

# Power SCADA Operation

Introduction & What's New in PSO 2020

PLUG Event / Toronto / October 17, 2019

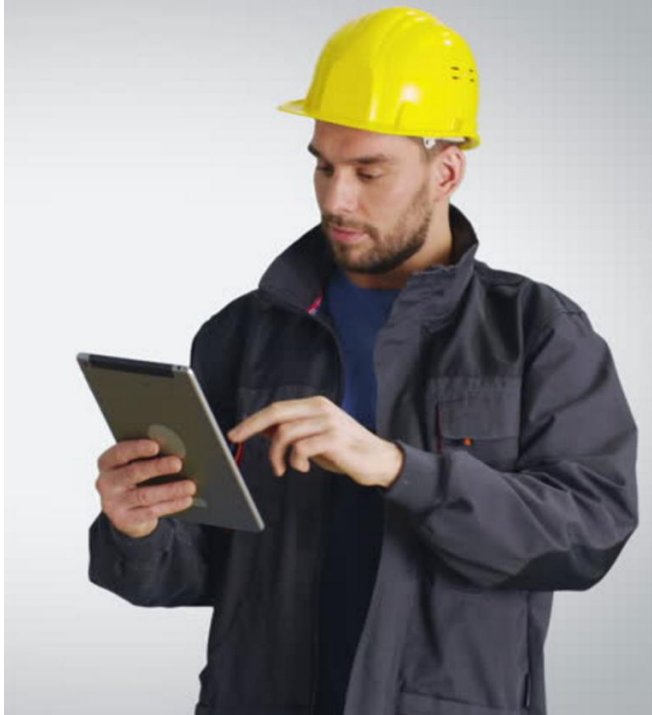
Presented by Rich Alexander – PSO Offer Manager

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# Some questions need quick answers...

Critical facilities and their critical questions



You get a phone call in the middle of the night from your boss telling you that portions of your **critical facility have lost power.**

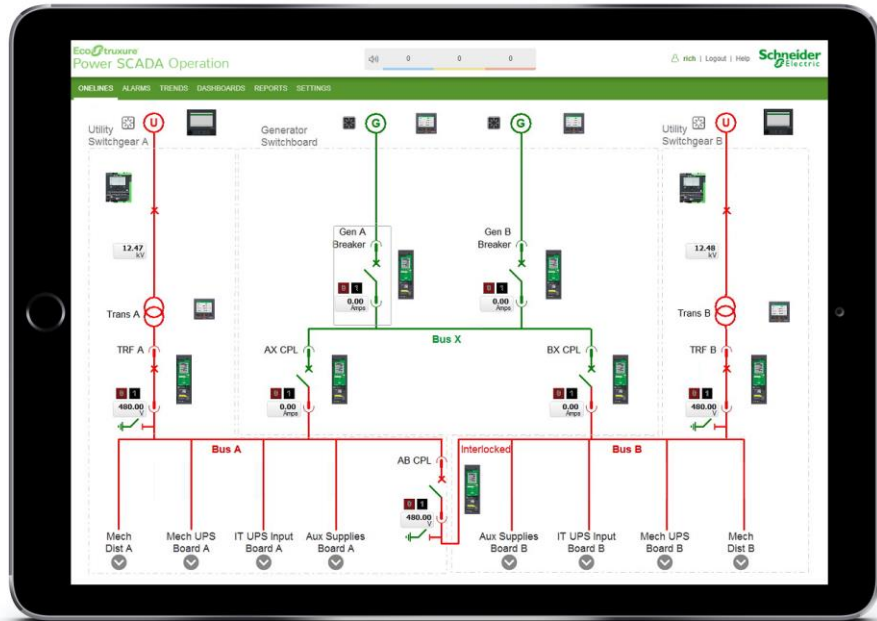
Each minute that power is unavailable your company is losing thousands of Dollars!

