Overview

Power Quality Dashboard

August 2014

Dashboard vs Analytic Software

> " Dashboard reporting is the process of designing an easy to read, often single page, real-time user interface, showing a graphical presentation of the current status (snapshot) and historical trends of an organization's Key Performance Indicators (KPIs) to enable instantaneous and informed decisions to be made at a glance.

http://www.exceldashboardwidgets.com/

Analytics is the discovery and communication of meaningful patterns in data. Especially valuable in areas rich with recorded information, analytics relies on the simultaneous application of statistics, computer programming and operations research to quantify performance. Analytics often favors data visualization to communicate insight.

(wikipedia)

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Dashboard vs. Analytic Software

Dashboard

- Easy to read
- Single page
- Graphical
- Current status
- Historical trends of key performance indicators
- Informed decisions can be made at a glance

Analytic Software

- Desktop or heavy client
- Manual steps
- Graphical or tabular
- Historical investigation
- Historical trends and details of specific events
- Typically used to gather reporting information

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Unique Values of a Dashboard

- View entire fleet instantly

- Primarily visual presentation

- Saves time compared manual tools

- Identify negative trends and take action

- Measure efficiencies/inefficiencies

- Present consistent view of information

- Make informed decisions based on specified populations

- Quickly identify data outliers

PQ Dashboard Beta

Background

- PQ monitoring goals considered:
  - Quickly assimilate large quantities of data
  - Effectively represent a large number of sites
  - Integrate PQ and GIS data
  - Provide value from a broad context
  - Provide actionable information

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Background

- Challenges:
  - Increasing number of monitors
  - Large data volumes
  - Ineffective data distillation
  - Bad data

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PQ Dashboard Beta

Background

- Objectives
  - An OSS application
  - Develop OpenPQ Dashboard framework
  - Implement key features as a proof-of-concept
  - Demonstrate the value of a PQ Dashboard
  - Easily deployable
  - Easy integration with legacy systems
  - Extensible

PQ Dashboard Beta

Building on Prior OSS Work

- Grid Solutions Framework (GSF) library
  - Approximately half a million lines of code
  - Highly optimized data management functions
- 2102 EPRI open fault location engine (openFLE)
- 2013 open extensible disturbance analytics (openXDA)

http://GSF.codeplex.com/
http://epriopenfle.codeplex.com/
http://openxda.codeplex.com/

Power Quality Dashboard

PQ Dashboard Beta

Context

- Initial displays have daily context
- Map and grid display entire fleet
- Default displays show yesterday's data
- 30 day summary chart
- Limited drill-down for some detail

