

US Nuclear Regulatory Commission (NRC): National Scale/Fleet Situational Awareness and Emergency Response - Lessons Learned

Presented by Paul Strasser, President & CEO



Agenda



About PPC

Review Case Study of the ERDS Project

Lessons Learned for Situational Awareness

Results & Benefits

PI Solutions for SA

Questions?





PPC is a recognized and responsible leader in innovative and cost-effective Technology and Management Solutions.

PPC is ever mindful to be at the forefront of Green Thinking and Sustainability in our key customer markets of: Energy, Environment, Public Safety, National Security, Financial, and Regulatory Compliance. We provide superior quality and always deliver on our promises.

FOCUS AREAS

INFORMATION SYSTEMS
DEVELOPMENT



KNOWLEDGE &
INFORMATION
MANAGEMENT



CYBER SECURITY &
INFORMATION
ASSURANCE



ENERGY MANAGEMENT &
ENVIRONMENTAL
CONSULTING



CONTRACT VEHICLES

General Services Administration Schedules

Information Technology Professional Services (IT 70)

Management, Organization, and Business Improvement Services (MOBIS)

Government-wide Acquisition Contract (GWACs) & Multiagency Contracts (MACs)

Chief Information Officers – Solutions and Partners 3 (CIO-SP3)



CMMI DEV / 3SM
Exp. 2018-01-30 / Appraisal #22960



NRC ERDS Case Study

Opportunities for Improved Situational Awareness

Story of the ERDS project

On March 28, 1979, Three Mile Island Unit 2 (TMI-2) reactor, near Middletown, Pa., had a partial melt down

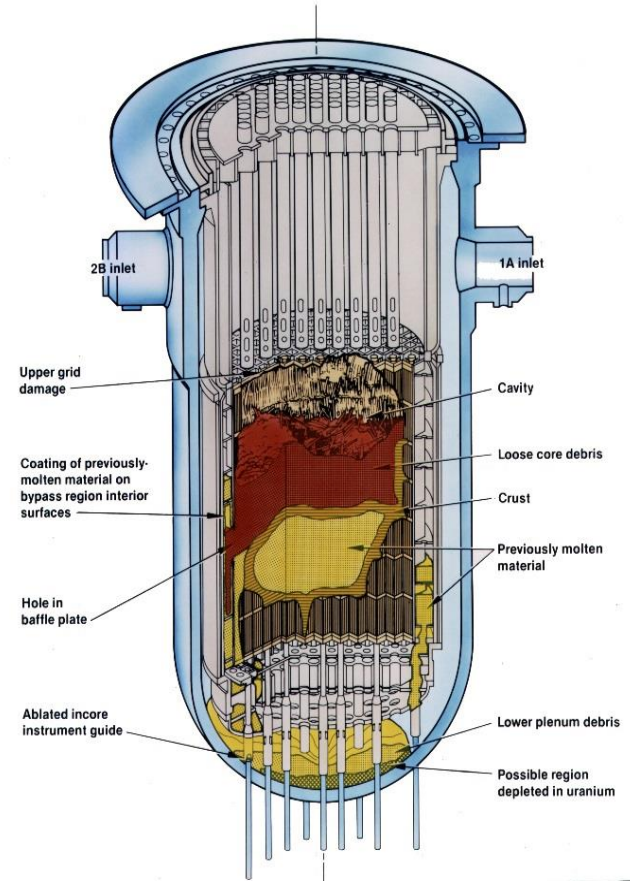
This was the most serious accident in U.S. commercial nuclear power plant operating history

The NRC tightened and heightened its regulatory oversight

In 1985 the NRC deployed the first Emergency Response Data System (ERDS)

In 2006 the NRC selects PPC/OSIsoft to replace an antiquated system with a new modern ERDS

TMI-2 Core End-State Configuration



Solution

In 2006, PPC deploys an integrated architecture based on the PI System that is designed to collect nuclear power plant performance and environmental data for analysis by NRC and State emergency response personnel.

