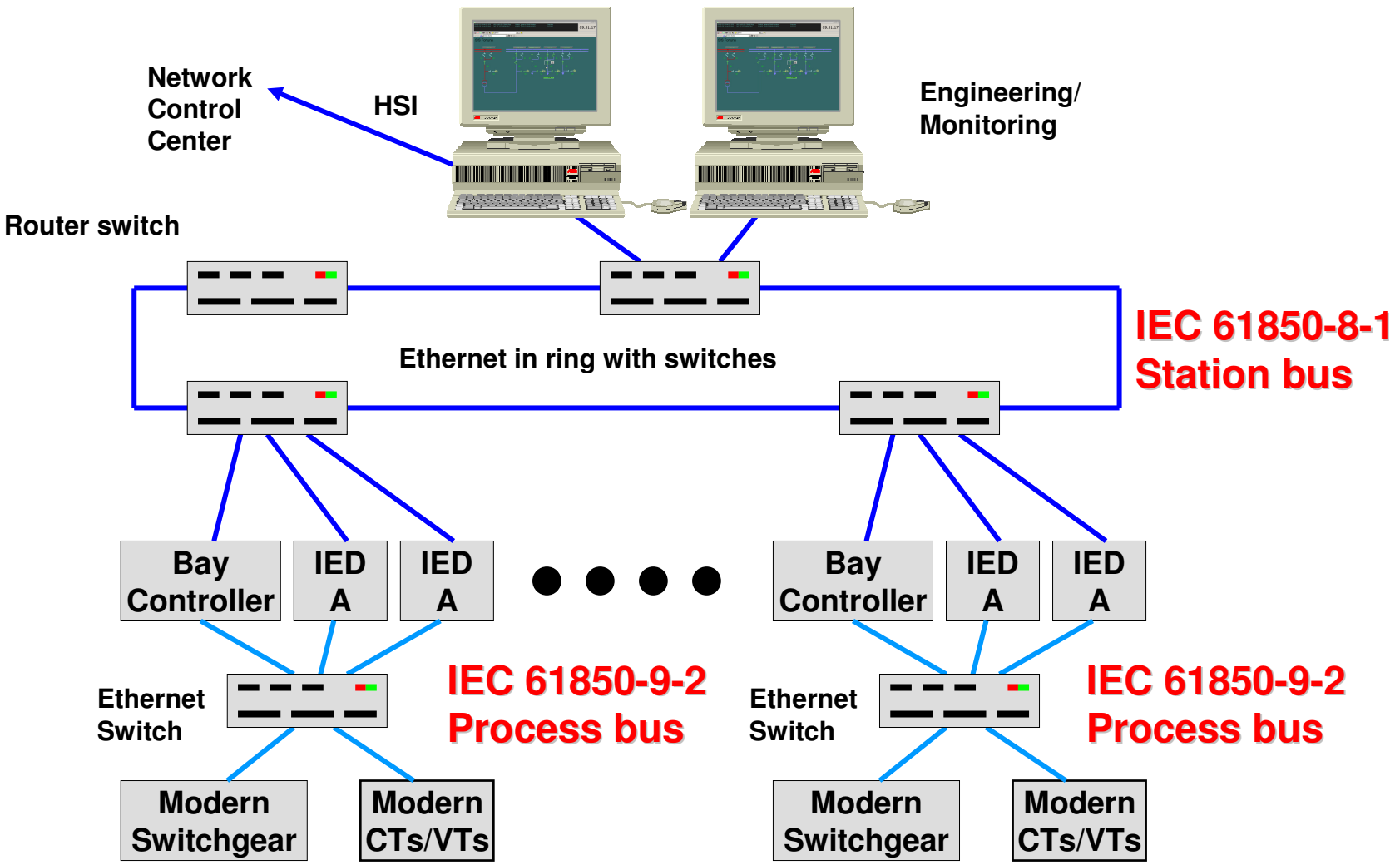
Station bus in ring



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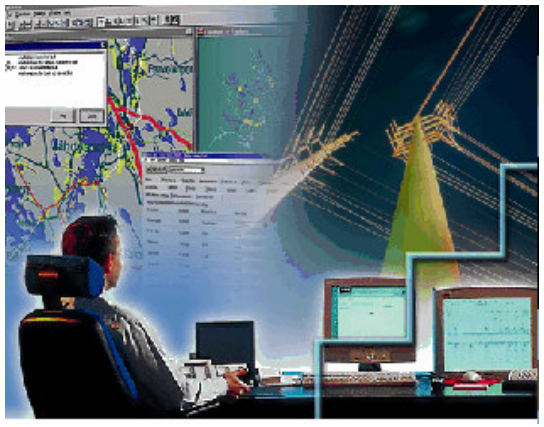
Network Control and DMS

- For distribution networks in utilities and industries
- Scalable
  - From standard SCADA to full-fledged Distribution Management
- Superior process graphics
  - From single line diagram to world map picture (zoom, panning and de-cluttering)
  - Busbar and network colouring
  - Tight P&C IED integration
- Safe and quick network restoration
  - Advanced and instant fault location and isolation
  - Automatic power restoration



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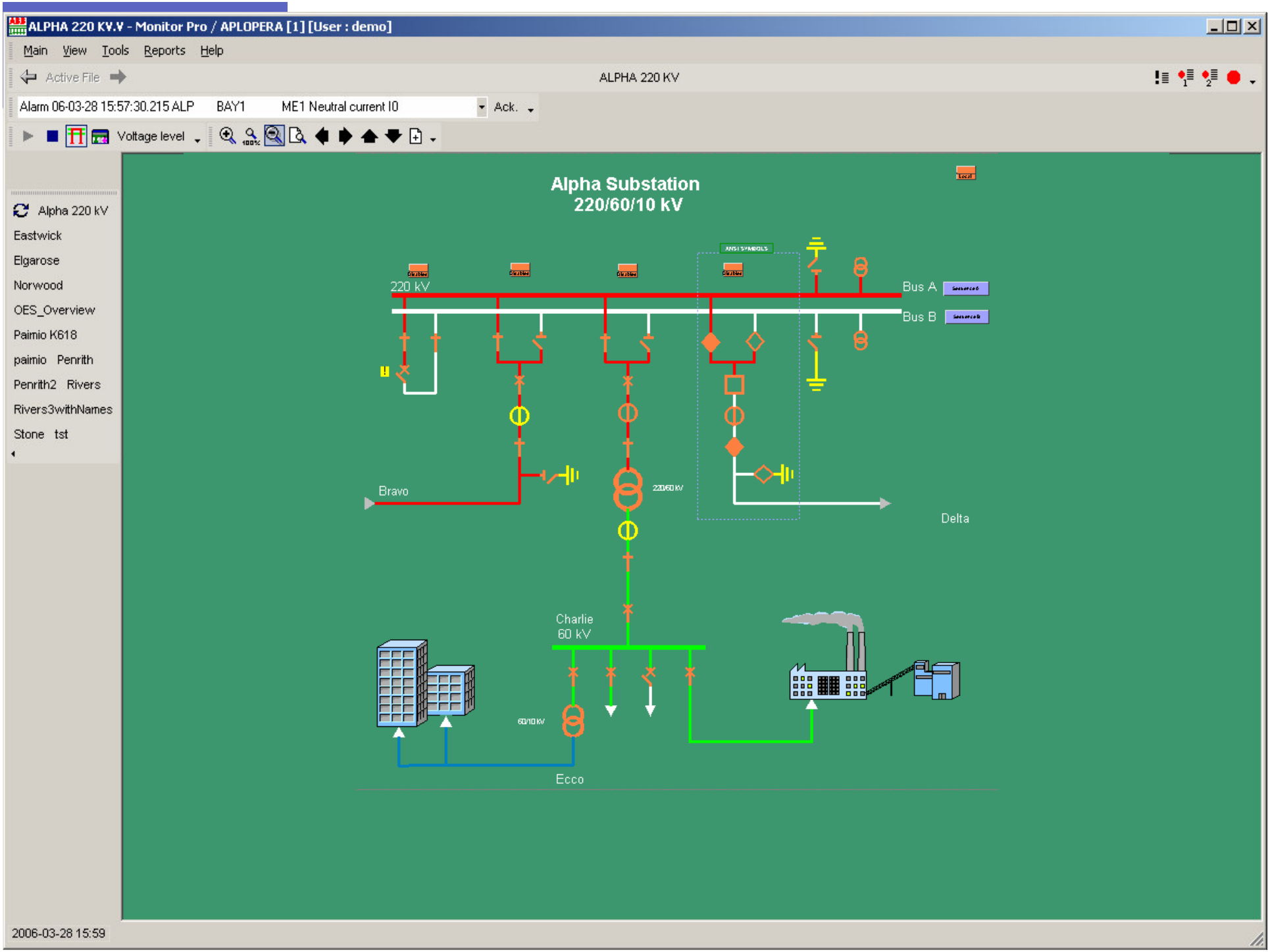
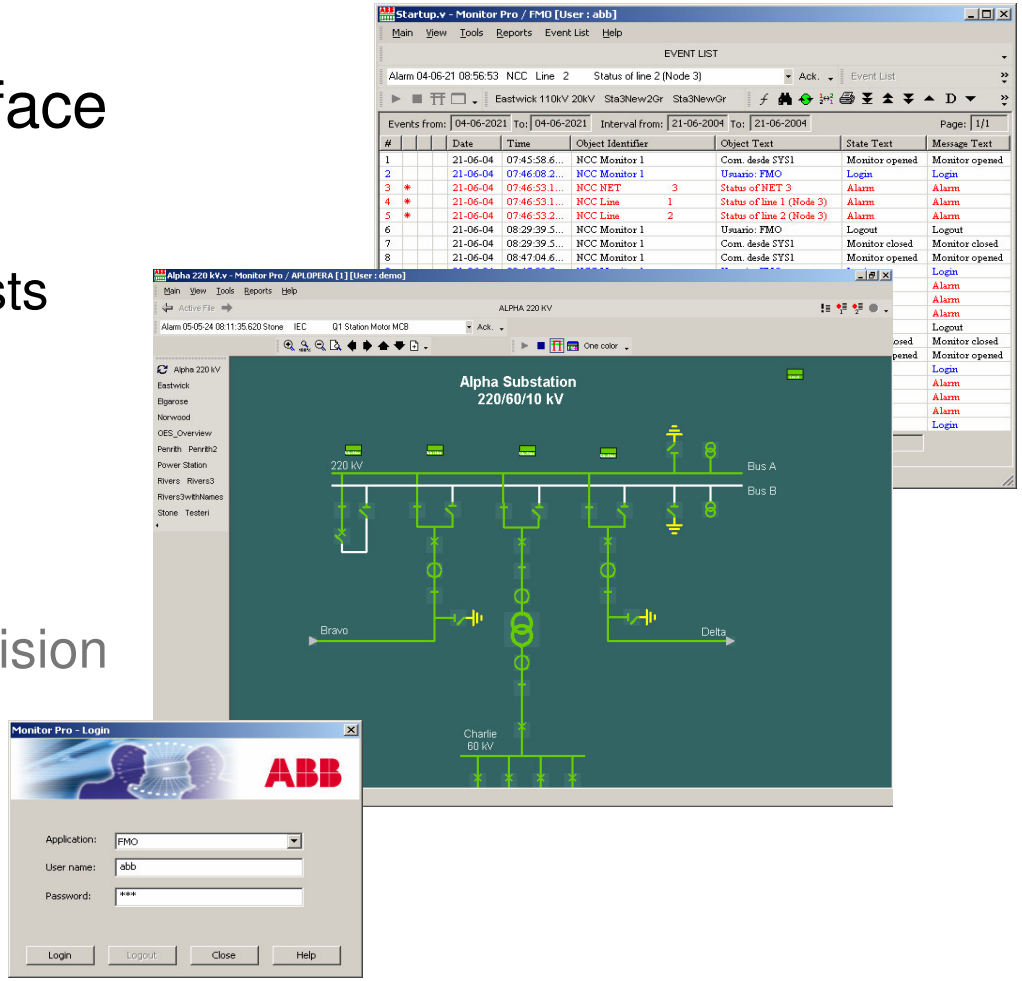

