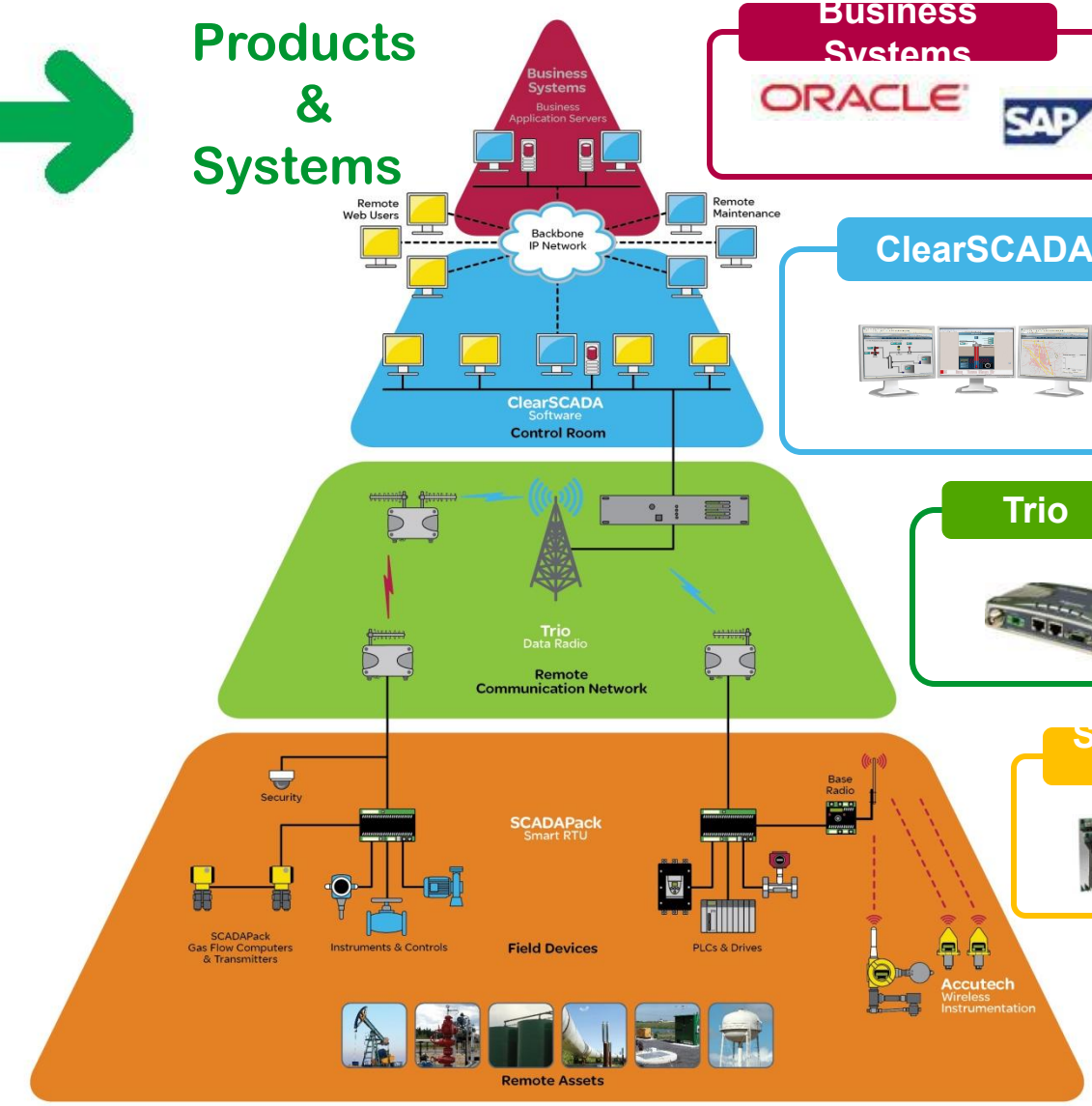
ClearSCADA Product Review

Telemetry & Remote SCADA Solutions

Schneider Electric

Telemetry & Remote SCADA Solutions

Products & Systems



Business Systems

ORACLE SAP OSIsoft ArcGIS

ClearSCADA

Object oriented, wide area SCADA for critical Infrastructures in WWW, O&G and Electrical Energy integrated SCADA and ready to use Telemetry features
Wide range of open protocols and interfaces:
DNP3, IEC60870-5, WITS, Modbus, OPC, SQL, …

Trio

Licensed/license-free radios for serial and Ethernet communication, support of Modbus,
DNP3 and IEC60870-5-101/104 protocols

SCADAPack

Cost effective, scalable, Smart RTU
Modbus-centric and DNP3/IEC60870-centric

Accutech

Rapid-deploy, self contained, battery-powered
Wireless Instruments

Telemetry & Remote SCADA Solutions

Applications

FlowStation

Complete pump station controller ideal for use in storm and wastewater lift stations and pump-up applications. …

Water & Waste Water

Realflo

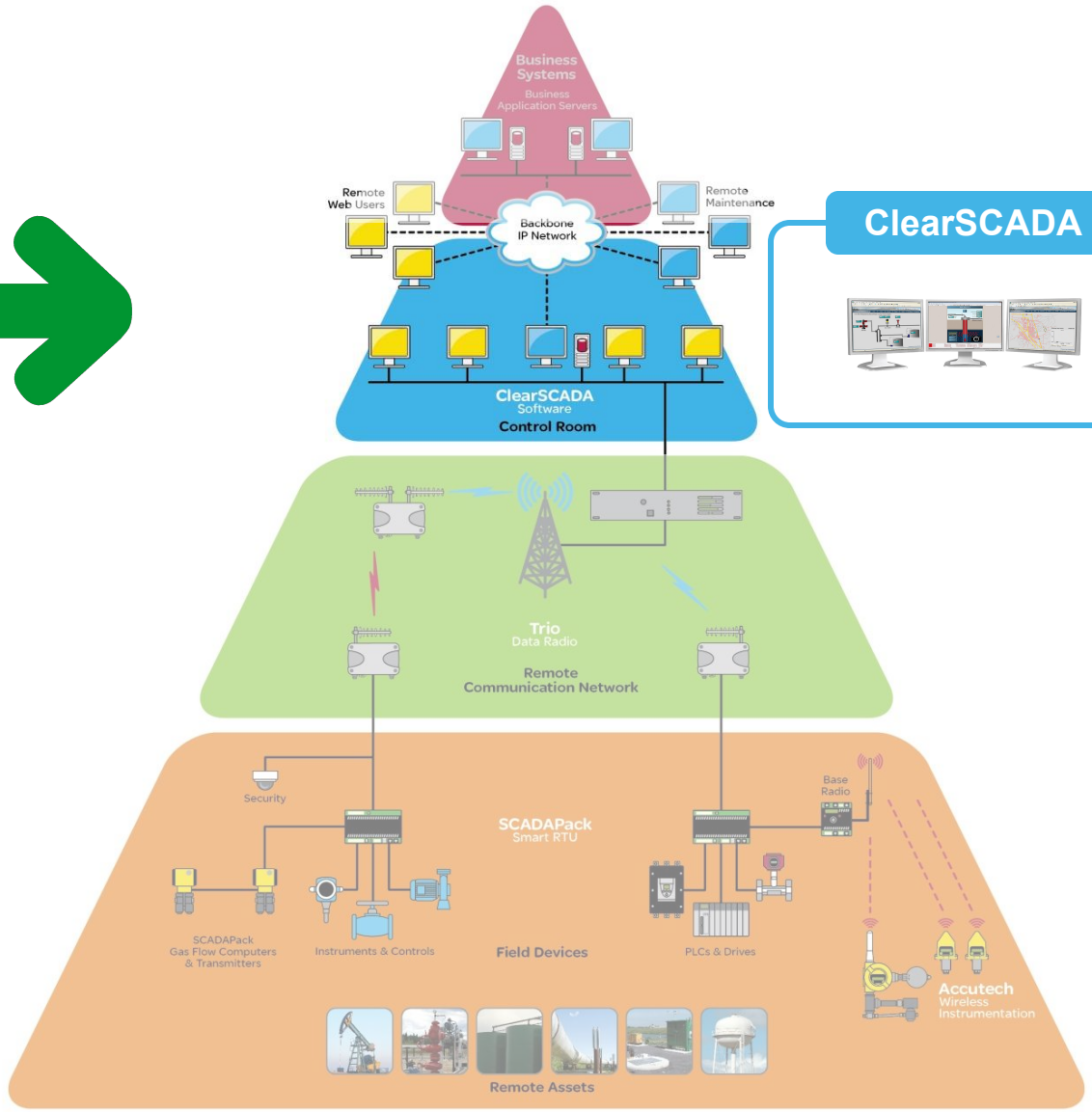
Flexible electronic flow measurement solutions for Upstream Production and Midstream including Transmitters, Gas Flow Computers

ProductionPlus

Distributed and scalable well automation and management solution for 1 to 30+ wells per pad. Based on integrated hardware and software solution to optimise production and extend well lifecycle.

