PI Development @ PJM

PJM Interconnection

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Agenda

- Who is PJM
- One-line Display Converter
- AF Database Automation
- Dispatch Interactive Map Application
- Questions

Who is PJM

PJM's Role as a Regional Transmission Organization

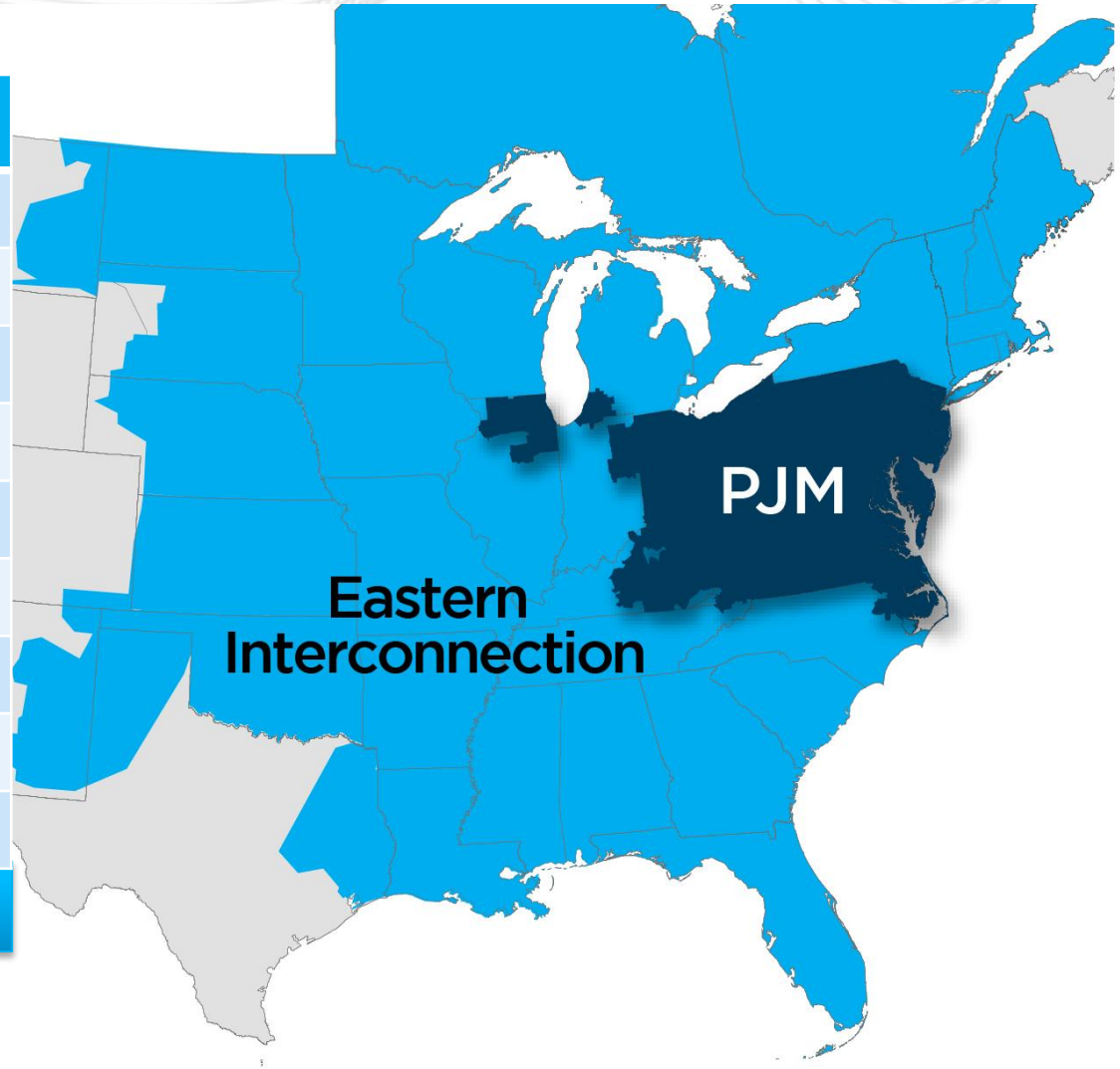
PJM's Role

- Ensures the reliability of the high-voltage electric power system
- Administers a competitive wholesale electricity market
- Coordinates and directs the operation of the region's transmission grid
- Plans regional transmission expansion improvements to maintain grid reliability and relieve congestion

