230328

System 800xA Update

800xA

Magnus Hammar, a.i. PLM 800xA

Presenters

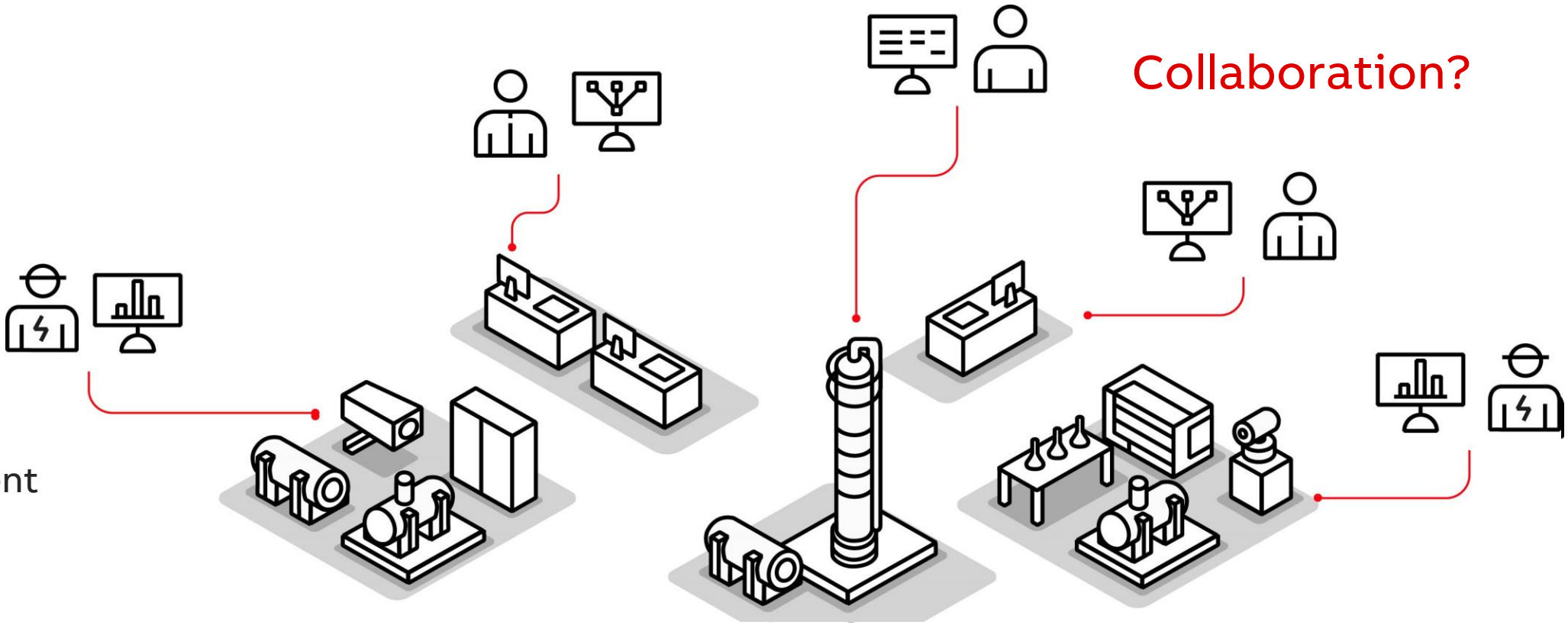
Magnus Hammar
Product Line Manager 800xA

Agenda

01. 800xA Value Propositions & Key selling points
02. 800xA Updates in 6.1.1 and 6.1.1.1
03. Device management
04. Future Sneak Peak

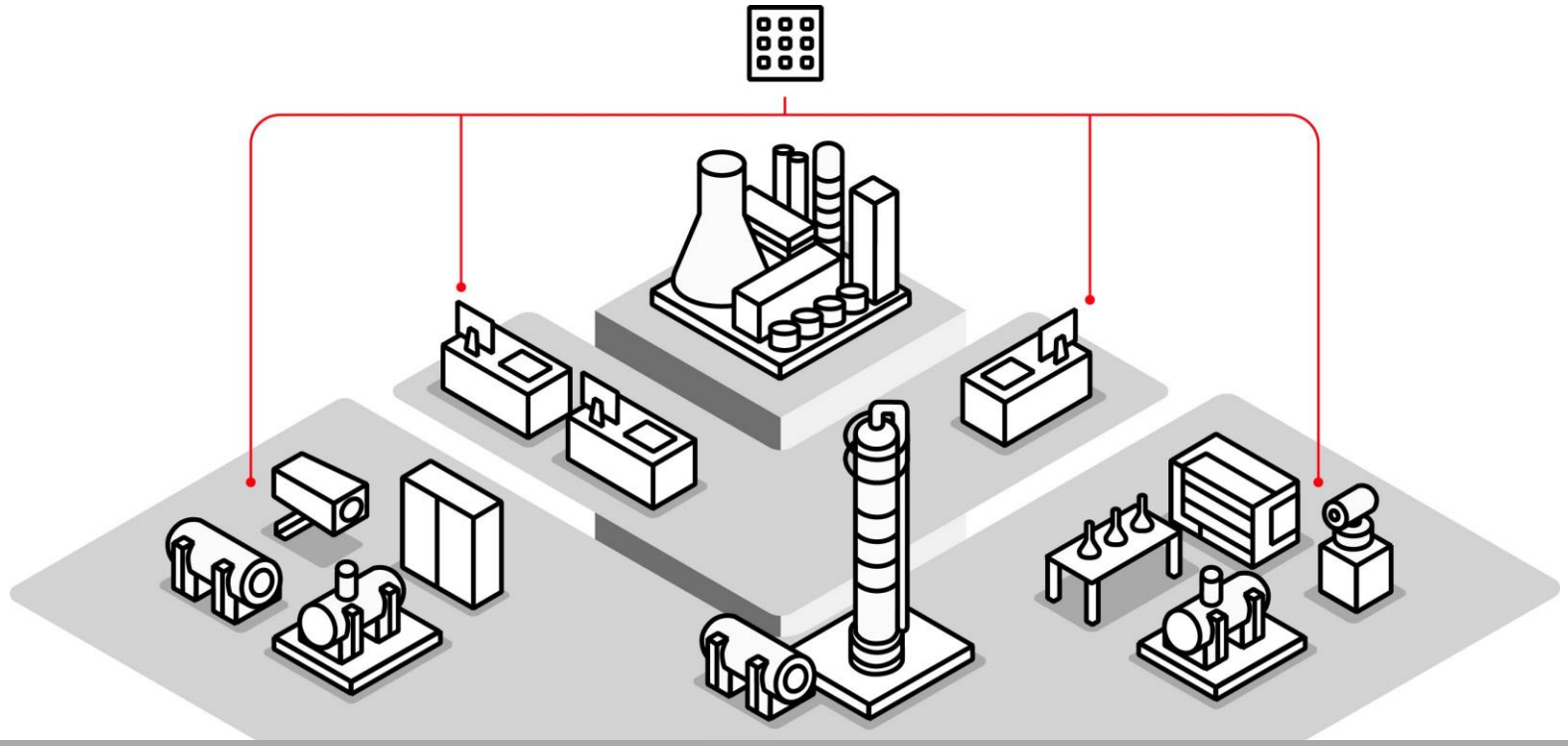
800xA Value Propositions

Industry Challenges



Equipment
Systems
People

Collaborative Process Automation System (CPAS)



Single view for all systems and equipment

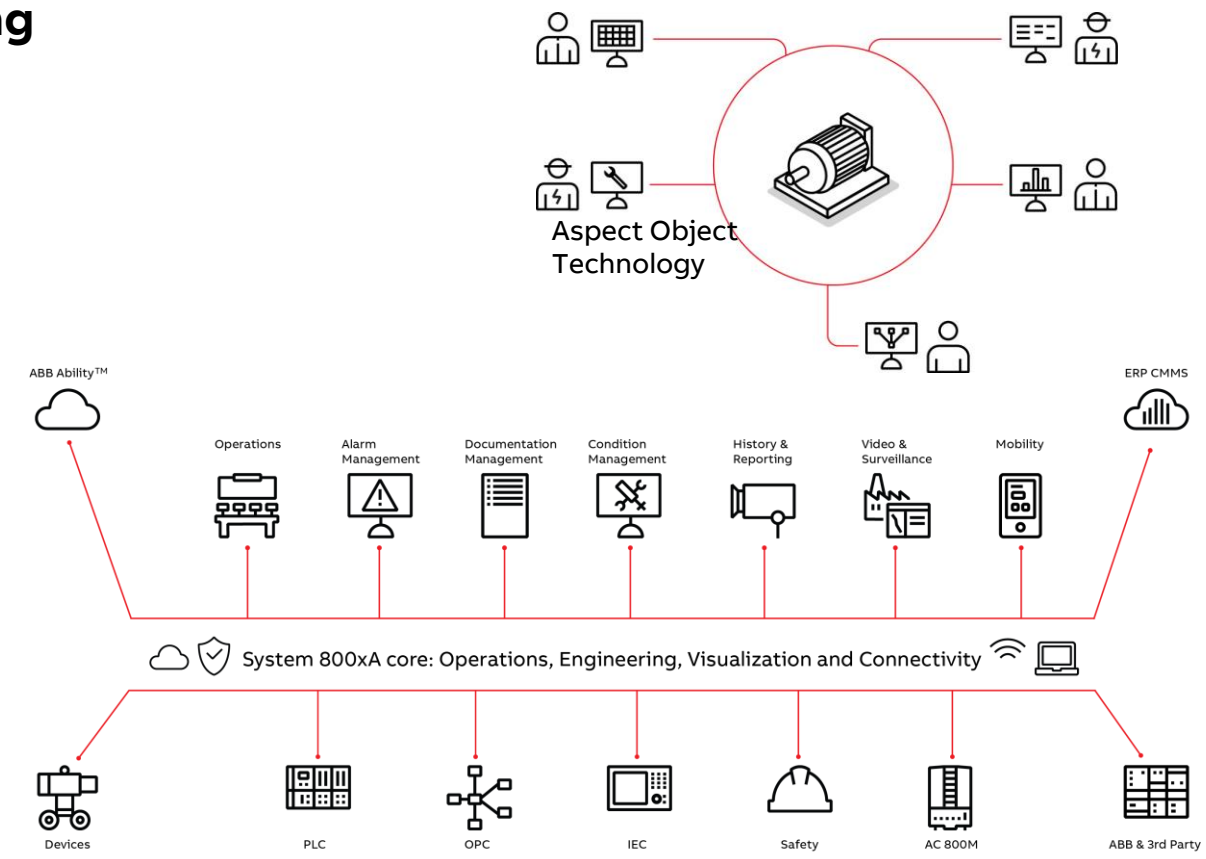
ABB Ability™ System 800xA

The Power of Integration

Process, electrical, and safety control and monitoring in one collaborative process automation platform.

