BC3ilding a Robust Operations and Monitoring System in Under 6 Months

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AMONIX™
POWERING THE FUTURE *NOW*™

Agenda

- About "Amonix"
- Challenges
- Solution
- OSIsoft Products and Services Employed
- Architecture
- Results
- Lessons Learned
- Next Steps
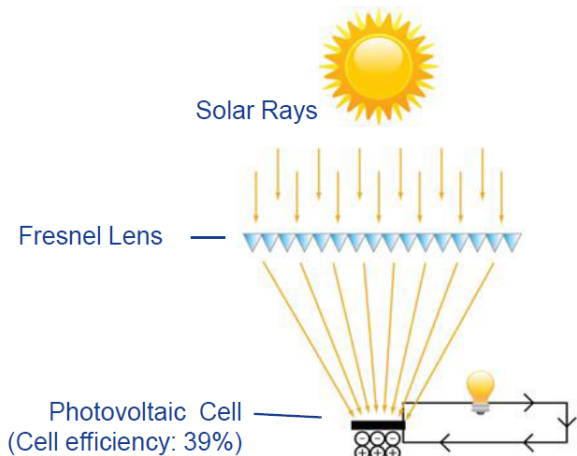- Contact Information
- Thank you

About Amonix

- Pioneer in CPV technology, 82%* of market
- Headquartered: Seal Beach, CA
- Manufacturing: Las Vegas, NV
- Installed Capacity: Over 65 MW (DC)
- Total Units: +650
- Total Sites: 15
- States: 6 US states

About Amonix - CPV Technology

Concentrating sunlight with optics…

Solar Rays

Fresnel Lens

Photovoltaic Cell
(Cell efficiency: 39%)

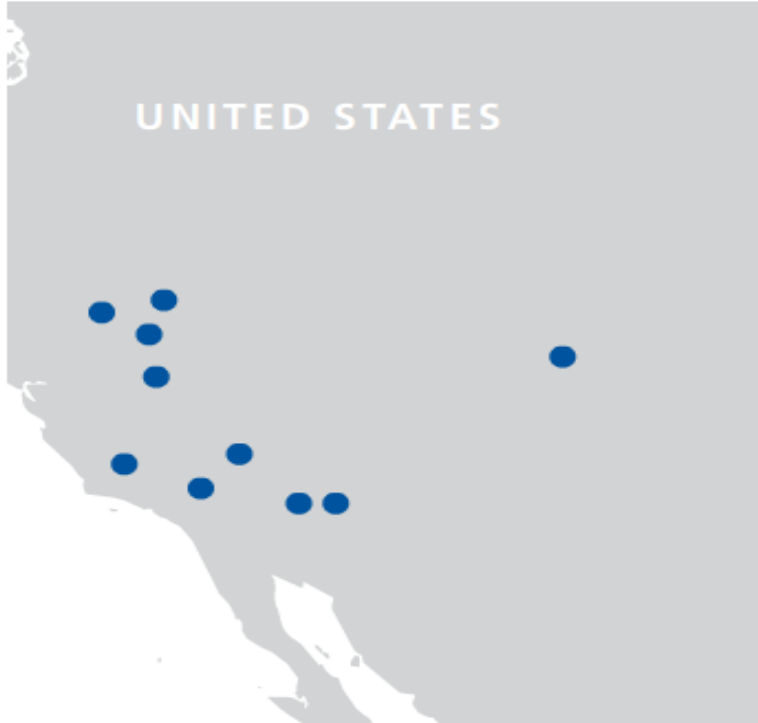…on the world's most efficient photovoltaic cells

Getting the most of sunlight and scale effects…

…by fully tracking the sun with large 2 axis systems

About Amonix - Installations

United States Sites

Arizona
- 2

California
- 5

Colorado
- 2

New Mexico
- 1

Nevada
- 4

Texas
- 1

Spain
- **Villafranca**
- **Talayuela**
- **Navarra**

Business Challenge

Develop a easy, low cost data system
- Low Cost of maintenance
- Easy to maintain from Remote (unmanned) locations
- Develop full end-to-end system

Business Drivers
- Centralized data
  - Historical files
  - Current data systems
- New metrics/KPI System's reporting
- Improve automated reporting
- Improve performance monitoring

Challenges

- Amonix team new to OSIsoft PI System
- Autonomous and distributed site integration
- Customer SCADA/historian integration
- Fast track implementation
- "Ground-up" System required
  - Network Infrastructure
  - Historian
  - Client Tools
- Scalable real-time monitoring

Amonix Solution

- OSIsoft PI System as data historian
- OSIsoft PI System native tools and develop expert tools around the system
  - PI Coresight, PI ProcessBook, PI Data Link, PI Server & MATLAB
  - SharePoint, MatLab, Reporting Agent
- EA agreement
  - Dedicated OSIsoft PI System support team
  - Full access to OSIsoft PI System software
  - Access to field service and field installations