PJM as Part of the Eastern Interconnection

Key Statistics	
Member companies	960+
Millions of people served	61
Peak load in megawatts	165,492
MW of generating capacity	171,648
Miles of transmission lines	81,736
2014 GWh of annual energy	792,580
Generation sources	1,304
Square miles of territory	243,417
States served	13 + DC

21% of U.S. GDP produced in PJM

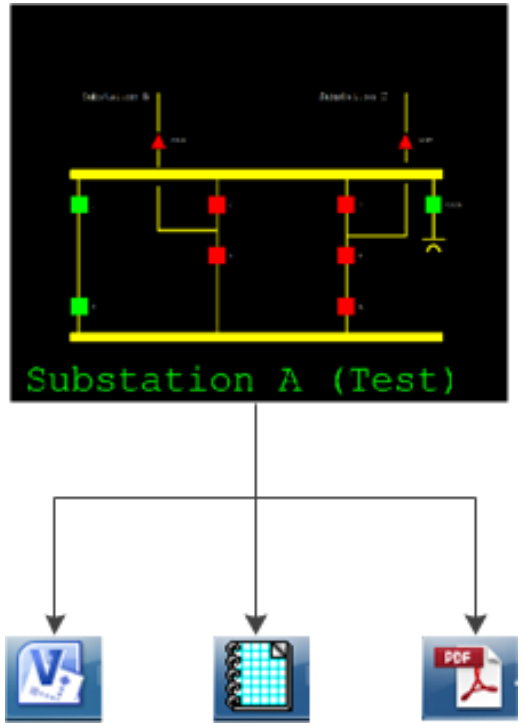


5/2016

One-line Converter

What?

