Power SCADA Operation 2020

What's New *(January 2020 Update)*

Rich Alexander: PSO offer manager

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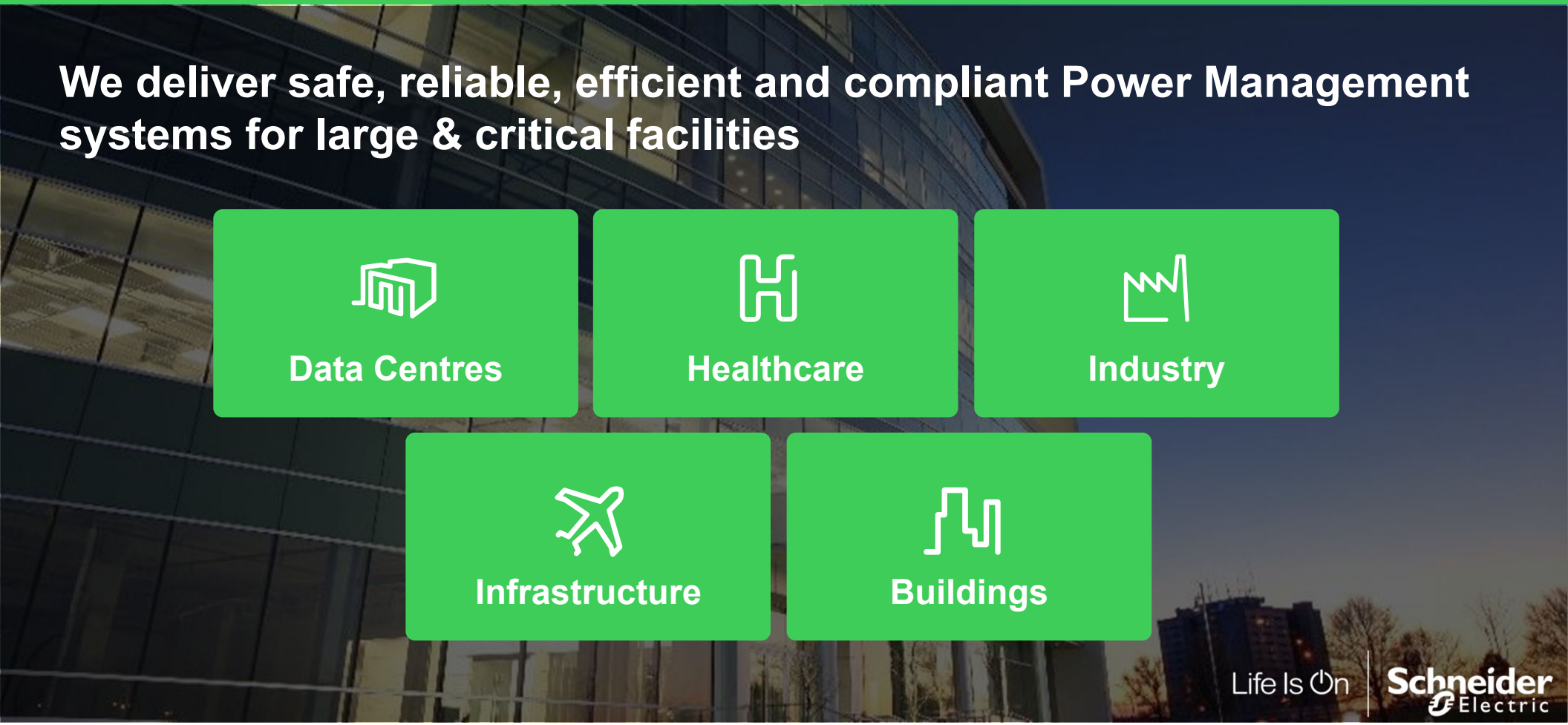
PSO Offer Overview Recap

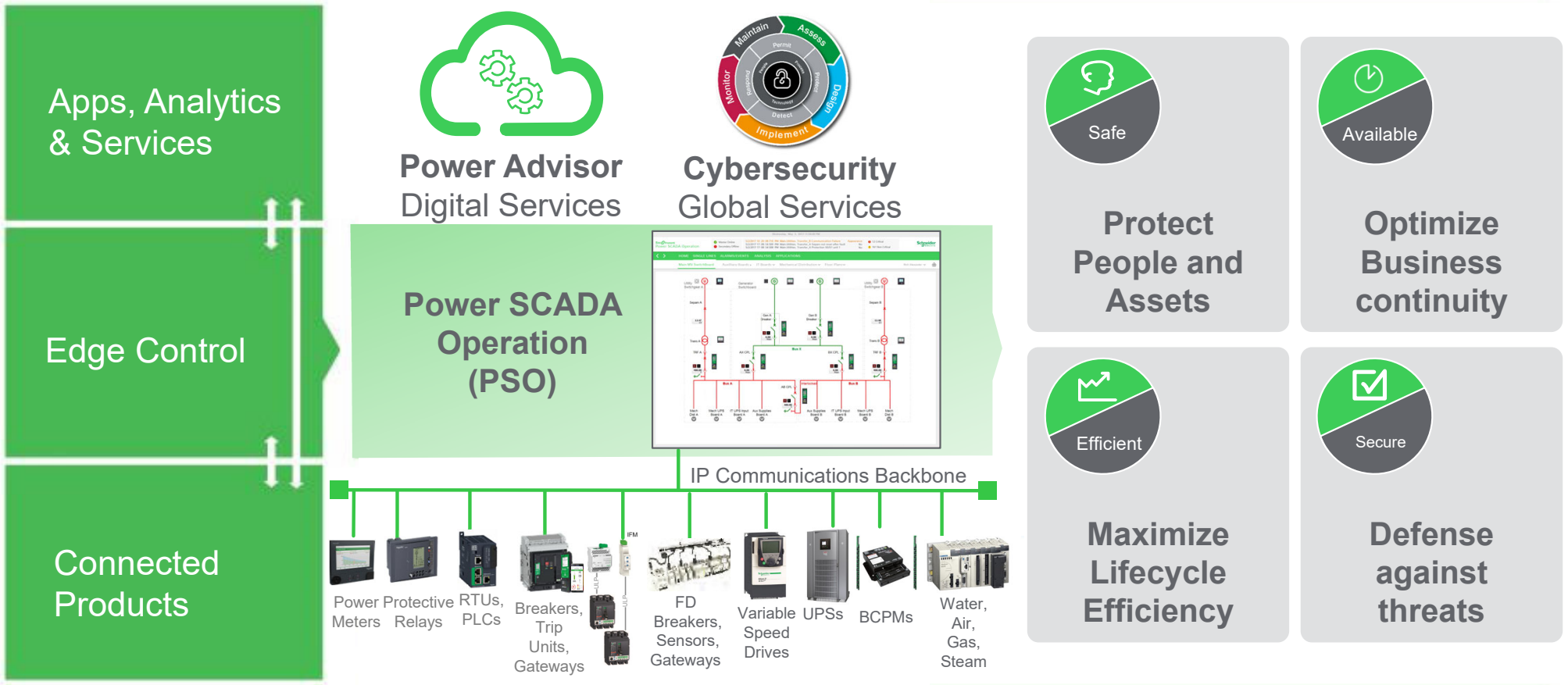
For those new to Power SCADA Operation

EcoStruxure™ Power - Digitizing your electrical distribution system with a future proof IoT Power Management platform



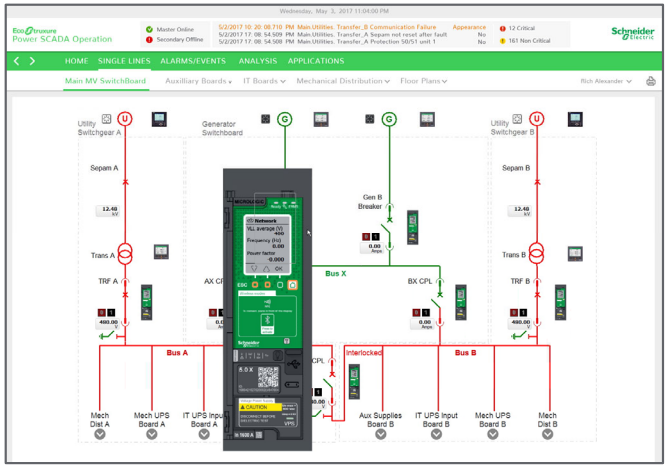
Innovation at Every Level: Power SCADA Operation

Power SCADA Operation (PSO) brings edge control to power distribution



Power SCADA Operation for real-time situational awareness

The power of a **SCADA** uniquely designed for **Power Management Applications**



Power SCADA Operation enables Facilities teams in **Power Critical Facilities** to monitor, control, and troubleshoot issues in real-time with their **MV and LV distribution** systems to **maximize power availability and operational efficiency**.

Power monitoring & alarming

- High performant **real-time communications**
- Native system **redundancy** and scalable architecture
- **Extensive protocol** support & **open** data exchange
- Highly **customizable** graphical experience
- Certified **compliance** with global cyber-security standards

Manage energy resources in real time

- Manage **microgrid scenarios** like automatic transfer schemes, load sharing or shedding
- Remotely and safely **control** breakers

Mitigate downtime & safety risks

- Restore power quickly via **power events analysis**
- Reduce risk of electrical fires via **continuous thermal monitoring**
- Improve safety via **active arc flash protection** & operator notification

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PSO 2020 What's New

New Features and Benefits

PSO 2020 Major Scope Themes

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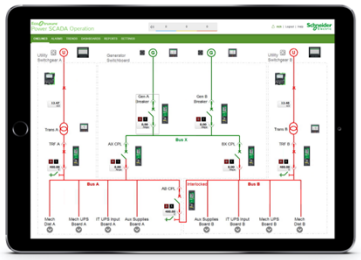
EcoStruxure™ Power SCADA Operation 2020

5 key benefits

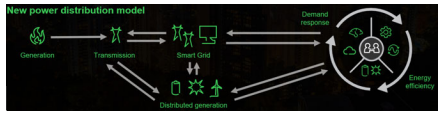
Modern Graphics & Alarms

Modern graphics and alarm user experience addressing operator's need to access their system **Anywhere**, **Anytime** and with **Any Browser** while complying to IT organization's need for **standard HTML5 web deployment** approach.



Microgrid Ready

Via animated 1-line quickly understand **the real-time power flows of multi-source systems** becoming more prevalent with adoption of **distributed generation**, **Microgrids** and renewables.



Cybersecurity Ready

Certified compliant with global cyber-security standard **ISA/IEC-62443**. Role-based access control via Windows Active Directory + **two-factor authentication** support. **Hardened against "zero day attacks"** via white listing solution.

ISA-62443

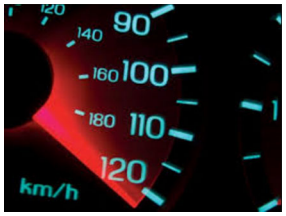
World Ready Translatable Software

Runtime, key design tools and documentation **fully translatable**.

PSO 2020 initially available in both English and **French** with more languages possible in future!

Simpler Deployments

Modern graphics allowing engineers to **create graphics more quickly** for a variety of screen resolutions. Improvements making **multi-site / multi-cluster deployments simpler** for engineers.



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Commercial Updates

Part numbers, Policies and Licensing

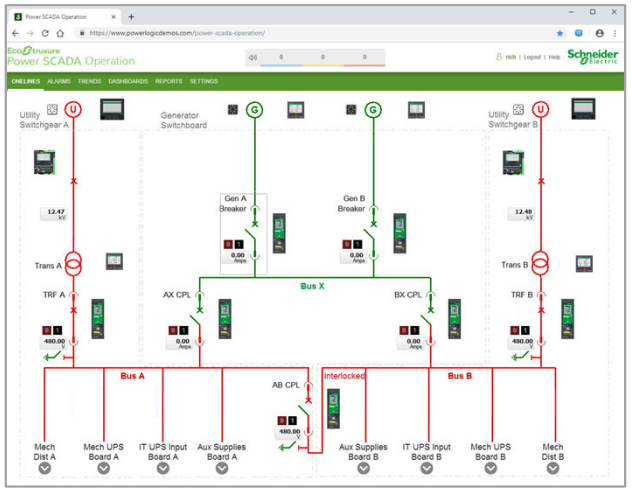
About Power SCADA Operation 2020

Internal commercial information

- EcoStruxure **Power SCADA Operation 2020** is:
  - Free upgrade for customers with software assurance
  - Paid upgrade from PSO 9.0 and previous versions

- Release date for PSO 2020 is **February 7, 2020**

EcoStruxure™
Power SCADA Operation



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PSO 2020 Commercial Updates Summary

Commercial Updates

- **SIMPLE - No new references!** Same references and offer structure as 9.0.

- Note: New **PSO 2020 native web client** is licensed via **existing Control Client part numbers**:
  - PSA102012: Power SCADA Control Client, 500 Points
  - PSA102013: Power SCADA Control Client, 1500 Points
  - PSA102014: Power SCADA Control Client, 5000 Points
  - PSA102015: Power SCADA Control Client, 15000 Points
  - PSA102099: Power SCADA Control Client, Unlimited Points

PSO 2020 Software Support Matrix

Operating Systems and SQL support

Windows Operating Systems

- Windows 10 Professional/Enterprise
- Windows Server 2012 R2 Standard/Enterprise
- Windows Server 2016 Standard
- ***New for PSO 2020!*** **Windows Server 2019**

SQL Server editions (applicable when using Advanced Reporting Module)

- SQL Server 2012 Express/Standard/Enterprise/Business Intel.,SP2
- SQL Server 2014 Express/Standard/Enterprise/Business Intel.
- SQL Server 2016 Express/Standard/Enterprise/Business Intel.
- SQL Server 2017 Express/Standard/Enterprise/Business Intel. *(included with Advanced Reporting)*

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Modern Graphics & Alarms
Native HTML5 Experience

Next Generation PSO Web Client

Why a next generation web client for PSO?

#1 – Mobile Operator Access

PSO operators need to access their system… **Anywhere, Anytime & with Any Browser**

#2 – IT Compliance

IT organizations need to have a solution that does **NOT require web browser plugins** or **3rd party streaming software**

#3 – Simpler to deploy

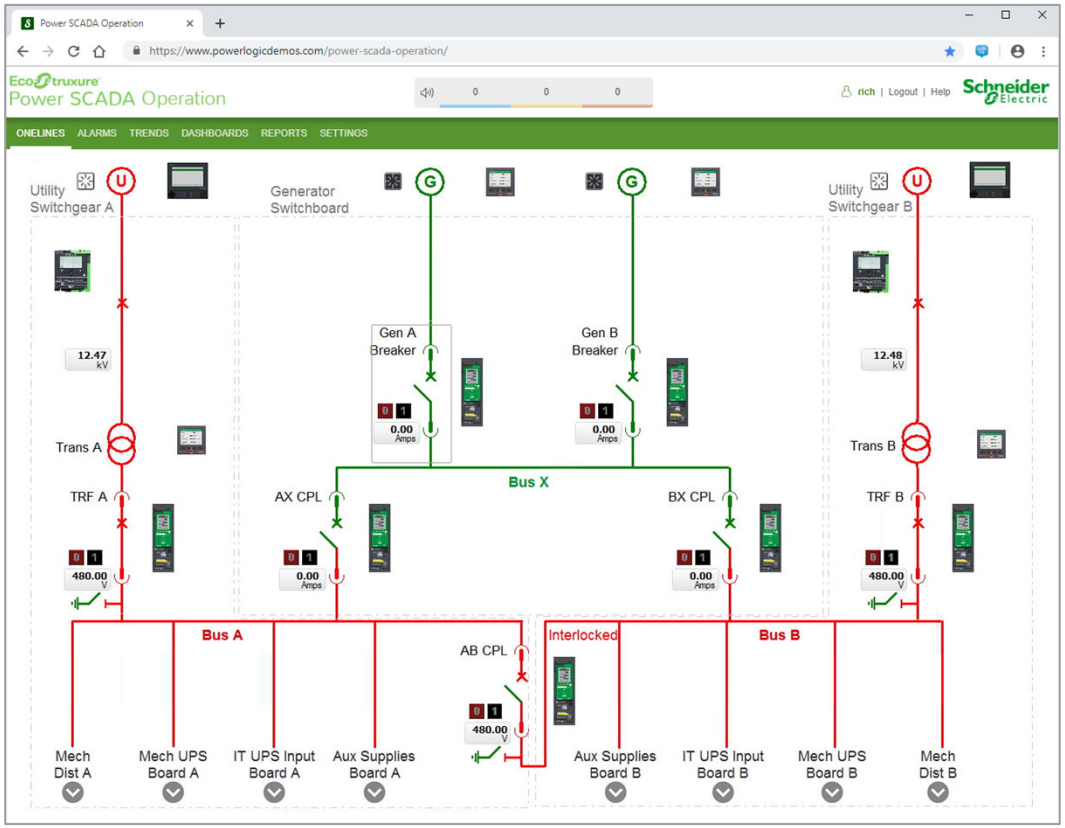
Application engineers need to have a modern graphics solution that is **simple to develop and deploy** across a variety of screen resolutions

#4 – EcoStruxure Consistency

Our customers want a **consistent runtime experience** as they move between our Edge Control offers (ie: PSO, PME and EBO)

Next Generation PSO Web Client

Meeting IT compliance needs for native web client run-time experience



Quickly **understand real time state of your power system**

View runtime graphics including **animated electrical 1-lines** via any **HTML5 compliant web browser** *(eg: Chrome, Firefox, Safari)*

Maintain clear image quality when viewing from various screen resolutions and when performing pan/zoom