Timeline
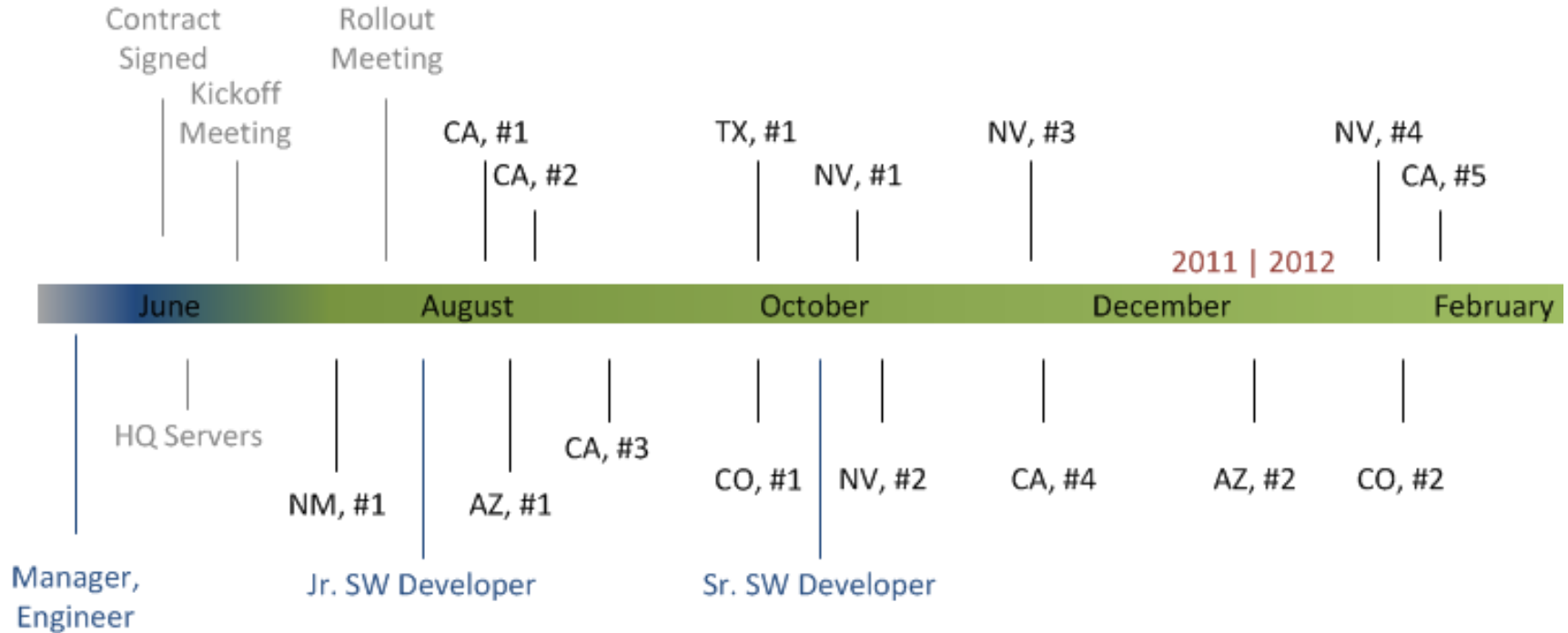
OSIsoft soft Products and Services Employed

Support
- CoE
- EPM
- Enterprise Agreement
- Field Service Engineers
- Managed PI System
- Tech. Support
- OSIsoft vCampus
- OSIsoft YouTube Learning Channel

Applications
- PI ACE
- PI Asset Framework
- PI CoreSight
- Interfaces
  - PI ModbusE
  - PI OPC DA
  - PI to PI
  - PI UFL
- PI Notifications
- PI Point Builder
- PI SMT
- PI SQL Commander
- PI Webparts

Client Tools
- PI Active View
- PI Coresight
- PI Datalink
- PI OLEDB Enterprise
- PI OLEDB Provider
- PI ProcessBook

