



ACTION.NET

The next generation SCADA



Operations Center

Real-time Data Acquisition

HMI, SCADA and Asset Monitoring Source-independent Presentation Layer

About Spin

We work with automation oriented to the electrical market developing SCADA, gateway, smart grid software, and business-intelligence solutions.

More than 25 years in the field provide enough experience to the development of well-built solutions. We have always developed and integrated our own software. We know how the integration process goes and how to make it easier and more secure.

Action.NET, our new SCADA, is based in new technologies, oriented for the future, with cloud computing, software as a service, scale use of personal mobile devices (BYOD – Bring Your Own device), ubiquity, consistent with the internet of things, shared engineering, and robust platforms.

We are a company built to work hard and in a simple way.

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Action.NET Platform

All about real-time data management

Action.NET is a powerful platform to develop and deliver applications managing real-time information, providing a complete set of modules in a unified and intuitive engineering user interface.

It includes as standard features: real-time tags and assets database, user templates, alarms and events, historian, SQL tables and queries, XML, CSV, XPS and PDF reports, built-in embedded SQL database engine and web server, scripting, scheduling, OPC server and client, native communication protocols, graphical designer, delivering user interface displays accessible from desktops, remote smart clients, web browsers and native iOS app on iPads and iPhones.

Action.NET was architected from a “green field” and was created entirely without the employment of any legacy code; that made it possible to create a system simple to use and powerful. Projects can scale from local embedded devices and mobile applications up to very large, distributed, high performance fault-tolerant systems.

Action.NET is a 100% .NET managed code application, allowing users to leverage and take advantage of the full potential of current technologies.

Applications

Typical applications are Advanced HMI visualization, SCADA systems, plant Information Management System (PIMS), Historian and Manufacturing Intelligence (MI), Operational Dashboards, Situational awareness, KPI and OEE indicators, MES and performance monitoring.

Industries

Action.NET support dozens of industrial protocols beyond most electrical protocols, it has been applied on Power & Utilities, Renewable Energy, Water & Wastewater, Building Automation and Embedded software Packaging.

Market Positioning

Action.NET is the most modern and complete software framework for Electrical Automation and Real-Time Information Systems, with a distribution network, supported by a highly experienced engineering team.

Pure .NET, no legacy code.

Cloud ready.

Native 64 bits.

Support for embedded Operating Systems.

Complete, all modules included.

Embedded SQL engine and web server included.

Event-driven, in memory, real-time database.

Combined IT and Factory floor tools.

Efficient and intuitive.

Intrinsically-safe software architecture development.

Nice details everywhere, from decades of practical experience.

High ROI and longevity, by the use of consolidated current technologies.



PUBLISH AND SUBSCRIBE



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STORE & PROCESS

Action.NET built-in modules

Third-party systems



Multi-Platform Solution

Taking connectivity to a higher level



IIoT (Industrial Internet of Things) demands connectivity. Action.NET takes it to a higher level

A Multi-platform solution:

- Raspberry Pi (rPi)
- Linux
- Windows Embedded
- Android/iOS
- Windows Server
- Windows 7/8/10

For the Server components, Action.NET delivers native 64-bit, hot-standby ready, advanced security and the most ever intuitive configuration tools.

Connecting any device, with any person and any business, across any network, anywhere, anytime!

Many companies today are looking to provide information from anywhere within the enterprise to anyone who needs it both locally and remotely. Many legacy products on the market today are still providing different project engineering environments in order to create applications to run in different operating systems.

That is not the case with Action.NET. Its platform provides a single engineering environment which helps customers get the most out of their systems by providing the richest experience in leveraging data from a variety of runtime environments and mobile devices.

iOS and Android support

Action.NET users have access to all mobile resources like cameras, to use as barcode scanners for electronic input of data, helping to reduce operator errors and maintaining corporate standards. GPS information is accessible from any iOS or Android device which helps verify location coordinates of the users and mobile corporate assets.

Linux and Raspberry Pi (rPi)

Machine and device builders have made Raspberry Pi (rPi) a fast growing popular device and environment for systems requiring lower resources than typical industrial grade systems. The same Action.NET that creates enterprise-class projects can be used to develop lightweight projects to run on rPi devices.

Application Areas

Open platform to implement custom solutions

Process Control & Data Aggregation

Process control stations require reliable server components and dedicated rich displays, so the security can be enforced and you have access to the full power of the computer. Action.NET has the complete set of functionality to implement distributed mission critical process control applications.

Mobile Native Applications

A native application provides functionality and a quality of user interface that a web page just can't match. Action.NET allows the same displays created for desktops to also be available to run natively on iOS devices and HTML clients.

SCADA, HMI and PIMS

Action.NET has the full spectrum of expected SCADA functionality and goes beyond, extending the real-time database concept towards IT systems, including objects such as data structures, dynamic arrays and images, time events, data tables, all with a tight connection with .NET languages for calculation engines and custom logics.

HMI, Embedded and OEMs

Action.NET has a wide range of built-in PLC protocols and a special version for HMI and embedded systems. The version control system, small footprint and remote access make Action.NET a wonderful choice for machine builders and other OEMs.

Performance Monitoring and BI

The ability to create a presentation layer that is source independent and cloud-ready, the support for automation protocols and IT network management protocols, the .NET integration, all make Action.NET an excellent tool to create operational dashboards.

SQL and PI Systems Front-end

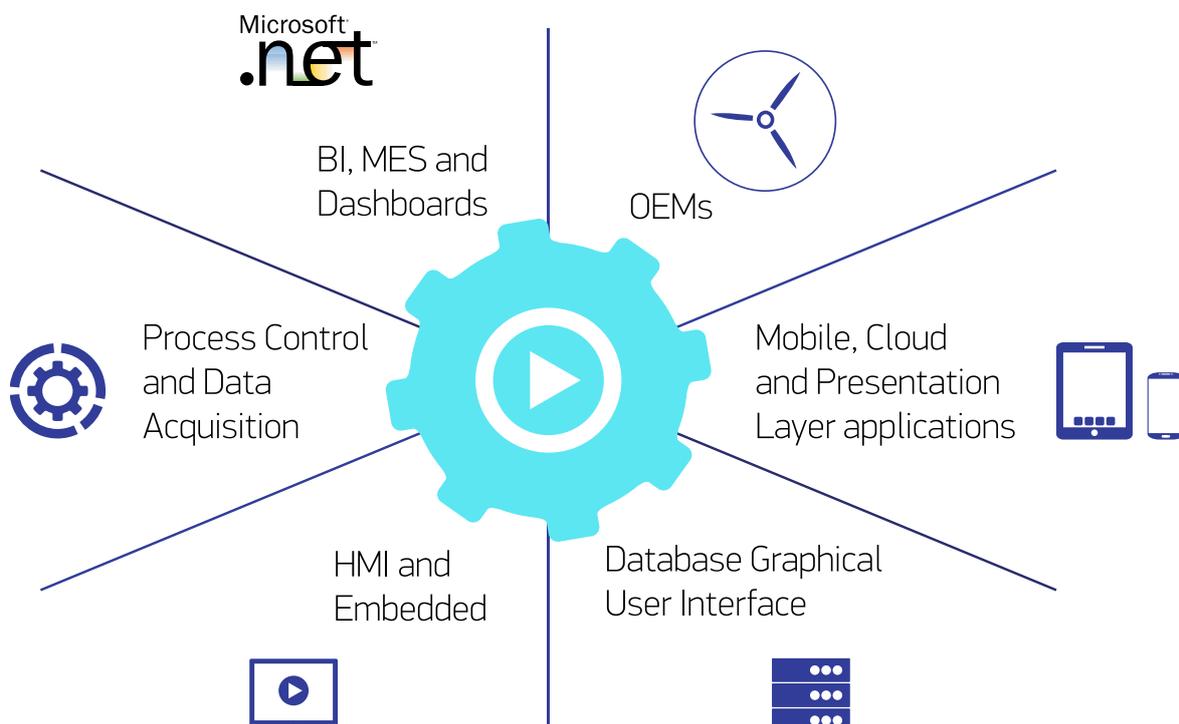
Action.NET has many features to manage SQL Databases, tables and queries in real time. It also has SDK-level data synchronization with OSIsoft PI System[™] and PI AF[™]. That makes it the number one platform when you need to create custom dynamic graphics and front-end custom user interfaces to those systems.

Applications delivered with Action.NET range from a couple hundred to more than one hundred thousand communication points.

Graphical interfaces of the engineering environment are state of the art, intuitive and innovative.