PQ Dashboard Beta

Where we are now

- TVA Test data positioned for events and simple trending

- Visualization framework complete

- Displays complete:
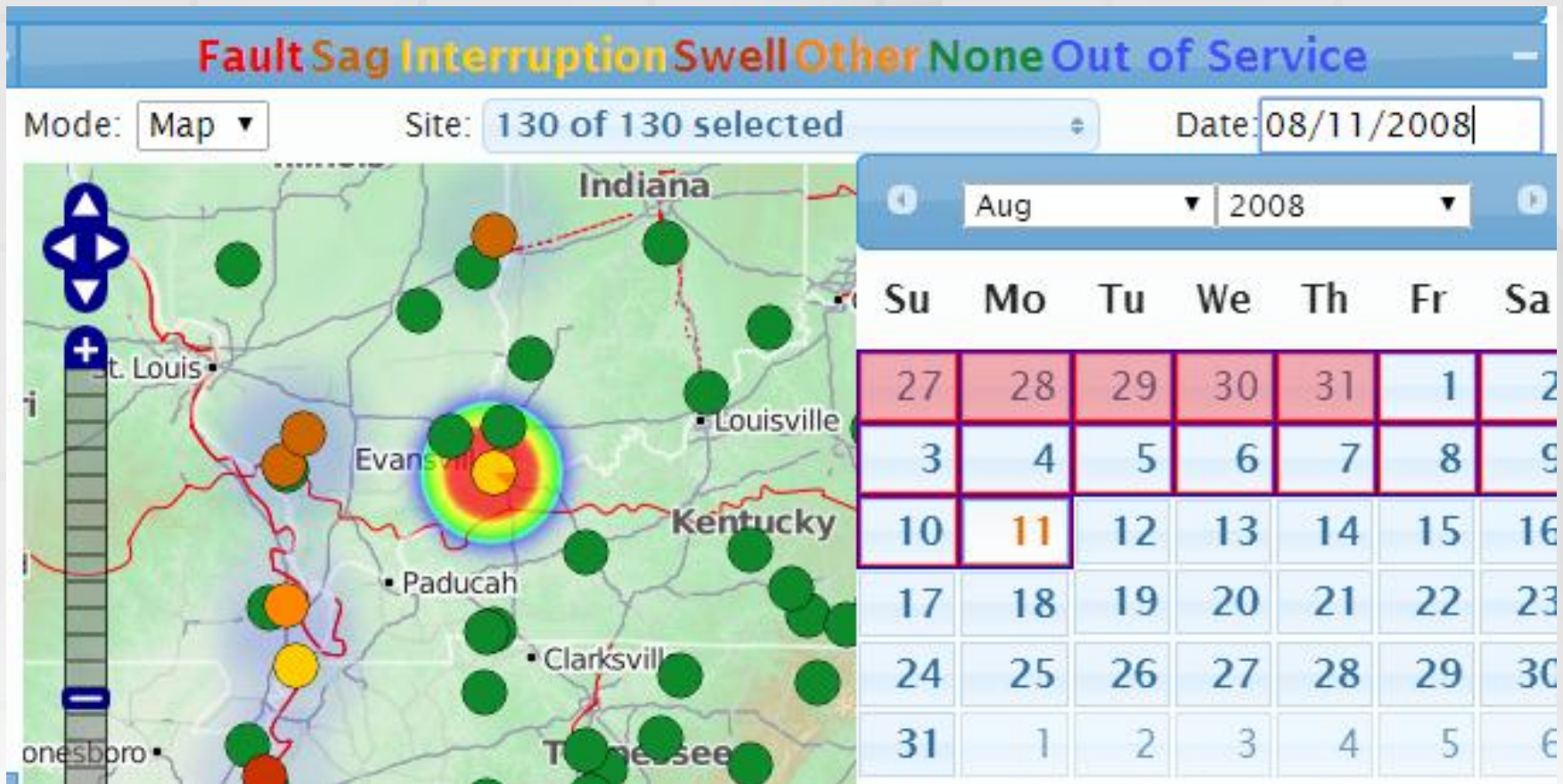
    - Map

    - Events

    - simple trends

PQ Dashboard Beta

Additional planned functions

- Complex trend displays
- Compatibility curves
- Data quality displays
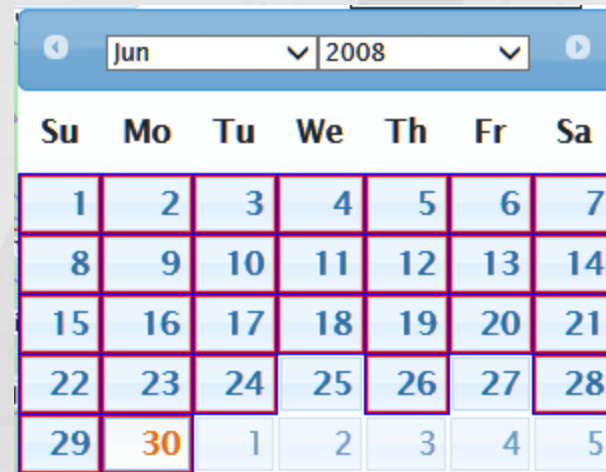- Automatic Link to PQWeb for analytic detail

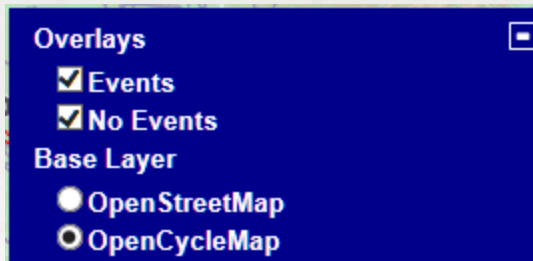# PQ Dashboard Beta
Simple Interface with Powerful Controls

PQ Dashboard Beta

Simple Interface with Powerful Controls

- Intelligent calendar control shows day selected and identifies days with events