Products/Services – PI Process Book

Functional Use
- Real-time monitoring

Value Added
- Increase performance
- Reduced response time

Integrator
- NOC operators
- Engineers
- Project Managers

Resources
- YouTube
- Internal client tools training
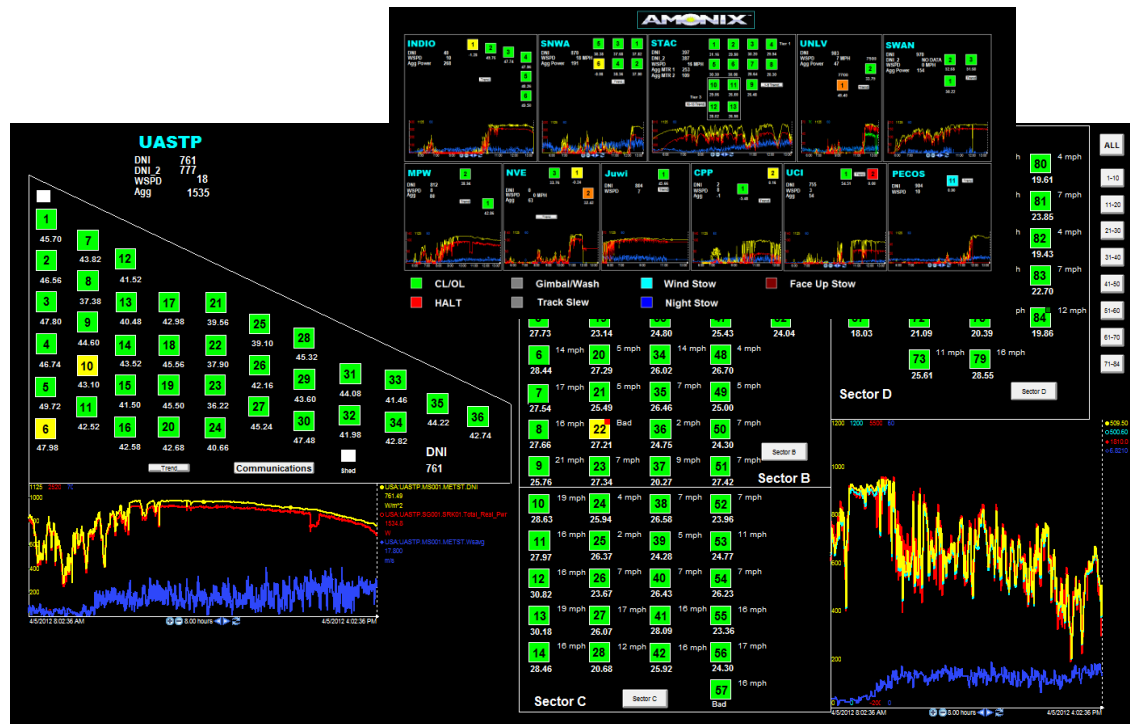
Products/Services – PI Data Link

Functional Use
- Standardized reports
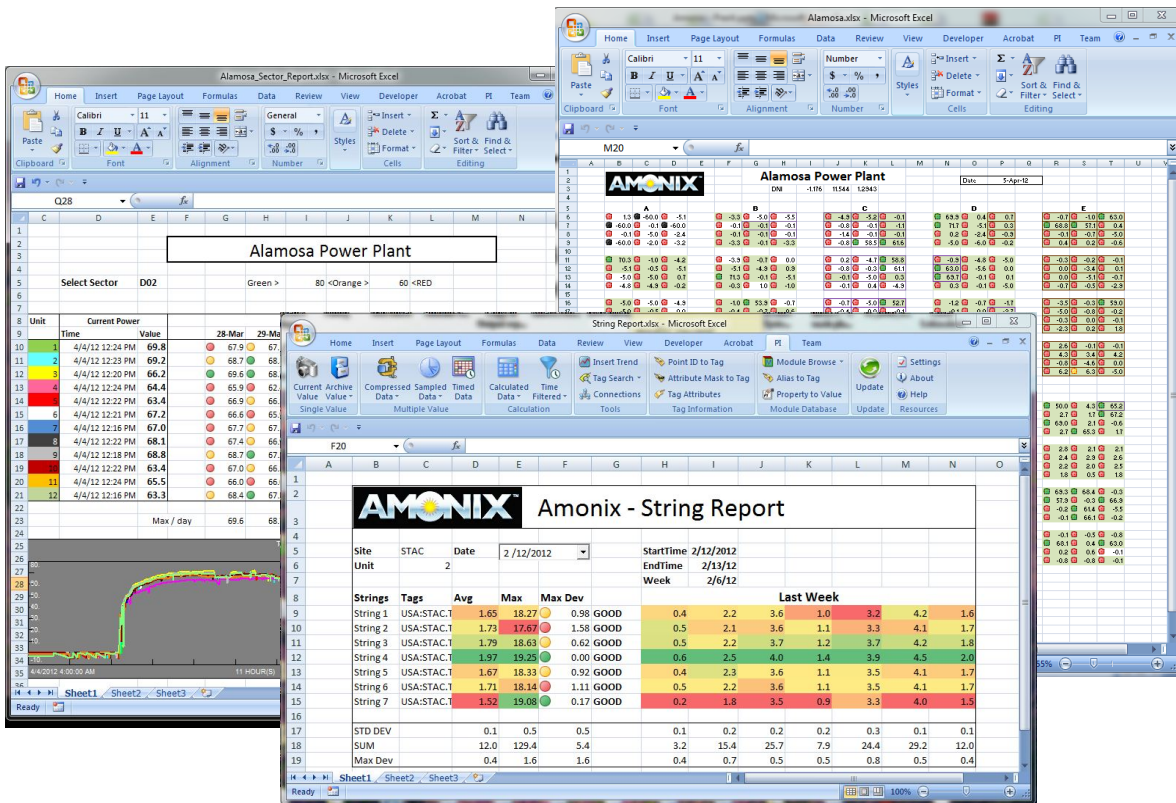- Performance analysis

Value Added
- Ad hoc analysis
- Trouble-shooting

Integrator
- Engineers
- Project Managers

Resources
- YouTube
- Internal client tools training

Products/Services – PI Notification

Functional Use
- Active Device Monitoring

Value Added
- Increased response time
- Highly configurable
- Historical alarm trending