**How do you get answers quickly?**

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## Power SCADA Operation

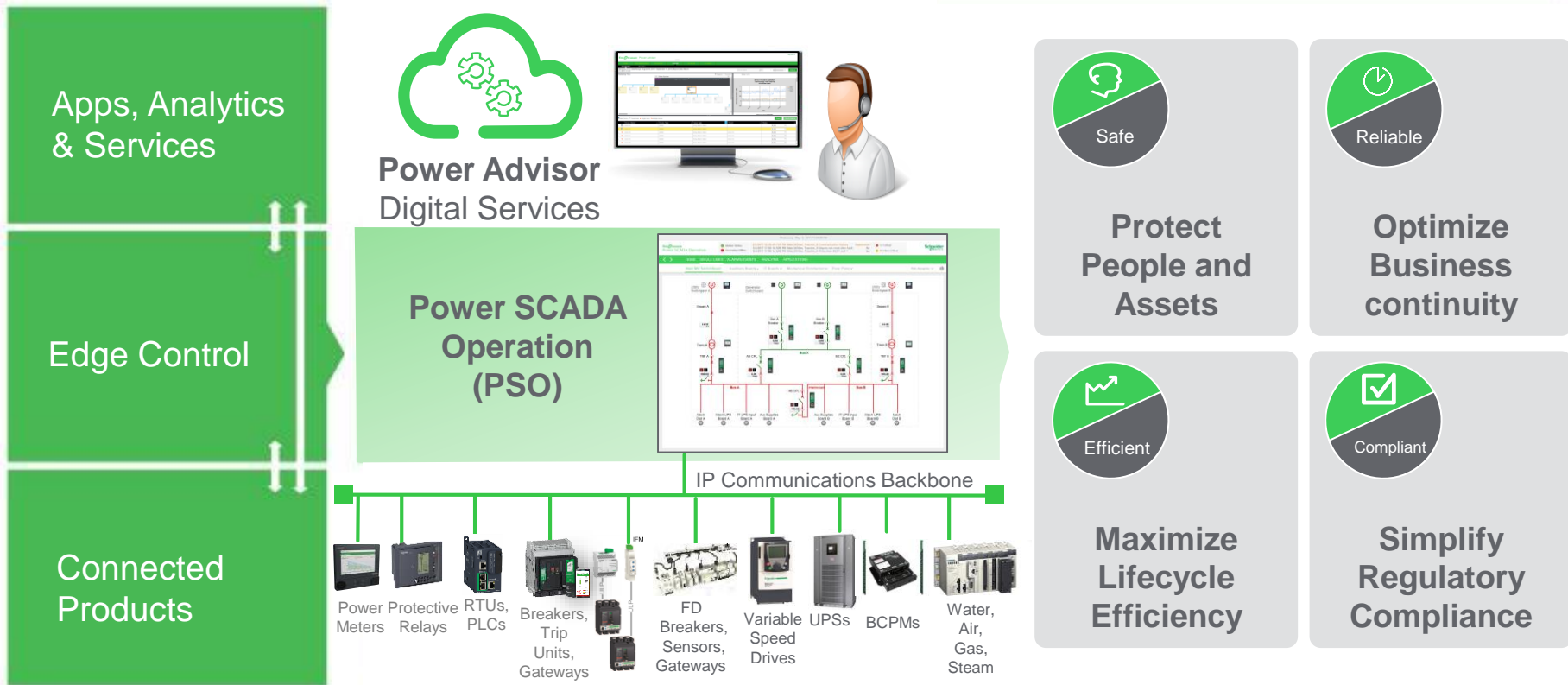


1 What is Power SCADA Operation

2 What's New in PSO 2020

# Innovation at Every Level: Power SCADA Operation

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

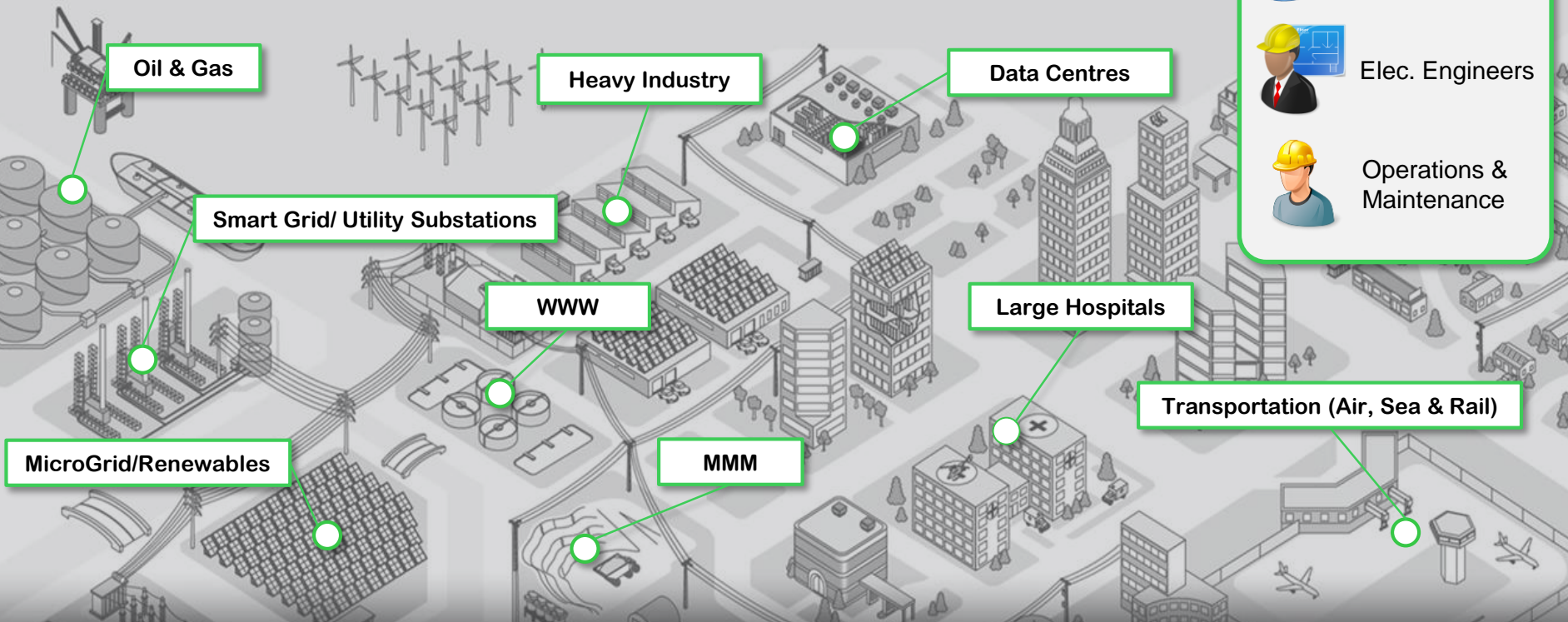


# Power SCADA Operation: Markets & Users

Mission Critical Facilities



-  Facility manager
-  Energy manager
-  Elec. Engineers
-  Operations & Maintenance



# EcoStruxure Power Edge Control Offers

PSO and PME

PME can be integrated with PSO as:  
**Advanced Reporting and Dashboards**

## EcoStruxure™ Power Monitoring Expert

### Standard Offer

1. **Configurable by end users**
2. Segment specific **historical applications**
3. Multi-user **Dashboards**

