

Control Technologies

Executive Summary

System 800xA 5.1 and feature releases

System 800xA 5.1 and feature releases

Overview of the presentation

- 800xA – leading control system and automation platform
- Features and Benefits 800xA 5.1 and feature releases
- The concept of Feature Packs
- Summary

Industry challenges

How can companies achieve and sustain exceptional operation performance?



- Meet health, safety and environmental requirements
- Minimize unscheduled shutdowns
- Increase asset utilization and reliability
- Minimize fixed and variable costs
- Phase out a soon-to-retire workforce

Key benefits 800xA 5.1 and feature releases

Improved user, system and plant performance



- Productized Control room environment using Extended Operator workplaces
- Integrated Alarm analysis for continues analysis and optimization to avoid nuisance alarm
- Increased support for High performance HMI improves situation awareness
- Simplified batch scheduling with one tool to organize parameters and schedule batch recipes
- Extended communication support for Foundation Fieldbus, Profinet, IEC 61850 and HART
- Increased virtualization support and doubled system capacity reduces the number of servers and installation costs
- Smart Client for presenting 800xA information in the office environment
- 800xA mobility guideline (2PPA110154-510)

Collaborative Process Automation

Going beyond the DCS



- Collaboration between systems, equipment and people
- Empowers people to perform optimal control actions and sound business decisions
- Requires the ability to share information without barriers

System 800xA Extended Automation

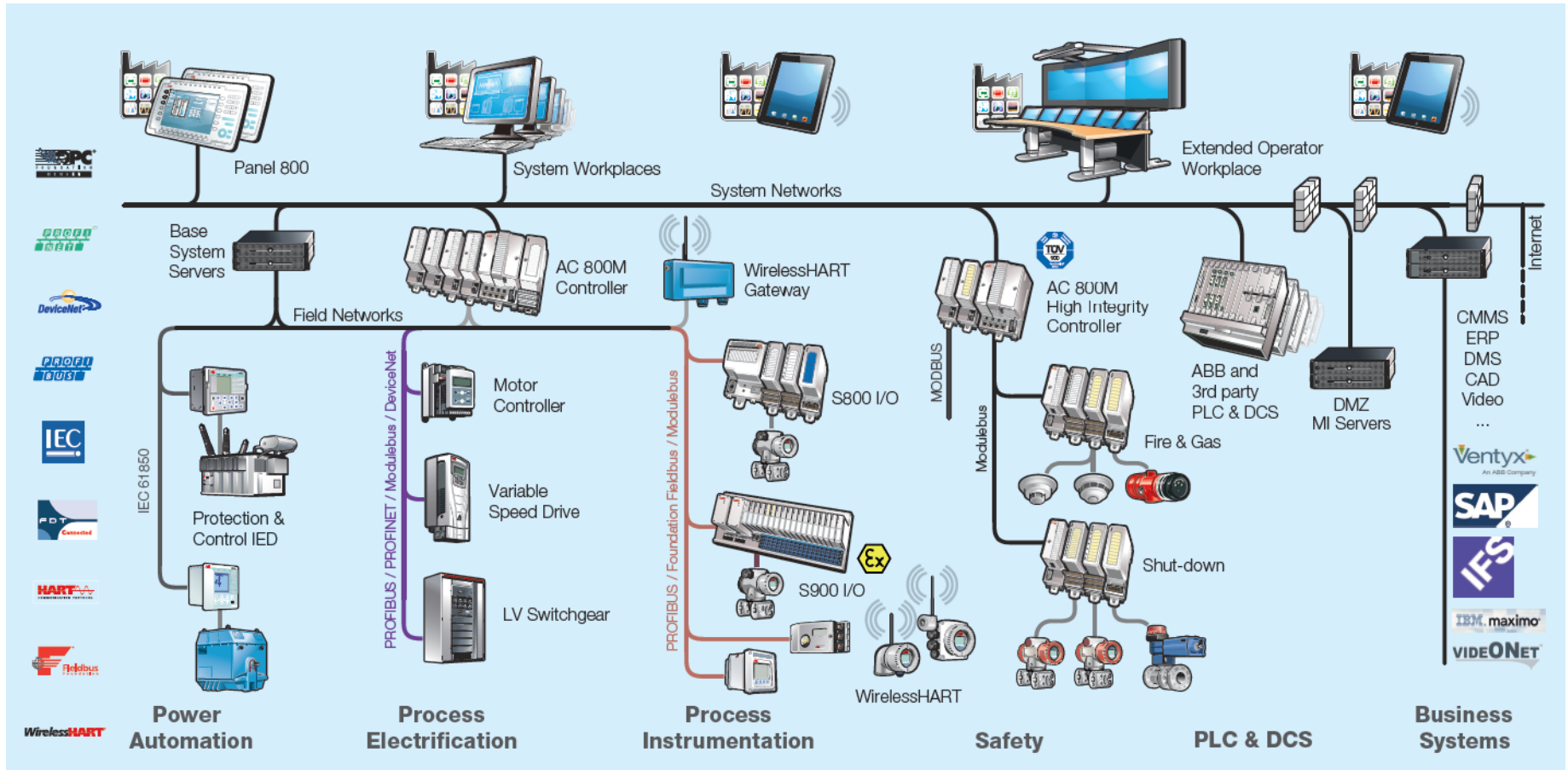
ABB's flagship control system



- System 800xA is the most capable automation platform on the market today
 - Comprehensive feature set
 - Largest global market share
 - Global support network
 - Reliable, Scalable and Flexible
- Unparalleled integration and connectivity to plant systems, applications, and devices
- Over 8000 systems installed since 2004