It includes :

- Secure connectivity to all plants and State Regulators

- Redundant and High Availability capabilities

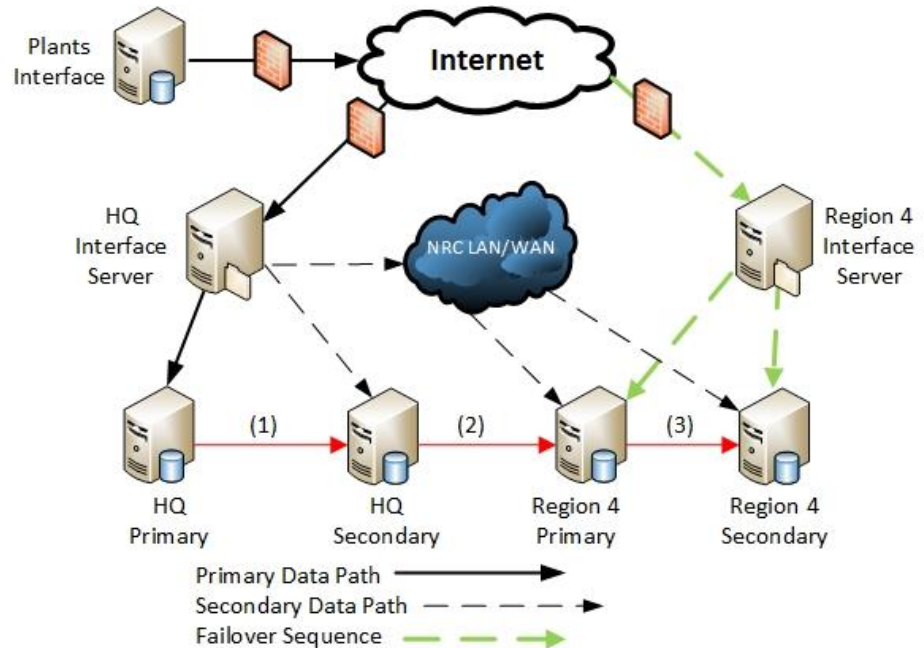
- A common interface for Situational Awareness

- Stores and presents data from nuclear power plants for the purpose of review and analysis

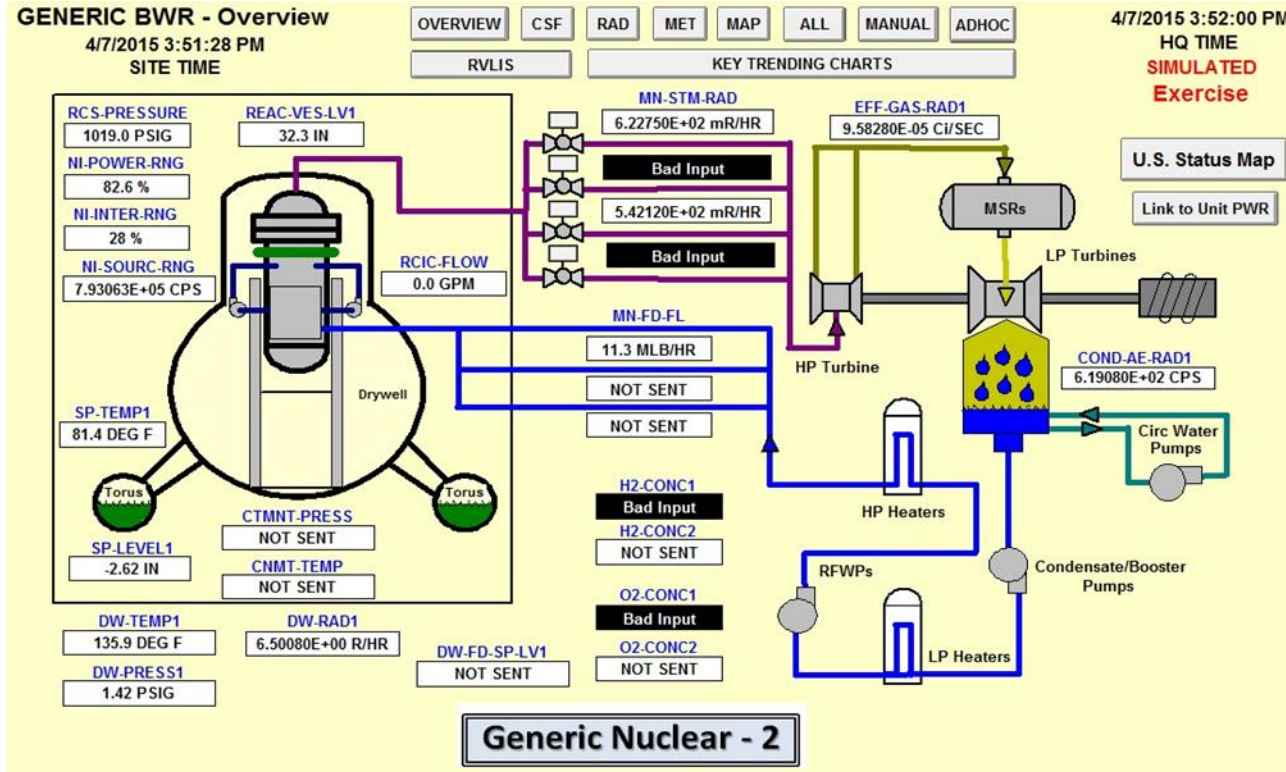
 - All 99 NRC licensed commercial nuclear power plants can be displayed

