



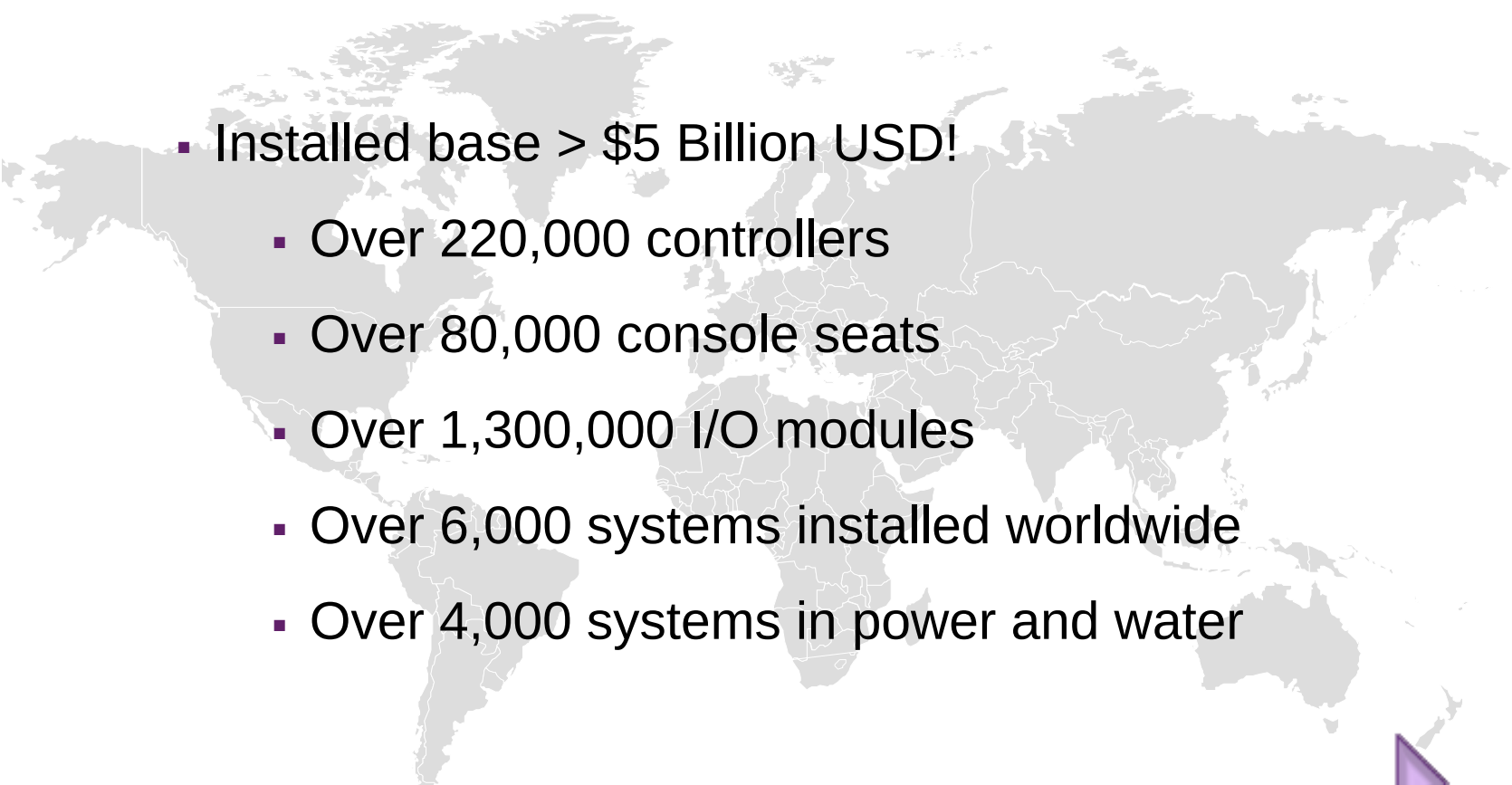
Rudy Schneider – Regional Marketing Manager – Power Systems

Symphony Roadmap

Current Releases and New Developments

Introduction

Symphony System Heritage

- 
- Installed base > \$5 Billion USD!
 - Over 220,000 controllers
 - Over 80,000 console seats
 - Over 1,300,000 I/O modules
 - Over 6,000 systems installed worldwide
 - Over 4,000 systems in power and water

1980's –
1st generation

1990's –
2nd generation

2000's –
3rd generation

Today –
new generation

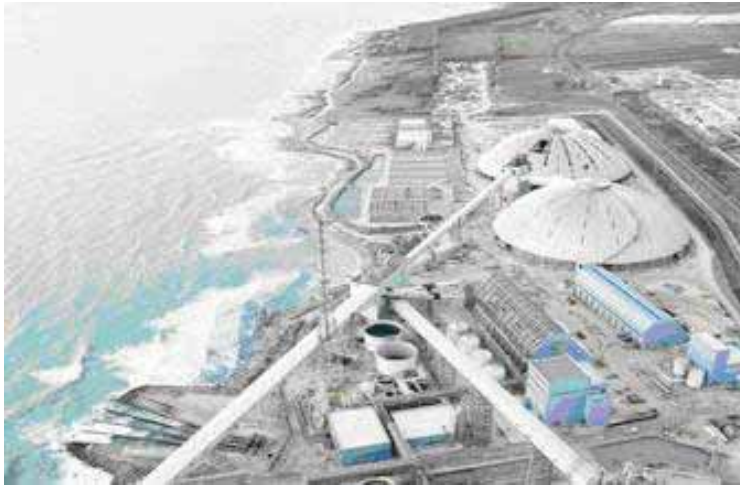
- *“We’re going to reinvigorate the Elsag Bailey Product Line”*

- Joe Hogan, ABB CEO

- Keynote Address, Automation & Power World,
 - Orlando, FL April 2011

Introducing Symphony Plus

Total plant automation



- Evolve the Symphony family of control systems
 - Backward compatibility with previous system generations
 - Ongoing ABB tradition of “Evolution without obsolescence”
 - Support of customer requirements of all industries as part of its Symphony platform evolution strategy
- Specifically designed to meet needs of the power generation and water industries
- Key focus areas
 - Improving plant productivity
 - Increasing energy efficiency
 - Ensuring operation security
 - Enhancing plant safety
 - Lowering cost of ownership



Symphony Plus New Releases - 2011



S+ Control and I/O

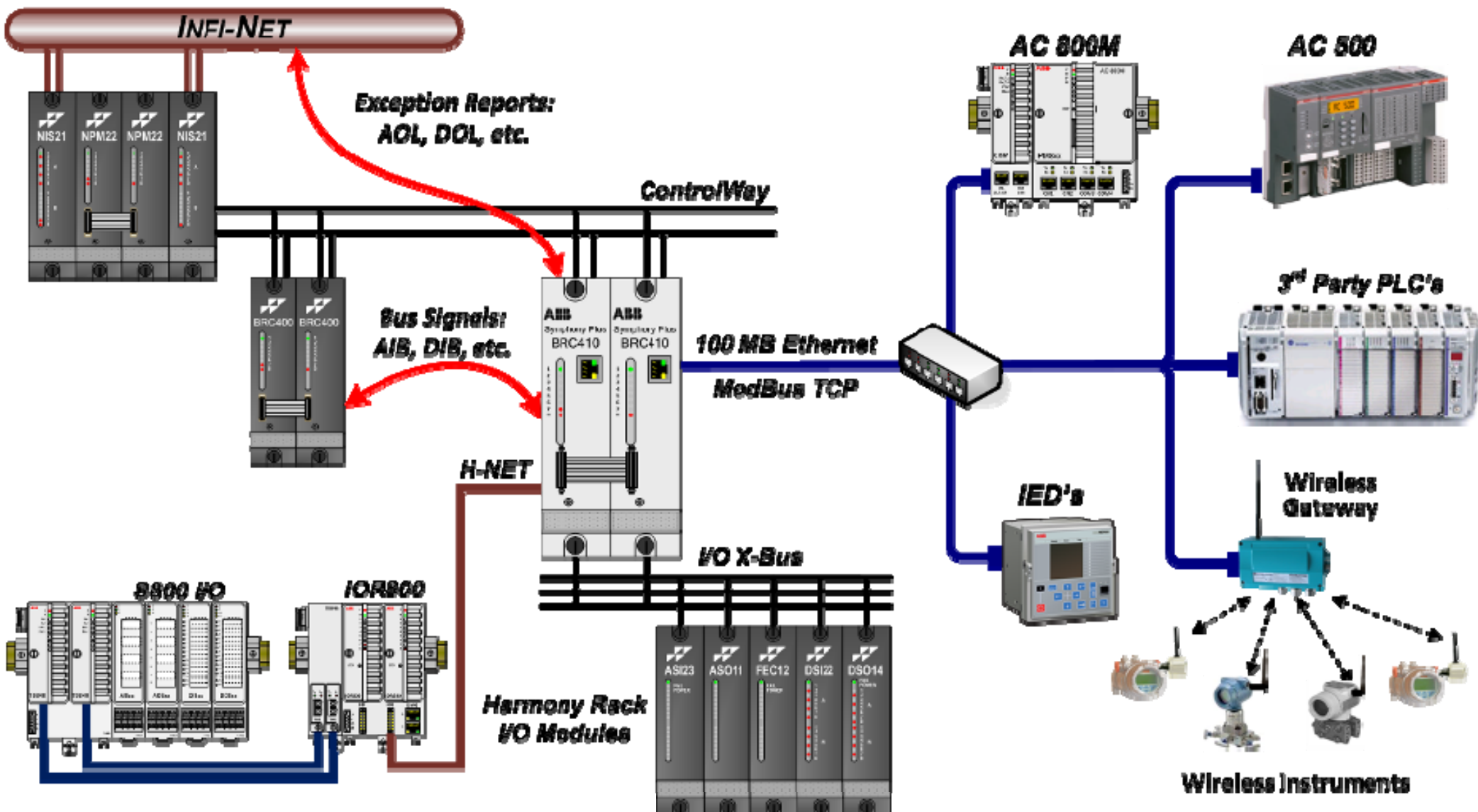
BRC410 Bridge Controller & Gateway Data Sheet