ALPHA 220 KV.V - Monitor Pro / APLOPERA [1] [User : demo]
Main View Tools Reports Help
Active File
ALPHA 220 KV
Alarm 06-03-28 15:57:30.215 ALP BAY1 ME1 Neutral current I0
Ack.
Voltage level
Alpha 220 kV
Eastwick
Elgarose
Norwood
OES_Overview
Paimio K618
paimio Penrith
Penrith2 Rivers
Rivers3withNames
Stone tst
Alpha Substation
220/60/10 kV
220 kV
Bus A
Bus B
Bravo
Delta
Charlie
60 kV
Ecco
2006-03-28 15:59

Overview

- Superior User Interface
  - Process Displays
  - Alarm and Event Lists
  - Blocking List
  - Trends
  - Reports
  - System Self Supervision



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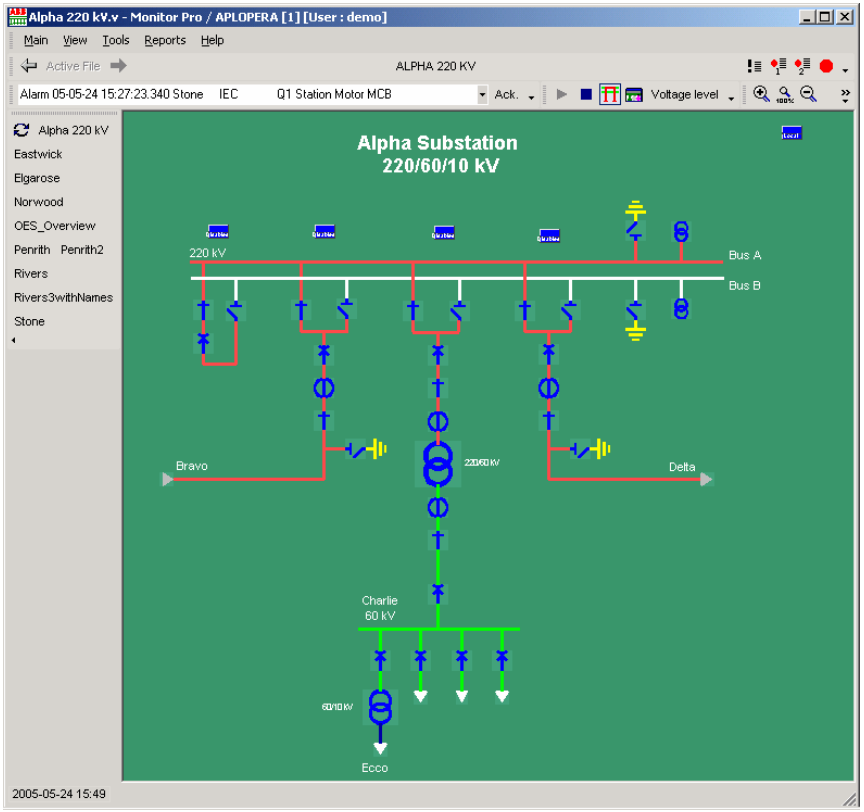
Process displays

- Single line diagrams
  - Indications
  - Control
  - Dynamic coloring
- Relay Tools
- Zoom, Pan, De-clutter
- Context menus
- Tool-tips
- Works together with LIB pictures



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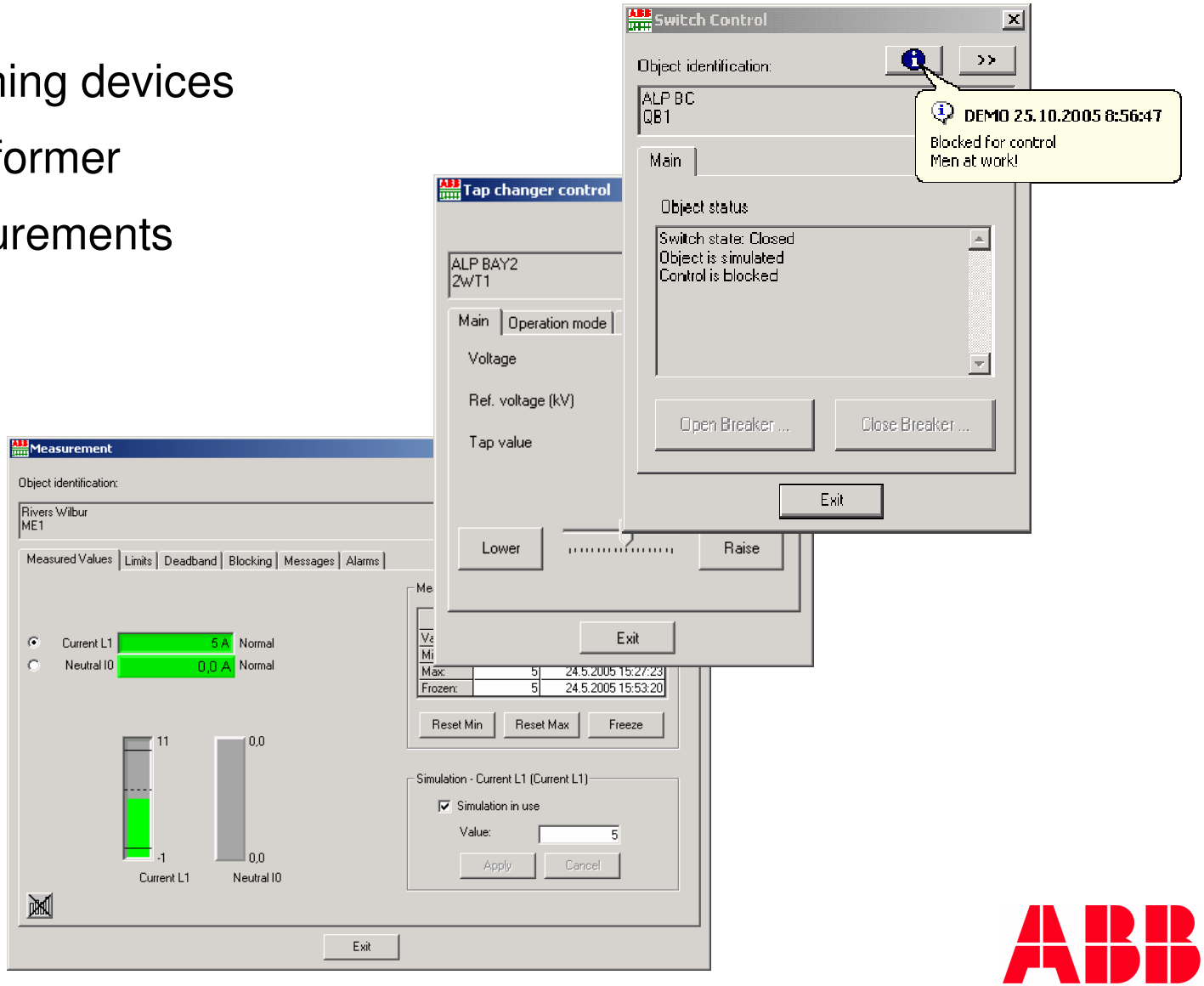
Control dialogues

