



GRID
PROTECTION
ALLIANCE

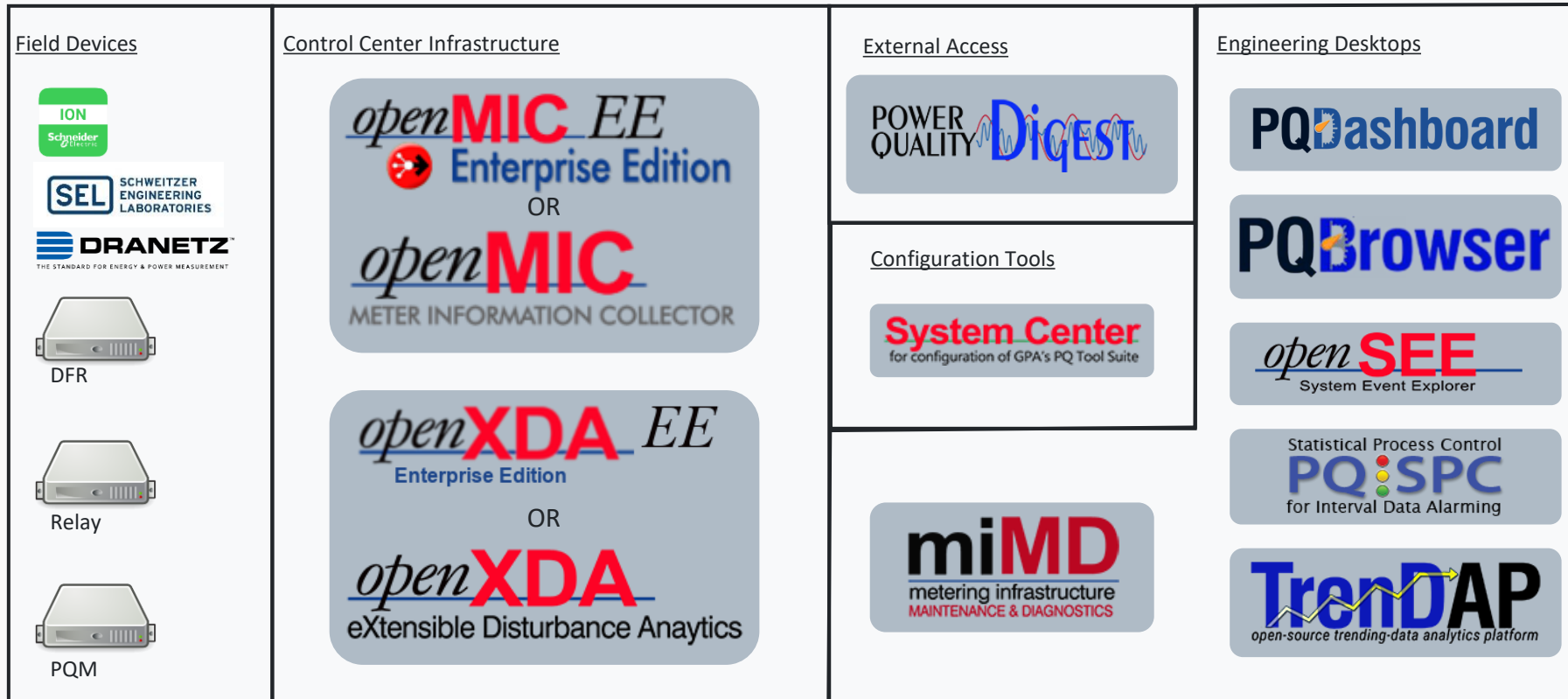
**PQDashboard
User's Group**

open **MIC** *open* **XDA**
System Center **miMD**
open **SEE** **System Event**
Browser
TrenDAP **POWER QUALITY** **Digest**