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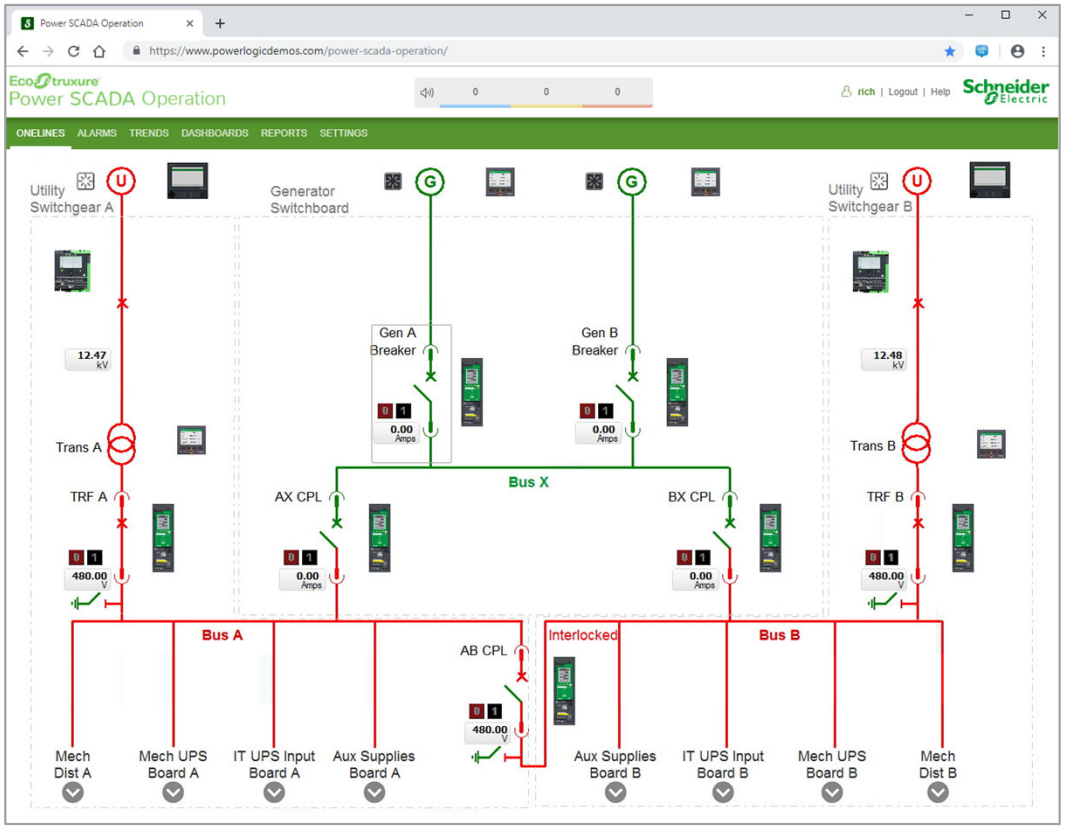
Next Generation PSO Web Client

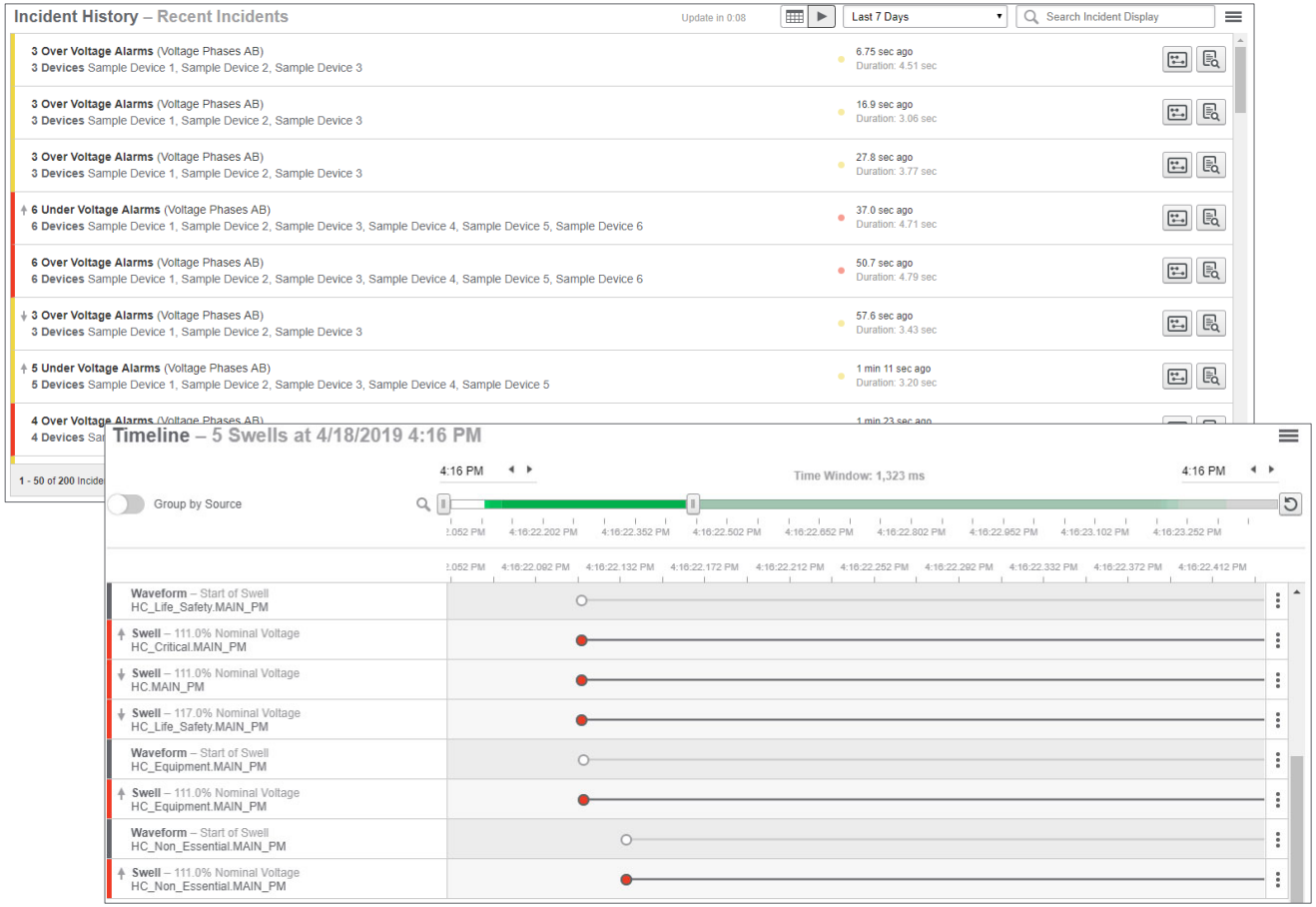
Graphic features details



- Current PSO Power graphics re-created for new PSO 2020 web client
- Ability to import **.TGML**, **.SVG** (Scalable Vector Graphics), **.DXF** and **.DWG** (AutoCAD) and convert to pan/zoom graphics
- Ability to import other non-scalable image formats **bitmap** (.bmp, .dib), **GIF**, **ICO**, **JPEG** (.jpg, .jpeg, .jpe, .jfif, .ewif), **metafiles** (.wmf, .emf), **PNG**, **TIFF**
  - *Importing non-scalable images will not convert them to scalable format*
- Ability to export to .TGML, .BMP, .GIF, .JPEG, .PNG and .TIFF
- Support for client side JavaScript

PSO alarm aggregation

The Right Information at the Right Time



Faster incident analysis by automatic grouping of related alarms.

Incident view of alarms grouped by **alarm category** and **time of occurrence**.

Alarm incident / summary views customizable.

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Smart Alarm Clustering (Terms/Concepts)

More Information ← → More Data

Incidents

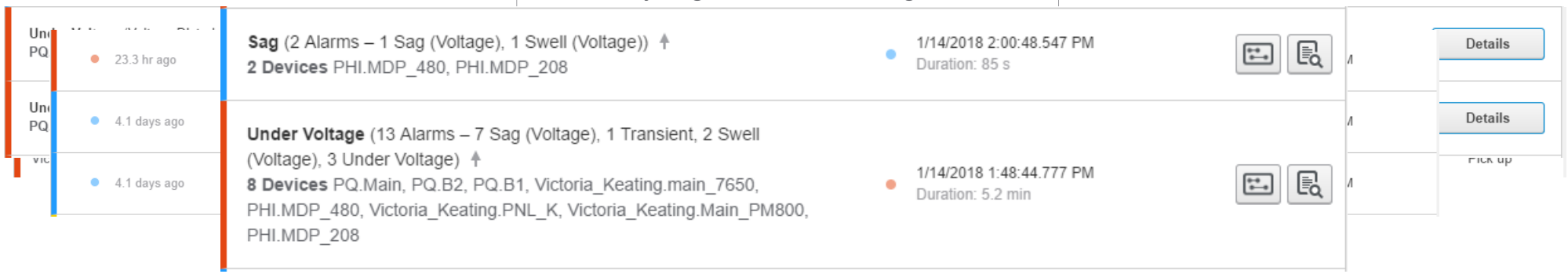
- Grouping of multiple alarm instances over time.
- 1 to N sources and 1 to N alarms instances
- Minimizes noise and speeds up event analysis
- Starting point for “Incident Timeline Analysis”

Alarms

- **Alarm definition** defines properties and source
- Alarm occurrences are instances of a definition, includes timestamp
- **New instance** increments number of occurrences, no new entry in alarm viewer
- History vs Status views
- Priority: e.g. Low, medium, high

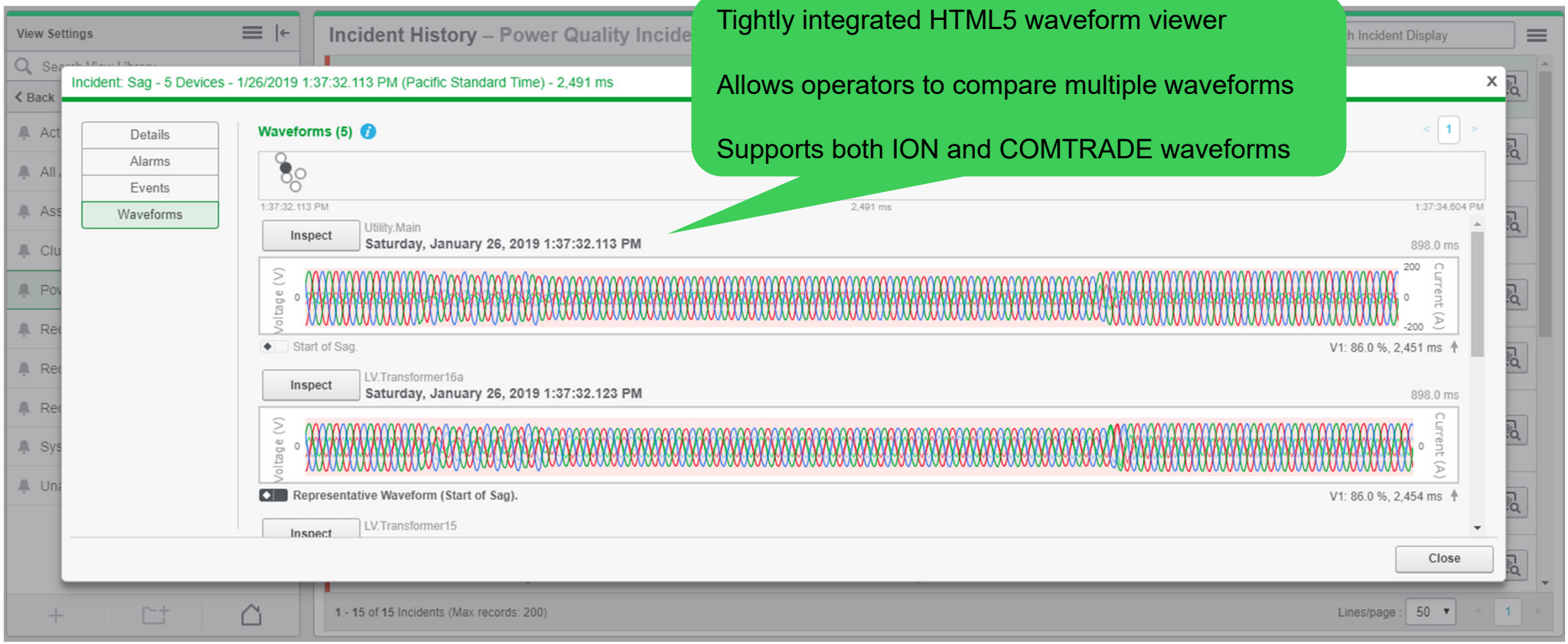
Events

- Single “event” in time from a single source
- Raw details as they come from devices and software
- Priority 0 to 255



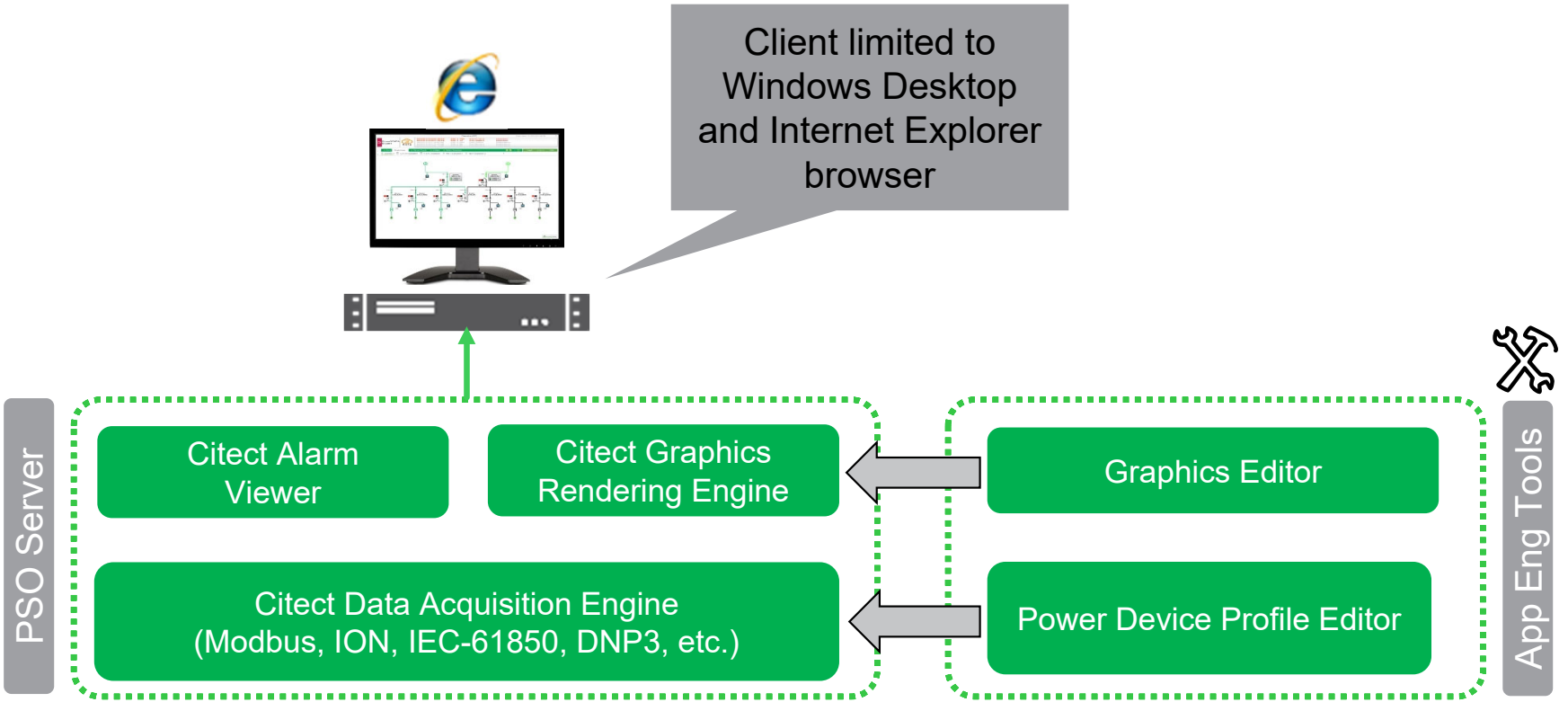
New HTML5 waveform viewer

Simplified waveform experience



PSO 9.0 Architecture

Before



PSO 2020 Architecture

"Under the Hood"

Legend

Existing PSO component

New PSO 2020 component

Reuse of Graphics Brick which is also used by EcoStruxure Building Operation (EBO).

Proven solution as brick has been used by 1,000's of Schneider Electric EBO customers.

Communication via
HTTP w/ TLS 1.2

PSO Server

HTML5 alarms
reusing EcoStruxure Power Application Portal

Native Web Graphics Rendering Engine
reusing EcoStruxure Graphic Brick

API - Data Abstraction Layer

Citect Data Acquisition Engine
(Modbus, ION, IEC-61850, DNP3, etc.)

EXSP Graphics Editor

Power Device Profile Editor

App Eng Tools

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PSO 2020 Architecture

"Deep Dive"

Communication via
HTTP w/ TLS 1.2

Platform Service:
- Adv One line logic engine
- Alarming logic, reconstructed from events
- Incident logic, reconstructed from alarms/events
- Service registration to remote web services
- Abstracts "platforms" so the CoreServiceHost is connected via abstract plugins pattern representing the "Citect Platform" – other DAQ platforms could be implemented using same interfaces

PSO Web Services:
- PME shared web framework libraries
- Web API controllers
- GRPC is used to communicate downward to Platform service
- Server redundancy managed here by communicating with remote Platform services

HTML5 Alarms/Graphics:
- PSO implementation of PME shared web framework and "neutral" web apps
- PSO reuse of Typescript TGML Graphics Viewer implementation

Legend

New PSO 2020 component

PSO Server Primary

HTML5 alarms

Native Web Graphics Rendering Engine

PSO Web Services

Platform service

CoreServiceHost service

Citect Data Acquisition Engine
Alarms/Trends/IO
(Modbus, ION, IEC-61850, DNP3, etc.)

Citect32
.exe

TLS 1.2

HTML5 alarms

Native Web Graphics Rendering Engine

PSO Web Services

Platform service

CoreServiceHost service

Citect Data Acquisition Engine
Alarms/Trends/IO
(Modbus, ION, IEC-61850, DNP3, etc.)

PSO Server Secondary

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PSO 2020 Cumulative Update #1

Web control functionality and trending coming soon

PSO 2020

available February 7, 2020

Control and **Trend** capabilities will be available in Windows **thick client only**.

Control and Trend capabilities will NOT be available in HTML5 web client.

PSO 2020 CU#1

available March 31, 2020

Control and **Trend** capabilities will be **added to HTML5 web client**.

PSO 2020 CU#1 will be a free upgrade for PSO 2020 customers.