- Switching devices
- Transformer
- Measurements



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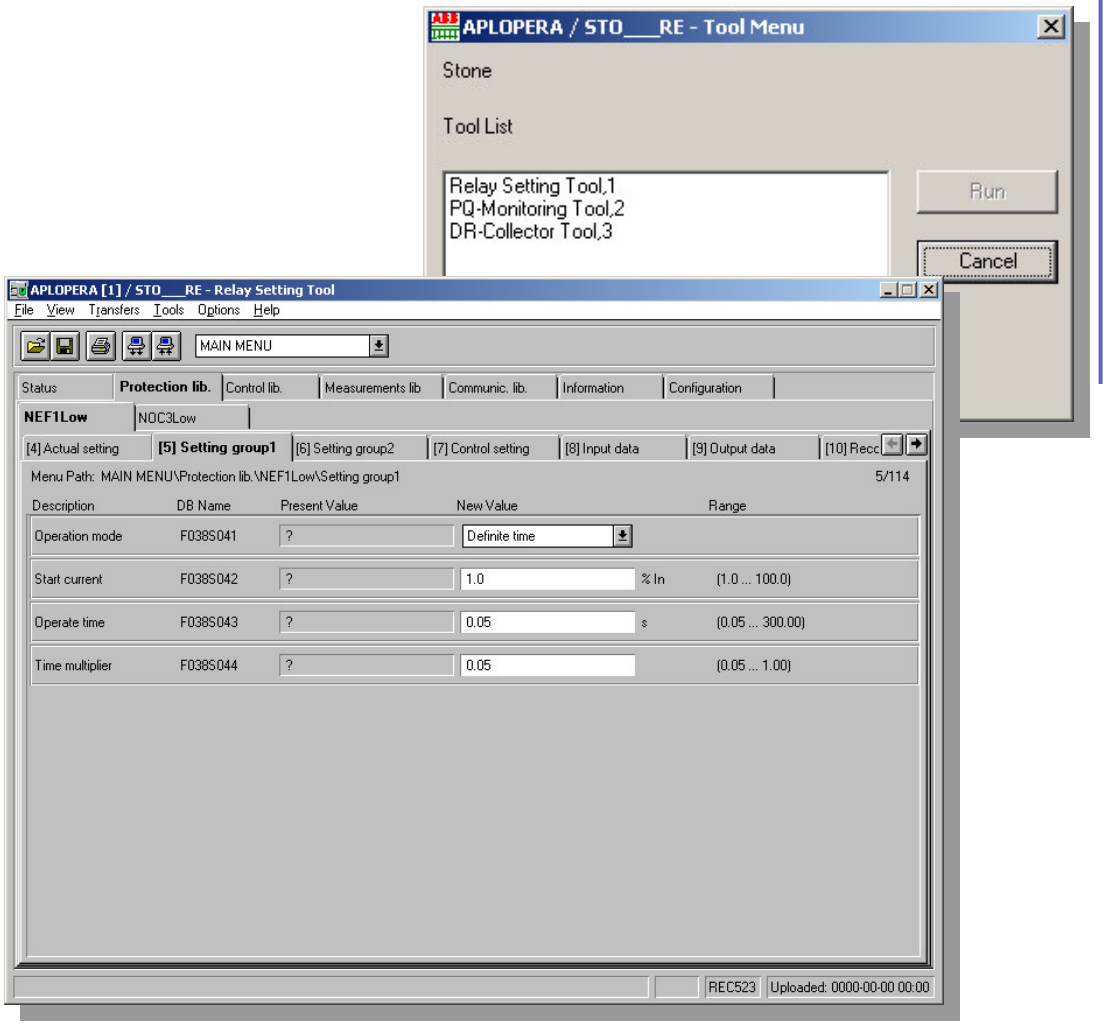
Control dialogues

- Relay Tools
  - Relay Setting Tool
  - PQ Power Quality Monitoring Tool
  - DR-Collector Tool



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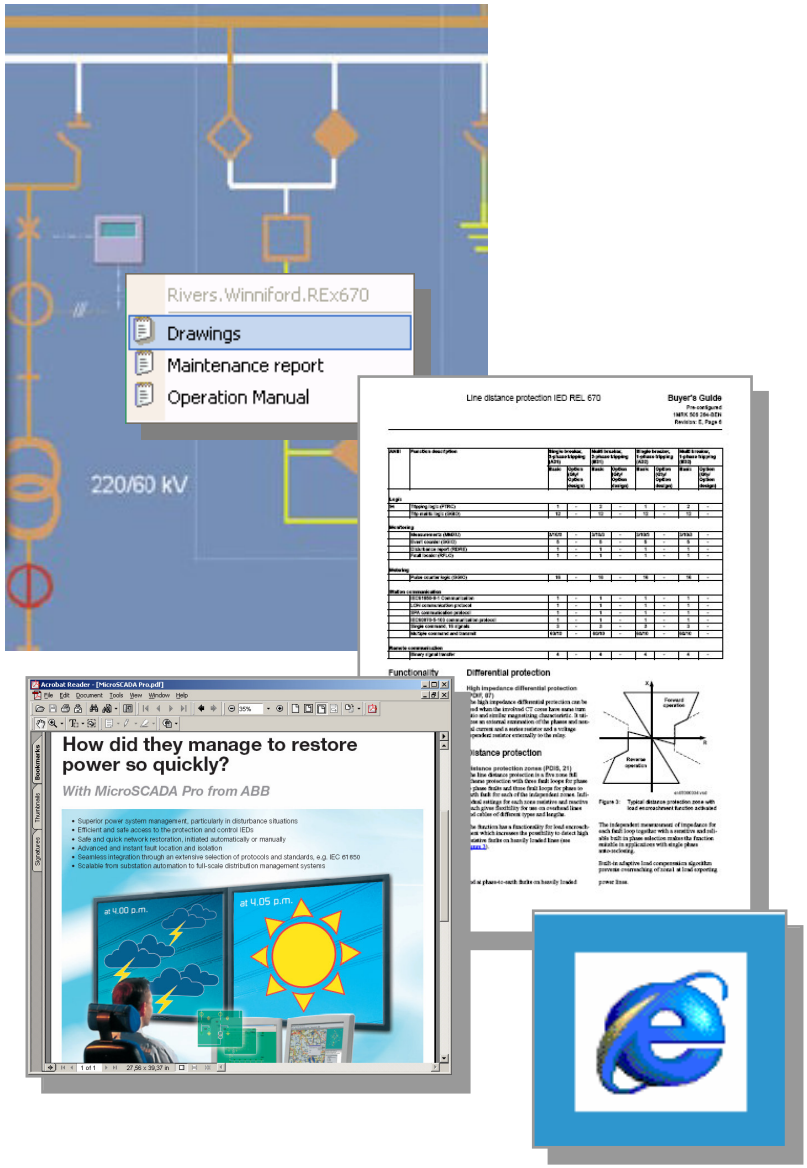
Information integration



- Tool-tips
- Context menus
- Fast and easy navigation to information:
  - Drawings
  - Documents
    - Manuals
    - Maintenance reports
  - Internet links