## EcoStruxure™ Power SCADA Operation

### Premium Offer

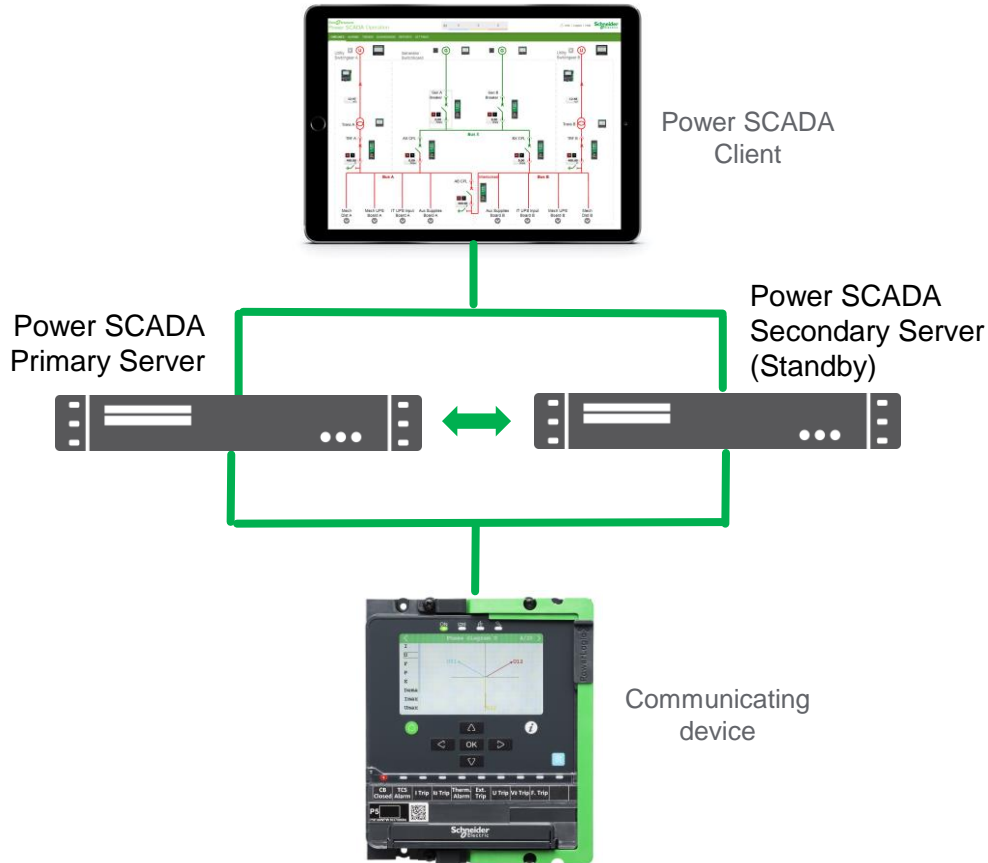
1. **Redundant architecture**
2. **Real time alarming** w/ largest systems
3. **Real time control** of critical loads
4. **Extensive protocol** support
5. **Highly customizable user experience**

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# Native Architectural Redundancy

Providing peace-of-mind that your system is reliable when the worst case scenario happens



No single point of failure

Redundant alarms and historical data

Full synchronization of data between servers

+ Support for redundant communications network

# Open Standard Protocols and Data Exchange

Large variety of protocols allows for vendor agnostic equipment communication

## Wide Range of Protocol Support



IEC61850 Edition 2



SNMPv2



## Open Data Exchange



### OPC support

- > OPC UA client
- > OPC DA v2 client & server
- > OPC AE v1 server

### Database connectivity

- > ODBC, OLE-DB, SQL

### Other Schneider Electric software

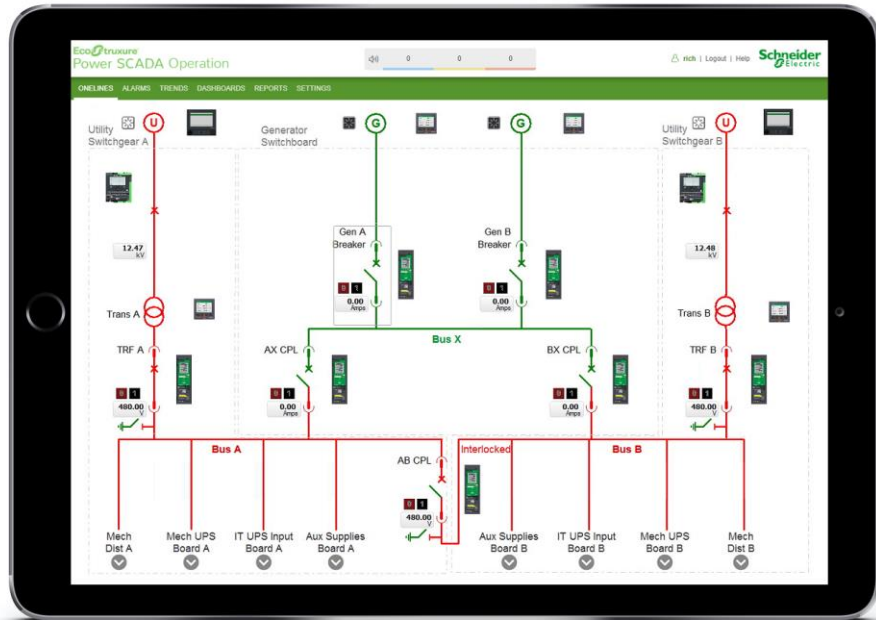
- > Web Services to integrate alarms with EcoStruxure Building Operation



## Power SCADA Operation

1 What is Power SCADA Operation

2 What's New in PSO 2020



# PSO 2020 Major Scope Themes

Available January 31, 2020



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A photograph of a control room with several operators at workstations. Large monitors display data and graphs. A green semi-transparent banner is overlaid on the image, containing white text.

# 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 3<sup>rd</sup> 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