System 800xA Extended Automation

The power of integration



People, systems and equipment collaboration

800xA plant collaboration offering The power of integration

- **Options**
To facilitate collaboration
- **Core system**
Basic system-wide functionality
- **Hardware**
Controllers, I/O, PC, Network...



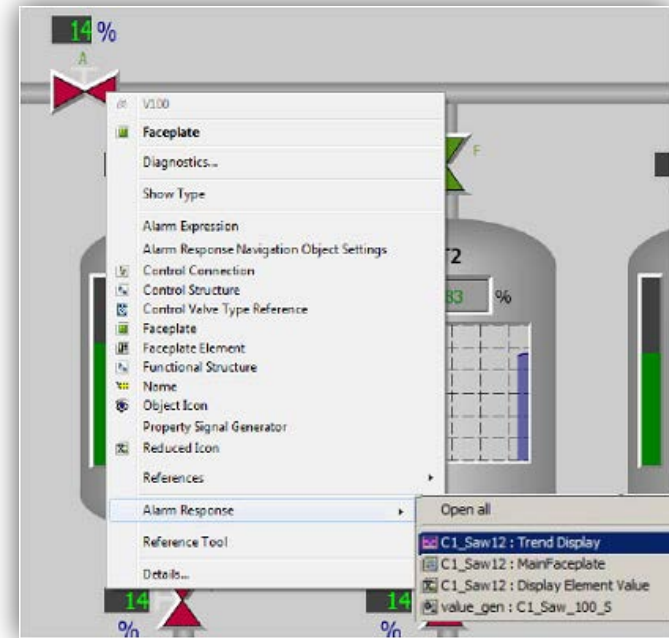
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System 800xA 5.1 – Highlights FP1

- Alarm Response
- Alarm Grouping
- Tabbed Navigation based Workplace
- Simplified Batch and Parameter Management
- SFC Viewer Improvements
- Multi-System Integration support for Point of Control, FF, and IEC 61850
- CMMS Integration support for Maximo version 7 and SAP ECC6



Alarm Response -
Giving operators a “head start” regardless of their experience level!

System 800xA 5.1 – Highlights FP2

Foundation Fieldbus Improvements

- Live list improvements
 - Real device type is shown instead of ABB version
 - Device that is Backup LAS is indicated
- Improved system diagnostics through LD800HSE

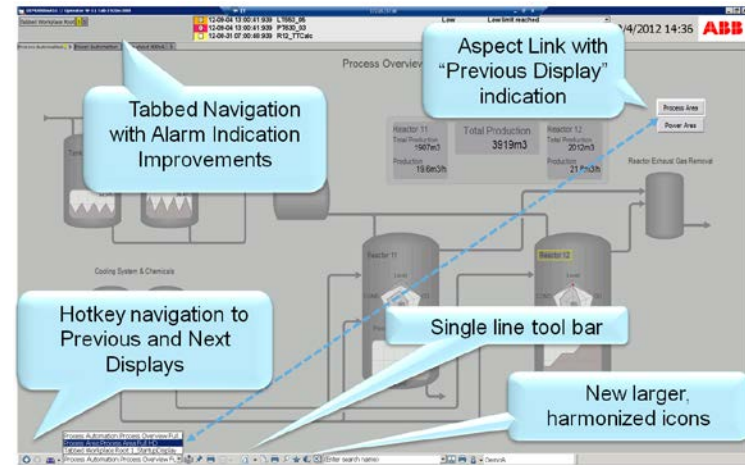


Live List		Diagnostics							
Icons	PD Tag	Live List Status	LAS Status	Download Action	Device Manufactur	Device Type	Device Address	PD Tag Dr	Dev
	LD_200				ABB	LD800HSE	172.16.108.168	LD 200	2 (
	FF_H1_LI_001		LAS (running)		ABB	H1 Link	4096 (1000hex)	Link 1	
	TIT030		BLAS		ABB	TF02 TEMPER/	20 (14hex)		1 (
	FIT030				ABB	TZID POSITIO	35 (23hex)		1 (
	FIT070				Softing AG	FBK Rock	36 (24hex)		3 (
	TIT010	configured			Endress+Hauser	TMT125	31 (1Fhex)		1 (
	TIT090	not available			ABB	TZID POSITIO	32 (20hex)		1 (
	VEGA_VEGA	active			VEGA Grieshaber	VEGABAR	44 (2Chex)		1 (

LD_200 (ABB LD800HSE) Device Assignment Mode: Online Device Type Reader standby Address Assignment standby PPAService

System 800xA 5.1 – Highlights FP3

- Tab Navigation w Alarm Summary
- New aspect view button with display history indication
- Display history navigation via hotkeys and selectable icon size
- Batch scheduler spreadsheet available on non-800xA nodes
- New batch scheduling graphic element
- Multi-System Integration support for Asset Optimization
- Support for latest HART protocol
- Improved fieldbus support for IO allocation
- Bulk configuration for SFC and SPL



Feature pack 3 improves productivity and profitability by increasing operator effectiveness, asset utilization and engineering efficiency.

