Rockwell Automation

Innovation & Technology Forum

Studio 5000® Design Environment® Overview – **T011**

Peter Kacz

Commercial Engineer

Integrated Architecture

A HIGH PERFORMANCE ARCHITECTURE

Smart.

Automation system with

Productive.

Simple integrated development resulting in improved

Secure.

End-to-end security

Integrated Architecture® Portfolio

Design Software

Distributed Control System

Visualization & Information Software

Programmable Automation Controllers

Industrial Network Infrastructure & Media

Operator Interfaces & Industrial Computers

Smart Sensing Devices

Input / Output Devices

Motor Control Devices

Motion Control

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Studio 5000® Design Environment

Architect		Enables Simplified System Design and Data Exchange
Logix Designer		Collaborative System Programing and Configuration
View Designer		Highly Integrated HMI with Logix
Application Code Manager		System Reuse and Quickly Build Projects
Studio 5000® Logix Emulate™		Virtual Design and Operator Training Systems
Simulation Interface		Connect Logic to Simulation Models

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Rockwell Software

Studio 5000 Architect®

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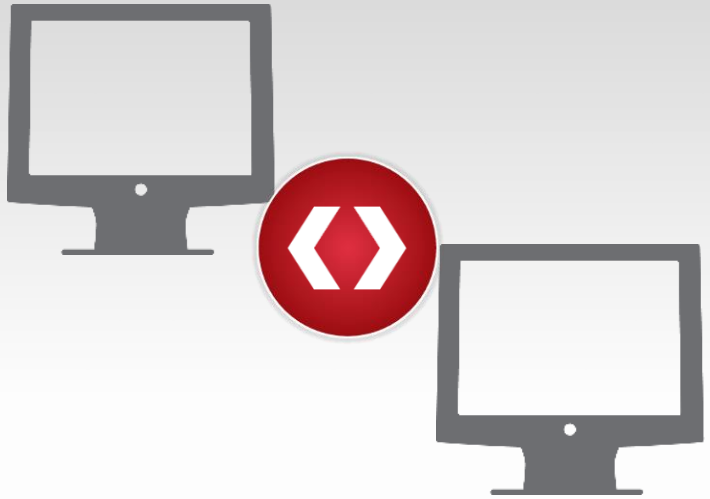
Studio 5000 Architect®

Design and Build your System Framework



Enhanced
Data Exchange

Lay out &
Configure System

Manage &
View Projects

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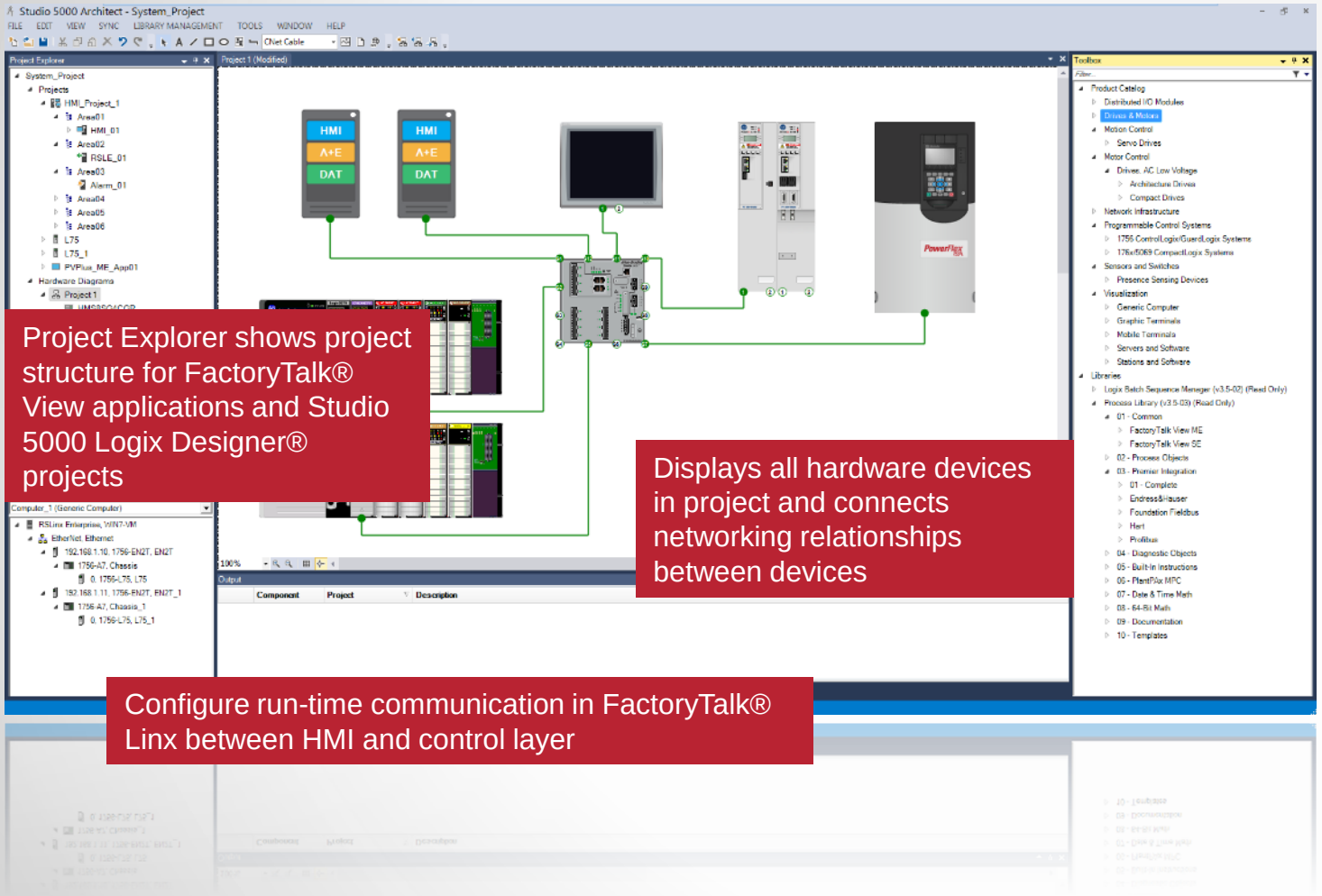
Rockwell Software

Studio 5000 Architect®



APPLICATION CONTENT

- Rockwell Automation® Library of Process Objects bundled into Studio 5000 Architect®
- Contains HMI and control application content

EXPLORER

- Current organizational structure is project based
- A project is represented for each server, panel, and controller on the layout

DEVICES

- Devices supported include ControlLogix®, CompactLogix™, PowerFlex®, Kinetix®, Stratix®, POINT I/O™, FLEX™ I/O, and PanelView™ Plus.
- PC-based product support includes FactoryTalk® View SE and ME, FactoryTalk® Alarms and Events, and RSLinx® Enterprise.

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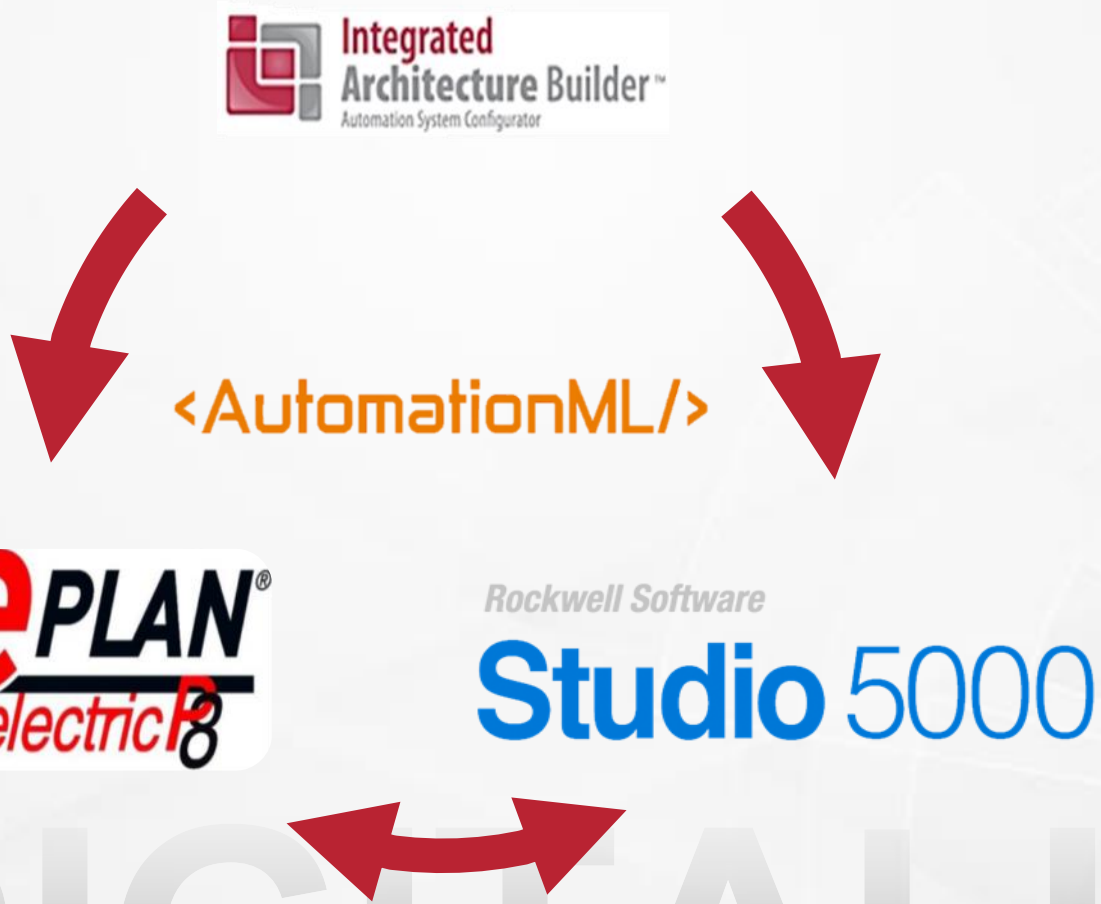
The Digital Tool Chain

New AutomationML Interface for Data Exchange



AutomationML Benefits

- Is an XML based data exchange format
- Is an international standard: IEC 62714
- Allows for a consistent data exchange along digital tool chains
- Neutral format aimed at eCAD and PLC manufacturers.

DIGITALIZATION

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Studio 5000 Logix Designer®

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Rockwell Software

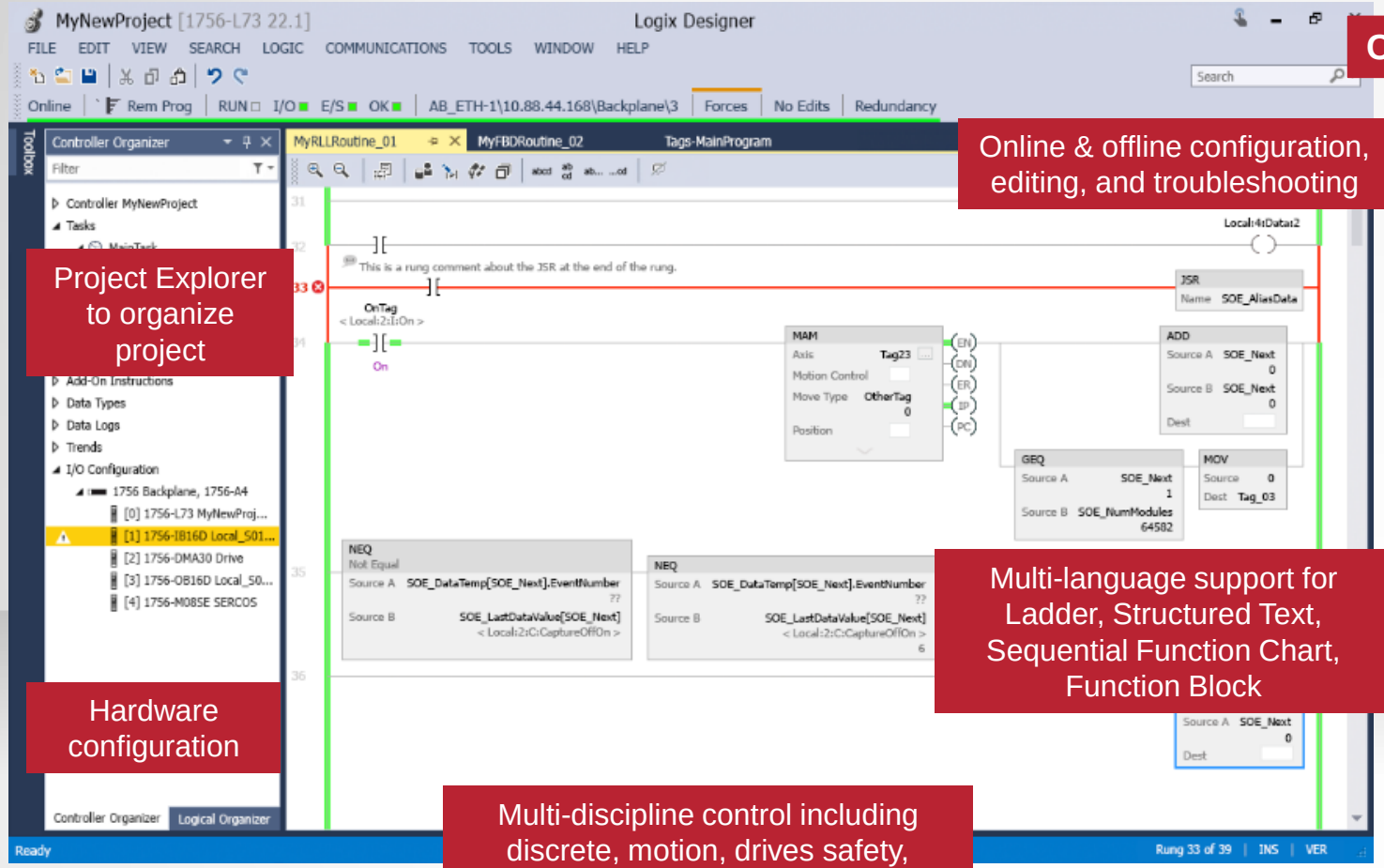
Studio 5000 Logix Designer®

ONE DESIGN ENVIRONMENT FOR ALL DISCIPLINES

- Supports comprehensive design and maintenance of the automation control system.