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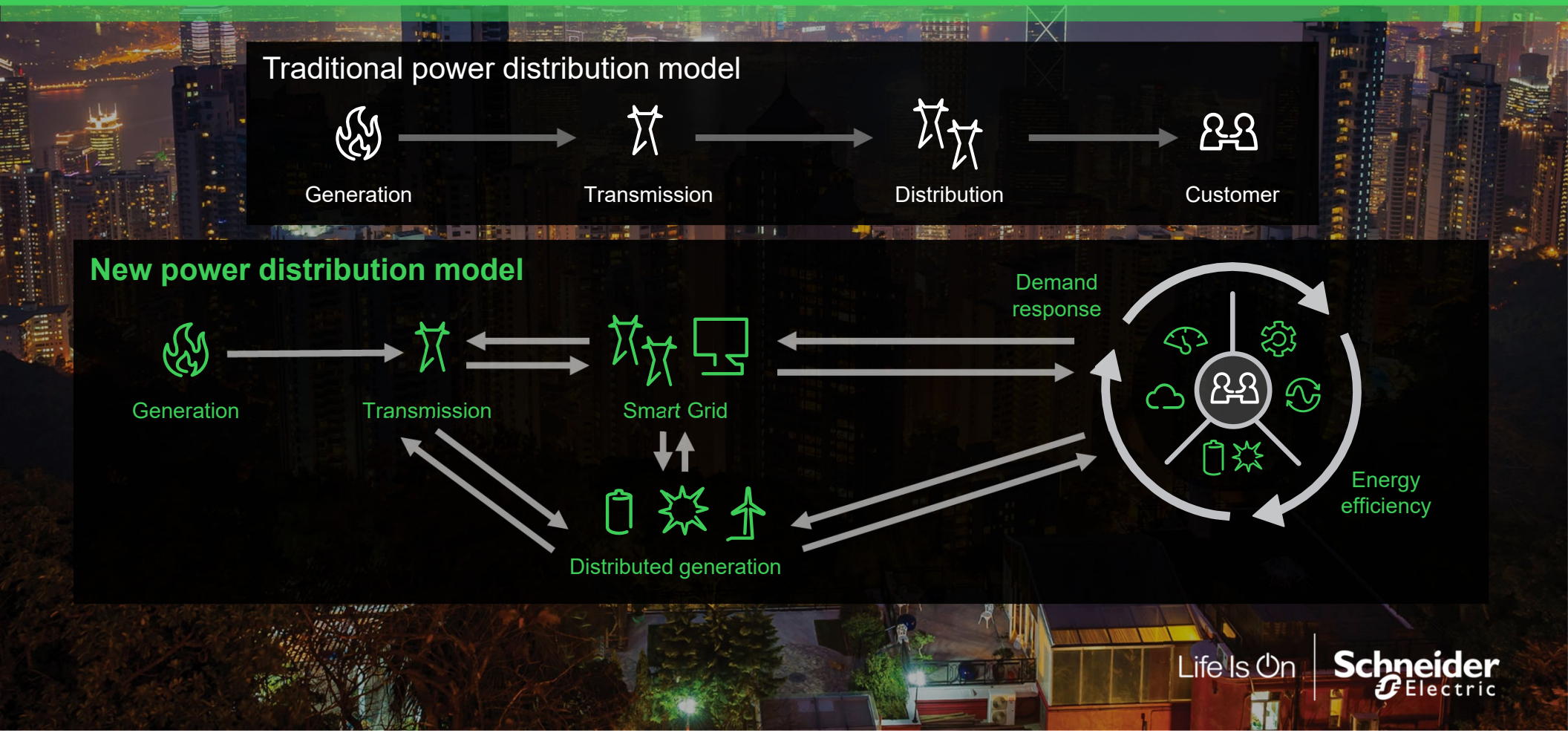
Microgrid Ready

Era of Disruptive Transformations in Power Distribution
Distributed Generation



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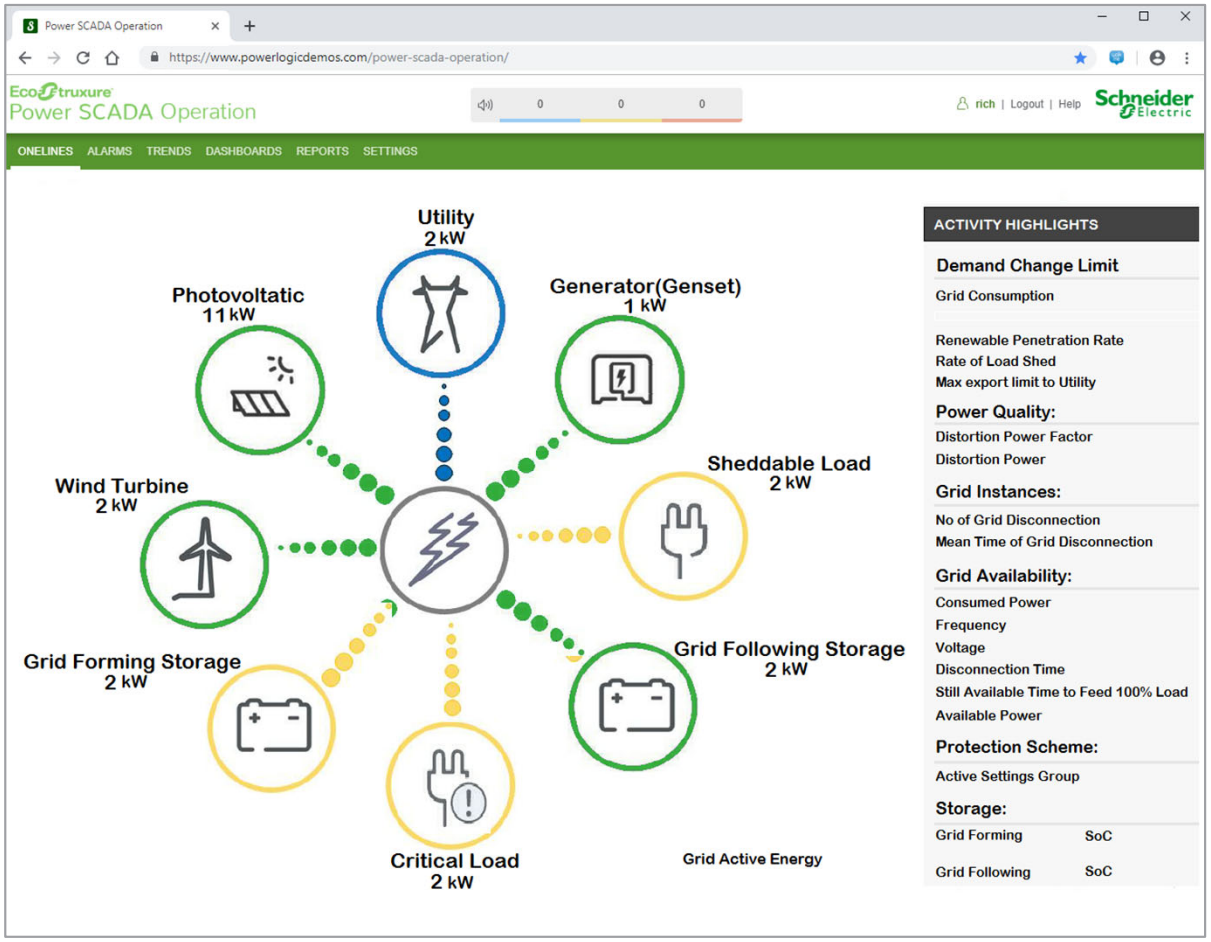
Multi-source support

Animated one-line to visualize multi-source electrical system status



Quickly **understand the state of your power system** even when **multiple energy sources** are leveraged simultaneously.

For example, Utility + PV = Color X

New graphics and templates aligning with EcoStruxure Microgrid Operation solution.

Available in **next-generation PSO Web Client only.**

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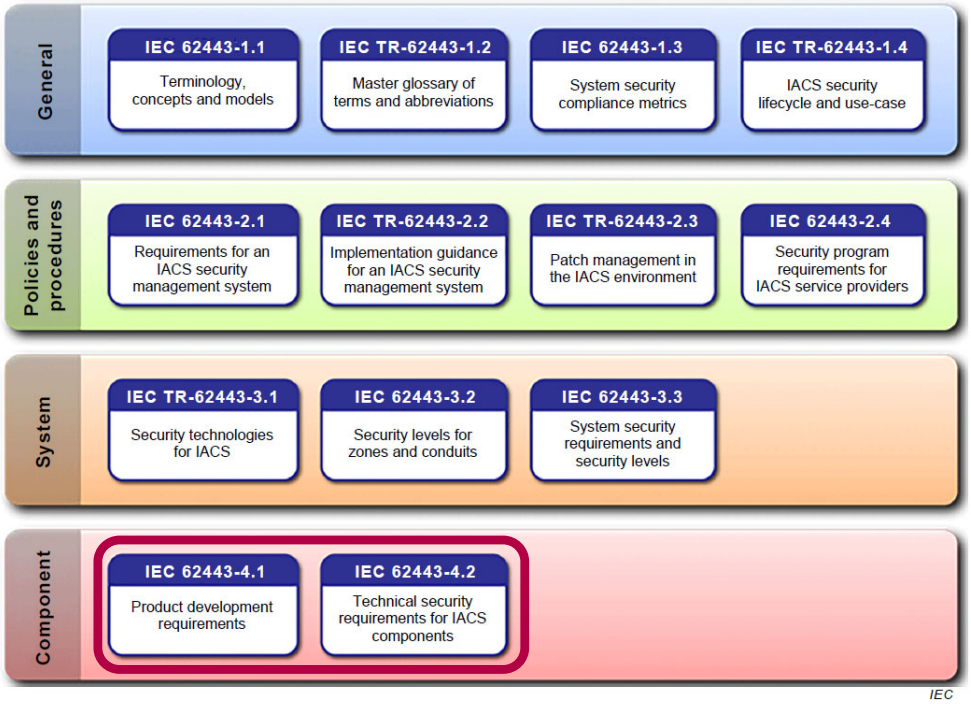
Cybersecurity Ready
Maintain optimal security

Cybersecurity for the OT - IEC 62443

IEC 62443 - international cybersecurity Operational Technology (OT) standard with various levels of robustness against Cyber threats

Today **PSO is SL1 certified to comply** with **IEC 62443** standard at the component level:

- IEC 62443-4.1: Assess a supplier's product development lifecycle for industrial automation and control systems (IACS)
- IEC 62443-4.2: Defines the security requirements for components of an IACS



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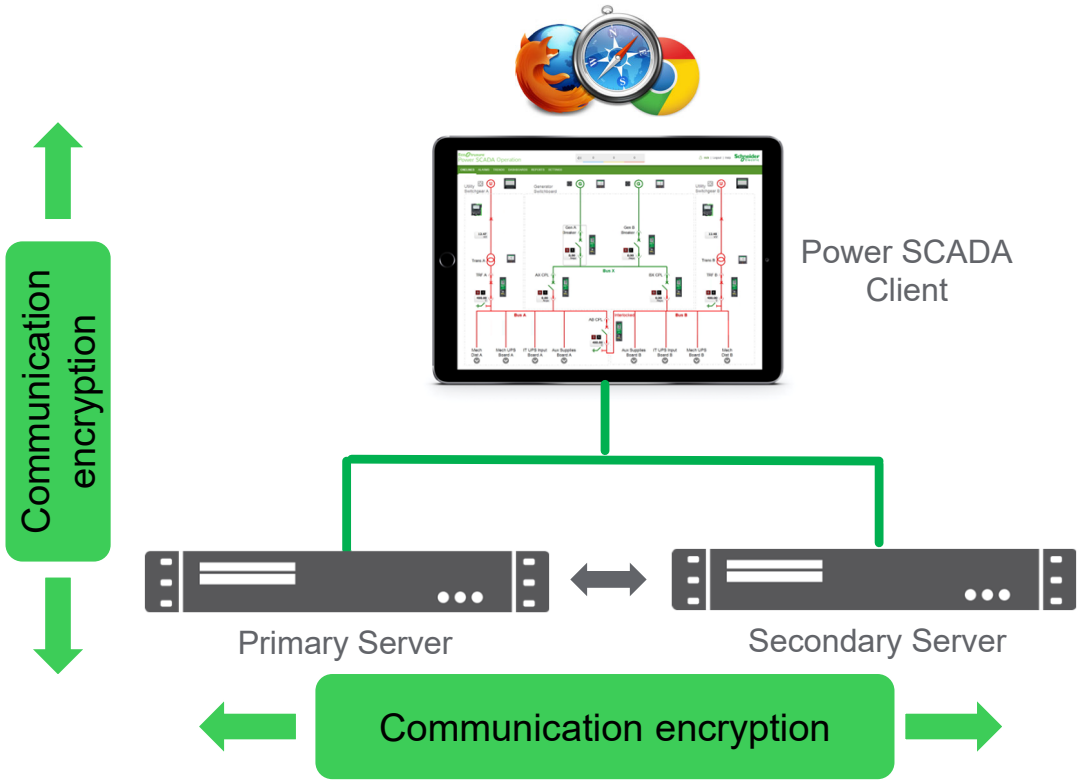
PSO 2020 – End to end secure communication

Moving towards 62443 4-2 SL2 certification with additional encryption options



Ability to **encrypt** communication **between PSO components** via latest Transport Layer Security (TLS) version.

Encrypt communication between

- Server(s) and client(s)
- Server to server

Cybersecurity for the OT - IEC 62443

IEC 62443 has 4 security levels (SL's)

Level	Target	Skills	Motivation	Means	Resources
4	**Nation State**	ICS Specific	High	Sophisticated (Campaign)	Extended (Multidisciplinary Teams)
3	**Hacktivist, Terrorist**	ICS Specific	Moderate	Sophisticated (Attack)	Moderate (Hacker Group)
2	**Cybercrime, Hacker**	Generic	Low	Simple	Low (Isolated Individual)
1	**Casual Violations**	No Attack Skills	Mistakes	Non-Intentional	Individual

PSO 2020 - IEC-62443 Compliance SL2 (step 1)

Moving towards SL2 certification

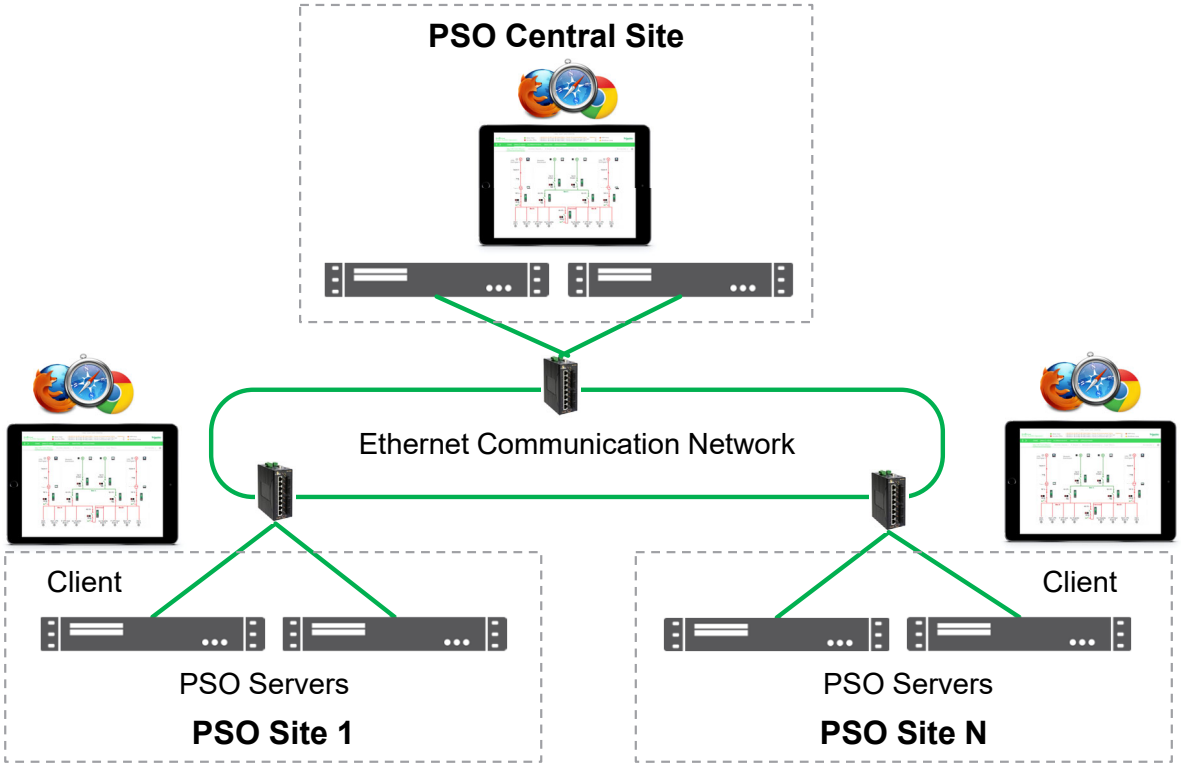
Level	Target
4	Nation State
3	Hacktivist, Terrorist
2	Cybercrime, Hacker
1	Casual Violations

PSO 2020 cyber-sec hardening to lay foundation for future **IEC-62443 SL2 certification**

Simpler
Multi-site Deployments

Multi-site architecture

Monitor multiple PSO systems from single client



Monitor and control multiple independent systems from single runtime client for geographically co-located customers

Validated and **Documented** multi-site architectures from Small to Large sizes

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World Ready
Translatable Software

