



What's new at GPA?

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**GPA User's Forum 2015**

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Atlanta, Georgia

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# GPA's Open Source Products

- PMU Connection Tester – Version 4.5.5
- ▶ *openPDC* – Version 2.1.120 SP1
- SIEGate – Version 1.1.147
- ▶ *openXDA* – eXtensible Disturbance Analytics – Version 1.3
- Synchrophasor Stream Splitter – Version 1.0.7
- ▶ *SubstationSBG* – Version 1.0.126
- *openSEE* – Disturbance waveform viewer
- BroccoliSharp – .NET for the Bro Communications Library
- Project Alpha (source code only)

*Products actively under development ...*

- ▶ *EPRI open PQ Dashboard* – Version 0.7 [Beta] Available - Release **2015**
- ▶ *openHistorian 2.0* – Version 2.0.199 [early Beta] Available - Release **2016**
- ▶ *PDQ Tracker* – Version 0.8.11 [Beta] Available - Release **2016**
- ▶ *ARMORE* – Super IDS for Substations - Release **2016**
- ▶ *MIDAS* – Meter Information Data Acquisition System - Release **2016**

# So What's Else Is New?

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- The Web Site

# New GPA Web Site

## GPA Grid Protection Alliance

Open Source Software & Services for Electric Utilities

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[Products](#)

[Services](#)

[Technology](#)

[Company](#)

[News](#)



GRID  
PROTECTION  
ALLIANCE

The Grid Protection Alliance is a not-for-profit corporation specializing in the development and support of innovative software solutions for the electric industry. By leveraging the value of open source software and the latest software development platforms and structured development methodologies, GPA is able to offer the highest quality products and services at an attractive price.

GPA has a track record of innovation and has both participated in and led major software development projects with client utilities and the federal government. Since its inception in 2010, GPA has successfully developed a suite of [products](#) that are in production use supporting grid operations.

In addition to custom application development, GPA offers [services](#) for installation, set-up, integration and on-going maintenance of its open source software. These services include 24x7 support and diagnostic services allowing clients around-the-clock access to GPA's technical experts.

Find us on [Google+](#).

### News

#### [openECA Selected by DOE](#)

August 2015

DOE announced that GPA and its partners have been selected to develop openECA as part of the FOA 970 series of awards from the Office of Electricity.

[Read more](#)

#### [openPDC Version 2.1 Service Pack 1](#)

July 2015

This service pack adds functionality and fixes several openPDC issues.

[Read more](#)

#### [PDQTracker Beta Released](#)

July 2015

The PDQTracker Beta has been posted on codeplex.

[Read more](#)



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# So What's Else Is New?

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- The Web Site
- Use of MIT License / Moving to GitHub
- Synchrophasor Product Roadmap

# Planned Phasor Software Improvements

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- **Version 2.2 openPDC**

**March 2016**

- openHistorian 2.0 Support
- C37.118.2 Protocol Production Tested
- UI Improvements (esp. alarm config)

- **Version 3.0 openPDC Release Candidate**

**Fall 2016**

- Restructuring of TSL / synchronization engine
  - Routing and management of abstract objects

# So What's Else Is New?

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- The Web Site
- Use of MIT License / Moving to GitHub
- Synchrophasor Product Roadmap
- Leveraging ZeroMQ to standardize GEP
- DOE Announcement of openECA Funding



open  
**ECA** open and Extensible  
Control & Analytics platform  
for synchrophasor data



DOE FOA 970



T&D Consulting Engineers



Dominion



GRID PROTECTION ALLIANCE



# GPA's Partners

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- Dominion Virginia Power
- Southwest Power Pool
- Oklahoma Gas and Electric
- Virginia Tech
- T&D Consulting Engineers  
(Montana Tech)
- Bonneville Power Administration

# Objective – Connecting Phasor Data to Tools

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- To significantly accelerate the production, use, and ongoing development of real-time decision support tools, automated control systems, and off-line planning systems that incorporate high-fidelity synchrophasor data.
  - Simplified implementation of end-to-end configuration and change management
  - Identification and management of bad data
  - Capability to easily integrate with existing legacy systems
  - Data management and storage designed for phasor data volume and speeds
  - Development of a “standard” analytics interface