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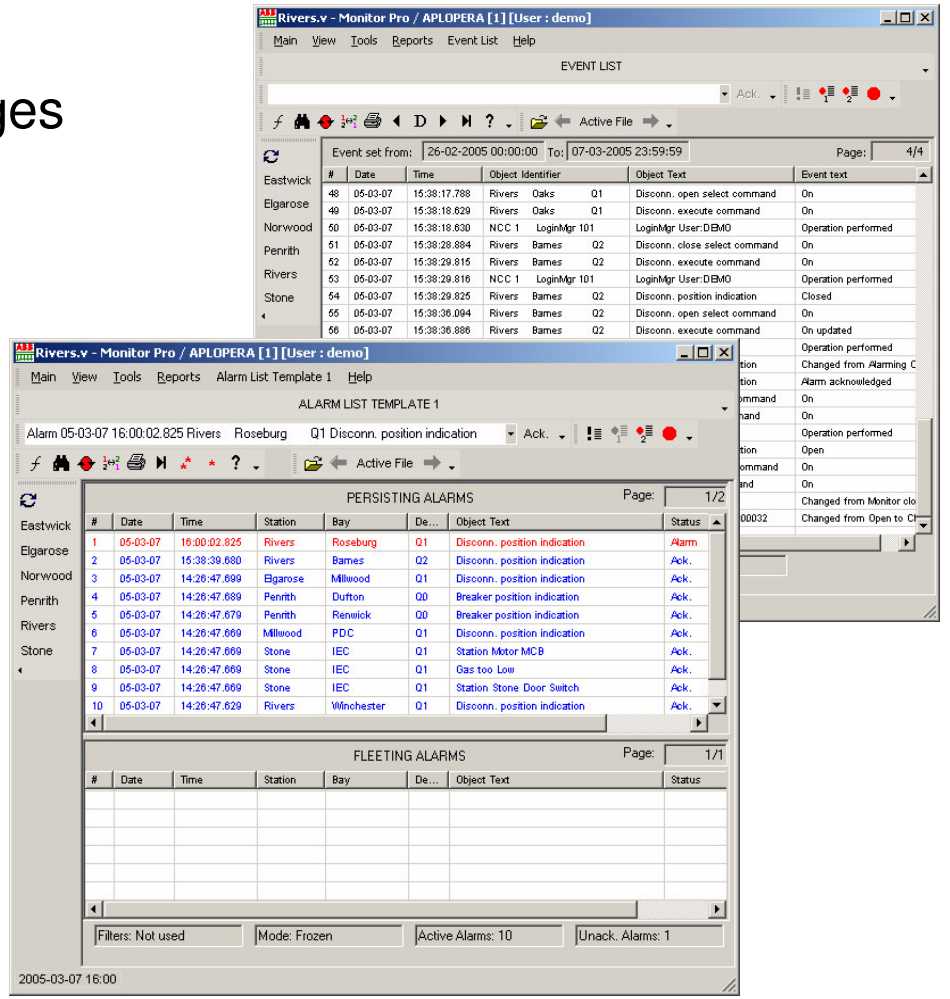
Event / Alarm list

- All texts in several languages (also object text)
- Layout settings
- Find
- Filtering
- Programmable coloring
- Copy/Paste
- Comments in Event list



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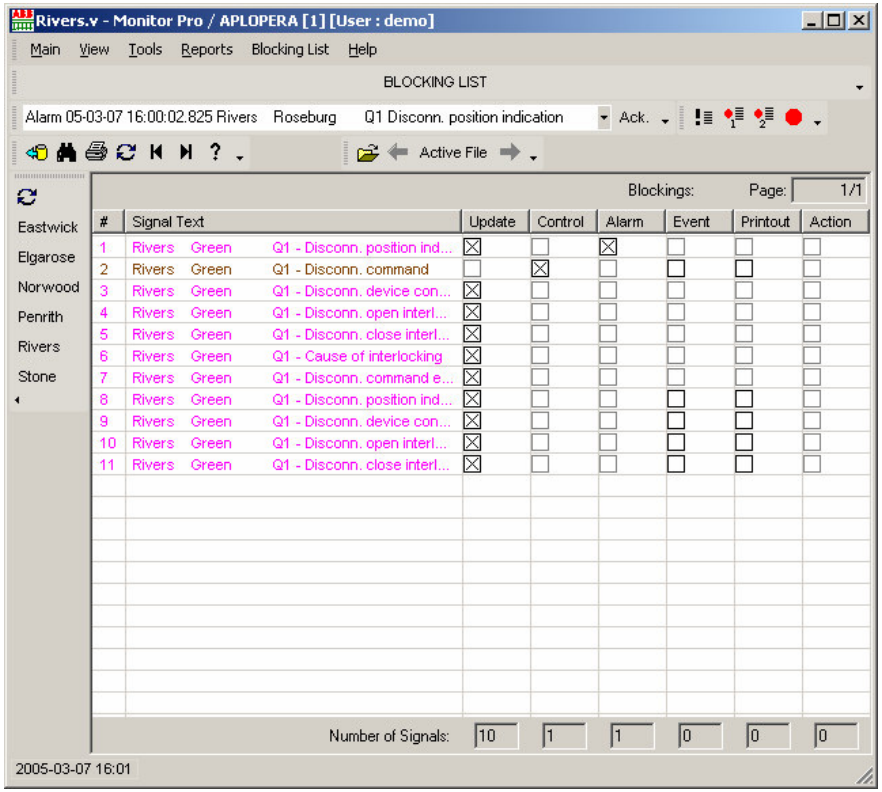
Blocking list

- Object texts in several languages
- Find
- Copy/Paste



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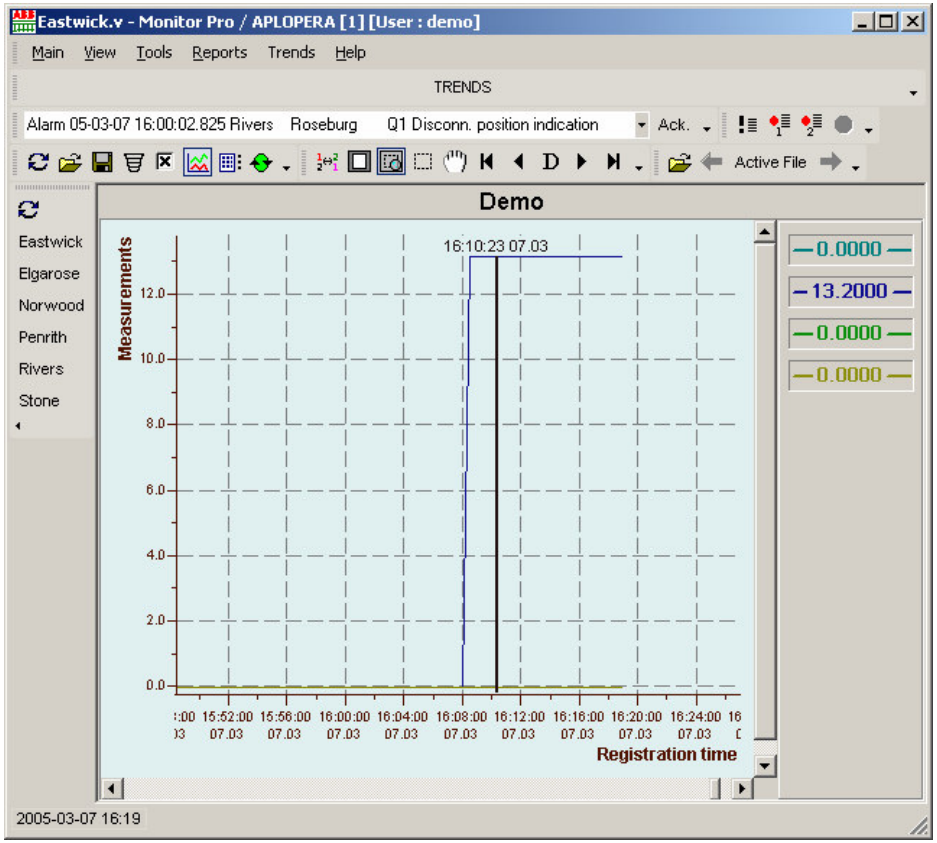
Trend displays

- Zoom/Pan
- Copy/Paste
- Export .csv



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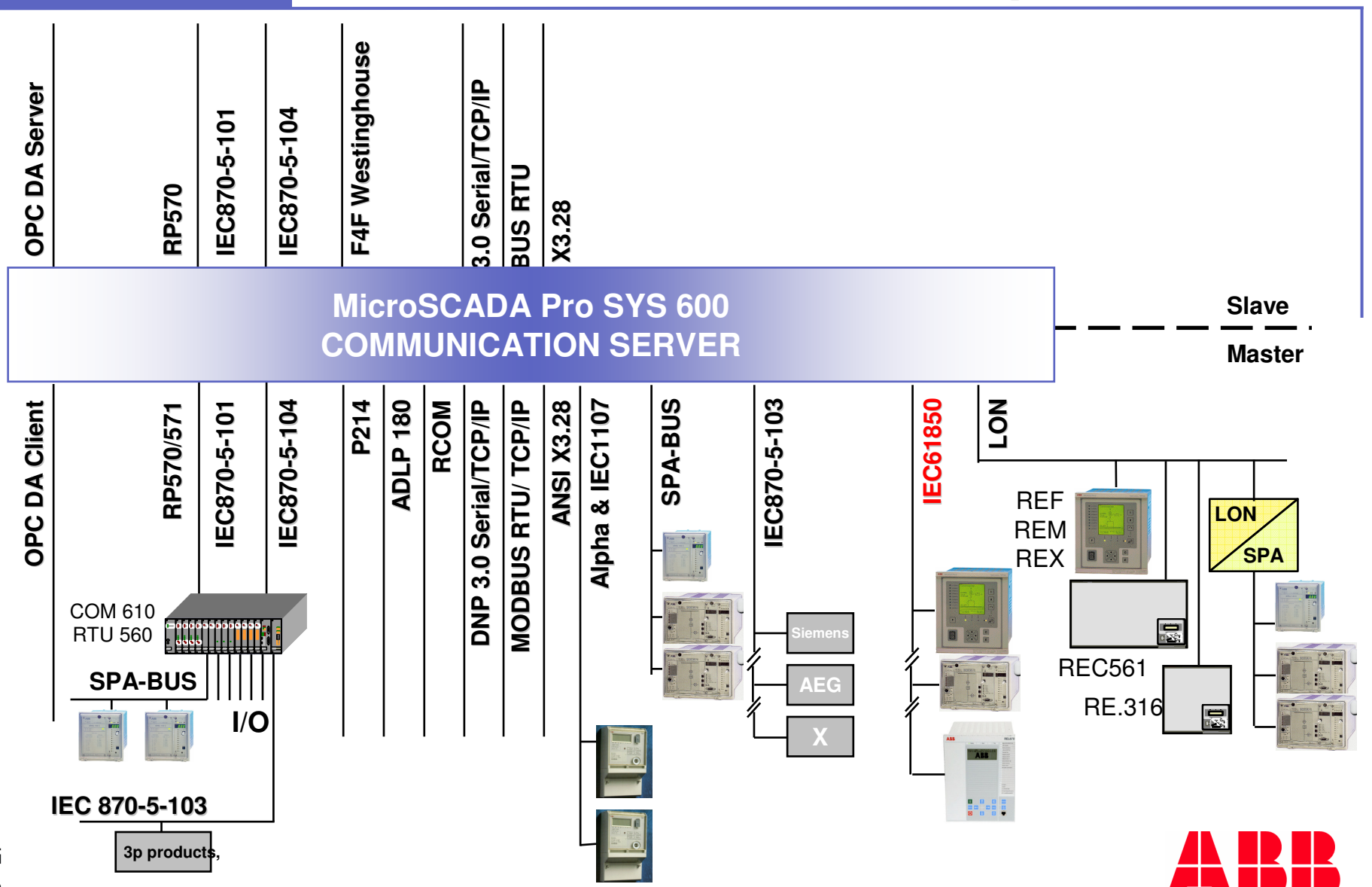
COM500 Communication protocols