- Select base map and category of data to display

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Simple Interface with Powerful Controls

- Switch between map and grid
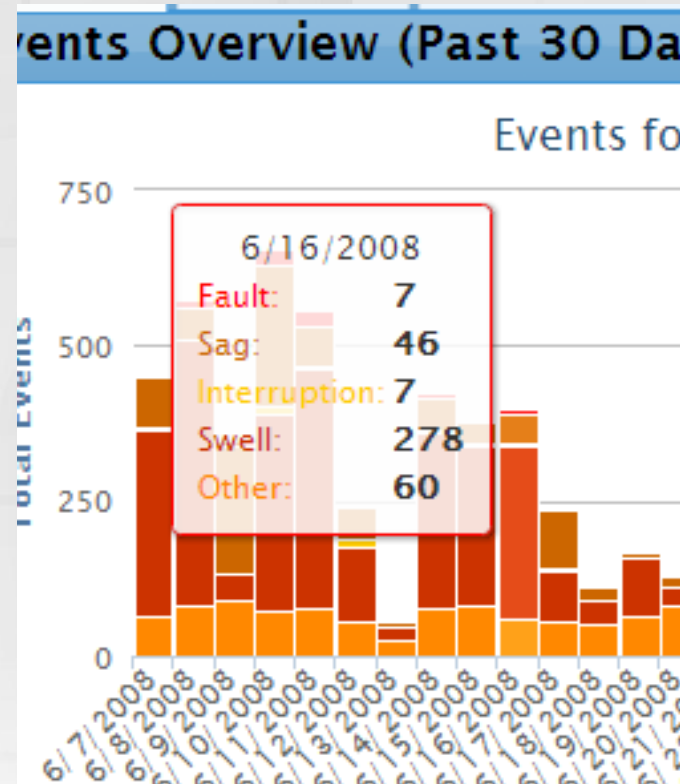
- Standard map zoom and pan

- Drag to zoom
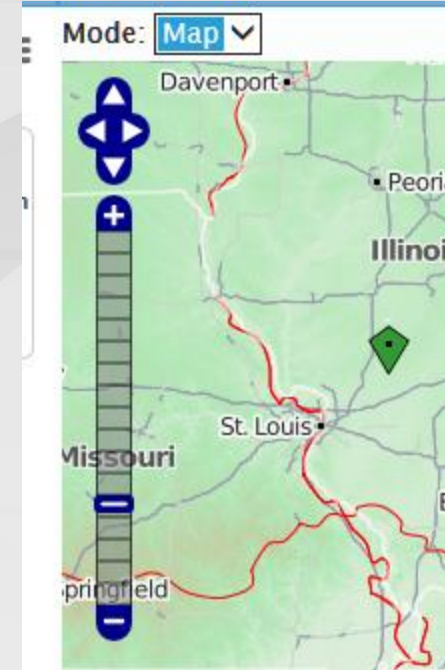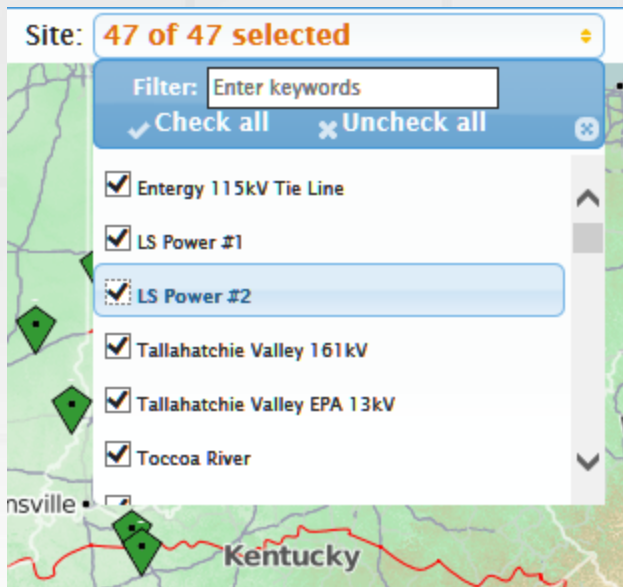
- Flexible site selection, list, click or drag