Oil & Gas

Telemetry & Remote SCADA Solutions



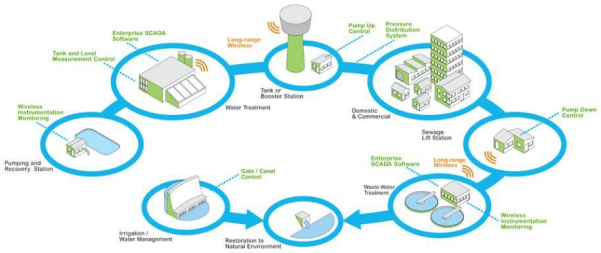
ClearSCADA

Object oriented, wide area SCADA for critical Infrastructures in WWW, O&G and Electrical Energy integrated SCADA and ready to use Telemetry features
Wide range of open protocols and interfaces: DNP3, IEC60870-5, WITS, Modbus, OPC, SQL, …

Target Markets – Remote Management of Critical Infrastructure

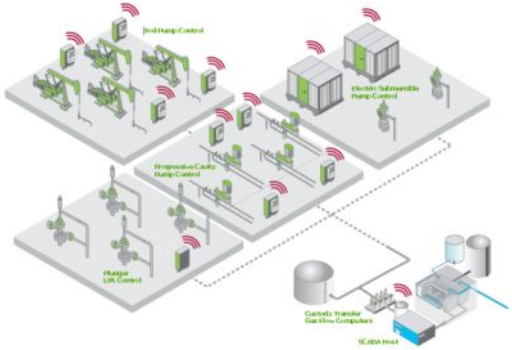
Water and Wastewater

Wide area SCADA for pumping & booster stations
Treatment plants: T1/T2/T3



Oil & Gas

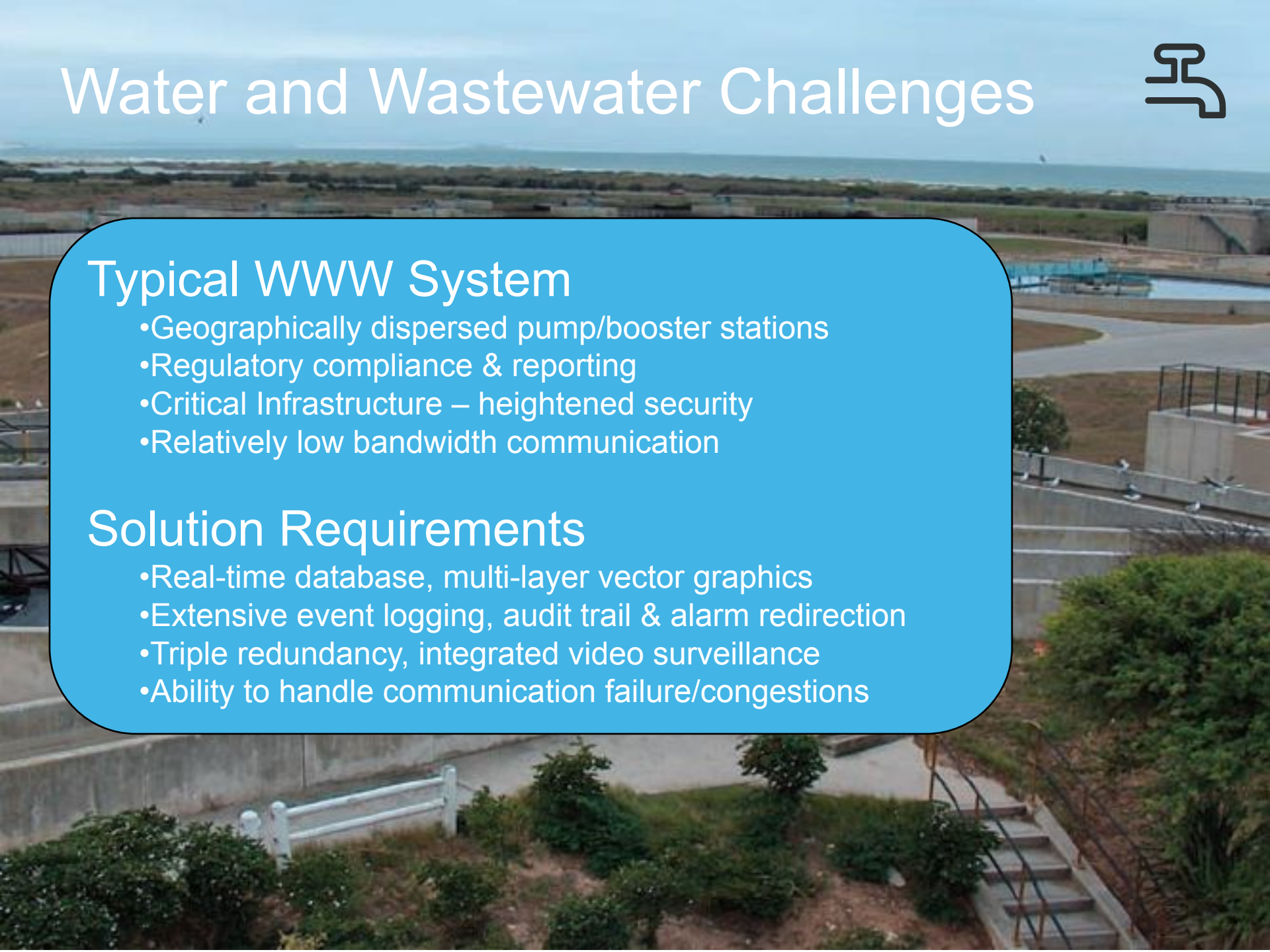
Well head monitoring & control
Gas Flow Computer applications
Artificial lift controller (RPC, ESP, Plunger)
Water Injection, Gas Lift, Block Valve control



Power, Hydro Power

Substation automation, Distributed Automation
Renewable Energy

Water and Wastewater Challenges



Typical WWW System

- Geographically dispersed pump/booster stations
- Regulatory compliance & reporting
- Critical Infrastructure – heightened security
- Relatively low bandwidth communication

Solution Requirements

- Real-time database, multi-layer vector graphics
- Extensive event logging, audit trail & alarm redirection
- Triple redundancy, integrated video surveillance
- Ability to handle communication failure/congestions

Onshore Oil & Gas Challenges

Typical well and field facilities

- Typically large number of geographically dispersed sites
- Uninterrupted operations in real time

Solutions requirements

- Real-time database, multi-layer vector graphics
- Maximum availability through redundancy, alarm redirection

ClearSCADA - Overview

- Integrated scalable SCADA Software
- Designed to manage remote assets
- With secure and reliable capabilities
- Open for easy connection to business and IT systems

Value Proposition

ClearSCADA

- Controlling total cost of managing and operating remote assets
  - Object-oriented development environment with on-line configuration changes
  - Built-in SCADA functions with integration to Schneider Electric Telemetry offer
  - Scalable and flexible SCADA architecture design
- Ensuring secure and reliable operations across wide area network
  - Secure protocols offering no loss of data and reliable communication over WAN networks
  - Built-in multi-level security management
  - Triple redundancy of Server and LAN
- Maximising asset productivity and operational efficiency
  - Easy integration to business systems (ERP, Asset Management software..)
  - Integrated to asset production optimisation solution (ProductionPlus)
  - Integrated diagnostics and predictive maintenance

Key Components

ClearSCADA

Integrated with Telemetry offer
- Direct access to Trio radio diagnostics
- Configuration management of SCADAPack RTU
- Direct configuration and data collection from SCADAPack Flow computers

Enhanced Security
- Multi-level security handling
- Support for Secure protocol
- Servers behind DMZ

Built-in Telemetry Functions
- IEC 60870-5-101/104 and DNP3
- Local data storage
- Automatic back-filling
- Multiple WAN Communication handling