- Leverage OSIsoft PI capability & industry expertise

- Leverage PPC expertise in information security, OSIsoft PI implementation, nuclear power operations, and best practices to design ERDS solution



Single Pane of Glass



The integration of the
PI System:

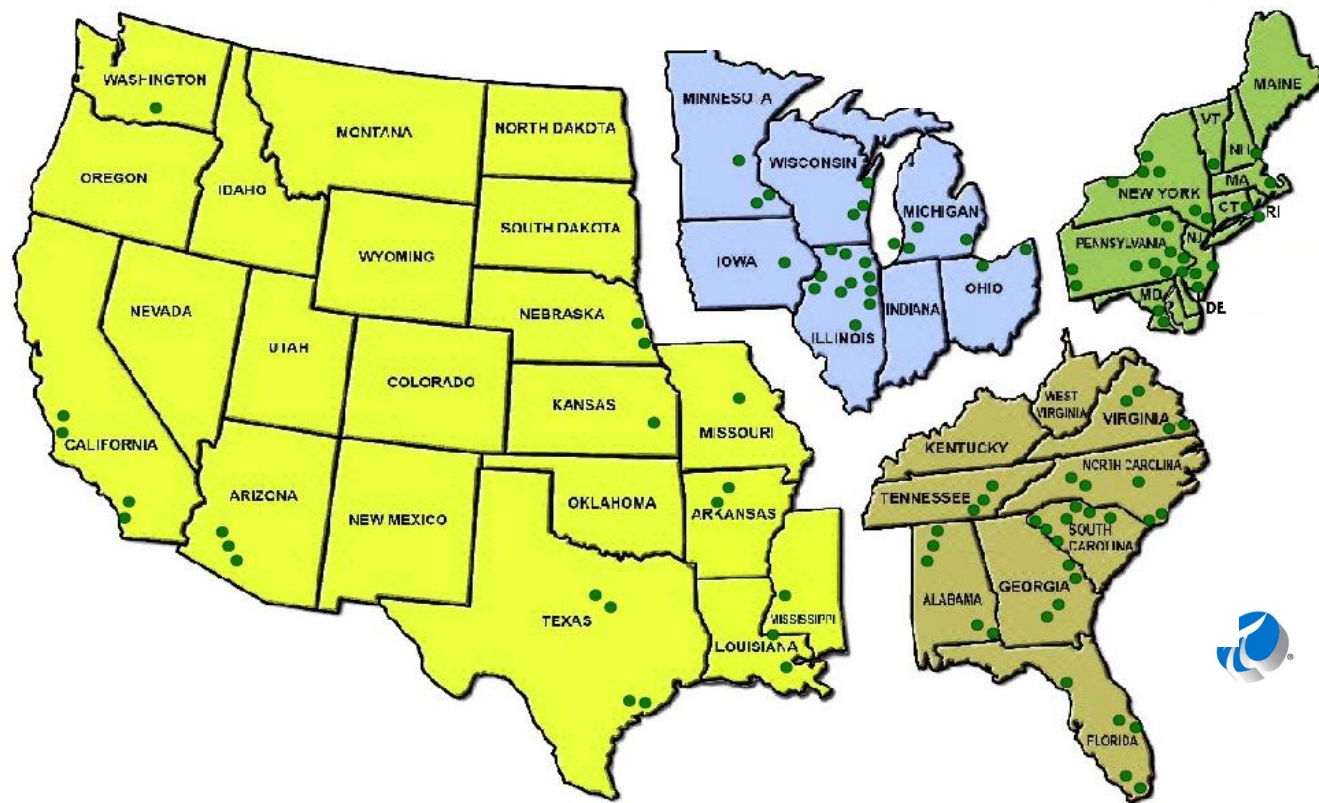
Data Server,

ProcessBook,

WebParts

delivers to decision
makers a single pane
of glass dashboard of
critical data to make
informed decisions

OSIsoft in the Nuclear Power Industry



Providing centralized
monitoring of all
operating NPP



U.S.NRC

United States Nuclear Regulatory Commission

Protecting People and the Environment

Lessons Learned for Situational Awareness

Situational Awareness

From Wikipedia, the free encyclopedia

Situational awareness (SA) is the perception of environmental elements with respect to time or space, the comprehension of their meaning, and the projection of their status after some variable has changed, such as time, or some other variable, such as a predetermined event. It is also a field of study concerned with understanding of the environment critical to decision-makers in complex, dynamic areas from aviation, air traffic control, ship navigation, power plant operations, military command and control, and emergency services such as fire fighting and policing; ...