COLLABORTIVE DEVELOPMENT

- Focused on delivering automation productivity, ease of use, and simplified workflows.



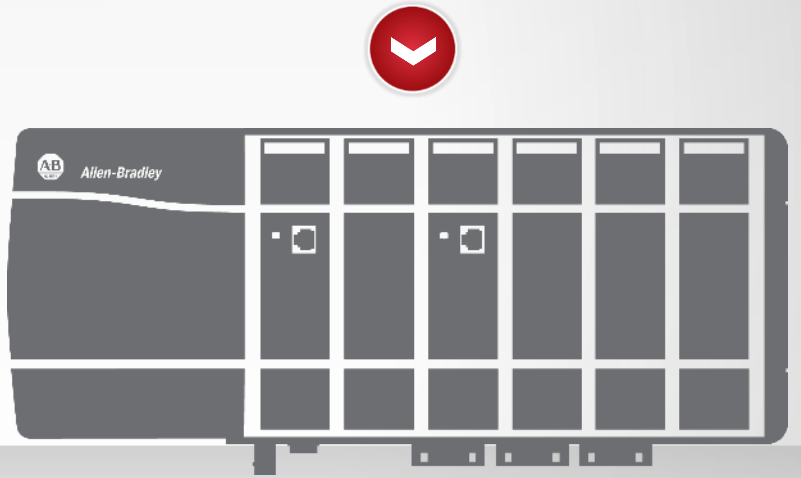
Online & offline configuration, editing, and troubleshooting

Project Explorer to organize project

Multi-language support for Ladder, Structured Text, Sequential Function Chart, Function Block

Hardware configuration

Multi-discipline control including discrete, motion, drives safety, and process



SINGLE PROGRAMMING ENVIRONMENT FOR ALL LOGIX CONTROLLERS

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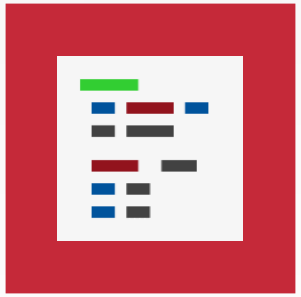
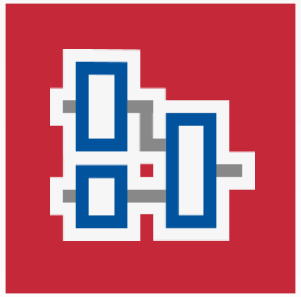
Multiple Programming Languages

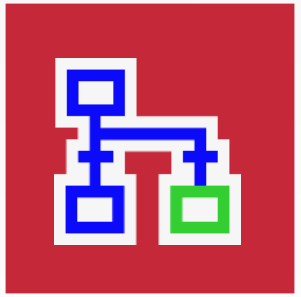
Ladder Logic



Structured Text



Function Block Diagrams



Sequential Function Charts

Safety Ladder Logic

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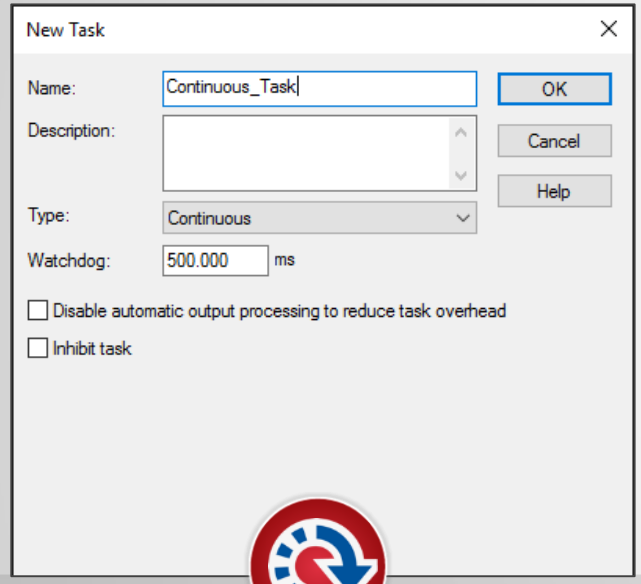
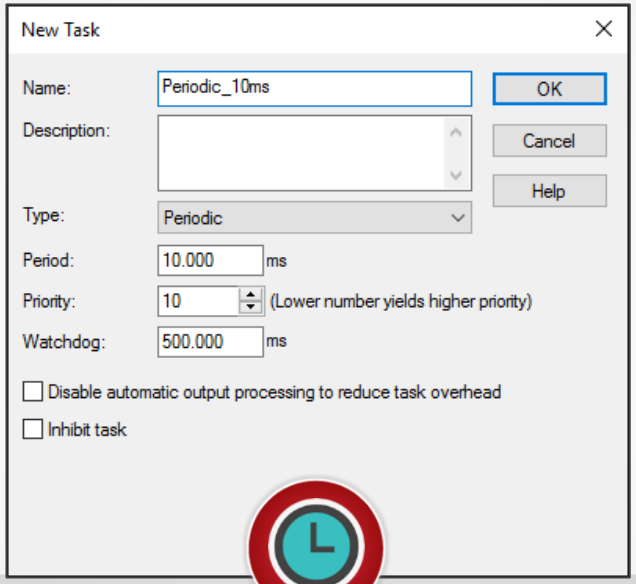
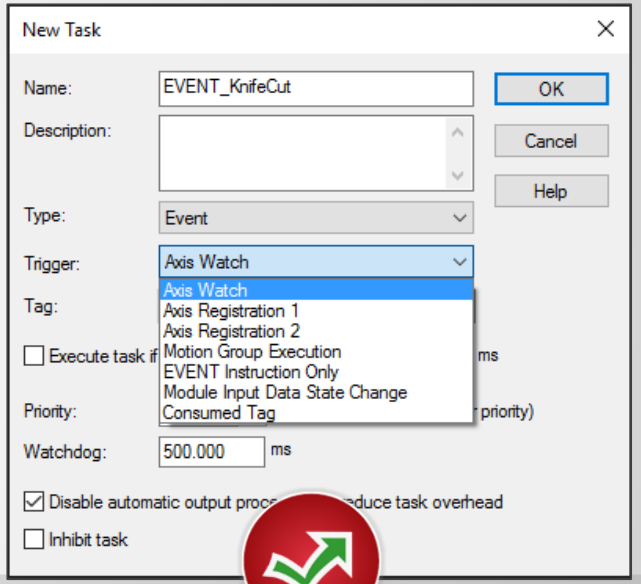
Flexible Task Execution



Continuous Tasks



Periodic Tasks



Event Tasks

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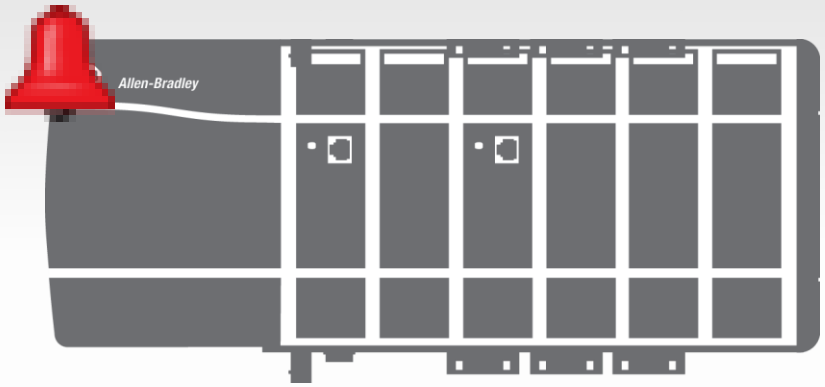
Types of FactoryTalk Alarms & Events

Server-Based
Alarms



Logix-Based
Alarms

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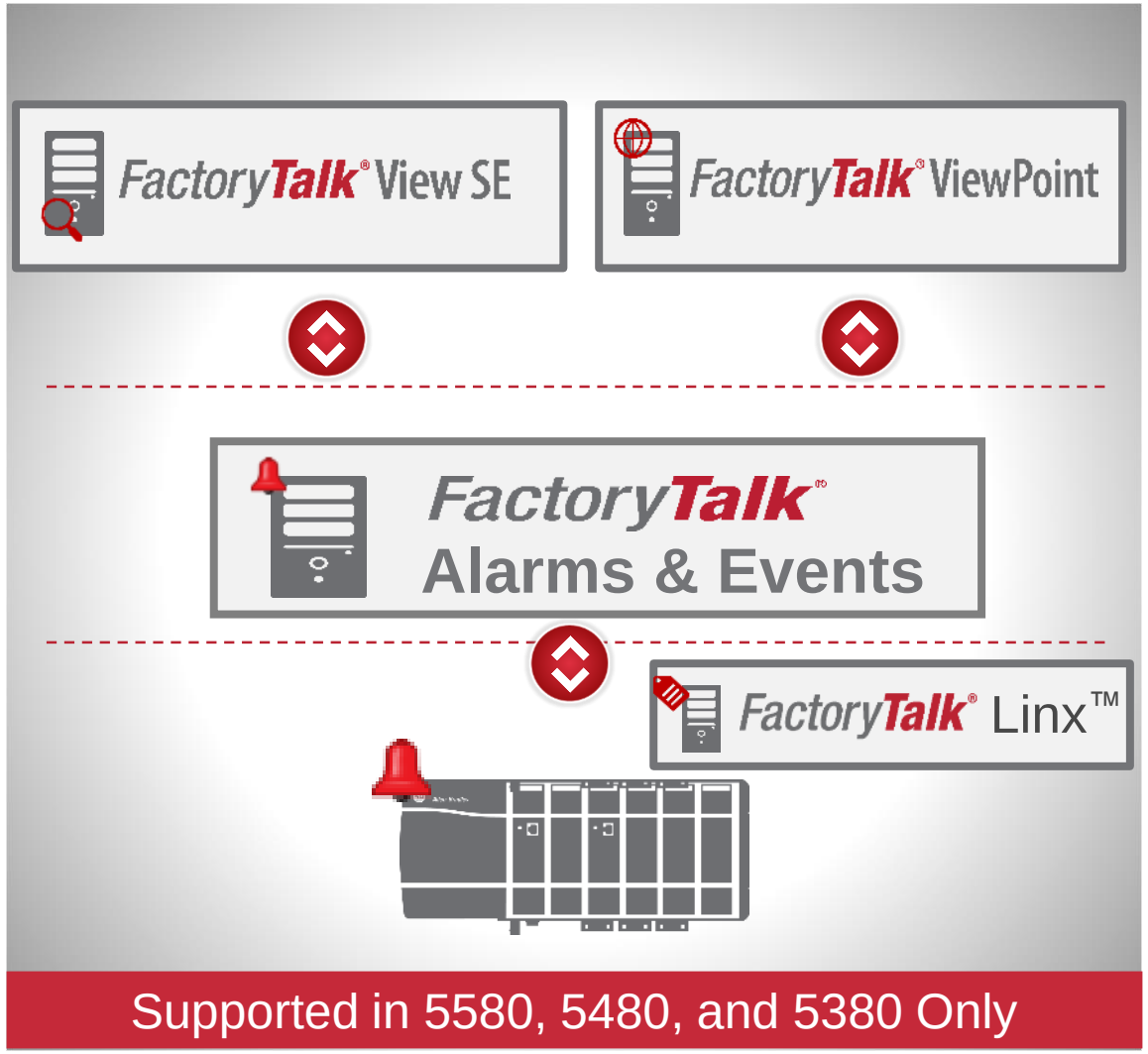
Logix Tag-Based Alarms

Alarming Capabilities for Streamlined Workflows



Supported in 5580, 5480, and 5380 Only

Overview

With the new Logix Tag-Based Alarming, alarms can now be defined on “tags” or “structures” in the controller with periodic evaluation.