Business and IT Integration
- SQL interface (ODBC, OLE-DB)
- SOAP/XML
- .NET
- OPC DA/HDA

Reliable Operations
- Triple Server redundancy
- Dual LAN and WAN redundancy

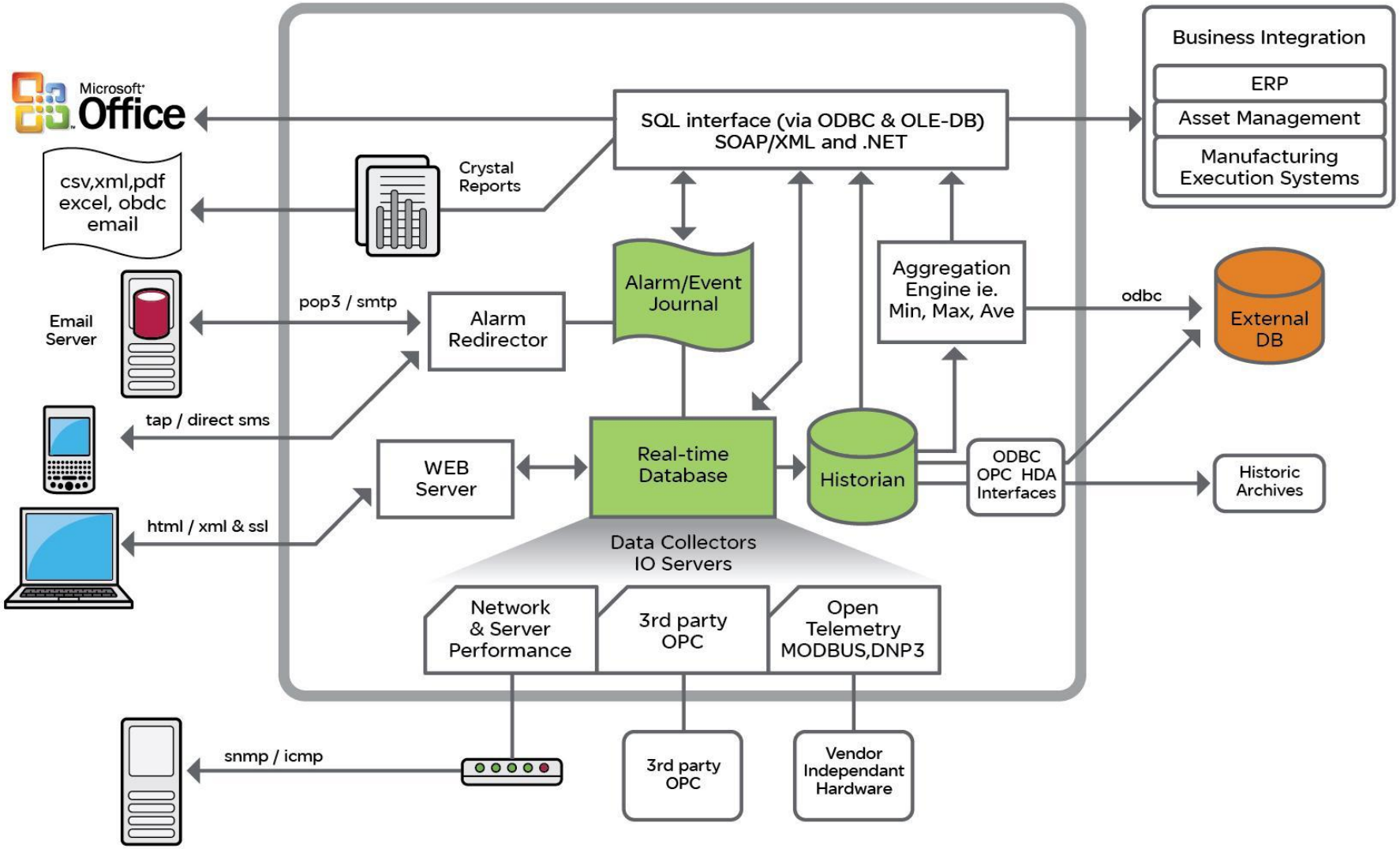
Advanced Design Environment
- Fully Object Oriented
- Templates
- Vector-based graphics
- IEC 61131 logic engine

Integrated SCADA Functions
- Web-Server
- Historian
- Reporting generation
- Alarm redirection

Scalable Design
- 250 points to 450,000 points
- Full client or web client
- Standalone to triple redundancy
- On-line configuration changes

Architecture

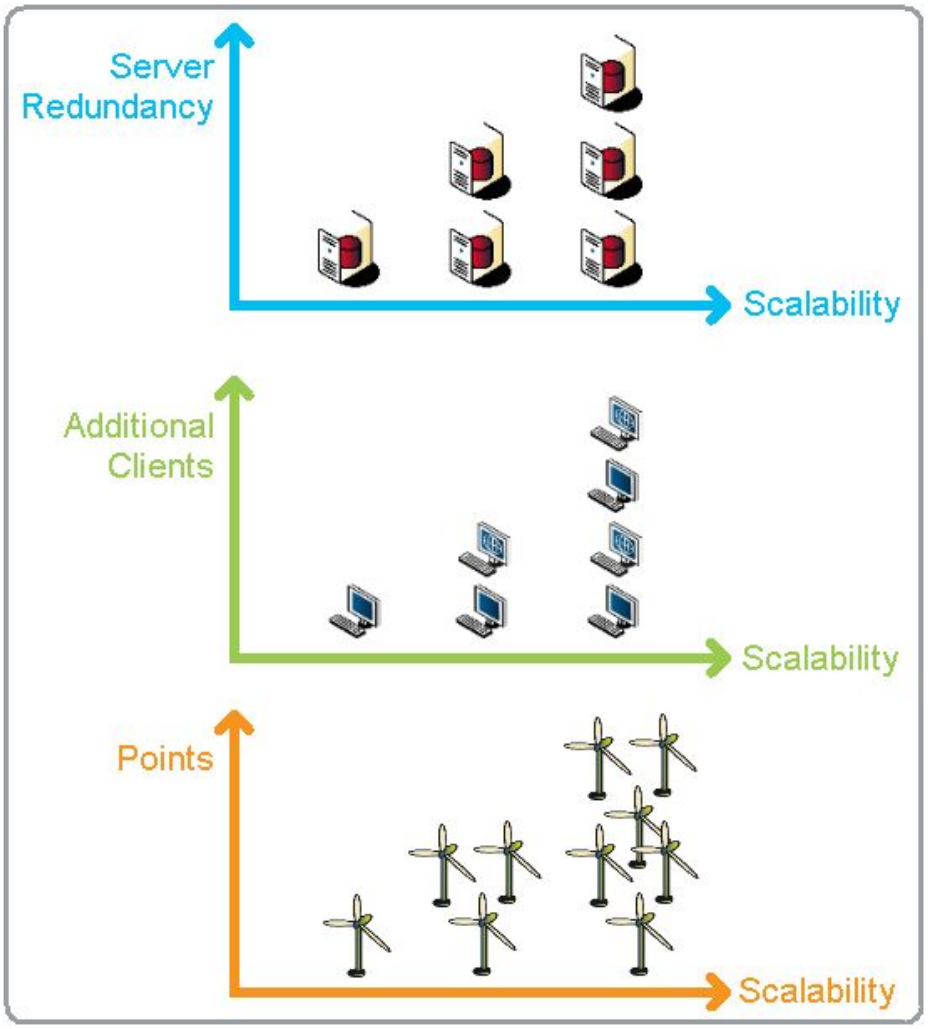
ClearSCADA



Scalability for Investment Protection

ClearSCADA

- Accommodate future expansion plans
- 32-bit or 64-bit platform
- Standalone to triple redundancy
- 250 Points to 450k Point licenses
- Full capability and Web clients