Opportunities for Enhancing SA

Lesson Learned #1: Promoting improved emergency response coordination

Lesson Learned #2: Expanding situational awareness out of the control room

Lesson Learned #3: Improving trend analysis to support root cause analysis

Expected Results:

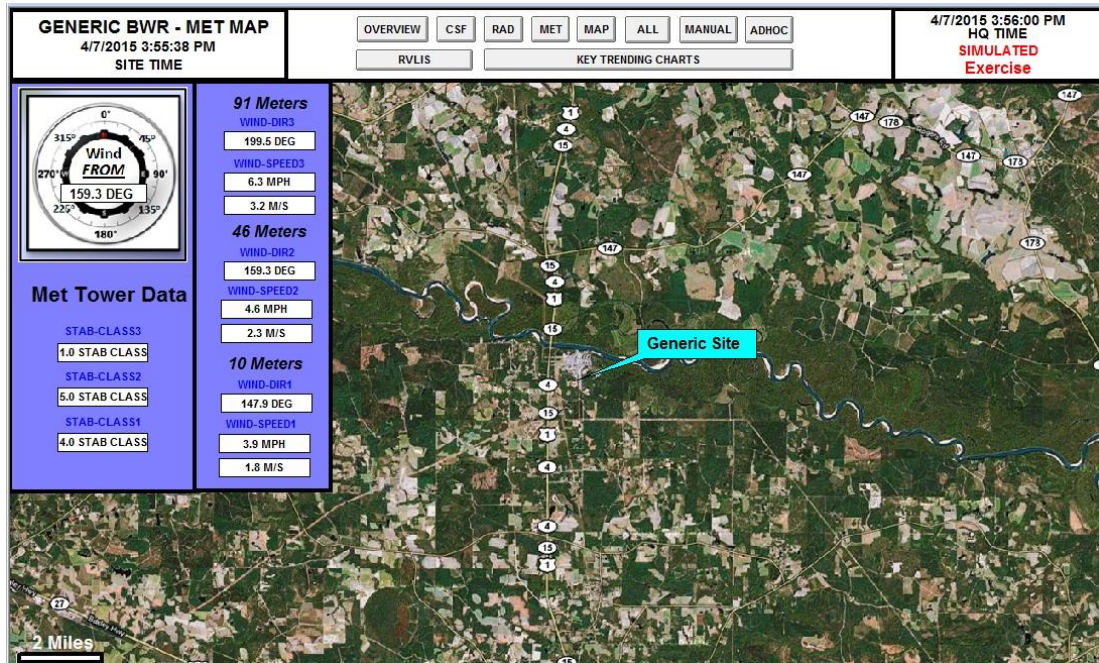
- Leverage Internal and External Sensor Data fusion

- Enhance coordination and communication

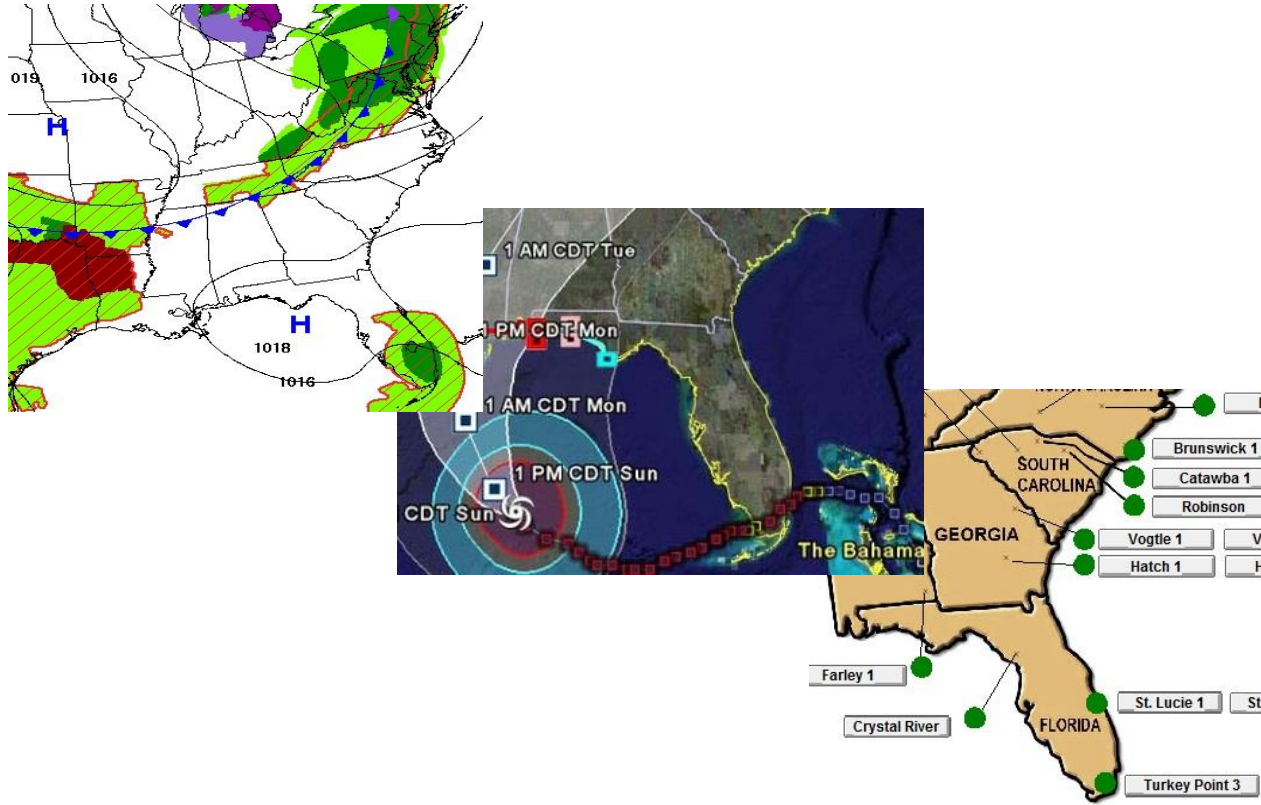
- Improving SA by expanding the community of users who can use the data to make informed decisions – “Shared Situational Awareness”