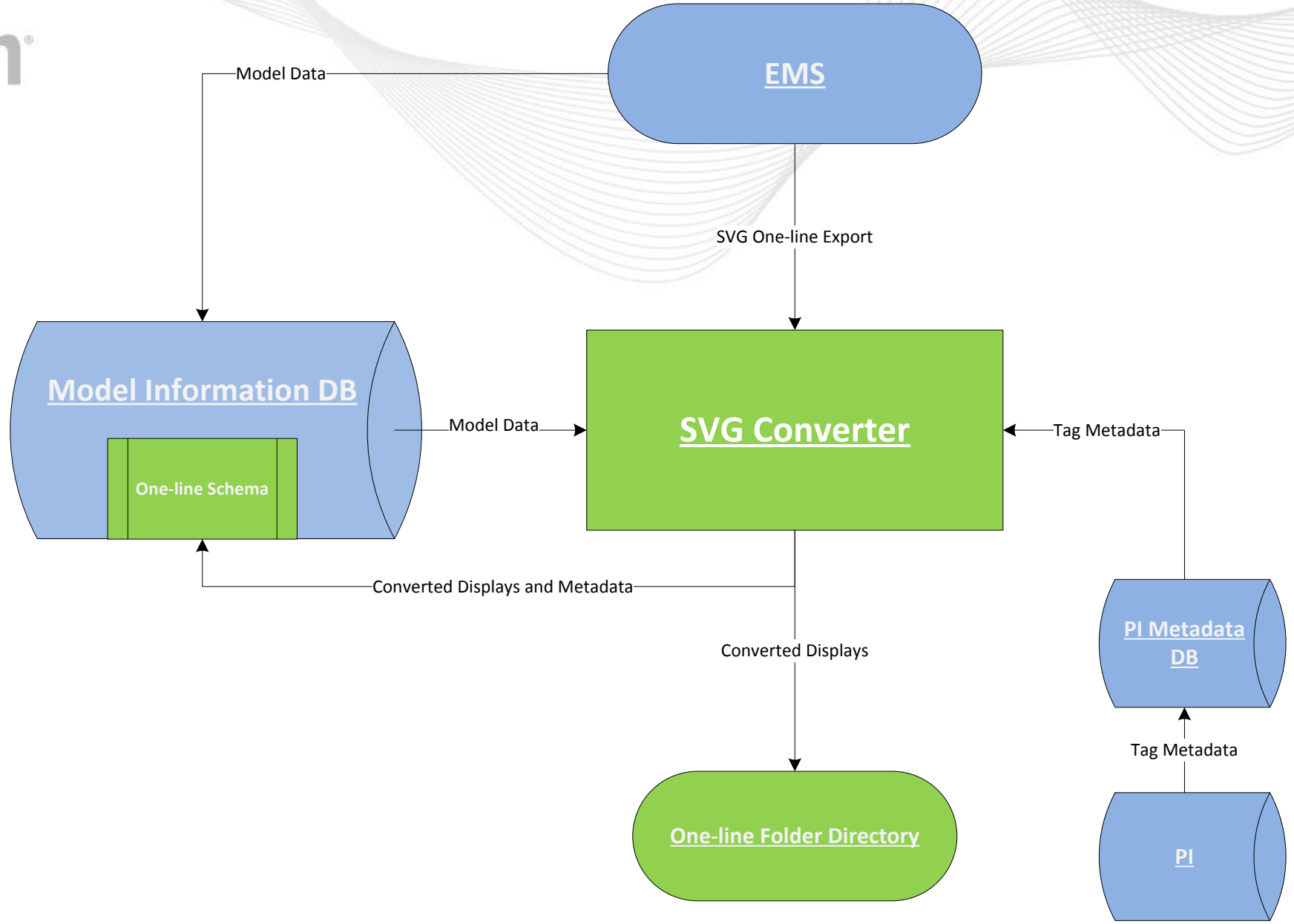
- File formats
  - ProcessBook (Real-time and State Estimator data)
  - Visio
  - PDF
  - SVG
- Directory structure
- Historical/Mapping database