Benefits

- No need to add an instruction; simplified design workflows inside Studio 5000 Logix Designer®
- No addition programming required – alarms automatically sent to FactoryTalk® Alarms and Events
- New alarm manager provides a single place to configure
- Small memory footprint – great for applications that have high alarm counts
- Alarm definitions allow for increased modularity
- Supports bulk generation of alarms via XML import/export

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Studio 5000 Logix Designer®

Content Protection History

Password
Source Protection

Version 8

FactoryTalk® Security

Version 20

License
Source and Execution

Version 30

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Which Do I Choose?

USE CASE	SECURITY OPTION
I want **limited control** over who accesses my content, but my chief concern is simplicity	**Password** Source Protection
I want **flexible, manageable** policies for who can access my content	FactoryTalk® Security
I want the **most secure** protection possible for my content	License **Source** Protection
I want to control the use of my content	License **Execution** Protection

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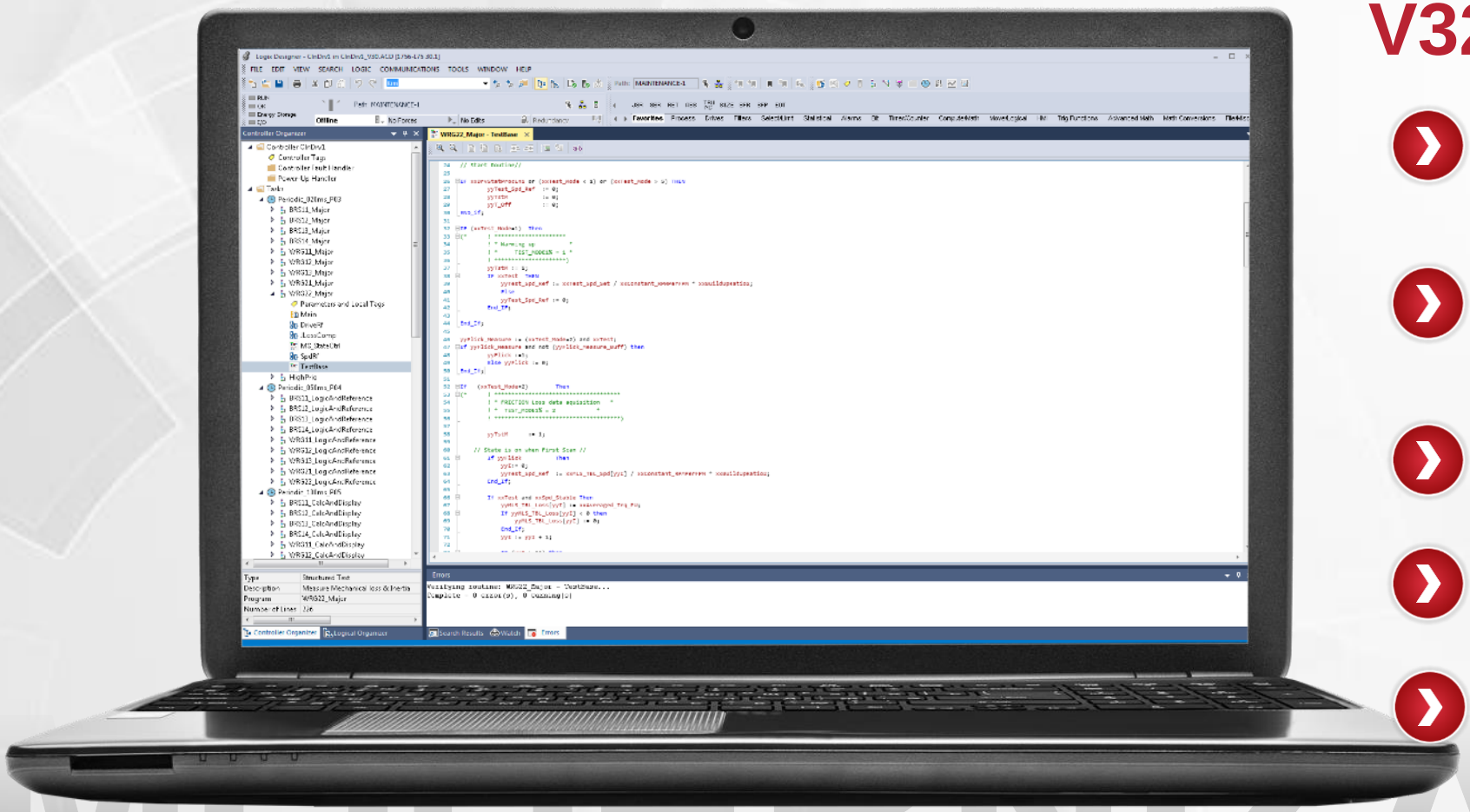
Studio 5000 Logix Designer®

Version 32 Launch



V32 SUMMARY

- Extended Data Types (64 Bit Math)
- Tag-based Alarm Enhancements
- New FBD Functions
- Productivity Enhancements
- Phase Manager Support

MODERNIZATION

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Studio 5000 View Designer™

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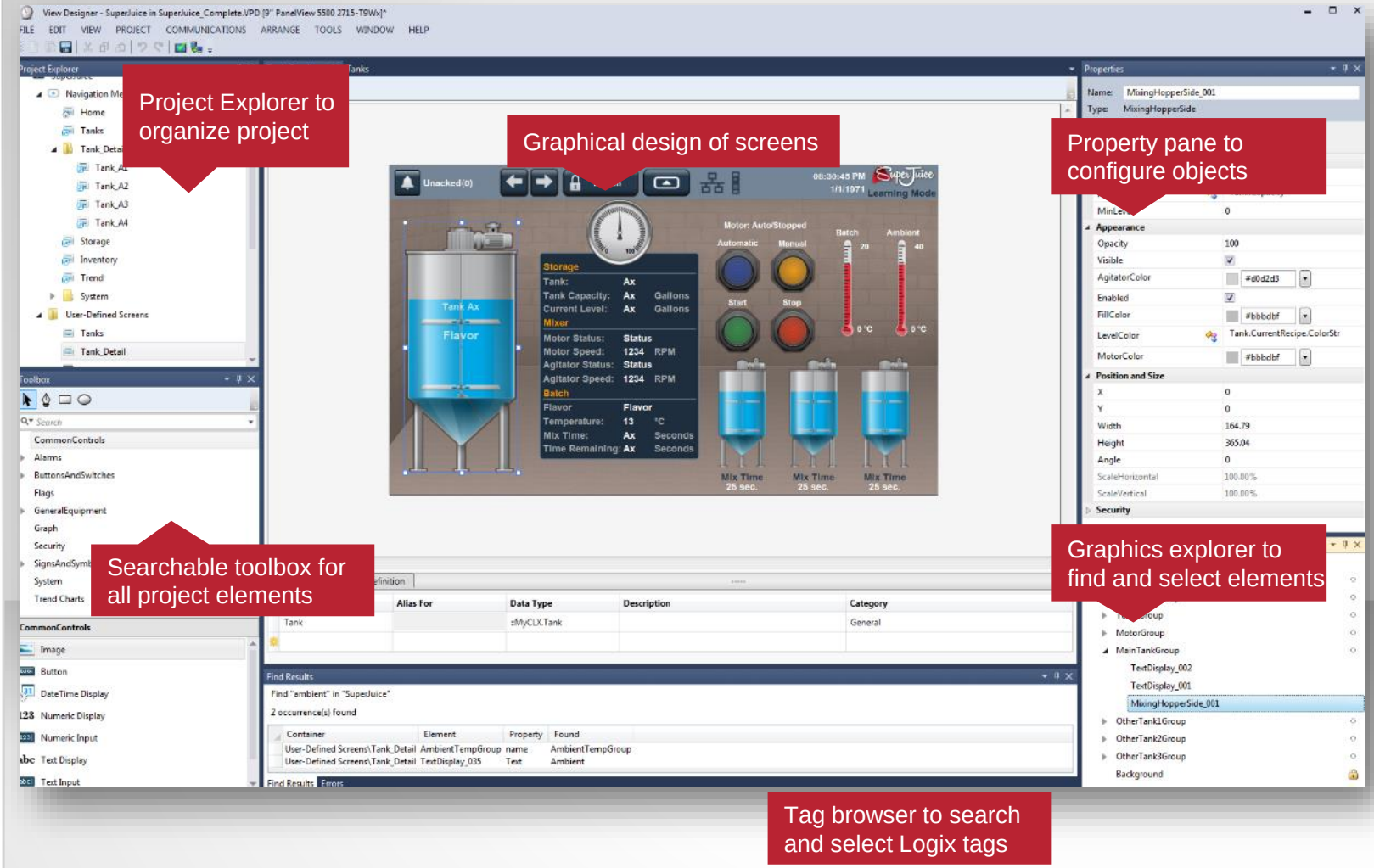
Studio 5000 View Designer™

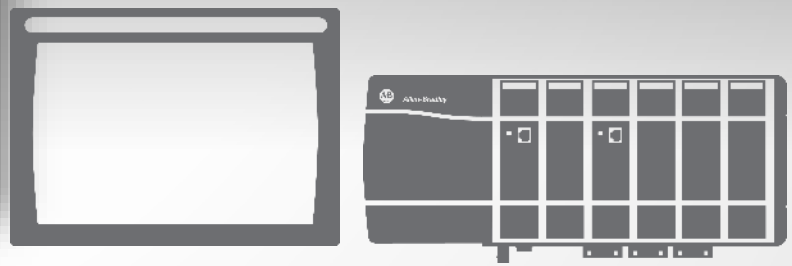


ENHANCED INTEGRATION WITH LOGIX

- Logix-based alarms are automatically available on the PanelView™ 5500
- Logix tag extended property support helps develop richer content

INTUITIVE DESIGN

- New design editor focused on ease of use
- Scalable vector graphics automatically adjust objects and screens to any terminal size
- Create custom, reusable add-on graphics to more efficiently build your applications



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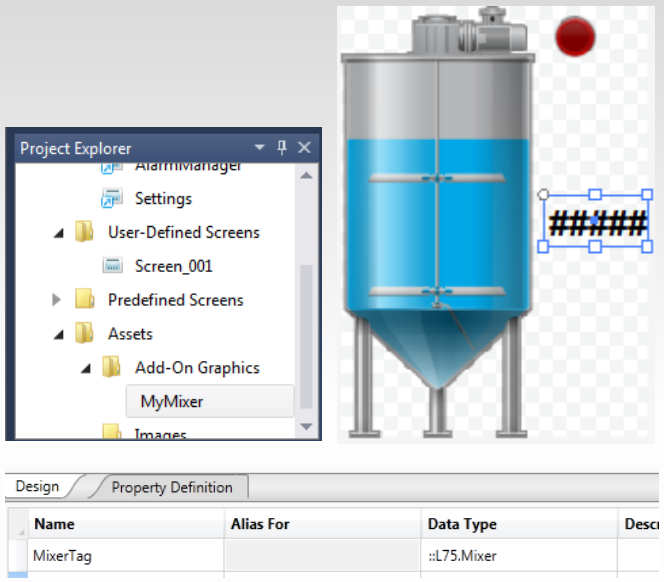
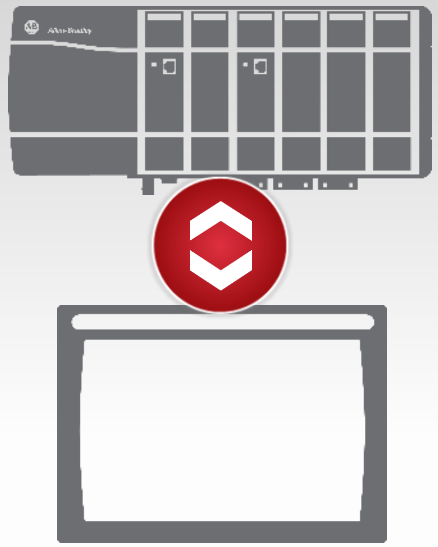
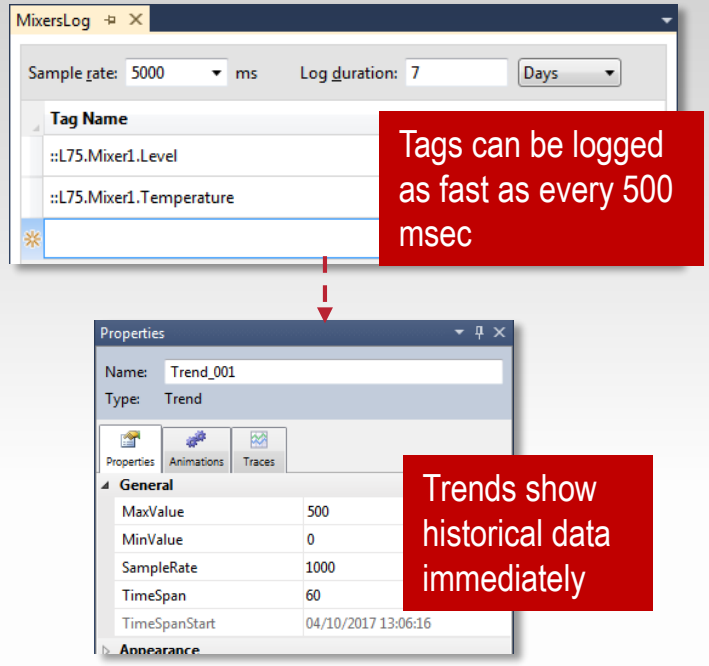
Studio 5000 View Designer®