- **Based on an integration platform** with seamless connectivity plant control and monitoring systems, communication protocols and fieldbus technologies
- Allows **for simultaneous execution of various automation strategies** in one collaborative environment
- **Connectivity solutions** for both ABB and third-party controller platforms
- Provides an overall **lower cost of ownership** and foundation for digital applications

Enables collaboration between systems, people, and equipment



What’s New in 6.1.1 and 6.1.1.1

Lifecycle Updates

System 800xA v6.1.1.1

Approximately 3 hours saved per node!

Protecting the core!

Three Operating System Versions Supported!

- **NEW** Win 10 IoT Enterprise LTSC 2021 *
- **NEW** Windows 2022 Server*
- Windows 2019 (10 LTSC & Server)
- Windows 2016 (10 LTSC & Server)

Windows 2016, 2019 & 2022*

Virtualization Platforms

- VMware ESXi 6.7, 7.0
- MS Hyper-V

vmware

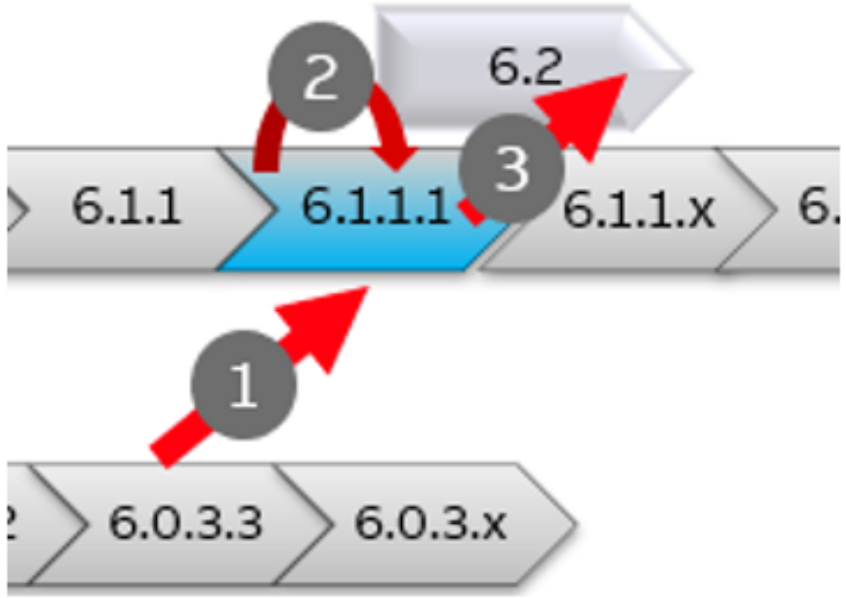
Microsoft Hyper-V

Windows Update in Place

- **NEW** Upgrade the underlying Windows operating system without having to reinstall and reconfigure 800xA and 3rd party software! (Starting with Windows 2016)

Example: Upgrading a system at 6.0.3.3 (2016) to 6.2 (2022)

1. Update to 6.1.1.1
2. Update Windows (2016 – 2022)
3. Update to 6.2



Lifecycle Updates

Lifecycle of Win 10 2021 LTSC

What changed in Windows LTSC lifecycle?

- Win 10 Enterprise LTSC only has a 5-year life cycle from 2021 onwards.
- In order to get the full 10 years, from time of release, **Win 10 IoT Enterprise LTSC** need to be used.

- How to get IoT licenses?
  - Use 800xA workstation from Arrow: https://link.arrow.com/abb/
  - Purchase IoT license from Arrow or Dell using ABB agreement with Microsoft and build the license with workstation hardware.

Windows 10 Enterprise LTSC 2021

Windows 10 Enterprise LTSC 2021 follows the Fixed Lifecycle Policy.

Support dates are shown in the Pacific Time Zone (PT) - Redmond, WA, USA.

Support Dates

Listing	Start Date	Mainstream End Date
Windows 10 Enterprise LTSC 2021	Nov 16, 2021	Jan 12, 2027

2027

https://docs.microsoft.com/en-us/lifecycle/products/windows-10-enterprise-ltsc-2021

Windows 10 IoT Enterprise LTSC 2021

Windows 10 IoT Enterprise LTSC 2021 follows the Fixed Lifecycle Policy.

Support dates are shown in the Pacific Time Zone (PT) - Redmond, WA, USA.

Support Dates

Listing	Start Date	Mainstream End Date	Extended End Date
Windows 10 IoT Enterprise LTSC 2021	Nov 16, 2021	Jan 12, 2027	Jan 13, 2032

2032

https://docs.microsoft.com/en-us/lifecycle/products/windows-10-iot-enterprise-ltsc-2021

System 800xA version 6.1.1.x is now ISASecure®

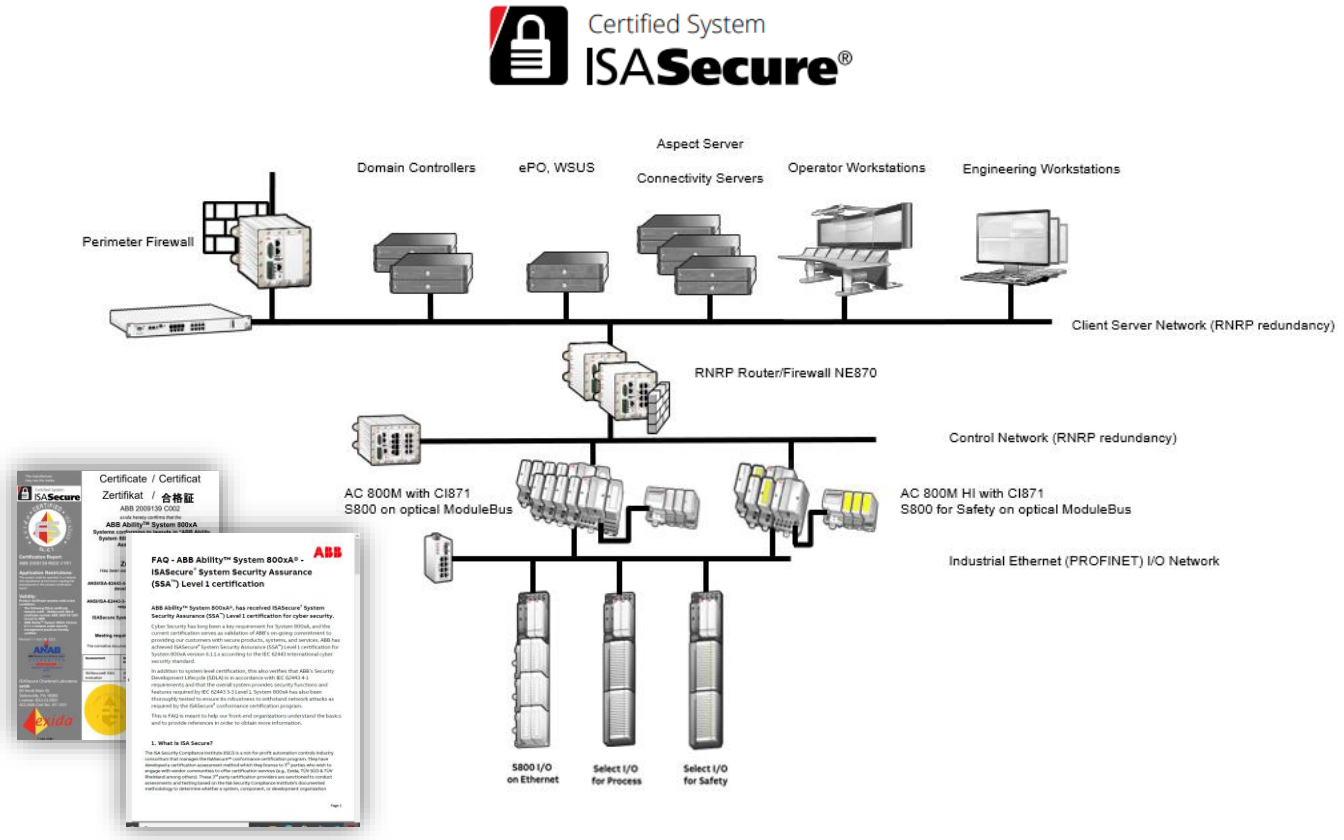
System Security Assurance (SSA) Certification

Providing Safe & Secure Operations

ABB Ability™ System 800xA®, has received ISASecure® System Security Assurance (SSA™) Level 1 certification to the IEC62443 standard.