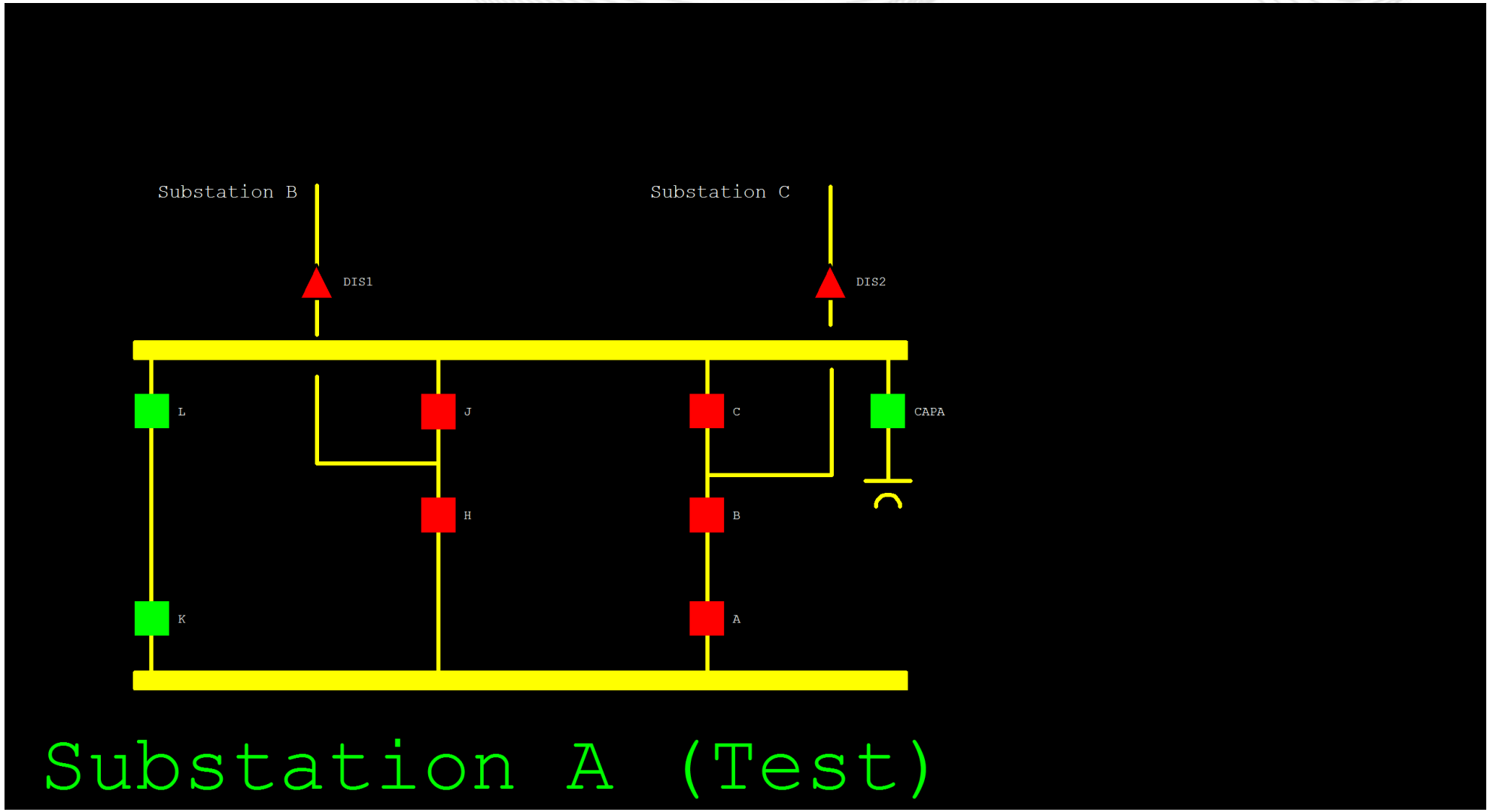
Why?

- Resolve one-line related business concerns
  - Modeling/Display errors
  - Model build display process
  - Historical data and versioning
  - System integration

How?


EMS
Model Data
SVG One-line Export
Model Information DB
One-line Schema
Model Data
SVG Converter
Tag Metadata
Converted Displays and Metadata
Converted Displays
PI Metadata DB
Tag Metadata
One-line Folder Directory
PI