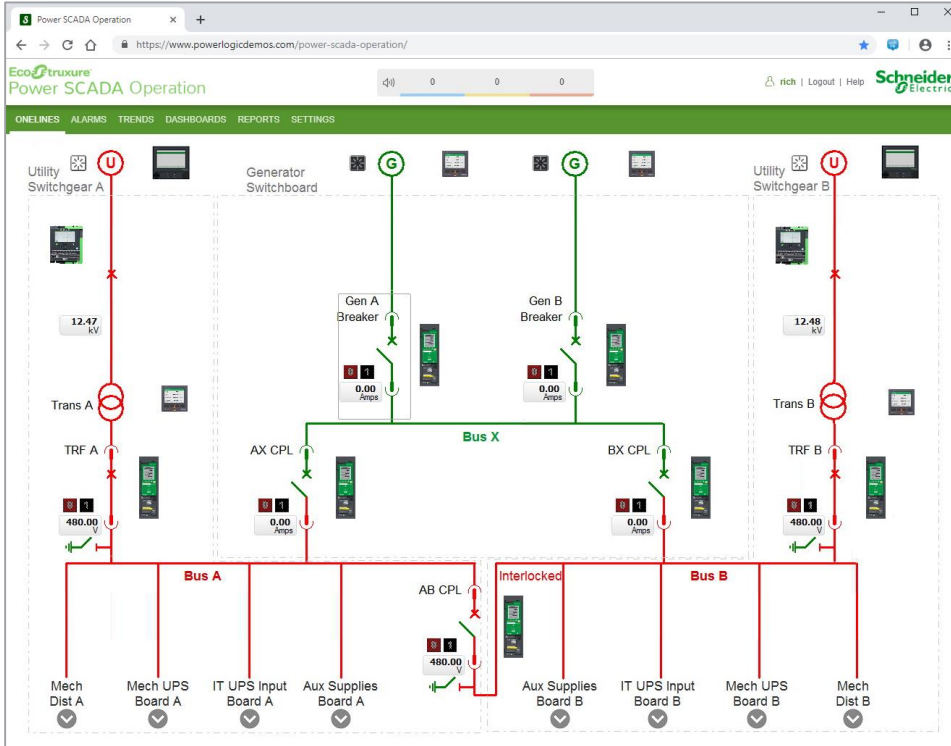
## #4 – EcoStruxure Consistency

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*)

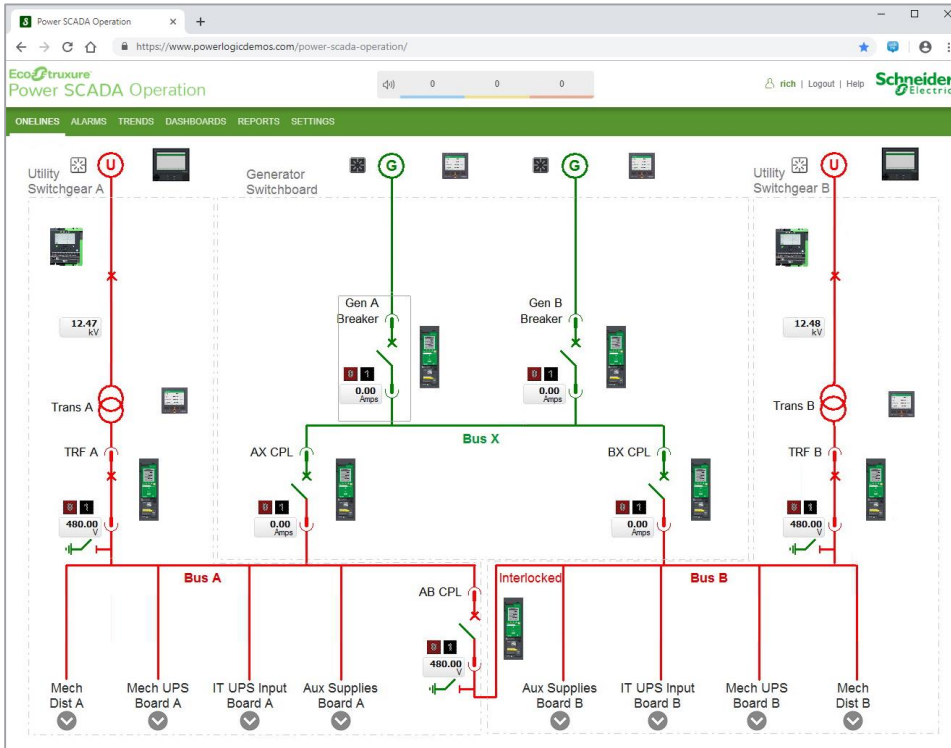
**Maintain clear image quality** when viewing from various screen resolutions and when performing pan/zoom

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# Next Generation PSO Web Client

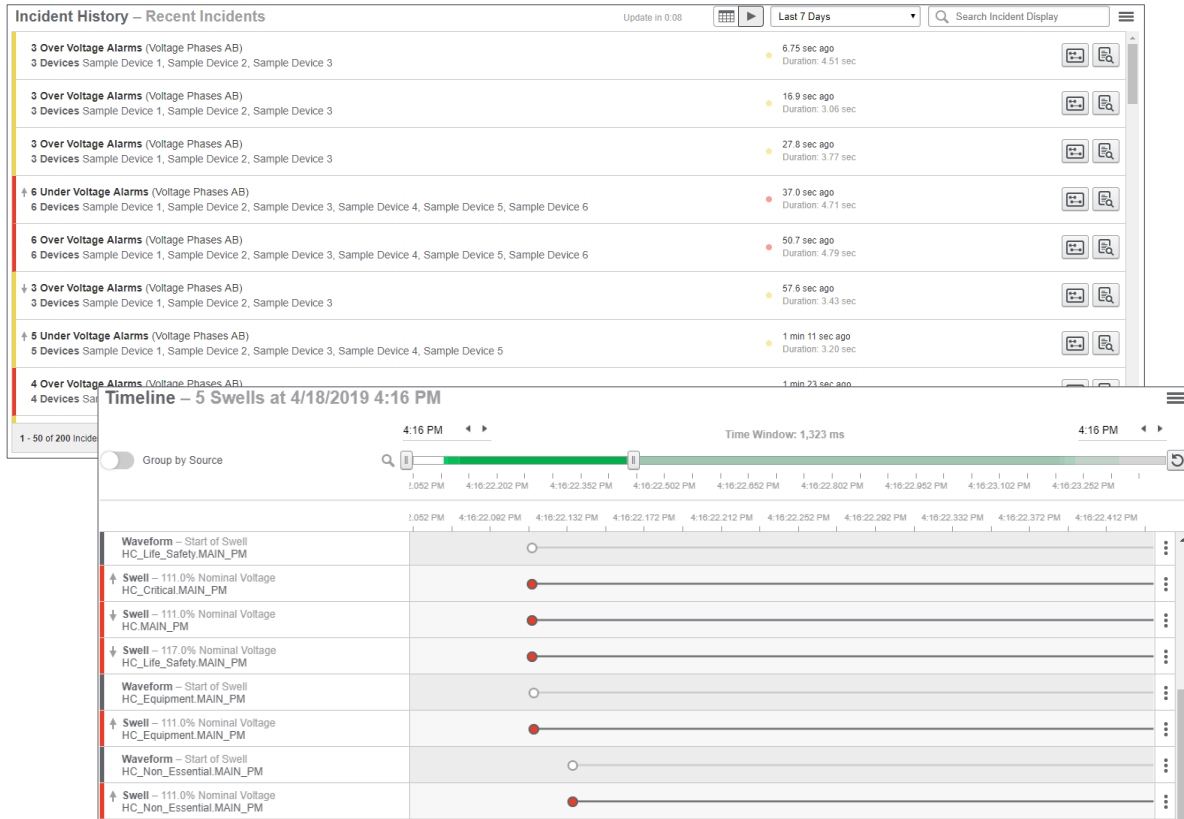
## Graphic features details



- “Reimagined” Intelligent One-Line Engine
- 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.

