



openXDA

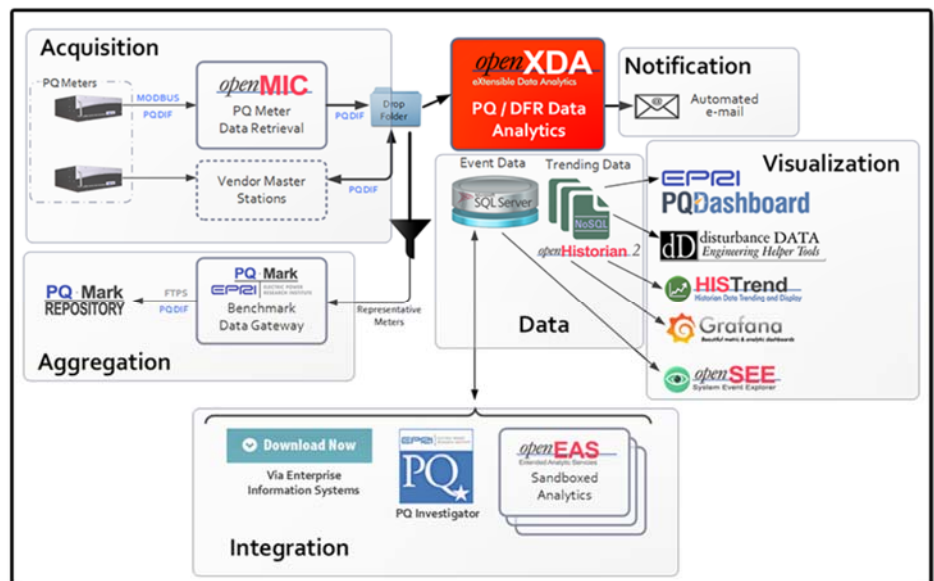
Automated event file processing

openXDA analyzes files from disturbance recorders.

openXDA automatically detects the availability of new data from field monitoring devices such as DFRs, PQ monitors, and digital relays, and then processes this data — identifying faults and PQ phenomena. *openXDA* analytic results and raw waveform data is placed in a relational data base to enable enterprise data accessibility and use.

Business Value

As seen in the figure below, *openXDA* is the automation engine within the suite of GPA open source tools for disturbance data management. *openXDA* processes event and trending data files produced by substation devices, analyzes this data, and places data into a open relational data base for visualization and enterprise use.



openXDA Benefits

- Automation of routine event processing frees engineering staff to manually analyze only the most complex events
- Enables internal benchmarking through a consistent analytic approach to processing all event records.
- The *openXDA* database provides enterprise access to raw waveform and analytic results via browser-based tools
- Produces email notifications of events
- Reports on data availability and quality

openXDA detects and processes each new disturbance record as soon as it is available and eliminates any delay in obtaining results that could occur when staff are not immediately available to analyze the record.

openXDA performs calculations automatically on every record, notifies designated personnel in near real-time, and builds a database of the results. These automatic notifications allow staff to take action much more quickly.

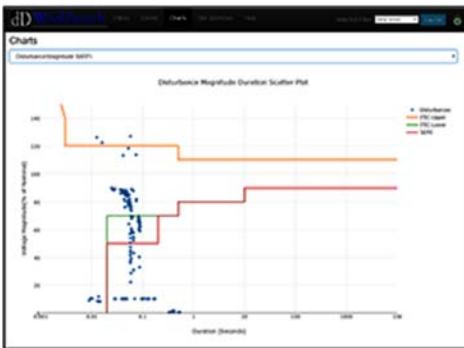
openXDA results are consistent, predictable, and repeatable and it provides utilities the assurance that the disturbance results that yield the highest value will be available to customer services and engineering staff.

Automated File Processing

- openXDA runs in the background as a Windows Service watching for new files or changes in the database that contains input data
- Analytics are performed on every input record and results placed in the openXDA database
- Automated notifications such as email reports can be generated according to predefined logic and sent to specific recipients for each reporting device
- openXDA supports industry standard formats such as COMTRADE and PQDIF as well as many native vendor-specific formats
- openXDA architecture supports “input adapters” to accommodate new waveform file formats

dD disturbance DATA

Magnitude-Duration Scatter Plot



The Benefits of Open Source

All GPA software is Open-Source Software (OSS) published on GitHub under the permissive MIT license.

With OSS, risks and costs are reduced. There is no vendor lock-in, software can be tested in-situ prior to making business commitments, and systems can be easily adapted to meet changing requirements. Unlike commercial software, OSS is peer reviewed to assure reliability, stability and security.

Analytic Features

- Out of the box, openXDA performs single and double-ended fault location and detects voltage sags, swells and interruptions.
- Breaker timing can be validated against the manufacturer's specifications.
- Analytics within openXDA are structured so that new algorithms and functions can be easily updated or new functions added.

Product Maturity

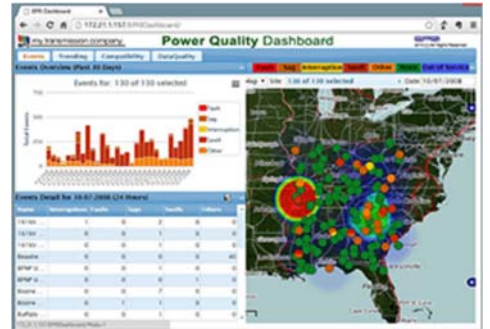
openXDA and its companion products have been in production use supporting large-scale deployments at several utilities for over three years.

Related GPA Products

- [Disturbance Data Tools](#) (dD Tools) are a suite of browser-based applications that are built into the openXDA service. These include application configuration tools and engineering data display and data editing tools.
- The EPRI [PQDashboard](#) is an enterprise grade, browser-based disturbance data visualization system that enables users get an overall perspective on disturbances and then easily reduce information to focus on trouble spots.
- [openSEE](#) is an interactive browser-based wave-form display and analysis tool used to display data from the openXDA data base.
- [PQDIF Explorer](#) enables power users and developers to verify PQDIF file standards compliance and to view all data placed in PQDIF formatted files. PQDIF Explorer is a reference implementation of GPA's open-source PQDIF file parser — [openPQDIF](#).
- [openMIC](#) (Meter Information Collector) is a head-end system to automatically poll disturbance meters and download file-based and real-time data.
- The [openHistorian](#) is a no-sql data system for efficient storage and fast retrieval of trending data.
- [openEAS](#) is an easy to use wrapper to enable use of third-party, proprietary analytics with the openXDA automation platform.

Visualization Layer:

PQDashboard



openXDA Hosting Requirements

- Hardware: Mid-level server or workstation—can be virtualized. With Windows OS, requires 64-bit hardware and a minimum of 8 GB of memory.
- Operating Systems: Windows (64 bit) Windows Server 2008 R2 (or later) with the .NET 4.6 framework is preferred. Builds for Linux and Apple OS are available.

Maintenance Services

GPA offers annual product maintenance agreements to cover typical business hours, or 24x7 for critical systems that require high availability as well as customized services that are tailored to meet the needs of individual utilities.

For more information



**GRID
PROTECTION
ALLIANCE**

1206 Broad Street
Chattanooga, TN 37402

423-702-8136

felmendorf@GridProtectionAlliance.org
www.GridProtectionAlliance.org