System 800xA 5.1 – Highlights FP4



Feature Pack 4 continues to enable collaboration between people, systems, and equipment

- **Feature Pack 4 makes it easier to create, maintain and secure a collaborative environment**
 - Packaged Control room design offering using EOW
 - Control Diagrams Editor
 - Application Versioning
 - Inter-Application Variables Support for Load-Evaluate-Go
 - New communication capabilities
 - High Density S800 I/O
 - Virtualized Clients
 - Standard Diagnostic Displays for AC800M
 - Industrial Defender Integration
 - Safety enhancements

System 800xA Extended Automation

Plant-wide consolidation, collaboration and optimization



System 800xA removes
barriers and promotes
collaborative process
automation!

Operator Effectiveness

- Full scope and features set includes control room design based on human factor best practices

Integrated Safety

- Promotes collaboration by combining basic process control with high-integrity applications

Automation and Power Integration

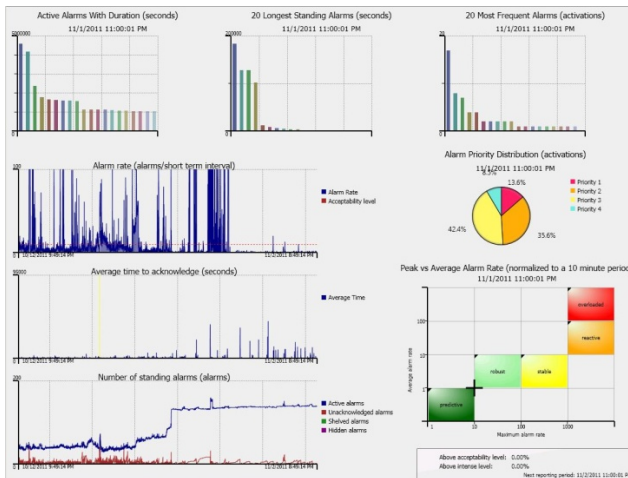
- Promotes collaboration by combining process automation and power automation in a common infrastructure

Enterprise Asset Management

- Full-scope asset monitoring and manufacturing operations management

Operator effectiveness

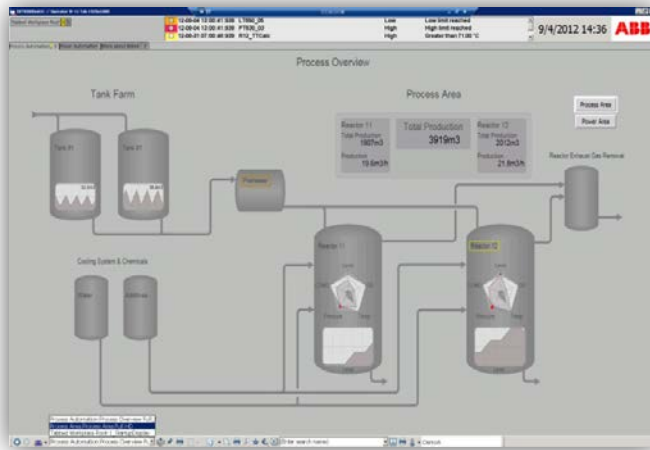
Improved alarm management



- Empowering the operators increases availability, safety, and quality and is a key enabler for consolidated operations
 - Alarm analysis acc to ISA 18.2 and EEMUA 191 (5.1)
 - Support for hiding and shelving of alarms (5.1)
 - Group alarms, a single alarm instead of several (FP1)
 - Alarm response, direct navigation from the alarm to object information (FP1)

Operator effectiveness

Display navigation tools improves situation awareness



- Indication on an aspect link if the link points to the previous display simplifies and speeds up navigation (FP3)
- Combined one line toolbar gives the operator more workplace space and simplifies access to tools((FP3)
- Selectable size for workplace toolbar icons improves operator screen and process interaction (FP3)
- Hotkey support for display history (Back-Forward) enables effective and familiar navigation (FP3)

Operator effectiveness – 5.1 FP 4

Extended Operator Workplace x

- EOW-x2 and EOW-x3
 - A base for collaborative plant operation
 - Transforms control rooms to collaboration centers
 - Managers and engineers can now easily create powerful collaboration environments using packaged solutions
 - Packaged preconfigured workplaces, including everything from software to screens and operator desk
- The EOW products includes
 - Software: Extended Operator Workplace, Operator Workplaces, Video-clients and input channels, CAD viewers
 - Hardware: Operator desk, Video Camera, Screens, Multi-client keyboard
 - Packaging & freight included