# PSO alarm aggregation

## New waveform viewer



View Settings | Incident History – Power Quality Incidents

Incident: Sag - 5 Devices - 1/26/2019 1:37:32.113 PM (Pacific Standard Time) - 2,491 ms

Details  
Alarms  
Events  
**Waveforms**

**Waveforms (5)**

1:37:32.113 PM

**Inspect** Utility.Main  
Saturday, January 26, 2019 1:37:32.113 PM

898.0 ms

Voltage (V) Current (A)

Start of Sag. V1: 86.0 %, 2,451 ms ↑

**Inspect** LV.Transformer16a  
Saturday, January 26, 2019 1:37:32.123 PM

898.0 ms

Voltage (V) Current (A)

Representative Waveform (Start of Sag). V1: 86.0 %, 2,454 ms ↑

**Inspect** LV.Transformer15

Close

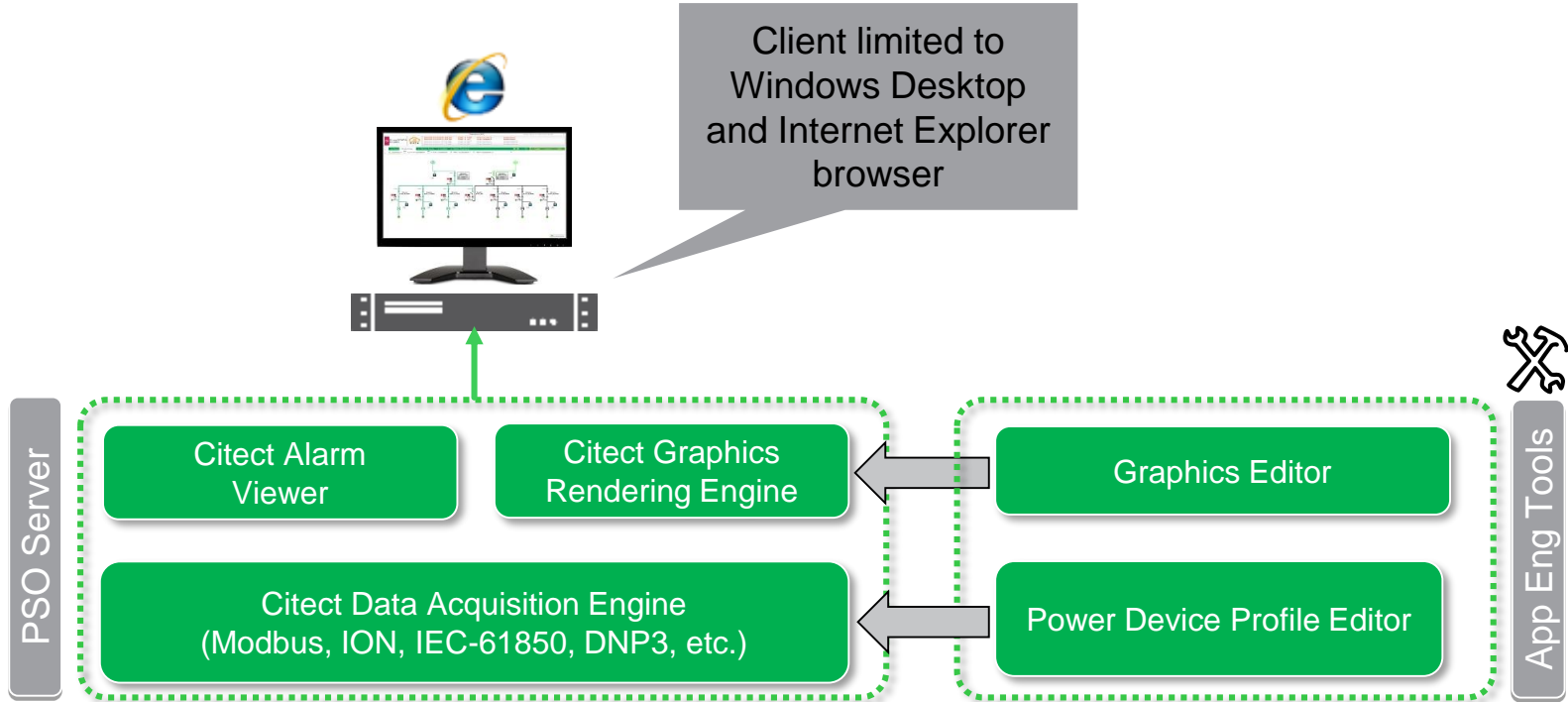
1 - 15 of 15 Incidents (Max records: 200) Lines/page: 50

**Tightly integrated HTML5 waveform viewer**  
**Allows operators to compare multiple waveforms**  
**Supports both ION and COMTRADE waveforms**