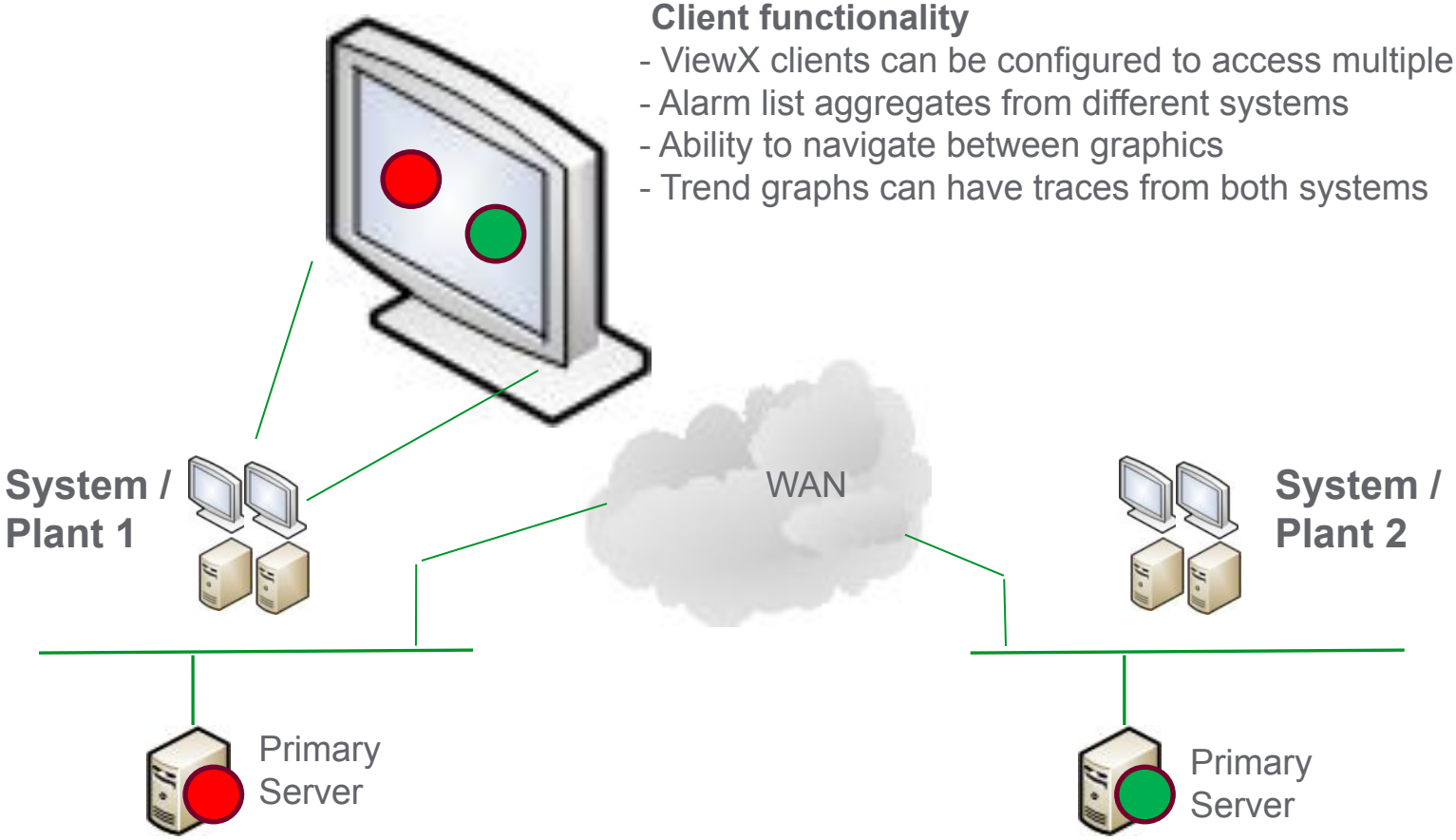


Distributed Server Architecture

ClearSCADA

Client functionality

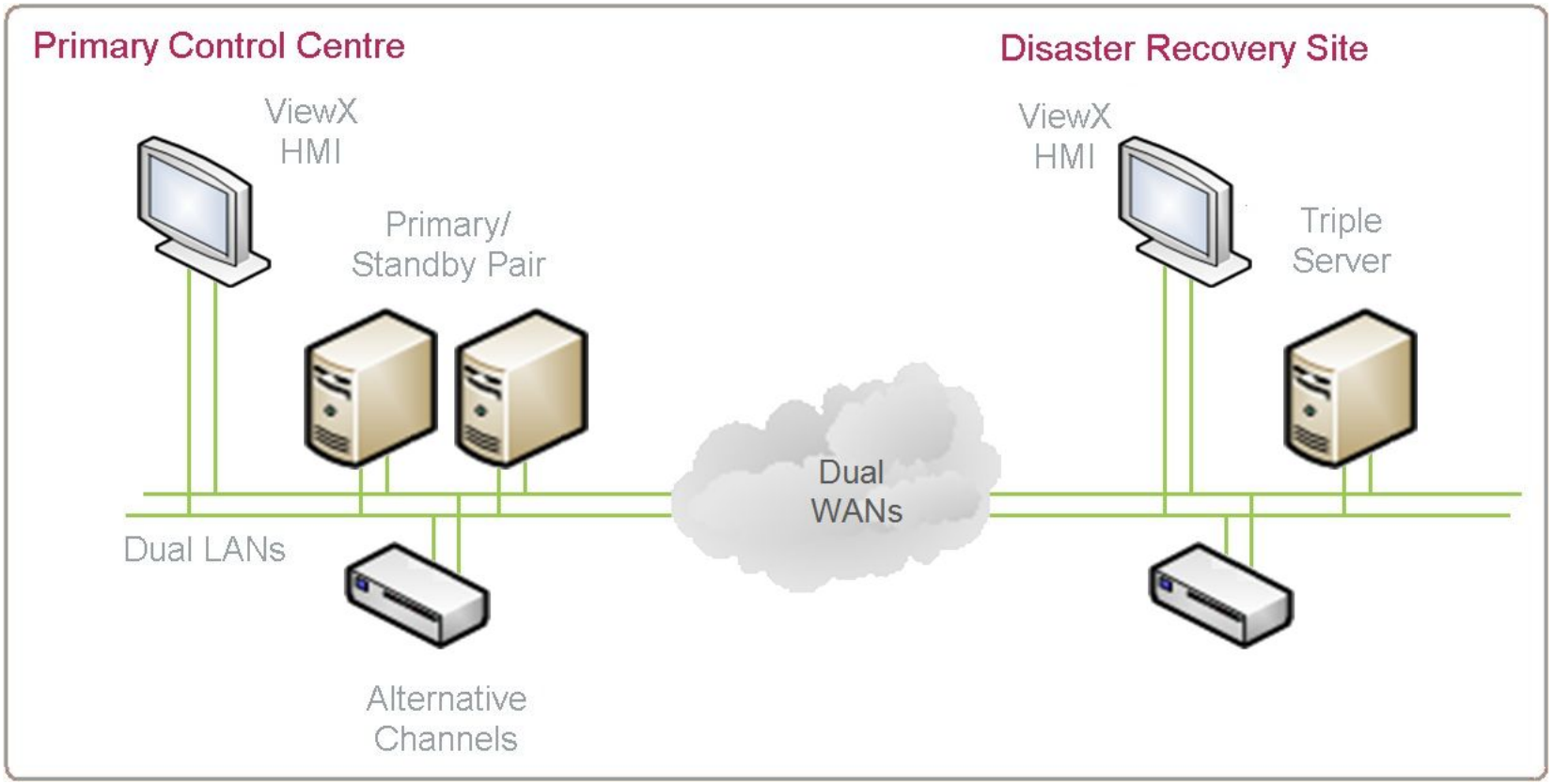
- ViewX clients can be configured to access multiple systems
- Alarm list aggregates from different systems
- Ability to navigate between graphics
- Trend graphs can have traces from both systems



Reliability through Redundancy

ClearSCADA

- Up to 3 Redundant Servers
- Standby Server can be located at remote site
- Dual LAN and WAN communication paths