Operator effectiveness – 5.1 FP 4

Extended Operator Workplace f

- EOW-f2 and EOW-f3
 - A basic version of the EOW
 - Fixed screens and tables
 - Packaged preconfigured workplaces, including everything from software to screens and operator desk
- The EOW products includes
 - Software: Extended Operator Workplace, Operator Workplaces
 - Hardware: Operator desk, Screens, Multi-client Keyboard
 - Packaging & freight included



High Performance Graphic Elements Included in 5.1 FP 4

Operator Effectiveness

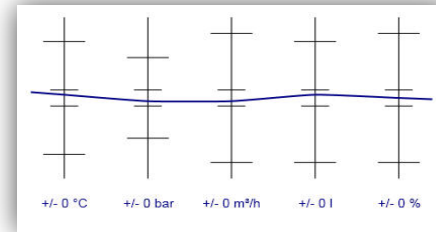
Integrated
Automation and
Power

Integrated Safety

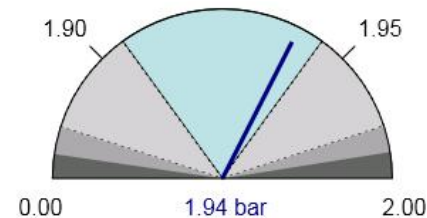
Enterprise Asset
Management

- PG2 Graphic Elements
- Numeric values freely configurable (e.g. as deviation from good-range)
- Display with or without numeric values
- Immediately indicates an abnormal situation for operators to take action
- No licence required

Improved situation
awareness!



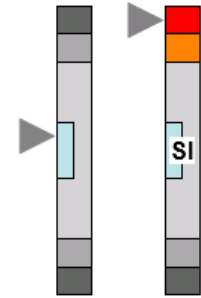
- Normalized trends



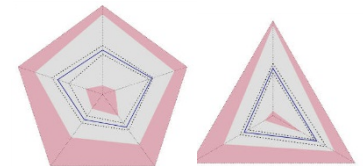
- Volt meter



- Alarm priorities
w/shapes



- Bar charts

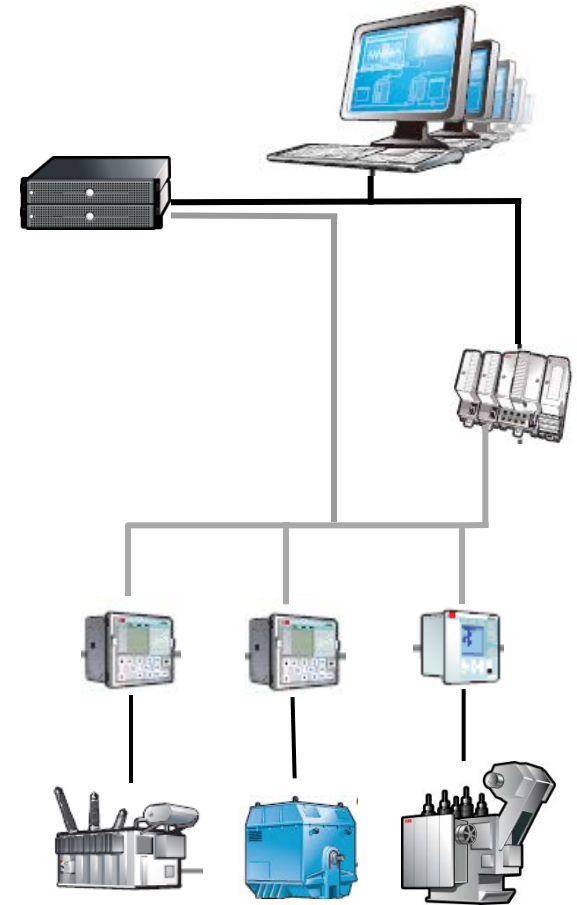


- Radar charts

Automation and power integration

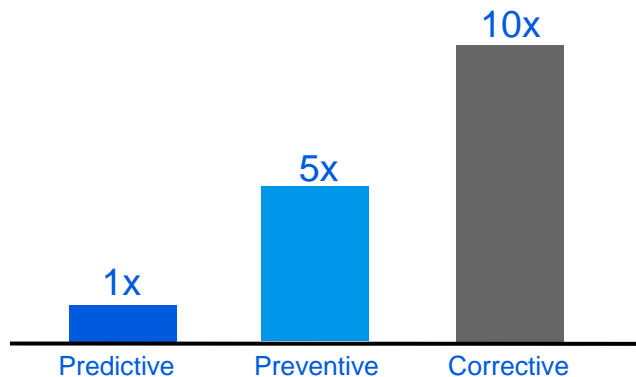
Embedded power automation - 5.1 FP 4

- Simplified IEC 61850 engineering workflow (IET tool dependency removed)
- Operations library for substation equipment (IEC and ANSI symbols)
- IEC 61850 OPC server
 - Extended signal configuration
- New CI868 features
 - MMS support
 - CI868 as IED (more cost effective deployment)
- Available for Harmony Controllers
- Enabled for Channel Partner sales
- More flexibility in 61850 networks layout supports network and voltage level correlation
- MMS variables available in AC 800M