Property	Characteristic / Value
Microprocessor Memory	ColdFire MCF5407 @160 MHz 8 MB DRAM / 2 MB NVRAM
Ethernet Port / Cable	10/100 Mbps RJ45 connector Up to 100M CAT5 or better
Redundancy	[Optional], RCL cable connection on module front plate
Function Blocks	Up to 30,000 Function Blocks Same FC's as BRC300/400
Programming Languages	Batch 90 / UDF and 'C'
ModBus TCP Interface	Harmony Gateway Software version 5.1
Client / Server Capacity	4 ModBus TCP Servers 24 ModBus TCP Clients
ModBus Point Capacity (Licenses)	500, 1500, 3000, 4000

S+ Control and I/O

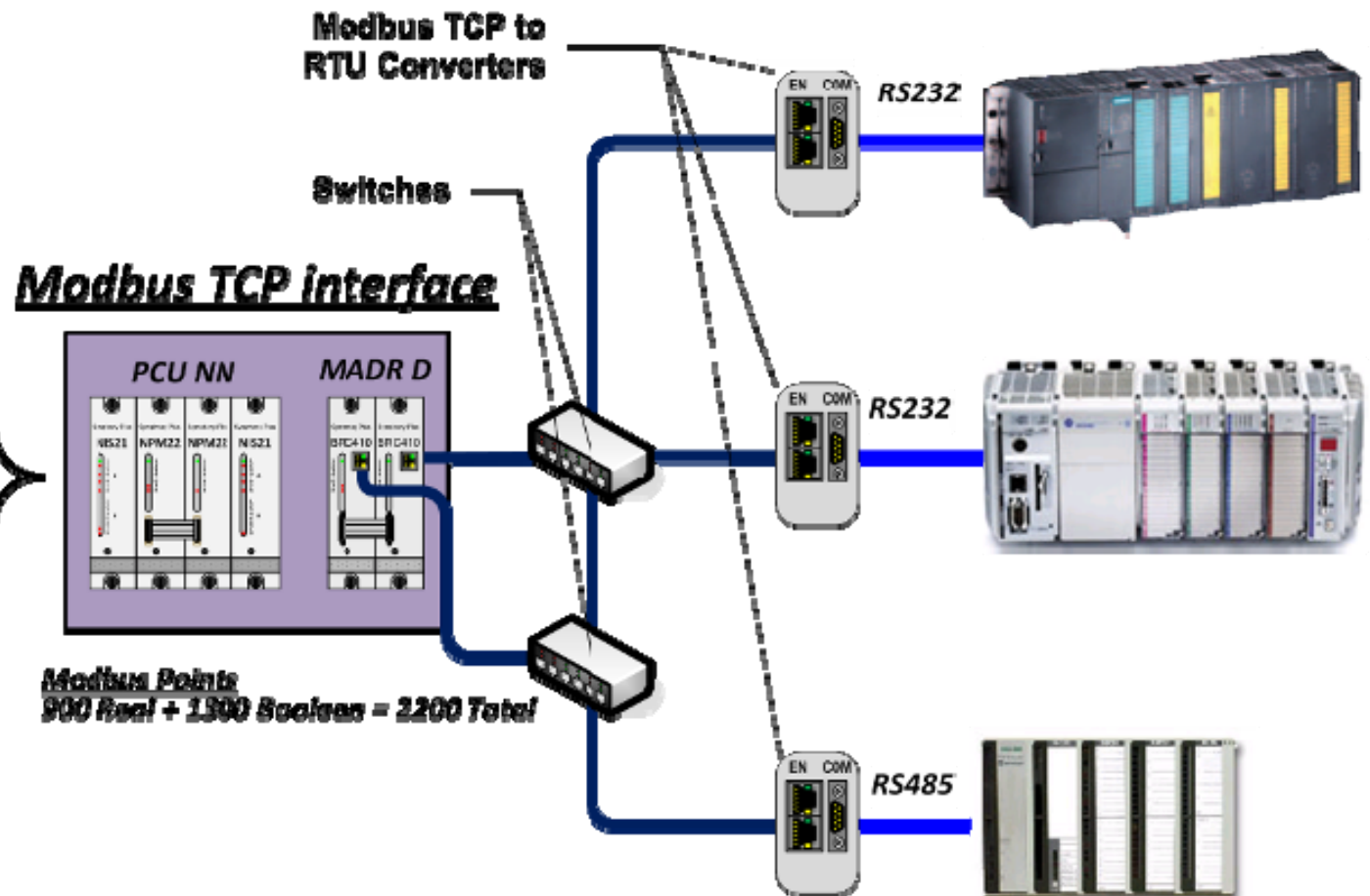
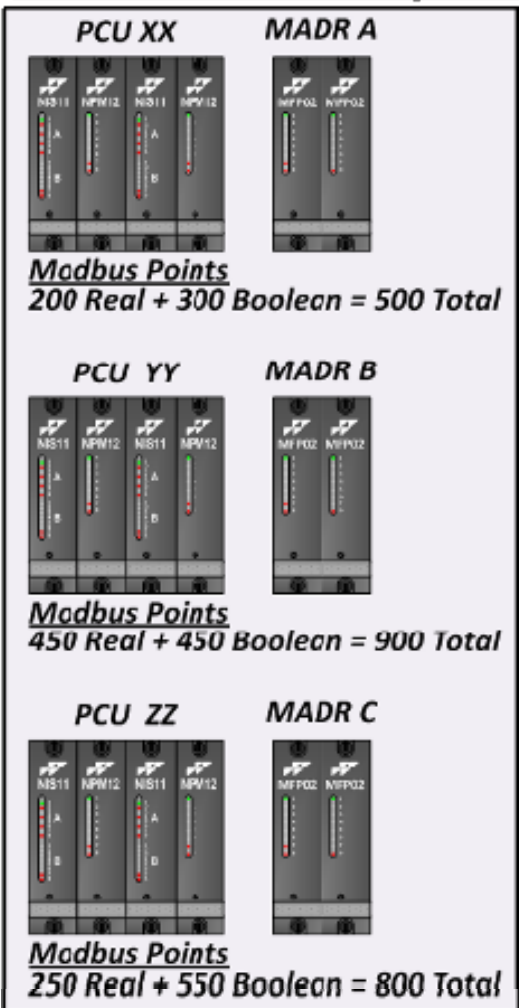
BRC410 Bridge Controller & Gateway