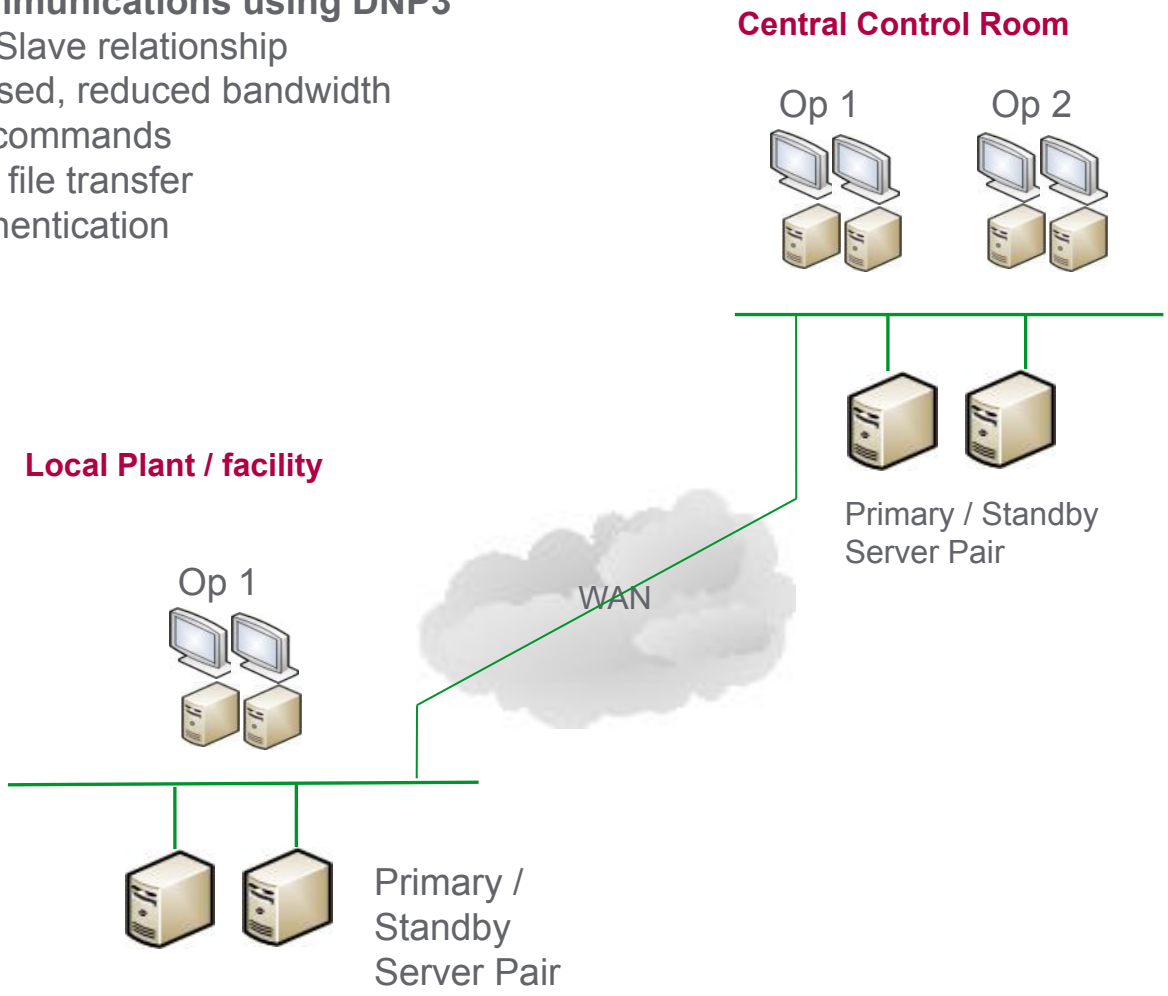


Tiered Server Architecture

ClearSCADA

WAN communications using DNP3

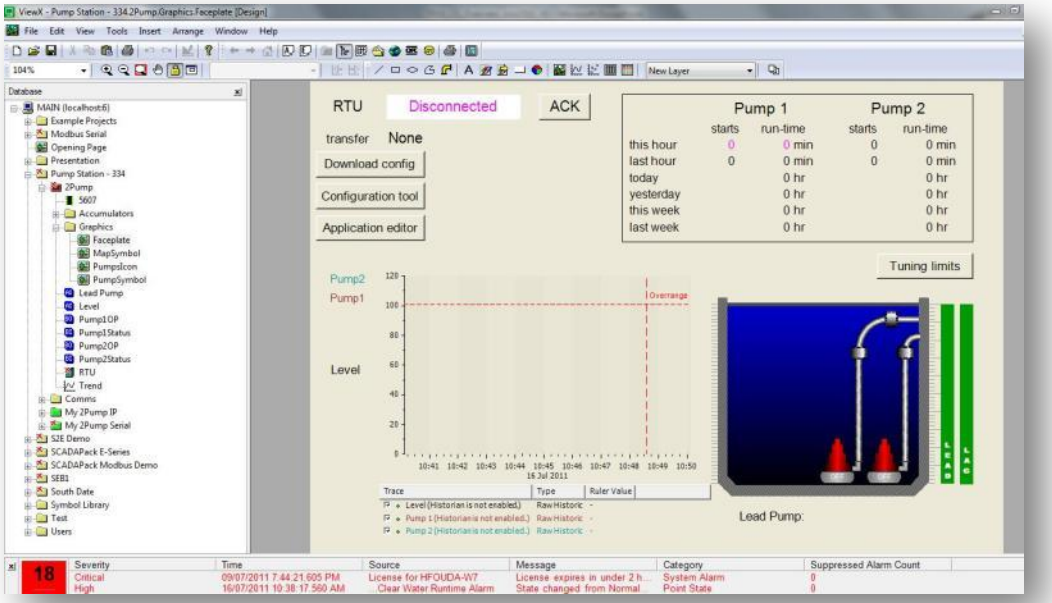
- Master / Slave relationship
- Event based, reduced bandwidth
- Remote commands
- Supports file transfer
- Data authentication



Integrated Development Environment

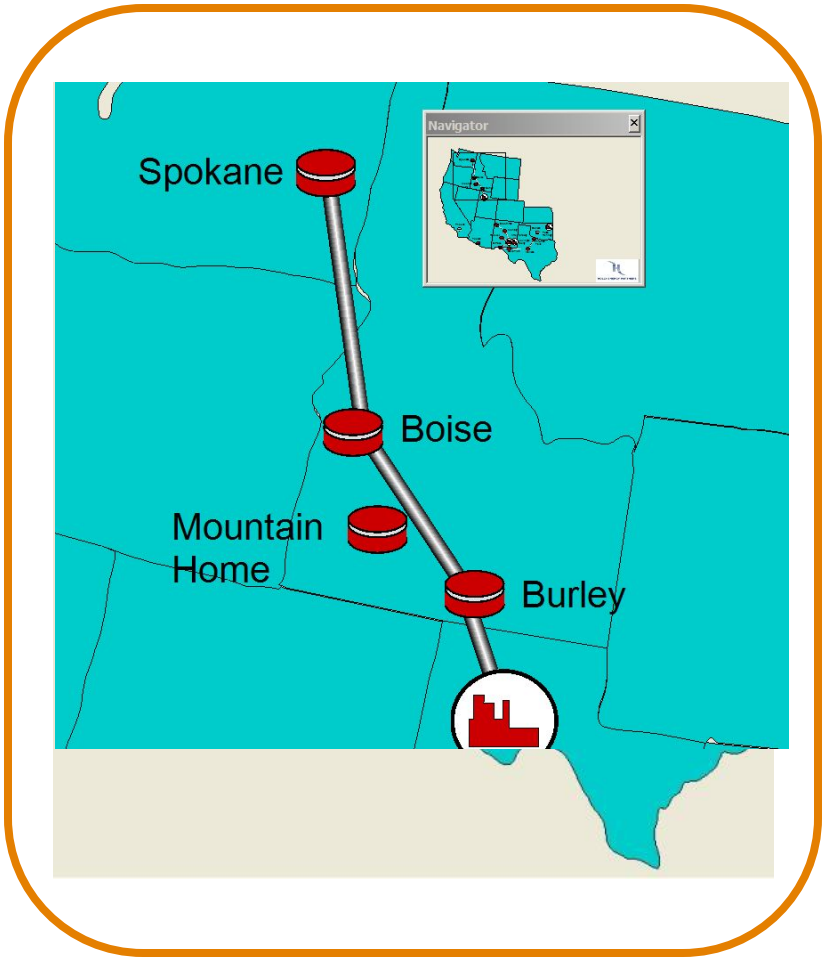
ClearSCADA

- Integrated Development Environment used for both Operators and Engineers – no separate development license
- Support for multiple programmers at the same time
- 'exclusive control' to prevent multiple users editing single object at one time
- Automatic audit log of all configuration edits
- Redundant servers automatically updated