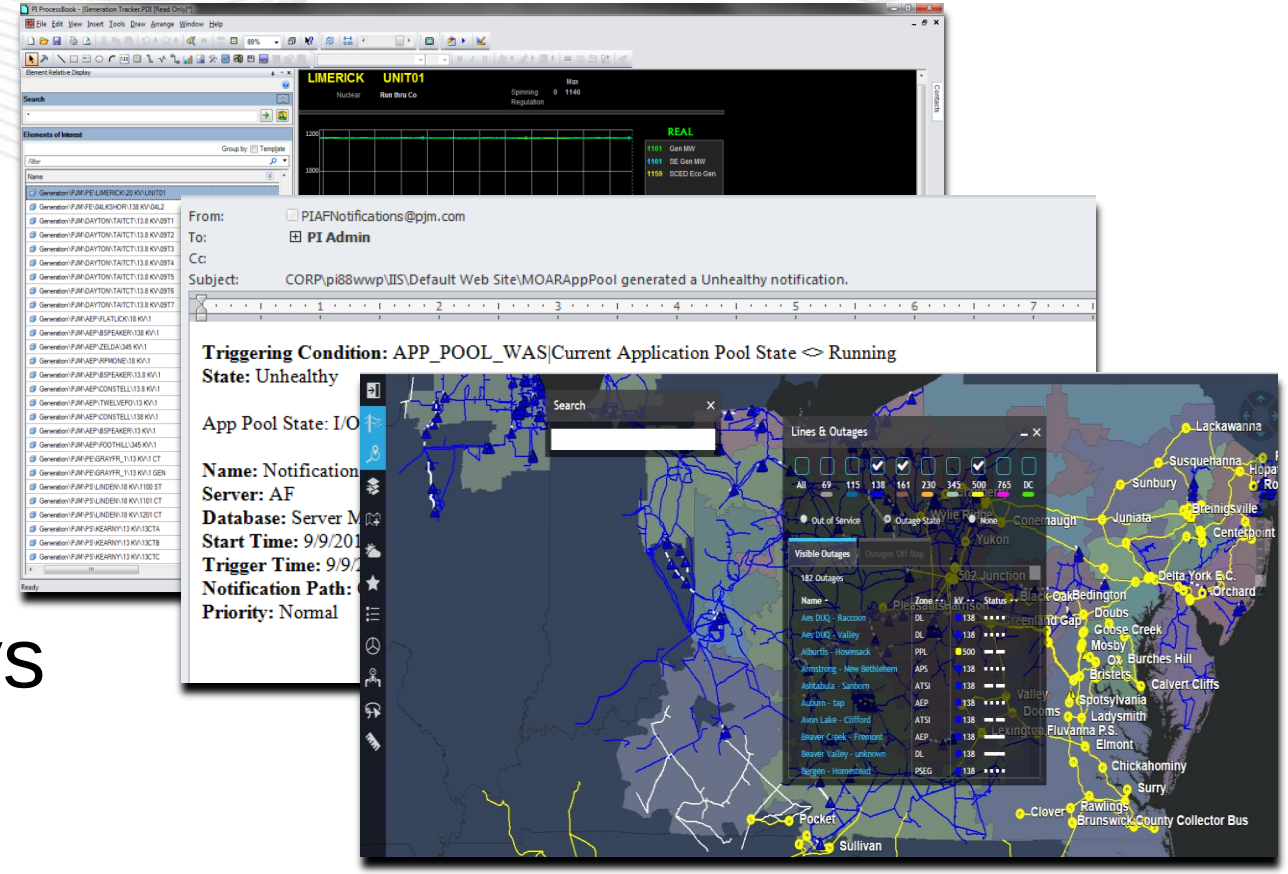
Demo



AF Automation

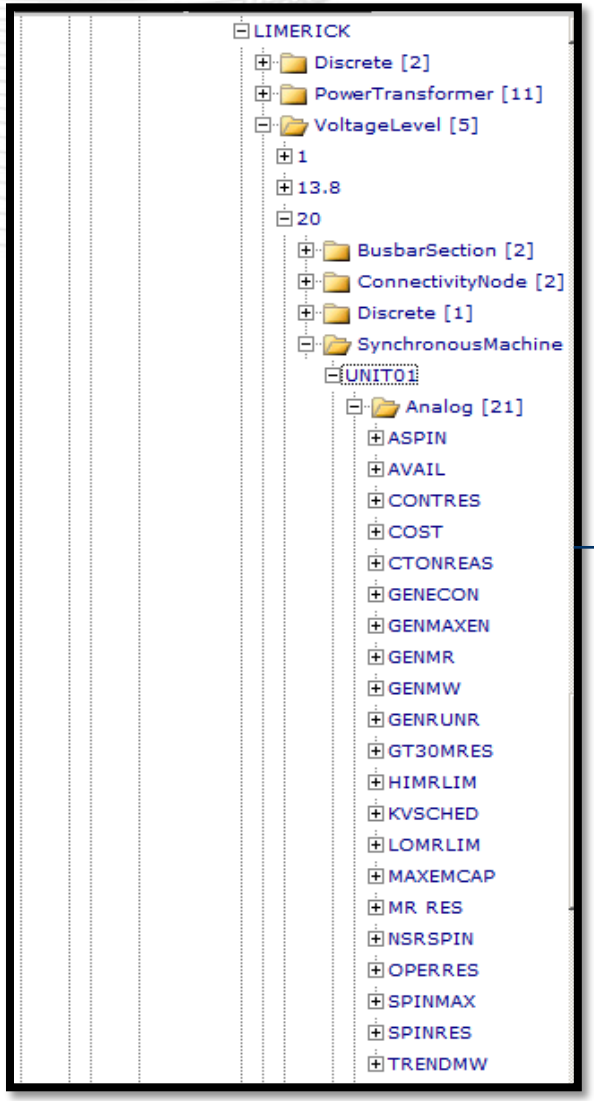
Why?