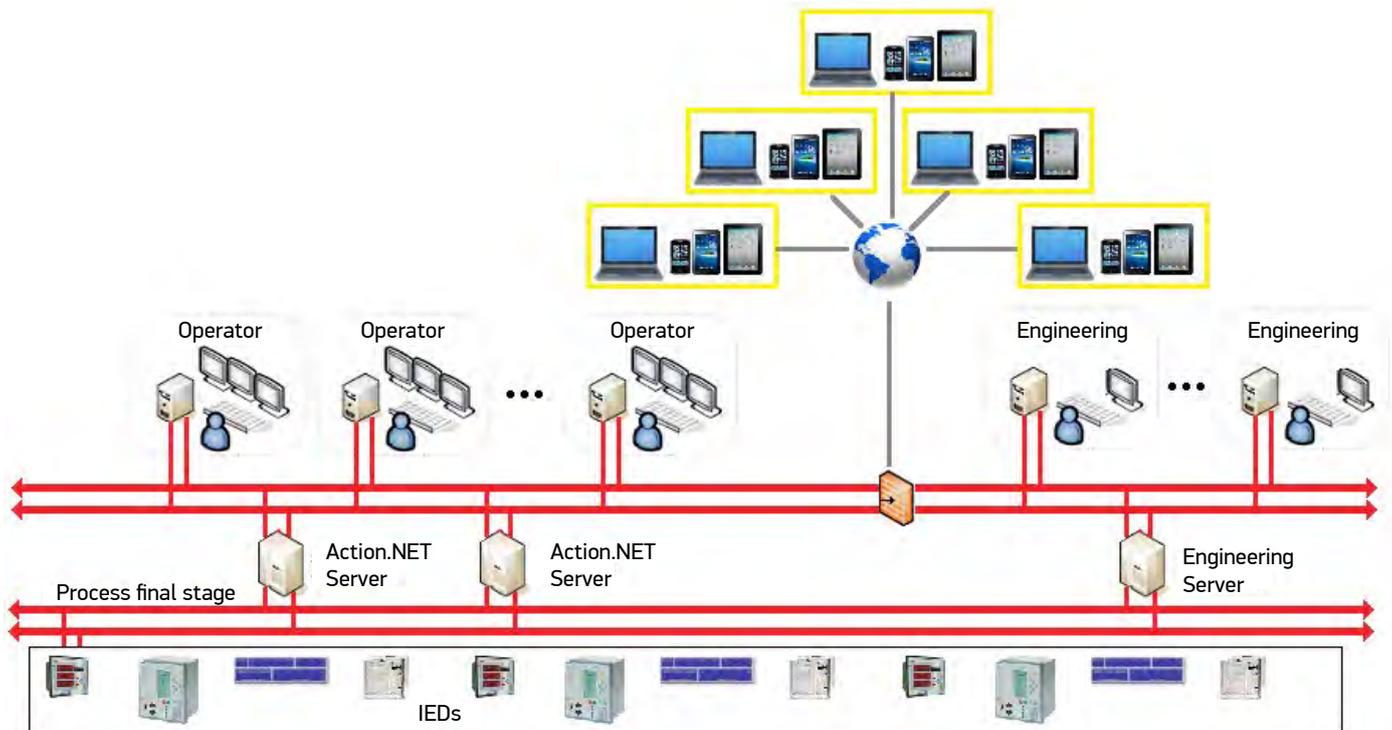
The use of open standards makes Action.NET easily extensible:

- WPF, XAML and HTML5 graphics.
- WCF and web services for connectivity.
- SQL for storage.
- C#, VB.NET and Java scripting.



Architecture Topology

Scalable, reliable and flexible



Hot-standby redundancy.

Distributed clients.

Automation Islands.

Data Server/Gateway.

Local HMIs.

Mobile Clients.

Embedded operating systems.

Online changes and hot-runtime-swapping.

The hot-standby redundancy of devices in the network and multiple clients.

Highly flexible, scalable and simple to use.

Securely route data from any machine, behind firewalls, to the cloud.

Access data remote machine data, from anywhere, anytime.

Multiple Layer Applications

Action.NET was architected to enable its use in different scenarios and topologies, from a local interface on an embedded panel to fault-tolerant servers, serving multiple projects and clients.

The development tools and project components are scalable, reusable and consistent.

Operational Stability

The 100% managed code implementation provides unmatched operational stability, thanks to an intrinsically safe software architecture, including execution threads isolation, exception control, failure recovery, modular implementation, hardware abstractions and operating system independence.

From IT to Factory-Floor

Spin provides a flexible and simple licensing model, allowing solutions that size your project to provide the best possible return of investment on each application scenario.

The product families and models enable you to deploy high quality and cost-effective systems, ranging from local HMI, touch-panels, embedded systems, supervisory stations, SCADA and distributed systems, control room and operations centers.

Redundancy and High Availability

For high availability systems, the real-time database, Alarm and Historian servers, data-acquisition, all Action.NET components can be deployed as a redundant hot-standby system, with no project changes required.

Unified Engineering Tools

High degree of scalability and performance

Deployment Scenarios

Action.NET is based on a unified-package architecture, so the server is always the standard Action.NET software. However, all Action.NET modules such as Scripts, Device, Historian, Database, etc. may be placed on different computers, in a distributed system context.

The server computers can run in different Operating Systems, connecting to many options of client visualization stations, allowing flexible deployment scenarios.

From Standalone to World-Wide

The Action.NET family of products is uniquely designed to provide the most reliable, flexible, and powerful application development platform. Whether you are building an application to run on a small device with very limited amount of I/O, to

run on a production line or a commercial building, or looking to provide information across the globe to those that need it, on any device, anywhere.

Data Aggregation from multiple locations

Action.NET is the perfect platform to collect data from multiple locations to a centralized location. Hundreds to thousands of distributed Action.NET nodes, provide the process data acquisition, and publish data to a cloud server, or to the corporate office.

Multiple User Security

User security can use Application Security, Windows Authentication (Active-Directory), or WS-Federation concurrently, mapping to the same application server.

Combine Role security with area security.

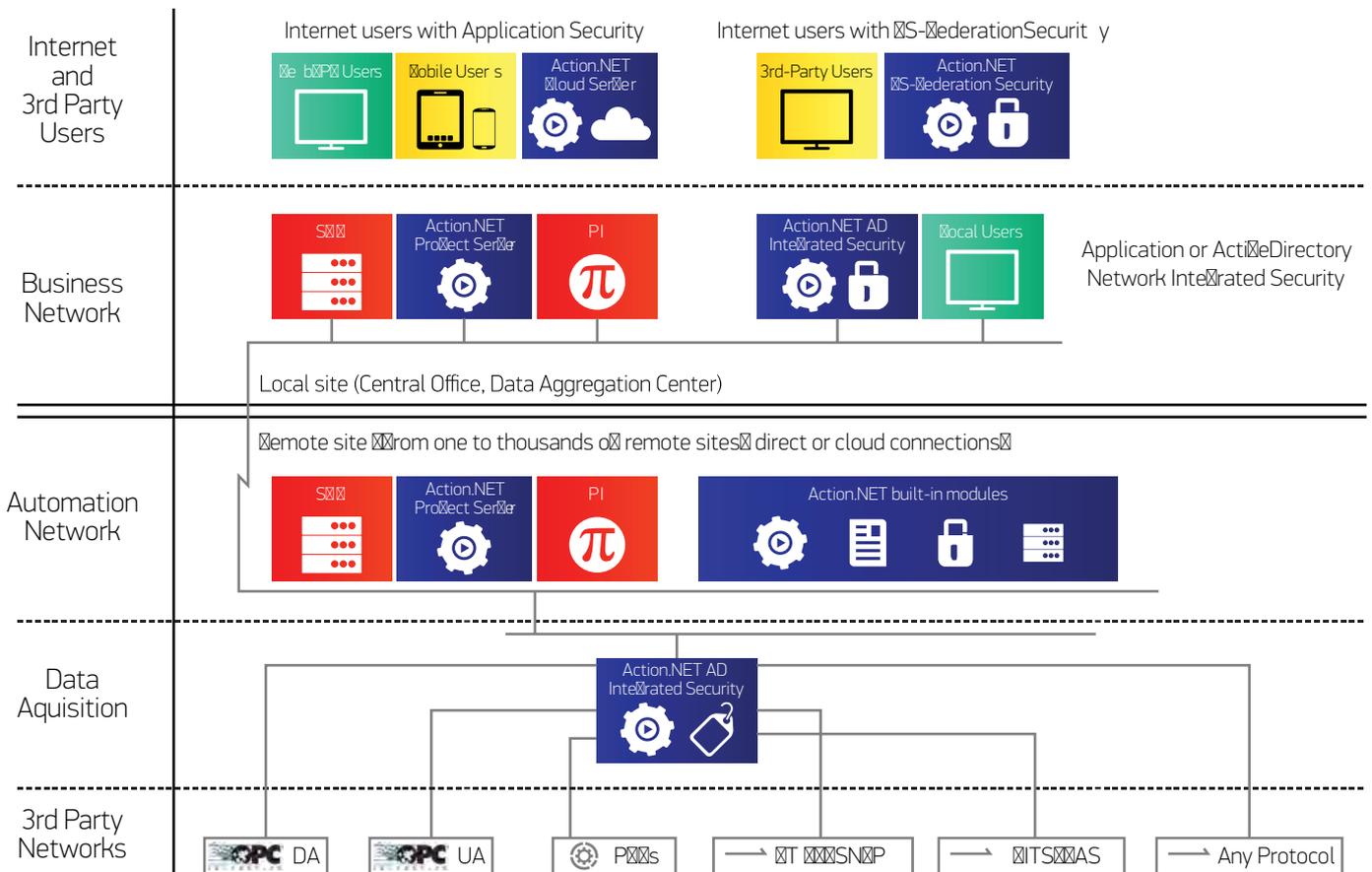
No need to work with multiple interfaces and applications.