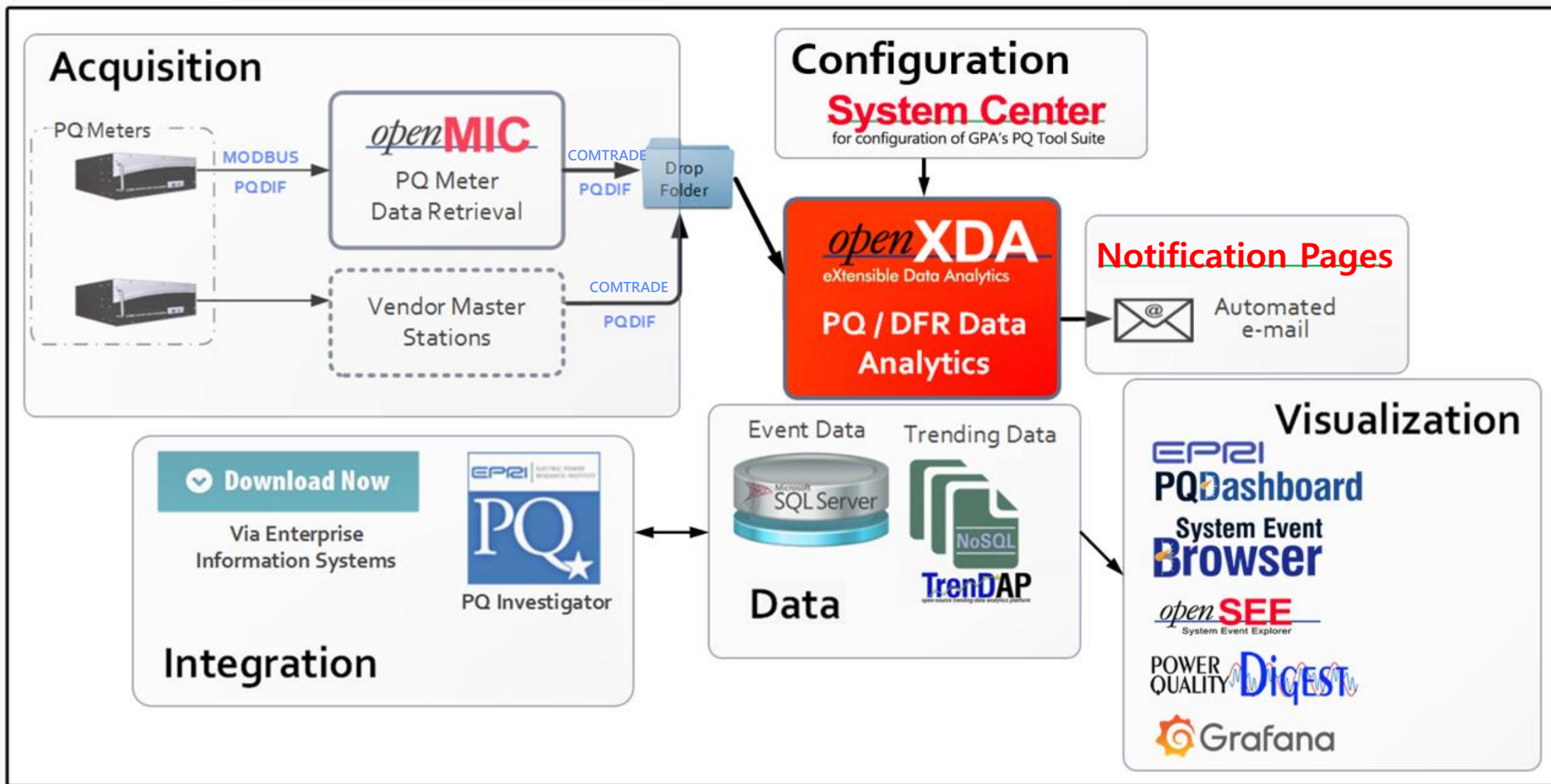


The openXDA-PQ Dashboard Suite

openXDA Suite of Tools



Our applications are involved in all stages of the data lifecycle.



The top-left screenshot shows the 'Home' page of the openMIC web interface. It features a navigation bar with links to Home, Devices, Configuration, Monitoring, Settings, and Help. A 'Quick Links' section on the left includes buttons for Devices, Status, Connection Profiles, Output Mirrors, Add Modbus Mapping, Manage I-Grid Connections, Real-time Measurements, and Restart Service. The main content area displays 'System Health' with a table of counters and their values.

The top-right screenshot shows the 'Status' page, which includes a search bar and a list of records. The records show various devices and their status, with a highlighted entry for '161-CAP_5_RELAY'. Below the list, there is a log of events, including connection profile tasks and connection profile execution.