Vector Graphics

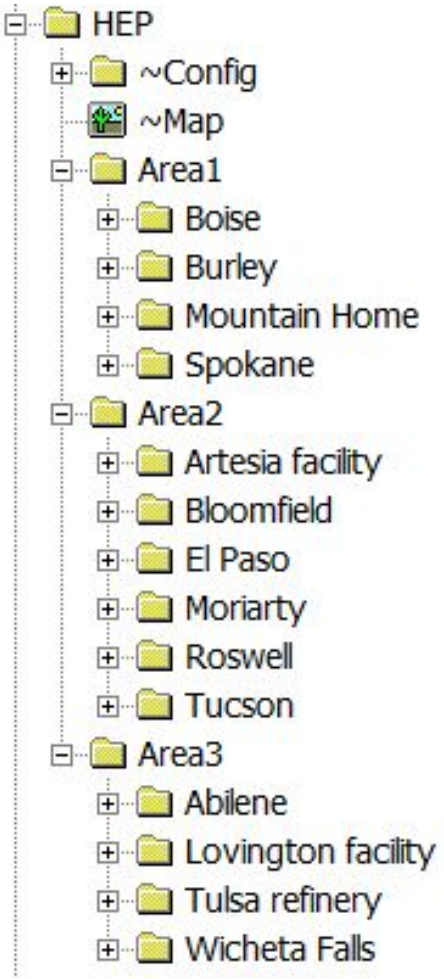
- Vector graphics are ideal for map display
- Independent of Windows resolution, no loss of detail
- Import AutoCAD format



Object Oriented

ClearSCADA

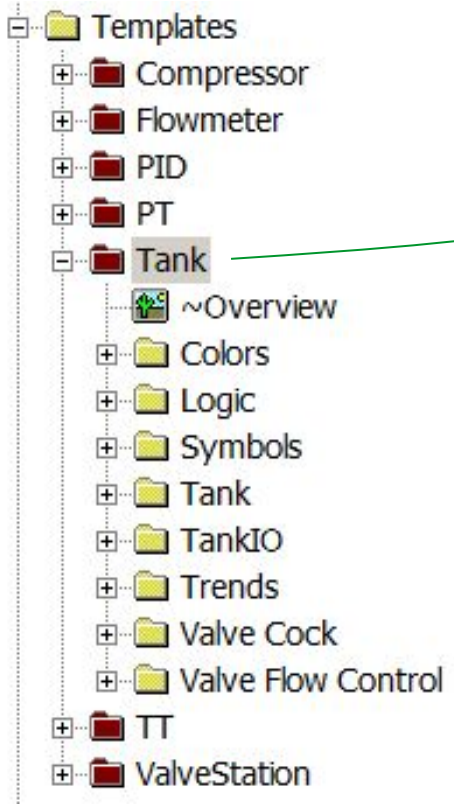
- Object based architecture to develop reusable object templates
- Low level objects represent single devices (pumps) with associated
  - Tags, alarms & events
  - Security
  - communication parameters
- High level objects represent entire sub-systems and typically comprise groups of devises

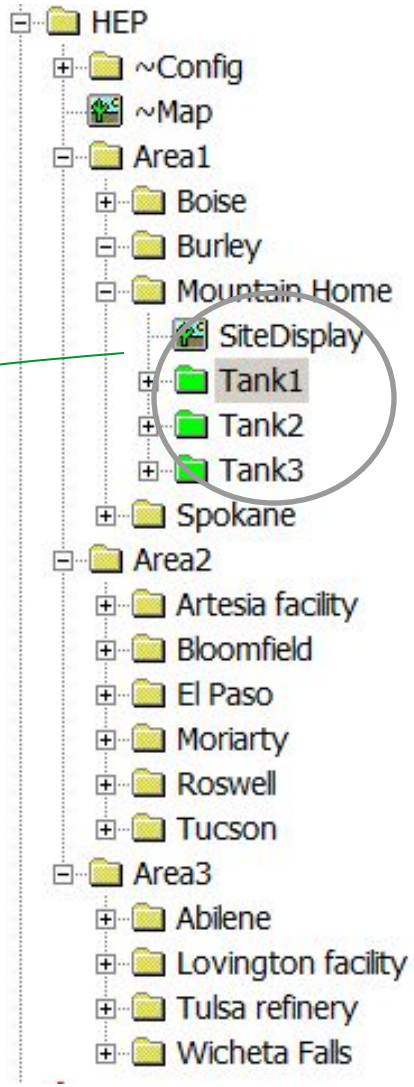


Use of Templates

ClearSCADA

- Create templates for duplicate assets and devices to ensure standardisation, to support rapid development and lower TCO

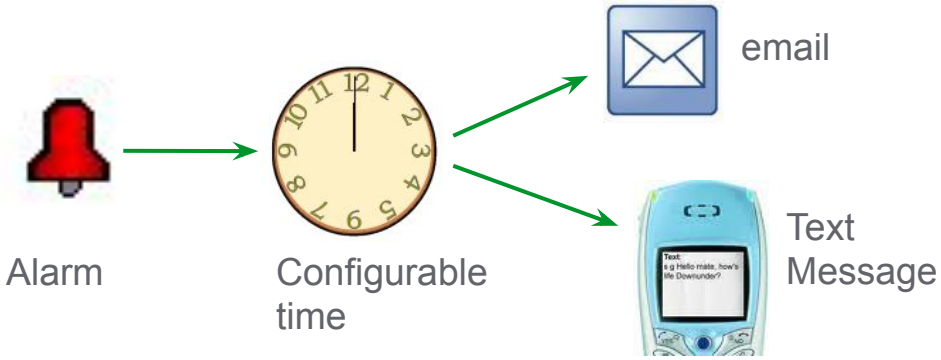




Alarm Management

ClearSCADA

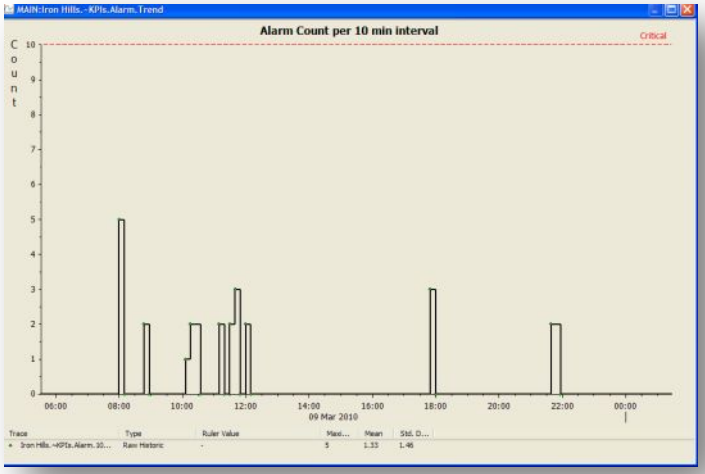
- 1000 alarm severity levels
- Associated help page
- Filter by area
- Send alarm to email and/or SMS text message
- Escalation of alarms based on business rules
- Built-in logic engine can be used for advanced alarming