# PSO 9.0 Architecture

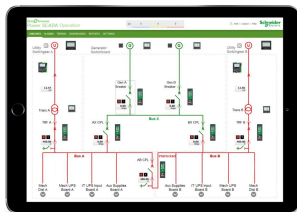
Before



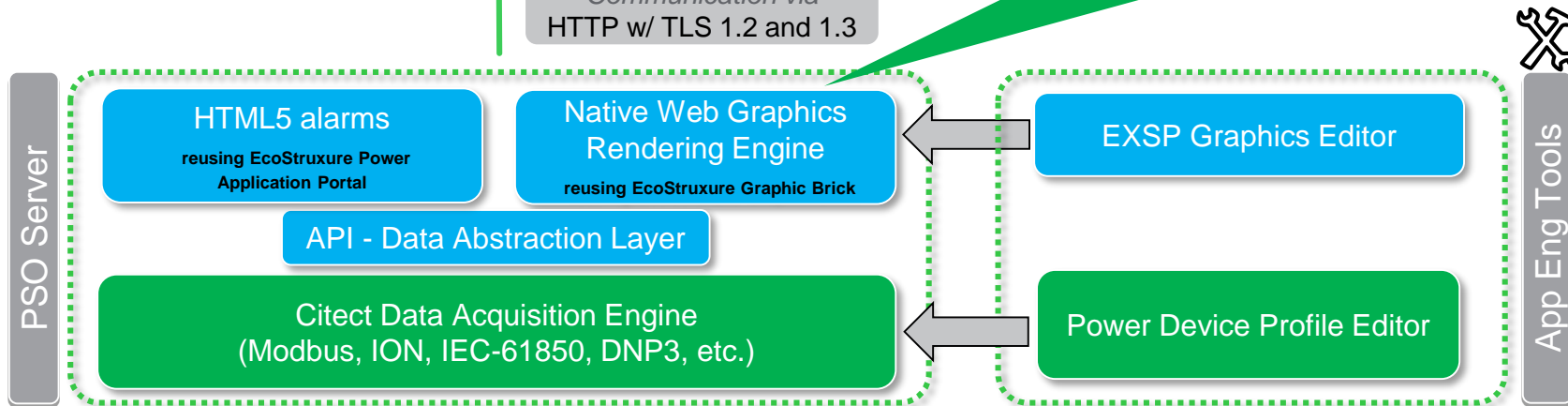
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# PSO 2020 Architecture

“Under the Hood”



Communication via  
HTTP w/ TLS 1.2 and 1.3



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A nighttime photograph of a cityscape across a river, with several bright lightning bolts striking the dark sky. The city lights are reflected in the water. A prominent white tower is visible on the left side of the river. The sky is dark blue and black, with multiple jagged white lightning bolts. A solid green horizontal band is overlaid across the middle of the image, containing the text "Microgrid Ready" in white.

Microgrid Ready

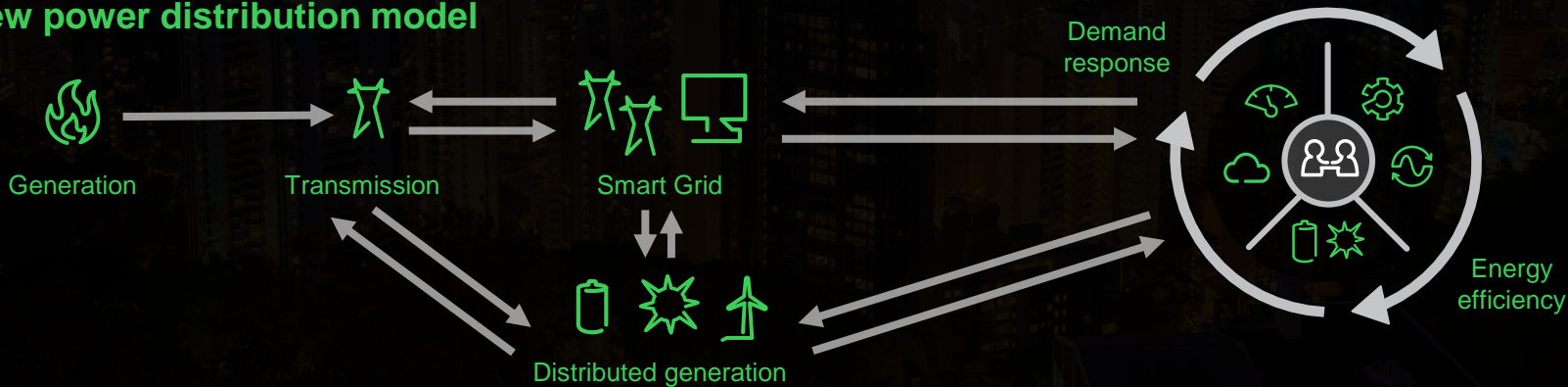
# Era of Disruptive Transformations in Power Distribution