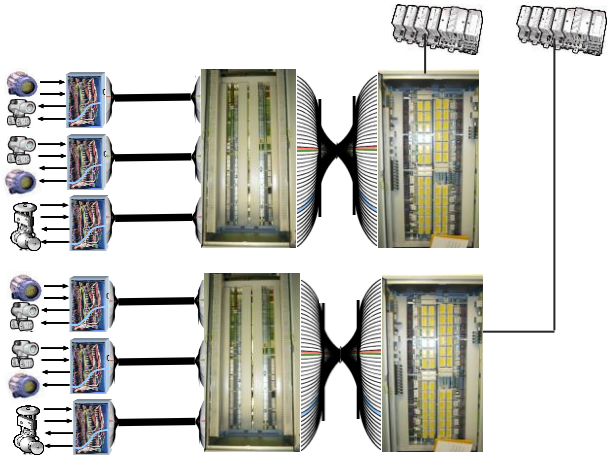
- Provides 3rd party validation of ABB's commitment to security
- For customers to use as the base for their installed system certification and assessment work if required

Certificates can be obtained at www.isasecure.org



Motivation Select I/O

Traditional Multi Channel I/O vs Select I/O

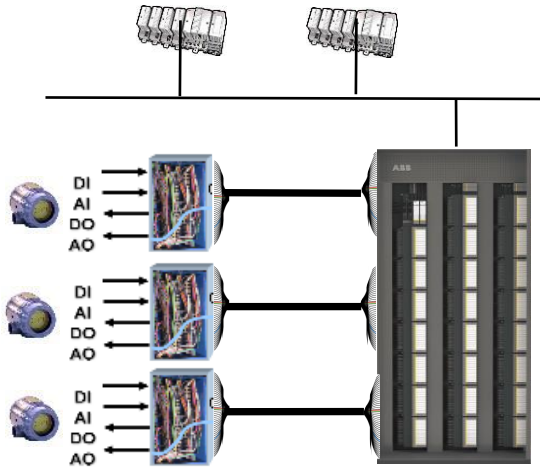


An instrument is routed a specific path though JB, marshaling and I/O cabinets

Cabinets within a project are most likely different

- Since an instrument belongs to a application one need to assign the applications into different controllers before starting cabling, marshaling and I/O cabinet design
- One also need to know the exact signal type of each instrument used in that application, redundancy needs, power needs, disconnect needs etc before I/O cabinet design can start
- Marshaling is almost always needed
- Each cabinet is **uniquely** designed/build/tested/documented
- Time consuming system FAT is normally performed on ALL cabinets
- Changes and expansions are costly and time consuming

Route the channel/instrument to any controller



Use same standard cabinet for all applications

No marshaling or terminal blocks or fuses

Any slot can hold any signal types

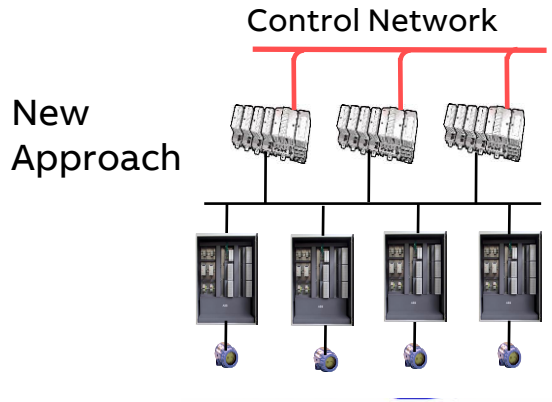
Connect any instrument to any empty slot in the cabinet

- An instrument can be wired up to any slot in any I/O cabinet and be freely routed to any Controller
- No dependency between hardware and application
  - Connect instrument anywhere and run application anywhere
- NO Marshaling is needed
- NO need for individual design/ build/testing/documentation of the I/O cabinets
- NO tradition FAT with all I/O is needed
- Changes and expansions are very simple

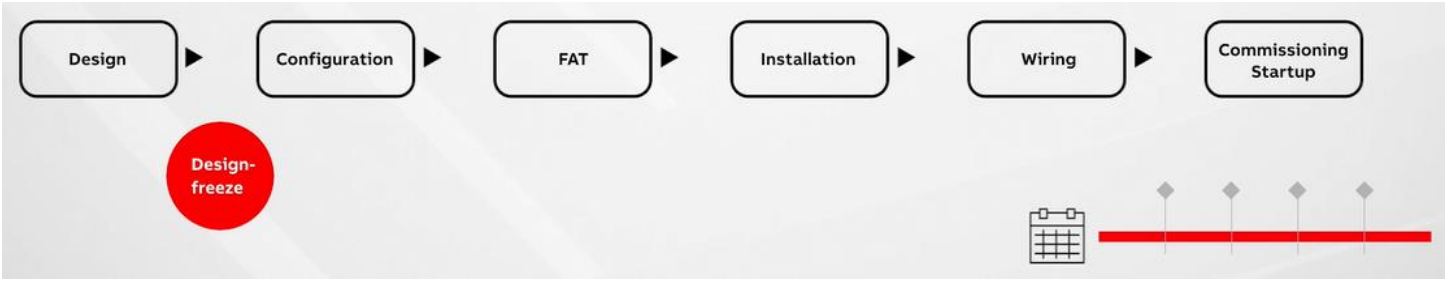
For Select I/O there is no dependency between application and hardware
=> Application engineering can run in parallel with hardware engineering
=> Reduced project execution time and cost

Motivation Select I/O

Reduced project execution time and cost

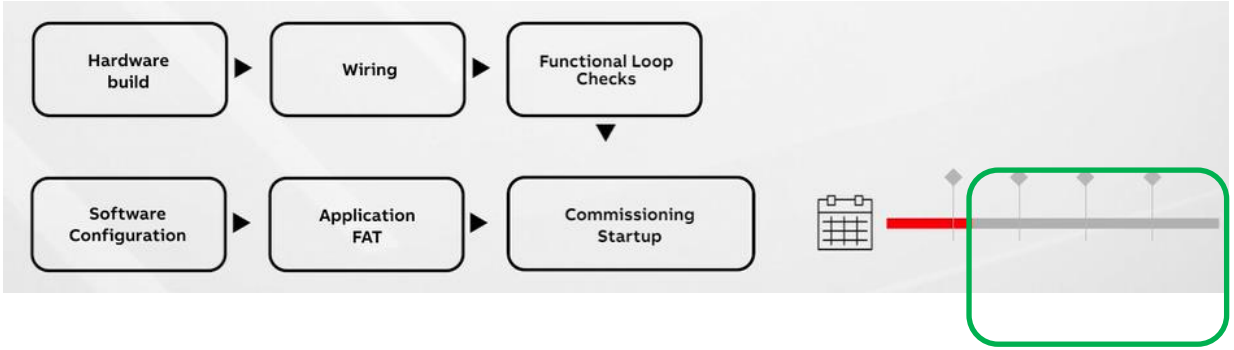


Traditional Approach – Serialized, Dependency Driven Project Execution



- Dependencies drive a 'serial' approach.
- Rough field cable design and allocation of applications to specific Controllers is mandatory before I/O hardware design/build can start
- Application programming begins after hardware freeze
- FAT before installation at site
- Late changes create costly change orders since there is a strict relation, Field Device – I/O – Controller – Application

New Approach WITH SELECT I/O – Decoupled, Parallel Project Execution



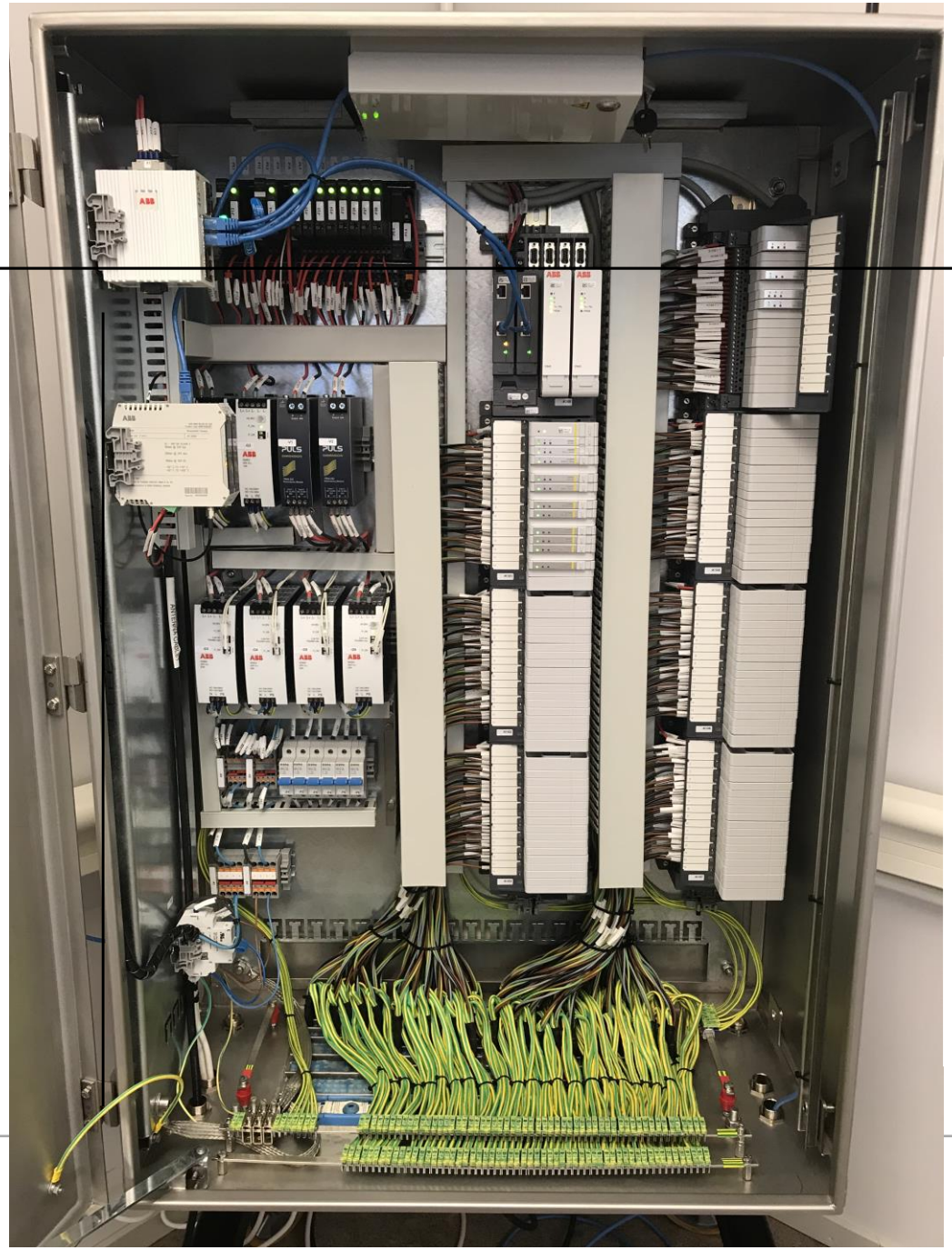
Schedule and cost savings

- Application programming and hardware build start together without dependencies
- No real need for hardware freeze, the I/O system is fully flexible and can handle any application and signal type
- No need for traditional FAT, application and hardware is tested separately
- Application and hardware meet the first time late at site

Select I/O

Standard Cabinets

- Standard I/O cabinet for all applications
  - Fully pre-wired and factory tested
  - No limitations, populate with any signal type available
  - Ship directly to site
- Available in different options
  - Up to 112 channels
  - Variants certified for Zone 2
  - Variants certified for Class 1 Division 2
  - Different size of field power
- Fully pre-wired with…
  - Powering
  - Ducts
  - Ground terminations
- -40to +55 deg C mounting



OIL, GAS AND CHEMICALS

ABB Select Remote I/O (RIO) Cabinets

Reduce design and installation costs

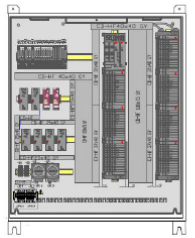


ABB Select Remote I/O Cabinets are self-contained, pre-wired, factory-tested cabinets that can be easily installed and connected to field wiring, power and network cables.