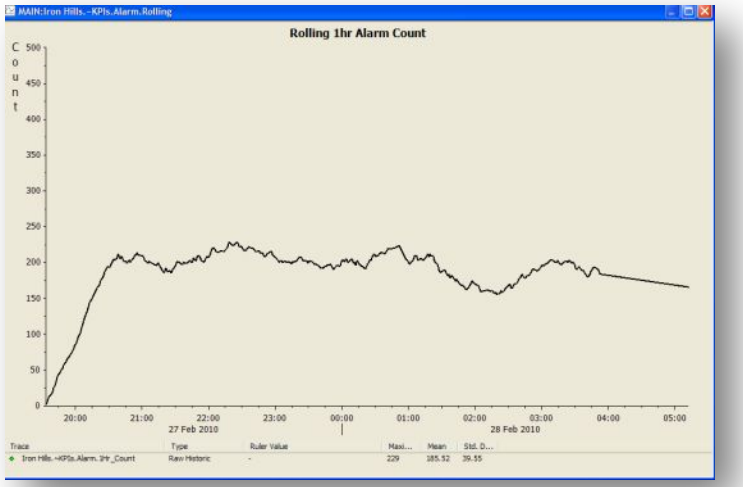


Alarm Management

ClearSCADA

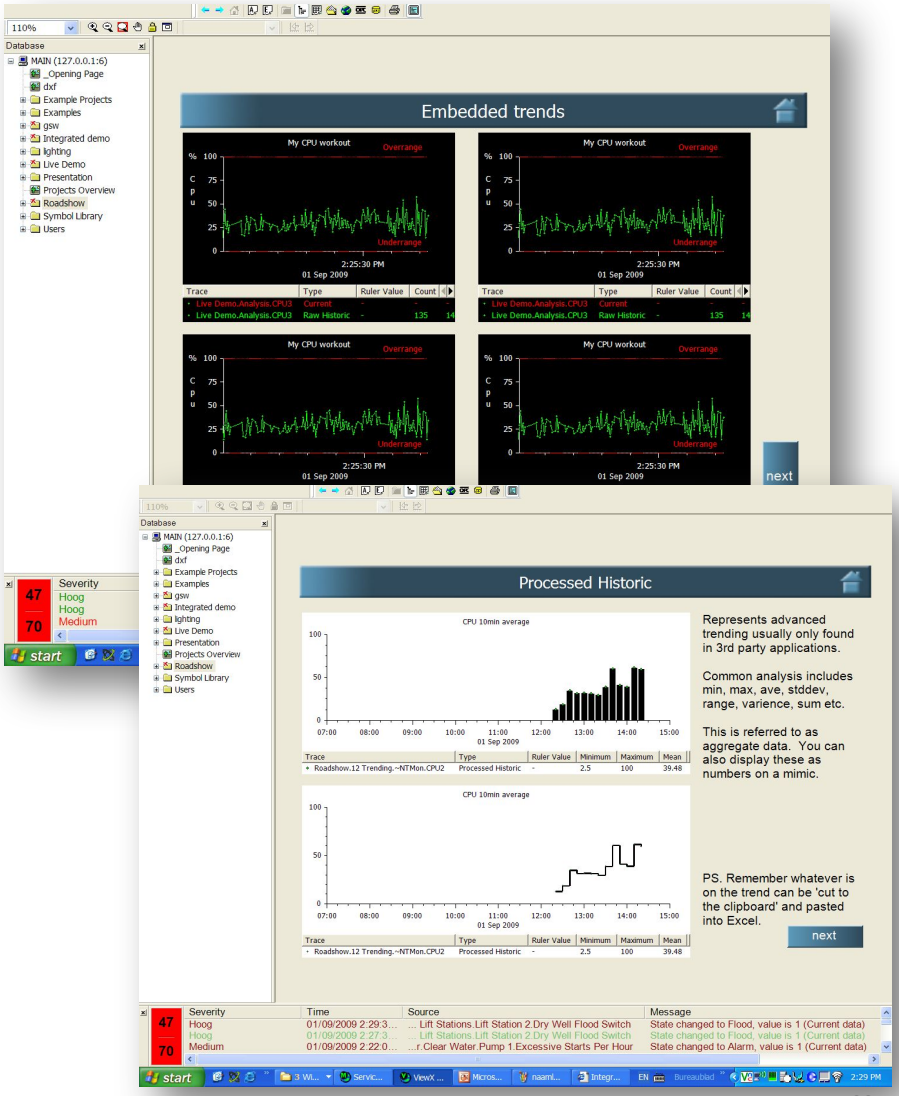
- Built-in alarm analysis tool provides much of what is required for API 1167 and PHMSA standards
- All alarms are automatically entered into event journal.
- Event journal can be queried using standard SQL
- Logic can monitor alarm rate/count in real-time and trend/report result
- Alarms can be suppressed based on another alarm in the database without writing logic.





Build-in Historian

- Full Historian Built-in
- Standard SQL to access data-base
- Trend Engine support for:
  - Real-time trend
  - Historical trend
  - Processed Historical trend (AVG, MIN, MAX)
  - XY Plots
- Long term archiving



Reporting

ClearSCADA

- Enhanced database query and reporting to optimise information sharing
- Scheduler allows for creation and distribution of reports with pre-configured templates
- Open industry standard interfaces for seamless integration with business systems

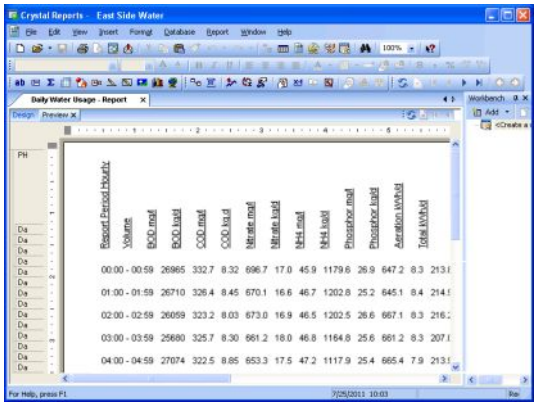
Schneider Electric

Water Quality Report : Daily

Water Inlet

Report Date: 26-Oct-2010 15:39:31

	Inlet												Energy	
Report Period Hourly	Volume	BOD mg/l	BOD kg/d	COD mg/l	COD kg/d	Nitrate mg/l	Nitrate kg/d	NH4 mg/l	NH4 kg/d	Phosphor mg/l	Phosphor kg/d	Aeration kWh/d	Total kWh/d
00:00 - 00:59	26965	332.7	8.32	696.7	17	45.9	1179.6	26.9	647.2	8.3	213.8	59.5	76.7
01:00 - 01:59	26710	326.4	8.45	670.1	16.6	46.7	1202.8	25.2	645.1	8.4	214.9	60.9	69.6
02:00 - 02:59	26059	323.2	8.03	673	16.9	46.5	1201.5	26.6	667.1	8.3	216.2	60.7	76.2
03:00 - 03:59	25680	325.7	8.3	661.2	18	46.8	1164.8	25.6	661.3	8.3	207	60.7	73.8
04:00 - 04:59	27074	322.5	8.85	653.3	17.5	47.2	1171.9	25.4	665.4	7.9	213.9	58.7	76.8
05:00 - 05:59	26523	339.7	8	667.8	16.5	47.7	1177.2	25.4	680.4	8.5	212.7	60.3	76.3
06:00 - 06:59	25922	310.4	8.59	662.3	16.7	44.6	1182.8	25.6	670.3	8.2	217.3	61	75.8
07:00 - 07:59	25287	319.5	8.58	674.3	16.4	45.2	1207.2	25.5	665.7	8.8	208.8	60.8	74.5
08:00 - 08:59	26136	319.4	8.67	651.5	16.9	45.2	1160.2	26.1	661.8	8.6	206.2	61	75.8
09:00 - 09:59	25178	325.1	8.29	682	17	46.8	1243	26.6	660.1	8	214.2	58.1	77.9
10:00 - 10:59	25260	318.6	8.22	635.5	16.6	45.4	1158.4	26.5	636.6	8.3	224.8	58	76.2
11:00 - 11:59	25915	323.2	7.92	655.6	17	46.5	1196	24.9	640	8.4	220.7	57.9	75.1
12:00 - 12:59	25718	315.6	7.97	651.2	16.6	44.3	1172	26.3	643.5	8.4	211.9	60.2	74.9
13:00 - 13:59	25603	314.2	8.72	676.5	16.2	44.6	1133.9	26.4	694.8	8	212.6	61	74.1



Enhanced Security Management

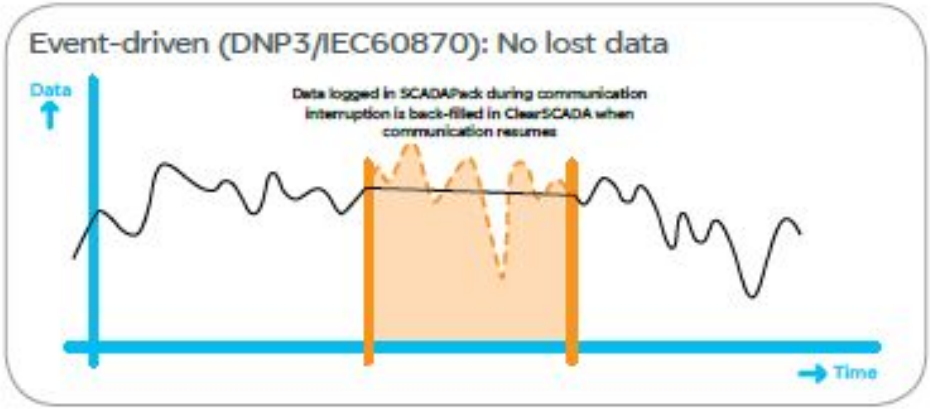
ClearSCADA

- Multi-Level Security Handling
  - Based on individual, groups and equipment type
  - Audit Trail for all configuration changes and operational actions
- Support of Secure Protocols
  - IEEE 1711 (AGA12) and IEC62351 (DNP3 Secure Authentication)
  - Unique security keys, ensuring data confidentiality and integrity
- Performance Server behind DMZ
  - Allow use outside of corporate firewalls
  - One-way communication to main server allowed (read-only)
  - No risk on corporate or SCADA network