The bottom screenshot shows the 'openMIC Manager' interface. It includes a 'Quick Links' section with buttons for Add New Device, Browse Devices, View Device Outputs, Graph Measurements, and Stream Statistics. The main content area displays 'System Overview' with a graph and a table of system health data. The table includes columns for Counter, Last, Average, Maximum, and Units. The data is categorized by Instance Type (64-bit), Server Time, Local Time, Current User, Version Information, and Database Information.

Vendor-agnostic PQ data collection tool using FTP as a primary protocol.

Download event, trend, configuration*, and diagnostic* data from field devices.

Supports vendor-proprietary protocols with Enterprise Edition subscriptions:

- BEN
- ION
- Dranetz
- SEL (beta)

The openXDA application automatically discovers, parses, analyzes and saves both raw data and analytic results from data captured from field devices. openXDA runs as a back-office service watching for new event or interval data files. After analyzing the data in these files, openXDA produces emails and raises alarms based on meter data quality and/or the nature of the system event that triggered the substation device.

The event waveform data processing pipeline includes:

- Event identification
- Event cause probability identification
- Event classification
- Sag/Swell analysis
- Identification of related events recorded by other devices
- Other relevant event analysis

The interval (trend) data processing pipeline includes:

- Collecting daily statistics
- Triggering configured alarm thresholds as appropriate
- Collecting data completeness information
- Collecting data quality information, including identifying latched values and engineering reasonability checks

System Center

for configuration of GPA's PQ Tool Suite

Configuration for openXDA, PQ Browser, openSEE, and miMD with more apps to come.

Replaces dD Tools and most direct database updates.

Provides insights into system health and other metrics.

The screenshot displays the openXDA System Center web interface. The top navigation bar includes the openXDA logo and a 'Sign out' link. The left sidebar contains a 'System Center' menu with sections for 'MONITORS AND ASSETS' (Meters, Substations, Assets, Asset Groups, Line Segments, Customers, Device Health Report), 'FILE PROCESSING' (Data Files, Data Operations, Data Readers, MATLAB Analytics, Database Cleanup), and 'EXTERNAL LINKS' (Version 3.0.545.69). The main content area features a search bar with 'Search Name' and 'Add Filter' buttons, showing 'Found 22 Meter(s)'. Below the search bar is a table with columns: Name, Key, Substation, Assets, Make, and Model. The table lists various meters and assets, including '02-08-24-Test', 'Bludhaven 13-T1', 'Bludhaven 13-T2', 'Bludhaven 13-T3', 'Central City 161-B1044-Caps', 'Central City 161-Cap 1 Relay', 'Central City 161kV Line', 'Coast City AHM', 'Digitals Test', and 'EMAX Event Test'. At the bottom of the table, there are 'Previous', '1', and 'Next' navigation buttons.

Name	Key	Substation	Assets	Make	Model
02-08-24-Test	02-08-24-Test	02-08-24-Test	1	Schneider	Ion 6589
Bludhaven 13-T1	Bludhaven 13-T1	BLUDHAVEN	1	Schneider	ION 8650
Bludhaven 13-T2	Bludhaven 13-T2	BLUDHAVEN	4	Schneider	ION 8650
Bludhaven 13-T3	Bludhaven13-T3	BLUDHAVEN	2	EMAX	ION 8650
Central City 161-B1044-Caps	Central City 161-B1044-Caps	CENTRAL CITY SS	14	Dranetz	61000
Central City 161-Cap 1 Relay	Central City 161-Cap 1 Relay	CENTRAL CITY SS	1	Dranetz	61000
Central City 161kV Line	Central City 161	CENTRAL CITY SS	3	APP	601
Coast City AHM	Coast City AHM	COAST CITY	3	APP	601
Digitals Test	Digitals Test	Digitals Test	1	Schneider	Ion 6589
EMAX Event Test	EMAX Event Test	Test Name	1	EMAX	Ion 6589

Notification Pages

← Notification Pages

Sign out

Subscribe

Subscribe to Event

Subscribe to Report

My Subscriptions

Event Notifications

Contact Info

All Subscriptions

Event Notifications

System Settings

Email Categories

Event Notifications

Reports

Cell Carrier

Version 3.0.539

Subscribe to an openXDA Event Notification

○ Select Notification

○ Email

○ Success

Step 1: Select A Notification

Asset Group

Other

Notification Category

Event

Notification Template

Event Email

Name	Num. Meters	Num. Assets
AllAssets	22	84

[Swell] Indianapolis

From: openXDA@gridprotectionalliance.org
To: elwills@gridprotectionalliance.org

Swell detected at 2025-03-04 21:12:15.2858080
Station: Indianapolis
Meter: Indianapolis
File: event-20250304T2112152858080.dat
Voltage: 500 kV
[Click to view in PQ Browser](#)