Enterprise asset management

Improved support for predictive maintenance



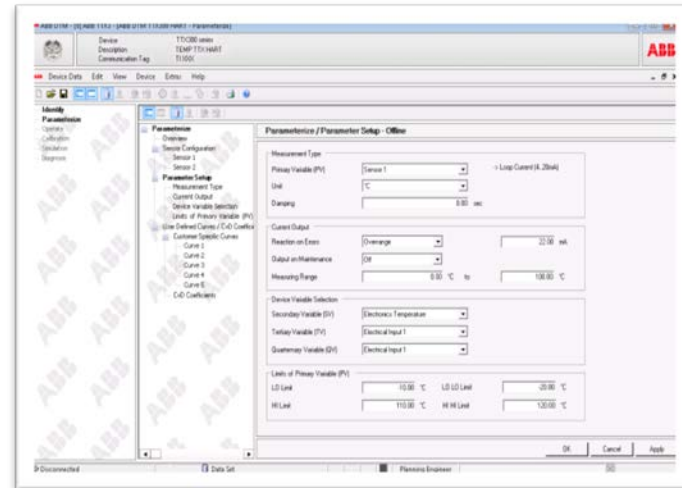
Corrective maintenance can cost ten times as much as a predictive maintenance strategy.

- Enabler for applying effective maintenance strategies and the shift to predictive maintenance
- Integration of CMMS with 800xA reduces unplanned downtime and disturbances
 - Improved 800xA support for Control Loop Asset monitors to 500 in one system (Rev A)
 - Improved support for integration of CMMS with 800xA, latest versions as well as previous for IBM Maximo and SAP (FP1)

Enterprise asset management

Support for latest protocol's increases asset utilization

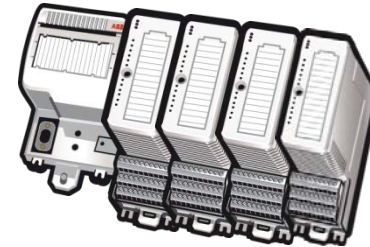
- Smart device communications and consolidated asset management system (FP3)
 - HART 7 support in base Device Type Manager (DTM)
 - HART Device Management support with AC 870P
 - Multi-system support for Asset Optimization (condition monitoring, reporting etc from the subscriber system)



S800 High Density I/O modules and MTUs – 5.1 FP 4

- New I/O Modules

- DI818 - 32 channel 24V
- DO818 - 32 channel 24V
- DI828 - 16 channel 120V
- DO828 - 16 channel Relay



- New Modular Termination Units

- TU818 MTU with screw terminals
 - 32 Channel single wire with same foot print as 16 Channels, for DI818, DO818
 - 16 Channel 2 wire connection, e.g. DI810, DO810
- TU819 MTU with 2 x 25 pin D-sub (32 Channels)
 - For use with DI818, DO818
- TU851 MTU that can handle 16ch, >50V
 - For use with DI828 and DO828
- TU852 and TU854, redundant MTU's with 25 pin D-sub
 - For use with S800 units supporting redundancy



Footprint and cost reductions – 5.1 FP4

Potential savings for only Digital I/Os

	Foot print reduction due to less quantity (Only Digital)	Cost reduction due to less quantity (Only Digital)
I/O Module	Up to 50%	Same amount of channels needed
MTU	Up to 50%	Up to 50%
FCI	Up to 30%	Up to 30%
Misc	Up to 5%	Up 5%
I/O Cabinets	Up to 50%	Up to 50%

Footprint and cost reductions – 5.1 FP4

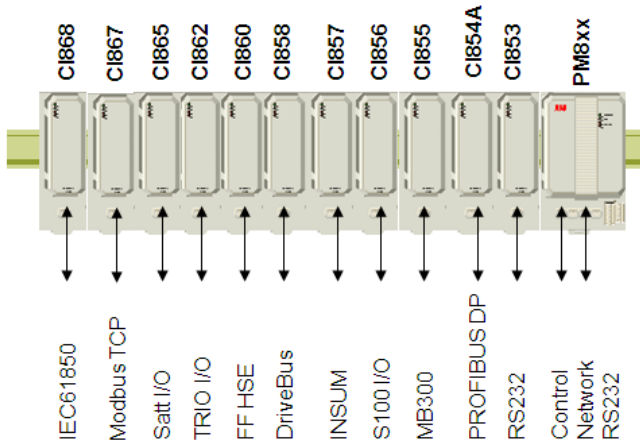
Savings for a typical project (30% Analog, 70% Digital)

	Foot print reduction due to less quantity (Only Digital)	Cost reduction due to less quantity (Only Digital)
I/O Module	20-30%	Same amount of channels needed
MTU	20-30%	20-30%
FCI	~20%	~20%
Misc	Up to -5%	Up 5%
I/O Cabinets	20-25%	20-25%