S+ Control and I/O

Use Case: Merge multiple Modbus RTU Interfaces

Modbus RTU interfaces





S+ Communications

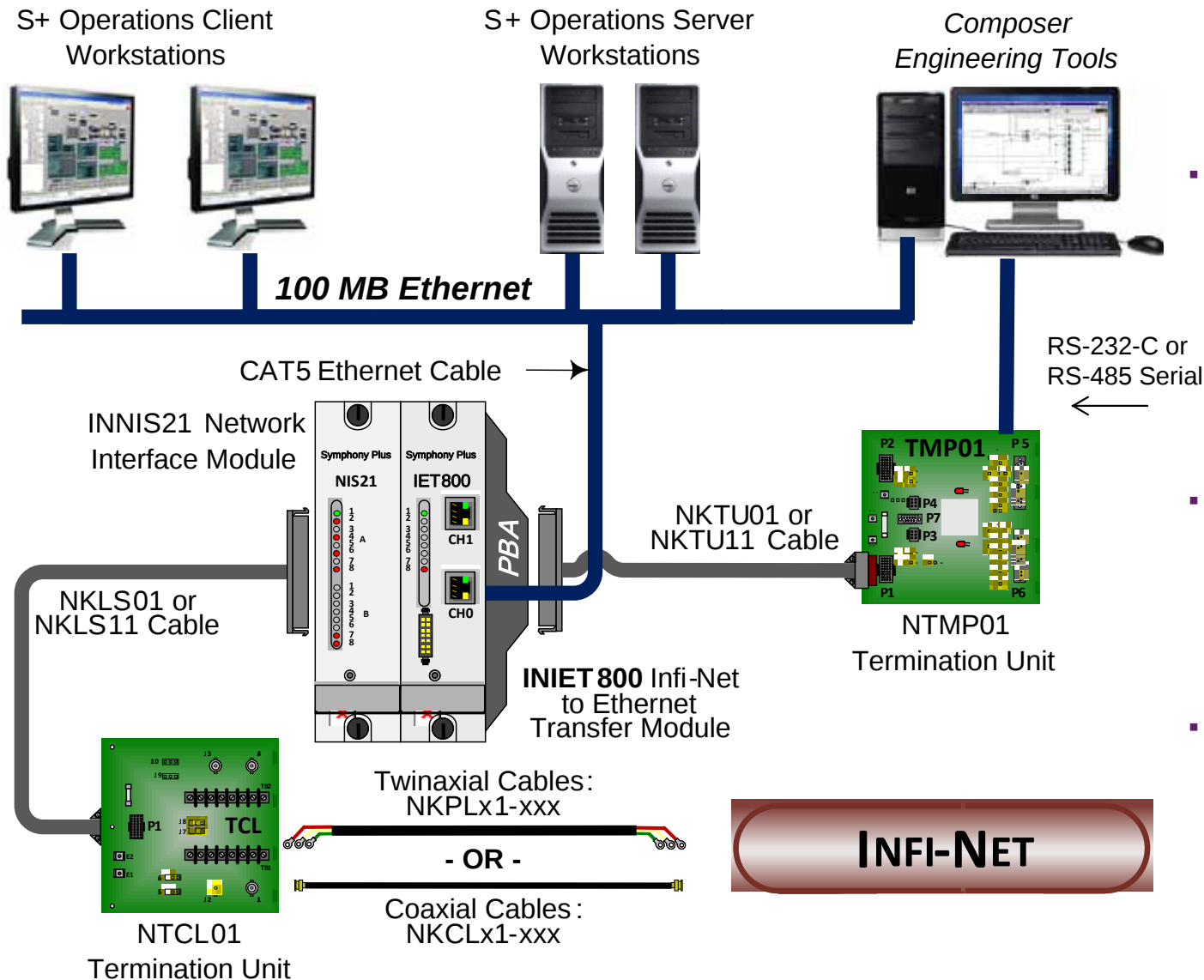
INFI-Net to Ethernet Transfer module: IET800



Property	Characteristic / Value
Microprocessor	ColdFire MCF5475 32-bit CPU @ 256 MHz, approx. 400 MIPS
Memory	64 MB DRAM / 2 MB NVRAM
Ethernet Port(s)	CH 0: 10/100 Mbps RJ45 connector <i>CH 1: (reserved for Future)</i>
Cables	Up to 100M CAT5 or better
Serial Port(s) via any port on TMP01	19.2K, 38.4K, 57.6K or 115.2K Baud
Tag Capacity	30,000 Tag database
Max Update Rate	> 1,500 XR's / sec
Client / Server Connections	☐ Up to 10 Composer Clients ☐ Dedicated connection to CS

S+ Communications Interface – ICI800

S+ Harmony Communications:



- Capacity
 - 30,000 Tags Ethernet
 - 5,000 Tags Serial
 - 10 Composer Connections
- IET800 supported by:
 1. Composer 5.1
 2. S+ Operations
 3. 800xA SV5.1, rev A
 4. Harmony OPC Server
- Communications Ports
 - 10/100MB Ethernet
 - 19.2 -115.2KB Serial
- Security Enabled
 - Basic (Twofish)
 - 128 –bit block cipher
 - Advanced (TLS1/SSL3)
 - 256-bit encryption

System 800xA Operations Version 5.1A

- Integration Platform
 - Historical Data
 - Business Systems
 - 3rd Party Control Systems
 - Asset Optimization
 - Fieldbus Networks
- Personalized workplaces for focused information access
- Harmony diagnostic and management functions



- *Industry's most complete user interface*

S+ Operations HMI

Designed for high performance

- Based on proven technology
 - Power Generation Portal +2300 systems worldwide
 - Integrated Historian - Power Gen Information Manager
- Benefits:
 - Improved scalability – systems small to large
 - Improved reliability – fault tolerant architecture
 - Added security – support for NERC CIP compliance manager
 - Enhanced Integration – bundled communication interfaces
 - Improved Operational efficiency – ergonomic operator workplace
 - Added Alarm management tools (EEMUA 191)
 - Integrated Plant performance monitoring tools
 - Improved Migration – evolve from earlier console platforms

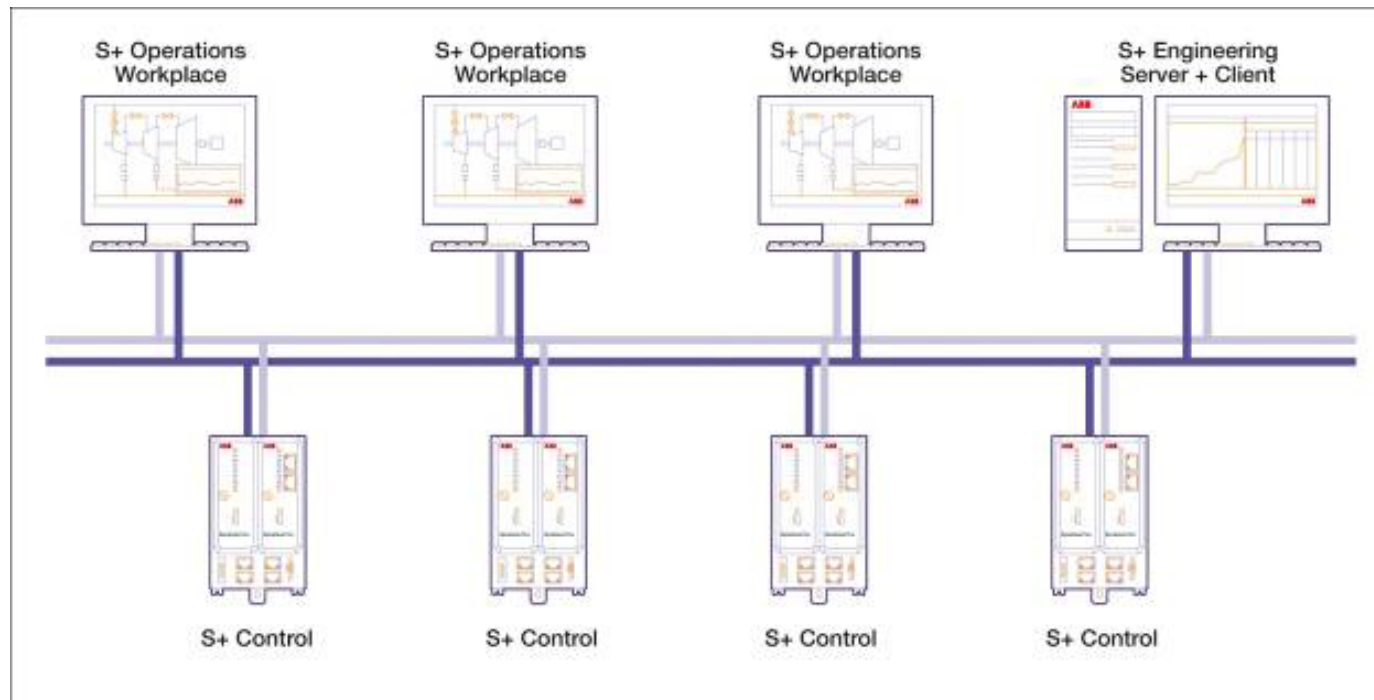


Symphony Plus

Total plant automation

Supports power and water industries' diverse portfolio with a simple and flexible system architecture