Indianapolis - Voltage

Indianapolis - Current

Voltage Disturbances:

Start	21:12:15.5251960	21:12:15.5354824
Type	Swell	Transient
Phase	CN	CN
Magnitude	1.3	1.449
Duration	19 ms (1.12 cycles)	55 ms (3.32 cycles)
Severity	1	2

To manage your automated event notification subscription, or to unsubscribe, click on this [link](#).

Ultra-custom email templates that can be sent on a schedule or triggered.

Self-subscription made easy.

Replaces dD Config Email functionality.

PQ Visualization

System Overview

PQDashboard



Event & Trend Search

PQBrower



Waveform of Focus

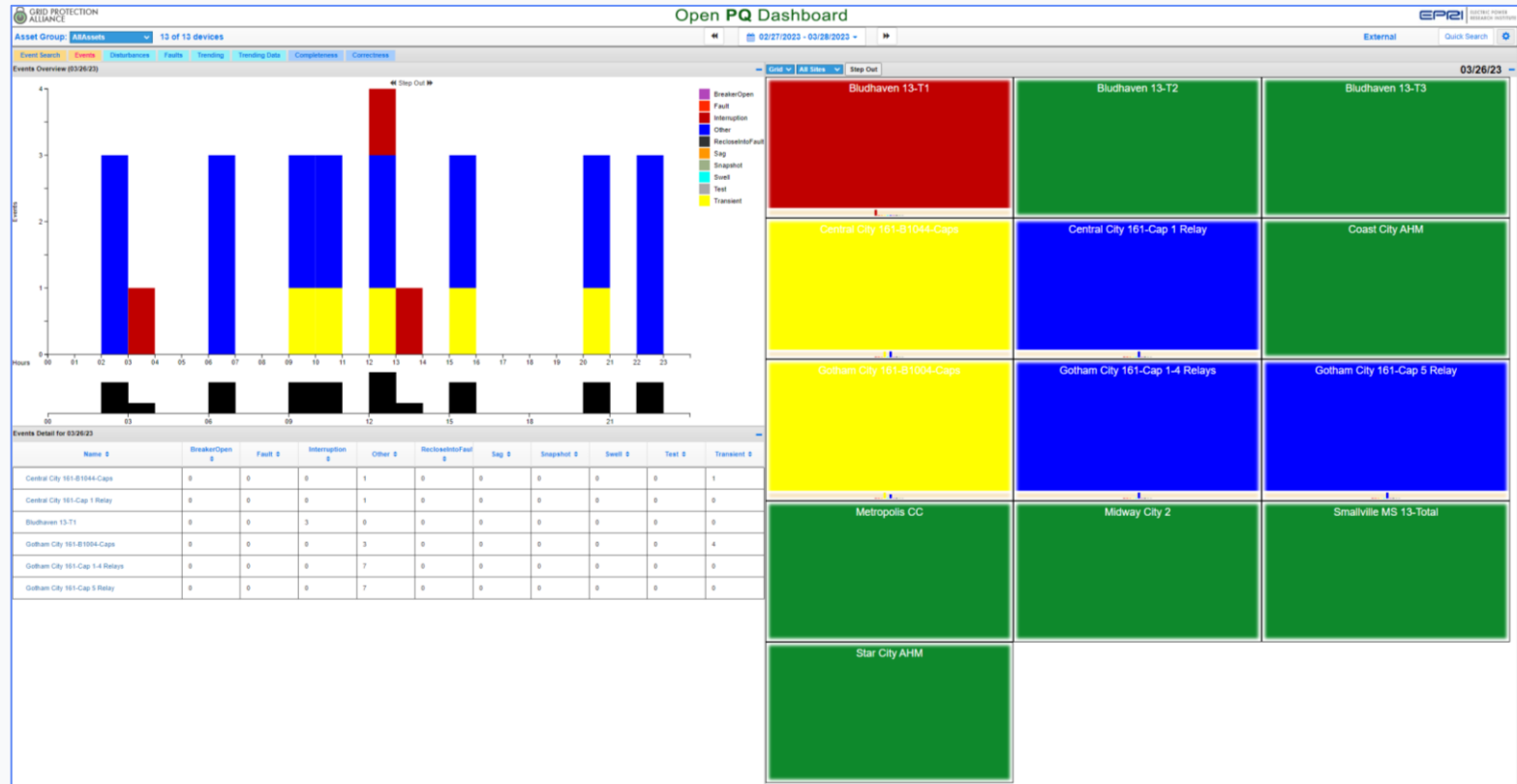
open **SEE**
System Event Explorer

- View the results of openXDA's analysis in stats tables, charts, and waveforms.
- From wide area down to single waveform focus.
- Rebranding of SE Browser to PQ Browser as its functionality expands.

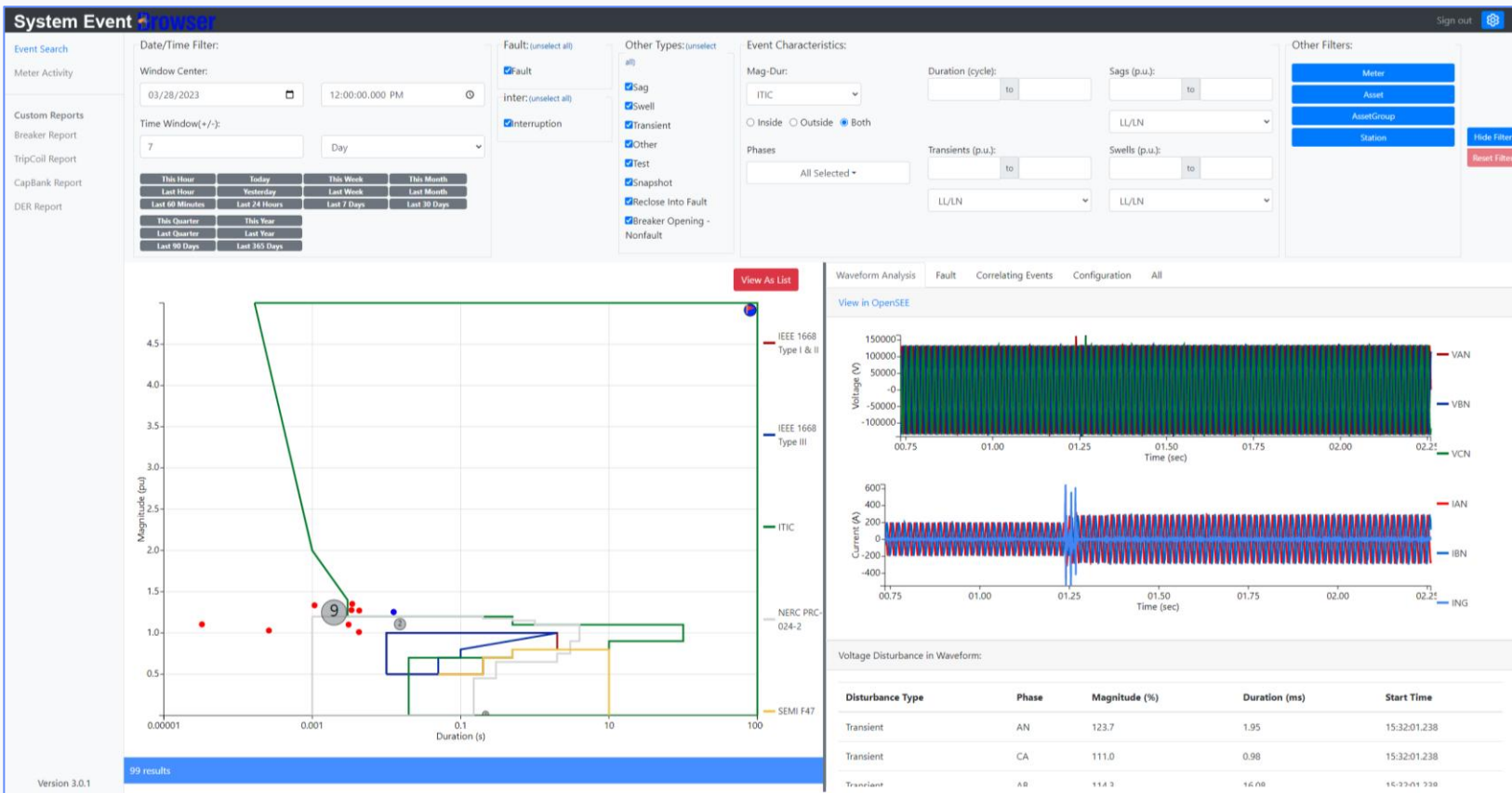
PQDashboard

View various types of events, trending alarms and data, and data health metrics across your entire PQ system.