PSO available in multiple languages

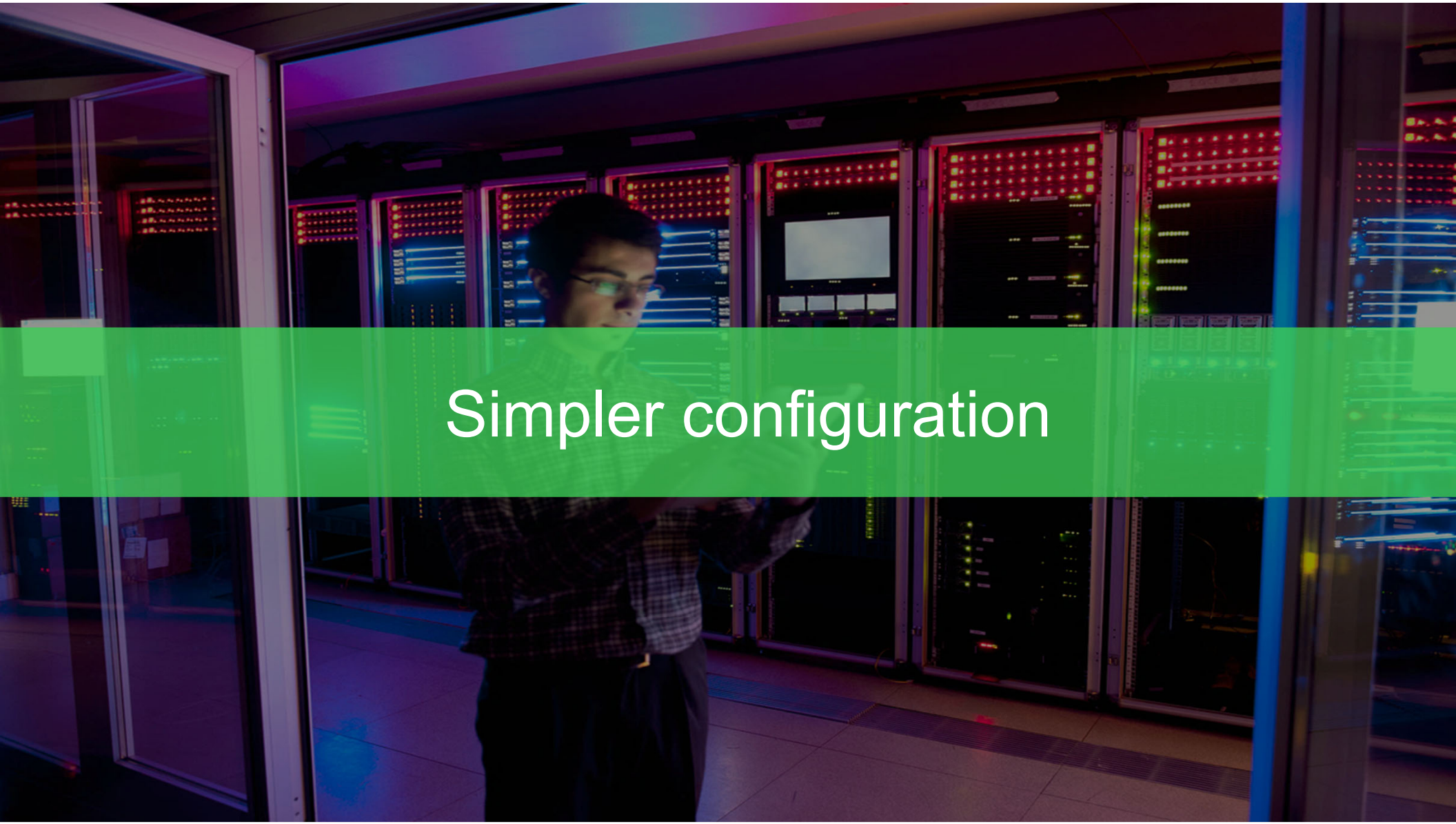
Enabling non-English speakers in 40+ countries where PSO has been sold

Runtime, **key design tools** and **documentation** fully translatable

Ability to run PSO clients and engineering tools on **non-English OS's**

End user run-time & key design-time available in **English** and **French**

Other languages now possible…


Simpler configuration

Next Generation PSO Web Client

Easier graphics engineering in PSO 2020

Modern & efficient graphic editor

Quickly **toggle between** Design, Source and Preview **modes**.

Graphics stored in a object model based **XML format** allowing easy comparison when changes are made.

Easy to deploy graphic updates

No need to restart PSO services or **recompile projects** to 'go live' on graphics updates.

Once graphics and/or graphic menu system changes are saved to PSO server, operators simply **refresh browser** to see changes.

Less graphics to create

No need to create graphics for different screen resolutions.

Resulting in **streamlined graphics libraries** as having same images in different resolutions no longer required.

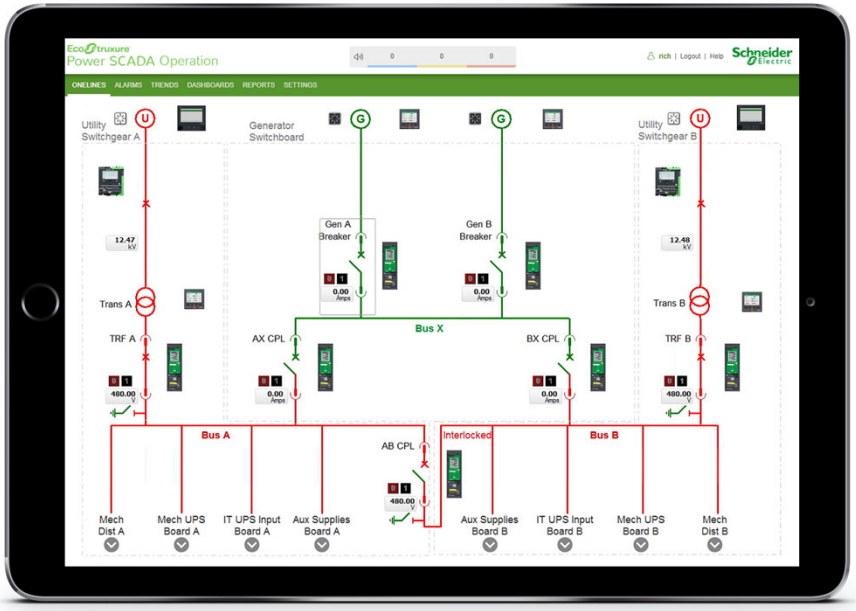
Drag & Drop / Point & Click experience

Easier binding of graphics to data with automatic association via **drag and drop workflow**.

1-line creation largely achieved via **point and click workflow.** Having to remember bus numbers will become a 'thing of the past'.

Next Generation PSO Web Client

Simplified engineering experience for 1-line engine



Various engineering improvements with new **web version of 1-line engine** for application engineers

Simpler configuration with

- no need for special user name / password
- no need for special encryption keys

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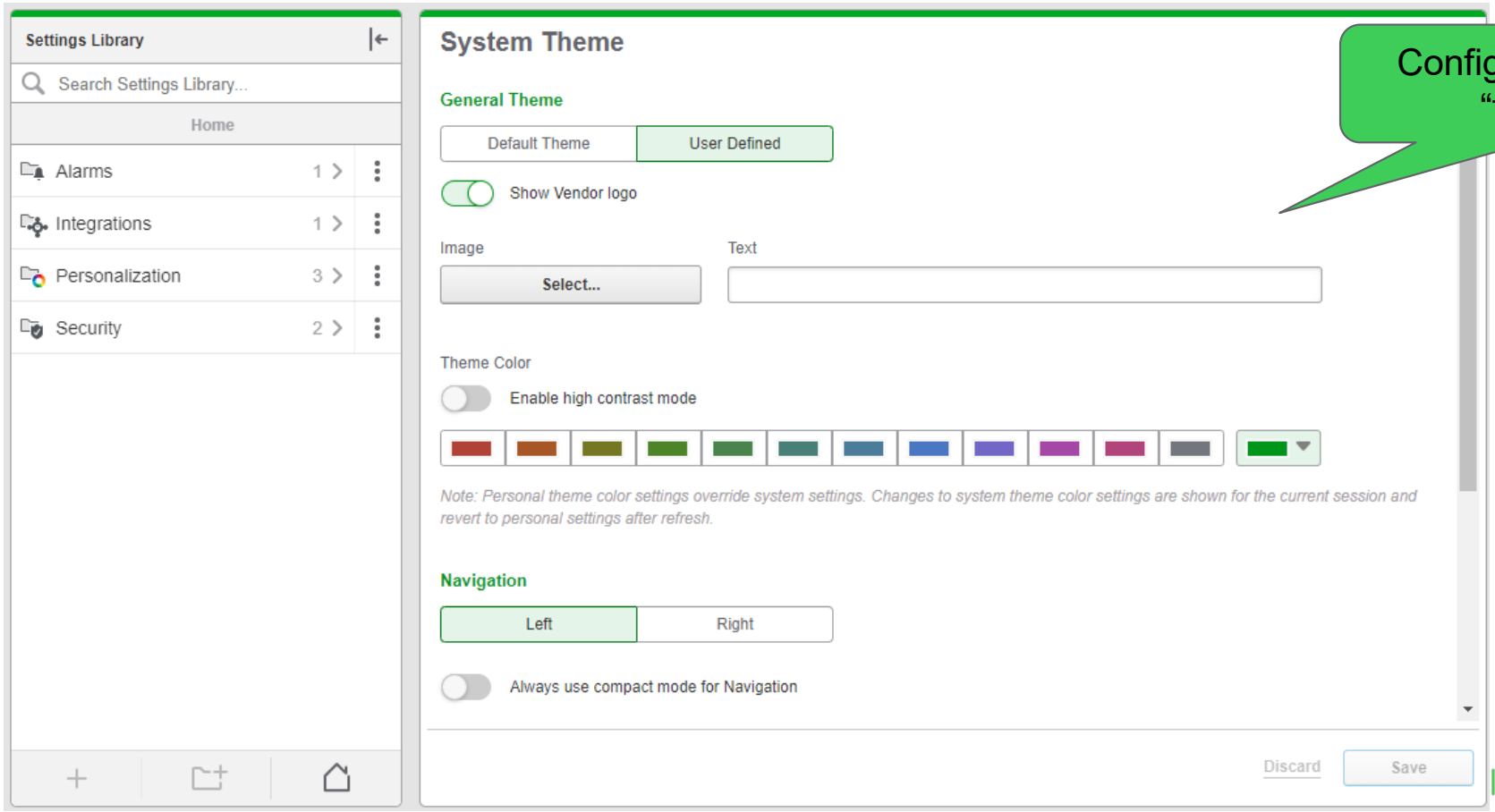
Next Generation PSO Web Client

Ability to adjust various runtime settings from web client



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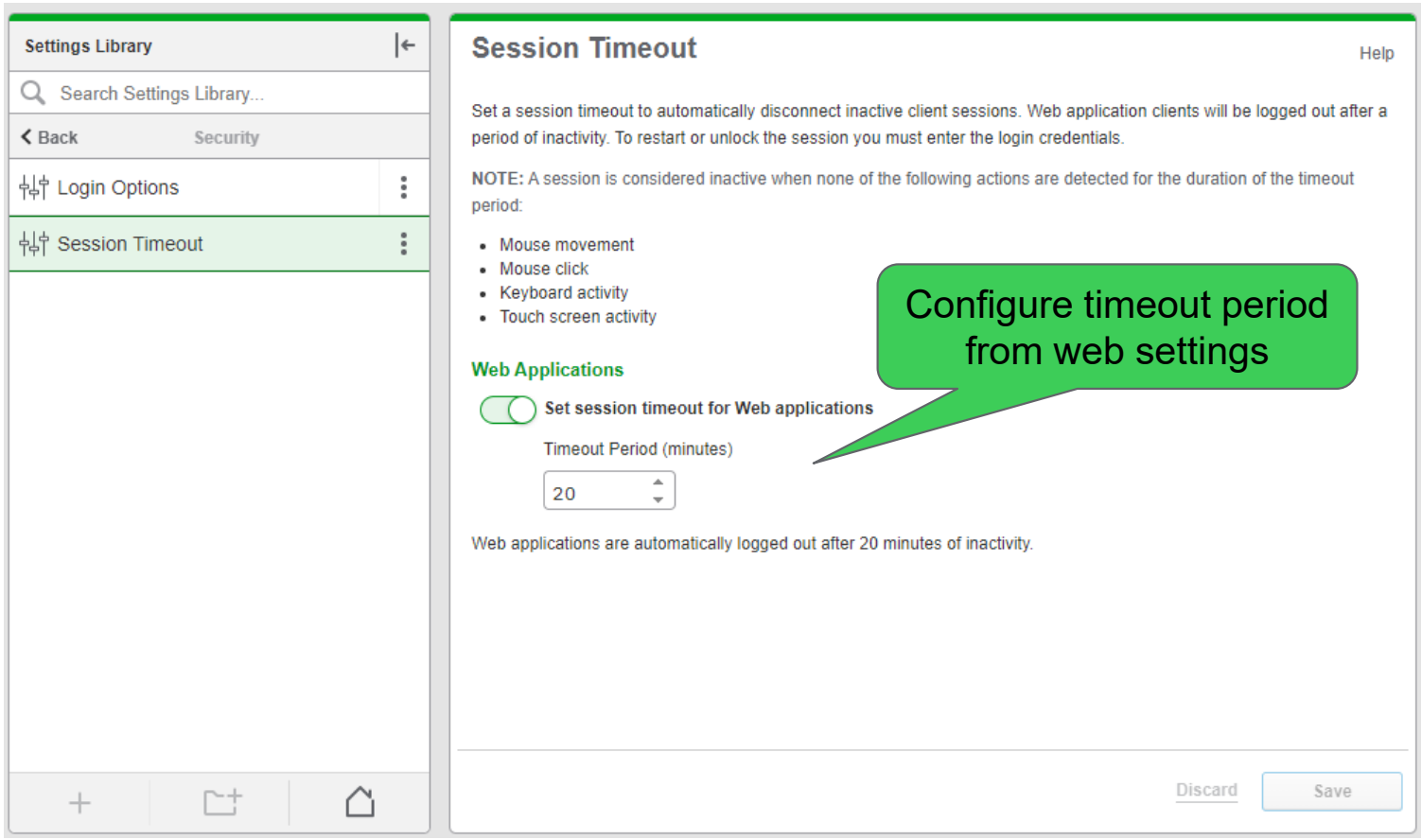
Next Generation PSO Web Client

Simpler timeout period configuration



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Do you remember…

How PSO 9.0 created single location for essential documentation

Comprehensive consolidation and simplification of previously siloed technical documents.

- Improved search and elimination of information gaps
- Easier to navigate and find information when you need it
- Just-in-time procedures to reduce task completion time
- Easier to find related and supporting information without having to obtain related documents
- **Single Document: PSO System Guide**

PSO documentation before 9.0

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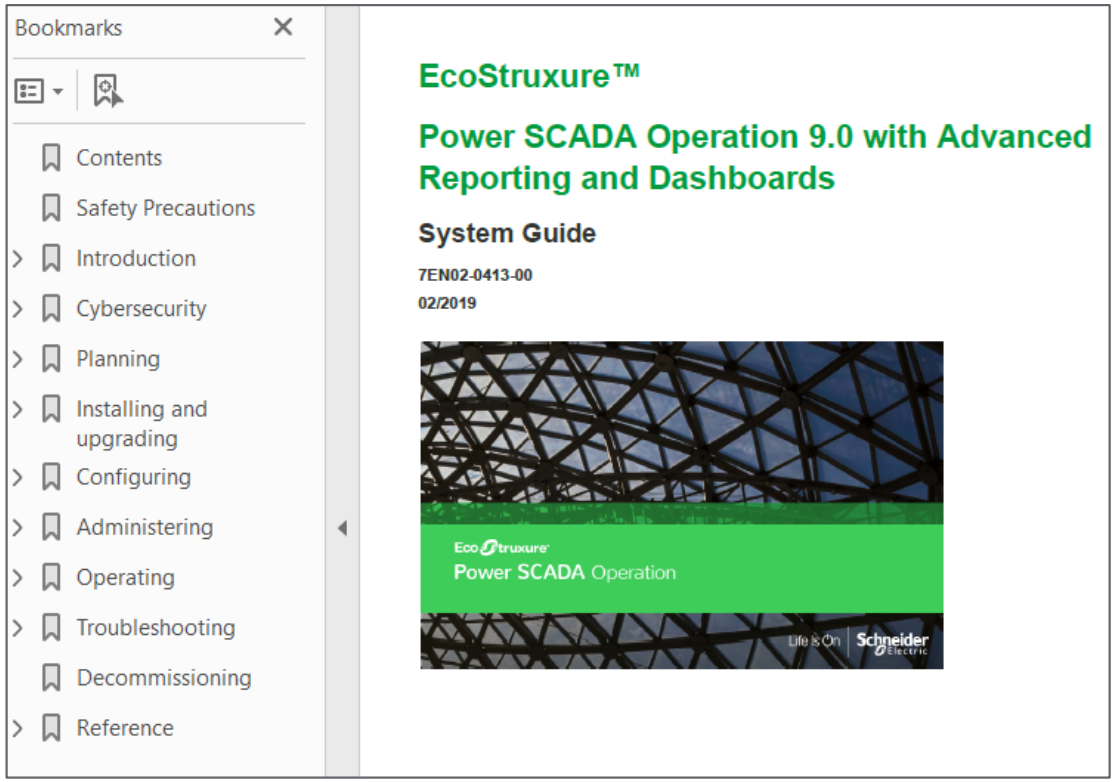
PSO 2020 System Guide

Now including graphics documentation and new runtime information



PSO 2020 System Guide will embed / include graphics editor how-to information

New runtime features such as simplified power event analysis via new alarm interface also included

The best EPMS documentation in the market is about to get even better!

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And Even More Connected Devices!