Highly Integrated HMI with Logix







Reusable
Add-on Graphics

Integration
With Logix

Optimized Trending
& Diagnostics

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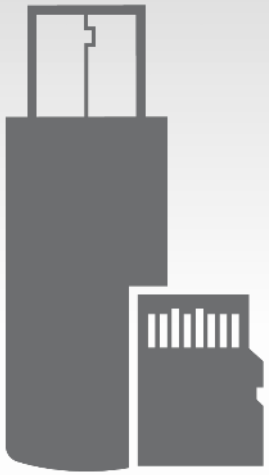
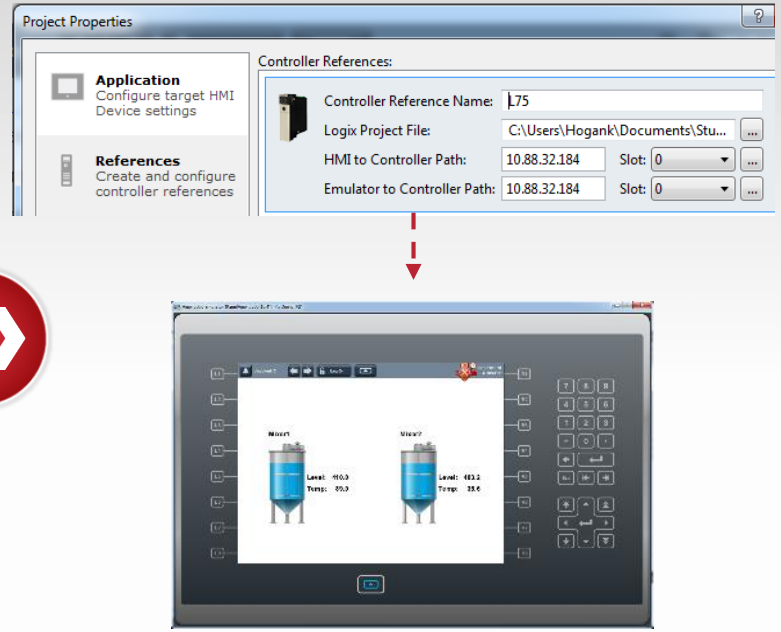
Studio 5000 View Designer®

Enhanced Runtime Performance





VNC Support

Load from removable media

Test run a project with emulator

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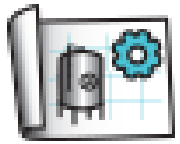

Rockwell Software

Studio 5000 Application Code Manager

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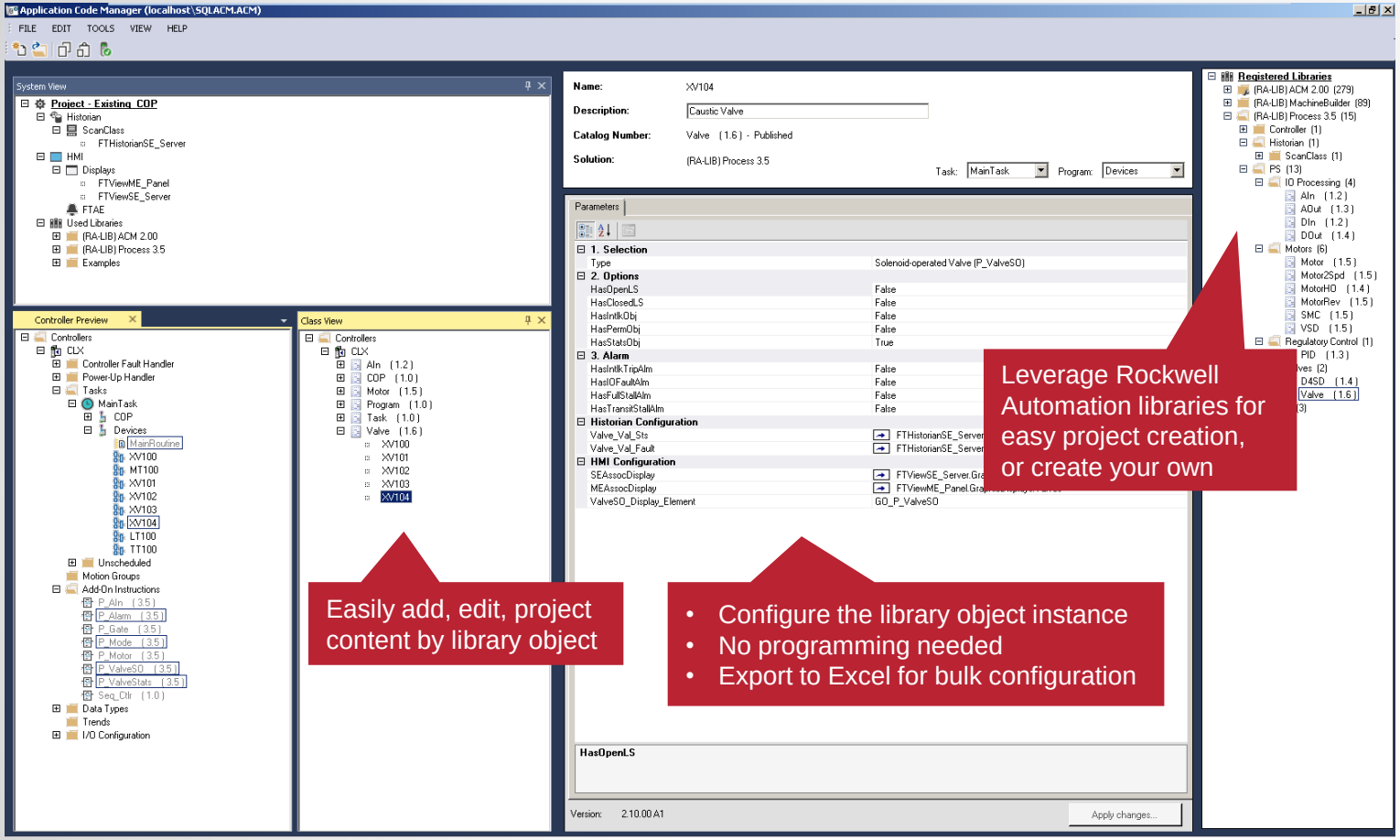
Studio 5000 Application Code Manager



BUILD APPLICATIONS

- Generate your standardized application code in bulk to configure projects
- Users don't need to understand the library object dependency structure; the tool manages the dependencies per the librarian's rules
- Out-of-the-box integration enables simple and fast bulk deployment of the Library of Process Objects and Machine Builder Library

DESIGN LIBRARY OBJECTS

- Library Designer is integrated into Studio 5000 Logix Designer®
- Allows the librarian to manage dependencies between library objects, easily share and manage common objects

PUBLISH LIBRARY OBJECTS

- Combine control, visualization, historical, and alarm management into one library object
- Centralized repository for easy access and version management

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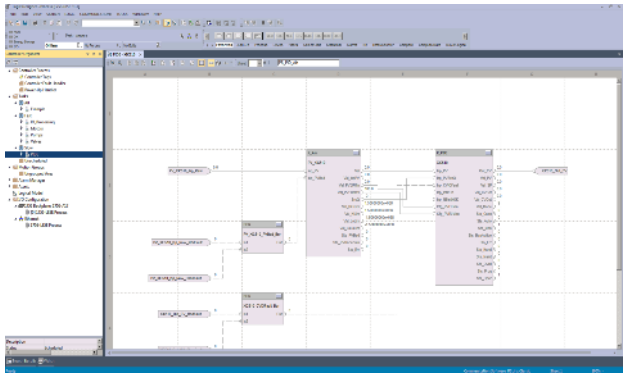
Studio 5000® Application Code Manager

Create Highly Reusable Library Content

Step 1:
Create Content to be Libraried

Logix Designer

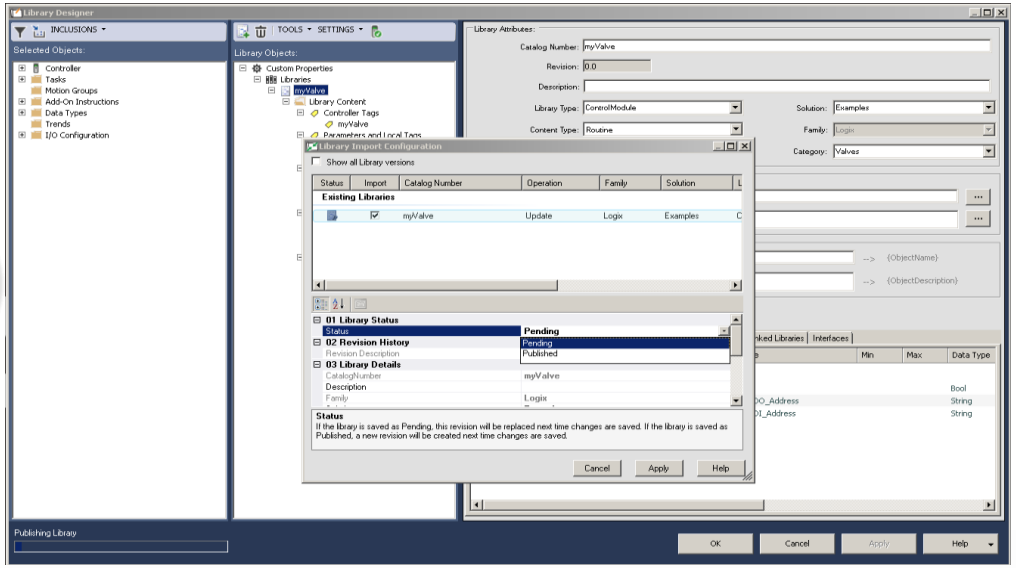


FactoryTalk® View

FactoryTalk® Historian

FactoryTalk® Alarms & Events

Step 2:
Group and Parametrize Library Content



Parametrize

- Create parameters to get information from the user
- Manage naming (tasks, programs, routines, tags and IO modules)
- Manage descriptions: tags, rungs, etc.
- Set tag values
- Conditional inclusions of content
- Usage (once or include many)
- Share common comments, etc.

Step 3:
Publish

Motor

Valve

PID

Labeling

Weighing

….

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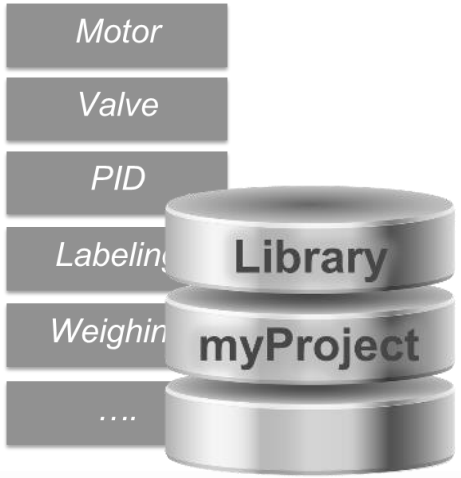
Build Project Content

Easily Deploy Project Content Through Configuration – No Programming!