Includes a map feature to view how a single event affects your wide-area grid.



PQBrowser - Event Search



Search and drill into specific events with an assortment of available configurable widgets and reports.

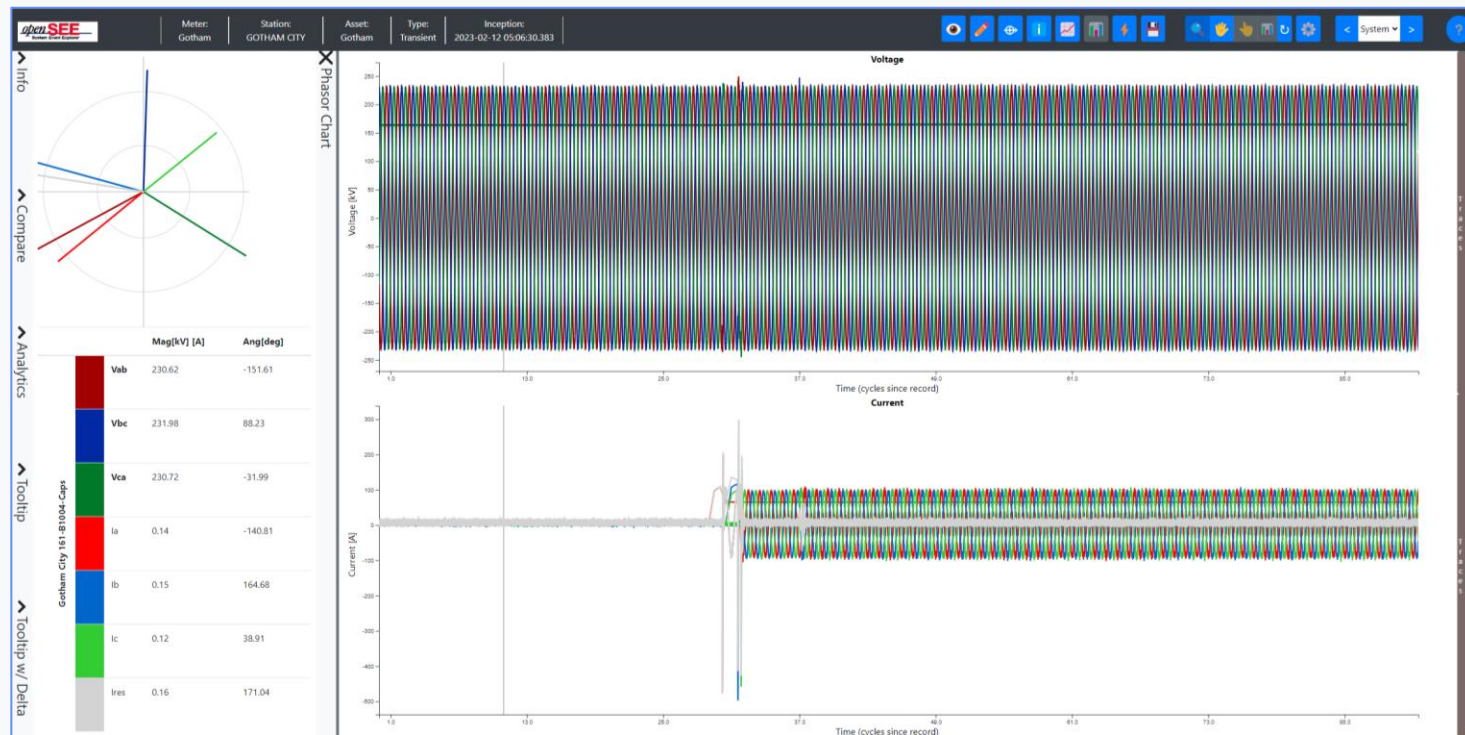
The built-in Magnitude-Duration Chart shows all the applicable events in your search plotted with both standard and user-definable curves.