Lesson Learned #1: Improving Emergency Response

Limited functionality
Emergency
Response
Managers view
multiple screens
Expansion of “The
Internet of Things”
provides
tremendous
opportunity



Example: PI Systems and GIS Integration



Incorporation of Google Earth, NOAA, HURREVAC and other existing tools to create a single view, will provide a better visualized concise analysis

Integration with modeling products such as RASCAL

Benefit: Actionable Data through GIS Integration

Isolate the location

Model the impact

Monitor the event

Leverage data

- Plant Sensor Data

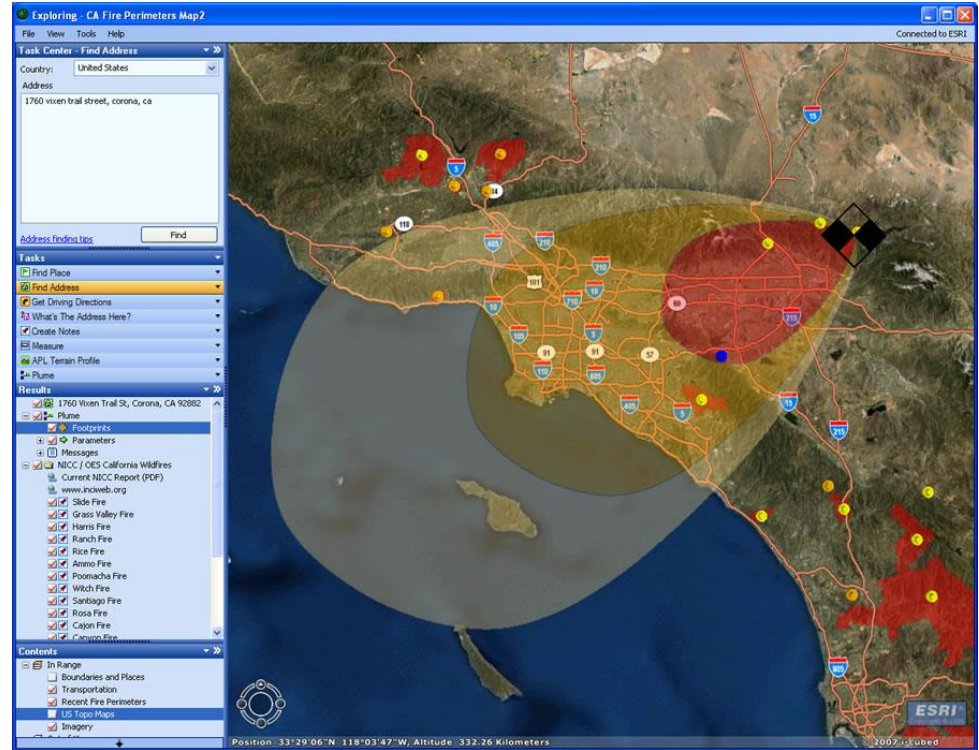
- Emergency Responder Locations

- Weather Patterns

- Regional Monitors

- Traffic Management

Improve response and minimize impact



Improving Health, Safety, and the Environment

Lesson Learned #2: Expanded Community

How do we better answer: Who? What? Where? When? How?