All modules are always built-in in ONE development tool.

Application portals and gateways to move data across firewalls and network security zones.

The same configuration tool can create applications for desktops, mobile, HTML5, and embedded devices.

Spin Action.NET Security - Distributed Data Architecture



Project Management and Engineering

Simple and intuitive, efficient and secure



Easy Project File Management

Action.NET projects are stored in an embedded-encrypted SQL database file, a SQL engine is included with Action.NET at no additional cost. That provides much more security and easier maintenance and deployment, when compared with legacy systems where configuration files are spread across multiple folders and files.

Access Projects from Anywhere

Providing flexibility to meet your design and execution requirements, Action.NET can be configured to store and run projects from a USB stick, local hard-drive, Network Server or from a Cloud server.

Synchronization and Import Tools

You can copy/paste any configuration table with Excel directly. Configuration from Rockwell™ PLC's, OSIsoft™ PI Systems, CSV files, XML files, DLL .NET assemblies can be easily mapped into projects with easy synchronization tools.

Concurrent Product Versions

Never again will you need to manage virtual machines or different computers with different versions of development software. Action.NET automatically enables the engineering environment that matches the version last used to edit a project. That prevents you from building something into the project that is not supported by the runtime environment, which can still be from a previous product version.

Intellisense

Tags and all application objects are presented to the user as you type, with full context validation. That makes the configuration process much faster and more reliable.

Manage Project Releases

Multiple project versions are easily managed thanks to the metadata information and the built-in management tools. Action.NET automatically tracks configuration changes, builds and project releases.

Each project is a single file, providing for easier maintenance and deployment.

Multiple product versions can be installed side-by-side.

Includes an embedded Web server and an embedded SQL database.

Multi-user and multi-project.

Exclusive runtime objects concept reduces engineering time and increases reliability.

Innovative configuration user interface inspired by the simplicity of tablets and the web look and feel.

Client Operator Stations, Web and Mobile

Create Once, Use Everywhere

Client Technologies

Action.NET was designed to support a comprehensive set of client applications. The client computer or remote devices require zero configuration, which means that all the project displays, scripts, everything is kept on the server computer, either using local networks, VPN or cloud servers. Project updates are automatically downloaded. Redundancy is supported by all clients.

Rich and Smart Clients

WPF-based visualizer desktop application that blocks Windows task switching. The enhanced security and full use of the client computer resources make this client type ideal for process control workstations. On one-click-install from a URL with automatic updates. The Smart Client combines the easy activation and no-install of a web client and the security and performance that a local rich client provides.

HTML5 Clients

Action.NET allows the creation of independent browser and operating systems displays using pure HTML5.

Microsoft XAML Technology

Microsoft XAML technology allows running full-featured graphics on Internet Explorer browser. Including dynamic 3D models. Web clients use the security sand-box (partial trust application), which is a newer standard and much safer than the legacy Active-X. Thin Client, RDP and terminal client technologies are supported for the mobile workforce.

iPad and iPhone Native Clients

SCADA HMI Client app is the first graphical native app that has the displays created on the desktop using the Microsoft .NET Framework and WPF drawing tools. Graphical displays accessible from the iPad with no specific project installation, just using the standard app downloaded from the Apple Store.

Local, embedded, distributed or cloud deployment scenarios are supported.

No project installation on the client side.

Simple and centralized deployment and updates.

On Smart and Web Clients, no previous product install is necessary.

Runtime displays are time-zone aware and can be localized to several languages.

Open remote sessions on your Microsoft Surface, Android or Apple device. For iOS, there is also a 100% native client.

On iPads, the use of the native iOS code, instead of browser HTML, allows you to access the full power of the iPad, with a better user experience, redundancy, easier and secure setup, among other benefits.



Hot-standby servers providing centralized project configuration to multiple clients, local, remote or on the cloud. Different user experience and display formats, including the native iPad and iPhone pages managed from a centralized location.

*Context sensitive multi-monitor portals
Create a state-of-the-art operations center with multidisplay portals. Asset tree view, PDF documents, synoptic screens, trends, alarms, 3D dynamic models and data grids managed in a coordinated interface driven by the asset and user context.*



Tags, Assets and Templates

Systems engineer dreams delivered



Tags and Modules are combined in the same workspace, providing high development efficiency.

Assets can be defined locally, imported from PI AF, to reflect ISA 95 models or any custom project hierarchy.

Advanced DataGrids, with virtualization, themes, grouping and filtering, maximize productivity.

Tags and Templates can easily map to physical assets or SQL databases.

TAT and Real-time Elements

Tags, Assets and Templates (TAT) are the core components to the real-time data models and the power of Action.NET.

Real-time Tag Types

A typical HMI-SCADA system has only basic tag types, such as numeric and messages. As Action.NET also targets IT and MES systems, it goes far beyond, supporting real-time entities that match all the SQL types and many .NET Framework entities, including Images and a complete DataTable in a single real-time tag.

Assets and Categories

Organize your project with categories and assets. An asset is composed of tags and other application objects connected to your process hierarchy. Action.NET allows implementation of ISA 95 modeling specifications, which can be essential in large systems.

Templates

Templates are user-defined structures,

similar to .NET classes, allowing composition and hierarchy. Besides the built-in basic types, real-time tags can be created based on templates that reflect physical assets, which speed up and simplify the application development.

Dynamic Arrays and References

Action.NET was the first, and up to now the only, real-time system with built-in support for tri-dimensional dynamic arrays, lists and type-safe reference tags with dynamic assignments, creating reusable components on displays, symbols, reports, calculation and at any part of your project.

Import and Synchronize

Tags and templates can be imported and automatically synchronized from various data sources including: XML and CSV files, OSIsoft^(TM) PI System^(TM) and PI AF^(TM), Rockwell^(TM) ControlLogix program files and OPC servers.

SQL Databases and .NET

The built-in tag types allow direct mapping to any SQL database or .NET variables.

Tag based Security

Refactoring allows renaming any object, anytime. No more need for global search and replace commands!

Intellisense shows auto-fill context sensitive information in all fields. No more typing names!

Cross-reference is available to all project elements, not only tags.

Automated Project Definition

East and simple synchronizations and imports

Standard Project Configuration

Each Action.NET project is stored in its own encrypted SQL database file. This architecture makes it very easy to update to newer versions of Action.NET as we may add additional tables or columns to existing tables, which is easier to do than working with proprietary file structures.

External Tag Integration

As of this printing, Action.NET can automatically use tags from some PLCs, OPC Servers, Wonderware Intouch projects, OSIsoft PI Systems, or PI Asset Framework (AF) Servers, ActionView projects and IEC61850 SCD files.

Action.NET includes the ability to import resources such as graphical objects, script code, communication configurations, project components, and to do so directly into any configuration table being used. To take that concept even further, entire project configurations can be managed outside of Action.NET, and then imported all at once.

.NET API for project definition

A powerful, yet simple to use, .NET interface, provides the ability to use C# or VB.NET, or any .NET language, to create project configurations from your own code.

From Excel/CSV to tags and displays

All Tag definition, alarms, communication mapping, historian, even symbols for displays, can be created from a one file CSV import. Create your project specification in Excel, and with click you have your project created.

OSIsoft PI Integration

Action.NET supports native connectivity, to OSIsoft PI Systems, directly accessing PI tags. It also supports native connection for the Asset Framework (AF) and Event Frames (EF). The entire AF data structure can be either imported to Action.NET, or accessed directly from the AF server, with no data replication or importing.

Bring legacy HMI/SCADA projects

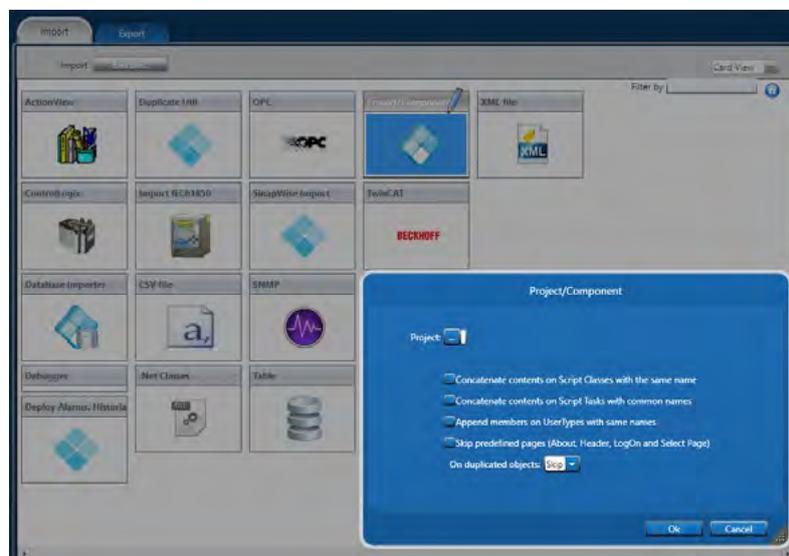
Use the reporting and export tools from your old HMI and SCADA software, to bring in automatically most of your previous project definition to state-of-the-art Action.NET projects.