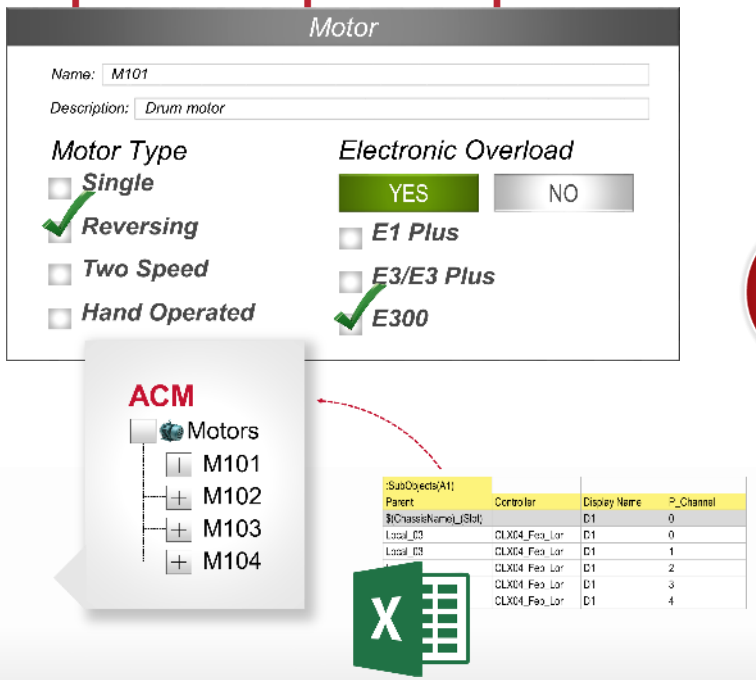
Step 1:

Create a Project



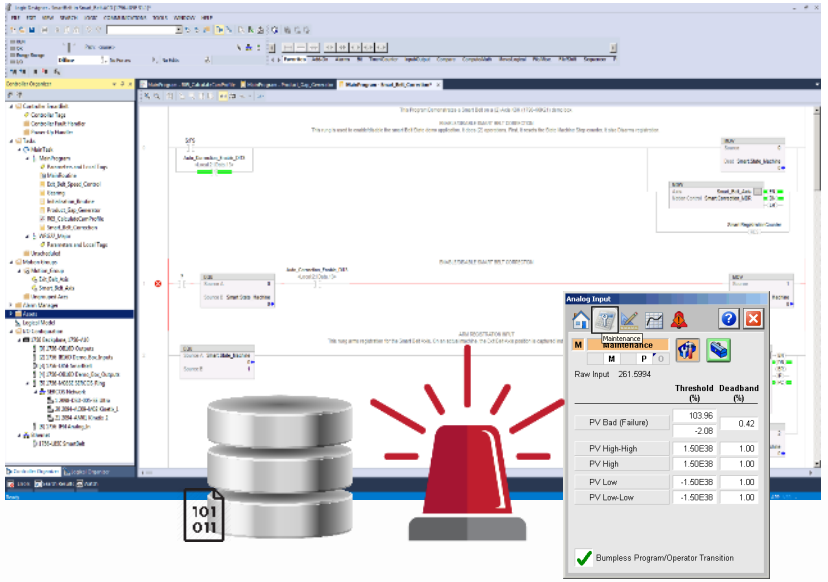
Step 2:

Select Library Object and Configure via Parameters. . . . Repeat or Export / Import



Step 3:

Generate



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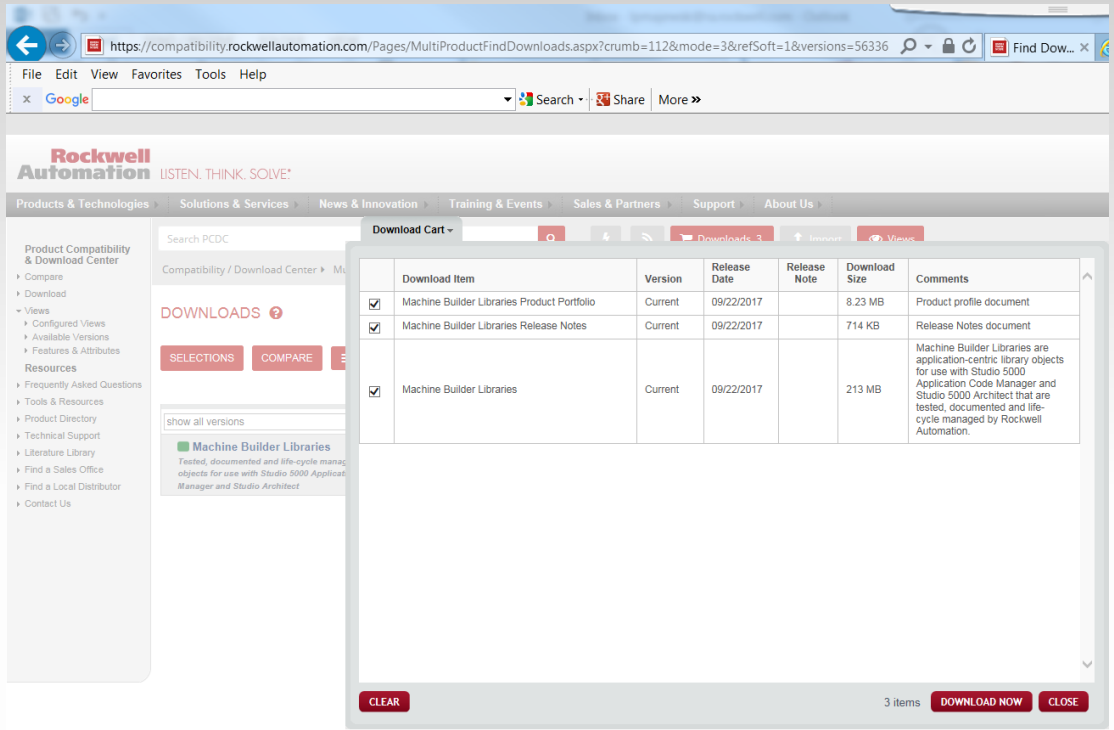
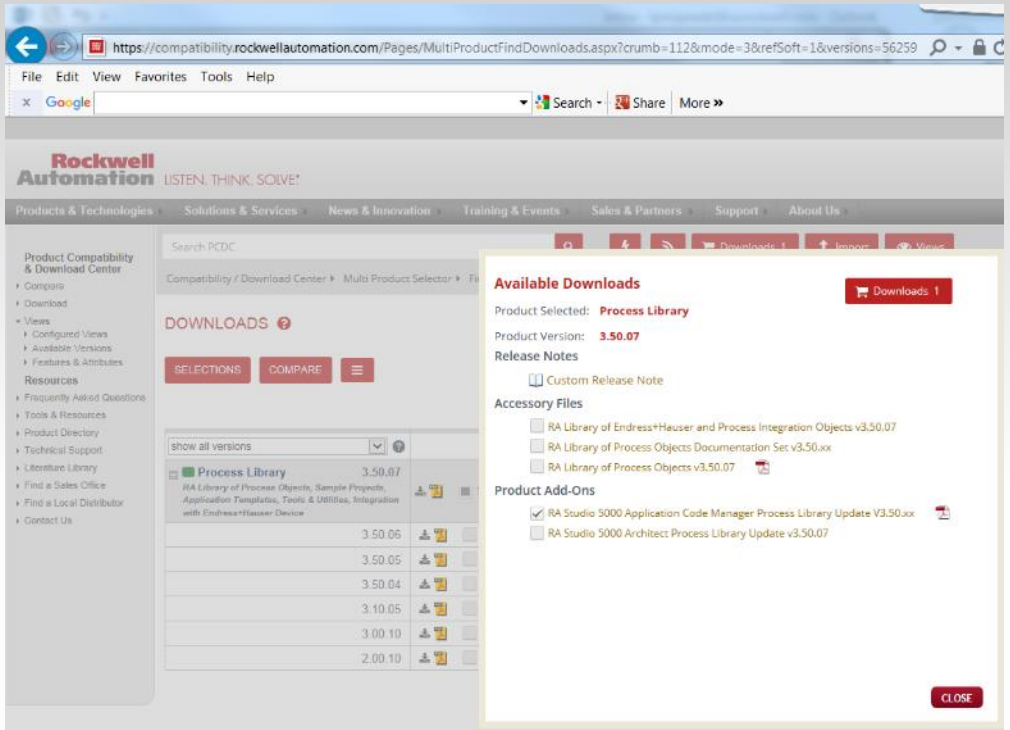
Studio 5000® Application Code Manager

Libraries Provided by Rockwell Automation





Machine Builder Libraries

PCDC search “Machine Builder Libraries”

Process Object Library

PCDC search “Process Library”

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Digital Engineering

Rockwell Software

Studio 5000

Logix Emulate®

Simulation Interface

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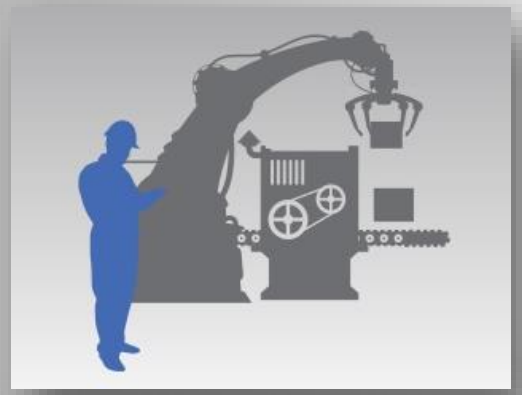
Digital Design Overview

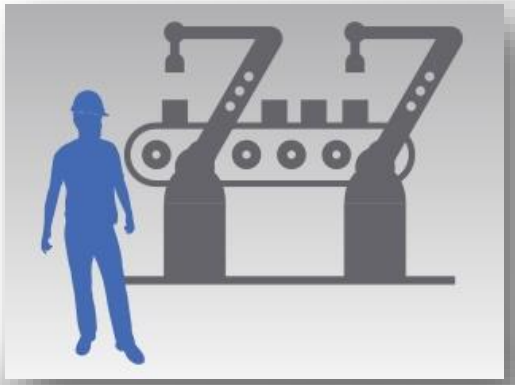


Machine Prototyping

Easily design and build next generation machines with confidence

Throughput Analysis

Optimize throughput with simple, real-time 3D simulation of complex dynamic processes



Virtual Commissioning

Design, test, validate, and commission machines or SKUs before they are put into service

Operator Training Systems

Reduce risk and improve operations by training workforce in a safe, virtual environment

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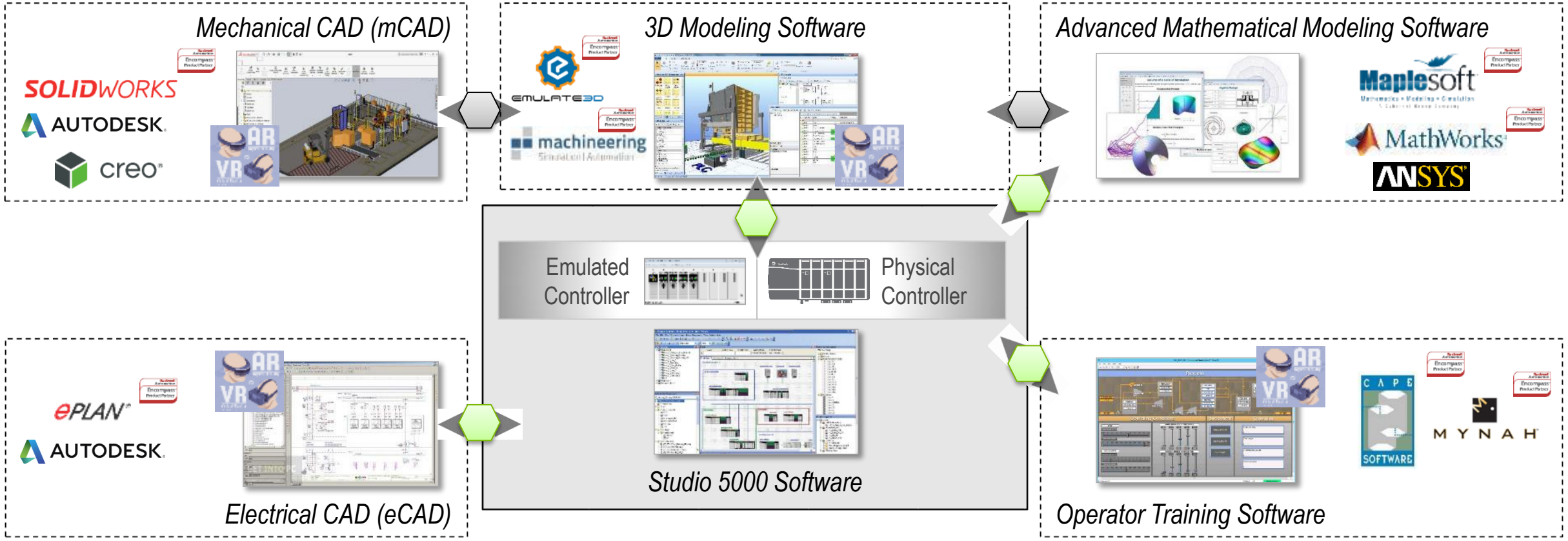
Digital Engineering