Even more native Modbus drivers

Connecting to our other ‘Hero Offers’

- Easergy P3*
- ASCO 7000 / 4000
- MasterPact MTZ v3.0
- Vigilohm IFL 12 series
- T300**

** P3 driver available in PSO 2020 cumulative update at end of Q1 2020*

*** T300 driver support for DNP3 and 104 protocols only*

MasterPact™ MTZ
FUTURE READY

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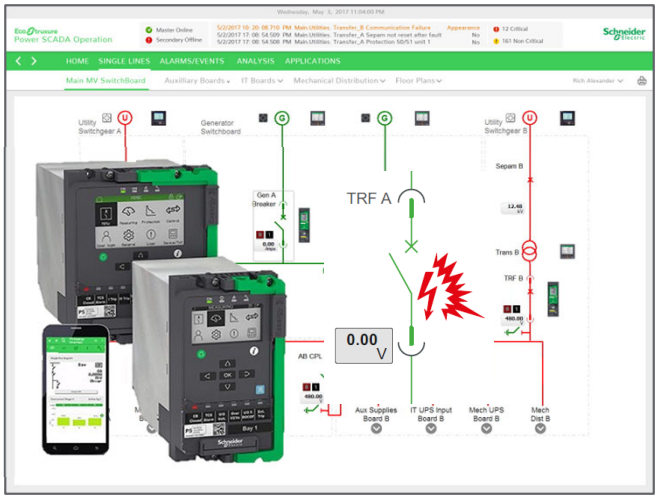
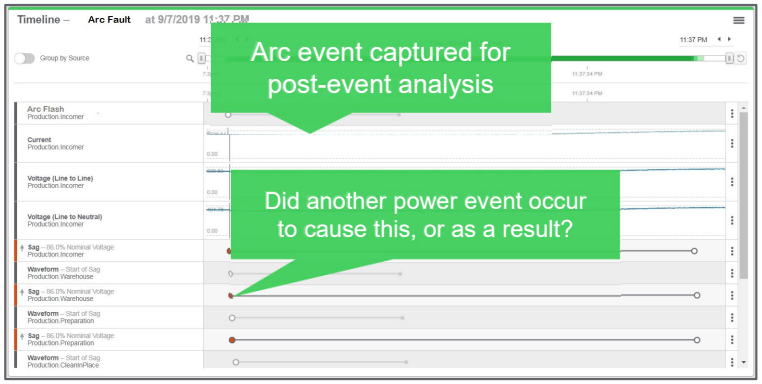
Active Arc Flash Protection

Active Arc Flash available March 2020

Help Protect Staff and Occupants and Minimize Equipment Risk





According to the National Fire Protection Association…
5 to 10 Arc Flash incidents occur every day in the USA

Minimize the **costs resulting from arc flash damages**: downtime, repair time, interruption of processes & equipment

Improve safety during maintenance activities

Improve arc flash awareness for maintenance teams: **remote monitoring, alarming and notification**

Get **real-time visibility** for fast response following arc flash events

Provide **post arc flash event analysis**

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PSO 2020 – What's New Summary

Modern Graphics

Runtime graphics including animated 1-lines viewable via HTML5 compliant web browser (eg: Chrome, Firefox, Safari)

Pan/zoom graphics support

Microgrid ready: Multi-source 1-line support *(eg: Utility + PV = unique color)*

Microgrid ready graphics

Smart Alarms

HTML5 alarm interface

Smart alarm clustering, rollups & classification

Incident timeline analysis

New waveform viewer

Cybersecurity ready

Certified IEC-62443 SL1

TLS 1.2 encryption for both web clients and for server-to-server communication

Reminders from past releases:
Role based access control via Windows Active Directory
2-factor authentication supported
White-list validated solution
User event logging
Developed with SDL practices

Simpler Deployments

Simplified 1-line graphics tooling

Documentation updates with additional depth covering multi-cluster (ie: multi-cluster) and graphics creation.

World ready software

Runtime, key design time tools and documentation translatable

English and French available at time of release

Active Arc Flash Protection

Support for Easergy P3 Advanced time-stamped events and alarms based on Arc Flash event *(end of March 2020)*

Additional device support

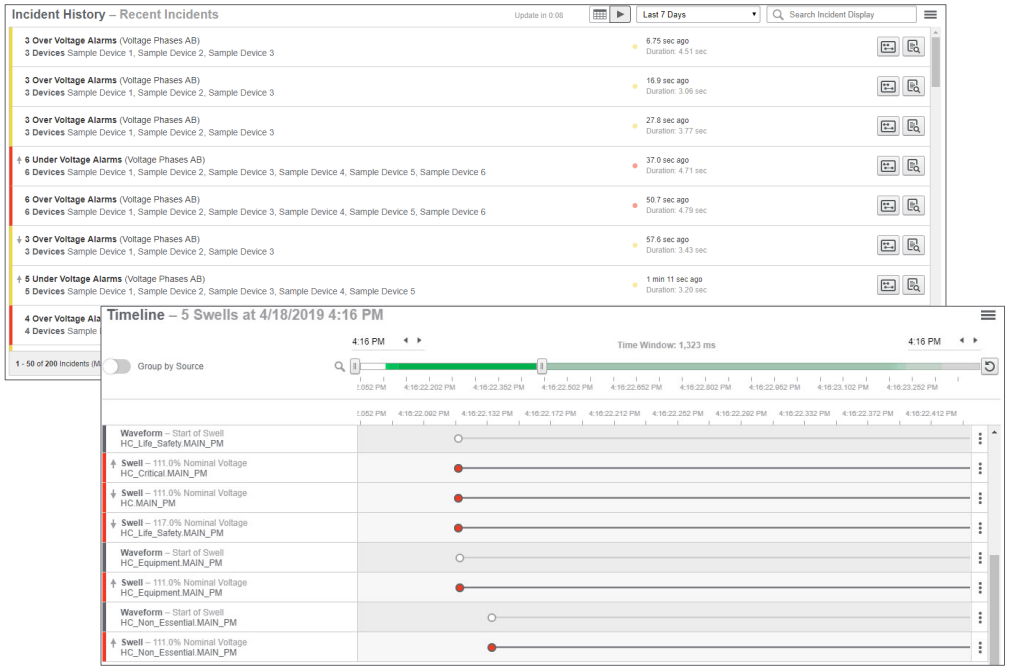
Additional Modbus drivers for:

- Easergy P3 *(March 2020)*
- ASCO 7000
- MTZ v3.0
- IFL
- T300

OS and IT

Windows Server 2019 support

Multi-browser support for graphics and alarms



Appendix:
PSO Smart Alarms
High level technical details

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PSO 2020 Alarms Deep Dive

PSO 2020 alarms

Why new alarms for PSO?

#1 – Mobile Operator Access

PSO operators need to access their system… **Anywhere, Anytime & with Any Browser** without use of browser plugins or 3rd party streaming software

#2 – Easier power events analysis

Faster analysis by **automatic grouping of related alarms** (ie: alarm incidents) and **richer visualization** experience (ie: timeline analysis)

#3 – Configured to Order

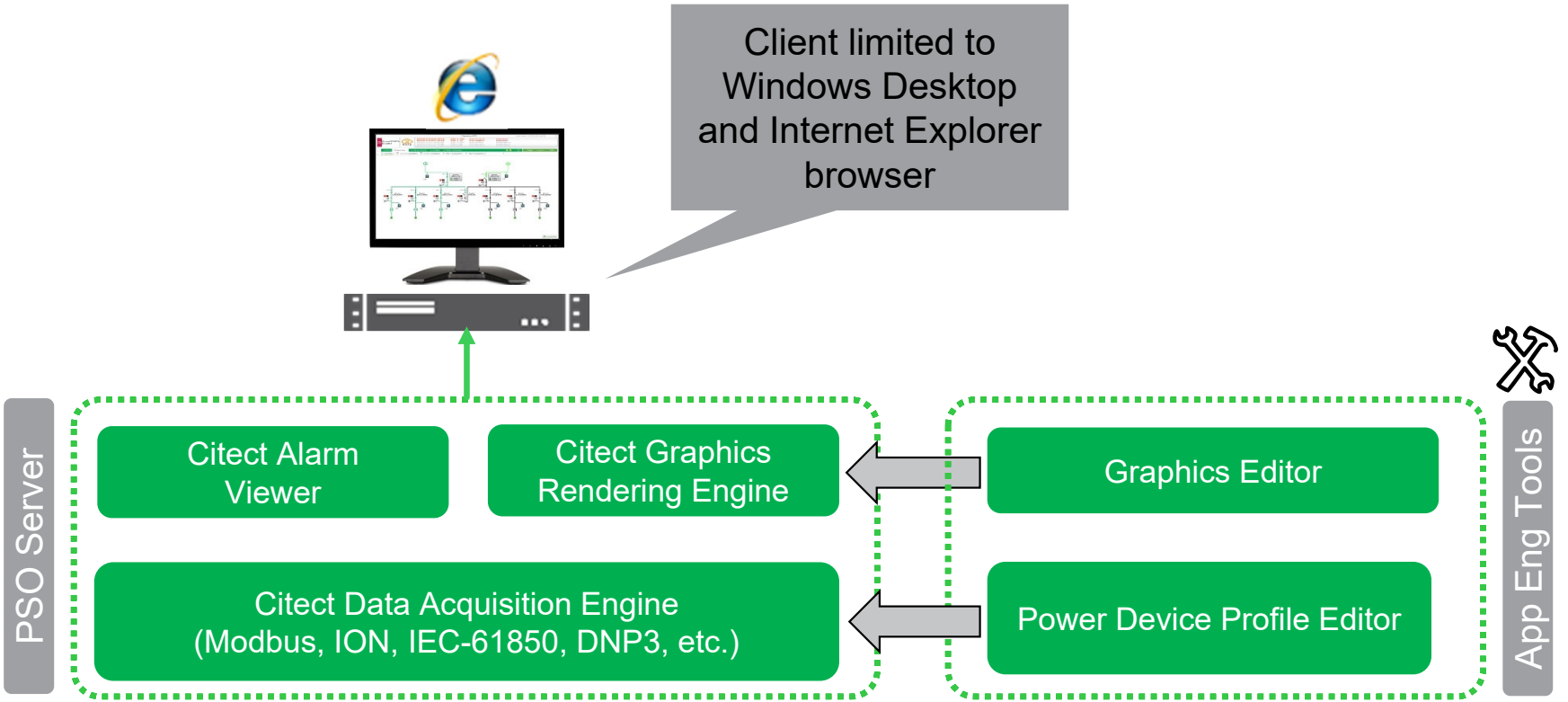
Allow **end users** to easily **configure** views, colors, alarm annunciator, etc. **via runtime interface**

#4 – EcoStruxure Consistency

Our customers want a **consistent runtime experience** as they move between our Edge Control offers (ie: PSO, PME) while taking advantage of high performance PSO DAQ

PSO 9.0 Architecture

Before



PSO 2020 Architecture

"Under the Hood"

Legend

Existing PSO component

New PSO 2020 component

Reuse of PME 9.0 alarm interface user experience

Communication via
HTTP w/ TLS 1.2

PSO Server

HTML5 alarms
reusing EcoStruxure Power Application Portal

Native Web Graphics Rendering Engine
reusing EcoStruxure Graphic Brick

API - Data Abstraction Layer

Citect Data Acquisition Engine
(Modbus, ION, IEC-61850, DNP3, etc.)

EXSP Graphics Editor

Power Device Profile Editor

App Eng Tools

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PSO 2020 Alarms Deep Dive

Smart Alarm Clustering (Terms/Concepts)

More Information ← → More Data

Incidents

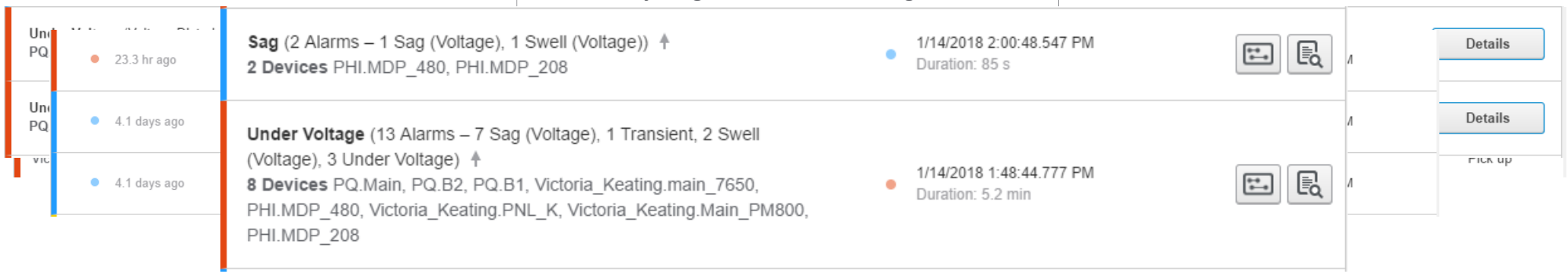
- Grouping of multiple alarm instances over time.
- 1 to N sources and 1 to N alarms instances
- Minimizes noise and speeds up event analysis
- Starting point for “Incident Timeline Analysis”

Alarms

- **Alarm definition** defines properties and source
- Alarm occurrences are instances of a definition, includes timestamp
- **New instance** increments number of occurrences, no new entry in alarm viewer
- History vs Status views
- Priority: e.g. Low, medium, high

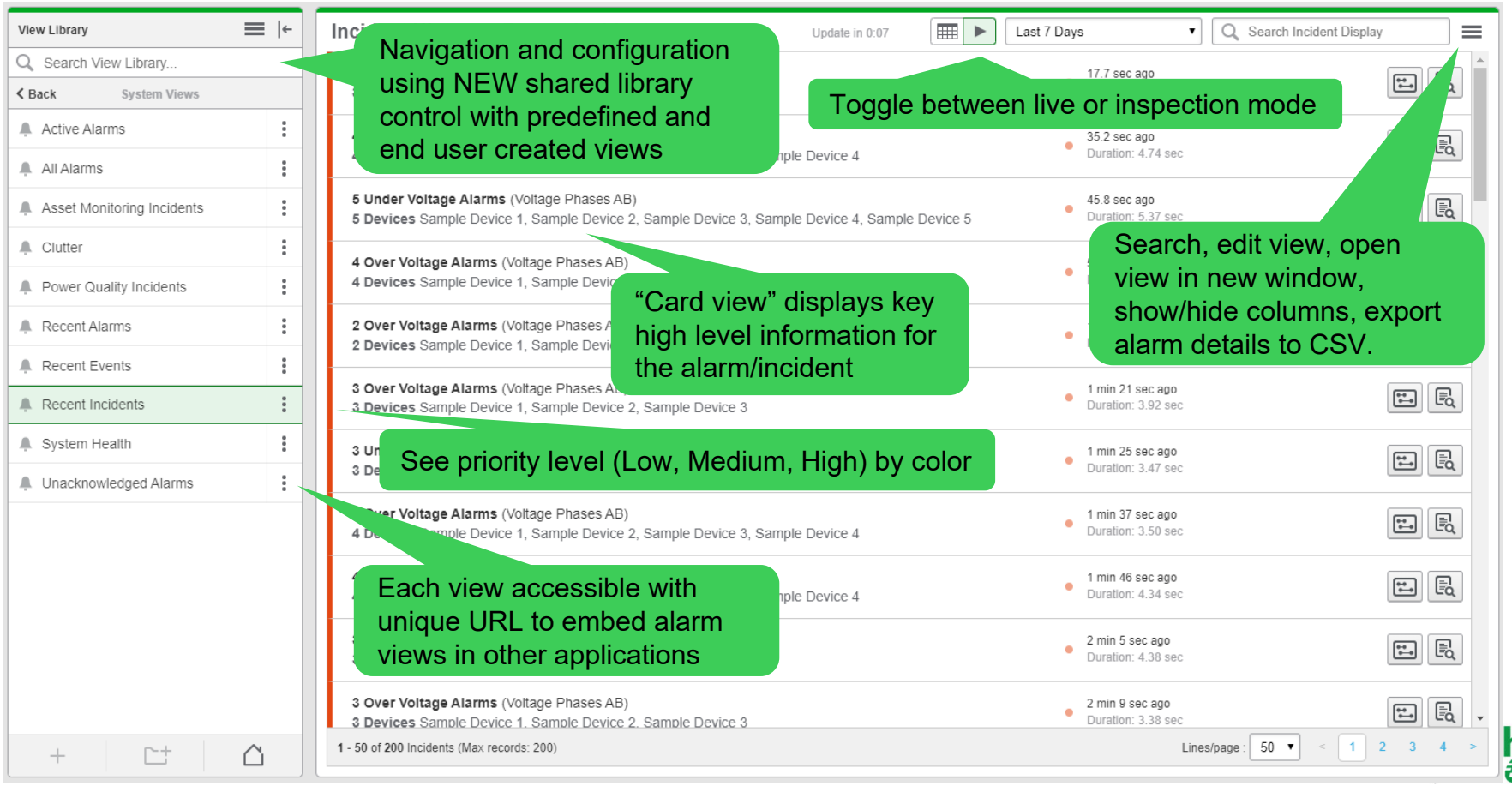
Events

- Single “event” in time from a single source
- Raw details as they come from devices and software
- Priority 0 to 255



Smart Alarms – General Navigation

New alarm viewer



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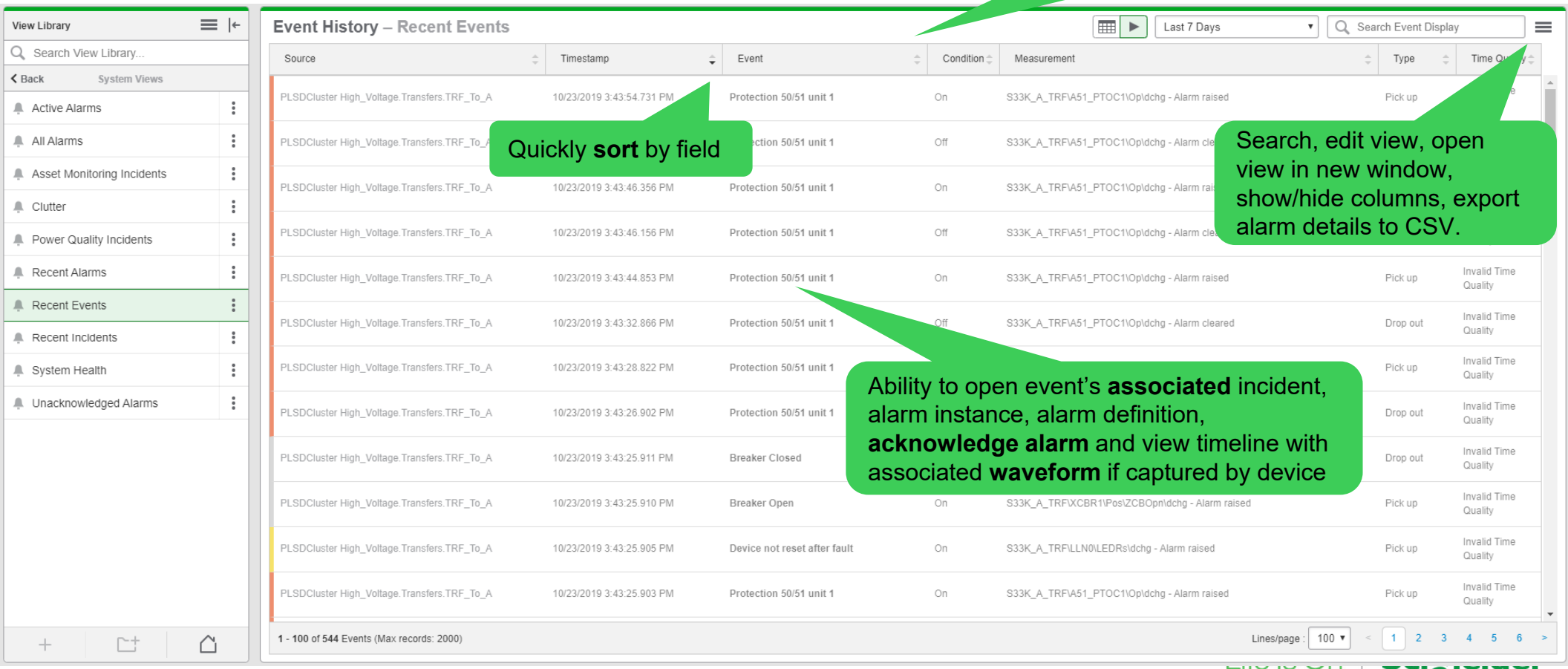
Smart Alarms - Events