PQBrowser - Trend Search

Plot trend data on the fly by meter or preconfigured channel groups.

Configure nearly every aspect of the plots, then save as pictures or pdf for easy reports.





View a waveform-of-focus with tools to show detail and share it with others with a URL formatted to show exactly what the user saw, including zoom levels and analytics.


Compare time-correlated events and run a variety of ad-hoc analytics with ease.

Set alarms on trend values to view in PQ Dashboard or trigger an email from Notification Pages.


Alarm groups allow configuration of channels with similar limits.

View alarm statistics on channel groups, meters, and individual channels.

Daily alarm counts can be viewed in the PQ Dashboard “Trending” tab.


Statistical Process Control
for Interval Data Alarming

[Home](#)
[New Alarm Group](#)
[Meter Overview](#)
[Channel Overview](#)

[Log Out](#)


Add Filter

Name	Meters	Channels	Alarm Severity	Time in Alarm
Alarm Group	0	0	Severe	N/A
Central City	2	6	Severe	N/A
Gotham	2	6	Severe	N/A
V RMS Upper	1	3	Severe	N/A
Voltage RMS Threshold	6	18	Info	N/A

Last Alarm
03/16/2025 00:00

Status
Not Active

Duration
24h 50m

Meter
Central City 161-B1044-Caps

Channel
V RMS C

Alarm Type
Triggered when setpoint is exceeded

Edit AlarmGroup

Previous
1
Next

miMD Sign out

Search: Search Meter Add Filter Found 4 Meters

Meter	Model	Make	Date Last Changed
Smallville MS 13-Total	ION 8650	Schneider	09/09/24 10:08 CT
Coast City AHM	601	APP	09/06/24 16:22 CT
Star City AHM	601	APP	09/06/24 16:22 CT
Bludhaven 13-T1	ION 8650	Schneider	10/10/23 15:58 CT

Configuration Files:

File	Last Write Time	# of Changes
Config.ini	09/09/24 10:08 CT	1

Config.ini History: Show Files w/o Changes

Last Write Time	# of Changes	File	Diff
09/09/24 10:08 CT	1		
09/06/24 09:59 CT	1		

Config.ini

```
[Alert 1]
ALR1 Message=Rapid Voltage Fluctuation Alarm
ALR1 Priority=128
ALR1 Destination=support@gridprotectionalliance.org
ALR1 Type=Email
ALR1 PageNum=
ALR1 Com Port=Ethernet
ALR1 Attempts=3
ALR1 Retry Time=15
ALR1 Lockout Time=0
ALR1 Location=Network Meter Name
ALR1 ModemInit=AT QDVEIO
ALR1 Email From=RVAlert@LW-1402A316-01[Analog Out 1]
AO1 Zero Scale=1
AO1 Full Scale=100
AO1 Port=NotUsed
[Analog Out 2]
AO2 Zero Scale=1
AO2 Full Scale=100
AO2 Port=NotUsed
[Analog Out 3]
AO3 Zero Scale=1
AO3 Full Scale=100
AO3 Port=NotUsed
[Analog Out 4]
AO4 Zero Scale=1
AO4 Full Scale=100
AO4 Port=NotUsed[Clock 1]
CL1 TZ Offset=-21600
CL1 DST Start=1:1299981600
```

miMD Sign out

Search: Search Name Add Filter Found 8 Meters

Meter	Model	Make	Status
Star City AHM	601	APP	Inactive
FORTTEST	Ion 6589	Schneider	Inactive
Central City 161KV Line	601	APP	Inactive
Coast City AHM	601	APP	In Compliance
Bludhaven 13-T2	ION 8650	Schneider	Compliance Issue
Bludhaven 13-T1	ION 8650	Schneider	Acknowledged

Compliance Issue

Meter not in Compliance
180 Days

Add Compliance Issue
Submit Remedial Action Plan

Compliance Issue
09/18/24 21:09 CT
GPA\jwells

Version 0.0.0.78

Monitor meter configuration and diagnostics. View configuration and diagnostic files and compare changes.

Set rules for alerting and tie them to email triggers in Notification Pages.

Configure PRC-002 monitoring with automated logging to maintain compliance.