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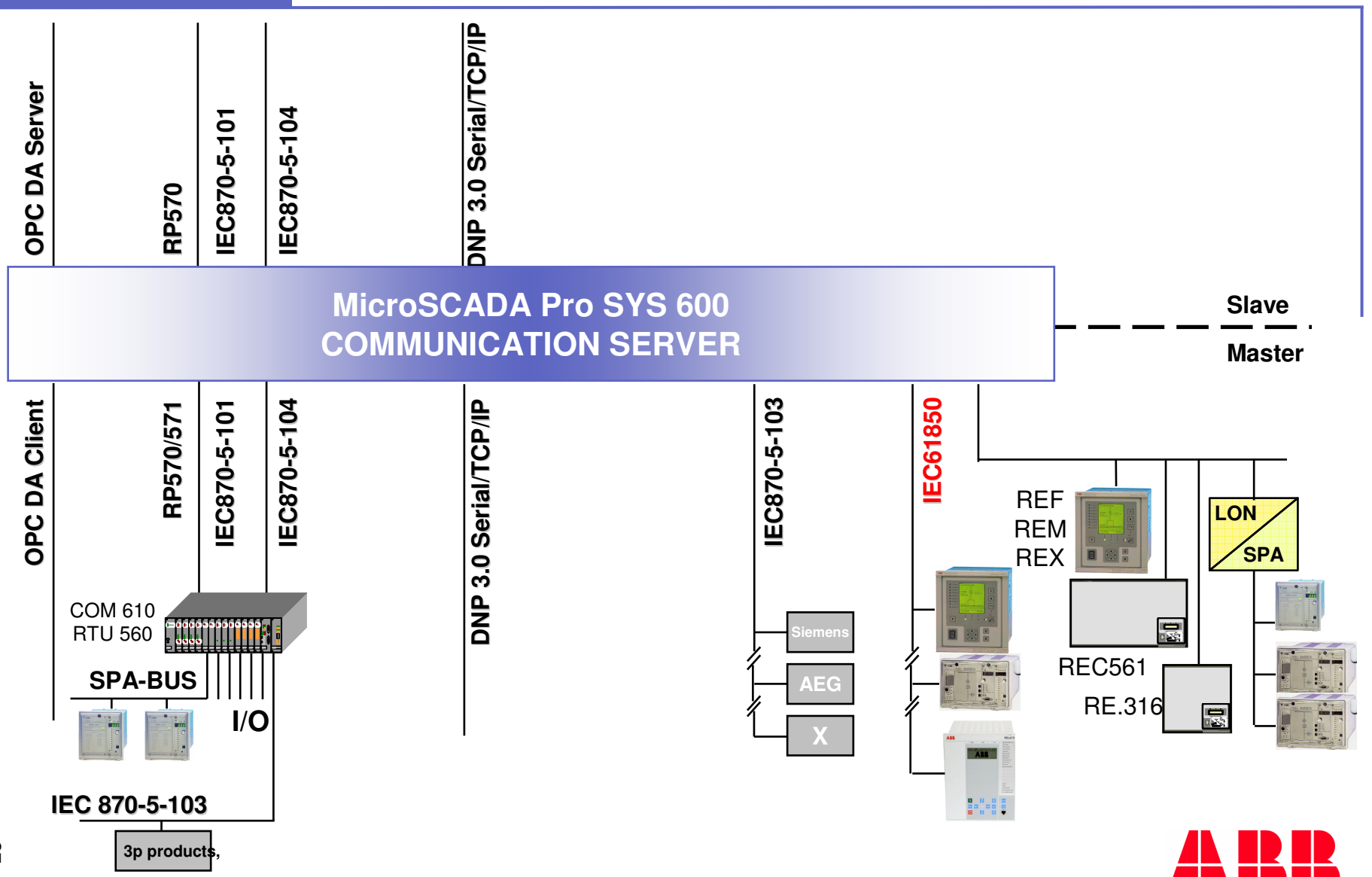
COM500 Communication protocols



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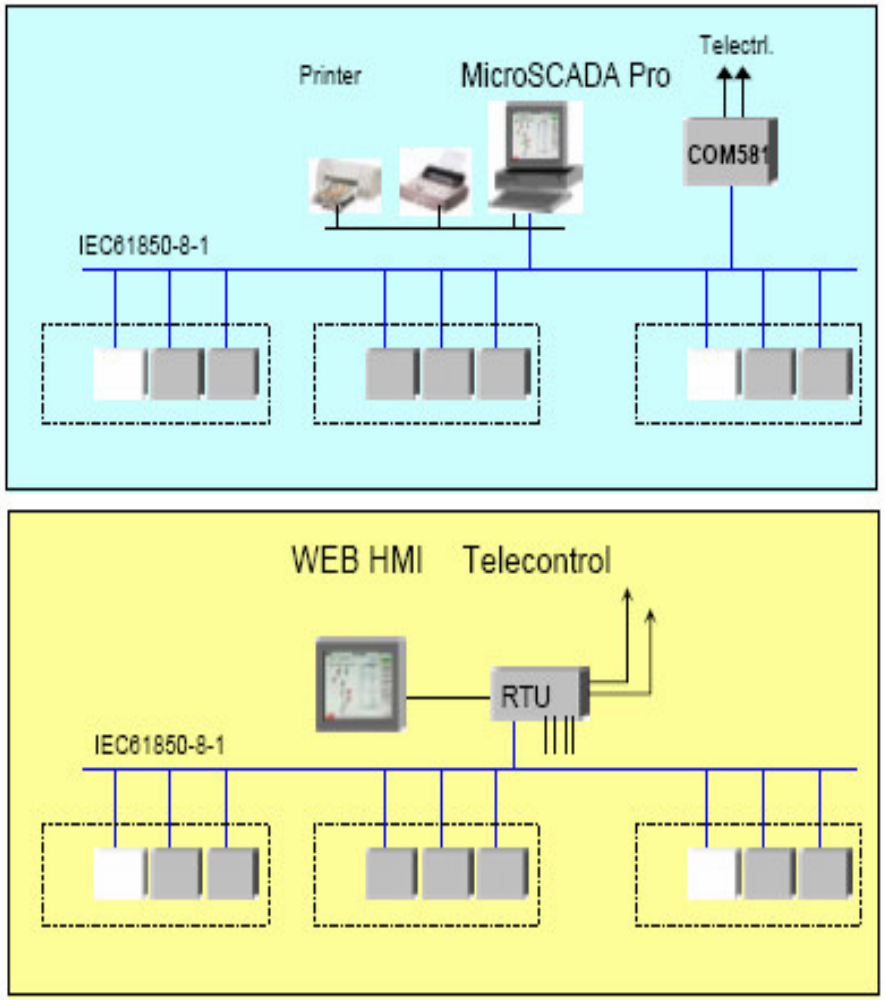
Communication gateways



- COM581 as high end gateway
  - DistibutedIEC61850 architecture MicroSCADA Pro and COM581 as standalone gateway
  - High end application(high numberof Data Points)
- RTU560 as lowend station controller
  - Classical RTU solutions with IEC61850
  - Lowend application

    IEC61850-

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Communication gateway COM 610

- Pre-configareted embedded communication gateway for Industry and Utility Substations
- Remote communication:
  - IEC 60870-5-101/104
  - DNP 3.0 Serial, LAN/WAN
  - External OPC server
  - SPA Router
- Process communication:
  - LON/LAG
  - SPA
  - IEC 61850-8-1 Client
  - IEC 60870-5-103

No moving parts - no fans, no harddisks

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1MRS755520

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Distribution Management DMS 600

Traditional SCADA functionality with on-line data integrated with:

- Distribution Network Information
  - Network Database with network modeling down to MV/LV substations (even to low voltage network)
- Background maps
- Applications using the modeled network
  - Fault location, outage reporting, trace, locate …