Overview

ABB Select Remote I/O Cabinets allow customers to install standardized cabinets early during a project, then select the type of I/O later. They arrive ready for installation close to field devices, allowing shorter field cable runs and reducing or eliminating field junction boxes.

Suitable for mounting on either wall or metal framework, these heavy gauge stainless steel enclosures offer the best protection in even the harshest environments.

Any project can benefit from ABB Select Remote I/O Cabinets:

- In greenfield projects, the space required for traditional, large cabinet rooms can now be allocated for other purposes.
- In brownfield projects where additional I/O is required, but space is limited, this solution is an advantageous alternative because it digitally marshals signals instead of using space- and labor-intensive marshalling panels.

Benefits

- Reduces design costs
- Shortens delivery lead times
- Enables late changes to I/O allocation without escalating costs
- Speeds deployment
- Eliminates the need for cabinet re-wiring
- Reduces field labor resources, time and expenses
- Provides external power to field devices

Description and Components

These solutions house Select I/O Module Termination Unit (MTU) field connection units and I/O termination units together with ancillary equipment, such as power supplies and networking gear.

Environmental conditions:

- Ambient temperature = -40°C to +55°C
- Humidity = 5% to 95% r.h.

Hazardous area variants:

- (ATEX) IP66, Zone 2 IIB T4
- (America) NEMA 4, NEC Class 1 Division 2

Non-hazardous area variants:

- (IEC) IP54 or IP66
- (America) NEMA3 or NEMA 4

Summary of new additions to Select I/O supported in System 800xA 6.1.1.1

Select I/O Additions (requires version 6.1.1.1)

- **Analog Signal Conditioning Modules**
  - AIS815 (4-20mA, 2/3/4 wire , 1.2A, HART, single/redundant)
  - AIS830 (Thermocouple/RTD/mV, single)
- **Digital Signal Conditioning Modules**
  - DIS801 (24V, 2/3/4 wire , SOE, single)
  - DOS801 (24V, 0.6A, 2 wire, single)
  - DIS820 (120V AC/DC, 2/3/4 wire, built-in replaceable fuse, SOE, single)
  - DIS821 (230V AC/DC, 2/3/4 wire, built-in replaceable fuse, SOE, single)
  - DOS820 (5-230V AC, 5-125V DC, Relay, 3A, built-in replaceable fuse, single)
- **Terminal Blocks and Kits**
  - FTB820 – Field Terminal Block for 120/230V
  - PTB820 – Power Terminal Block for 120/230V
  - TUS810K03 – Module Termination Unit with FTB/PTB820 (MTU)

NOTE:
All modules added in 6111 are for process control (non-SIL)
MTU: Module Termination Unit
RTD= Resistance Temperature Detection

AIS815 Analog Input (1.2 amp)

AIS830 Analog Input TC/RTD/mV

DIS801 and DOS801 24V Digital Input and Output Modules

DIS820/DIS821 120V/230V Digital Input Modules

DOS820 Relay Output 5-230V, 3A

FTB820
120/230V Field Terminal Block

PTB820
120/230V Power Terminal Block

TUS810K03
MTU with 16 FTB820 and redundant PTB820

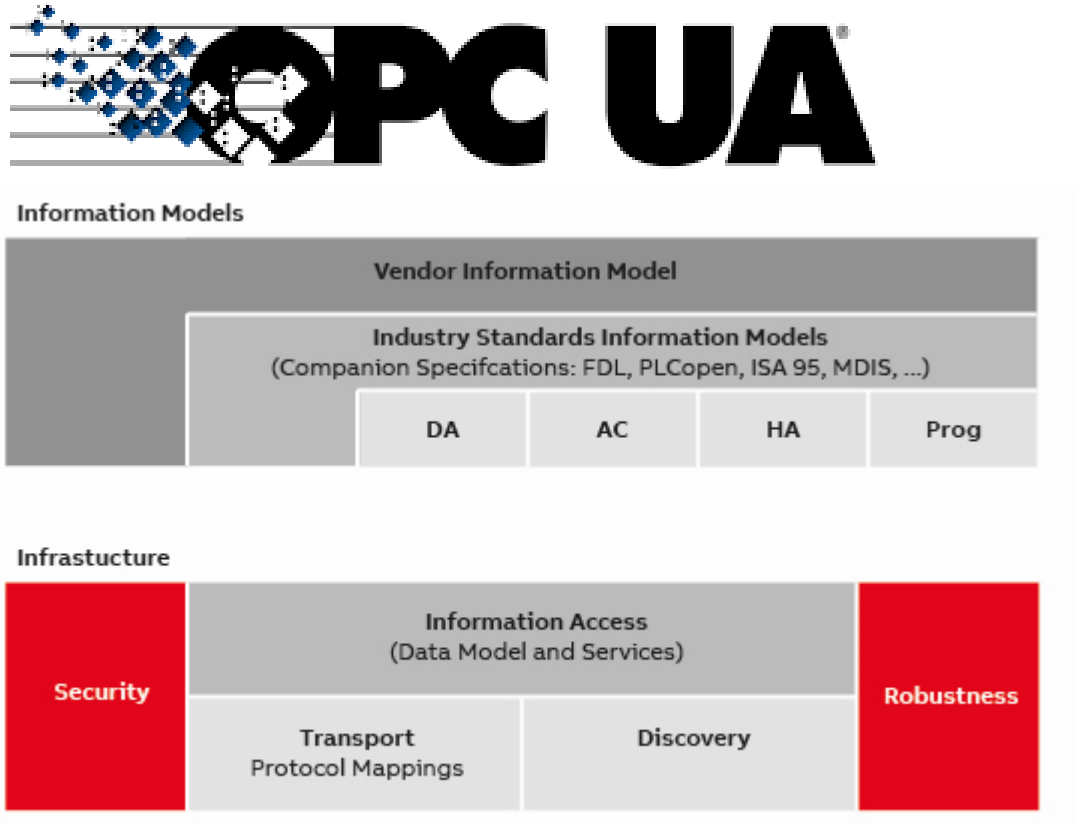
OPC UA

System 800xA v6.1.1

Providing secure collaboration

OPC UA (Open Platform Communications - Unified Architecture) is an open standard for information exchange for industrial communications and an enabler for Industrial Internet of Things (IIoT) applications and solutions.

- Platform independent
- Internet ready (tcp/https protocols)
- Comprehensive information modeling
- Service oriented architecture (‘methods’)
- Security built-in



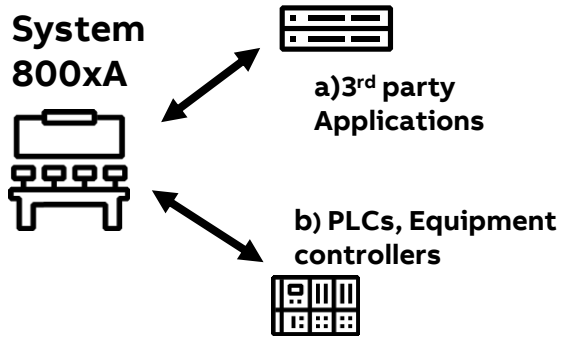
OPC UA in System 800xA

System 800xA v6.1.1

System - OPC UA Client/Server

a) Allowing a 3rd party client to communicate with System 800xA. (**OPC UA DA Client Connect)**

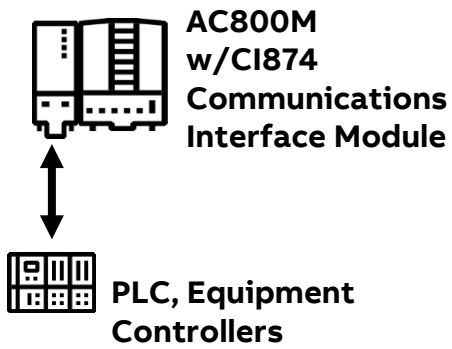
b) Communicating with an OPC UA Server to bring in an 800xA Connectivity Server (**OPC UA DA Connect (client)**)



Controller - OPC Client via CI874

OPC UA DA Client in the CI874 communications interface on the AC 800M controller

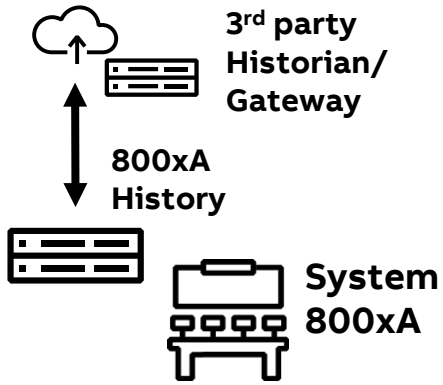
Primarily developed for MDIS subsea connection, but could connect to any OPC UA Server



OPC UA in 800xA History

Embedded OPC UA Server in 800xA History (and MOM) supporting **OPC UA DA, HDA, and AE.**

Robust, due to backfill, etc., data source for 3rd parties to retrieve data.