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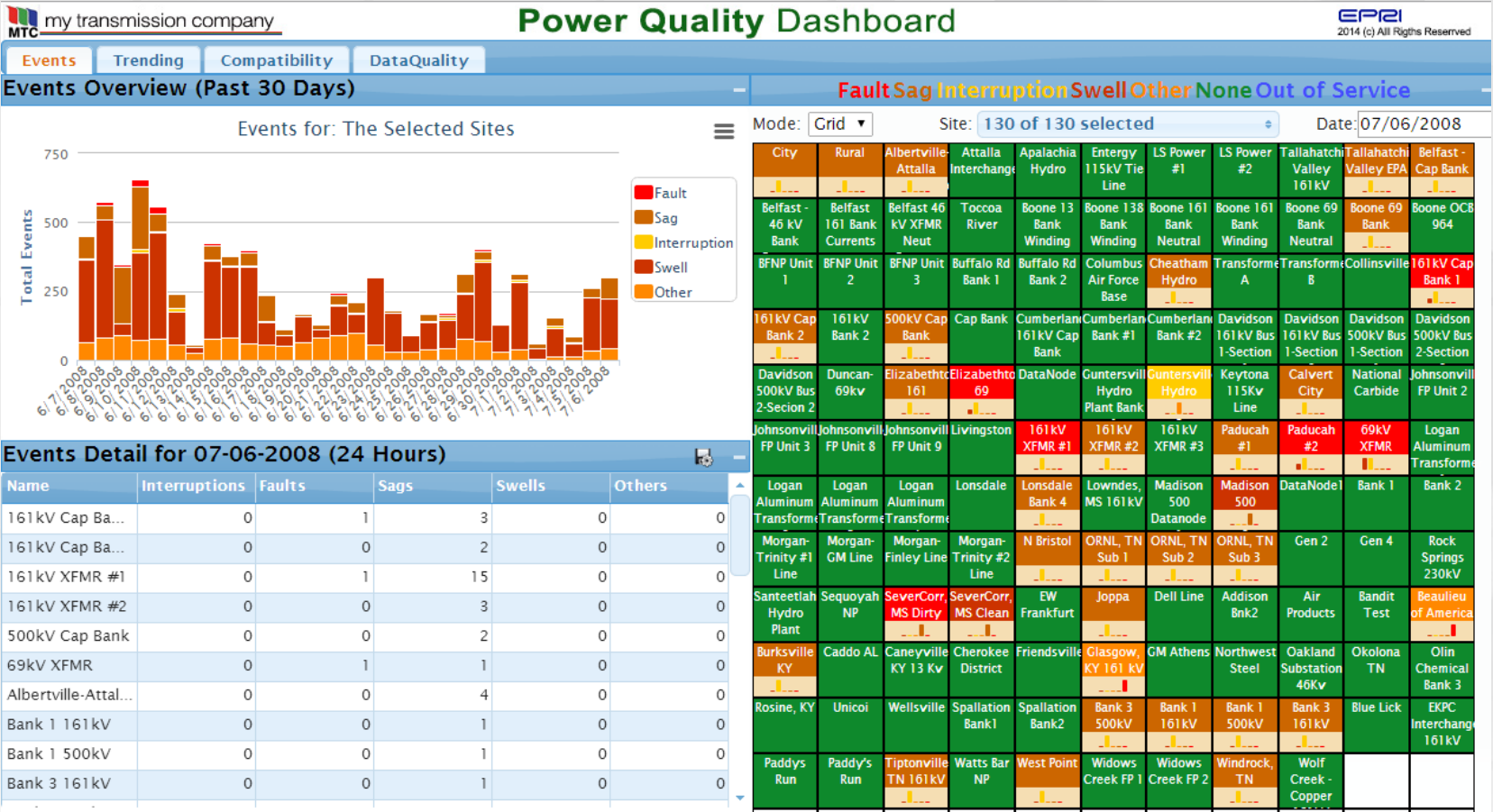
PQ Dashboard Beta

Simple Interface with Powerful Controls

- Mouse-over tool tip
- Click daily bar for
  event detail table

PQ Dashboard Beta

Initial test data provided by TVA

PQ Dashboard Beta
Initial test data provided by TVA

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Conclusions

- A dashboard approach for visualization brings new value to large volumes of data from a fleet perspective

- OSS development strategy ensures flexibility and extensibility

- Seamless integration can be accomplished with existing data sources and tools

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