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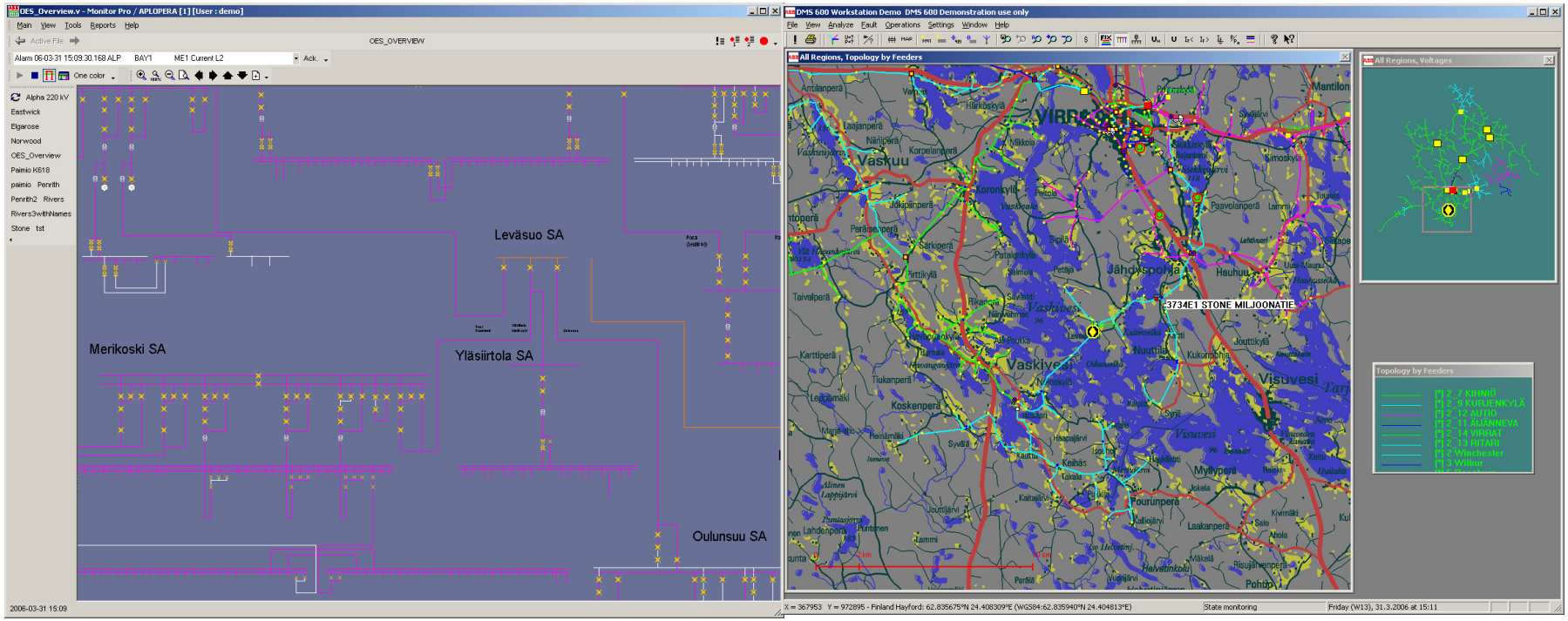
MicroSCADA Pro

Network Control and DMS



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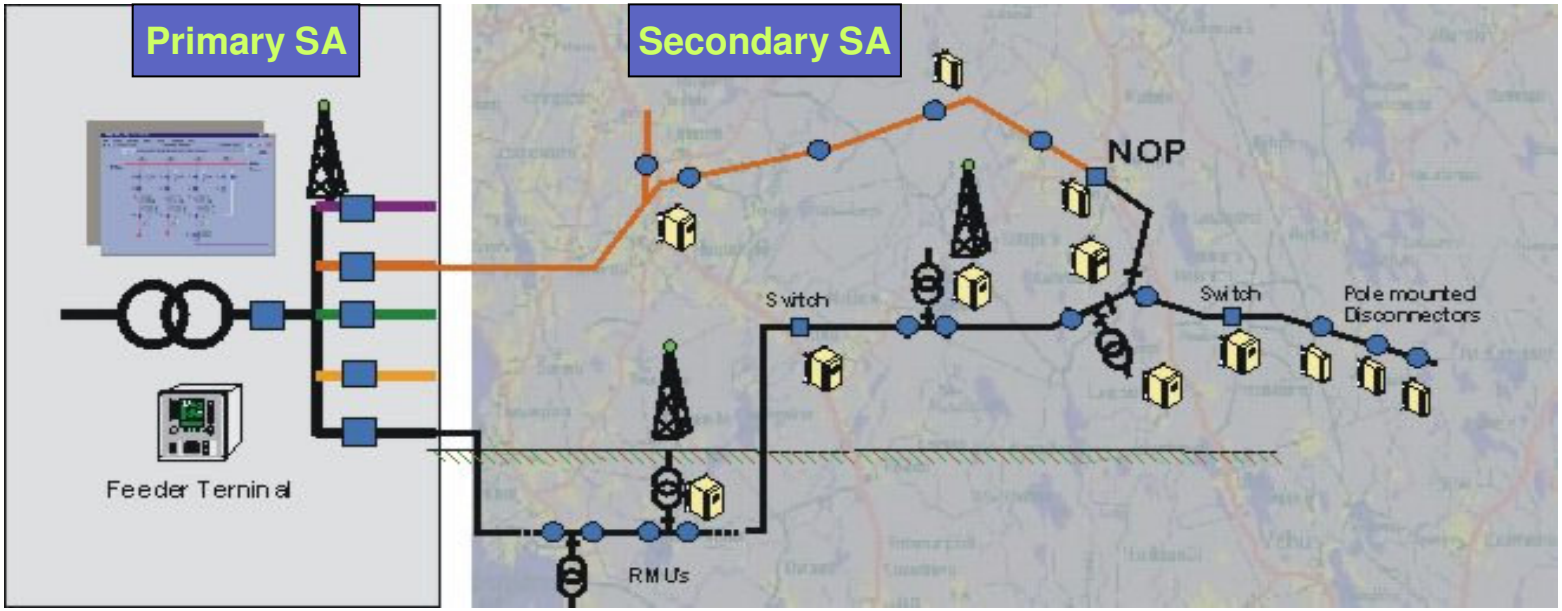
Distribution Automation

Network Control Centre, SCADA, DMS and other IT systems



- The complete DA system requires that all levels are integrated
- Advanced DMS functions in NCS require data from Substations and feeders to provide the best results

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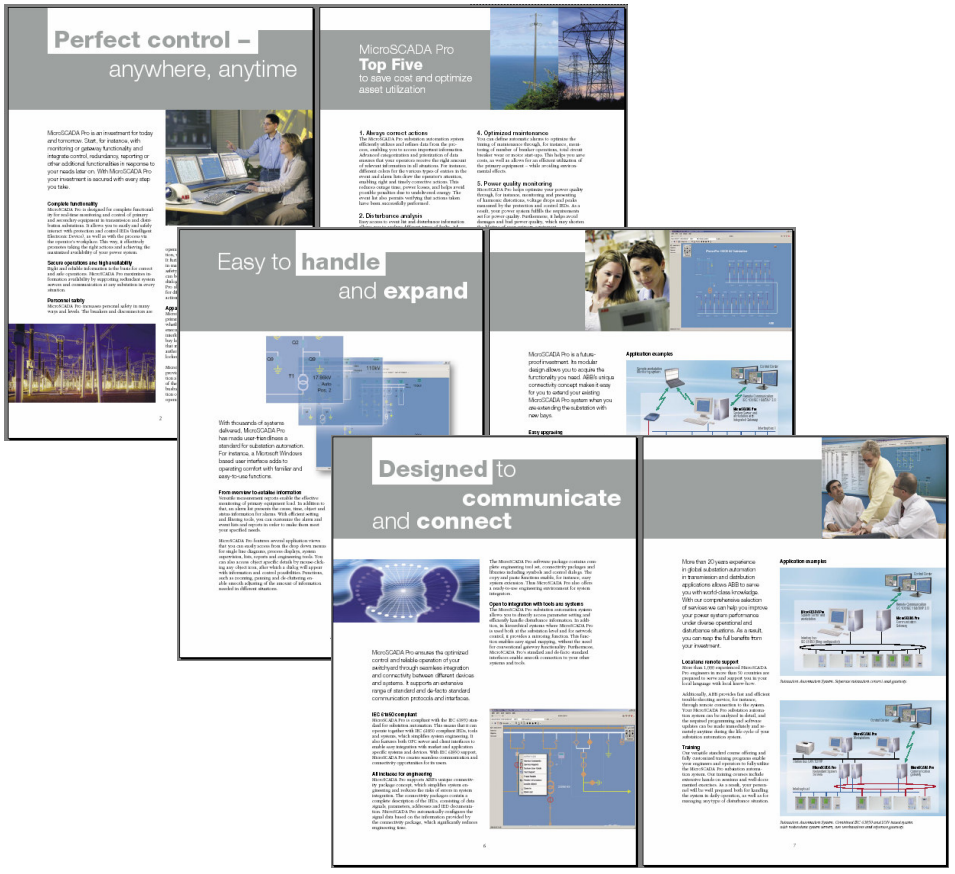
MicroSCADA Pro for SA