Events View



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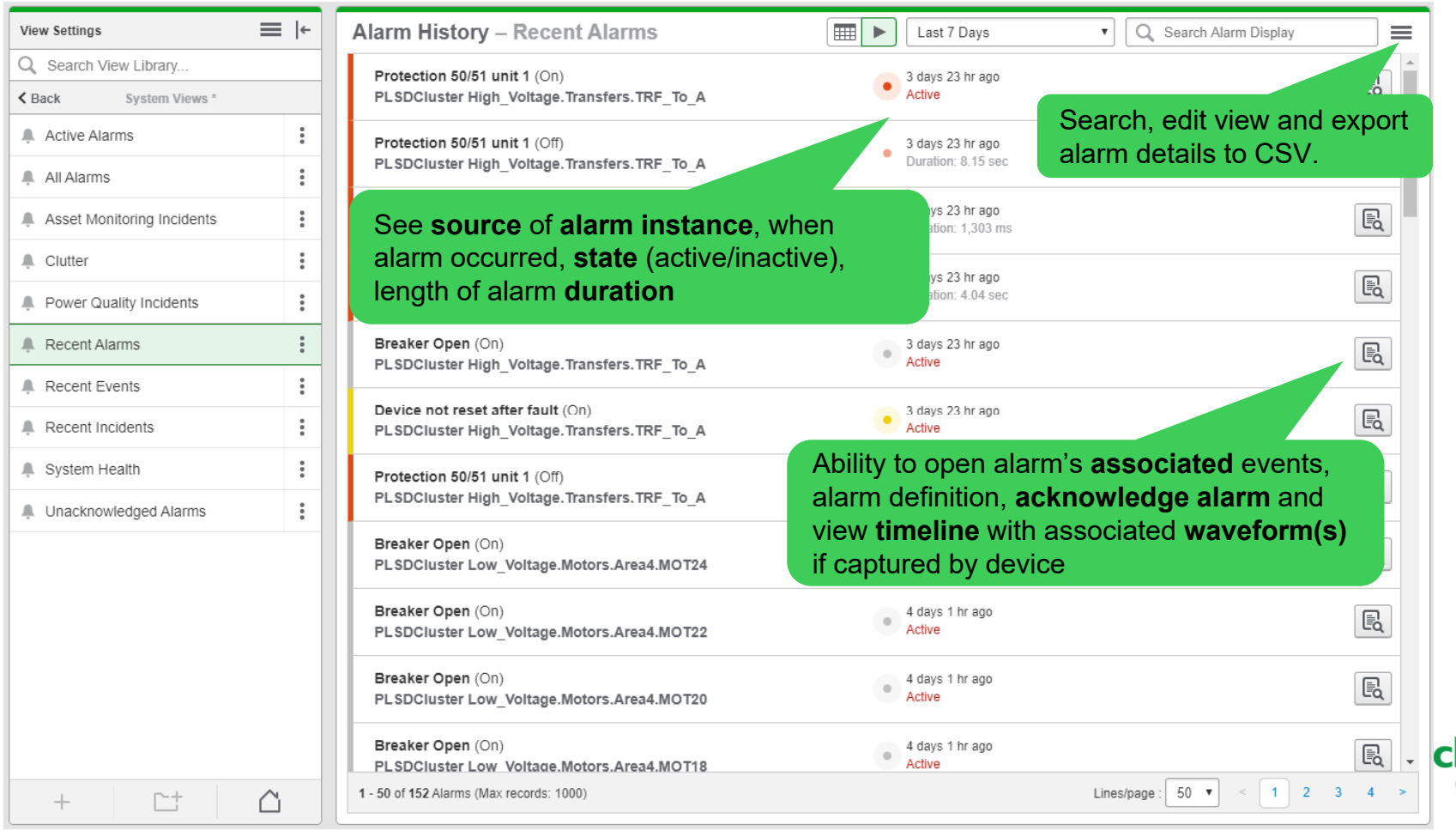
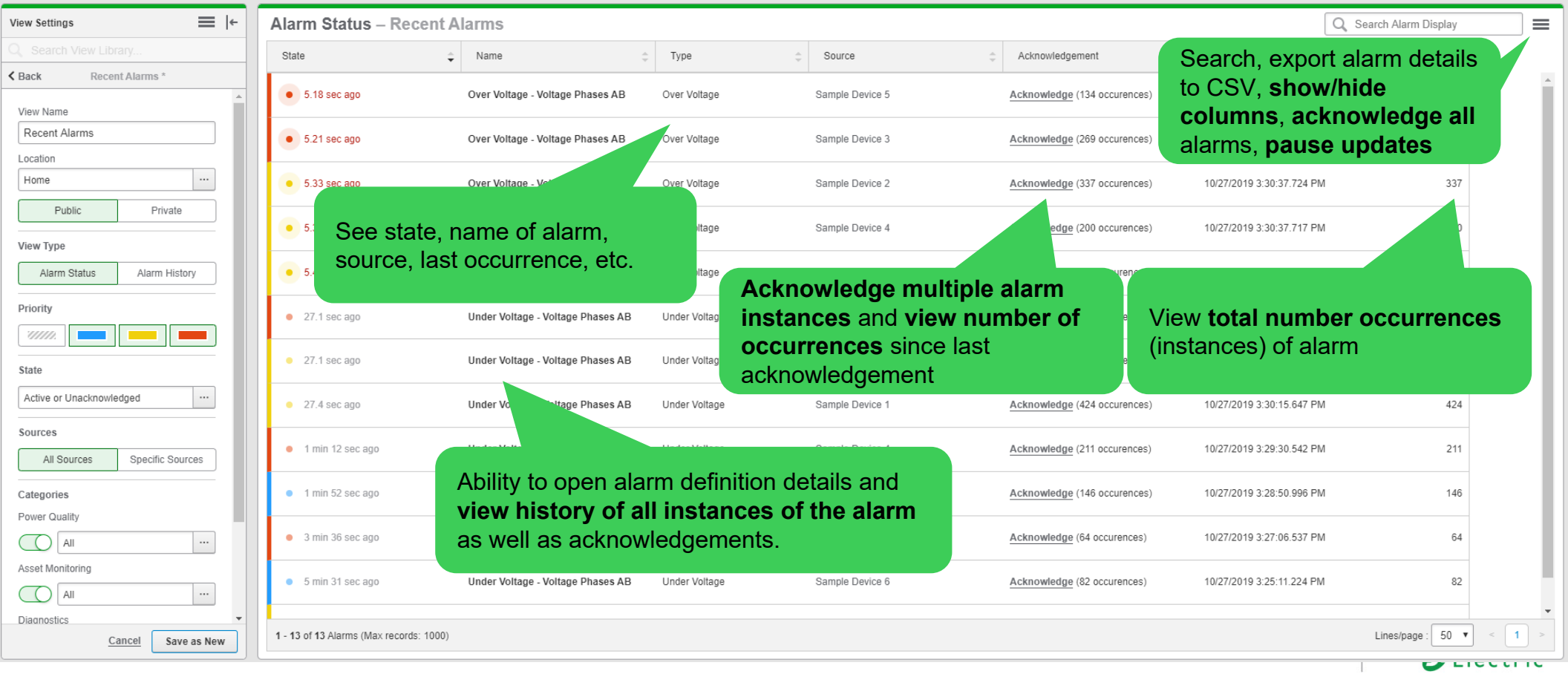
Smart Alarms - Alarms

2 Views possible: **Alarm History View** to view by **individual** alarm occurrence



Smart Alarms - Alarms

2 Views possible: **Alarm Status View** to view by **multiple** alarm occurrences



Smart Alarm Clustering

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How Incident Grouping Works

Over Voltage example

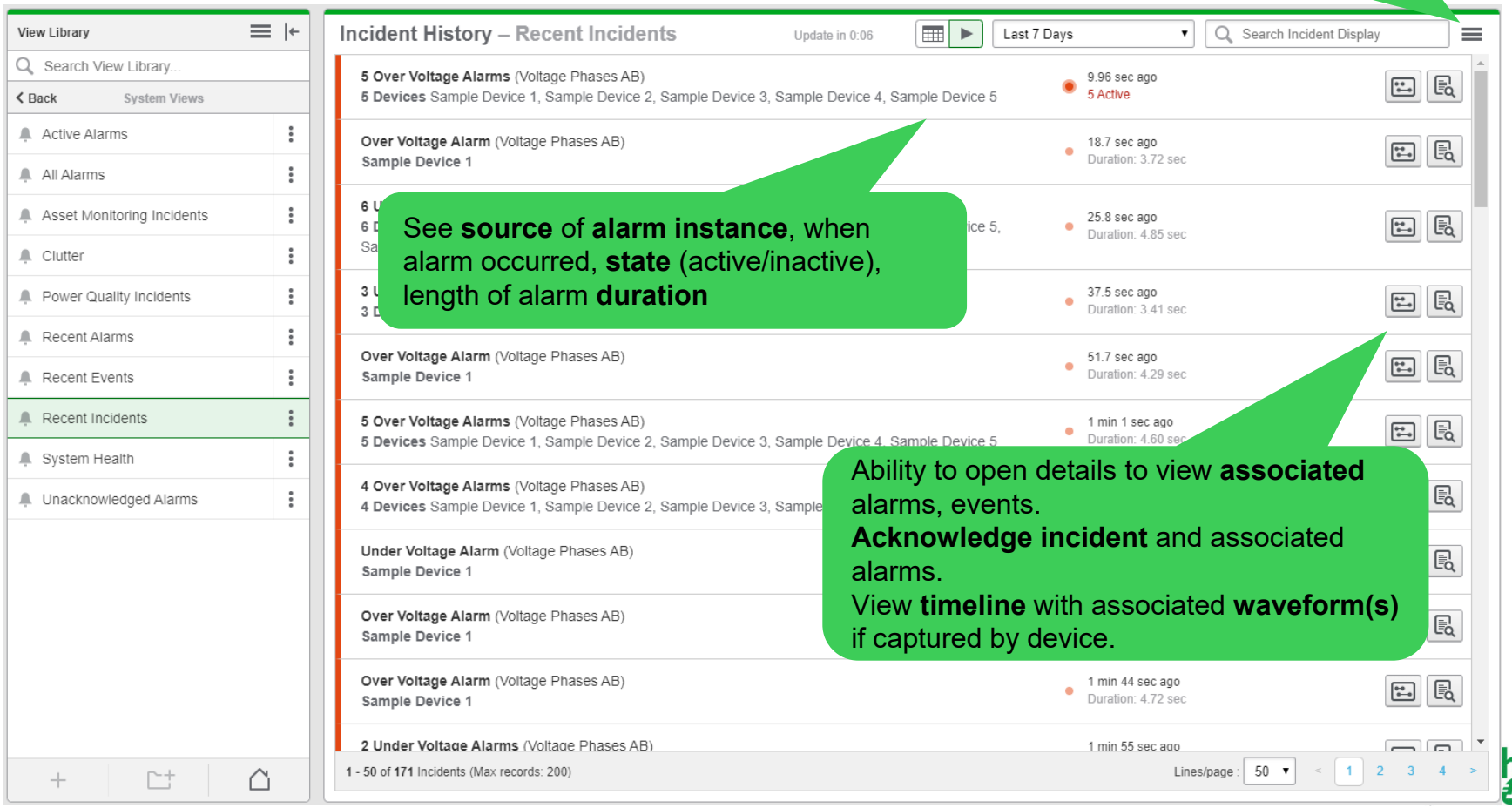
Alarm types have a **grouping interval** and **their start times determine** which Alarms to group into an Incident.

Example Incident with alarm type of **Over Voltage** which has a **grouping interval** of **5 minutes**.

1. Start: New alarm comes in that is part of the Over Voltage type and marks start of an Incident
2. Active: Any alarm of Over Voltage type that starts within the grouping time interval is considered part of the same Incident.
   - *The grouping time interval is always based on the most recent Alarm in the Incident, which means that the counter is restarted every time a new Alarm is added to the Incident.*
3. Complete: When there are no more alarms of the same type that fall inside the grouping interval, the Incident is complete.

Smart Alarms - Incidents

Incident View



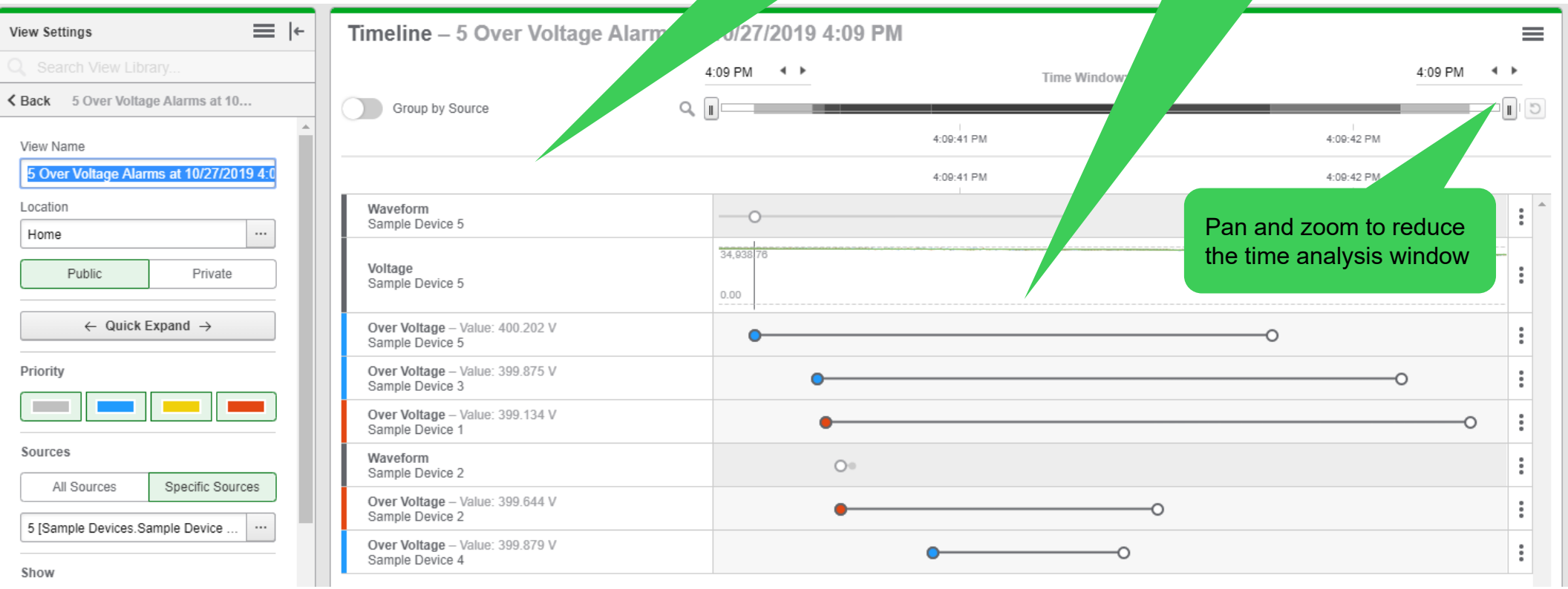
Incident Timeline Analysis

Graphical timeline analysis

Display all the alarms and associated waveforms that are part of an incident

Easily analyze events sequence on a **graphical timeline**

Pan and zoom to reduce the time analysis window



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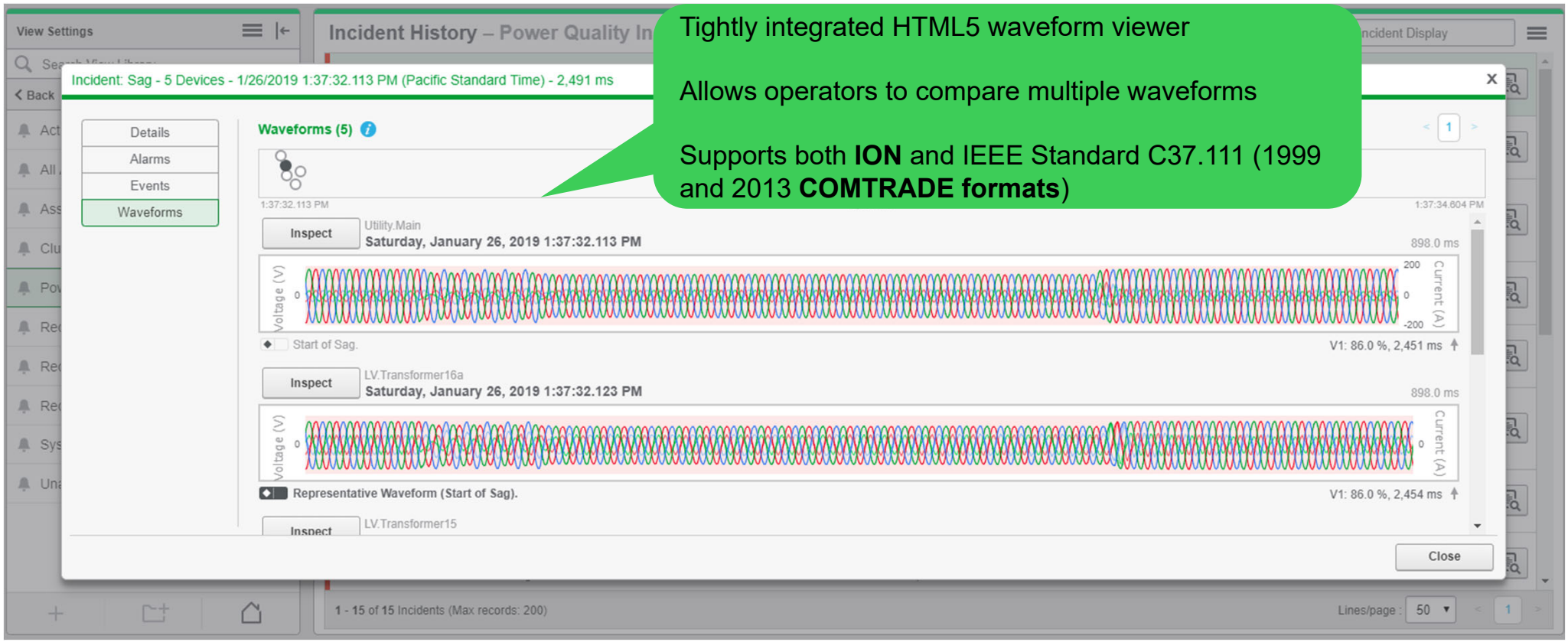
PSO 2020 Alarms Deep Dive