Serverless architecture



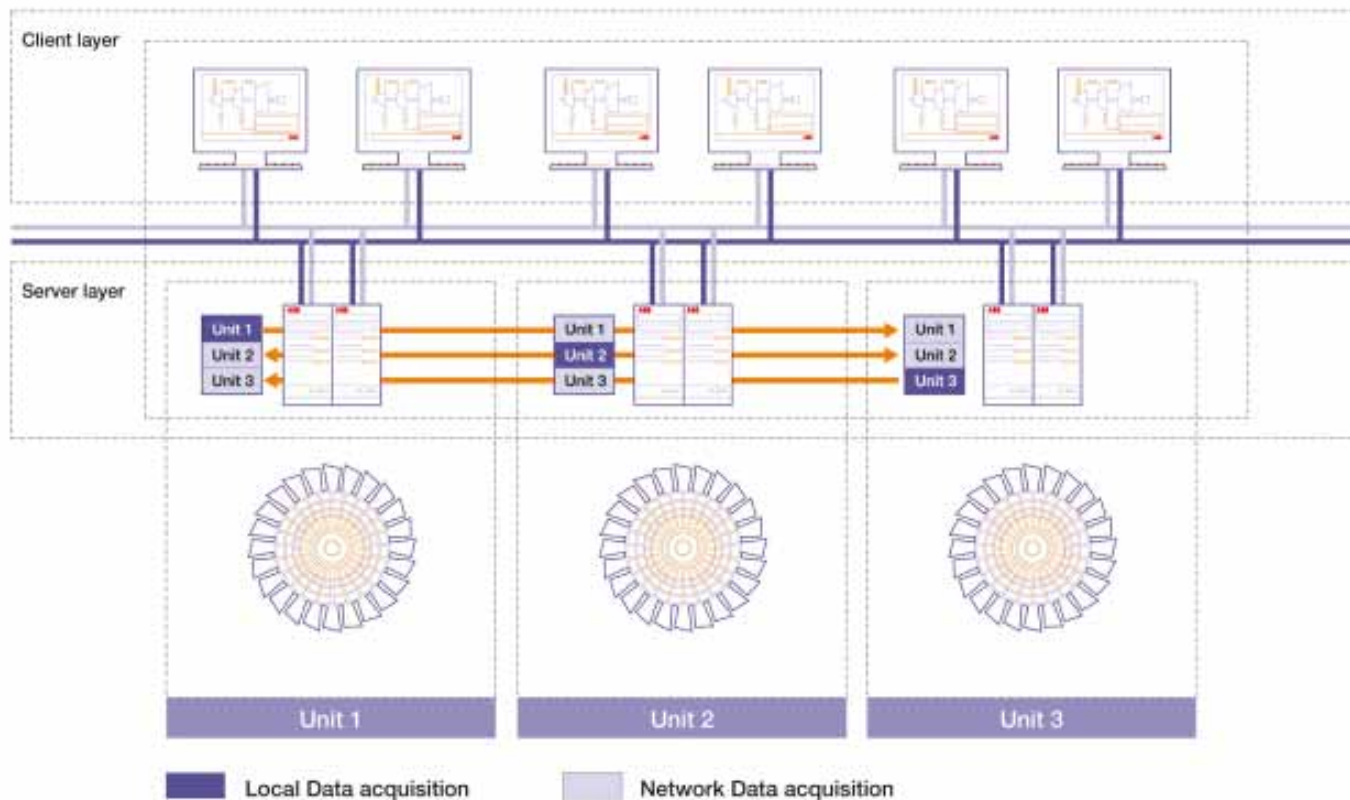
A scalable plant-wide network-centric communication backbone

Symphony Plus

Total plant automation

Supports power and water industries' diverse portfolio with a simple and flexible system architecture