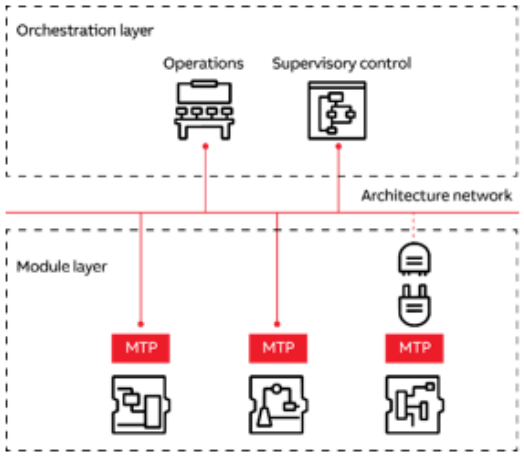
Modular Automation

System 800xA 6.1.1

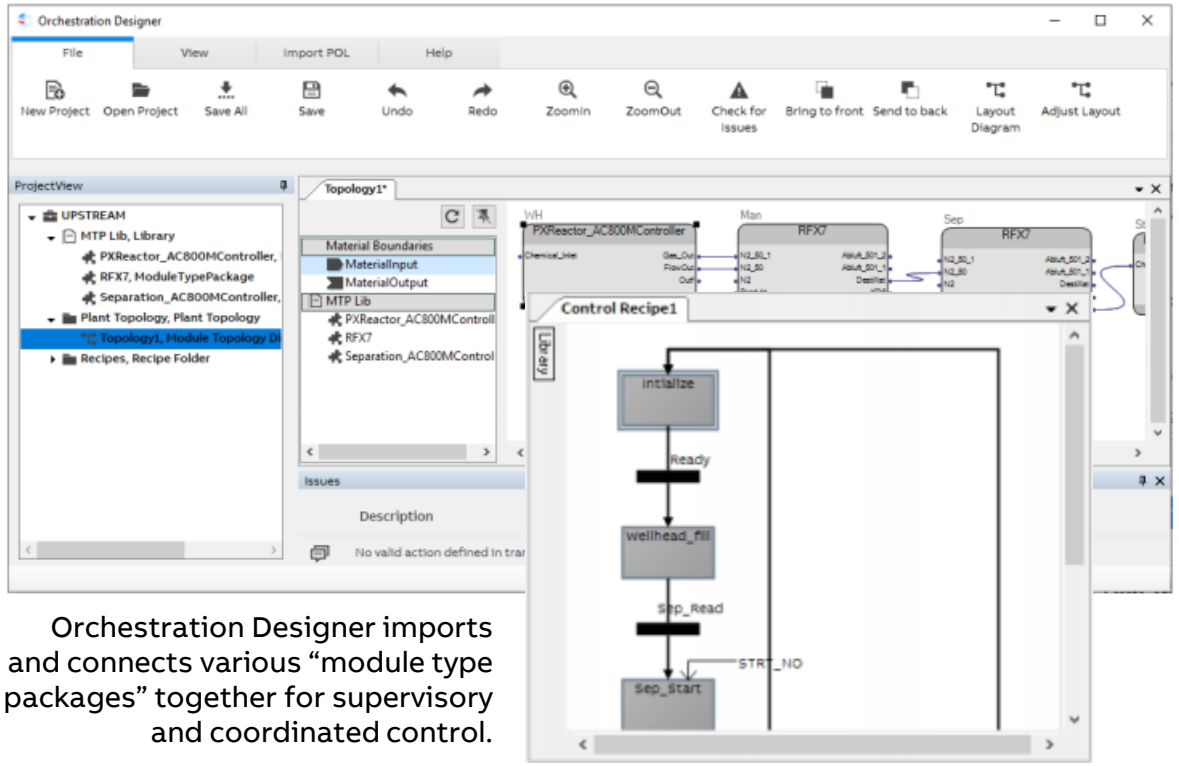
“Modular Automation is a topic that is gaining interest to many industries as it embodies an open automation approach to system integration.” – PCP Global Marketing Mgr.

Plug and produce to improve production flexibility

System 800xA is one of the first Modular enabled **orchestration systems** on the market



- System 800xA 6.1.1 **Orchestration Designer** now on main media and using native OPC UA Connectivity
- Ability to import MTPs (Module Type Packages) into Control Builder / Plant Explorer simplifying overall engineering effort.
  - Import MTPs (that may utilize others hardware and configuration) and then add coordinated / supervisory control logic
  - Import graphics and integrate alarm & events



Orchestration Designer imports and connects various “module type packages” together for supervisory and coordinated control.

System 800xA v6.1.1.1

An even easier call to make…

First maintenance release for System 800xA LTS version 6.1.1

- **Lifecycle Update (Windows 2022 added)**
- **Windows Update in Place**
- **ISA Secure SSA Certification**
- **Ethernet I/O Field Kit w/ Automated Sessions**
- **Coming Soon - Individually Release Offerings including Process Recall, Select I/O, & more.**

Regardless if you already have System 800xA at a prior release or you are looking for an automation platform for your next project,

System 800xA 6.1.1.1 is an even easier call to make.

FIM – Field Information Manager

Field Information Manager

Supporting latest field device technology

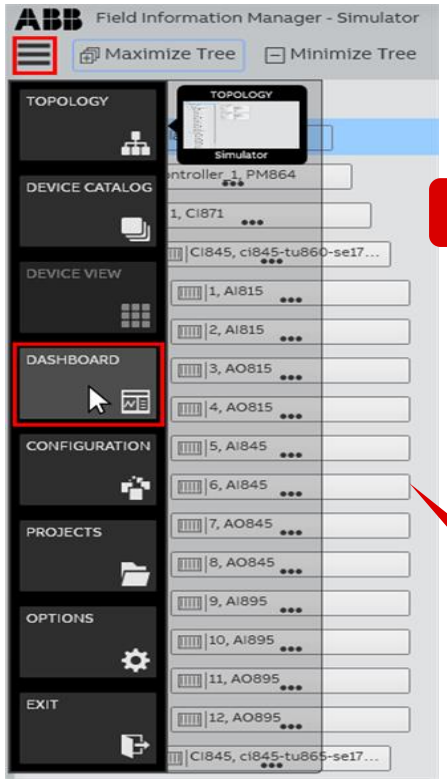
- Leverages FDI technology, which combines the simplicity of EDD and information richness of DTM
  - Supports both legacy DD/EDDs and new FDI packages
  - FIM supports UIP that enables graphic rich features corresponding to those of a DTM package
  - FIM comes packed with Generic Device Packages that can be used with any HART device
- Wide range of Field protocols support
  - HART, HART IP & Wireless HART, Profibus DP, Profinet, OPC UA Devices
- Supporting ABB S800 IO, S900 IO and Select I/O Installations
- FIM OPC UA server
  - Fleet management - Sensor configuration & diagnostic data is made available seamlessly
  - Enabler for digital opportunities – Remote service, remote verification, fleet reporting, analysis of sensor/actuator diagnostics

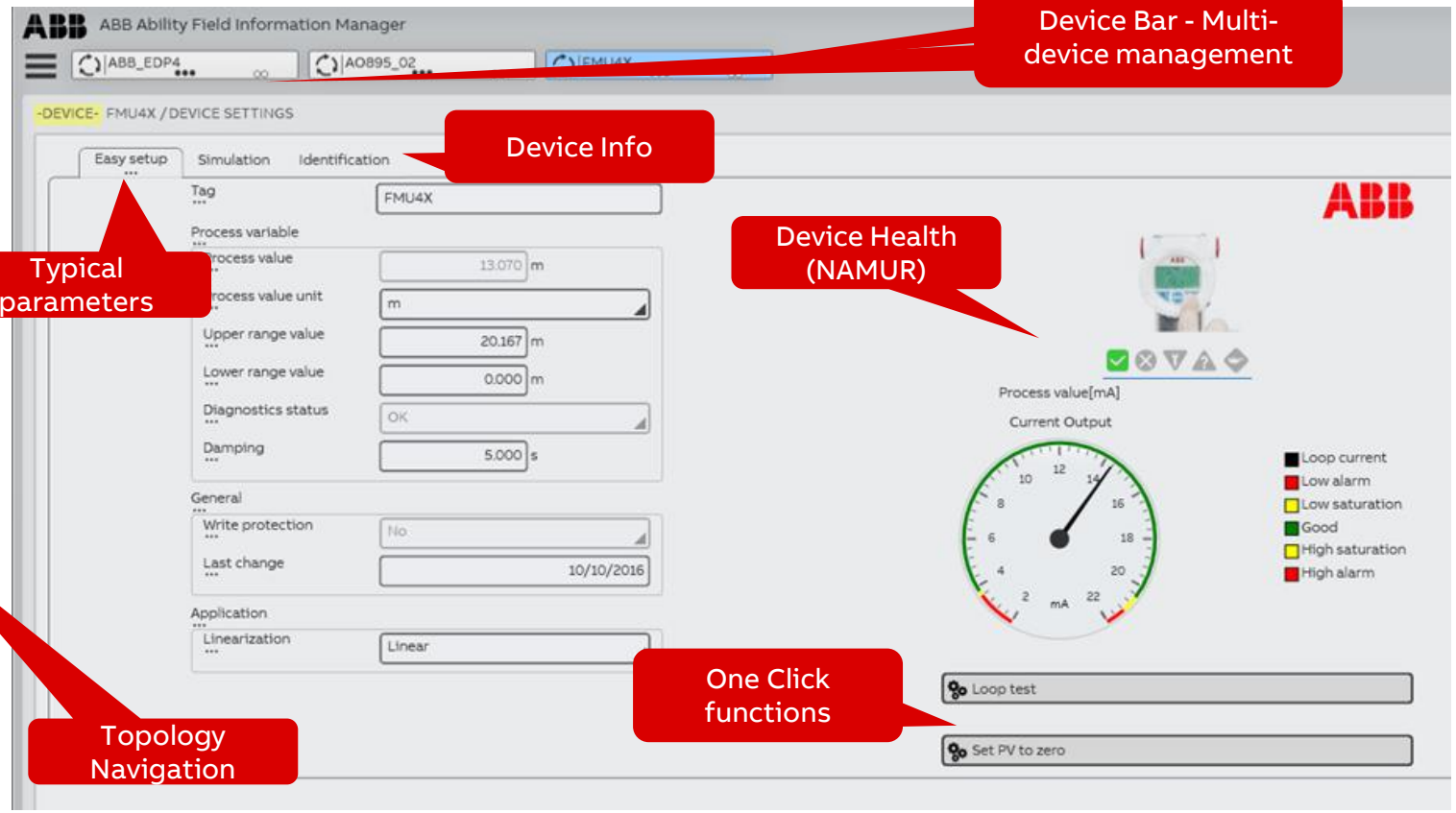
Source: FieldComm Group

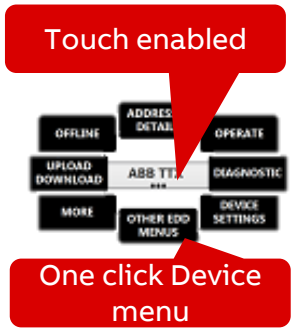
Functional design for the best-in-class field experience