## Distributed Generation

Traditional power distribution model



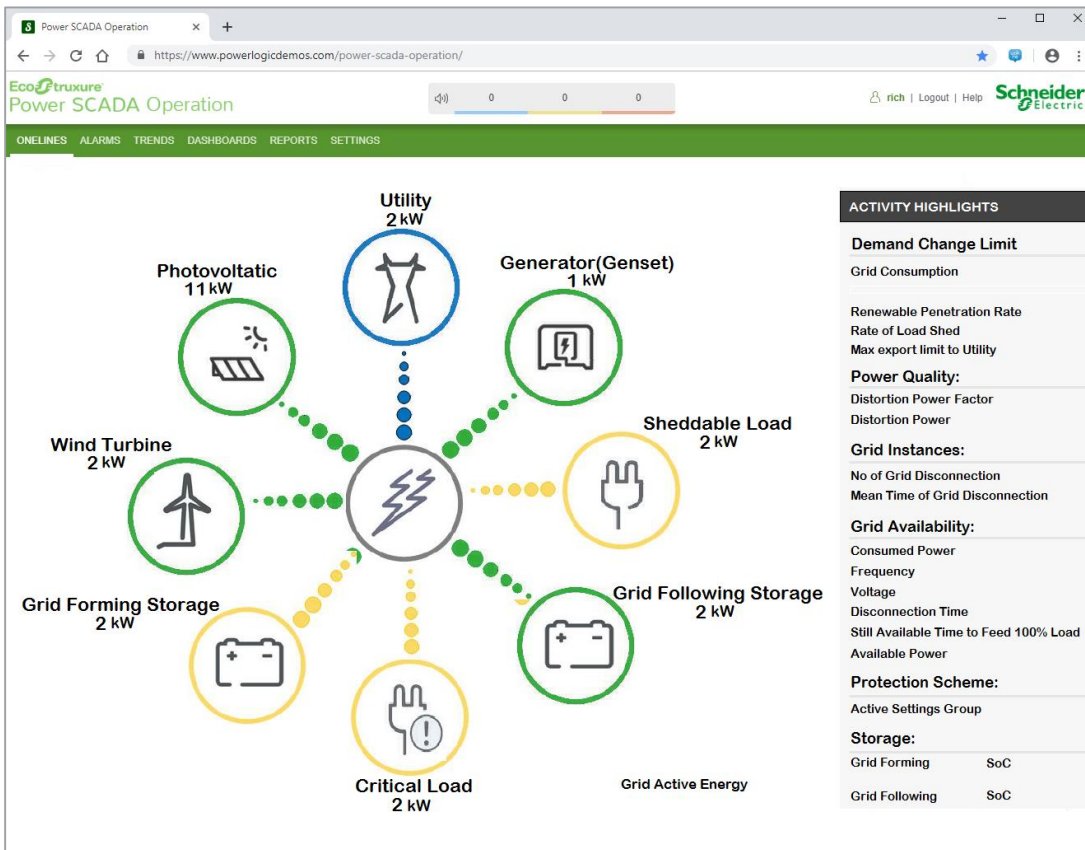
New power distribution model



# 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

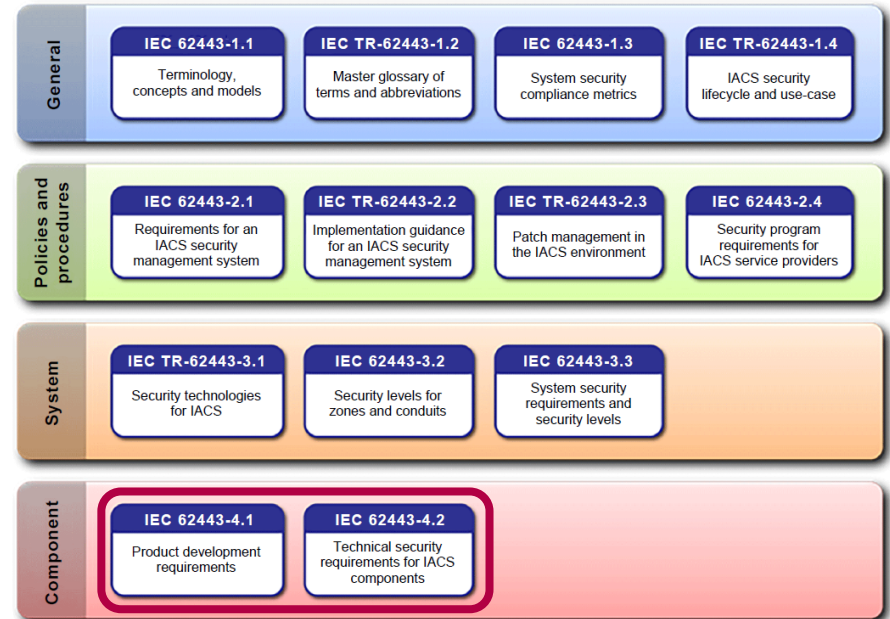
# Cybersecurity for the OT - IEC 62443

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



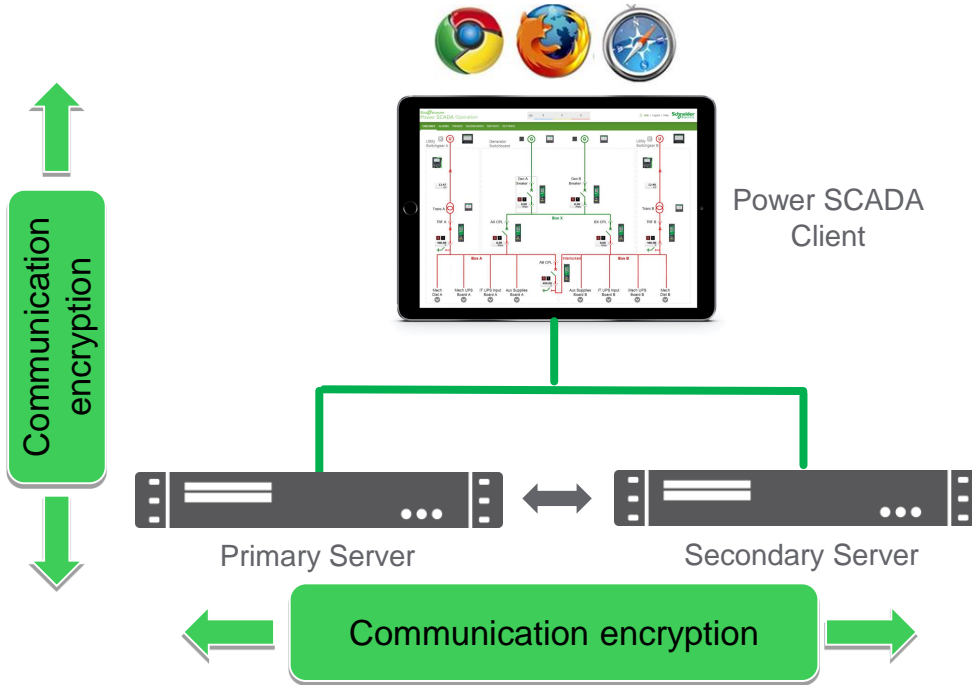
IEC

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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