Object Model configuration

Action.NET use of templates, with connected symbols and properties, cuts the time needed to create your application, while providing easier maintenance and extensibility. Using this functionality, Spin developed the [Lean Automation](#) methodology, which allows you to set up an application in record time, after creating libraries based on the client culture.

Complete set of real-time tag types:

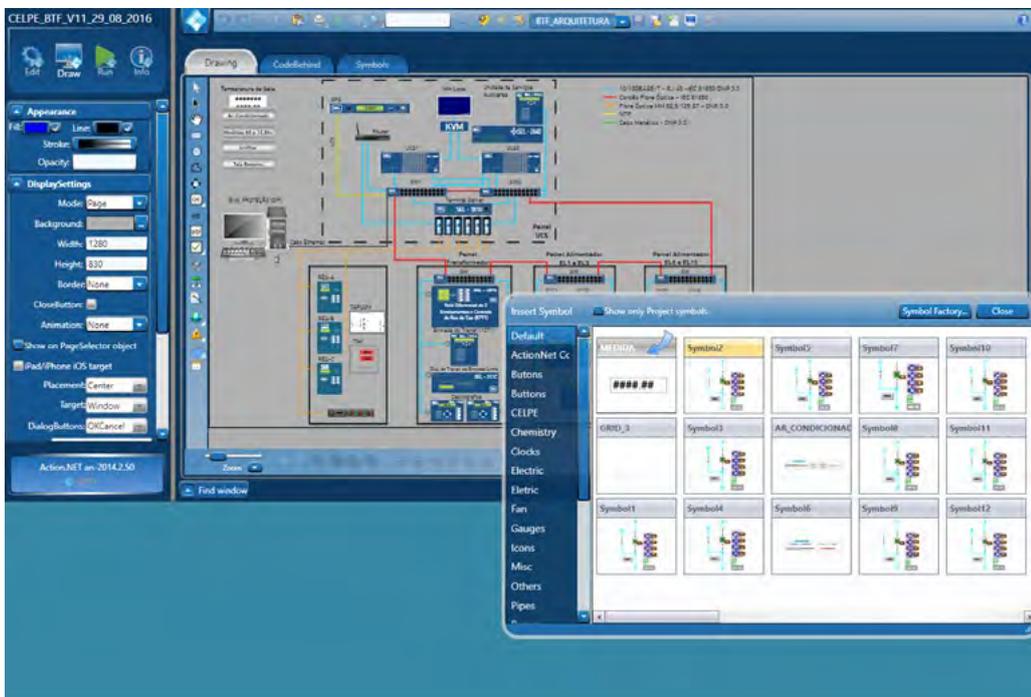
- Digital
- Integer
- Long
- Real
- Decimal
- Text
- TimeSpan
- DateTime
- Image and Byte Array
- GUID and DataTable
- Reference
- User defined templates
- Asset models



Graphical Designer and Dynamic Displays

Systems engineer dreams delivered

The Vector Drawing tool, professional designers quality level, and the extensible set of dynamic symbols provide quick development of custom rich user interfaces. Develop once and use the same display on desktops, web and mobile clients.



Advanced Graphical Technology

Action.NET is the first complete product where all of the configuration and execution tools are pure Windows Presentation Foundation, the latest graphical technology from Microsoft. WPF uses the full potential of the current graphics cards and computers, providing superior quality and performance.

Dynamic 3D Models

Connect real-time tags to control properties in 3D models created with 3DMax or other systems that supports the .3DS extension.

Code Behind and Expressions

Develop code behind, using C# or VB.NET, or HTML5/JavaScript, expressions on dynamic animations and client-side event-driven scripts, providing flexible customization.

Touch Panel Applications

Customizable on-screen keyboard, multi-touch support, momentary buttons and other features deliver rich touch panel systems.

Smart Symbols

Smart Symbols are asset and template based reusable graphical components, with runtime dynamics or static binding and centralized management.

The symbols can keep a live link with the library, so you can modify the symbol only once and automatically apply to all displays.

Unique set of Dynamic Animations

Unique new dynamics, such as opacity, shine and skew, combined with move, scale, color change, rotate, and others, applied to any object, provide the most comprehensive set of animations. No more difficult laborious workarounds dealing with drawing tools created on top of legacy graphics systems.

Images, Colors and Transparency

Images are added to the project database for centralized management, low and hi resolution versions of the image are automatically created, optimizing the project. Transparency, alpha color, image brushes, all designer tools are there.

Advanced Controls

All Windows controls are included, as well web browser, child-displays, doc viewer and many others. Add WPF controls to extended functionality, such as scheduler controls, Gantt or live video cameras. Legacy Active-X controls can also be used for compatibility.

The graphical tool creates displays for both .NET (WPF) and HTML5.

Display estimated value or historical values, for simulation and playback.

Audit trail of user actions.

Change display language in runtime.

Resolution independent, no conversion tools, nor distortion when changing monitor or resizing.

Multi-touch and multi-display support

Same project supports multiple different resolutions, no conversion required.

Dynamic Symbols

Advanced Graphical Displays

Map Symbols to Assets

Create assets and templates based on reusable components with runtime binding, standard graphical visualization, and centralized management

Import Objects and XAML

Images and symbols can be imported from the most popular formats used today. XAML standard simplifies automated import of displays from legacy HMI and SCADA system.

Linking Tags to Symbols

Action.NET has many rapid application development tools – [Lean Automation](#). One example is the ability to define Categories in which Tags and Symbols can be tightly integrated. Using Categories expedites screen development by specifying graphical symbols to automatically be used in displays simply by copying Tags and pasting them into your displays.

For example, users can define a bay of feeder symbol and all of its' attributes (switches, circuit breakers, protections, measures, etc.) to use in displays. Then by specifying a Tag to have the same Category as the feeder bay, when the Tag is pasted into the display it comes in as the default feeder symbol for that category. There is simply no need to go through the manual steps of placing individual symbols on the display and assigning the attributes.

Extended Symbol Library

Action.NET has its' native library of symbols created with properties assigned to them. To help you create the most advanced graphical displays however, Action.NET was the first software package of its' type to also include the SymbolFactory.NET library of over 5.000 vector-based graphics... at no charge! This library installs with every Action.NET development package and is unlimited in terms of how many symbols you use and how many times you use them.

Edit multiple symbols, rows and properties combined.

Copy and Paste dynamic animations settings.

PowerPoint style display transitions.

Group, align, vector composition, zoom, layers, layouts, gradients, all the WPF power available in a simple user interface.

Select objects at the display or at the tree.

Hide and show objects while editing from the tree.

Map tags and templates with symbols.

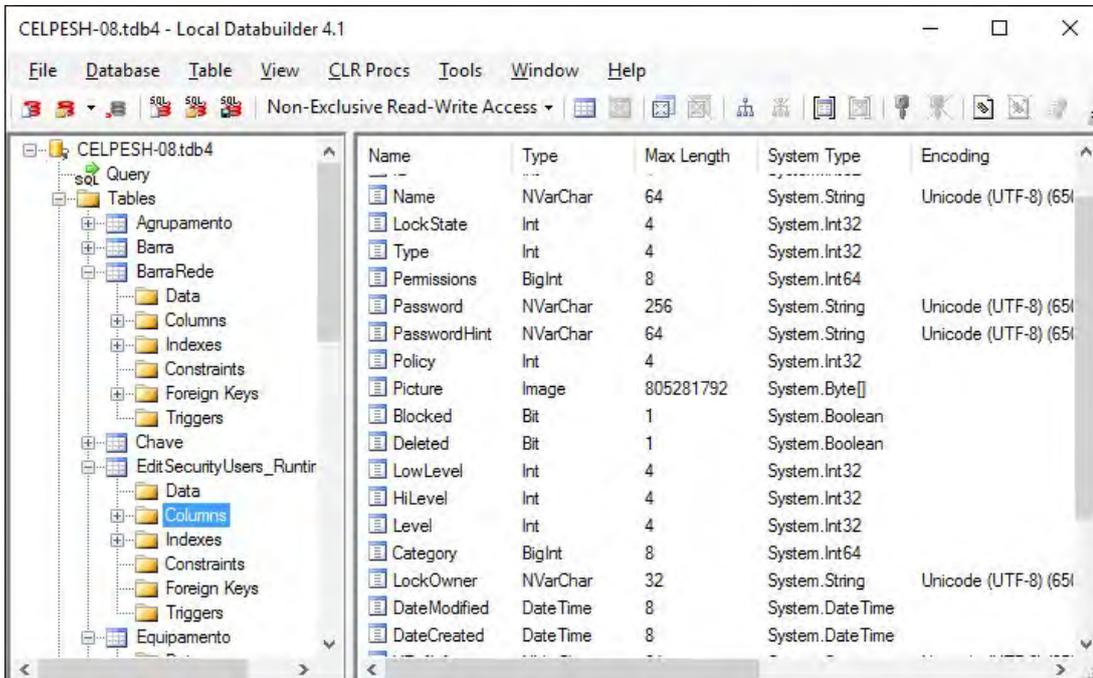
Create one Popup or Dialog that can map in runtime to different tag groups.