Intuitive user interface for easy navigation and data interpretation

Menu Overview







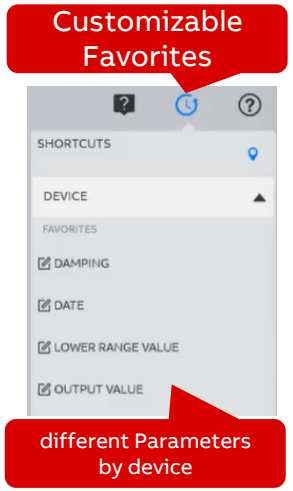
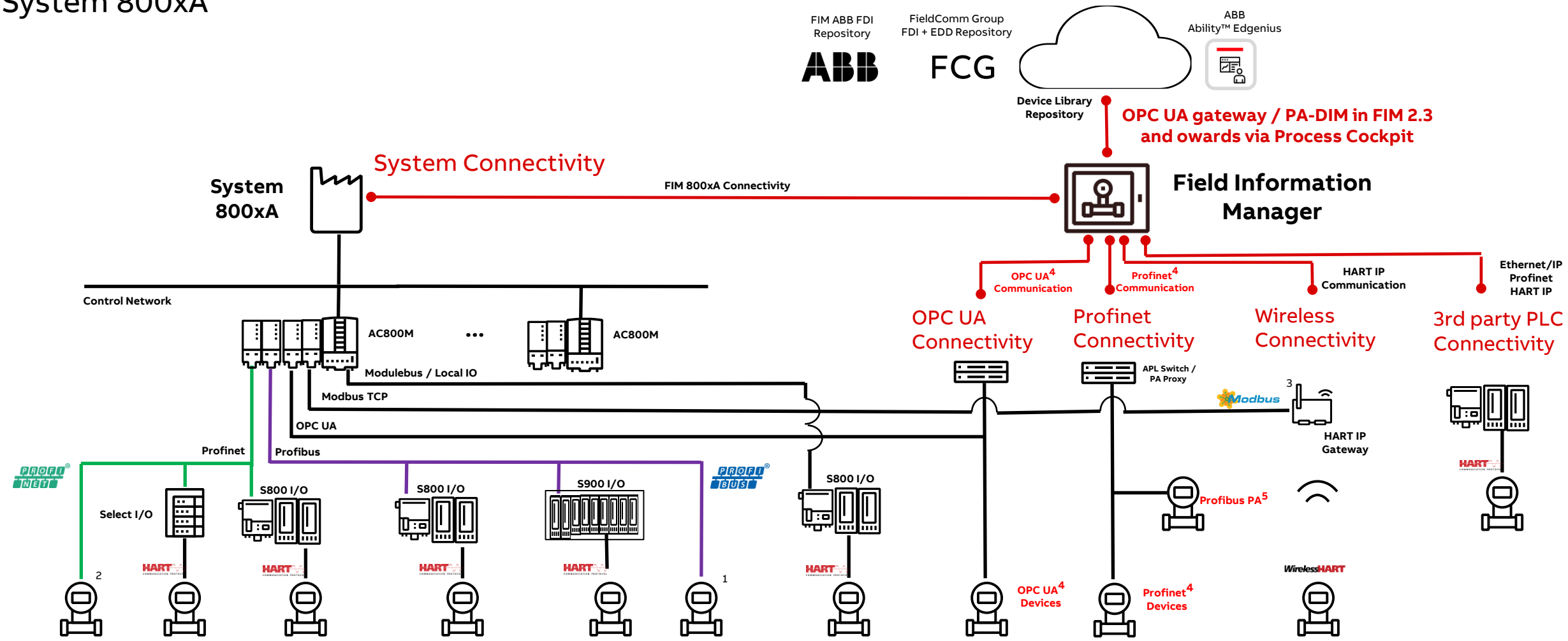


ABB Ability™ Field Information Manager

System 800xA

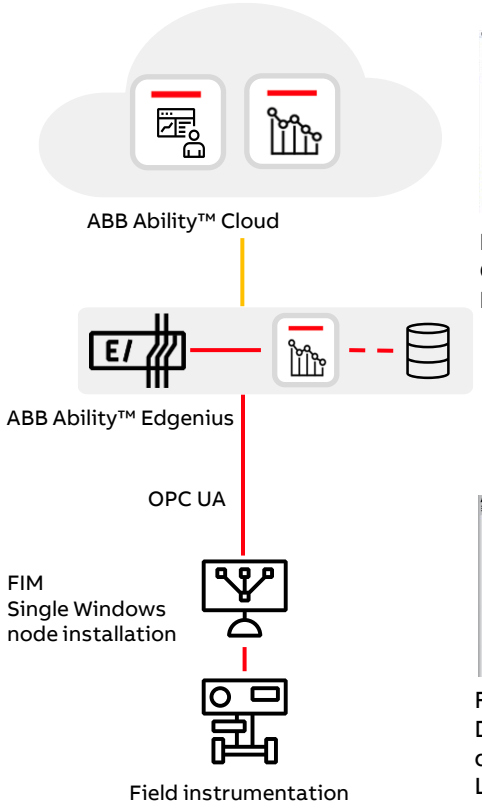


Instrumentation Condition Monitoring Workflow

FIM/APM Predict workflow

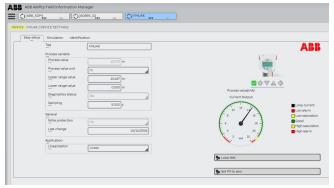
FIM/APM Predict workflow

1. Condition alarm including possible cause and recommendations is detected in APM Predict (web) application. ABB preconfigured asset specific view can provide additional device information.
2. User moves to FIM (desktop application on L2) and launch vendor specific DD or UIP view for detailed trouble shooting.
3. For any device configuration changes (e.g., asset model relevant alarm limits) are configured from DD/UIP views as described in bullet 2.



Maintenance Workplace
Condition monitoring
L3/L4 network layer

Condition monitoring with area/plant/site/enterprise perspective persona



FIM workplace
Device configuration, detailed diagnostic and trouble shooting
L2 network layer

Device configuration, detailed diagnostic and trouble shooting persona

PA-DIM – Process Automation Device Information Model

PA-DIM definitions

ProductInstance Uri Device

A Device is a globally unique physical component identified with the ProductInstanceUri defined by the manufacturer.

AssetId Device

An AssetId is a user writable alphanumeric character sequence uniquely identifying a device

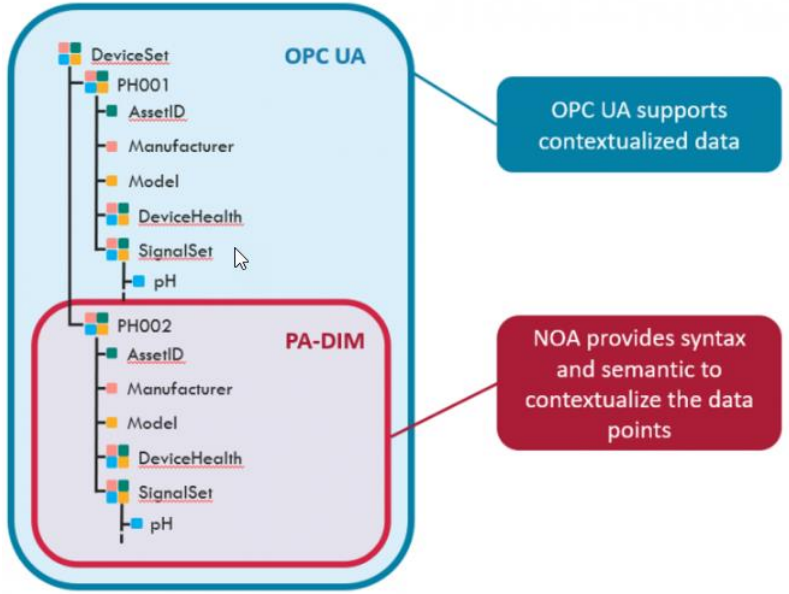
SignalTag Measuring or Control Point

A SignalTag is a user writable alphanumeric character sequence uniquely identifying a measuring or control point. A device can have several signals.