By improving information sharing

By improving data accuracy and reliability

By expanding the reach of situational awareness out of the operations center

By enabling resources on the ground

By integrating disparate data sources

Access PI System data anywhere and from any device

Combine PI Coresight displays with other web applications to gain even more insights and drive new innovations

PI Coresight allows users a quick and easy way to share displays and encourages collaboration across the enterprise

Give all your users secure access to the data they need with one simple installation and no special software on users machines



Benefit: Expand Situational Awareness Community

- Integration of data to provide resources in the field or at the plant with more insights and situational awareness
- Allows ad-hoc customization to allow individual analysis which can then be shared dynamically
- Provides emergency response teams to make informed decision in the midst of an emergency with real-time data on hand held or mobile devices

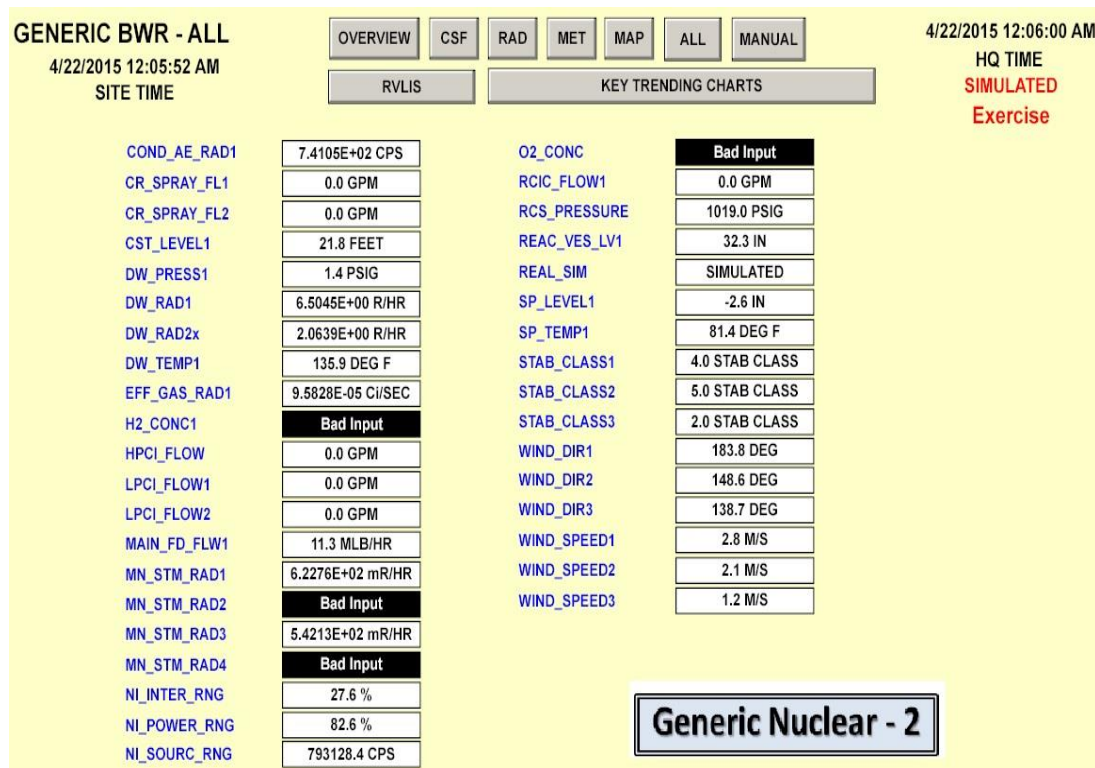


Access PI System data from any device and from anywhere.

Lesson Learned #3: Improve Root Cause Analysis

Currently, first glance of “ALL” points, team members don’t know what is up-to-the-minute unless they recognize the values that are out of range and then launch a trend