Integrator
- Developer
- Engineer

Resources
- OSIsoft PI System knowledge base
- OSIsoft PI System user manuals
- AF Structure

Products/Services – PI Coresight
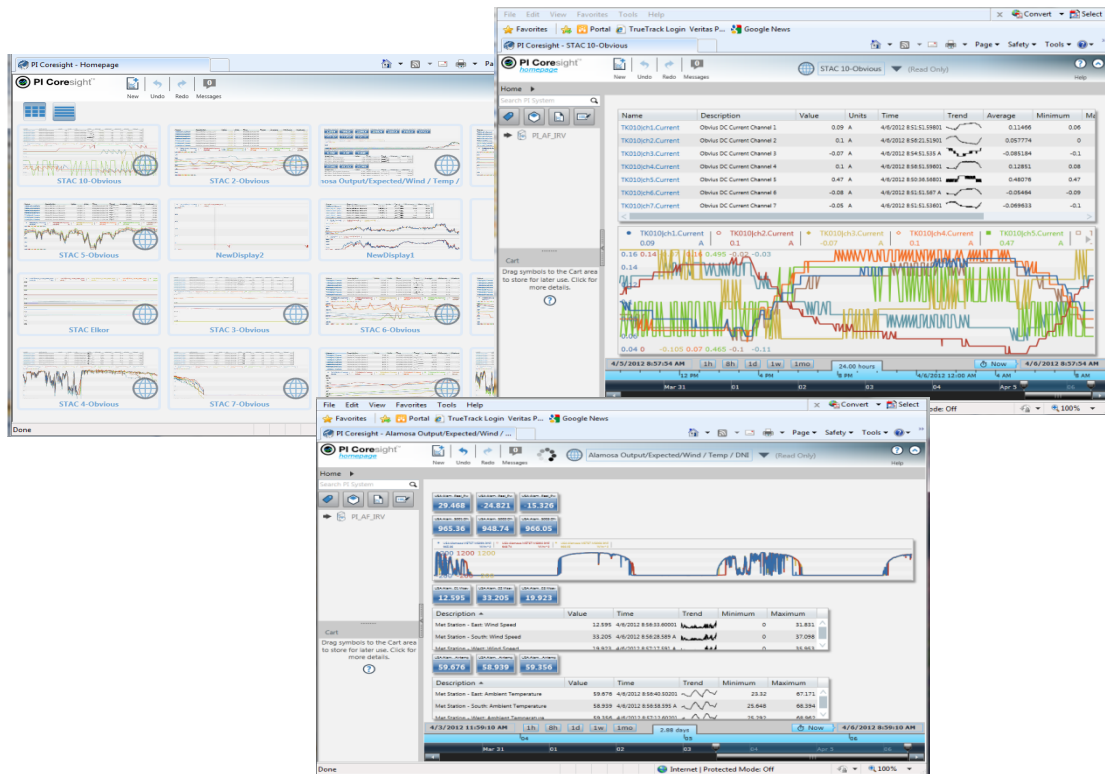
Functional Use
- Field monitoring

Value Added
- Minimal learning curve
- Rapid trend analysis

Integrator
- All privileged domain users

Resources
- AF Structure

PI Server & MATLAB Integration

Functional Use
- Advanced data analysis
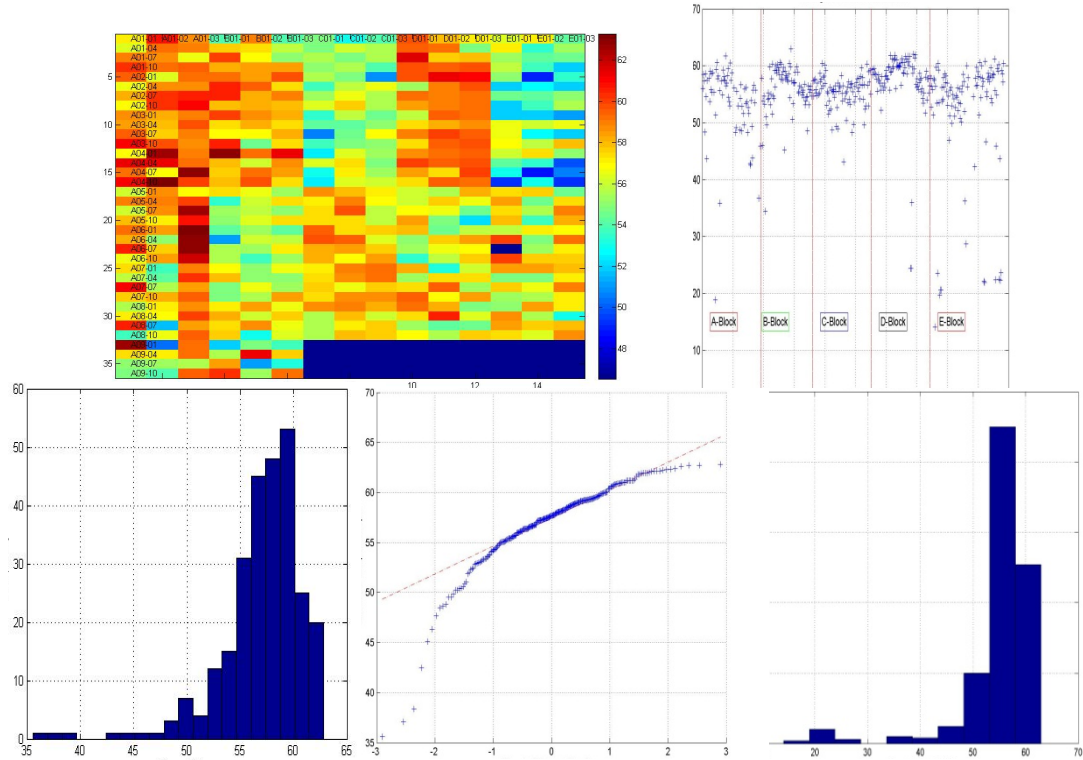- Large Scale data comparison