PA-DIM Simplified Data Access

- Manufacturer Independent
- Sorted
- Structured Hierarchy
- Prioritized
- Mapping can be understood by standard interface tools

PA-DIM is the implementation of the NOA-IM with OPC UA



Future outlook

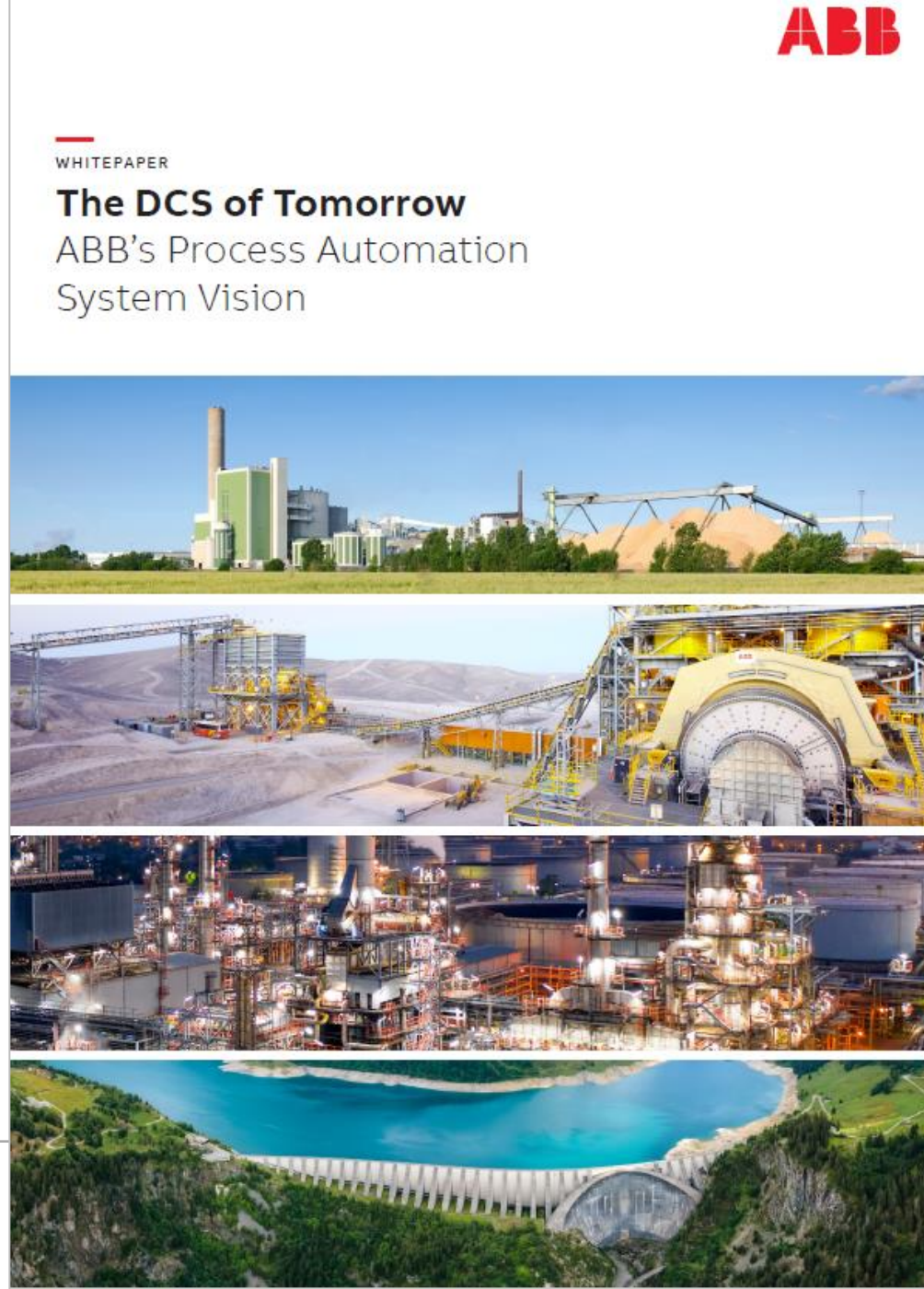
Process Automation System Vision

Reclaiming mindshare

By communicating our vision and how the future solutions will come together and ensure **continuity** for our customers we secure customer **loyalty** and support sales pitches to prospects

The White Paper underlines ABB's **technology competence** and **domain expertise** in the automation market and their **relevance** in the **future** industrial automation landscape

It describes ABB's **vision** of the future Process Automation System including "extended capabilities" while demonstrating that ABB understands and **addresses trends and future customer challenges**

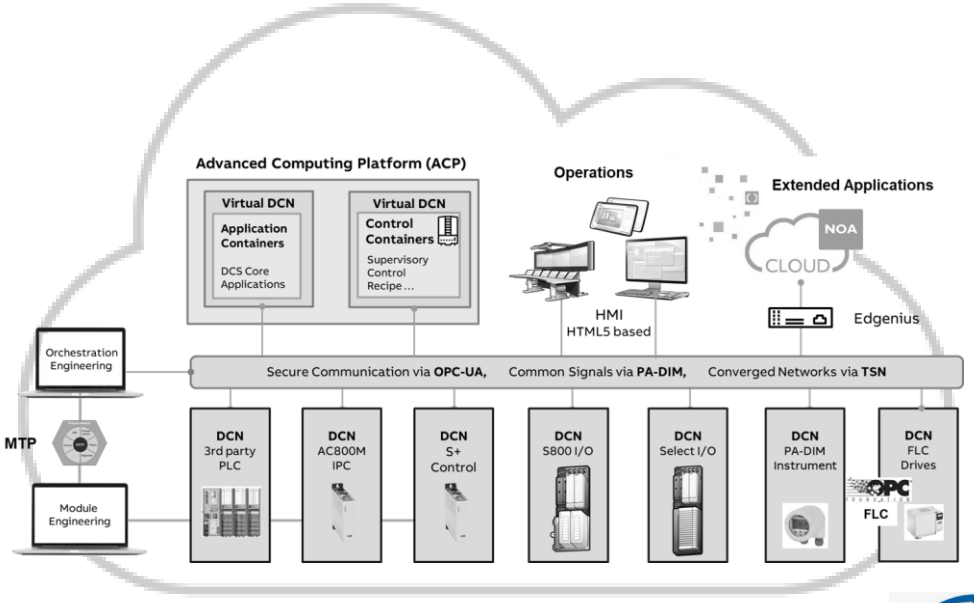


The DCS of Tomorrow: ABB's Process Automation System Vision

Customer Initiatives/Market Trends

Ensure compliance while providing additional value from a complete system solution

- **Network Centric architecture**
  - Any data available anywhere supporting new deployment models
  - Engineering centrally or distributed as required
  - Supporting flat network structure hierarchy reducing investments

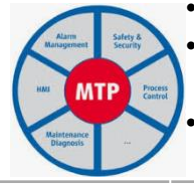


- **Open Process Automation Forum (OPAF)**
  - Aligning with OPA-S standard
  - Open yet secure to reduce customers' Total Cost of Ownership
  - Based on OPC UA as network backbone

- **Namur Open Architecture (NOA)**
  - Embrace Industrie 4.0 and Industrial Internet of Things
  - Safe and secure separation of Core Process Control increasing availability, reliability, and security of critical processes
  - Enable integration of OT and IT by with built-in digital platform for M&O applications

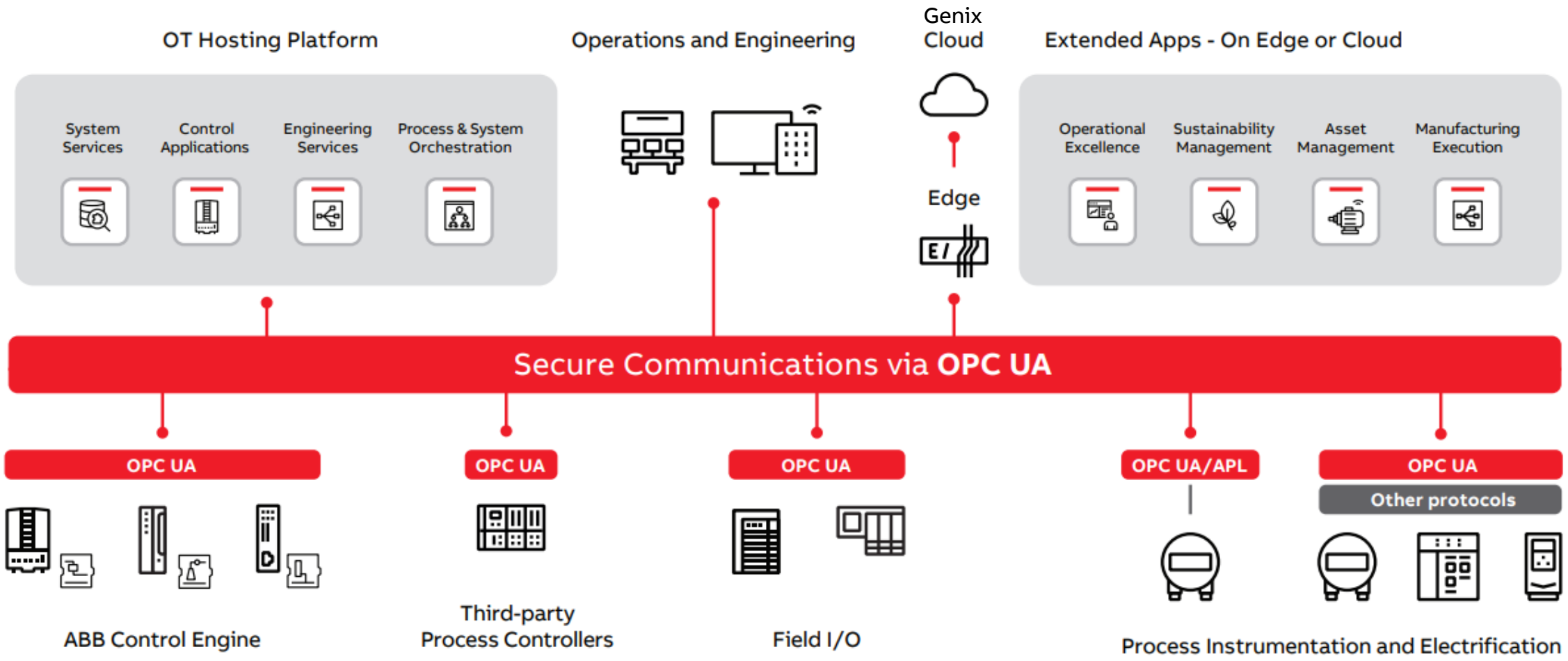
- **Ethernet APL**
  - Physical Ethernet all the way out to field device.
  - Providing power through Ethernet
  - Connect to field devices in Zone (IS)
  - Replacing traditional IO

- **NAMUR Modular Automation**
  - Plug and Produce Modular Approach
  - Standardization of processing modules increasing reuse and speed
  - Bringing agility and flexibility to production



These initiatives will drive new business models and provide an opening for new entrants to market

