GRID PROTECTION ALLIANCE

What's new at GPA?

GPA User's Forum 2015

Atlanta, Georgia

GPA's Open Source Products

- PMU Connection Tester – Version 4.5.5
- *open*PDC – 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
- BrocolliSharp – .NET for the Bro Communications Library
- Project Alpha (source code only)

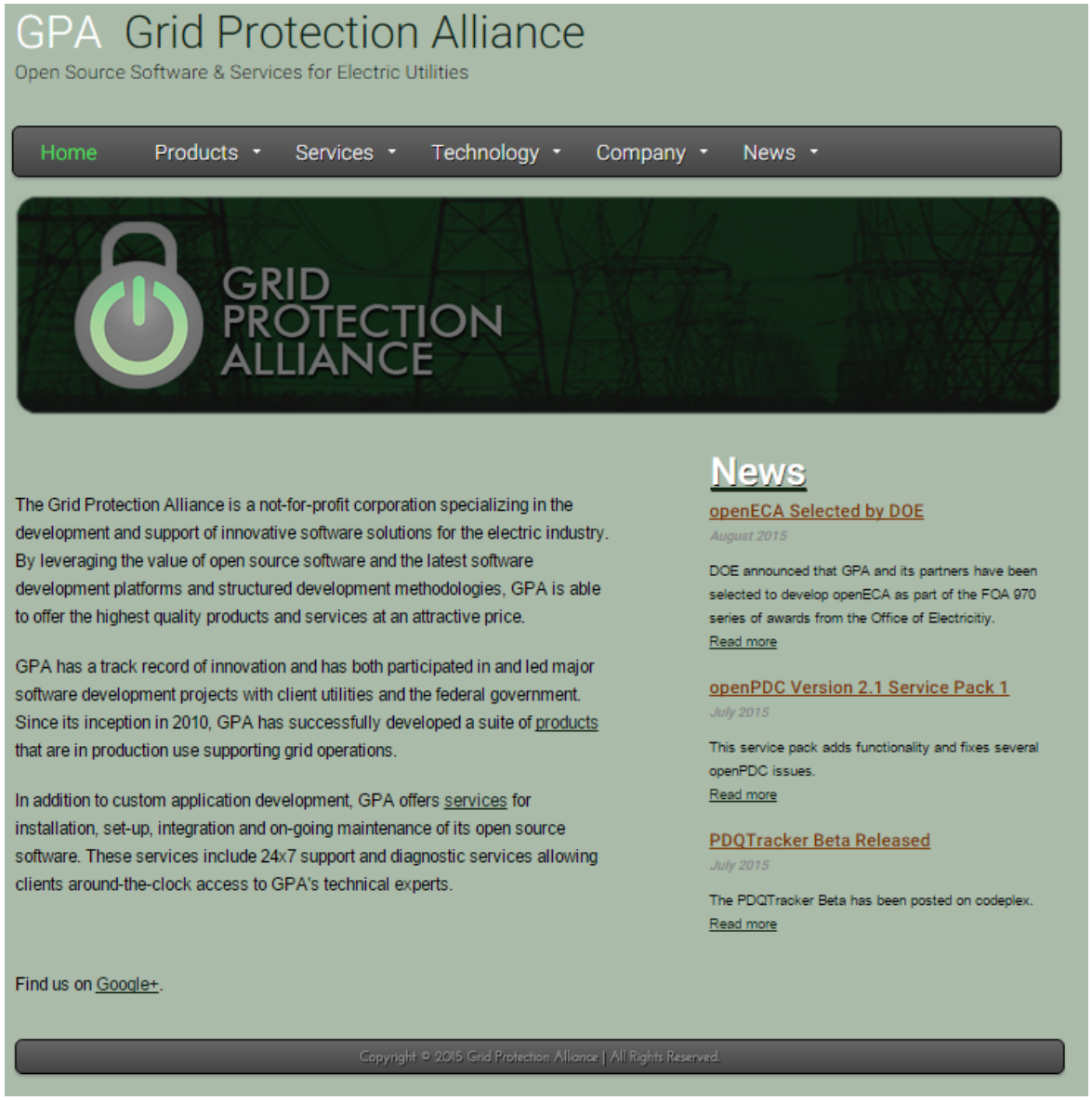
Products actively under development …

- 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?