Value Added
- Root-cause analysis data
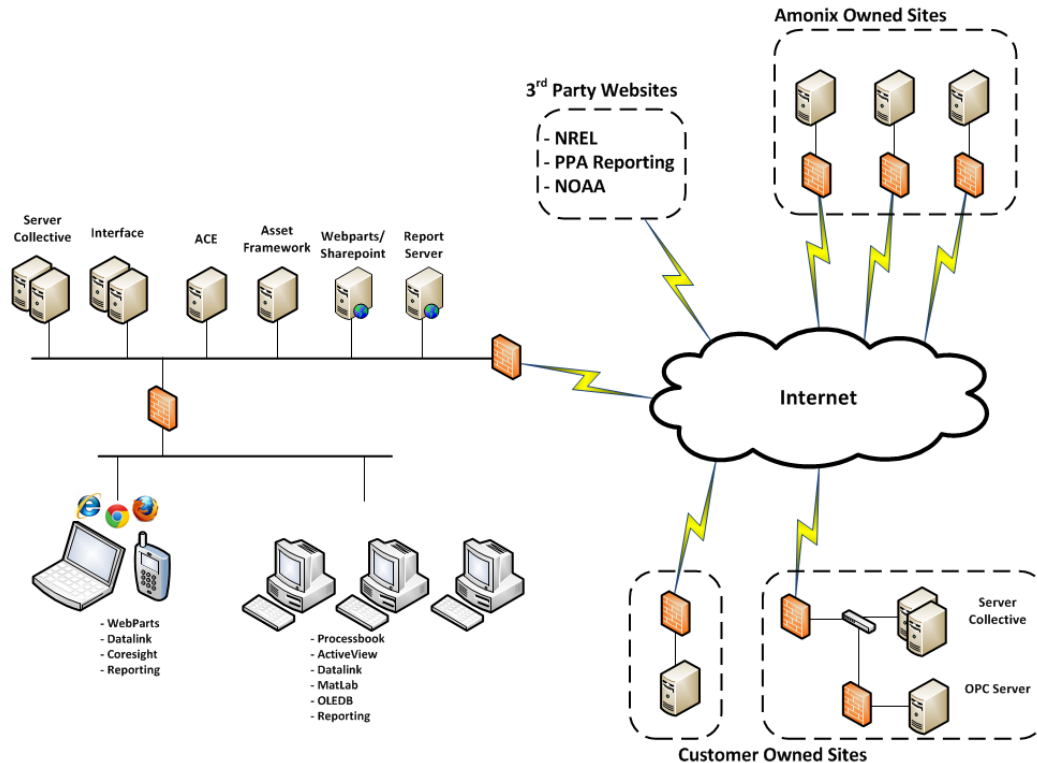- "What-If" Correlation