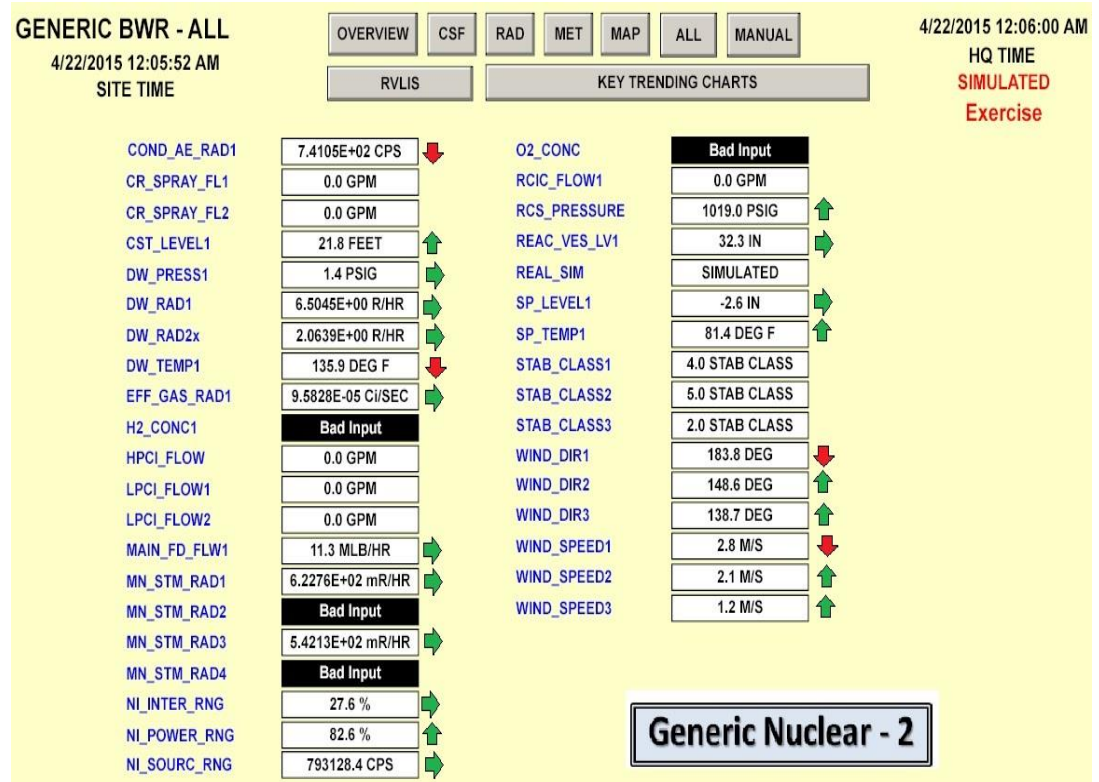
Implementation of a trending indicator has resulted in quicker analysis and lead to better trouble shooting to identify the origin of the issue