Symbols can be dynamically added while the display is running.



SQL to the Core

The Convergence of SQL database, HMI software and .NET



Included Database admin supports all standard SQL data types and queries to create local storage for your application.

Full-featured DataGrid with drag-drop grouping and multiple themes.

Various built-in display elements can bind directly to real-time tables and queries.

Built-in Embedded SQL

Every Action.NET system includes a full-featured embedded SQL engine. This provides several advantages including:

- A safe and secure location for your entire project configuration.
- It can be used as the historian database to log tags, alarms and events on small to medium systems (up to 10GB of data).
- On Large systems, it can be used as a local Store and Forward location, when the remote database is not available.
- It provides an ideal system to store local runtime settings, retentive information, local recipes, schedules and tables and queries when preparing reports.

Multiple Database Connections

Action.NET provides seamless integration with any third-party database, including Microsoft SQL Server, Oracle, MySQL, Informix, SQL Lite, PostgreSQL and others. Real-time Queries and Tables.

Any data source with ODBC, OLE-DB or ADO.NET support can be connected with the application; an easy syntax allows you to create or customize any query or table search with real-time tags.

Advanced DataGrid

Action.NET provides a fully-featured DataGrid object to present tables and queries from databases, as well show contents of any tag, asset or real-time object.

Just drop the table, query or tag to the Grid Data Source to create front-end visualization or edit any real-time object or database.

Client-Server Architecture

Real-time queries can be processed either at the server or from the client computer, asynchronously or synchronously. To achieve better performance, multiple requests from distributed clients are cached and synchronized at the server.

Data Gateway

Connecting client queries through Firewall protected security zones, such as moving data between the Automation Network and the IT network, is no longer an issue. Action.NET provides a built-in firewall friendly data gateway. Data queries from clients are routed in a secure way through any Action.NET system.

Scheduling and real-time data consolidation made easy.

DataGrid features:

- Real-time data
- Transpose option
- Cell editors
- Data validation
- Display value converter
- Open output formatting
- Image cell contents
- User interface themes
- Auto-column creation
- Grouping and filtering
- And more...

Providers supported:

- ODBC
- OLE DB
- ADO.NET
- SQL Server Native
- Oracle Native
- SQL Lite
- MySQL
- PostgreSQL

Data Exchange files:

- XML
- CSV
- Text

.NET to the Core

Built-in Script engine and seamless access to Visual Studio libraries

Built-in Code Editor

Action.NET includes an integrated script editor for developers to create custom functionality for the application. The editor provides a powerful set of tools to help you test and evaluate your scripts. Debugging tools include assigning breakpoints, stepping into code, stepping over code, executing line by line and watch values of objects changing with each step.

Scripts are executed natively as managed code within the .NET framework, meaning you cannot create a script that would inadvertently cause the system to shut down. This provides a greater level of security and up-time for your application.

Server and Client Domains

Using the Action.NET script editor you can create scripts that execute on the server for global reach, or they can execute on the client side for local reach.

Tasks, Classes and Expressions

You can create Tasks, .NET classes and function libraries. In some cases it may be more efficient or desirable to create one-line expressions, rather than full methods. For that purpose, Action.NET provides an expression editor allowing access to all .NET operands and classes.

Object Orientation, Project Elements

All project elements, including Tags, Datasets, Alarms, devices, status of communications are immediately accessible via IntelliSense, as they are native .NET objects, no temporary tags calls are required. With a single move data from Tags to .NET external Data-tables.

C#, VB.NET and Code Translation

Action.NET includes industry standard languages of C# and VB.NET so engineers no longer have to suffer through using old proprietary, single-threaded or interpreted scripting editors. Translate your code between C# and VB.NET anytime to better leverage your expertise.

Events and Scheduling

Tasks and expressions can be triggered to execute by date, time, condition, calendar, tag change or interval. Execution is distributed among processes, each running in its own application domain, isolated from the real-time database, for maximum system security and performance.

Tasks and scripts run on protected isolated threads.

Multi-threading system with exception control.

Create Function Libraries or full .NET classes and namespaces.

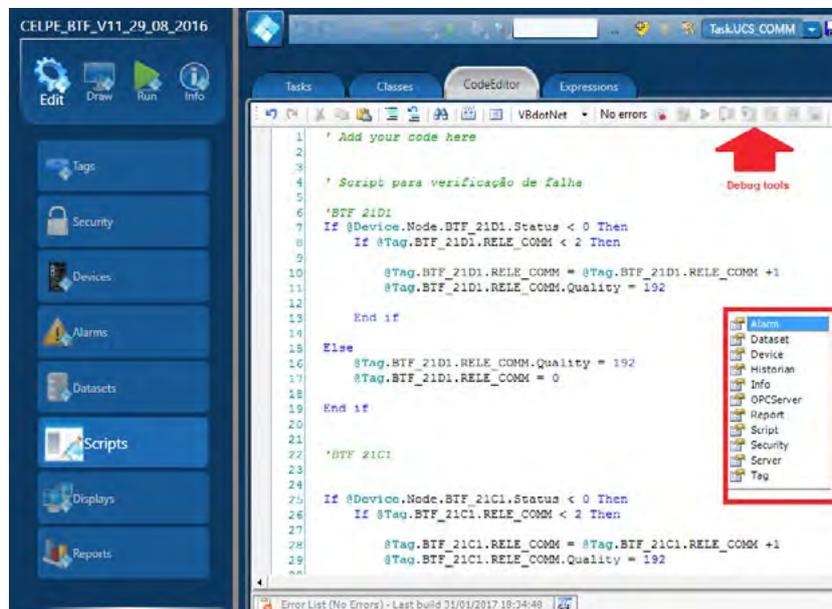
Add references to .NET external DLLs with one click.

Complete debugging tools, including breakpoint, steps, watch and stack view.

Online project changes and configuration while running and debugging.

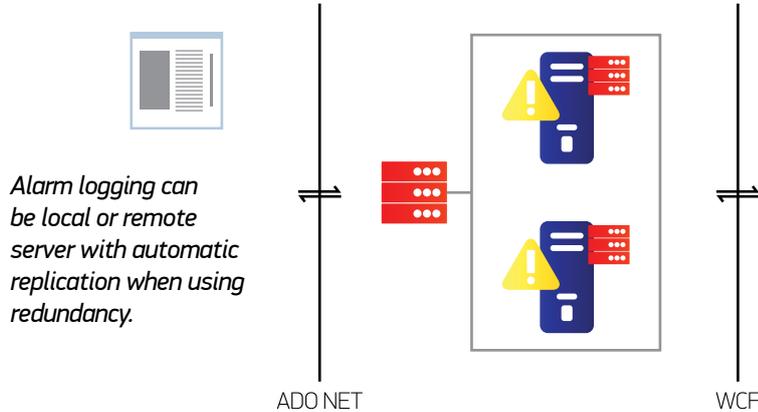
Expressions can be used directly on graphical objects and the code behind the displays.

Client-side events, tasks and expressions; even for web and tablet clients.



Alarms, Alerts and Events

Alarm and Event features matured from applications in all regulated environments



Built-in Viewer object for desktop, web and mobile. Send SMS, email and custom event handling.



Subscribe notifications to your C# or VB.NET in-projects scripts, .Net classes, such as text-to-speech, for voice messages and all the flexibility of the .NET Framework is accessible.

Complete set of alarm conditions. The standard alarms HiHi, Hi, Lo, LoLo, Rate-of-change and Deviation; plus any comparing condition with >, =, <; plus trigger events based on value changes.

Unlimited number of alarm conditions are allowed for each tag.

Messages can contain any number of real-time values.

Internally uses 0.1 ms timestamp, so the alarm precision is only limited by the data-acquisition.

Acknowledge rearming or timeout, comments, voice messages, SMS, emails and any custom actions.

The Tag timestamp acquired from the field process, when available, instead of the computer time is used to record the events.

Alarm properties and runtime status are .NET objects, allowing easy development of any custom application.

Text to speech alarm voicing.

Real-time Alarm Processing

The Alarm module was created on pure .NET managed code, with multi-threading and exception control, for maximum performance and reliability. Combining the Alarm, Dataset and Script Modules, you can log and bookmark process execution events, like downtime, startup, shutdown, batch control and continuous process analysis.

Storage and Replication

Alarm Historian data can be saved in any local or remote SQL database. When using redundancy, automatic synchronization of the database is provided. The replication guarantees the accuracy of the exact same data on both servers, even when they are using different providers.

OSIsoft™ PI EFTM Event Frames

The system also has a seamless, SDK level, connectivity with PI Batch™ and PI EFTM for data presentation, charts and custom data management.

Universal Time and Daylight Saving

Action.NET leverages (UTC) Coordinated Universal Time on all logging and online date time objects; so that Alarms, Events and Historical data are accurately time stamped for when they happened, no matter where you are located or any daylight saving settings.

Audit Trail and Alarm Areas

One-click configuration to enable audit trail on Operator Actions, Database and Reports Events, User logon and logoff, System events and custom tags events. Data is archived in SQL tables with project defined encryption.