Ecosystem



Interface supplied by 3rd party software company

Interface supplied by Rockwell Automation®

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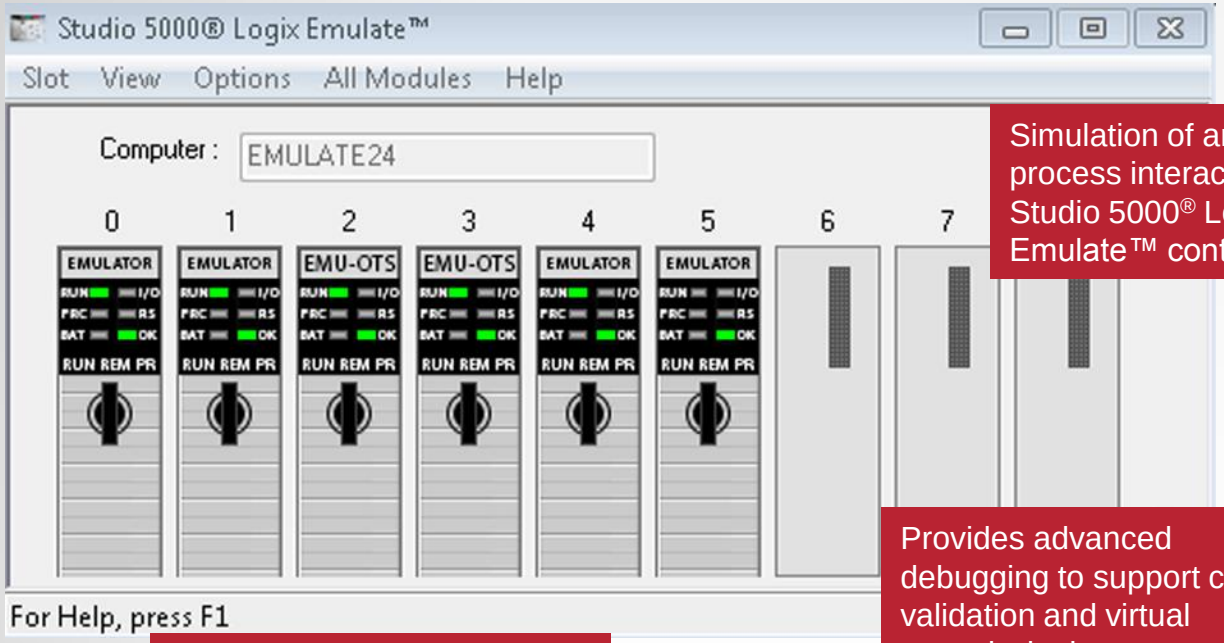
Rockwell Software

Studio 5000 Emulate



Simulation of an industrial process interacting with a Studio 5000® Logix Emulate™ controller.

Provides advanced debugging to support code validation and virtual commissioning

Run and test application code without physical controllers and Input/Output (I/O)

MACHINE PROTOTYPING

- Easily design and build next generation machines with confidence
- Enables teams to innovate and optimize

THROUGHPUT ANALYSIS

- Optimize throughput with simple, real-time 3D simulation of complex dynamic processes

VIRTUAL COMMISSIONING

- Design, test, validate and commission production machines long before they are ever put into service

OPERATOR TRAINING SYSTEMS

- Reduce risk and improve operations by training workforce in a safe, virtual environment

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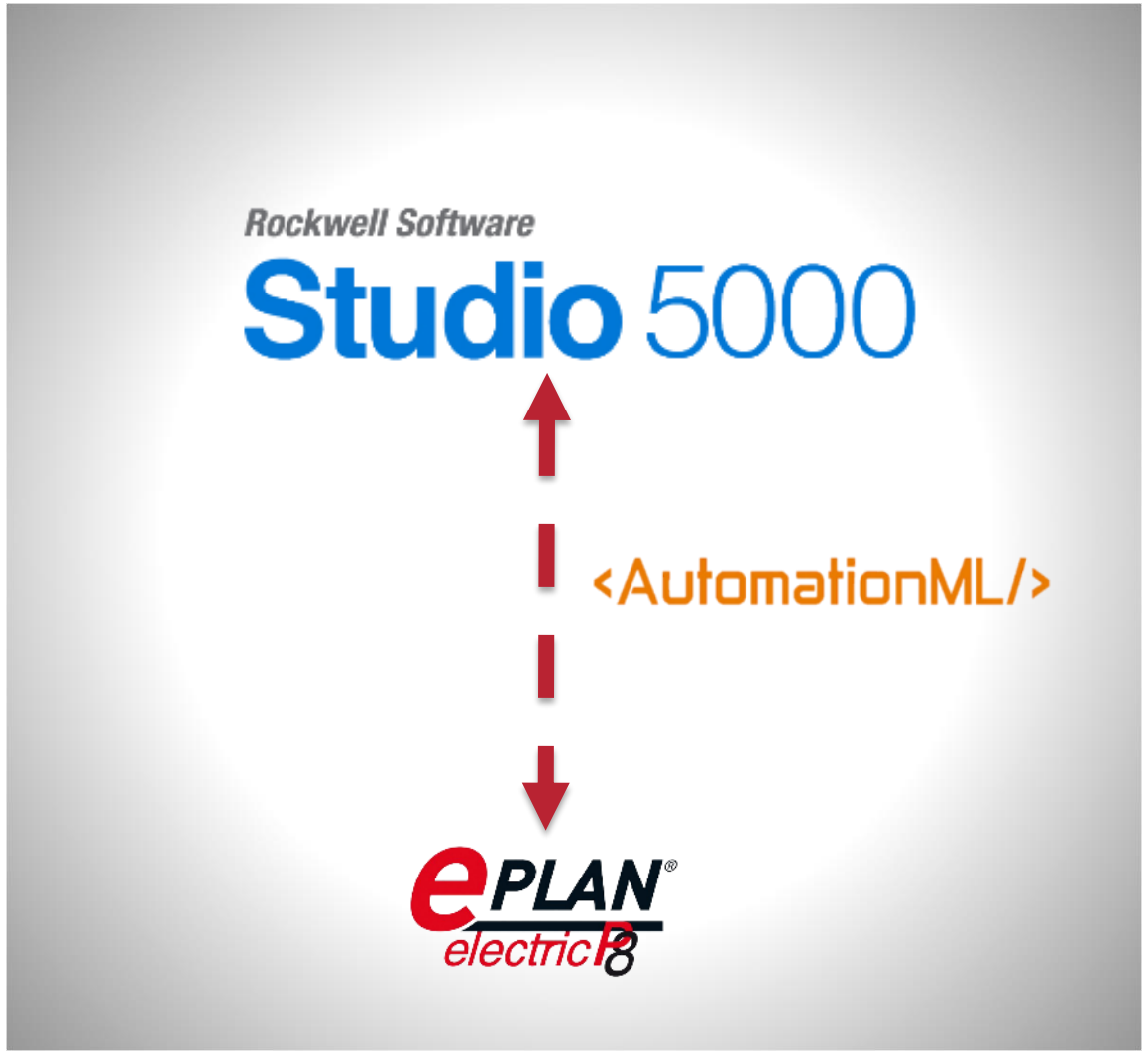
Studio 5000®

New AutomationML Interface for Data Exchange



Overview

Enhance capabilities for bi-directional exchange of data between Studio 5000® and engineering tools

- Adoption of AutomationML for robust data exchange

AutomationML Benefits

- Scalable data exchange
- XML-based data exchange format
- International standard: IEC 62714
- Allows for a consistent data exchange along digital tool chains
- Neutral format aimed at eCAD and automation suppliers

DIGITIZATI

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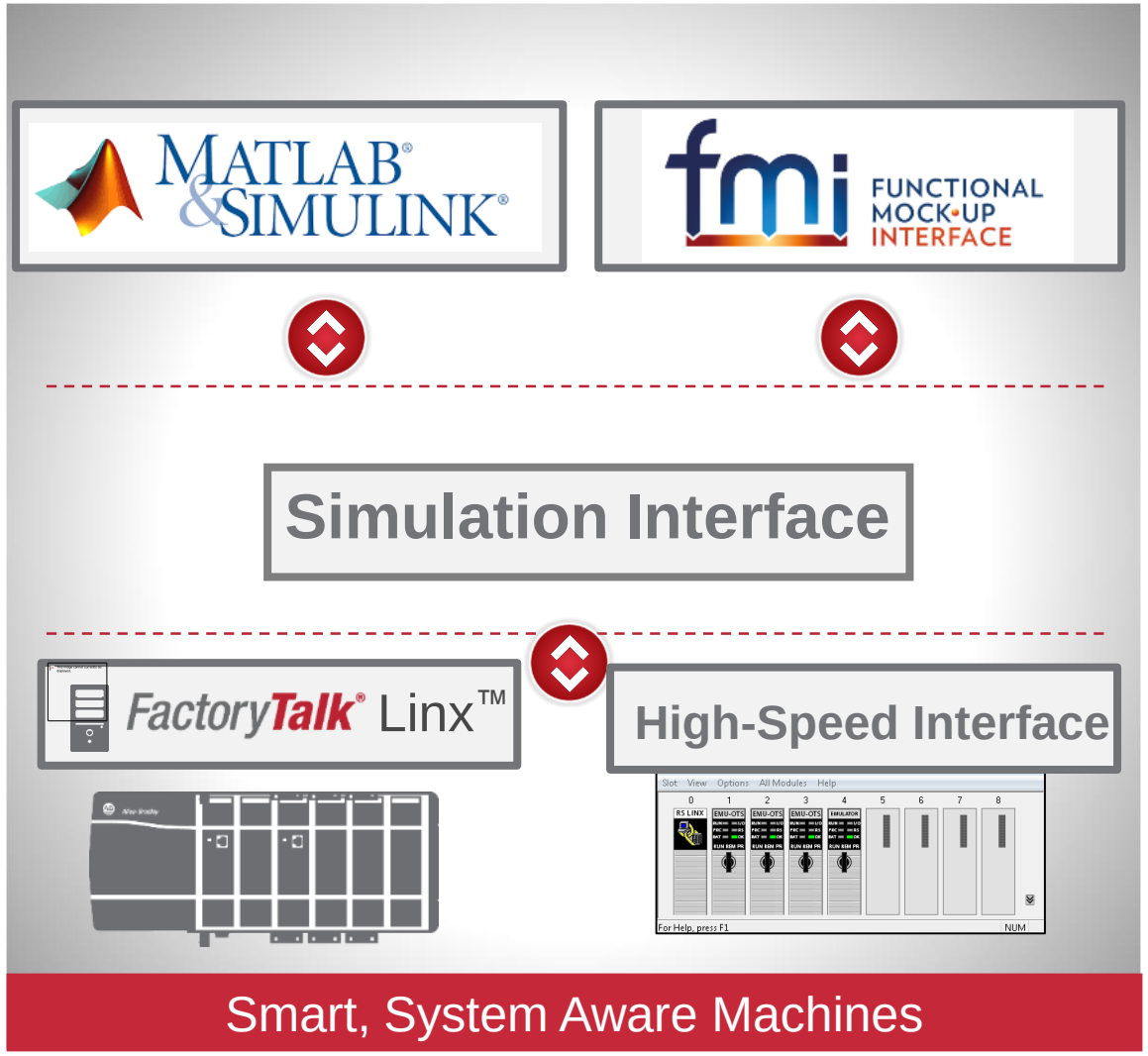
Studio 5000® Simulation Interface

New Connectivity to Support Smart Machines and Digital Design



Overview

The Studio 5000 Simulation Interface provides a means to connect controllers, physical or emulated, to simulation of modeling tools to enable virtual commissioning, and model based design.