Multi-server / multi-master architecture

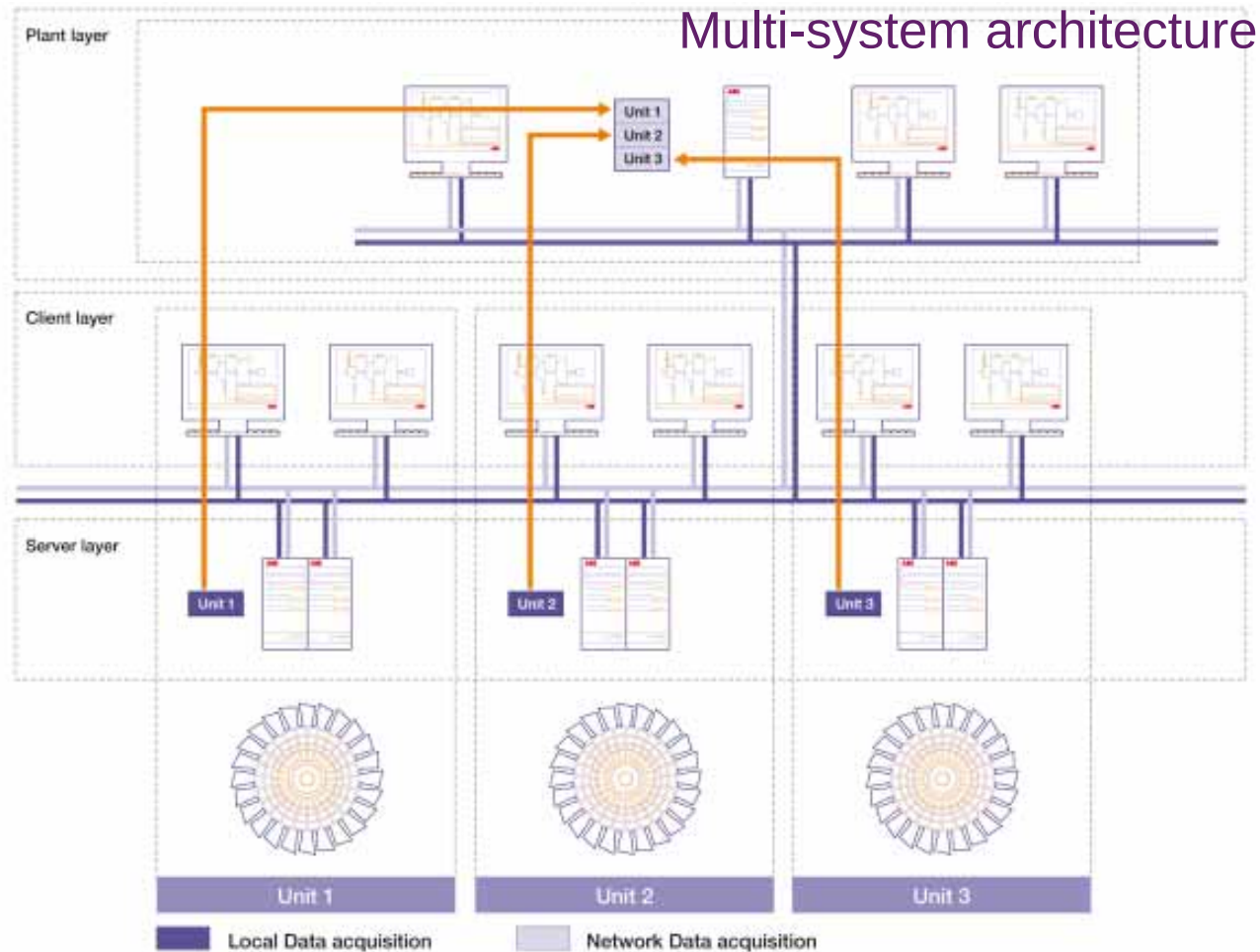


A scalable plant-wide network-centric communication backbone

Symphony Plus

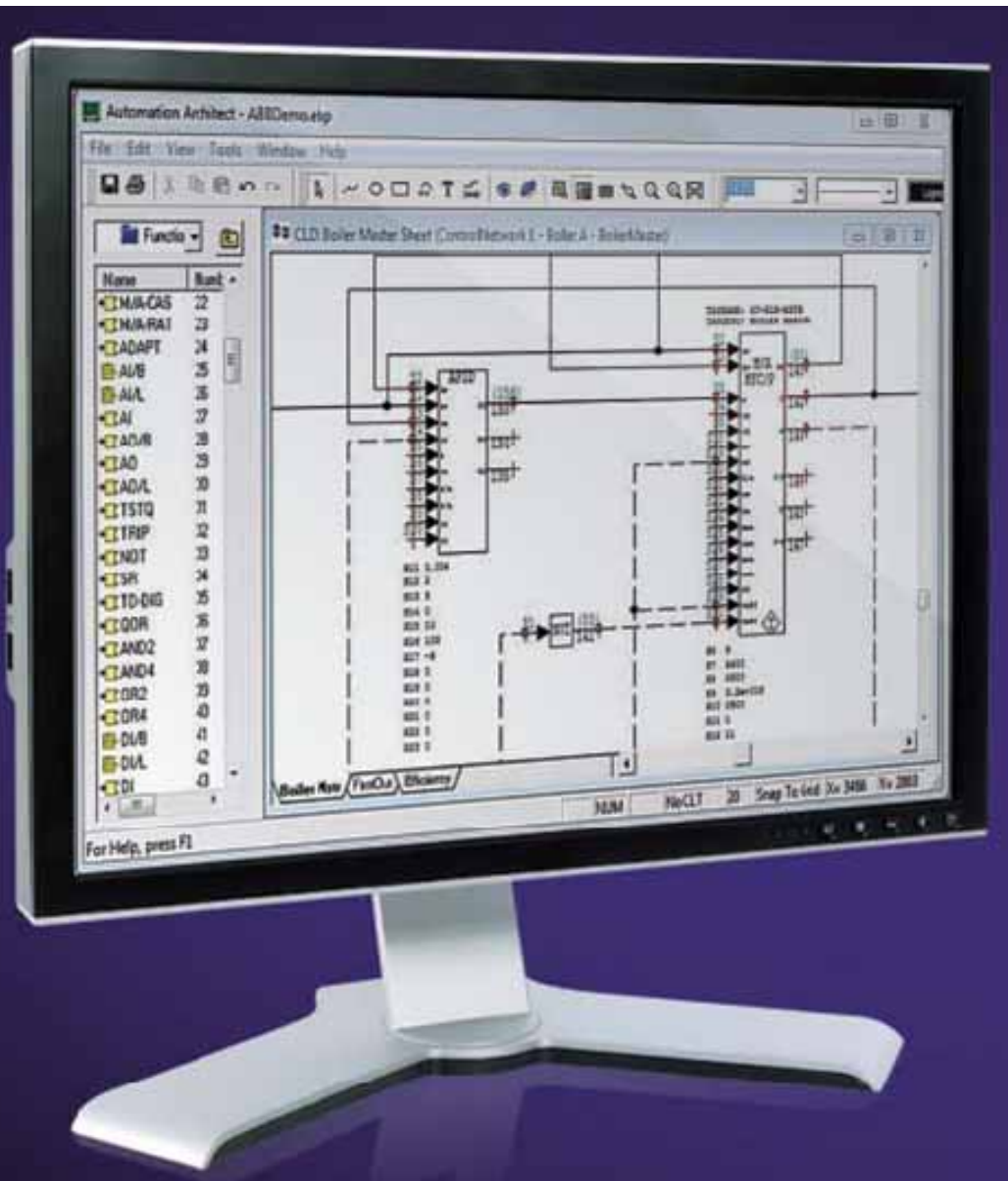
Total plant automation

Supports power and water industries' diverse portfolio with a simple and flexible system architecture



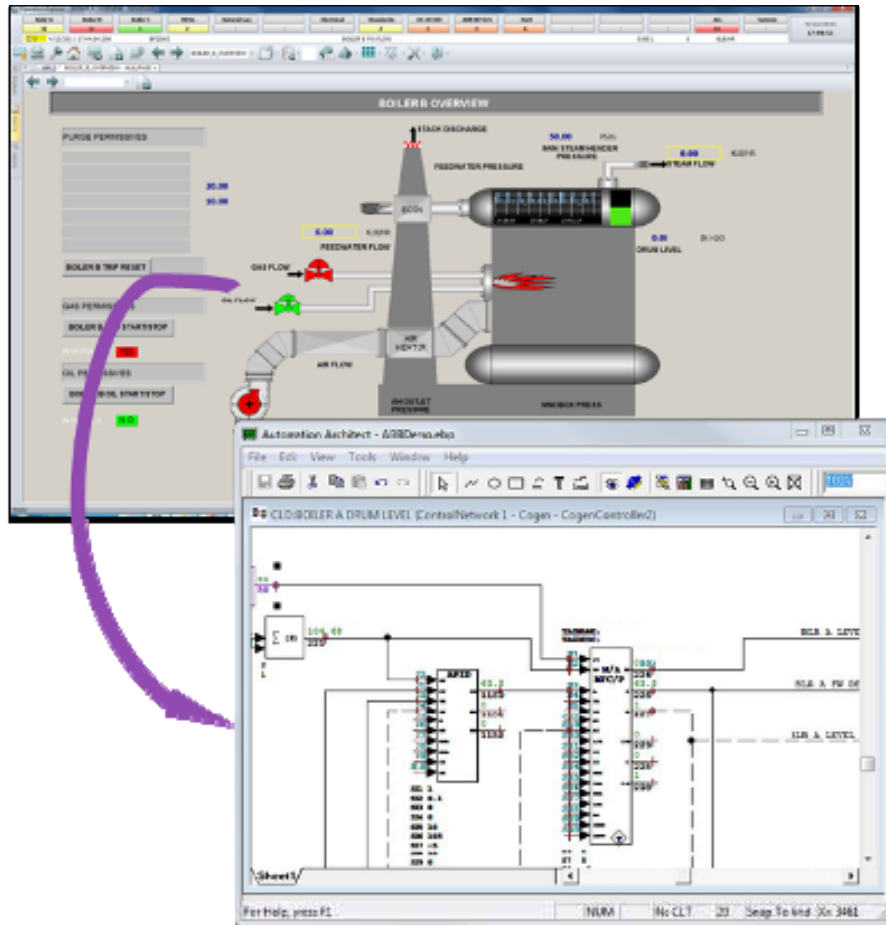
A scalable plant-wide network-centric communication backbone

S+ Engineering Harmony Composer version 5.1

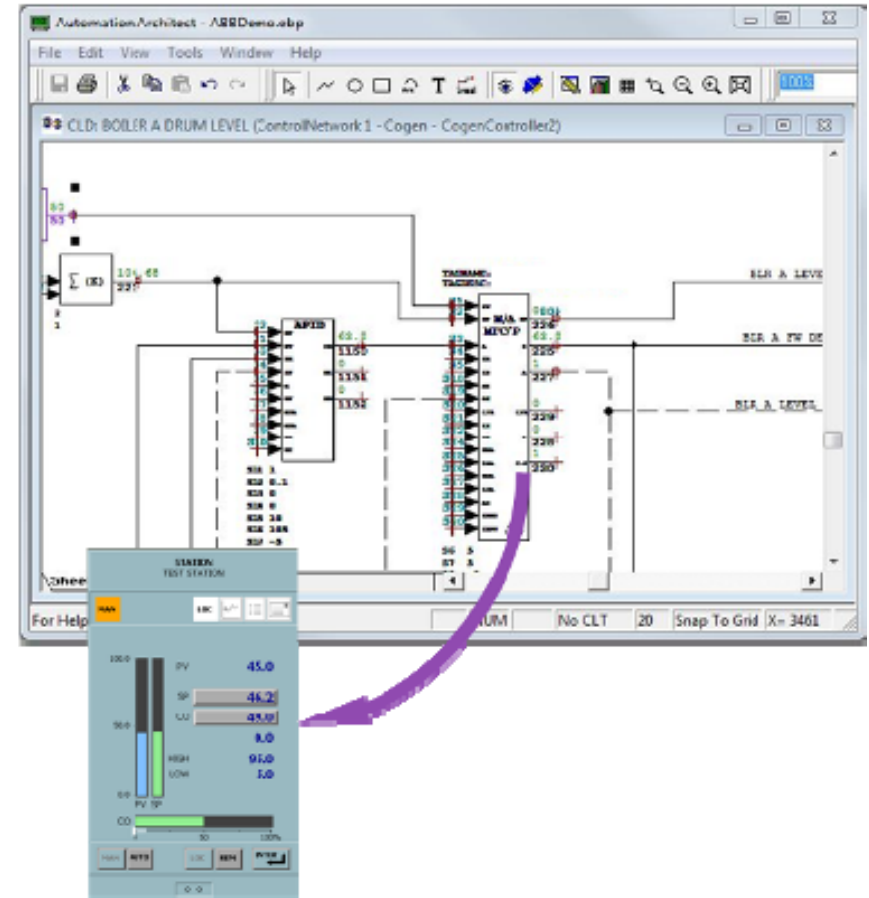


- Microsoft Operating Systems
 - Windows 7
 - Server 2008
- IET800 / BRC410 Support
- Adds Alarm Management FC's
 - AOLDDB (FC48) & DOLDDB (FC67)
- Integration w/ S+ Operations
 - New Console Type (database)
 - From Composer launch Symphony Operations faceplate
 - From Symphony Operations launch Composer's 'View & Monitor'