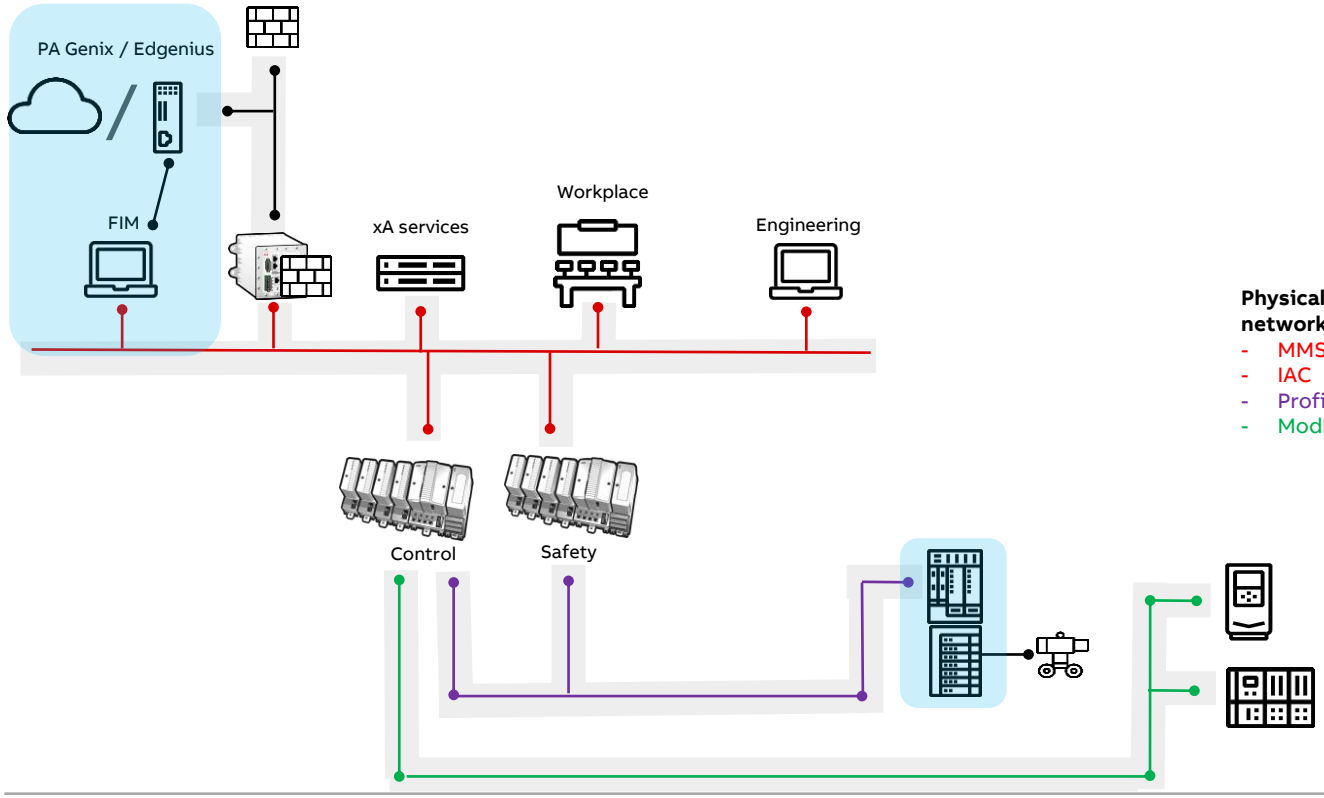
Future Topology - Vision



Roadmap strategy System 800xA

Today’s xA system

Already Available NGT components



Physical single/redundant network, with protocols:
- MMS
- IAC
- Profinet
- Modbus TCP /Other Fieldbus

Comments

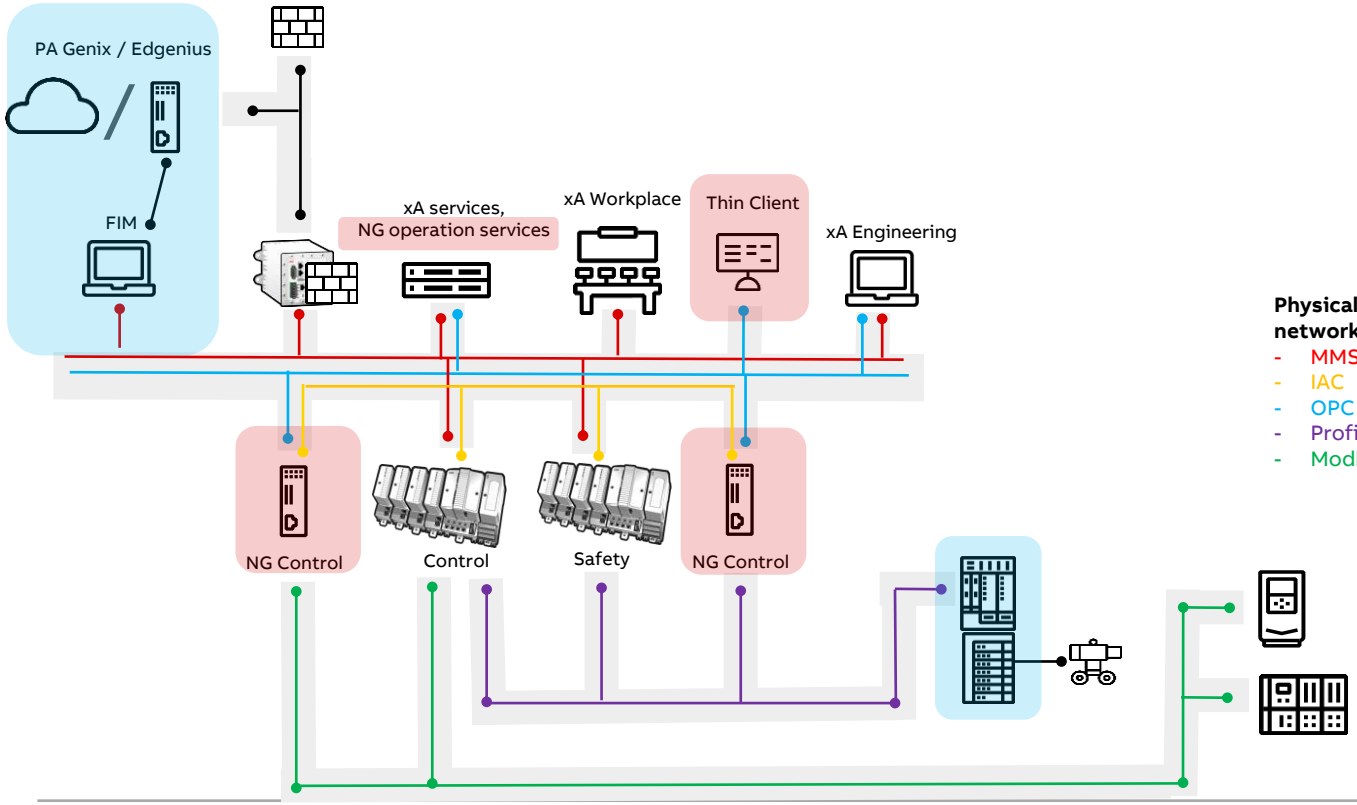
800xA system as we know it today.

Roadmap strategy System 800xA

800xA Step 1 intro, 6.2

NGT Components Introduction

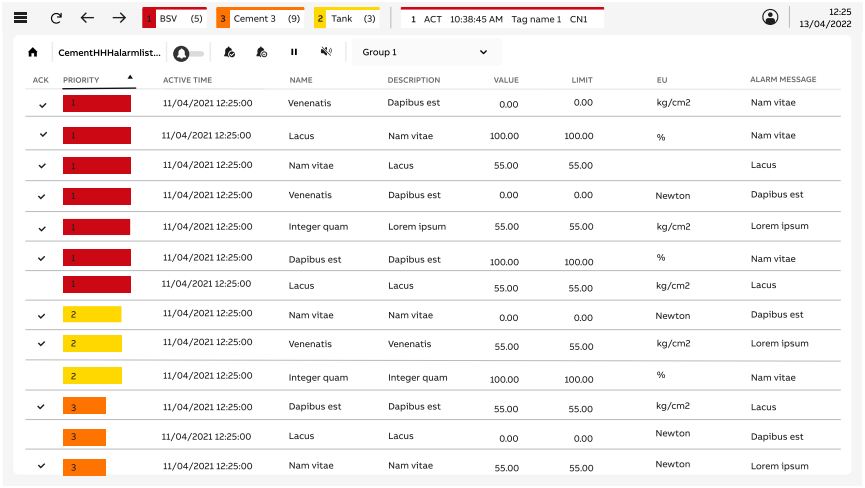
Already Available NGT components

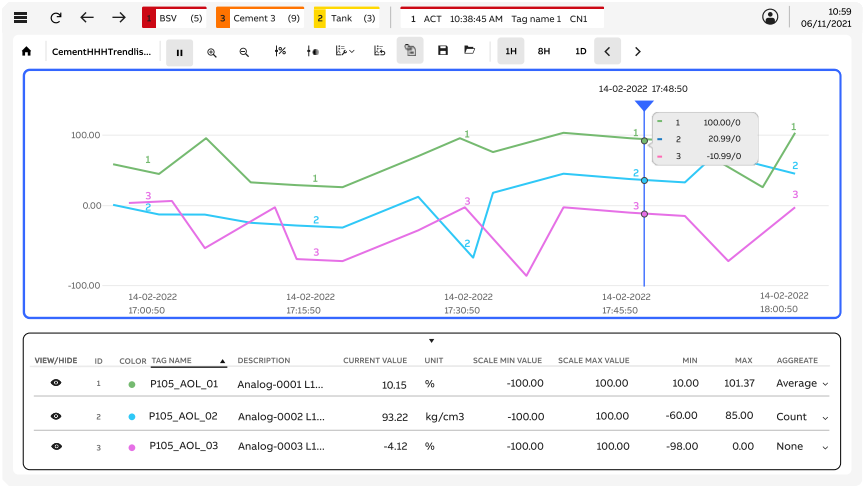


Clarification comments

- New HW agnostic Control Engine
- Introducing HTML5 based Thin Client
- Utilizing the OPC UA as a backbone for the new components
- Engineering control application from CB
- Engineering Graphics from PG2 Editor (Deploy tool will render graphics into HTML5 environment)

Web Client for 800xA 6.2





Thank you!


ABB