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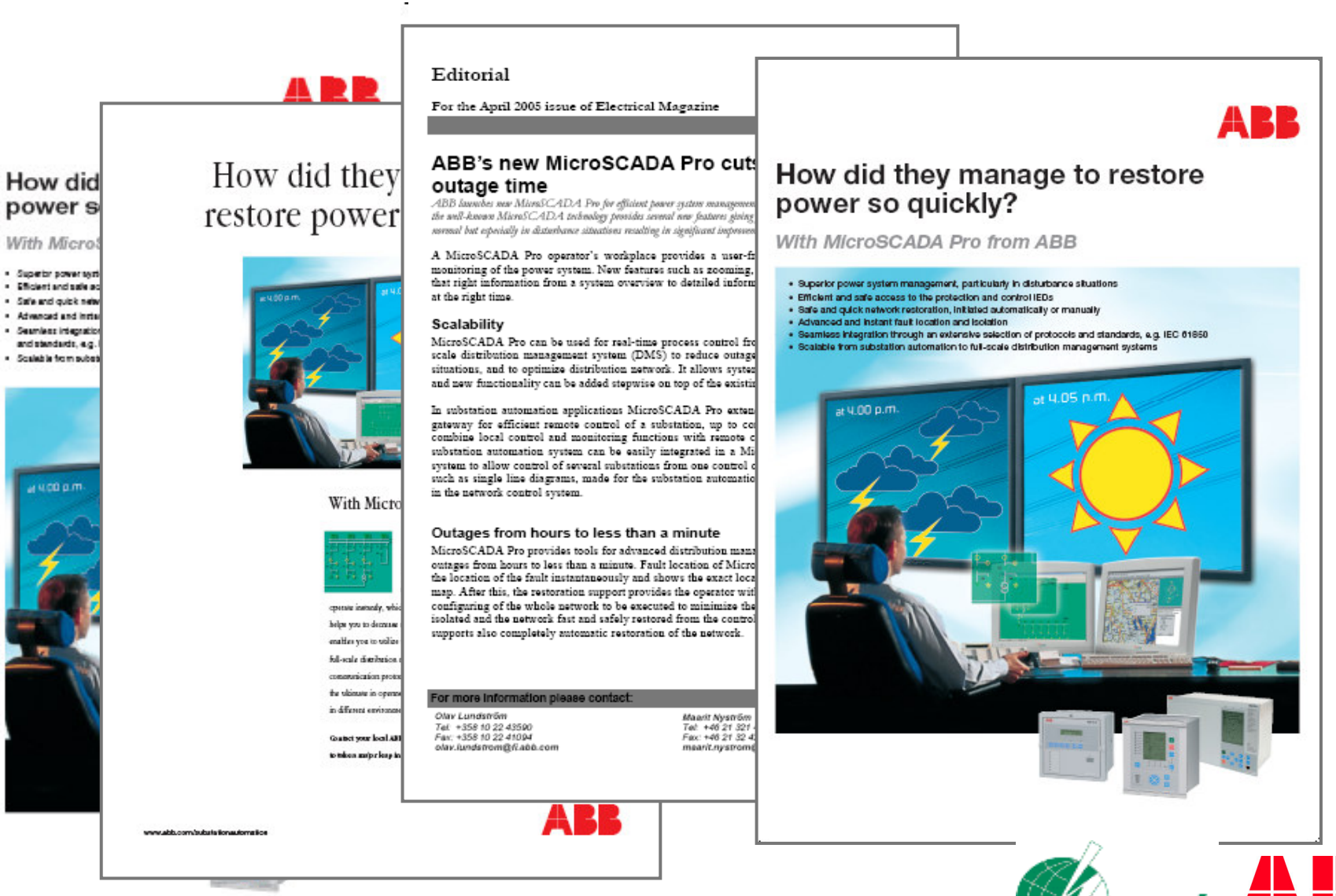
MicroSCADA Pro

Marketing material



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MicroSCADA Pro Portal

- MicroSCADA Portal
  - http://www.abb.com/microscada

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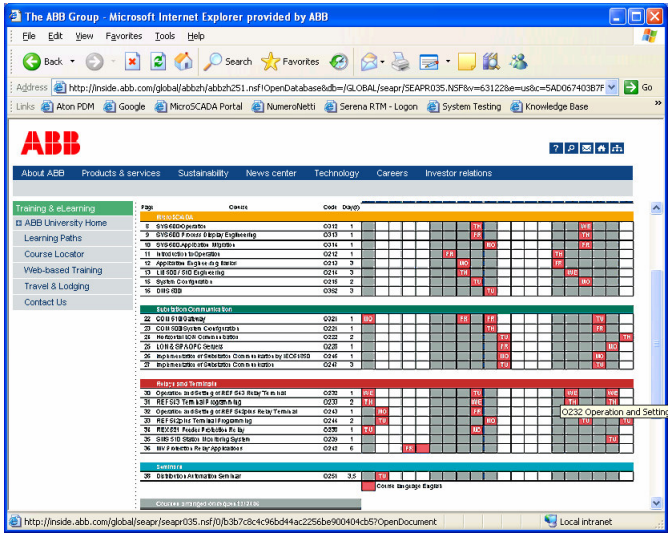
New Training Courses



- SYS 600 Operation
- SYS 600 Process Display Engineering
- SYS 600 Application Migration
- Substation Communication with IEC 61850

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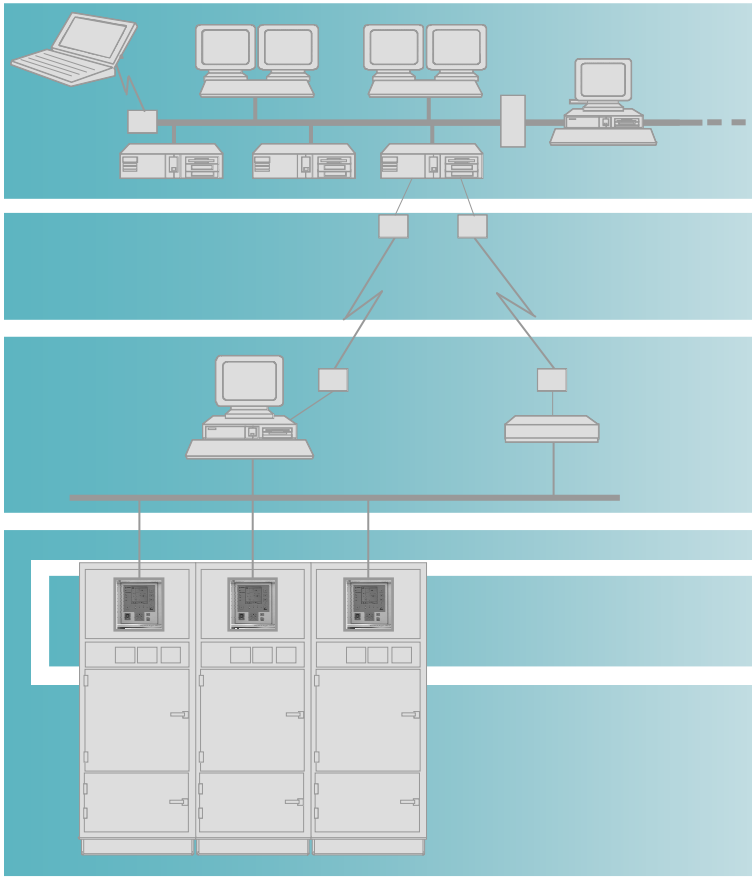
Evolutionary development

Life Cycle in the Power Process



Network Control Centre
- Operator Workplaces
- SCADA Servers
- Front-ends

Life Cycle 5-7 years

Remote Communication
- Communication equipment

Life Cycle 6-20 years

Substation Level
- Substation HSI
- Substation Gateway
- Substation wide com.

Life Cycle 6-8 years (~20 years)

Bay Level
- Secondary equipment
  - P&C IEDs

Life Cycle 15-25 years

- Primary equipment
  - Switchgear
  - Transformers
  - etc.