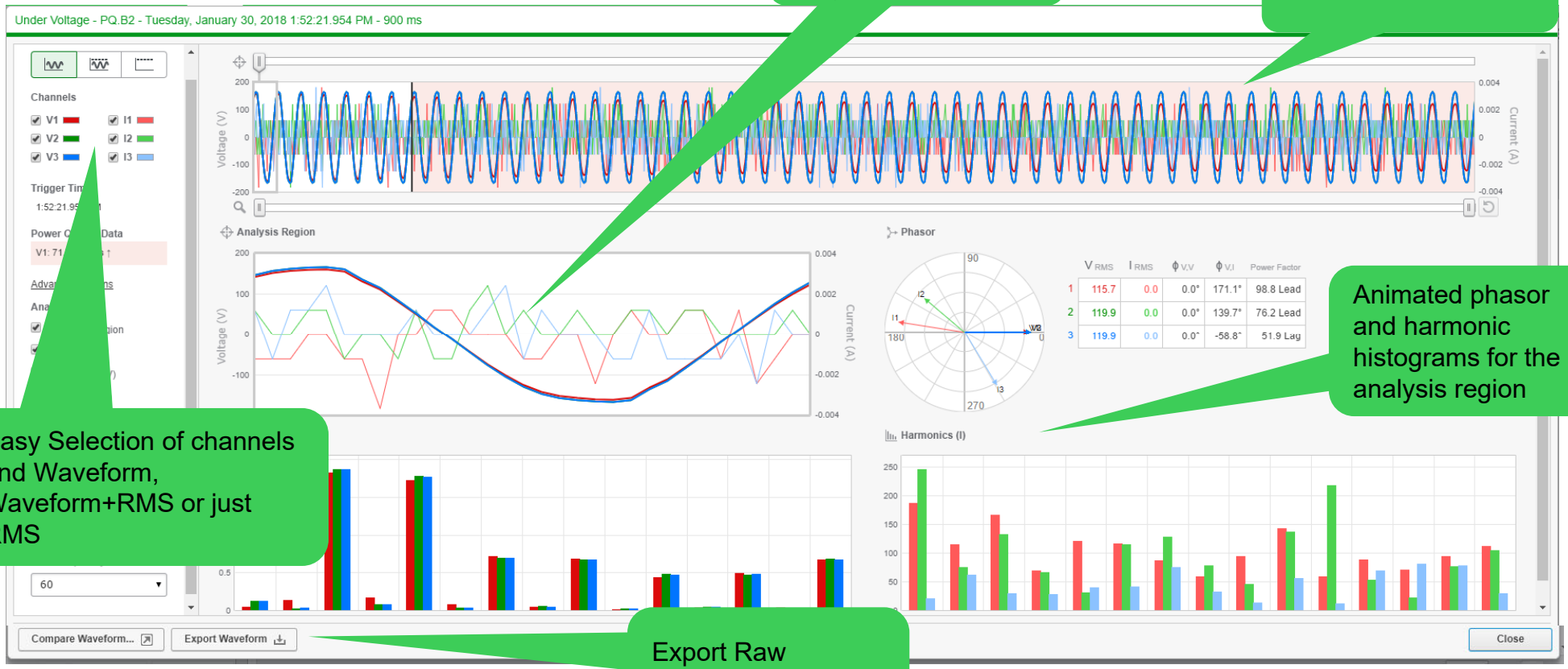
New HTML5 waveform viewer

Simplified waveform experience



New HTML5 waveform viewer

Details



Move analysis region for detailed analysis of cycles

Easy Pan and Zoom

Easy Selection of channels and Waveform, Waveform+RMS or just RMS

Animated phasor and harmonic histograms for the analysis region

Export Raw Waveform Data to CSV

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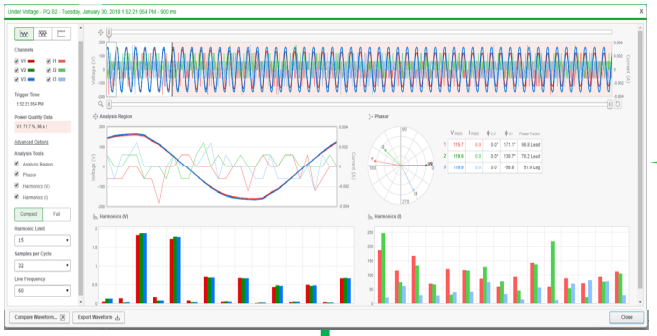
New HTML5 waveform viewer

Technical details around how ION waveforms are handled



PSO Server parses the time/value pairs in the COMTRADE 2013 waveforms and send this to the HTML5 waveform viewer

PSO Server downloads “ION format” waveform from ION9000 & PM8000 and then converts this to COMTRADE 2013 format which is stored in PSO waveform database

ION9000 & PM8000 capture waveforms in “ION format”

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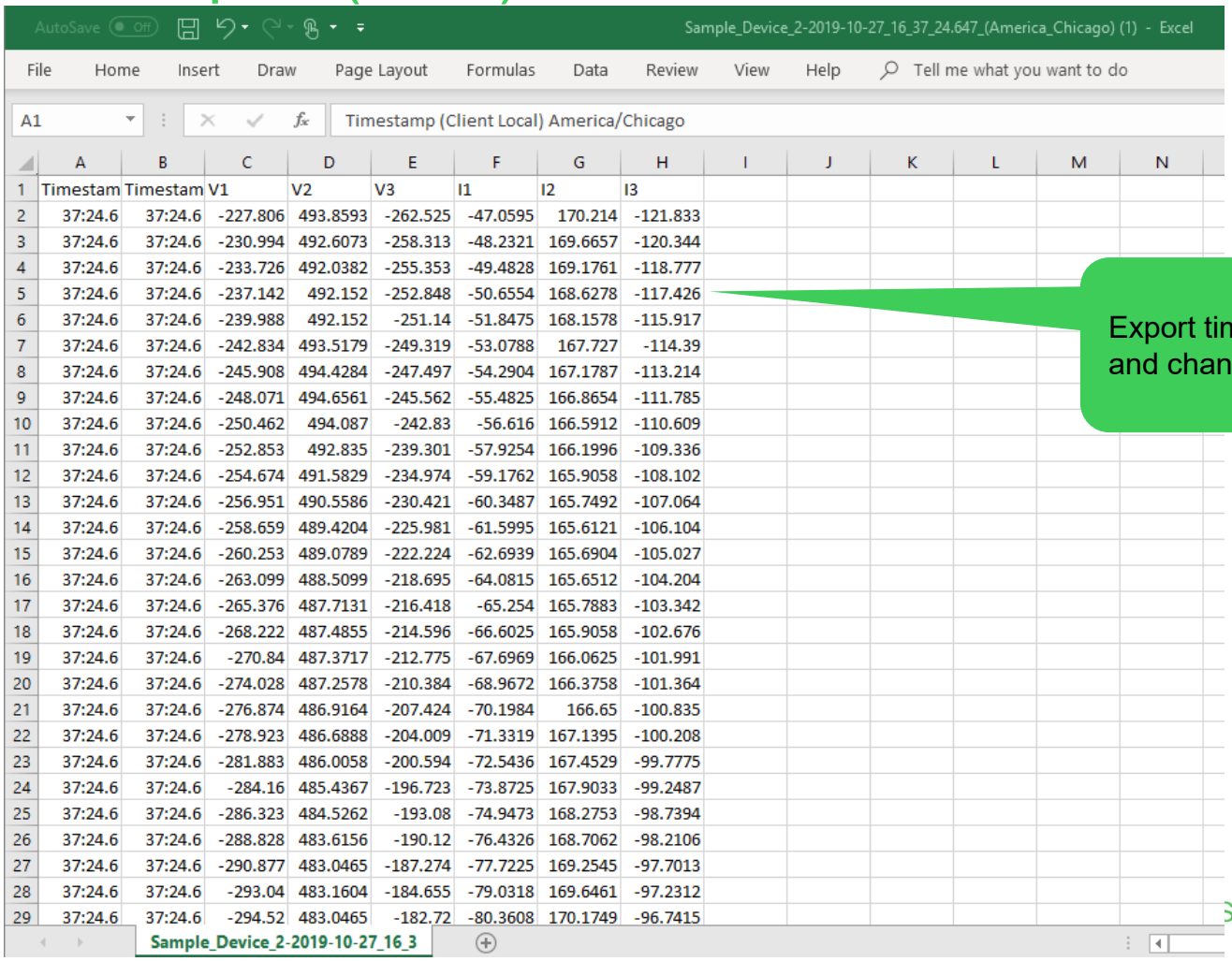
Waveform Data Export (CSV)



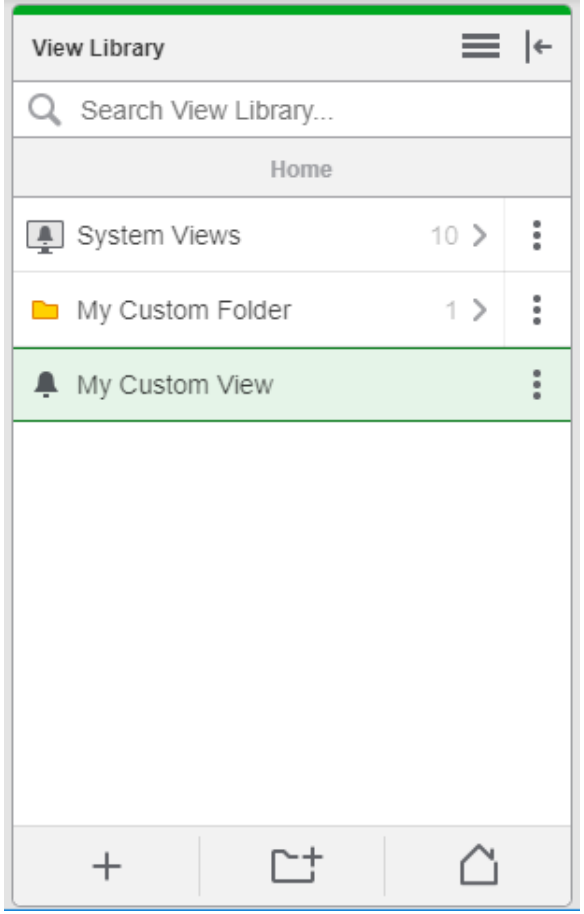
	A	B	C	D	E	F	G	H
1	Timestam	Timestam	V1	V2	V3	I1	I2	I3
2	37:24.6	37:24.6	-227.806	493.8593	-262.525	-47.0595	170.214	-121.833
3	37:24.6	37:24.6	-230.994	492.6073	-258.313	-48.2321	169.6657	-120.344
4	37:24.6	37:24.6	-233.726	492.0382	-255.353	-49.4828	169.1761	-118.777
5	37:24.6	37:24.6	-237.142	492.152	-252.848	-50.6554	168.6278	-117.426
6	37:24.6	37:24.6	-239.988	492.152	-251.14	-51.8475	168.1578	-115.917
7	37:24.6	37:24.6	-242.834	493.5179	-249.319	-53.0788	167.727	-114.39
8	37:24.6	37:24.6	-245.908	494.4284	-247.497	-54.2904	167.1787	-113.214
9	37:24.6	37:24.6	-248.071	494.6561	-245.562	-55.4825	166.8654	-111.785
10	37:24.6	37:24.6	-250.462	494.087	-242.83	-56.616	166.5912	-110.609
11	37:24.6	37:24.6	-252.853	492.835	-239.301	-57.9254	166.1996	-109.336
12	37:24.6	37:24.6	-254.674	491.5829	-234.974	-59.1762	165.9058	-108.102
13	37:24.6	37:24.6	-256.951	490.5586	-230.421	-60.3487	165.7492	-107.064
14	37:24.6	37:24.6	-258.659	489.4204	-225.981	-61.5995	165.6121	-106.104
15	37:24.6	37:24.6	-260.253	489.0789	-222.224	-62.6939	165.6904	-105.027
16	37:24.6	37:24.6	-263.099	488.5099	-218.695	-64.0815	165.6512	-104.204
17	37:24.6	37:24.6	-265.376	487.7131	-216.418	-65.254	165.7883	-103.342
18	37:24.6	37:24.6	-268.222	487.4855	-214.596	-66.6025	165.9058	-102.676
19	37:24.6	37:24.6	-270.84	487.3717	-212.775	-67.6969	166.0625	-101.991
20	37:24.6	37:24.6	-274.028	487.2578	-210.384	-68.9672	166.3758	-101.364
21	37:24.6	37:24.6	-276.874	486.9164	-207.424	-70.1984	166.65	-100.835
22	37:24.6	37:24.6	-278.923	486.6888	-204.009	-71.3319	167.1395	-100.208
23	37:24.6	37:24.6	-281.883	486.0058	-200.594	-72.5436	167.4529	-99.7775
24	37:24.6	37:24.6	-284.16	485.4367	-196.723	-73.8725	167.9033	-99.2487
25	37:24.6	37:24.6	-286.323	484.5262	-193.08	-74.9473	168.2753	-98.7394
26	37:24.6	37:24.6	-288.828	483.6156	-190.12	-76.4326	168.7062	-98.2106
27	37:24.6	37:24.6	-290.877	483.0465	-187.274	-77.7225	169.2545	-97.7013
28	37:24.6	37:24.6	-293.04	483.1604	-184.655	-79.0318	169.6461	-97.2312
29	37:24.6	37:24.6	-294.52	483.0465	-182.72	-80.3608	170.1749	-96.7415

Export time stamp and channel data

PSO 2020 Alarms Deep Dive

Alarm Views

Manage alarm library

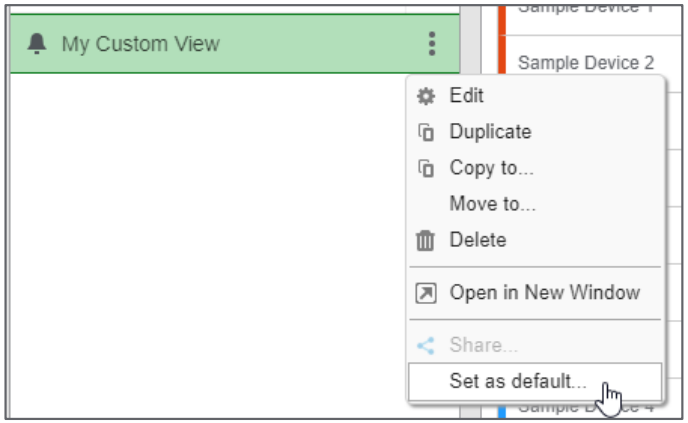


Customize alarm library from runtime

Create multi-level **public folders** containing variety of custom alarm views

Create **public or private alarm views**

Set **default views** shown when Alarms tab selected *(user & system wide options)*



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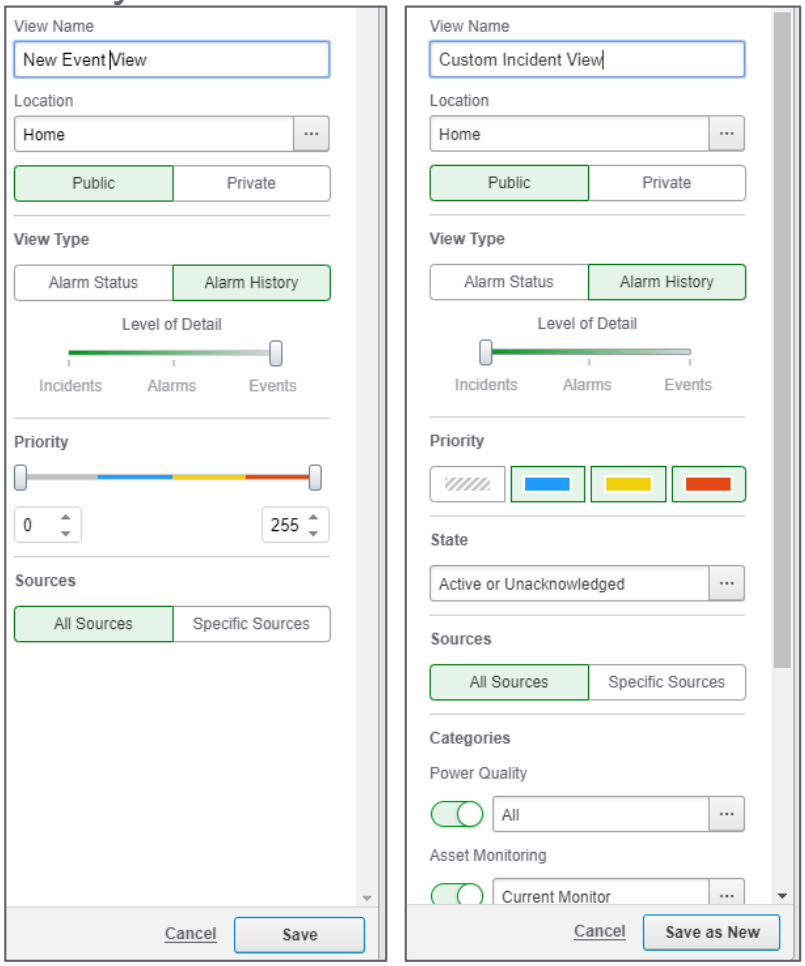
Alarm Views