S+ Engineering Composer 5.1 Integration with S+ Operations



Call-up Composer View and Monitor
from Symphony Operator display



Call-up Symphony Operator faceplate
from Composer's Automation
Architect



Symphony Plus Control Products – In Development



Symphony Plus – STEP 1

Harmony Control & Communications on a DIN-Rail



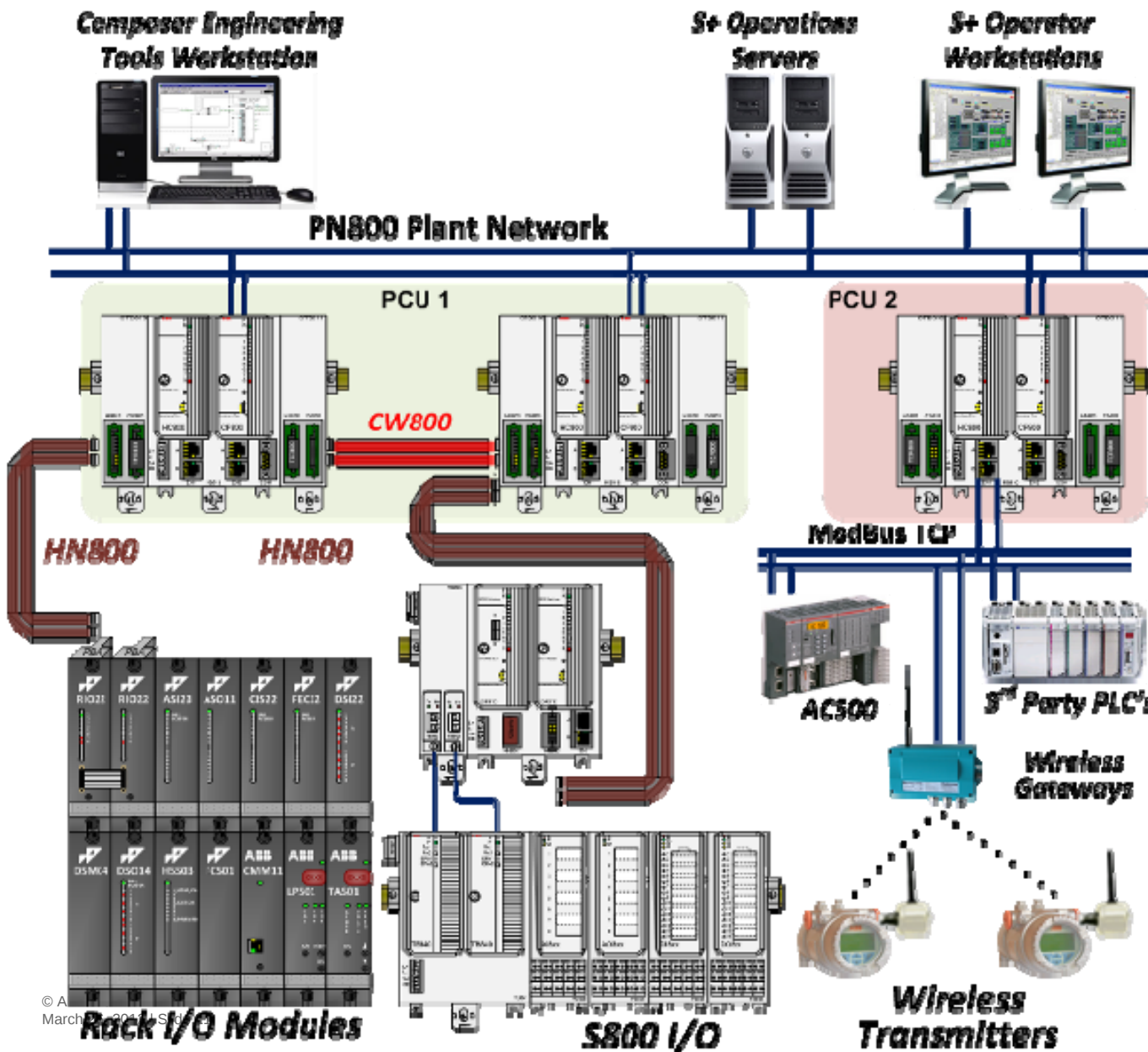
- **PN800: S+ Plant Network**
 - Protocol = “*INFI-NET over Ethernet*”
 - Connects consoles (S+ Operations,800xA) and tools (S+ Engineering) to HPC800 Harmony Controllers
- **HC800: Harmony Control Processor**
 - Executes INFI 90 Function Codes
 - BRC / HPG Functionality
- **CP800: Communications Processor**
 - Combination of NIS / NPM modules
 - Control Network Interface
- **CTB810/811: Comm. Term. Board**
 - **HN800** I/O interface for Rack I/O (via RIO22), S800 and new I/O
 - **CW800** provides PTP communications between controllers



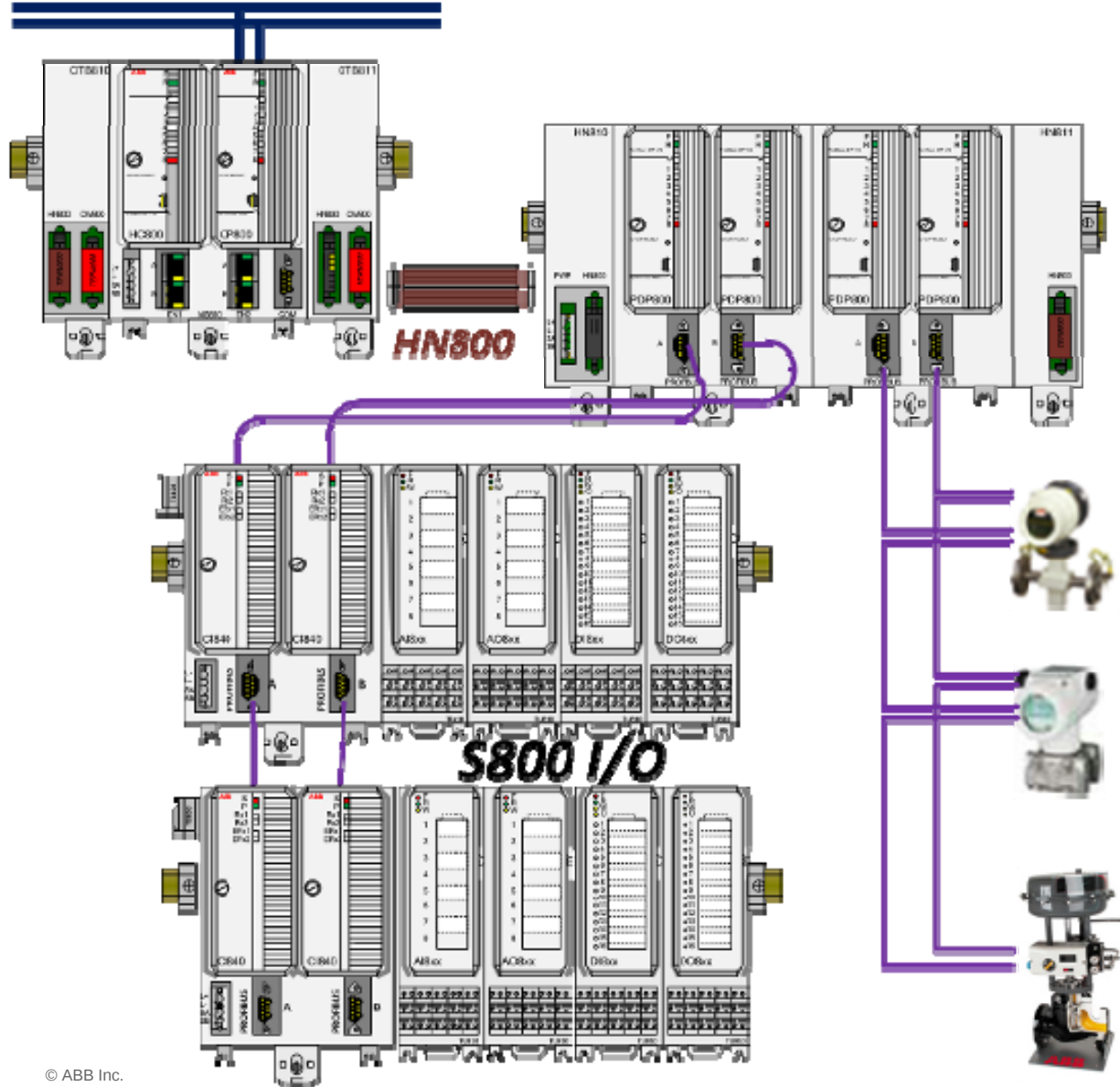


Symphony Plus – STEP 1

Harmony Control & I/O Architecture



- **PN800 Plant Network**
 - “INFI-Net over Ethernet”
 - 100MB Ethernet TCP/IP
- **Harmony Controller**
 - Harmony Rack I/O via RIO22
 - S800 I/O via IOR810
 - 3rd Party I/O via ModBus TCP
- **HN800: Enhanced HNET**
- **CW800: Enhanced Controlway**
 - PTP communications
- **CTB810 / CTB811**
 - Additional communications connectors