Alarm Visualization Component

No matter if you are on a PC, web browser, or iPad, a built-in graphical visualizer for alarms is provided.

Filtering, SQL queries, grouping, printing, saving, acknowledging and exporting are some of the built-in features included.

Notification Subscription

Project scripts, with access to the entire Microsoft .NET Framework, can subscribe to alarm events to implement custom actions, such as notification and calculation methods.

Store and Forward

When using remote databases, a store and forward option is provided, so a local cache is created, while the connection is not available and forwards the data when the database connection is reestablished.

Localization

Online messages and query results from the Alarm Historian database can be translated on the fly to local languages based on automated dictionaries.

Trend and Historian

More options to your system

Storage and Replication

Store and Forward

Universal Time and Daylight Saving: these features, as described for the Alarm and Events, are also available for the Tag Historian database management.

Compare two curves on the same chart from two different days, ideal for load analysis.

Vertical and XY plots

Vertical waterfall and XY charts are available, with all properties accessible through real-time tags or in the code behind scripts.

Annotations and Alarms Overlay

Customizable open project templates are provided, so you can overlay annotations stored in SQL databases, or alarm conditions and acknowledgement, on top of the trend charts.

Real-time Online Charts

Online charts run at the client display level, even if there is no historian to the selected tags. Built-in trend chart control is available for desktop, web and mobile clients.

Customize and Save at Runtime

Empower operators to customize tag groups, scales and the whole appearance of the trend charts at runtime; save and share the configuration.

Snapshots, Tables and Reports

Trend charts can be added to web and PDF reports, image snapshots and value data table exports are available upon operator commands or any process event.

OSIsoft™ PI System Database

For high-performance, large applications, instead of a SQL database, the tag historian can be kept on the PI System database. The pure .NET SDK level connection with PI (no COM, OPC or OLEDB required) provides high performance and click-once tag definition synchronization.

Data Quality and Timestamp

Tag Quality is stored and presented on the trend charts. Action.NET is capable of handling up to 0.1 ms interval timestamps, therefore, the precision will be whatever the evolution of networks and data acquisition devices will bring in the future. Your data management based on Action.NET is prepared for long-term usage and process enhancements.

Plot future data and calculated data on the same chart as logged data.

Combine Historian curves with any SQL database queries.

Historian information can be used to display VCR or data aggregation with the built-in script module.

Trend charts are out-of-box fully functional, yet completely customizable.

Real-time SPC calculation.

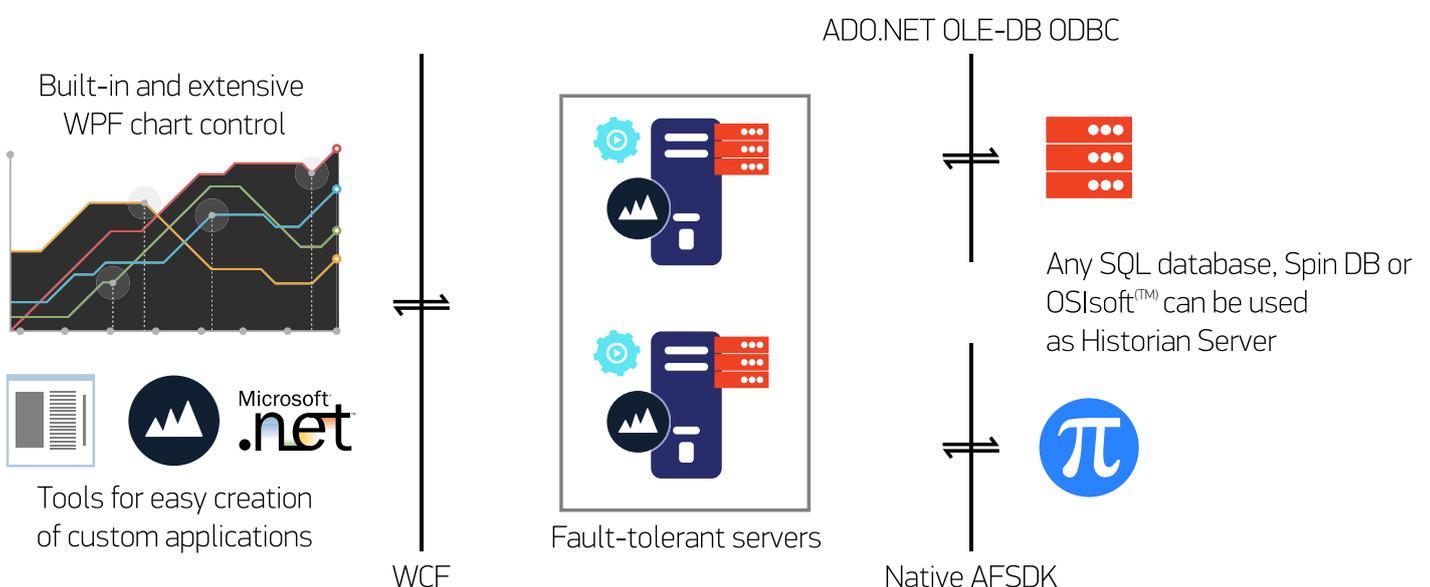
Multiple vertical cursors, with time different calculation between cursors.

Tooltips, zoom, sample markers and auto-scaling are configurable to each pen.

Stepped value charts and digital bars are supported.

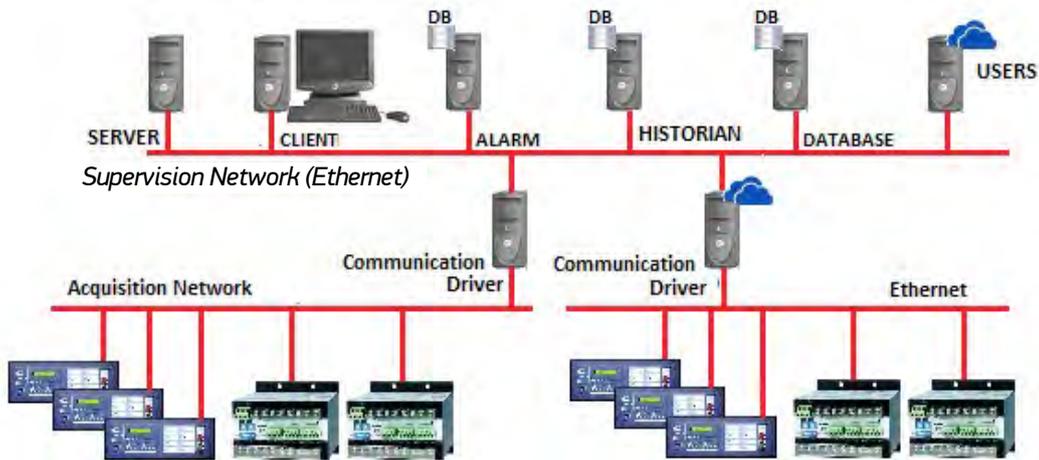
No limits on the number of trend charts or pens.

Trend charts with historical data and calculated data.



Communications Interfaces

Infrastructure designed from the Core, leveraging .NET and nearly three decades of experience



Native Communication Drivers

Connectivity is a key Action.NET feature, therefore many native communication drivers to a variety of electrical and industry standard protocols are included.

Spin's engineering team has extensive experience in developing communication drivers, with dozens interfaces created over that past twenty years. For the Action.NET platform all drivers are being written from scratch in pure managed code and a more advanced infrastructure. New drivers are continuously added to the standard distribution of Action.NET

OPC Client and Server Support

Action.NET is in full compliance with the OPC Server and Client specifications. For any protocol not included with the product, the OPC client provides all the necessary integration.

Remote Data Servers

Data acquisition and drivers, native or OPC, can run on remote computers, for instance to get data from RS-232 devices or to eliminate the requirement for DCOM OPC configuration.

OPC Data Server Action.NET Station

Action.NET can be deployed as a stand-alone OPC Data Server, using the native protocols and providing data to other systems through its OPC Server interface.

Automatic Synchronization

A Tag Import Wizard and automatic definition synchronization is provided for OPC Servers, Rockwell ControlLogix L5K files, CSV files, Beckhoff TwinCAT, OSIsoft™ PI System and PI AFTM; new wizards are continuously being added.

Process Isolation and Multi-threading

Data communication runs in its own .NET domain, with a WCF layer to isolate the drivers from the main real-time database. Multiple threads are created to each protocol and device node for maximum performance. Password commands increases application security and hacking.

Diagnostics Tools

Complete set of testing, deployment and diagnostics tools provides fast and reliable application development and installation. Built-in Performance Monitoring Statistics on system messages, success and error messages, dynamic blocks created, cycle time and execution time on each block are generated to allow the fine tuning of high performance applications.

Dynamic Addressing

Everything in the driver configuration, from the station node IP to the address and tag mapping can be changed online using the project script itself. Create standard applications capable of having the runtime setup to the specific conditions where it is being deployed.