Built-in Telemetry Functions

ClearSCADA

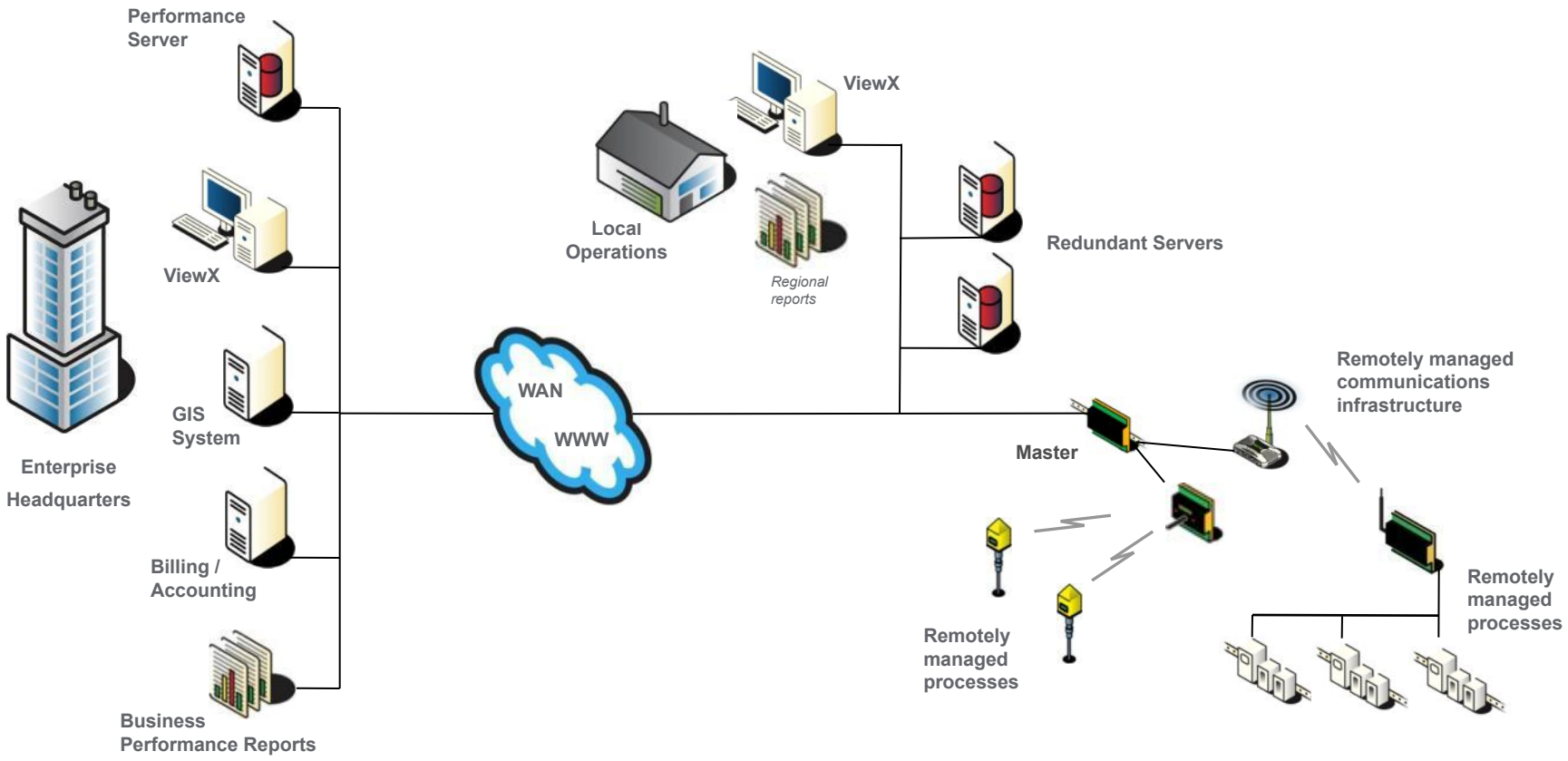
- Optimised to manage remote assets with event driven protocols
- Local data storage
- Automatic back-filling
- Multiple WAN communication handling



Integrated with TRSS Hardware

ClearSCADA

Seamless Integration



Ready for Business Integration

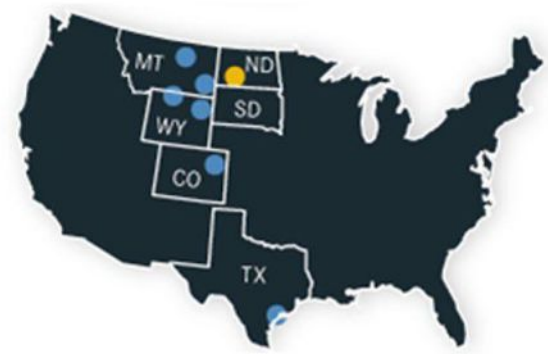
ClearSCADA

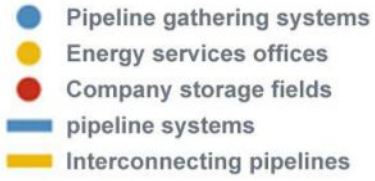
- Open platform provides industry-leading integration with external business and IT systems allowing to transform remote asset data into valuable business information
  - SQL interface (ODBC, OLE-DB)
  - SOAP/XML
  - .NET
  - OPC DA/HDA

ClearSCADA – **Applications**

Gas Pipeline

Application:
Enhanced Web Access & Reporting
Realised Value:
Reduced cost of ownership through web-hosted customer service site.
Improved operation & compliance through real-time delivery of critical operational data.

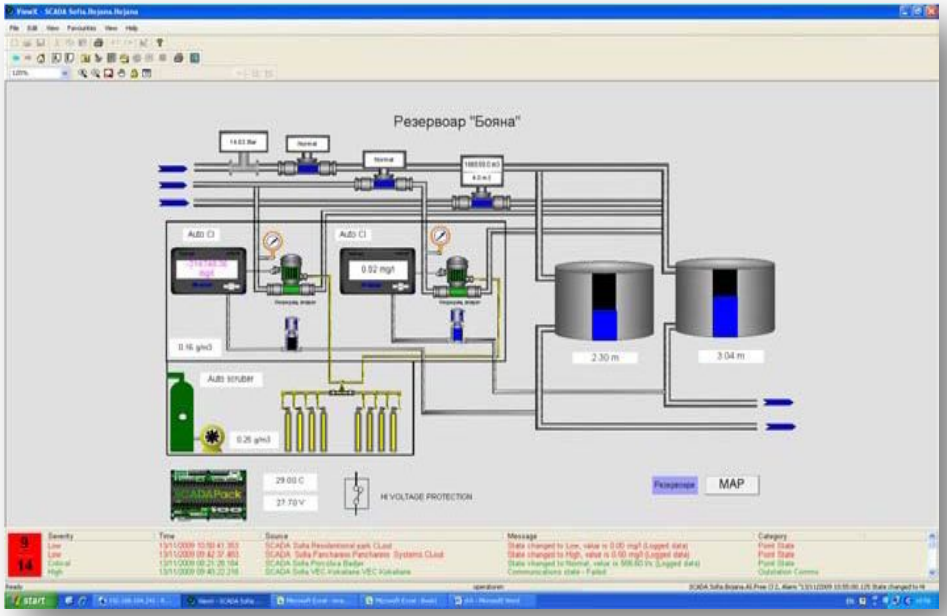




ClearSCADA – **Applications**

Water Supply System

Application:
Water System Monitoring & Control
Realised Value:
Reduced cost of expansion through use of intuitive, easily replicated and deployed, object templates
Improved operator use through user-friendly, easy-to-learn interface and local language support.



Try ClearSCADA Now !

- Free ClearSCADA Trial Download:
  - This version is the full product with all the features included but with a limited run-time of 2 hours, 1000 tags / points maximum and 2 WebX clients. On the 2 hour run-time has lapsed, the ClearSCADA server will shutdown but all you need to do is restart the service.

  http://www.clearscada.com/home/free-trial-demos/clearscada-free-trial-demo-request/

- ClearSCADA TestDrive
  - This event is a hands-on event where each participant will learn the ClearSCADA architecture and go through a number of exercises in configuring the ClearSCADA database. Register at:

  http://www.clearscada.com/home/testdrive/

Summary

ClearSCADA

1. Increased VISIBILITY and CONTROL for dispersed assets
2. Enhanced SECURITY Management and RELIABILITY
3. Fully INTEGRATED with Telemetry Offer and OPEN to business layer
4. ADVANCED SCADA design environment