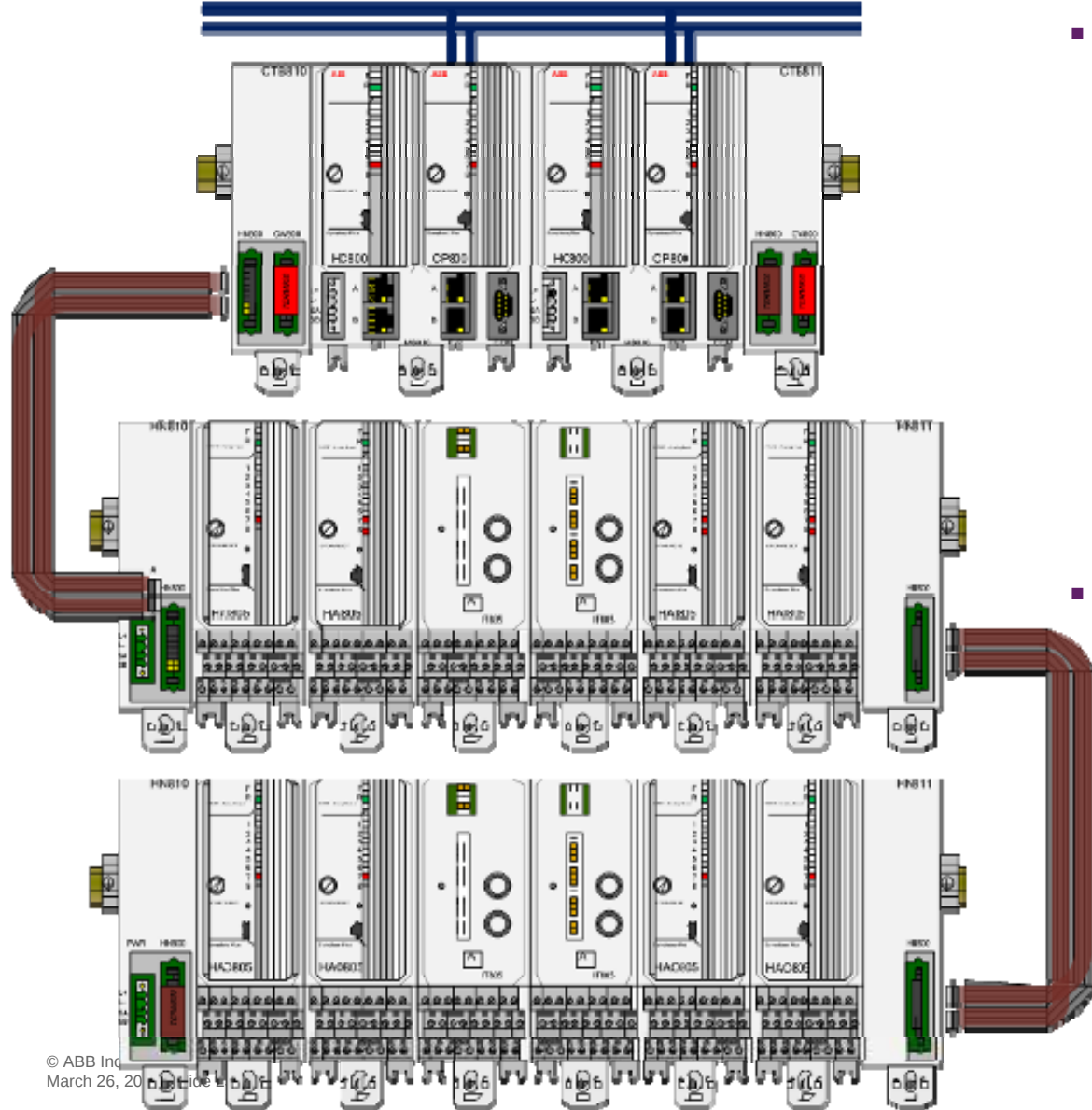
- DIN-Rail mounted
- Profibus DP-V0, -V1 and -V2
- Transmission rates from 9.6 Kbps to 10 Mbps
- Std. Profibus Diagnostic functions
- SOE Time-Stamping with S800 I/O or other devices that support this feature
- Master & Line Redundancy
- Up to 64 Profibus Slaves per PDP800
- Communicates to Harmony Controller via HN800 [Redundant]

Profibus Instruments

Symphony Plus – STEP 1

HAI805 & HAO805: HART AI & AO Modules

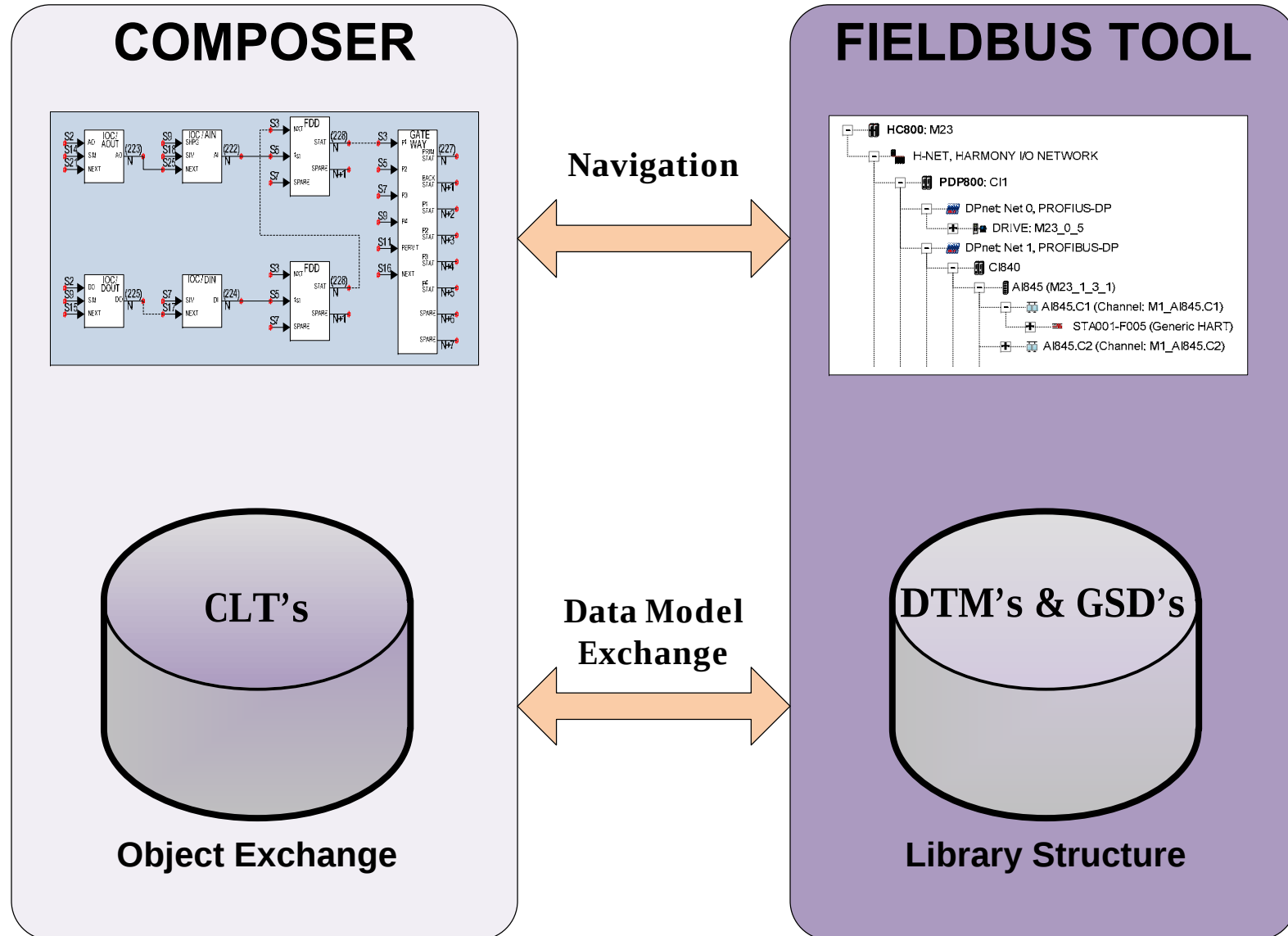
PN800: S+ Plant Network



- HART I/O Modules
 - HAI805 – 8 Analog Inputs
 - HAO805 – 8 Analog Outputs
 - Dedicated HART modem for each I/O Channel
 - Communicate to Controller via [Redundant] HN800
- Secondary /Tertiary HART variables:
 - Variables available in Controller (can be used in control strategy)
 - Update rates: less than 1 sec
 - Up to 4 secondary/tertiary ... variables per channel or device