Easily create custom views



End users can create their own views containing:

- View name
- Library location
- Public/private access

Views can be prefiltered by:

- Priority level(s)
- Sources
- Alarm category / type *(available for alarms & incidents)*

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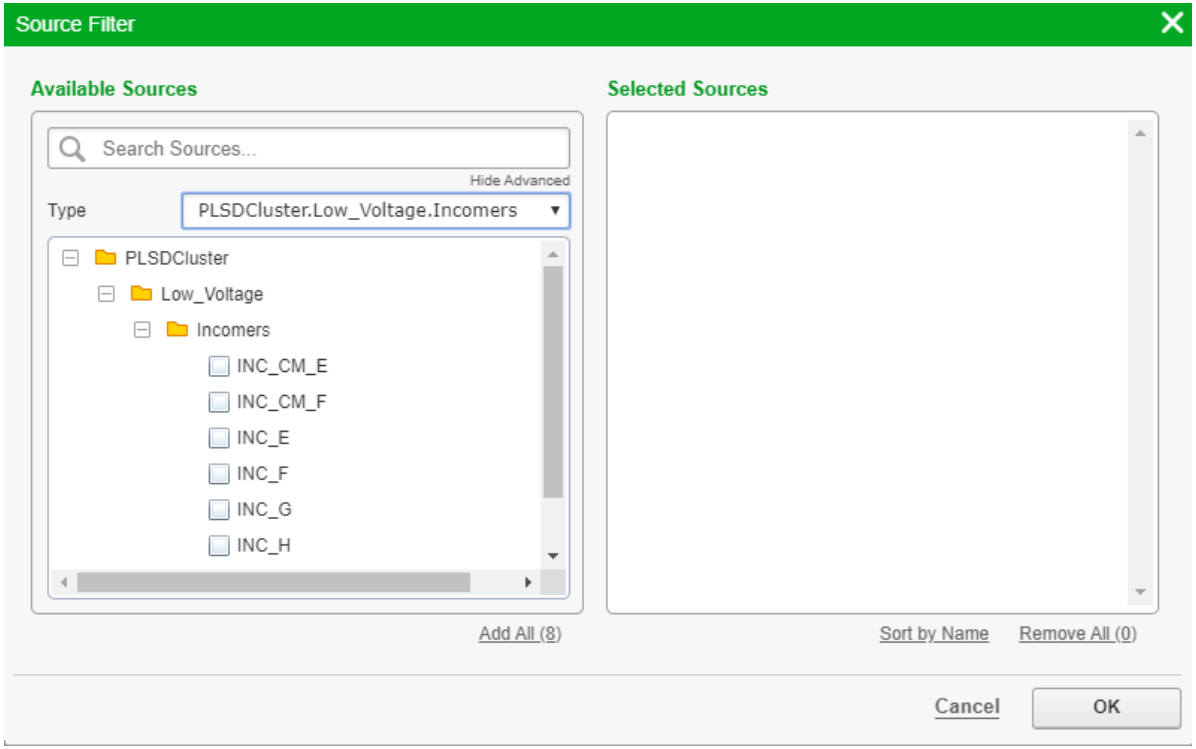
Alarm Views

Source / Device Filter



New hierarchy filter for PSO 2020

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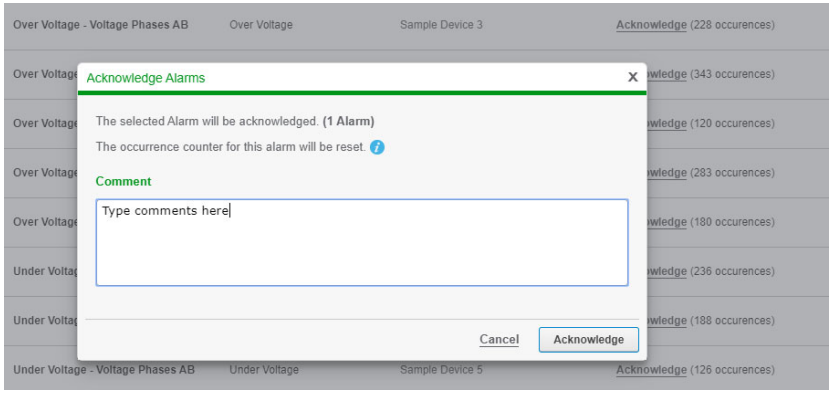
PSO 2020 Alarms Deep Dive

Alarm Acknowledgement

How it works

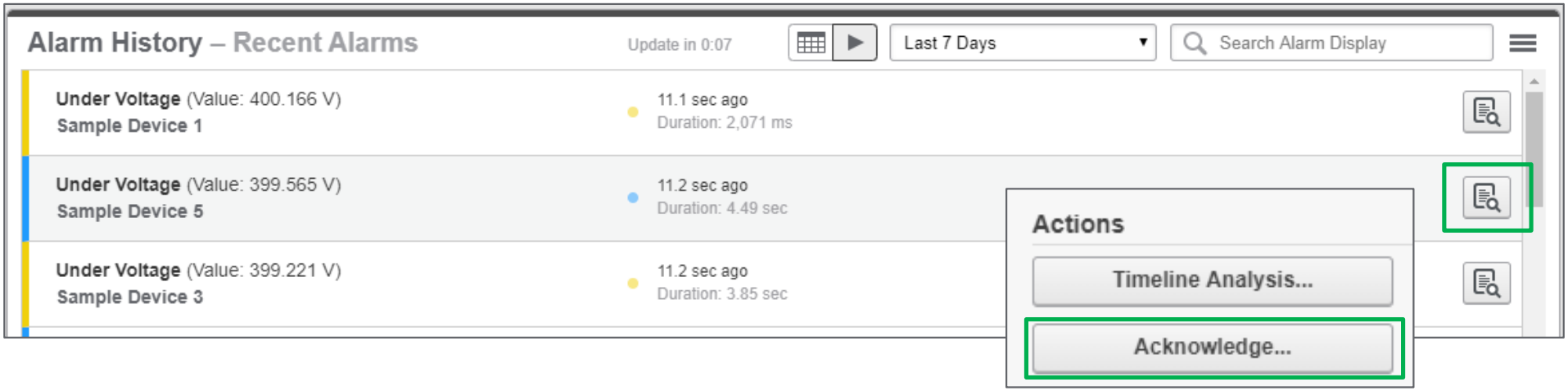


When you acknowledge from the **Alarm status or history views**, the alarm definition and all respective alarm instances will be acknowledged.

When you acknowledge from **Incident view**, all alarm definitions and respective alarm instances that are part of the incident will be acknowledged.

Alarm Acknowledgement

Acknowledging from Incidents and Alarm History views



To acknowledge alarms from Incidents and Alarm History views, click on “Details” icon and acknowledge from the details page.

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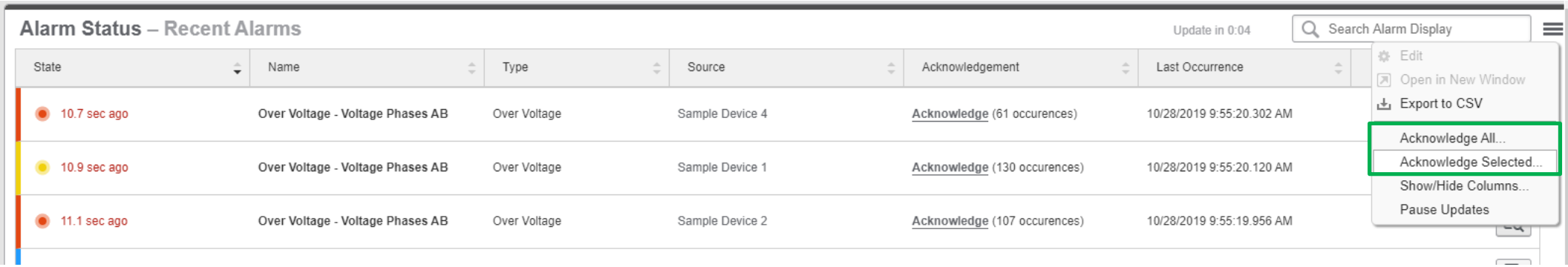
Alarm Acknowledgement

Acknowledging multiple alarm definitions



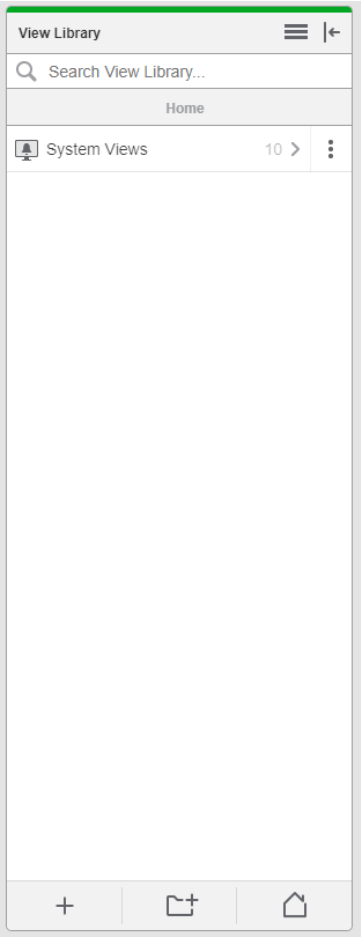
From **Alarm Status view**, you can **acknowledge multiple alarms** via variety of options:

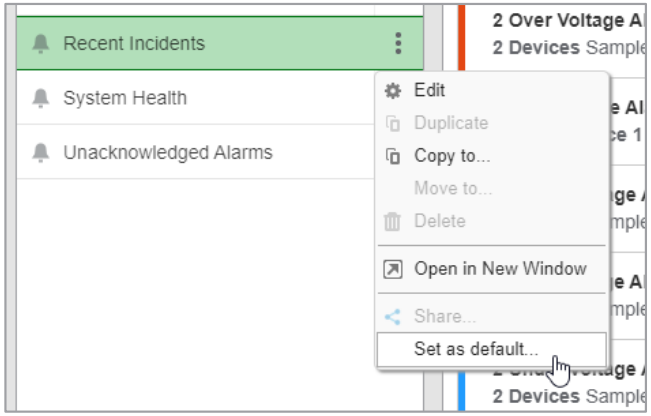
- Acknowledge All *(acknowledges all alarms in the current view)*
- Acknowledge All Selected *(Ctrl+Click to select individual alarms / Shift+Click to select a block of alarms)*

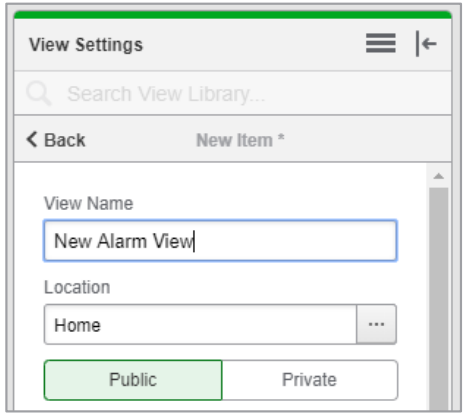
PSO 2020 Alarms Deep Dive

PSO alarm permissions

Control user access and privileges







Administrators will have ability to control following:

- **Acknowledge** alarms
- **Create** new **alarm views**
- **Edit** any existing **alarm views** in system
- **Delete** any **alarm views** in the system
- Set **default** alarm view for the system
- Access to alarms application
- Ability to view incidents

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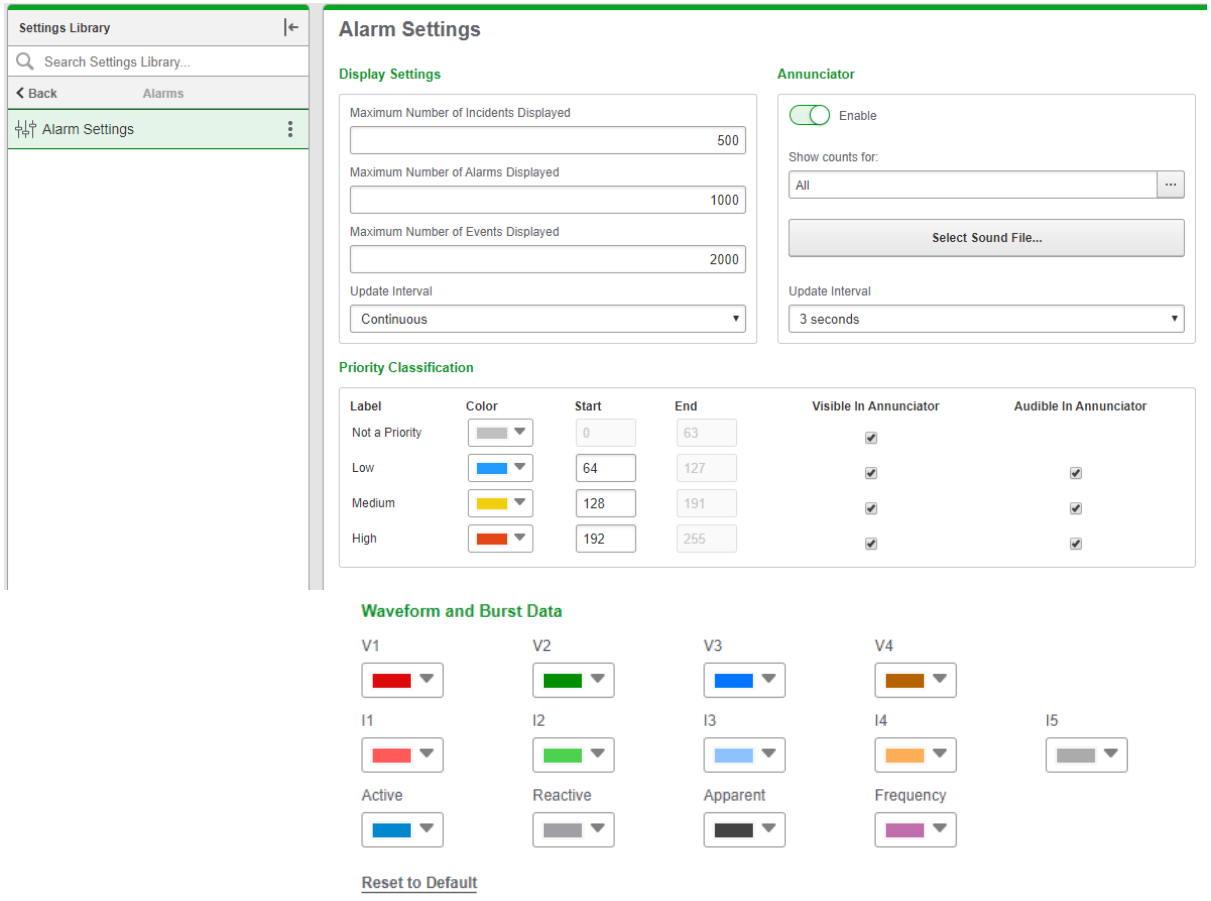
Configurable alarm settings

Alarm settings configurable in web interface



Various **system wide alarm settings configurable** by admin users in web interface

- Alarm display settings
- Waveform colors
- Alarm priority classification and colors

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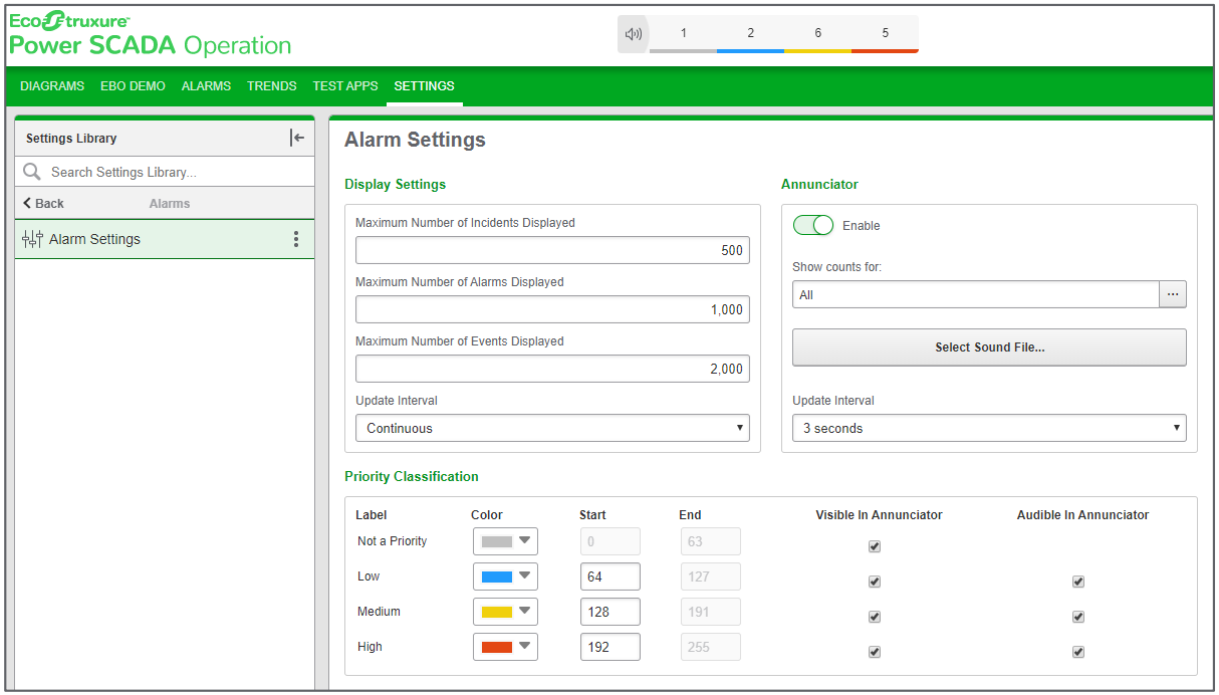
PSO 2020 Alarms Deep Dive

Alarm Annunciator

See system alarm state at a glance in banner



Ensure **awareness of new alarms** in your system at a glance and via **audio alerts**

Settings configurable by Admin users:

- Show/hide annunciator itself
- Sum of alarms by various priority levels & states
- Alarm sound
- Etc.

Ability to **navigate from annunciator to associated** view

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