Partial list of supported manufacturers and protocols though the native built-in drivers, in alphabetical order:

ABB
DNP 3.0
Ecom/KOYO
Fatek/Facon
GE IEC-61850 IEC-870-5-101 and 104
Matsushita
Mitsubishi
Modbus
MQTT
National Instruments
Omron
Reliance
Rockwell
Siemens
Simatic/TI 505
Smar/ SNMP
TwinCAT/Beckhoff
and more...

Block Optimization:
Action.NET performs real-time optimization, blocking addresses to maximize the use of the communication channel.

Reports and Data Access

Built-in tools and open interfaces for custom solutions

Built-in Report Designer

Action.NET includes a user-friendly simple Report layout editor integrated with the engineering workspace. The rich text format uses underlying XAML flow document technology from WPF, Windows Presentation Foundation; that enables the inclusion of graphics and flexible formatting.

Runtime Display Snapshots

The runtime displays can be opened in background or saved to image files, allowing you to create rich graphic snapshot reports. Current displays and layouts also can be printed or saved as an image to disk.

Report Append and Text Data Logging

The report generator ability to append files, based on the project configuration and real-time tags, can be used to create CSV and text logging files for scenarios that require the information to be created as time goes by, such as batch reports and shift reports.

Dynamic Graphical Symbols

Any symbol from the real-time displays can be included in the Report. The dynamic

behavior of the symbol, such as color, text output, and rotation, are all updated using the current tag values when generating the report. User controls, like Trend and Bar charts can be added as well.

Tables and Queries

The contents of database tables and queries can be added to the reports. The queries and report generation execute in isolated processes, not interfering with the real-time processing.

Data Access Toolkit

A complete .NET Data Access library is available to create custom reporting solutions or to integrate with Microsoft Office, SQL server reporting services or other vendors tools. A COM model API is also available to be used from Excel VBA and JavaScript applications.

Built-in reports

The empty default project already includes several reports from the electrical sector such as events, alarms, operator logs, historical and real-time trends of any group of variables, etc.

Reports can be saved in multiple formats:

- Text (ASCII or Unicode)
- HTML
- XPS
- PDF

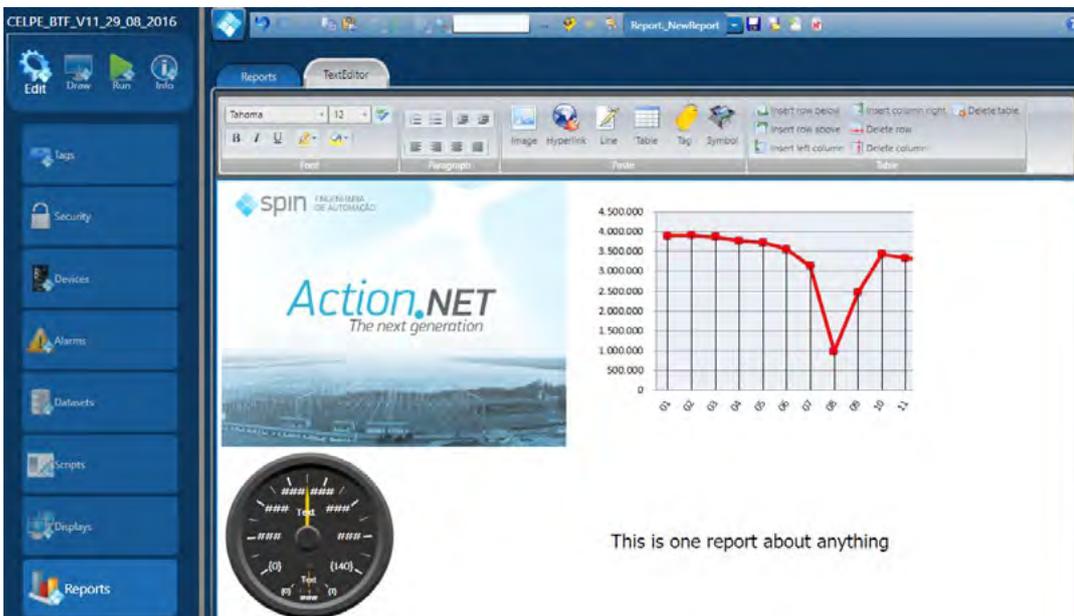
Filenames are dynamically assigned based on real-time tag values.

Reports can be created in memory only and saved to disk or printed by operator actions.

.NET Integration allows an easy way to send reports by email or publish to websites.

PDF support allows reports to be visible on iPads and web browsers.

Visualization Object, with pagination and zoom, is built-in for XPS files and in-memory reports.

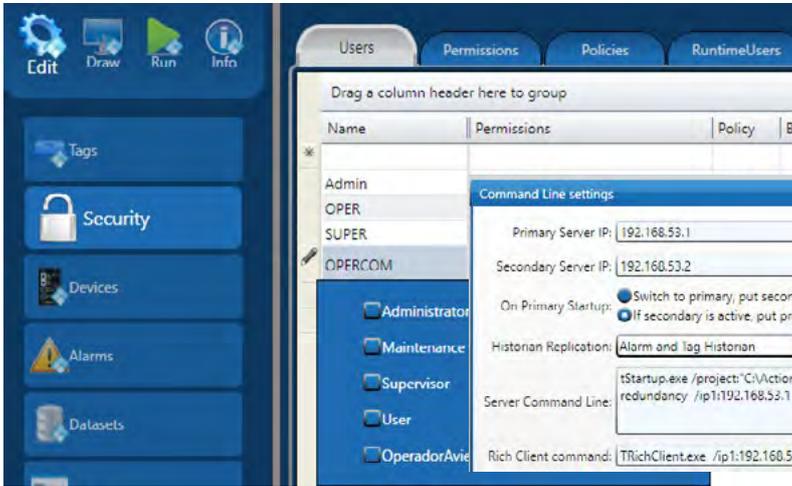


Tables are automatically expanded when creating the report based on the result of the query, table or object.

Report Viewer object for use in the real-time displays, shows in-memory reports with zoom and pagination.

Security and Redundancy

Designed to deliver world-class mission-critical applications



Identifying the IP address of the servers and electing the switch options is the only configuration required to implement redundancy. Run any project on hot-standby fault-tolerant servers.

Complete redundancy scenarios:

- Hot-standby or hot-hot servers;
- Redundant networks
- Redundant remote data servers;
- Redundant PLC stations management.

Permission groups and user policies allow simple implementation of any Role or area-based security.

Security

Group and User Permissions

Total flexibility to define privileges based on groups or specific users. Permissions can be global or tied to a specific display, object or input action. Command password.

Runtime Users

Dynamically create users and store credentials in SQL databases. Get users from Active-Directory or third party system for integrated security or unified login.

User Policies

Identification policies, session duration, control, automated logoff, e-sign, audit-trail and a complete set of user management features are available.

FDA and NERC Regulated Applications

Action.NET allows delivering applications in conformance with Title 21 CFR Part 11 and it was designed following the applicable recommendations from NERC, such as the CIP-007-1-Cyber Security-System Management.

Security at the Core Level

Security must be implemented at the core, not applied externally. Action.NET modules have built-in security related components designed from the core.

Redundancy

Hot-standby Fault-tolerant Servers

Reliable, easily configurable redundancy, for seamless failover - Action.NET automatically initializes and continues to synchronize the primary and secondary server. The Device communication channels are also easily setup for redundant physical networks and redundant PLC nodes.

Database Redundancy

The Alarm and Historian database can be assigned to a third-party external cluster or replicated automatically when running on the Action.NET servers.

Project Configuration Synchronization

Engineering tools provide features to simplify configuration and updates in redundant scenarios.

Hot-swapping

Redundant or stand-alone servers allows dynamic switching of project versions, without interrupting service for connected clients and keeping the real-time database loaded.

Redundancy at the Core Level

Real-Time tags, Devices, Alarms, Historian, Scripts, Clients, all modules were designed from the ground up to meet redundancy and hot-swapping requirements.

Protect your configuration: specific displays or scripts can have assigned security for editing and visualization.

Windows ctrl-alt-keys can be disabled at the rich and smart clients, based on the logged in user.

Commands, input fields and any display can have security, disable condition, confirmation message or e-sign.

Option to audit-trail the user actions.

iOS native app provides better security than web solutions and automatic server switch on redundant systems.

Redundancy switch time and high volume data was tested to meet rigorous offshore requirements.

Project Life-Cycle and Version Management

Operational Stability and Security from the ground-up

Technology Foundation

A solid foundation is a requirement to achieve operational stability - Action.NET was designed carefully selecting secure, efficient, flexible and modern established technologies, carrying no legacy undesirable baggage.

Project Configuration

In projects created with tools from previous generations, many field errors result from undetected configuration errors. Action.NET added many features targeting consistency checks and complete configuration verification in the engineering environment, instead of the run-try-and-fail from the past.

Test and Field Deployment

Potential errors and famous SCADA viruses, such as Stuxnet, were due to deployment security breaches. Action.NET's design includes specific features to simplify and secure the field deployment.