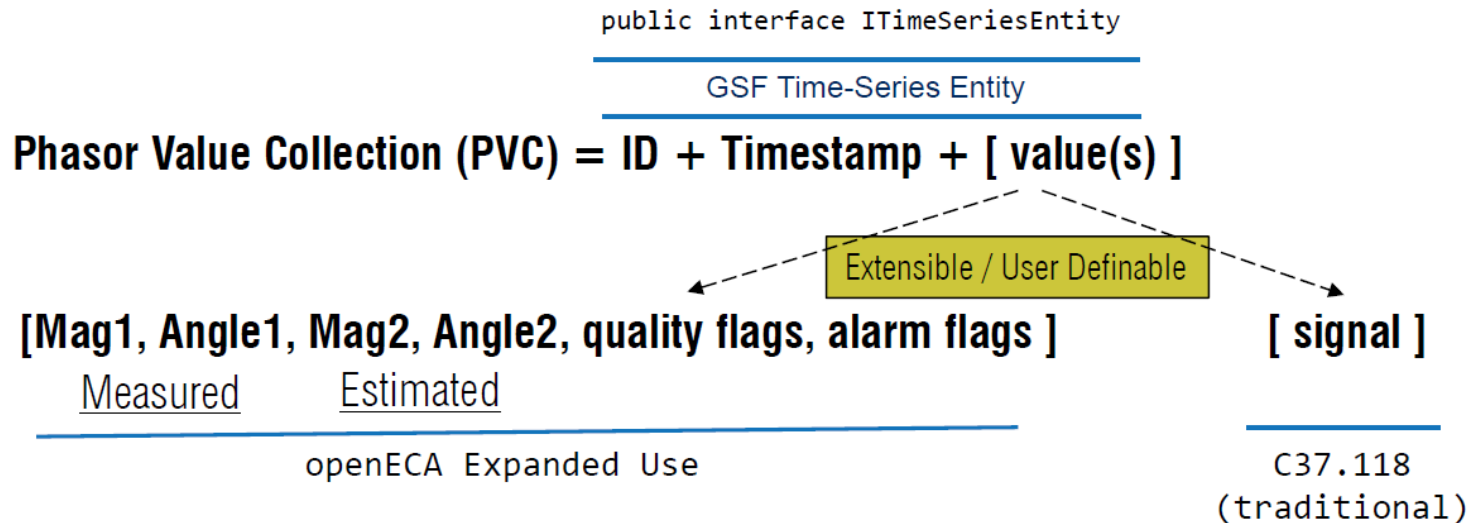
# Approach

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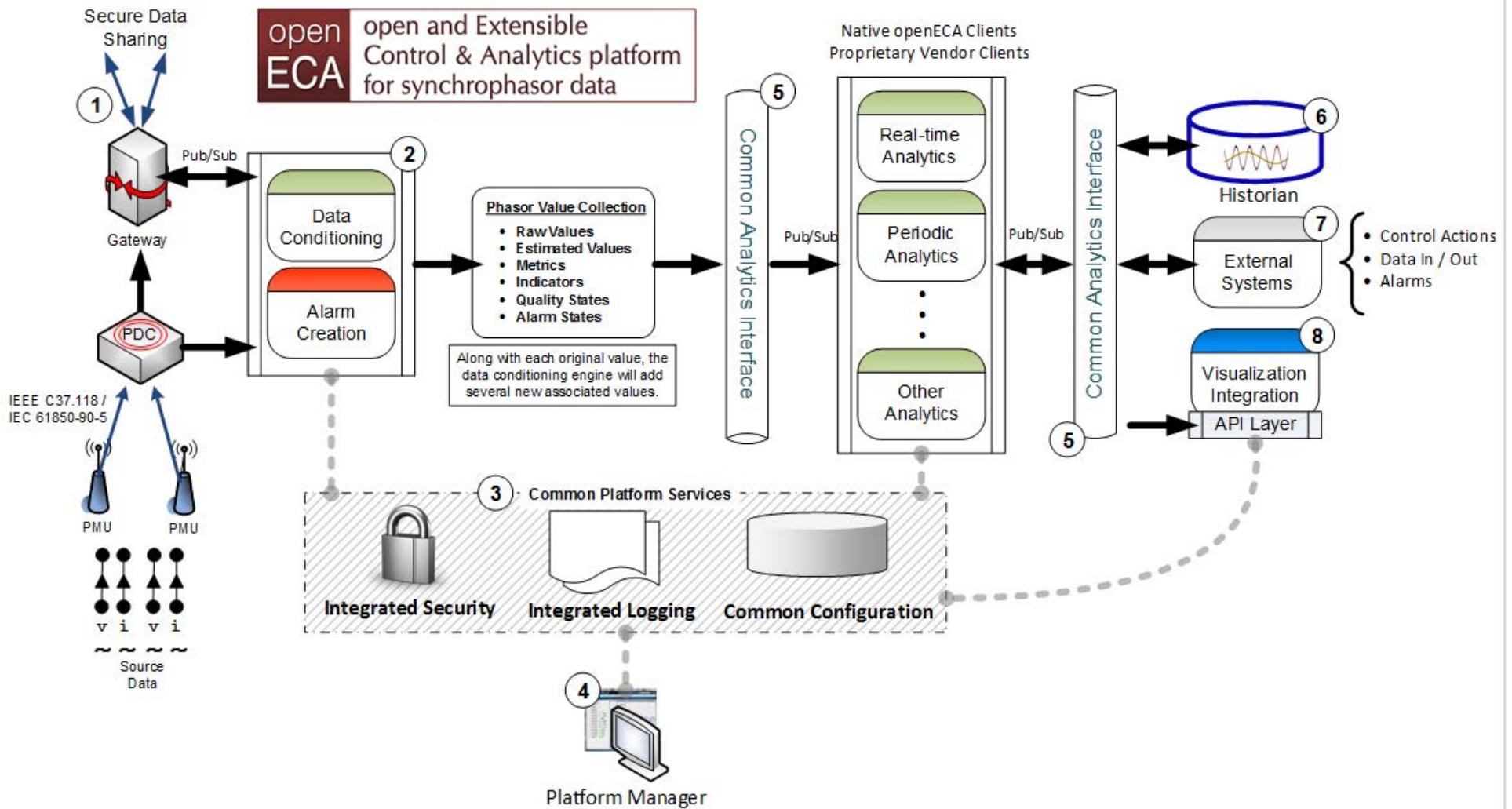
- Leverage GPA's production-grade open-source code base to create an open source tool under a permissive license
- Enable secure data exchange using SIEGate
- Create a multi-tier bad data detection and correction system
- Provide a “Common Analytics Interface” (CAI) that includes the concept of a Phasor Value Collection (PVC)
- Assure generalization and test use of CAI and PVC at five utility partner locations – and seek more demo locations
- Include full-featured alarming services
- Provide an extensible set of platform displays

# Configuration and Use Simplification

- Phasor Value Collection
  - Enables publication/subscription of data of any type
  - Includes useful common types – e.g., a complex value (phasor)
  - Includes complex user defined types – an array of complex values



# Architecture



# Project Provided Analytics

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- Real-Time Analytics
  - Oscillation Detection Monitor (ODM)
  - Oscillation Mode Meter (OMM)
  - Topology Estimation
- Control Analytics
  - Wide Area Volt-Ampere-Reactive (VAR) Control
- Off-Line Analytics
  - Dynamic PMU Transducer Calibration (Automated, Periodic Use Case)
  - Line Parameter Estimation (Ad-Hoc Use Case)
  - Synchronous Machine Parameter Estimation (Automated, Periodic Use Case)
  - Acceleration Trend Relay (ATR) Improvement (Research Use Case)

Plus – Natively Included  
Linear State Estimation

# Thanks !

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