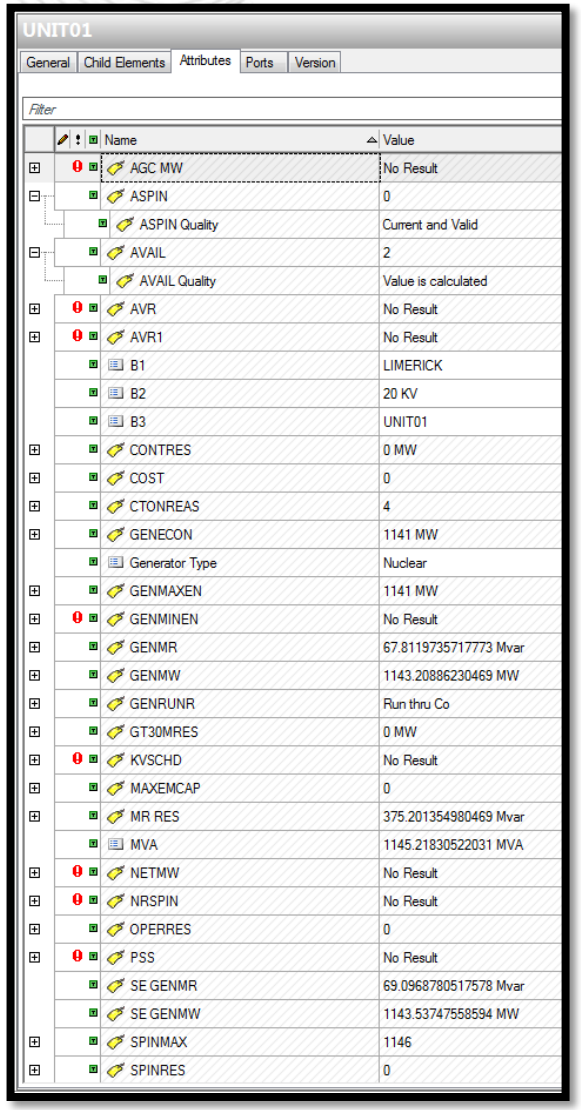
- Application integration
- Calculations
- Monitoring
- Find tags
- Element relative displays



What?