- The Web Site

New GPA Web Site



GRID PROTECTION ALLIANCE

So What's Else Is New?

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

Planned Phasor Software Improvements

- 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?

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

GRID PROTECTION ALLIANCE

openECA

open and Extensible Control & Analytics platform for synchrophasor data

DOE FOA 970

BONNEVILLE POWER ADMINISTRATION

NorthWestern Energy

T&D Consulting Engineers

Dominion

VirginiaTech

OG&E

SPP Southwest Power Pool

GRID PROTECTION ALLIANCE

GPA's Partners

- 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

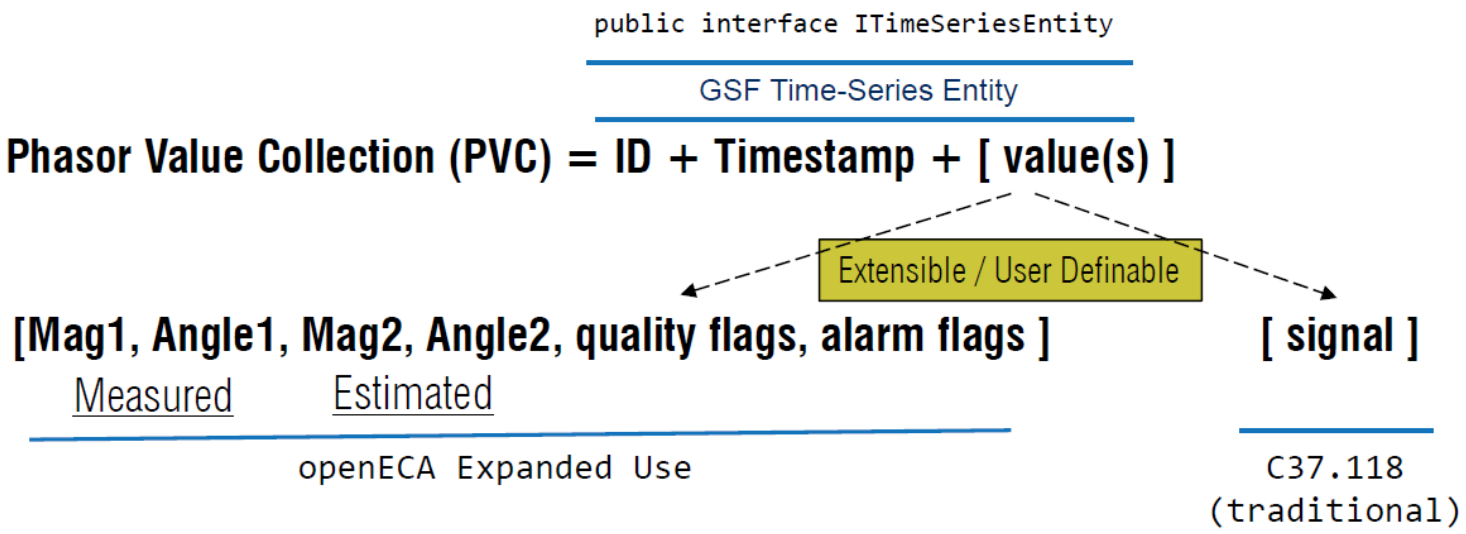
- To significantly accelerate the production, use, and ongoing development of real-time decision support tools, automated control systems, and off-line planning systems that incorporate high-fidelity synchrophasor data.
  - Simplified implementation of end-to-end configuration and change management
  - 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