Benefits

Functional Mock-up Interface (FMI) is a tool-independent standard to support both model exchange and co-simulation of dynamic models using a combination of xml-files and compiled C-code

- Design smart, system-aware, self-adaptive machines
- Easily design and build next generation machines with confidence
- Design, test, validate & commission machines before they are put into service

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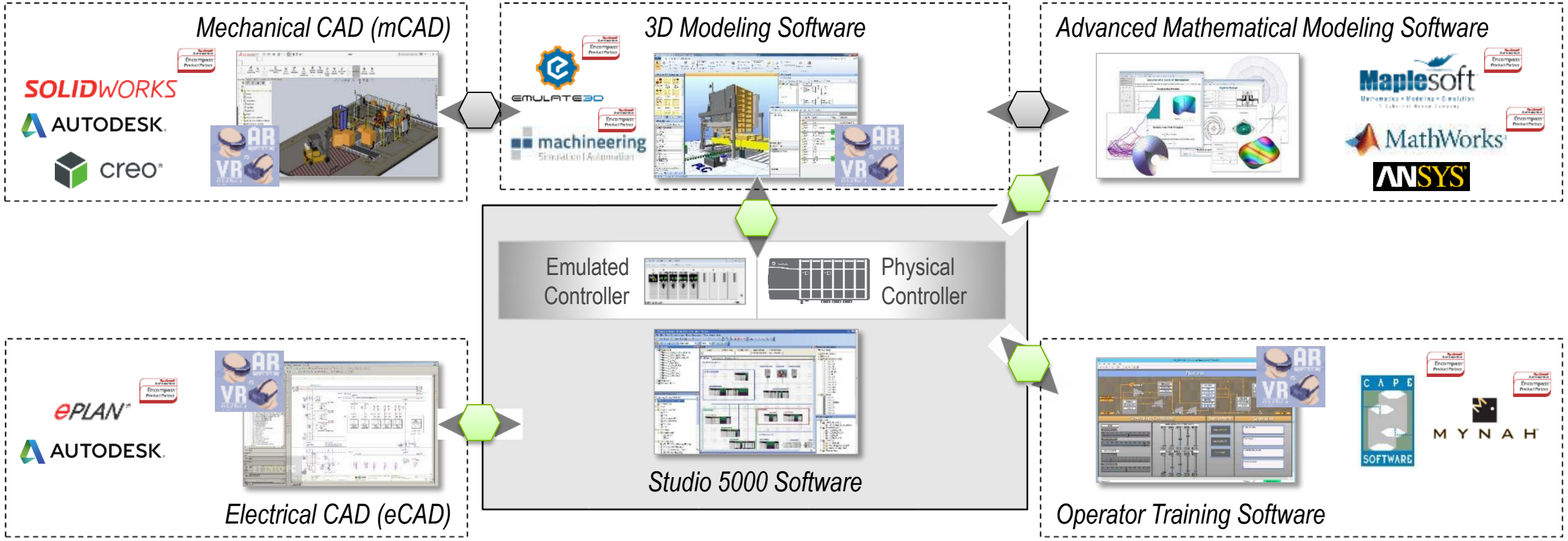
Digital Engineering

Ecosystem



Interface supplied by 3rd party software company

Interface supplied by Rockwell Automation

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Enabling The Connected Enterprise

FactoryTalk® Linx™

Highest capacity and performance
Logix data server for Rockwell Automation software
(delivered with FactoryTalk® Service Platform)
(Formerly RSLinx® Enterprise)

FactoryTalk® Linx™
OPC UA CONNECTOR

Provides connectivity to third-party OPC UA Servers for FactoryTalk® Software
(delivered with FactoryTalk® Service Platform)

FactoryTalk® Live Data

Provides global namespace with tag browsing and deliver of data to FactoryTalk Software
(delivered with FactoryTalk® Service Platform)

FactoryTalk® Service Platform

FactoryTalk® Linx™ Gateway

Delivers data from FactoryTalk® Linx to third-party software via OPC-DA and UA
(Formerly FactoryTalk® Gateway)

FactoryTalk® Linx™ Data Bridge

Moves data from one system data source to another across FactoryTalk Live Data
(Bundled with FactoryTalk Linx Gateway Professional)

RSLinx® Classic

Provides OPC-DA access for third-party software, with best support for legacy control equipment

FactoryTalk® Linx™ CommDTM

Communications service for asset management of EtherNet/IP process devices

KEPServer Enterprise

Enables FactoryTalk® software to access data from third-party control equipment

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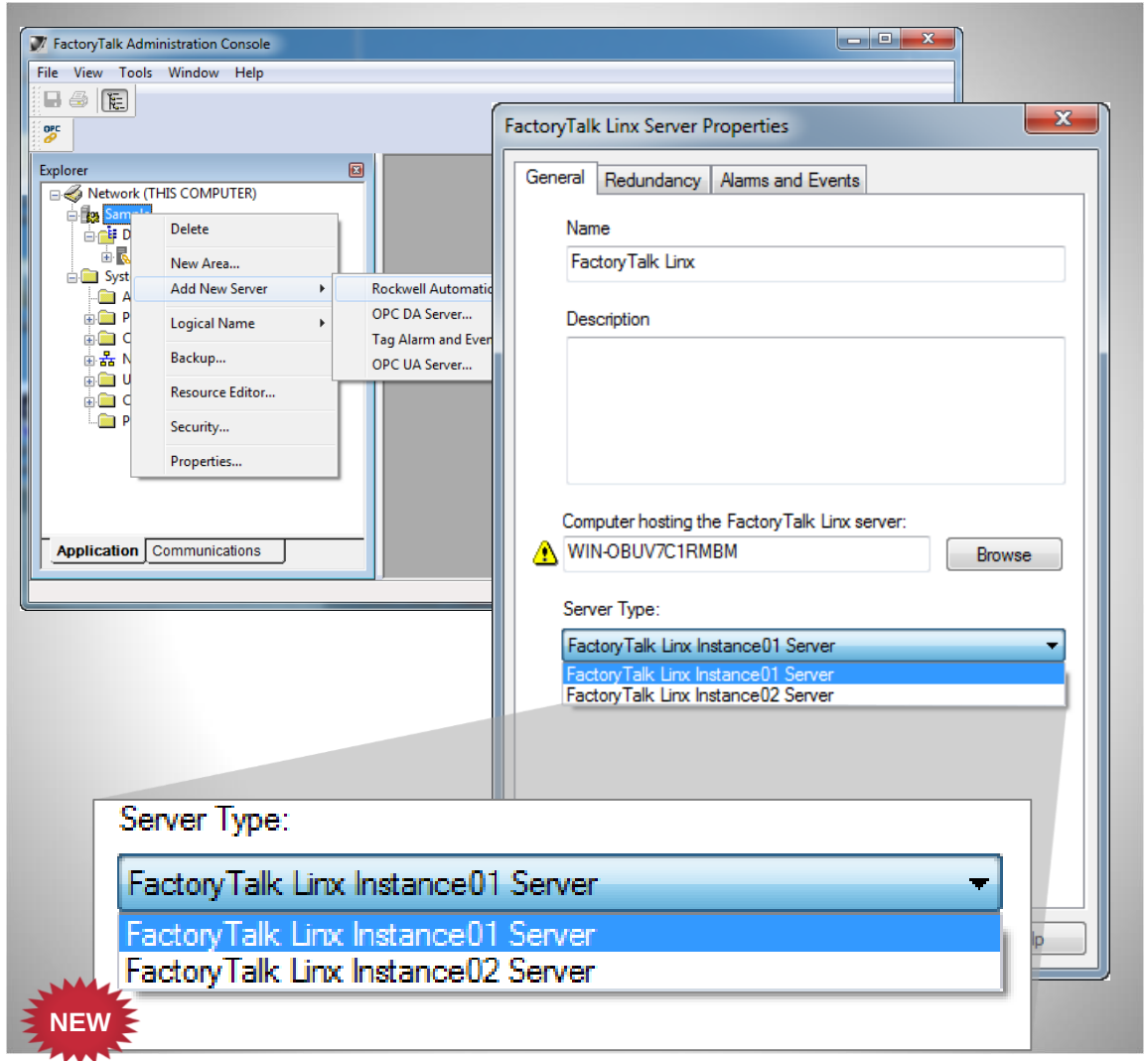
FactoryTalk® Linx Dual Service Option

Doubling the Data Server Capacity

FTLGW ≥ v6.10



Overview

- FactoryTalk® Linx v6.10 provides an option to run two parallel data servers in the same workstation / VM
  - Takes advantage of modern multi-core CPUs to significantly expand capacity
  - Second instance limited to polled tags (no alarms or unsolicited messaging)
- Configured using a single common user interface
- Remote administration in a distributed system

Benefits

- Add capacity without having to add additional server hardware
- Reduce the number of operating system licenses
- More efficient use of available resources

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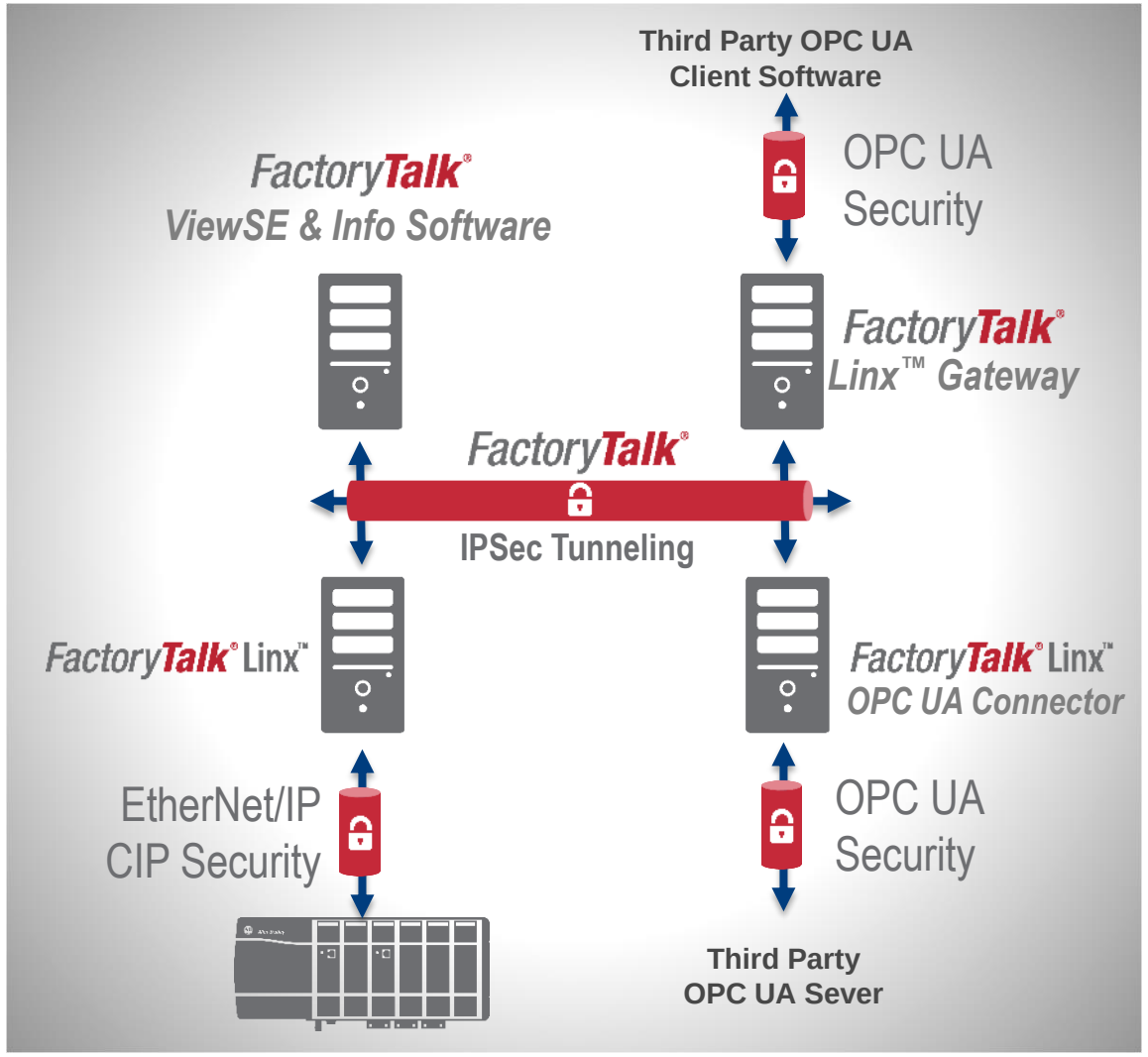
Securing Your Automation System
Encrypted Communications



Overview

- FactoryTalk® Service Platform v3.10, FactoryTalk® Linx v6.10 and Logix V32 permit system-wide security capabilities
  - EtherNet/IP CIP Security for Logix 5000™ controller communications
  - IPSec Tunneling for FactoryTalk® communications between computers
  - OPC UA Security to/from third party OPC Severs
- FactoryTalk® Security extensions to control access to configuration settings and control data value writes from external OPC UA Clients

Benefit

- Data Encryption to maintain integrity of critical information
- Limits changes to authorized users