Example: Expanded Data Collection Improves Results

Addition of indicators that show how points are trending on specific screens

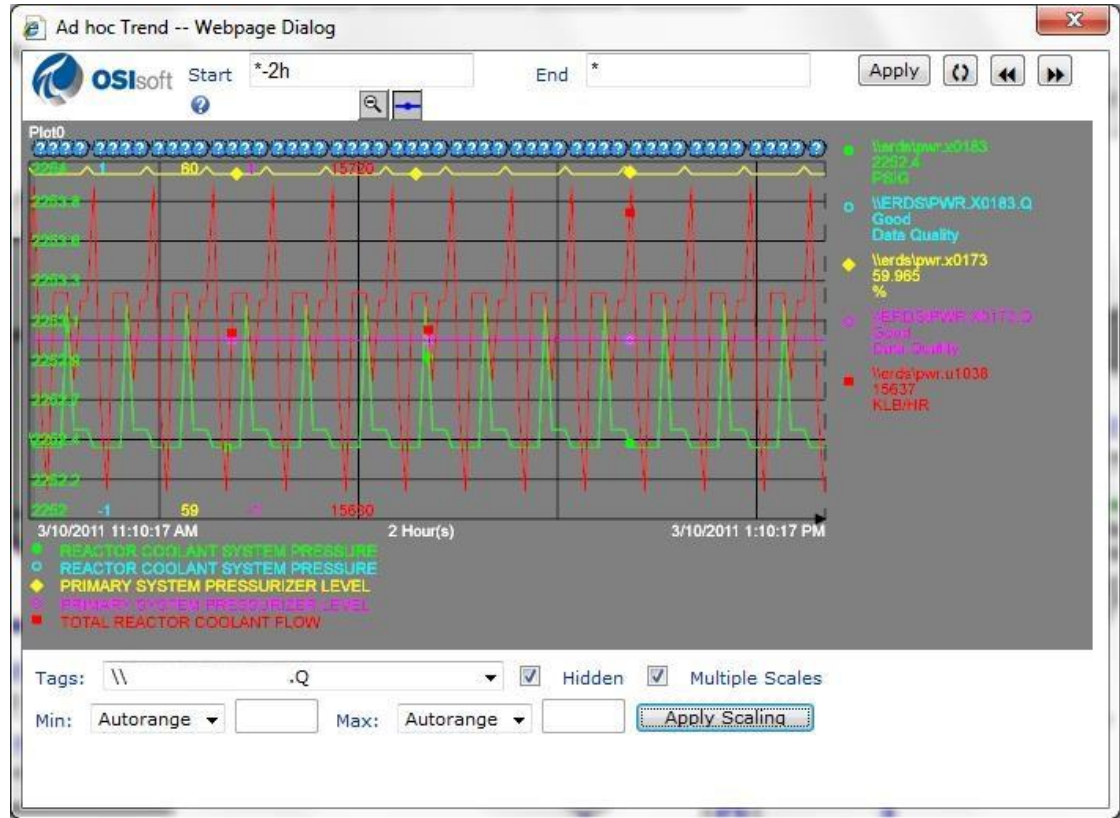
Quality tags identify problem areas



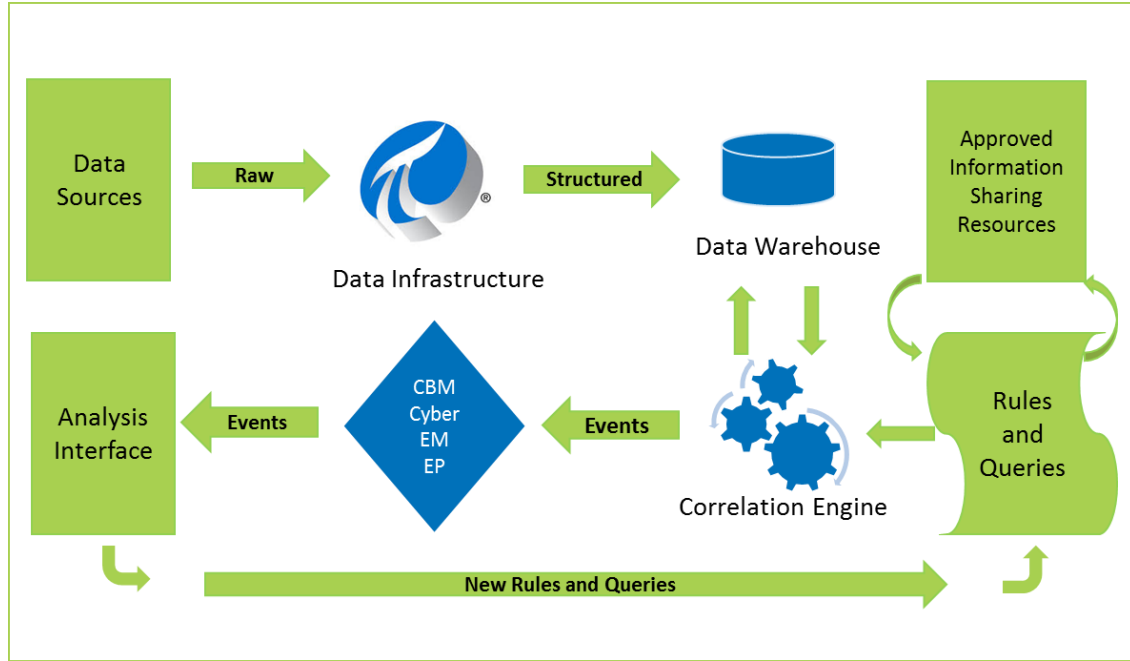
Benefit: Moves toward Predictive Analysis

Incident response teams can immediately see how points are trending without having to drill down on each point or create an ad-hoc trend

Gives the ability to create and use analytics on specific points to highlight and forecast issues before they become critical



PI Solutions Improve Situational Awareness



Provides a comprehensive situational awareness tool to capture and maintain an accurate, shared common operating picture

Applicable to:

- Lifecycle Maintenance
- Cyber Security
- Energy Management
- Emergency Preparedness

Contact Information

Paul Strasser

paul.strasser@ppc.com

President & CEO

Project Performance Company, LLC

Questions

Please wait for the **microphone** before asking your questions



State your **name & organization**

Please don't forget to...

Complete the Survey for this session



The **Power of Data**
DECISION READY IN REAL-TIME

Evaluation Form (Seminar Location - Date)

Name: _____

Company: _____

Email: _____

Quality and content of the presentations

Poor Good Excellent N/A

Welcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Journey To Real-Time Operational Intelligence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Power of Connection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tank Level Management System	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using the PI System to Aid in Troubleshooting Operational Aspects of Oil and Gas Well Drilling and Completion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unleash your Infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information on the Spot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wrap-up/Seminar Conclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Quality and organization of the seminar

Choice of date	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time allowed for lunch/breaks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Choice of presentations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Break and time allowed for the presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>