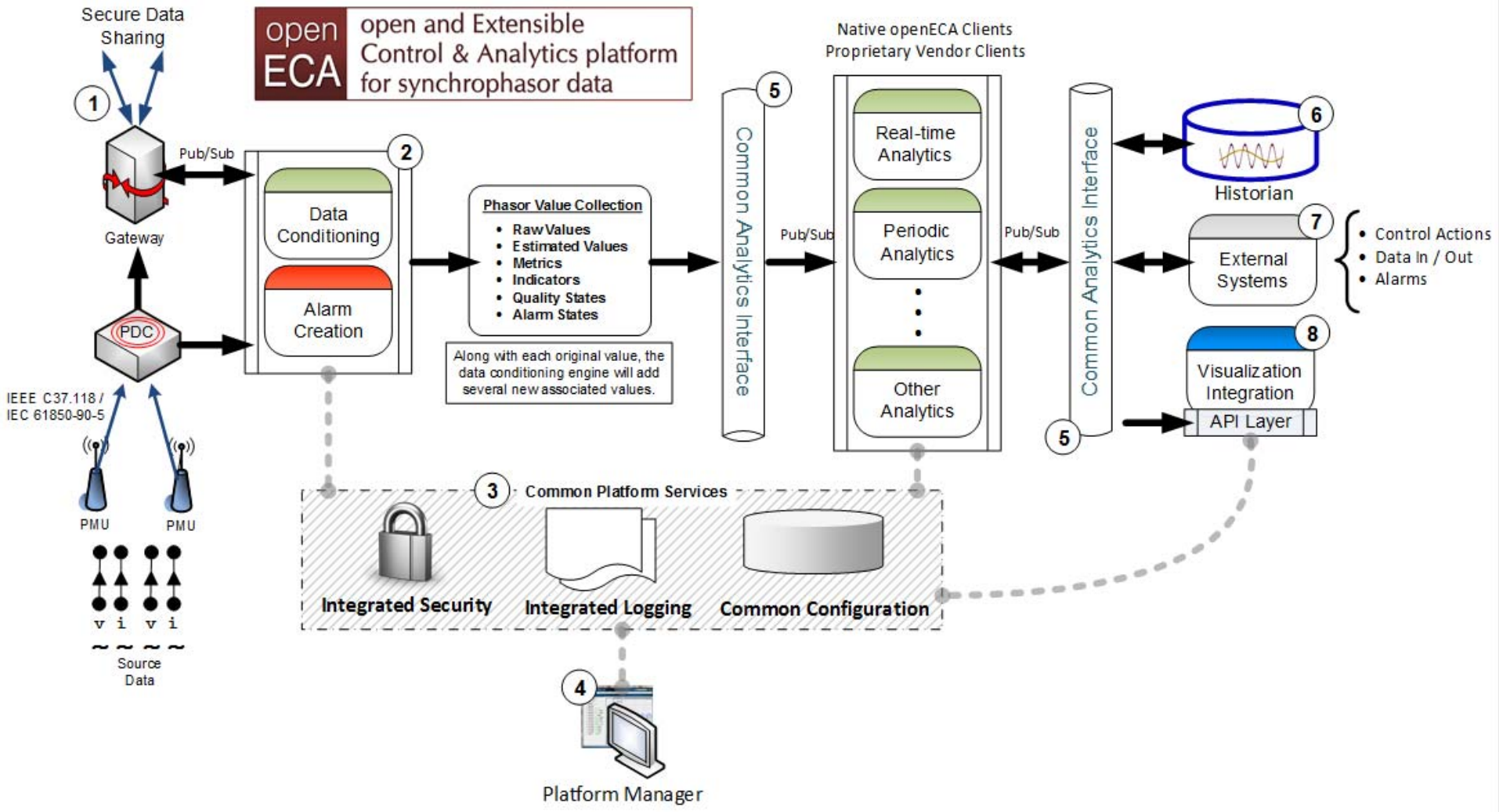
- Leverage GPA's production-grade open-source code base to create an open source tool under a permissive license
- Enable secure data exchange using SIEGate
- Create a multi-tier bad data detection and correction system
- Provide a "Common Analytics Interface" (CAI) that includes the concept of a Phasor 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

- 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 !

GRID PROTECTION ALLIANCE