Life Cycle 30-40 years

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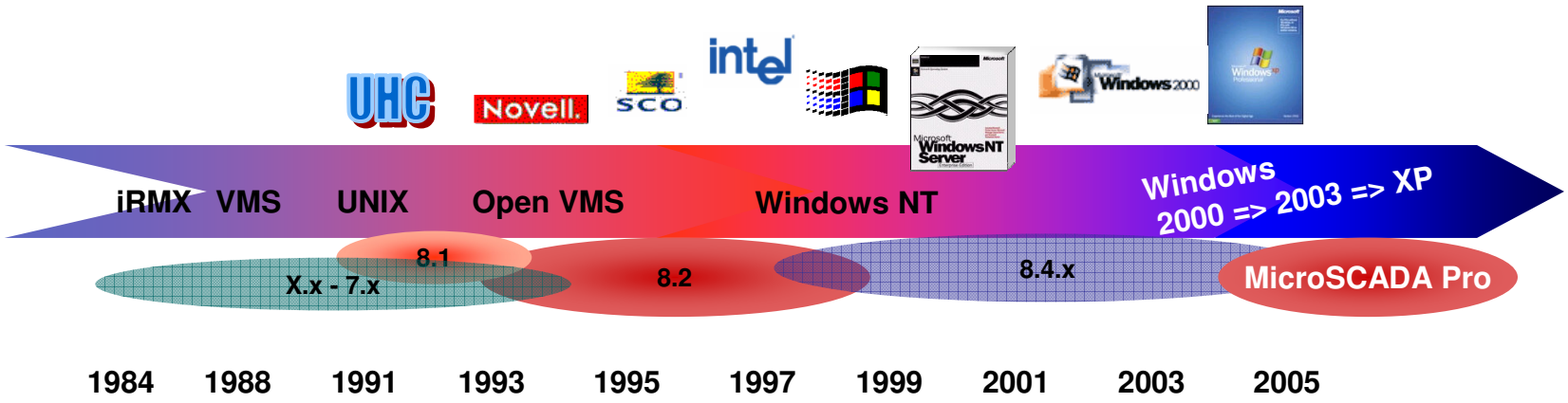
Evolutionary development

- Creates a bridge between the technology active today and the technology to be used to tomorrow
  - Enable customers to relocate existing solutions to more modern environment



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Evolutionary development

- Key factors
  - Upgradeability and system continuity
  - Enable relocation of existing solutions to a more modern environment
  - Preserves an existing solution investment and the functionality
  - Safe investment when using ABB's solution

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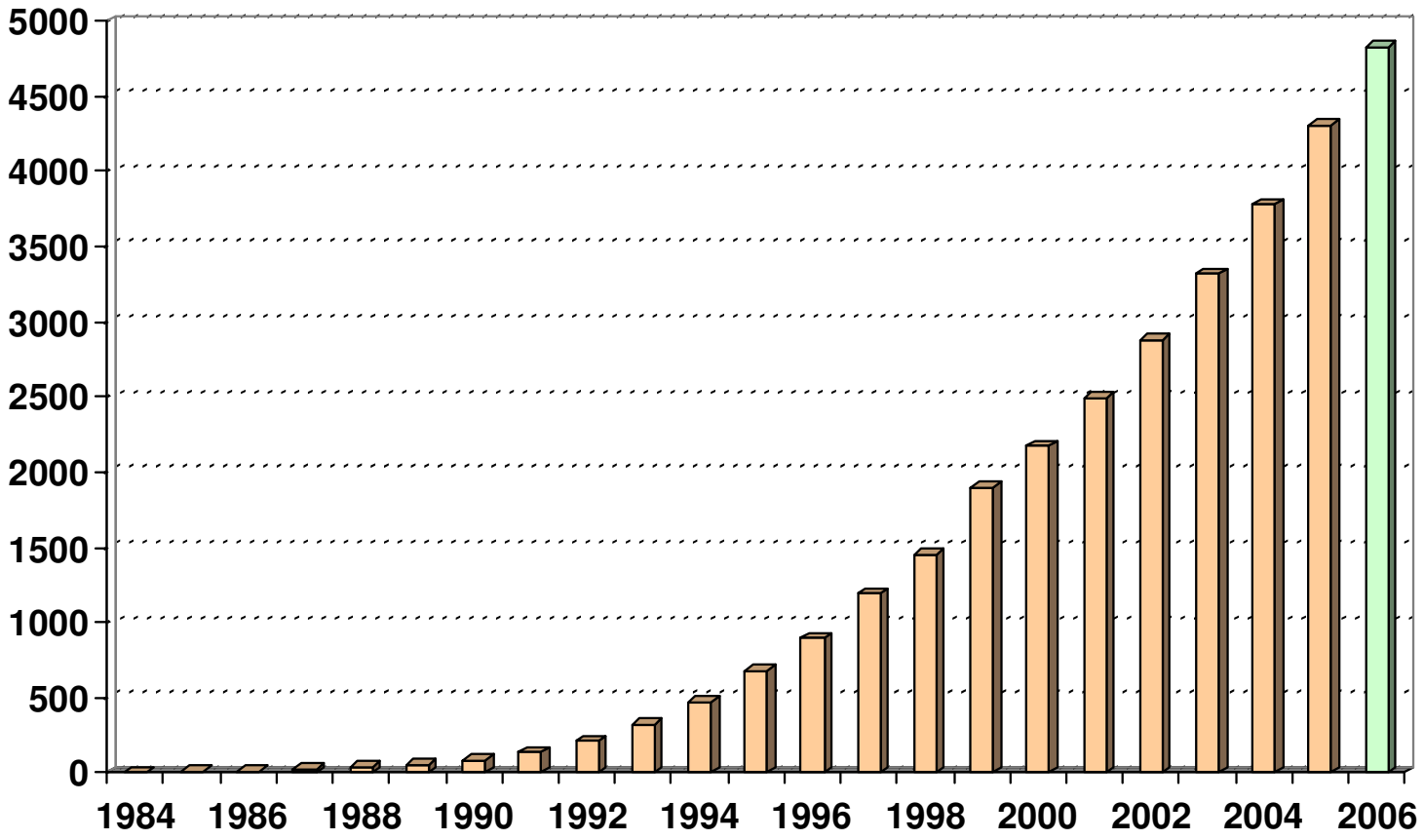
MicroSCADA Licenses in numbers



4443 MicroSCADA Licenses (31.03 2006)

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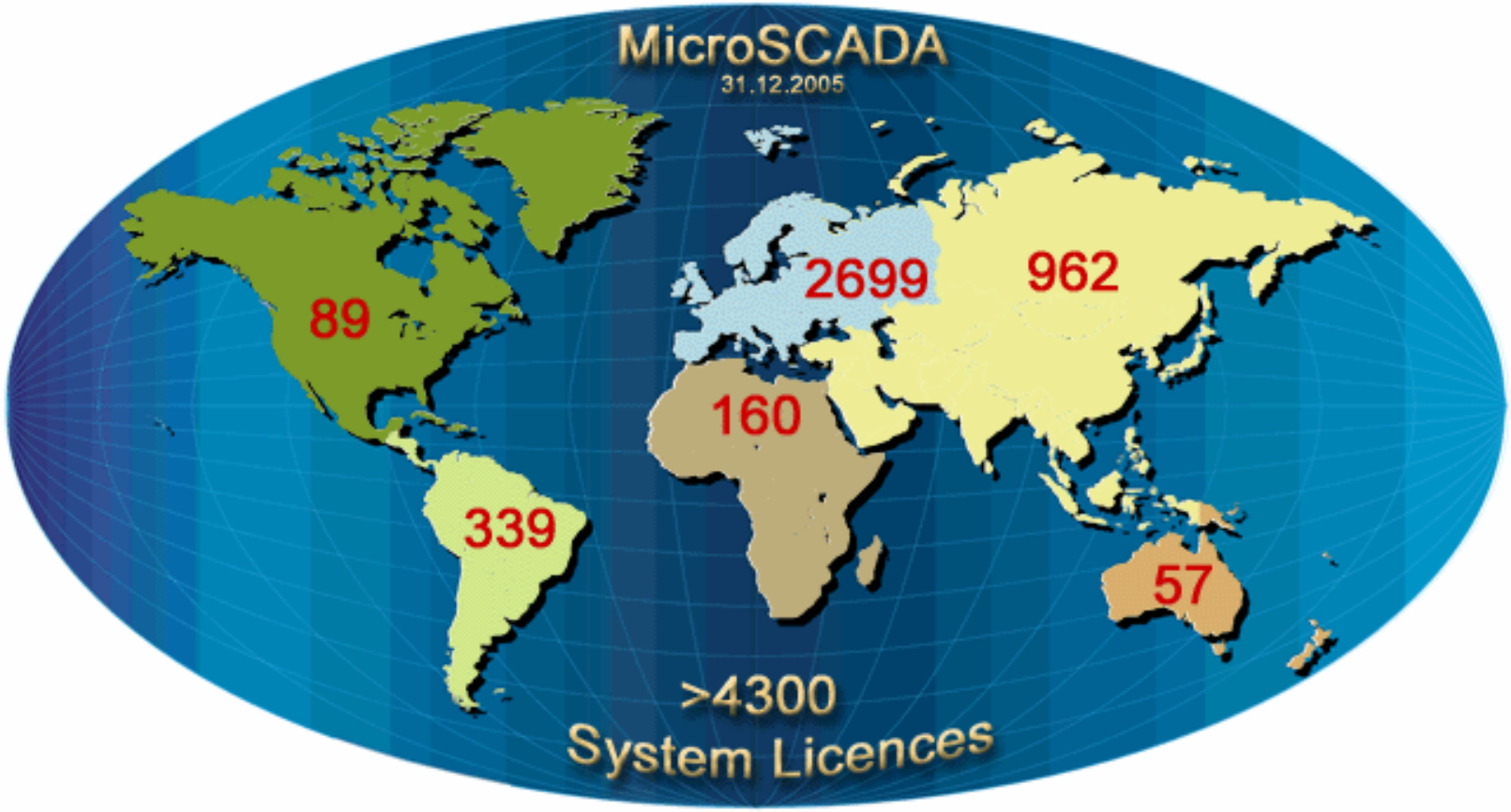
MicroSCADA Systems



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MicroSCADA Pro …

- Easy overview and manageability of the whole network
- High quality of the power supply
- Short outage times in fault and maintenance situations
- Scalable from Substation Automation to SCADA/DMS
- Open communication and integration
- IEC 61850

...for complete power system control and automation

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