Communication

Improved communication capacity



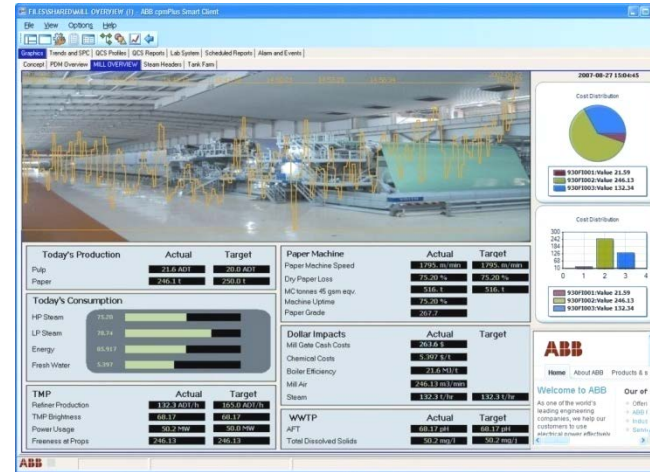
A wide portfolio of communication interfaces promotes effective plant-wide integration and facilitates easy access and usage of diagnostic data from smart

- Support for Profinet, Device Net and Wireless HART (5.1)
- Improved support for Foundation Fieldbus
 - EDDL
 - More efficient and faster commissioning in Device Management (FP2)



Smart Client

Improves production follow-up



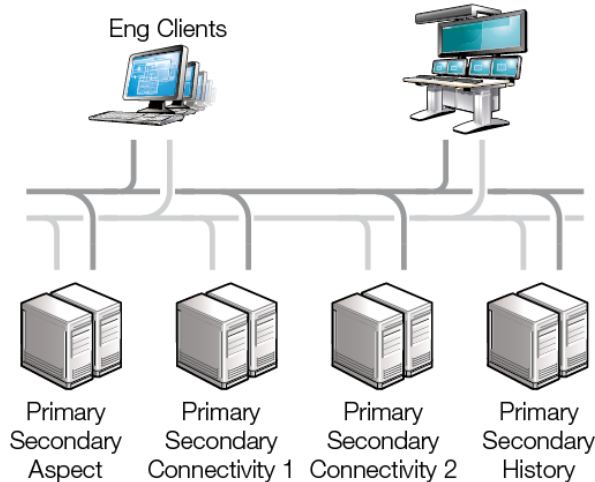
- Desktop client for office users with access process data and easy to use tools for effective analysis and reporting (Smart Client v2.2)
- Improves plant visibility, production follow-up and the production planning process
 - Reuse existing 800xA PG 2 graphics; view live data, navigate to related displays etc (Smart Client 2.2)
 - Reuse existing graphics, engineering and system investments

Virtualization – 5.1 FP 4

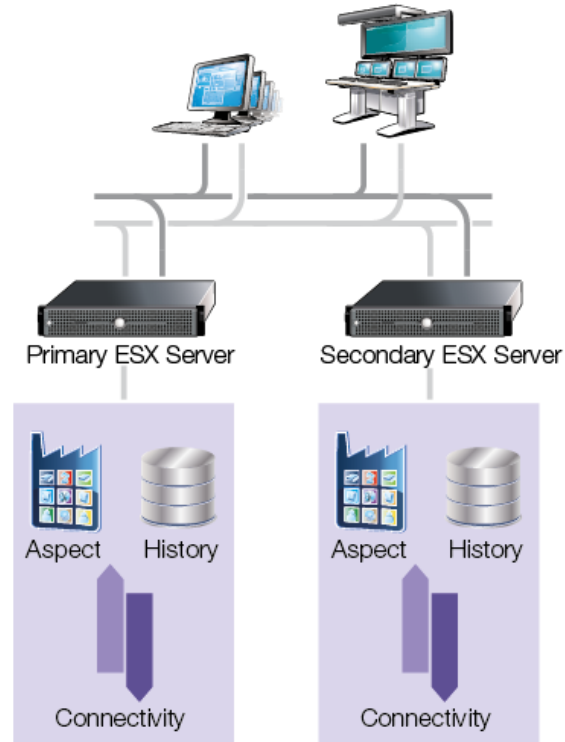
Virtualized clients

- Virtualized Clients, entire system can be virtual now
 - Including Servers and Clients
 - No 800xA SW on physical client machines
- Support for ESXi 5.1

Before, 8 physical servers



Virtualization with 2 servers



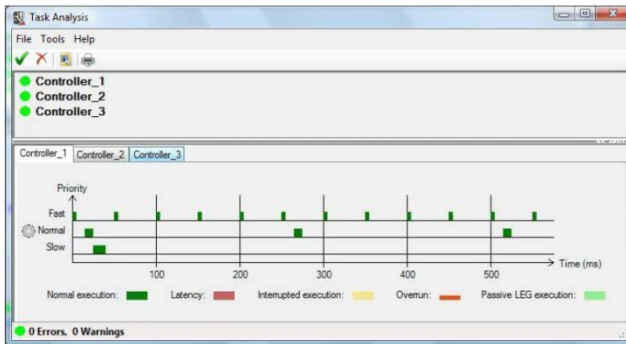
Cyber Security - 5.1 FP 4

- 800xA Cyber Security today
 - High default security based on 3D+C framework
 - Testing MS Security updates
 - Qualified anti virus solutions
 - Security fingerprint services available
- New 800xA Cyber Security presentation
- Extended security options introduced in FP4
 - Industrial Defender for 800xA, qualification of Monitor and Manage products
 - Application whitelisting with Cryptzone, by using SE46 standard