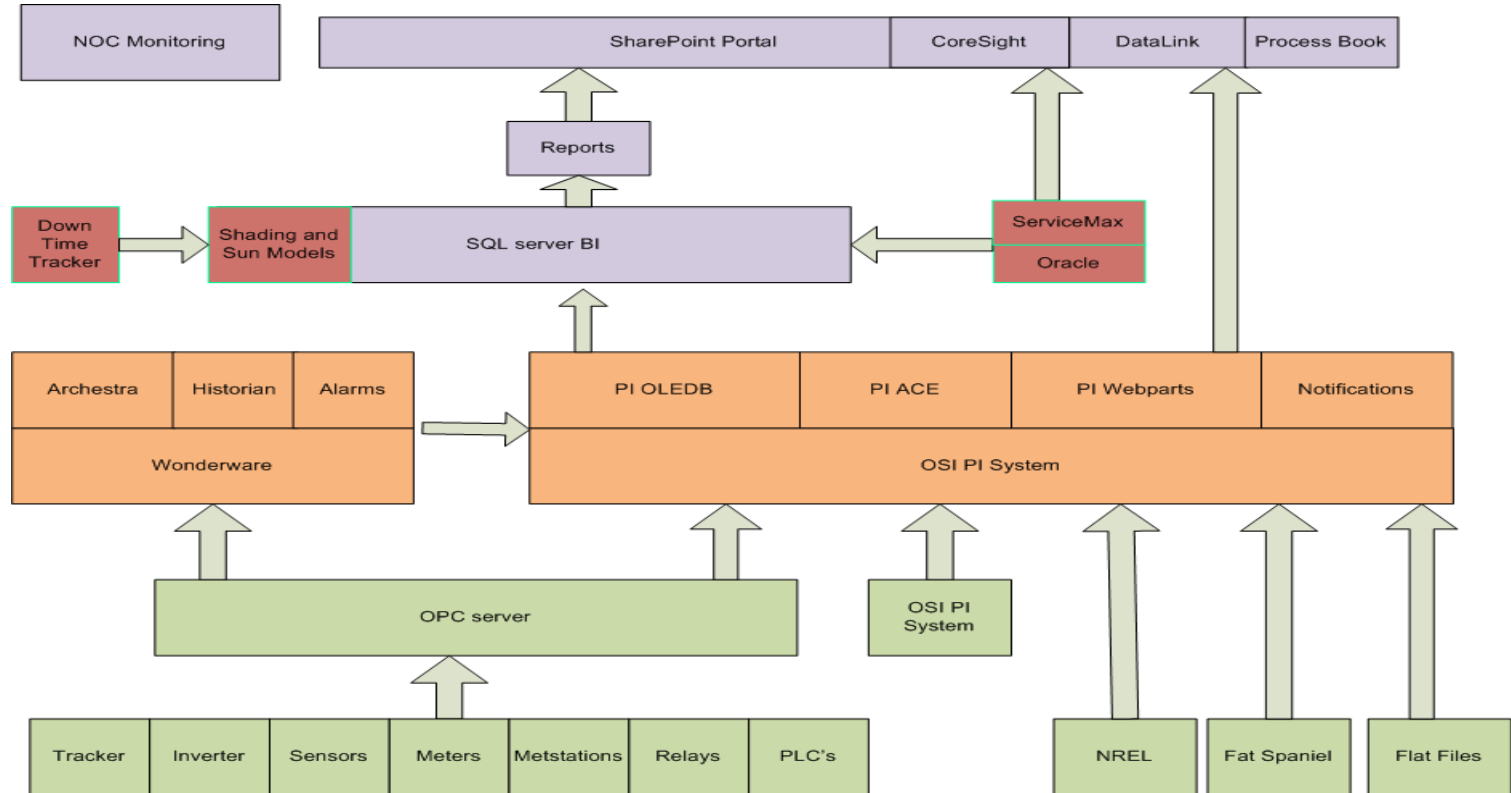Integrator
- Engineer

Resources
- vCampus

Architecture - PI System

- Central PI Server Collective
- Interface Nodes
- Web scraping via PI UFL Interfaces
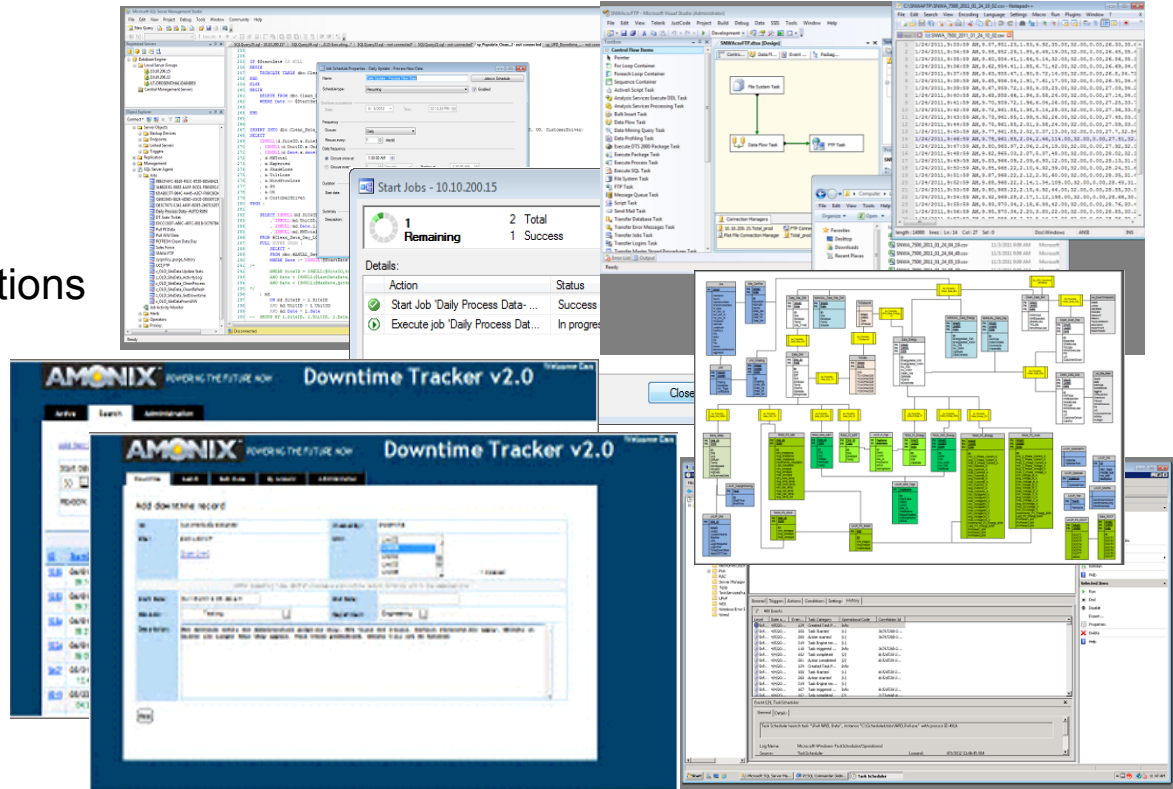- PI to PI Interfaces from Customer PI Systems
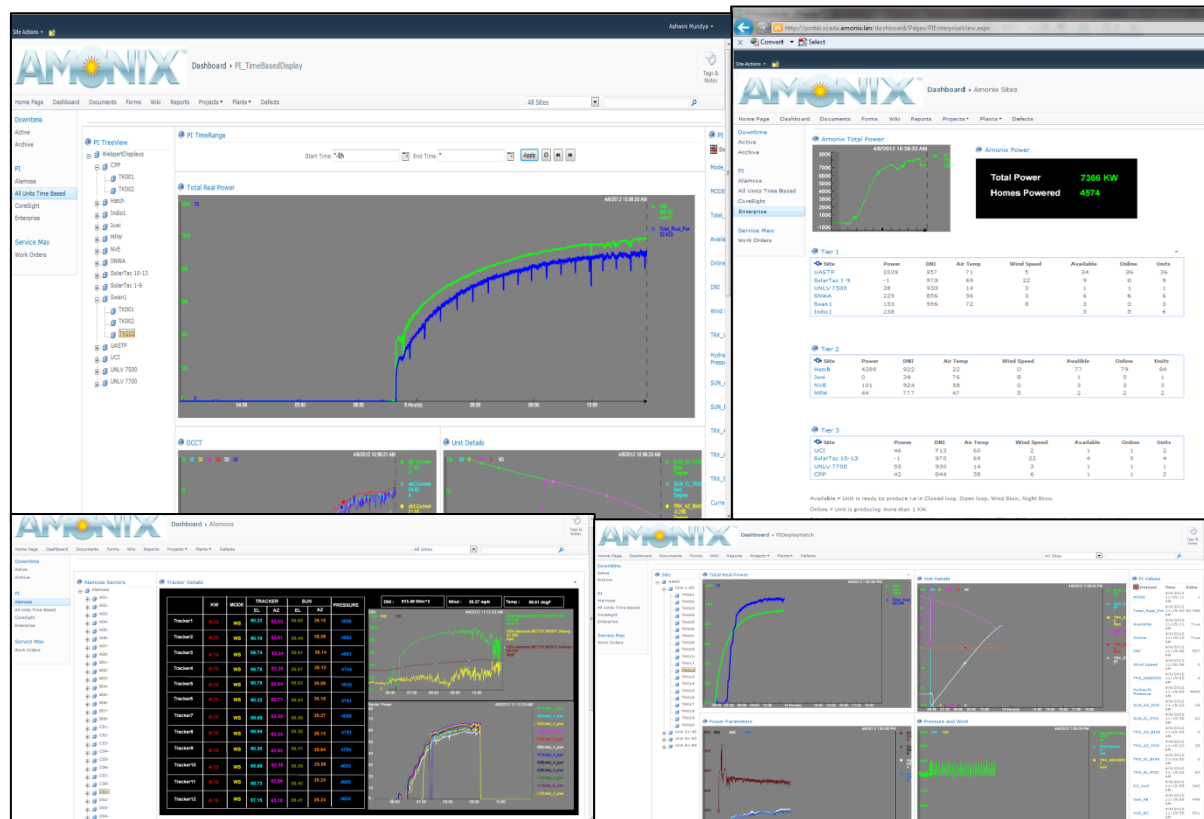
Architecture - Enterprise

Results - Sub Systems

Benefits
- Downtime Trackers
- Site Access Logs
- Business Logic
- Multiple Import/Export Applications

Results - **Amonix Online Portal**

Benefits
- Centralized resource
  - Downtime
  - Site Access
  - Document repsitory
- Company wide availability
- KPI System metrics display
- High level site performance monitoring