Maintenance and Operations

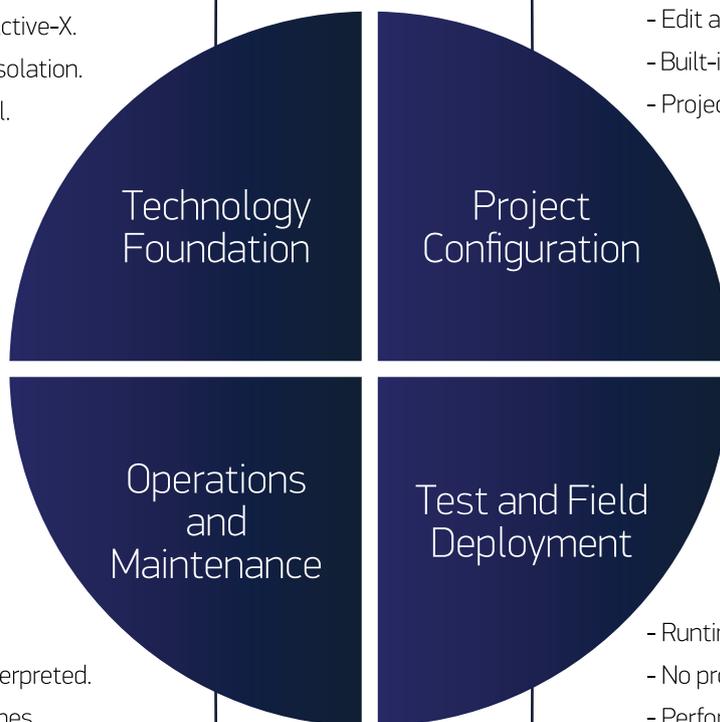
Operational stability, the number one requirement of most automation systems, is based in a chain that embraces the complete project life cycle: the Selection of Technologies, Project Configuration, Test and Field Deployment, Operations and Maintenance.

Track project changes:

- Each configuration row has the date created and modified.
- A summary view of all tables' changes and sizes is available.
- Build commands can create project labels and save partial versions.
- Publish command creates runtime-only projects with release version control.
- Action.NET automatically logs who changed what, in all project configuration objects.

- No legacy code, 100% managed system.
- Scripts compiled, instead of interpreted.
- Security sand-box, no unsafe Active-X.
- Process and memory intrinsic isolation.
- Threads and exceptions control.

Complete Project Life-Cycle Support



- Single file project definition.
- Client-server SQL-centric configuration.
- Edit and validation Intellisense.
- Built-in tracking of configuration changes.
- Project status and self-diagnostic.

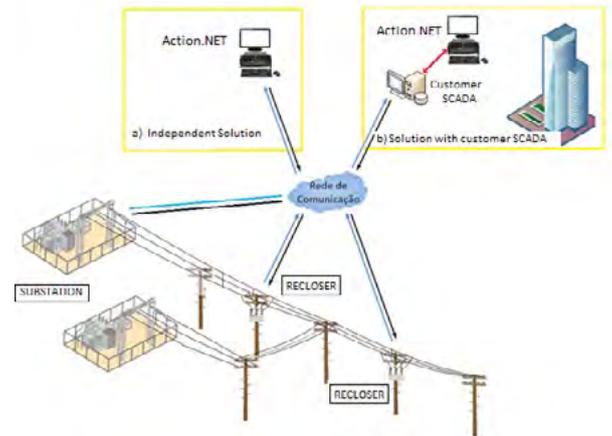
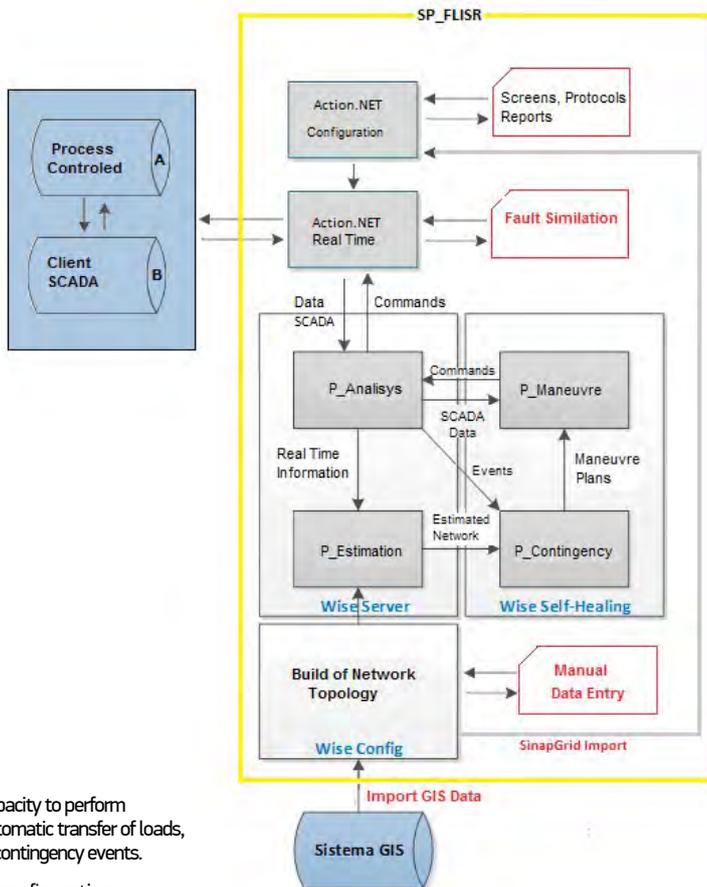
Engineering tools embody decades of field experience

- Advanced security features.
- Scripts compiled, instead of interpreted.
- FDA and NERC security guidelines.
- Server, network and device redundancy.
- Online updates and version control.

- Runtime built-in testing tools.
- No project installation at Client nodes.
- Performance and health profiling.
- Publish protected project versions.
- Remote distributed engineering.

FLISR

Fault Location, Isolation and Service Restoration



Capacity to perform automatic transfer of loads, in contingency events.

Reconfiguration algorithm may be adequate to observe the load of substation feeders and transformers.

No need for language or routine for implementation.

Full register of devices in operation and state of modifications (millisecond accuracy).

Execution in real-time or simulated mode.

Access screens through mobile devices (tablets and smartphones).

Adequacy of the parameterization of the protection of the devices involved in the maneuver, according to the new topology of the network.

If there is an indication of risk to the safety of the operation, the maneuver will be blocked and an alarm will be displayed with the reason for the lock.

Action.NET can be used to implement the Fault Location (Isolation and Service Restoration) function through a dedicated ADMS module.

The solution can basically be implemented in two ways:

- Independent: implanted autonomously in a computer that acquires field data (feeders, reclosers and automated switches) of the monitored and controlled circuits (controlled region). In the event of a fault in the controlled region, Action.NET detects the change and defines the best strategy to isolate the problem and restore the system. The strategy can be executed automatically or under the operator's command (automatic or manual mode).

- Complement to an existing SCADA: the SCADA of the client, responsible for interfacing with field equipment in the controlled region, detects a fault and the information is sent to FLISR by standard TCP/IP protocol (OPC, DNP 30, IEC 60870-5-104). FLISR will perform the contingency analysis and define the best strategy for isolating the system failure and recombination, sending the SCADA the list of maneuvers to be performed.

Action.NET can optionally run the FLISR function through a compact ADMS module. The solution is adherent to the concept of Smart Grids.

[See it working in this video.](#)

Resources

Join our health and wealth business ecosystem



Online Resources

Visit spinengenharia.com.br/en for additional product information.

Distribution Network

For sales, marketing and support, besides its own locations, Spin has Regional Distributor Partners, System Integrators and Value Added Resellers.

The distribution partners and VARs receive regular training and have continuous interaction with the Spin team, ensuring the consistency and quality of the services provided worldwide. Regular product training is also offered in many locations.

Technical Support

The Action.NET platform is designed to enable mission-critical applications, therefore, providing a high quality and responsive technical support is the top company priority.

All the Action.NET distribution channels have skilled support engineers ready to solve issues promptly or escalate the request to Spin. End-users are also welcome to contact Spin as needed.

International Languages

The Action.NET Engineering workspace is 100% created using Multiple User Interface (MUI) technologies that allow the language switch of the product engineering user interface at a mouse click. The online help is integrated with Google Translation services.

Engineering on the Cloud

Action.NET was the first full-scale system industrial automation framework to allow distributed engineering and SaaS, Software as a Service, licensing model, where Spin, or a service provider company, hosts the Project server.

Legacy Systems Migration

Spin understands that the desire to bring the process controls installations to modern technologies must be balanced with the need to maximize the return

of previous investments; therefore two programs were established to facilitate the migration of your legacy systems: competitive upgrades and partner migration services.

Competitive Upgrades: When acquiring software licenses to replace competitive products special conditions apply. Please contact the distribution channel partners for more information.

Partner Migration Services:

Configuration of legacy systems, such as Tag Definition, IO mapping, alarm settings, scripts and displays can be switched to Action.NET. The application migration is always possible, as Action.NET has a super set of functionality compared with other systems, but the automation of the process and the time required varies. Partners with specialization in different vendors solutions are available to help your company with that process.



Acknowledgements:

Spin is a Microsoft Partner.

Spin SCADA HMI Client app is available at the Apple Store.