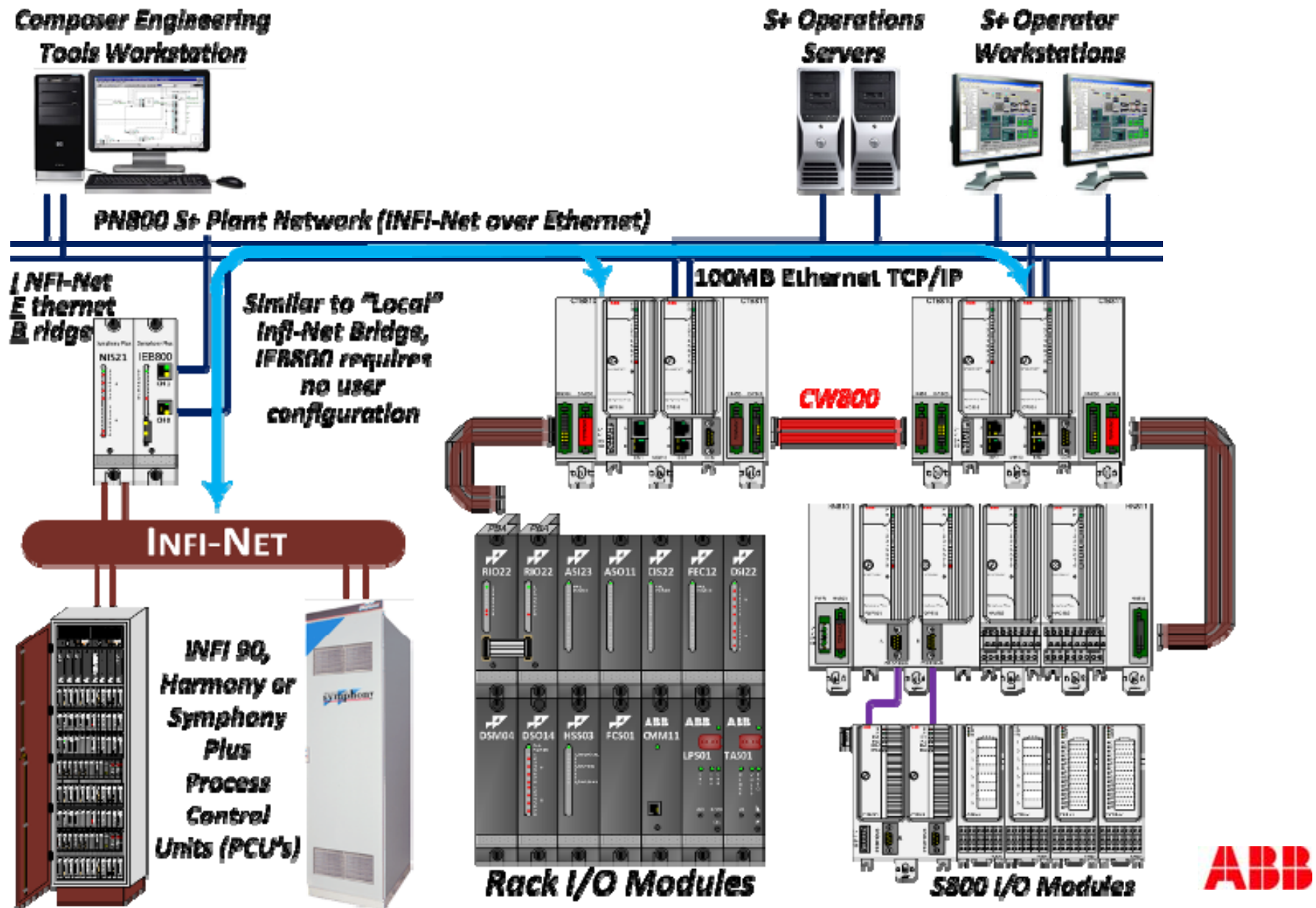
Symphony Plus – STEP 1

Fieldbus Tools integration with Composer



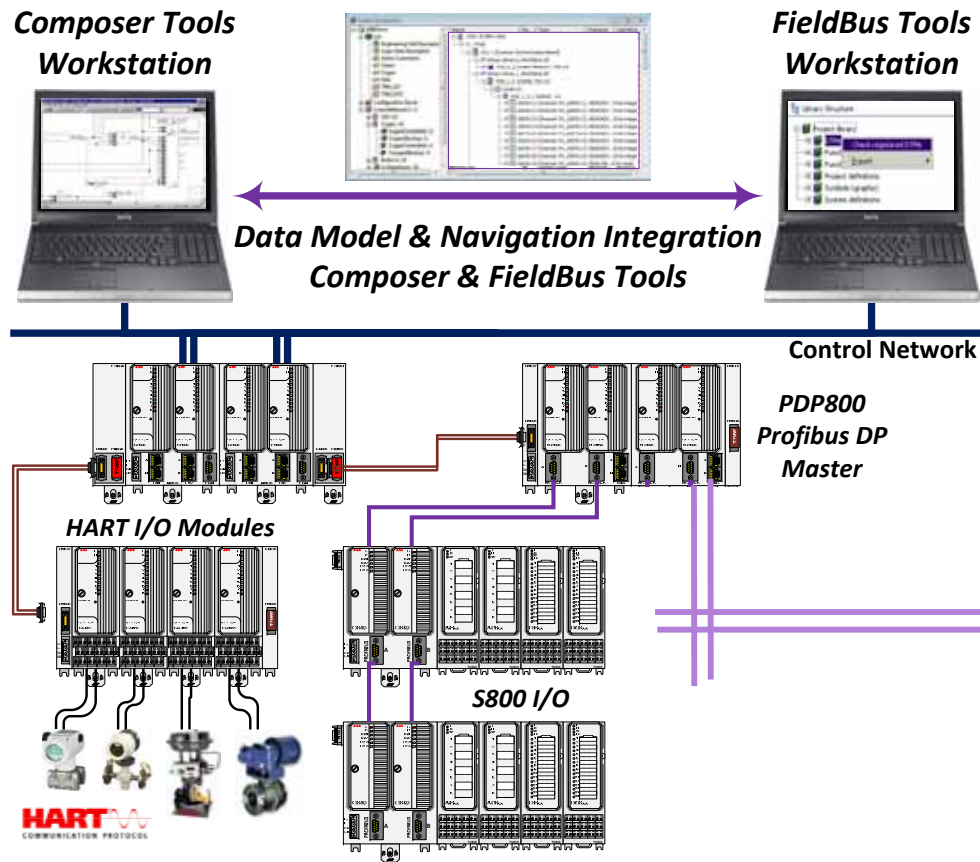
Symphony Plus – STEP 1

IEB800: INFI-Net to Ethernet Bridge

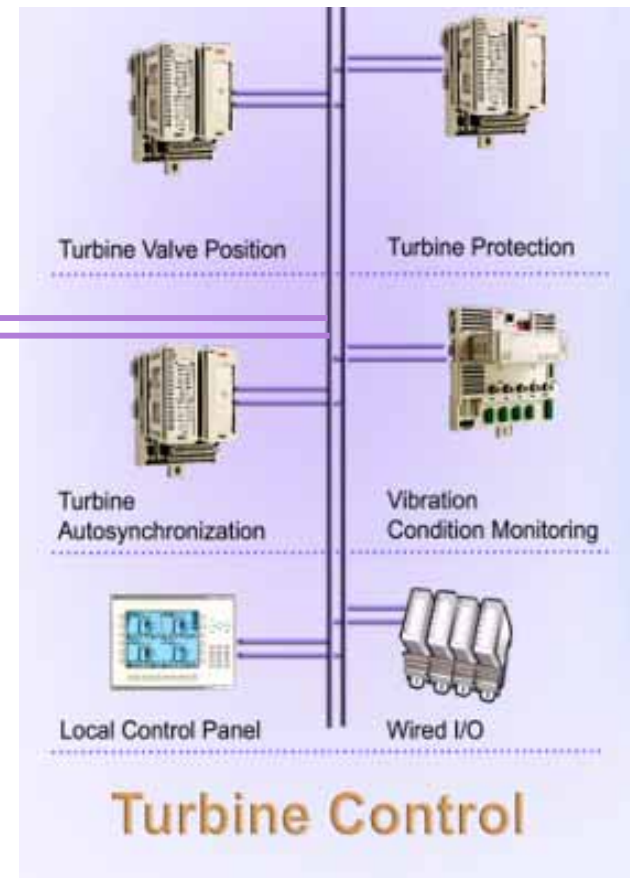


S+ Turbine Control / Condition Monitoring

Adding Latest Turbine



- Profibus Connection for Turbine Control
 - Valve Position
 - Turbine Protection
 - Auto Synchronization
 - Condition Monitoring



Symphony Plus Supporting Greenfield and Installed Base

*S+ Operator
Workstations*

*S+ Operations
Servers*

*Composer Engineering
Tools Workstation*

*FieldBus Tools
Workstation*

INFI-NET

Control Network

100 MB Ethernet TCP/IP

**INFI-Net
Ethernet
Bridge**

INFI-NET

*INFI 90, Symphony or
Symphony Plus
Process Control Units (PCU's)*

Rack I/O

(Modulebus)

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

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S800 I/O

S800 I/O

S800 I/O

Primary

Back-up

ModBus TCP

AC500

3rd Party PLC's

**Wireless
Gateways**

Wireless Transmitters

(Profibus)

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

S800 I/O

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S800 I/O

S800 I/O

Profibus Instruments

HART Instruments



Summary

- Lifecycle Extended Indefinitely
- New Developments at all levels of the Symphony system
- System 800xA continues in development and provides an additional evolution option
- Automation and Power World 2012 – Houston – April 23-26
 - DIN Controller
 - HART IO
 - Profibus Integration

Power and productivity
for a better world™