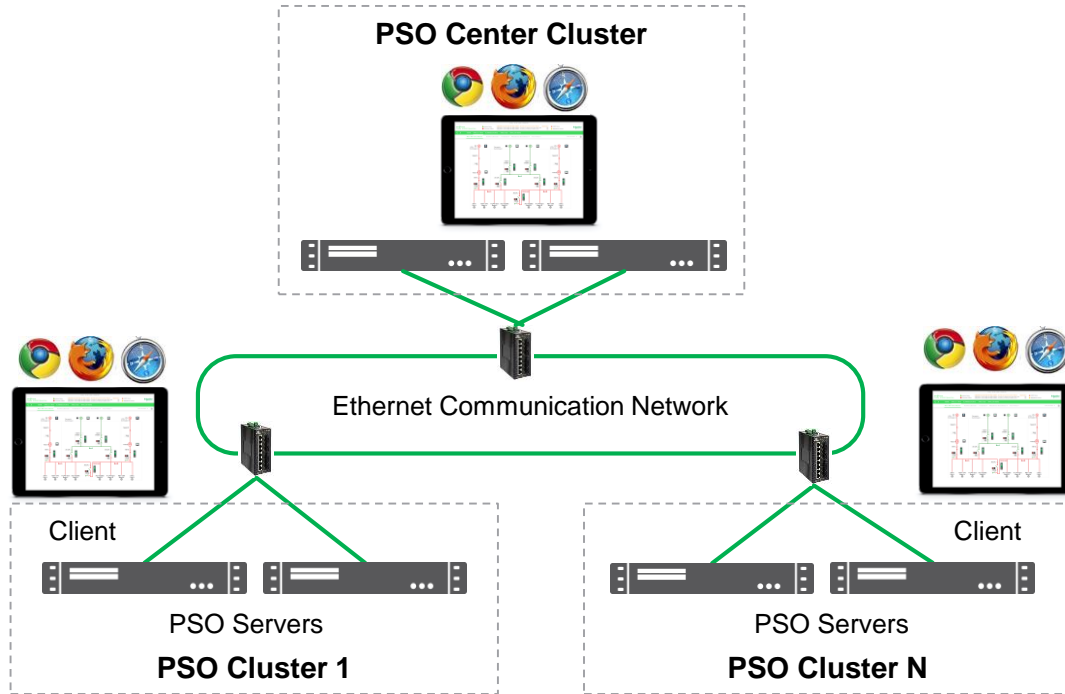


# Simpler Multi-cluster Deployments



# Multi-cluster architecture

Monitor multiple PSO systems from single client

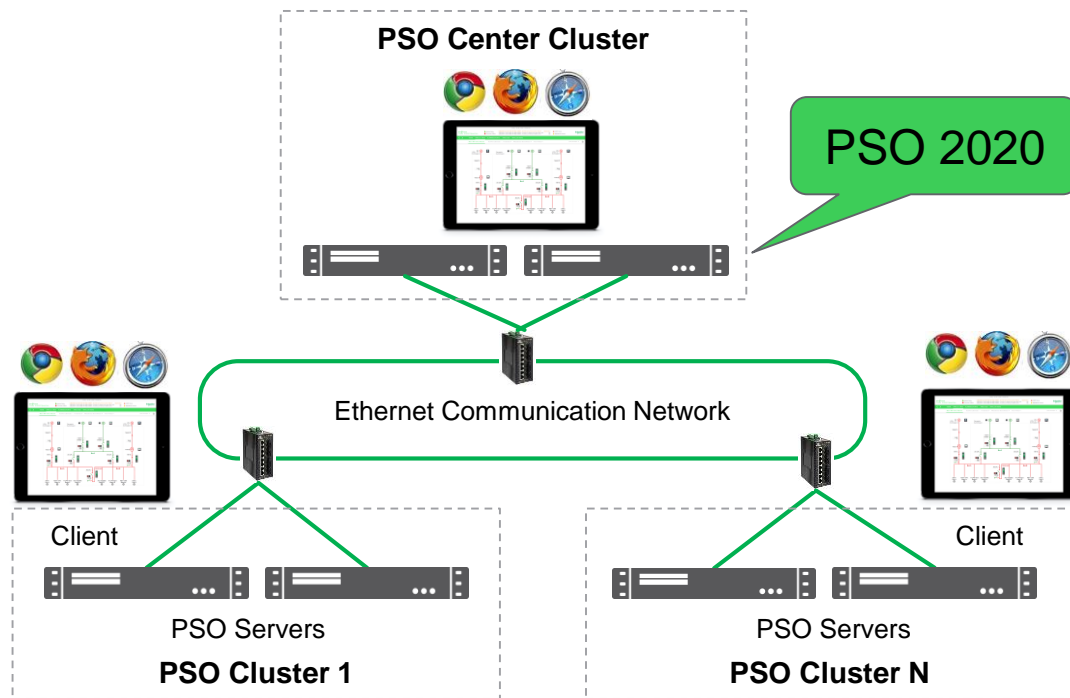


**Monitor and control multiple independent systems** from single runtime client for geographically co-located customers

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

# Multi-cluster architecture

Flexibility to mix product versions for simpler system management



**Simpler system management**  
with flexibility to **mix product**  
**versions** amongst clusters

**PSE 8.2**



# 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...*



**EcoStruxure™**  
Innovation At Every Level

And Even More Connected Devices!

# Even more native Modbus drivers

Connecting to our other 'Hero Offers'



- Easergy P3
- ASCO 7000
- MTZ v3.0
- IFL
- PM2000
- T300

**MasterPact<sup>®</sup> MTZ**  
**FUTURE READY**



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A photograph of a woman and a man in a modern office environment. The woman, in the foreground, has long dark hair and is wearing a brown top and grey skirt, leaning on a metal railing. The man, behind her, is smiling and wearing a light-colored shirt. Large windows in the background let in bright light, creating a professional and positive atmosphere.

# Commercial Updates

OS, SQL, Availability Dates



# 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)

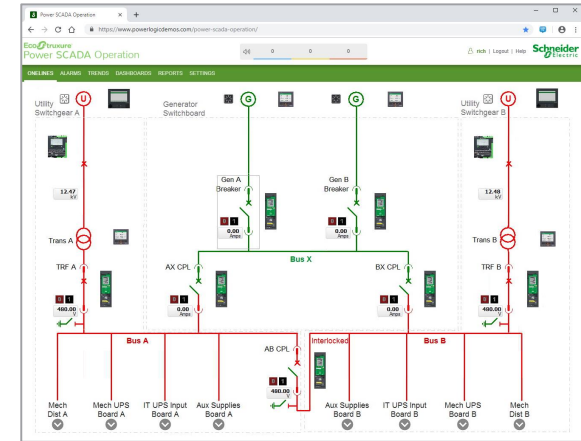
- SQL Server 2012 Express/Standard/Enterprise/Business Intel., SP2
- SQL Server 2014 Express/Standard/Enterprise/Business Intel.
- SQL Server 2016 Express/Standard/Enterprise/Business Intel.
- SQL Server 2017 Express/Standard/Enterprise/Business Intel. *(included with Advanced Reporting)*

# 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 end of **January 2020**

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