FTSP ≥ V3.10, FTL ≥ v6.10, Lgx ≥v32

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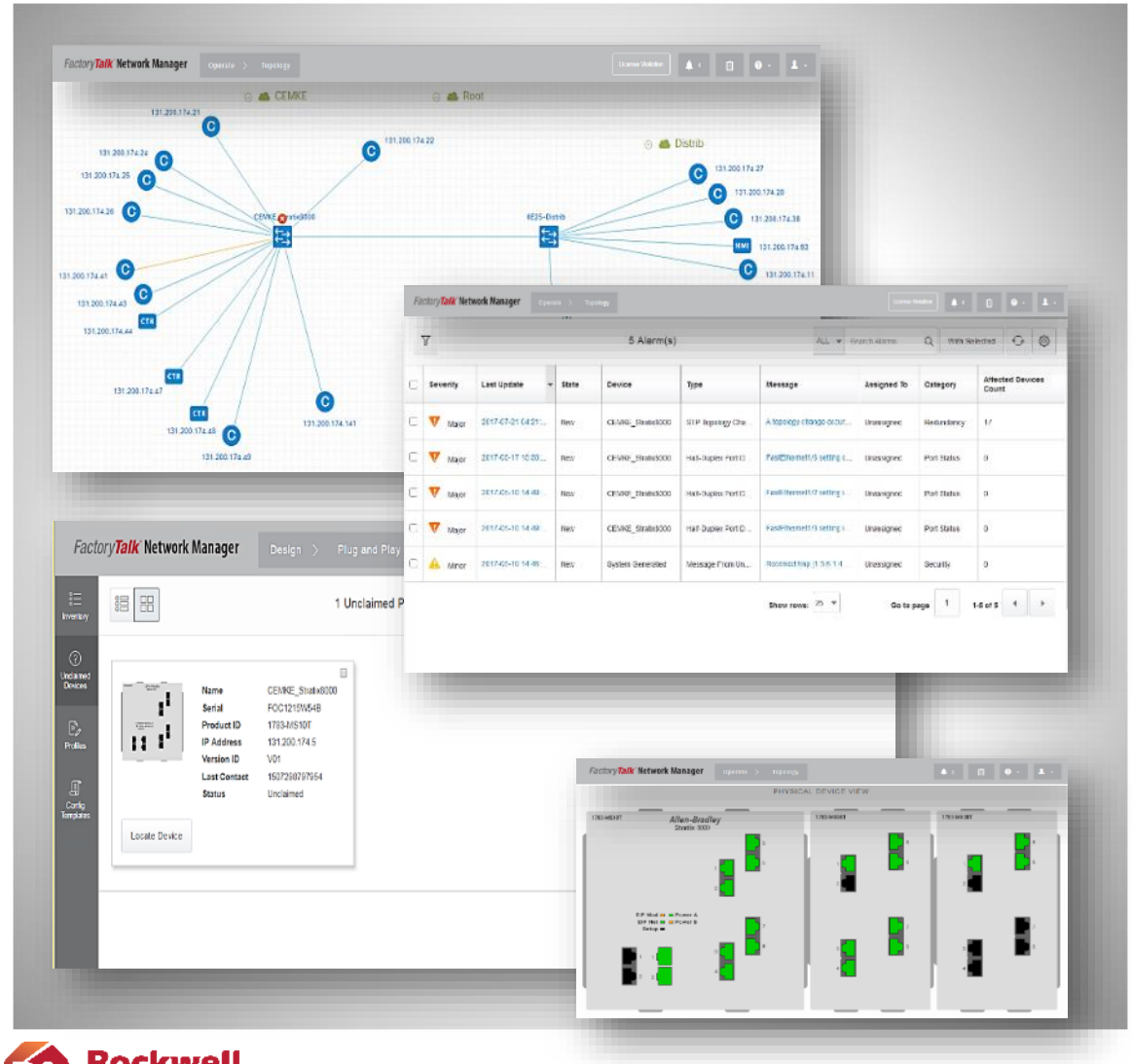
FactoryTalk® Network Manager™



Overview

New easy-to-use network management software from Rockwell Automation:

- Discovers plant floor network (EtherNet/IP and CIP) and provides many enhanced topology views
- Provides real-time capture of alarms and events, configuration, backup, and export capabilities
- Allows for creation of configuration templates

Benefits

- More easily deploy, commission, and maintain your control system networks
- Simplifies management and troubleshooting activities

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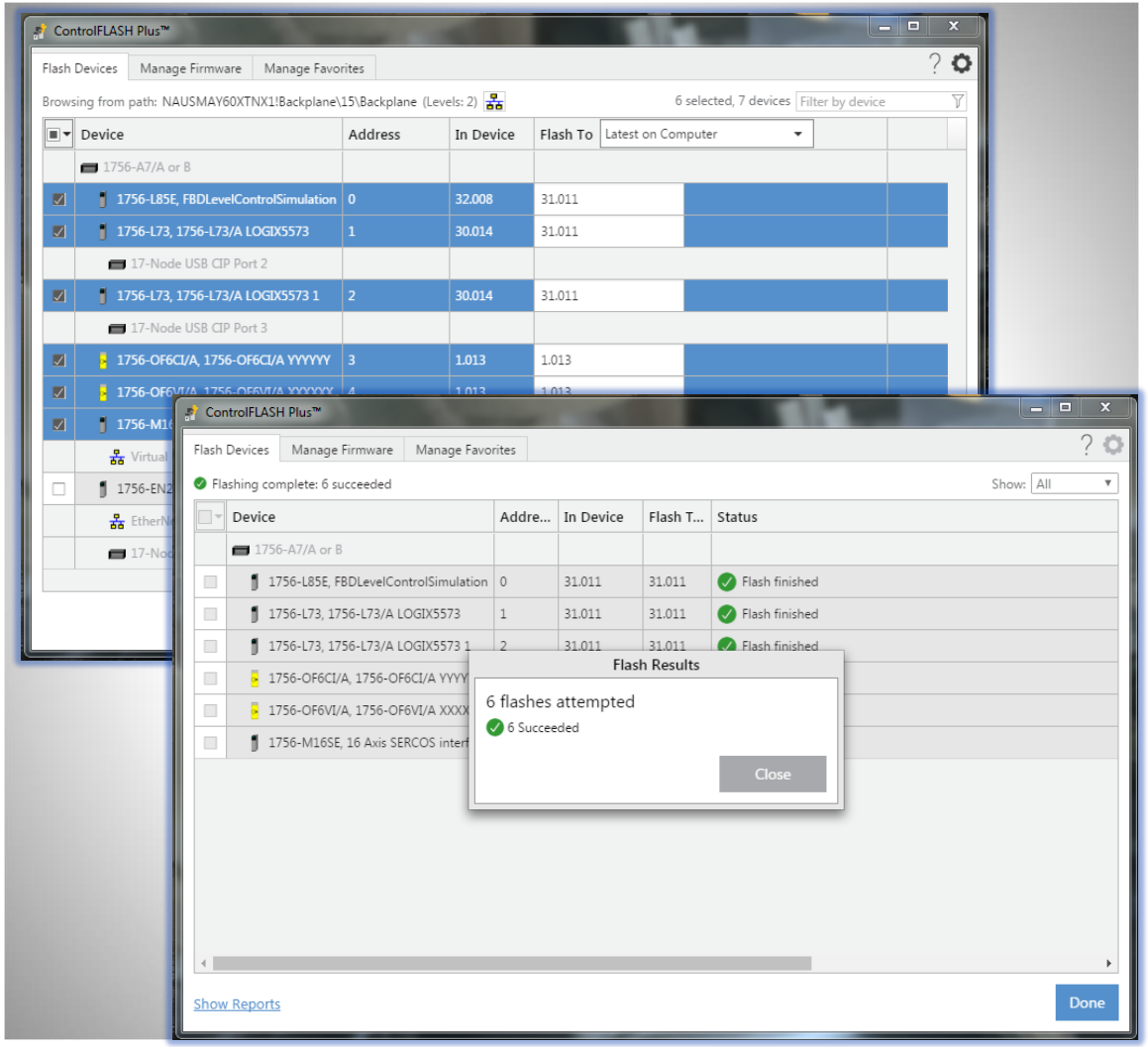
ControlFLASH Plus™ V1.00 Functionality

Improved Productivity, Usability and Scalability



Overview

- New generation firmware update tool with a modern and simple UI for better firmware management
- Allows for multiple devices flash operations
- Firmware revisions favorites support
- Leverages FactoryTalk® Linx (free of charge)

Benefits

- Improves productivity by allowing shorter time to update multiple devices
- Easily apply firmware standards
- Can coexist with ControlFLASH™ and RSLinx® Classic

Free of charge, available for download since late April 2018

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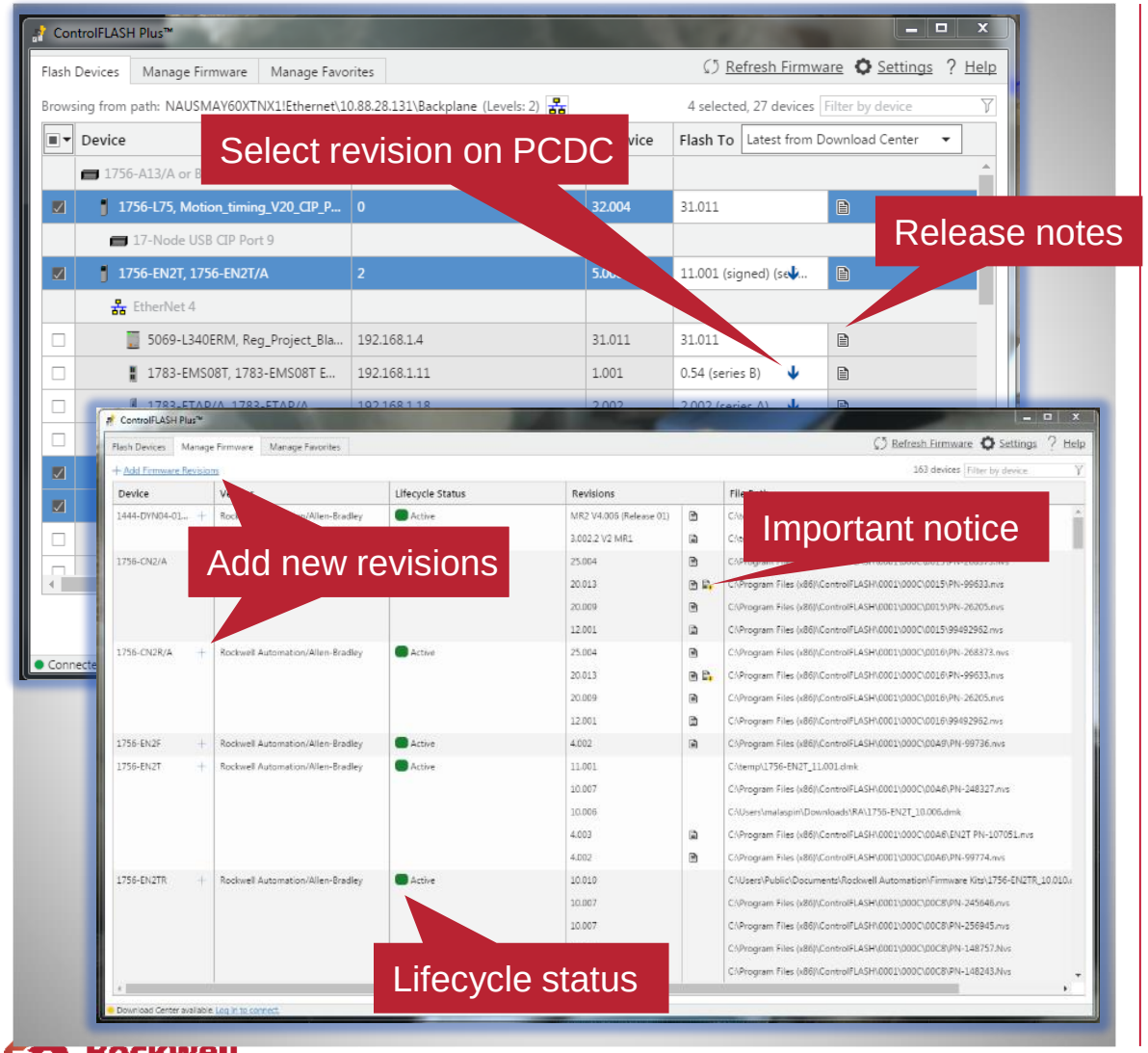
ControlFLASH Plus™ V2.00 Functionality



Overview

- Integration with Product Compatibility Download Center for firmware downloads, release notes, important notices and lifecycle status.
- Flashing Micro810®and Micro820® over USB is supported when using FactoryTalk® Linx (V6.10.00 and higher)
- Install available with and without FactoryTalk® Services Platform and FactoryTalk® Linx

Benefits

- Easier firmware lifecycle management
- Improved productivity and ease-of-use
- Can coexist with existing ControlFLASH™ and RSLinx® Classic

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Thank you