Engineering

Improved support for cost-effective solutions

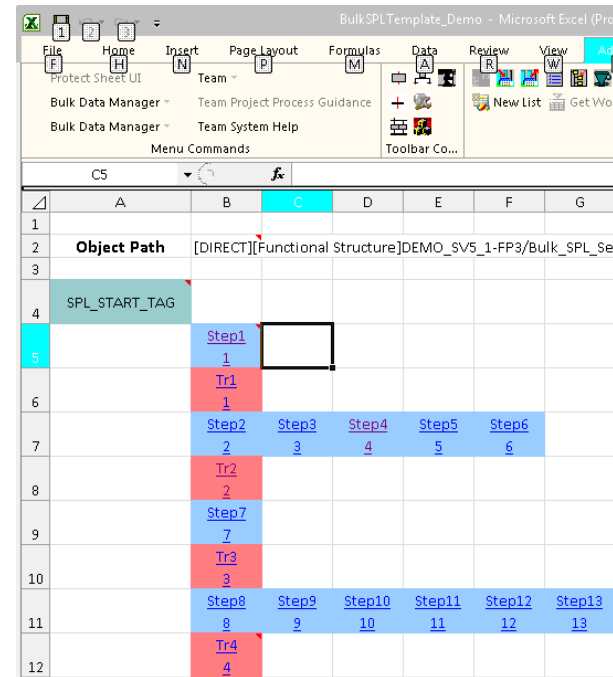


- Valued added engineering that generates cost-effective solutions
- Standardization and reusable solutions deliver the best overall engineering value
 - Task analysis tool helps the user to evaluate the application (5.1)
 - The detailed difference report makes it easier to see and track changes in the application (5.1)
 - The process engineering tool interface supports advanced Foundation Fieldbus configuration (FP1)

Engineering

Improving efficiency through better workflows

- Improved support of fieldbus I/O allocation and configuration workflow for sequential logic (FP3)
 - Improved IO allocation in Function Designer for Profinet, Foundation Fieldbus, and IEC61850
 - Automated importing of sequential logic from MS Excel to Control Builder and Function Designer