- Targeted Equipment Models
  - Generators
  - Lines
- AGC
- Monitoring



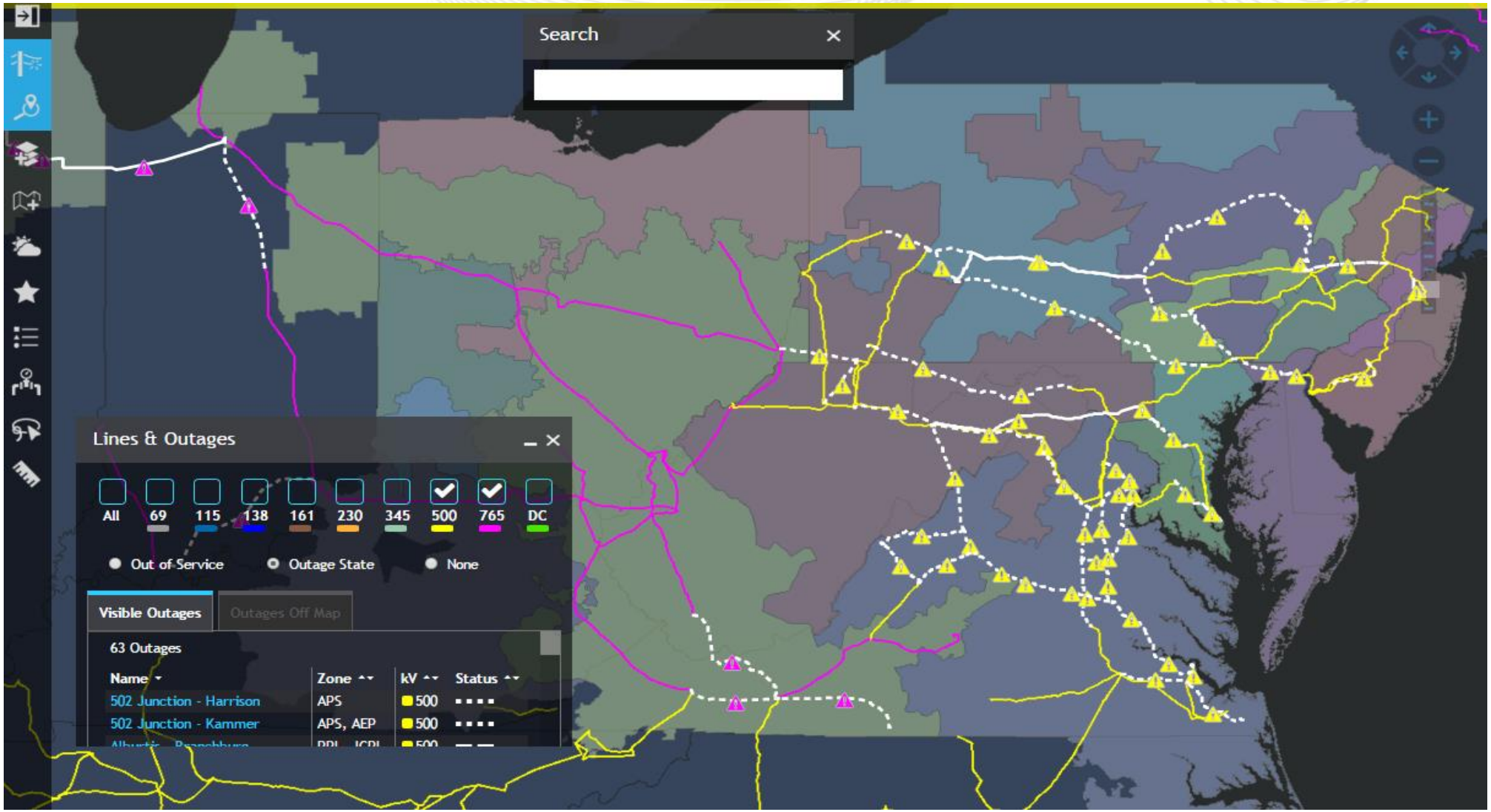


How?