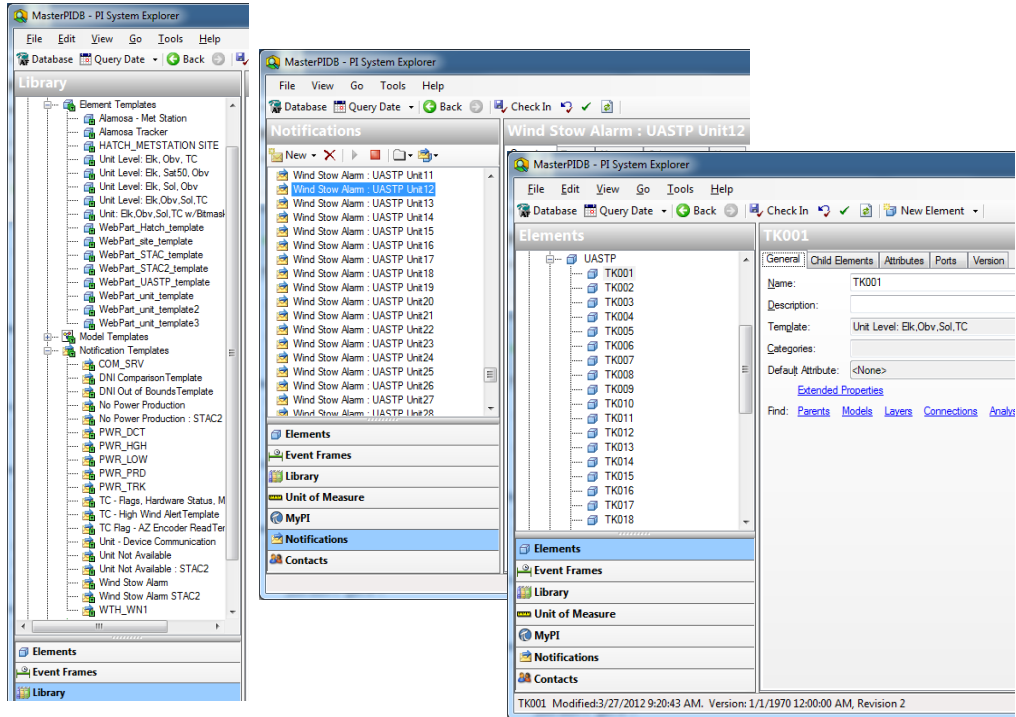# Results - Network Operations Center

Benefits
- Complete Fleet Monitoring
    - Increased Availability/Production
- Centralized Dispatch
    - Work Orders
    - Site Activity Log
    - Downtime Traceability
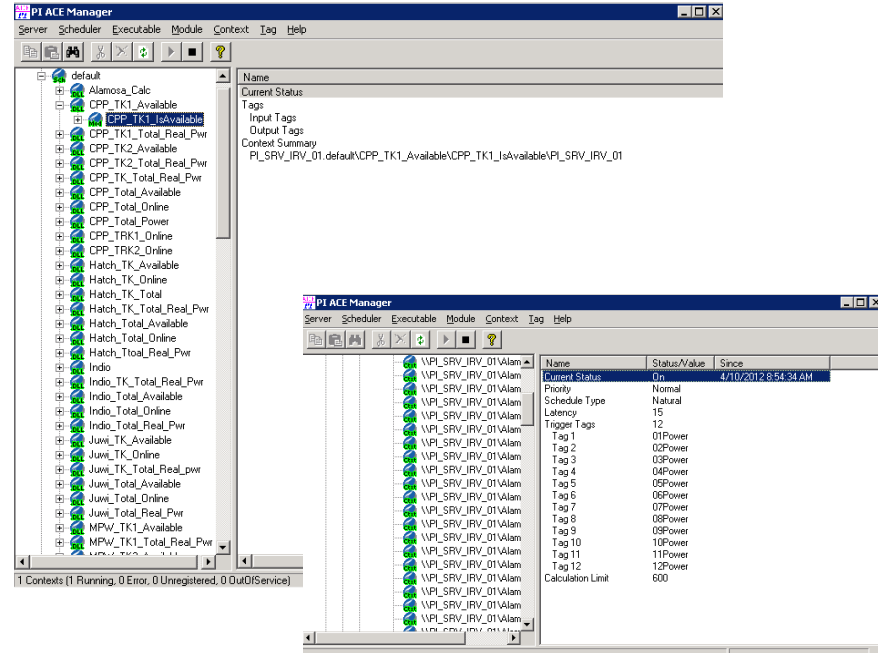- Real-time Data Feed

Lesson Learned – PI Asset Framework

- Large Scalability
- Tag Generation
- Templates First
- Total Fleet Device Update

Lesson Learned – Data Scrubbing

- PI ACE
- Redundant Tags - Single Metric
- "Bad", "I/O Timeout" Removed
- Clean Data

Lesson Learned

- Plan and Learn ahead, use PI System expertise
  - EA agreement is great asset
  - NOC, CoE, EPM
- Understand Architecture issues
  - Data Sources
  - Archives
  - Collectives
- Time zone issues
- Tag properties can change later

Lesson Learned

- Start In-house training early
  - YouTube is great asset
  - OSIsoft Technical Support
- Use Templates in PI AF for rapid deployment
  - Custom clients applications benefit a lot from PI AF structure
- PI System, sub-systems and data needs maintenance
  - OSIsoft NOC a great asset to detect and resolve issues
- Data scrubbing is easy (templates) in PI System using PI ACE

Next Steps

- International Deployment
- PI Web parts Enhancements
- Generation Forecasting
- Mobile Applications
- Customer Online Portal
- Automated Long Term Data Analysis
- Next Generation NOC

Contact Info

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THANK YOU

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