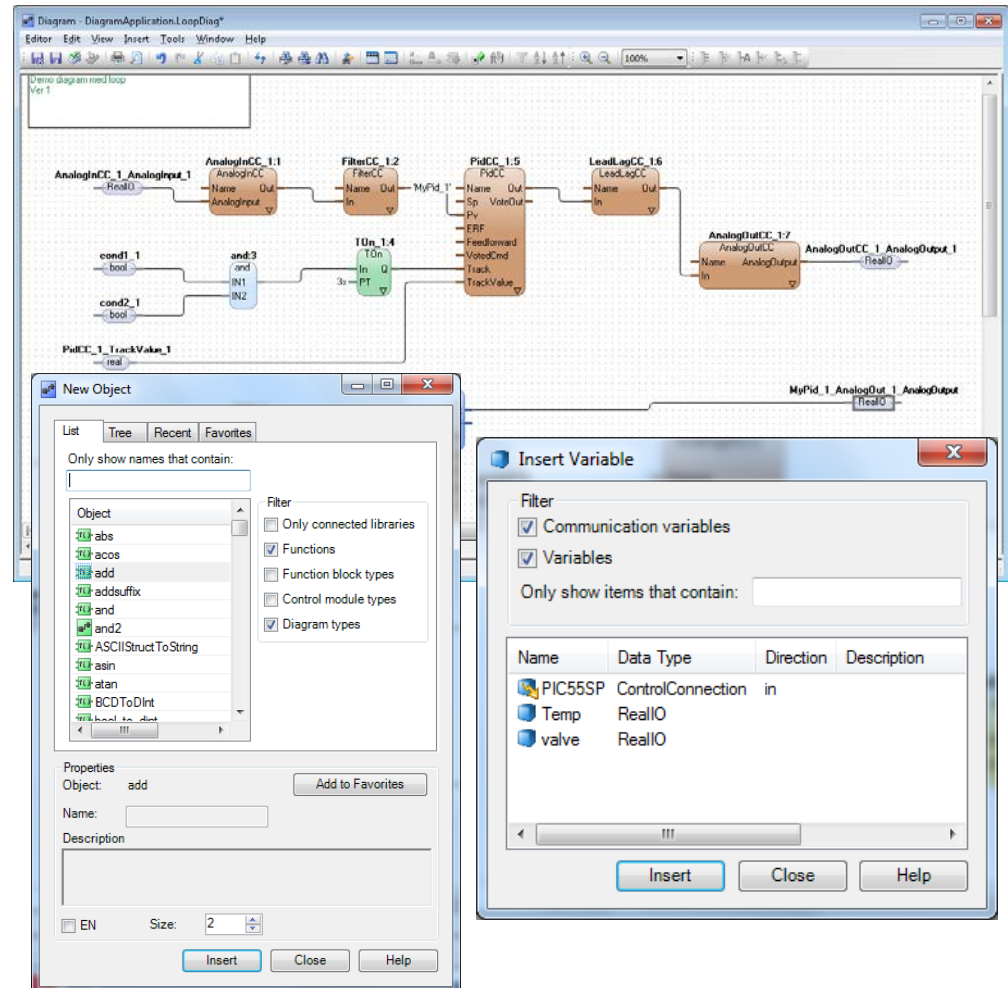


The screenshot shows a Microsoft Excel spreadsheet titled 'Bulk SPL Template_Demo'. The spreadsheet contains a table with 12 rows and 7 columns (A-G). The table is used for configuring sequential logic steps and transitions. The 'Object Path' in cell B2 is '[DIRECT][Functional Structure]DEMO_SV5_1-FP3/Bulk_SPL_Sec'. The table structure is as follows:

	A	B	C	D	E	F	G
1							
2	Object Path	[DIRECT][Functional Structure]DEMO_SV5_1-FP3/Bulk_SPL_Sec					
3							
4	SPL_START_TAG						
5		Step1 1					
6		Tr1 1					
7		Step2 2	Step3 3	Step4 4	Step5 5	Step6 6	
8		Tr2 2					
9		Step7 7					
10		Tr3 3					
11		Step8 8	Step9 9	Step10 10	Step11 11	Step12 12	Step13 13
12		Tr4 4					

Engineering Control Diagram Editor – 5.1 FP 4

- Easy to work with
- Compatible with FBD, CMD, ST, SFC
- Parallel engineering supported
- Open interface (XML)
- Independent
- Tools
 - New Object browser
 - Insert variables
 - Paste-special
- SIL support



Batch

Streamlining batch operations improves efficiency

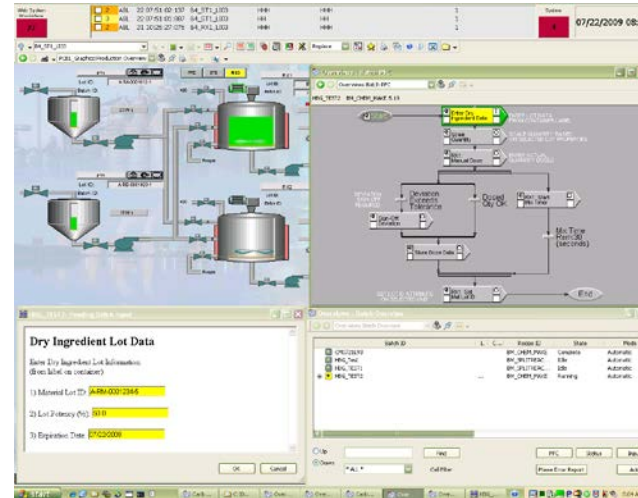
A screenshot of the Batch Spreadsheet Scheduler software interface. The interface is a spreadsheet with various tabs and data. The 'Batch' tab is active, showing a table with columns for Parameter, Default Value, Formula, New Value, Values to be Written, Low Range, High Range, Type, Engineering Units, and Description. The table contains several rows of data, including parameters like Param1, Param2, Param3, Param4, Param5, and Param6. The 'Batch' tab also includes a 'Schedule Batch' section with a 'Result' table. The 'Batch' tab is part of a larger application with multiple tabs, including 'Batch', 'Parameter', 'Schedule', and 'Help'.

- Comprehensive functionality integrated with system operations improves user and process efficiency
 - Simple Batch and Parameter Management : one tool to organize parameters and schedule batch recipes, fast and easy, no training required improves process and operator effectiveness (FP1)
 - Multi-write capability for OPC increases application performance (FP1)

Batch

Improved simplicity in batch scheduling

- Scheduling of batches is taken to a new level of simplicity by new ways to schedule and monitor batches (FP3).
 - Ability to have the Batch Scheduler Spreadsheet on non-800xA nodes
 - Enhanced security on the Batch Scheduler Spreadsheet Parameters
 - New Batch Scheduler Graphic Aspect for simplified scheduling
 - Accessibility to batch status parameters for improved visibility



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The concept of Feature Packs

More value to Sentinel subscribers

- Release of new features and functions between system version releases
 - To be used as “add-ons” to an already available system version
 - Allows a more agile response to market requirements without revising or releasing a system version
- Users are not forced to adopt a feature pack
 - A new installation can choose to install the main version only, or to also add the feature pack
 - An existing installation can choose to stay on the main version, or to install the feature pack at any time

5.1 Rev C FP4 March 2013

5.1 Rev C December 2012

5.1 Rev B FP3 September 2012

5.1 Rev B July 2011

5.1 Rev A FP2 March 2012

5.1 64 Bit February 2012

5.1 Rev A FP1 September 2011

5.1 Rev A May 2011

800xA 5.1 July 2010

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Power and productivity
for a better world™