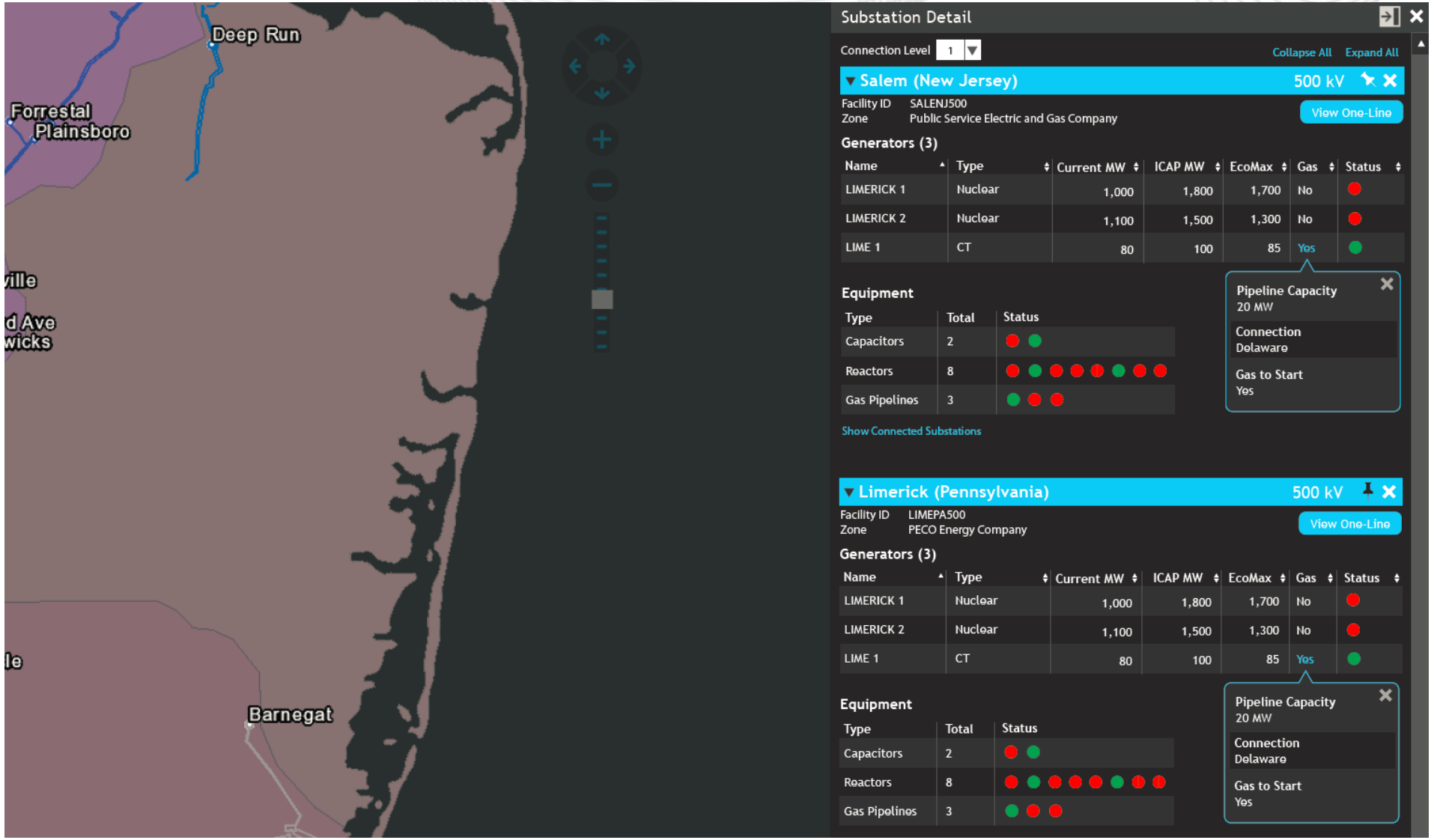
- Network Model DB
- PI Metadata DB
- .Net using AF SDK
  - Loads source model and tag names from Oracle/SQL databases
  - Builds hierarchy of pools, companies, stations and voltage levels using AF templates
  - Adds equipment using templates based on equipment types

Dispatch Interactive Map Application (DIMA)

Demo



Future: Substation Detail



Why?

- **Resolve Business Challenges**
  - Multiple tools used for situational awareness
  - Limited geographic awareness
  - Need to process a significant amount of data

How?

- PI Integrator for ESRI ArcGIS
- GeoEvent Extension for ArcGIS Server
- AF Models
- PI Metadata DB

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