

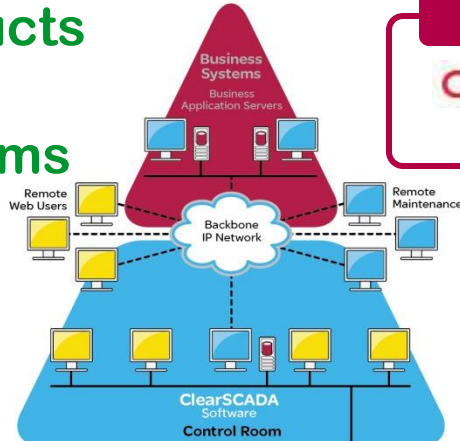
# ClearSCADA Product Review

Telemetry & Remote SCADA Solutions

# Telemetry & Remote SCADA Solutions



## Products & Systems



**Business Systems**

**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**

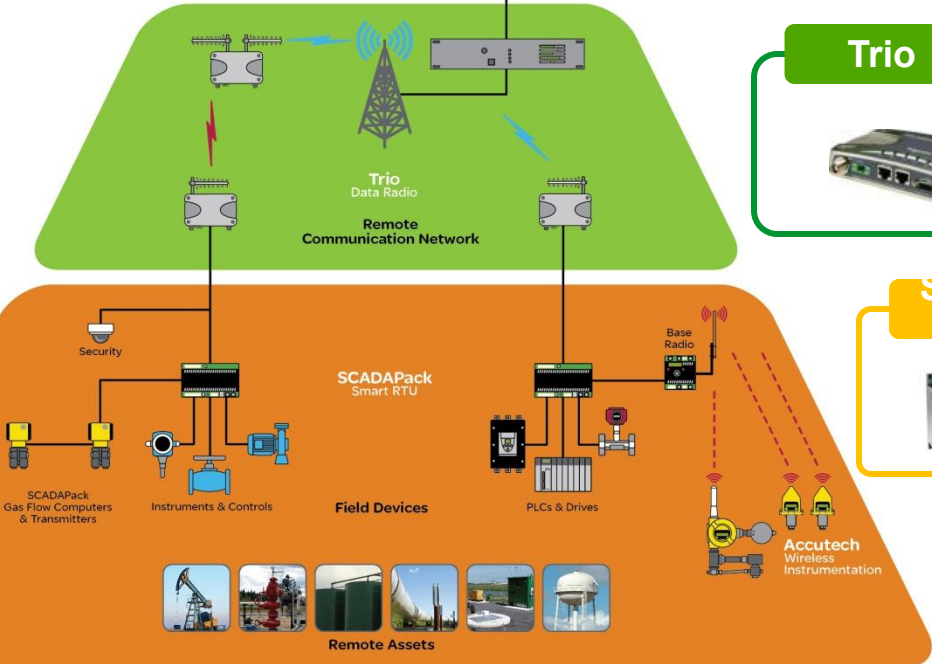
Licensed/license-free radios for serial and Ethernet communication, support of Modbus, DNP3 and IEC60870-5-101/104 protocols

**SCADAPack**

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

**Accutec**

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. ...

### 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.

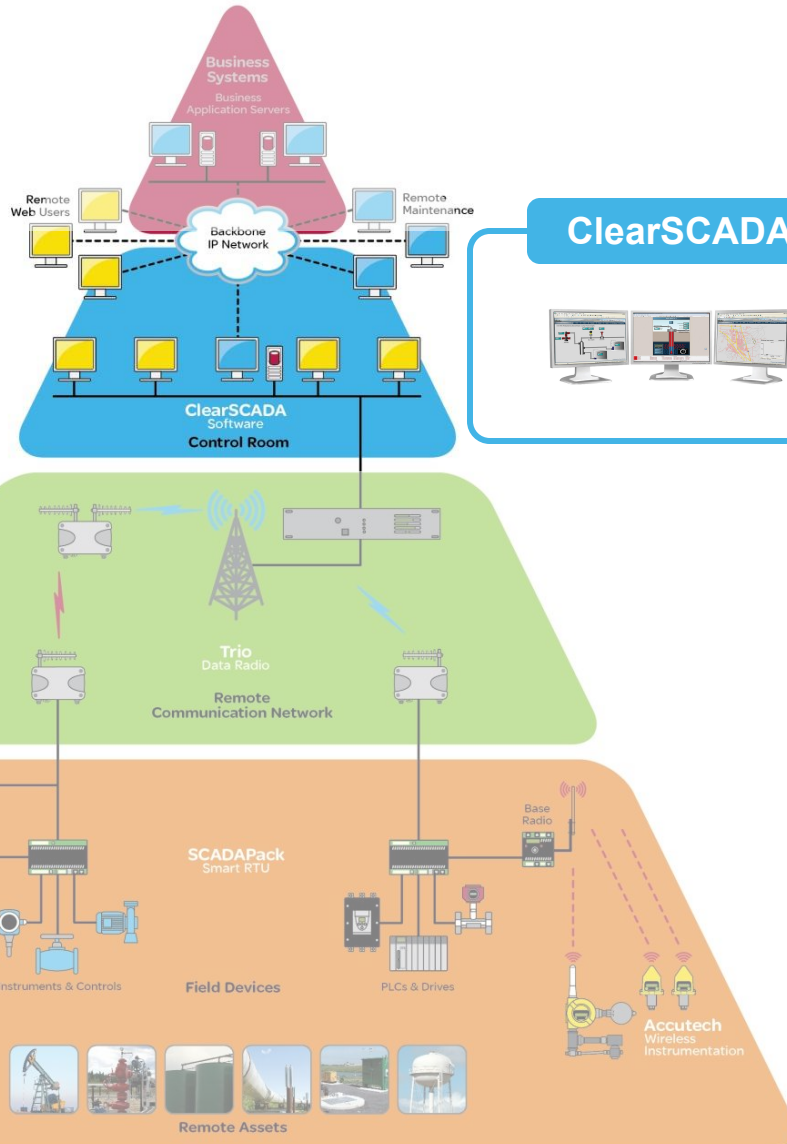
## Water & Waste Water



## Oil & Gas



# Telemetry & Remote SCADA Solutions



## ClearSCADA

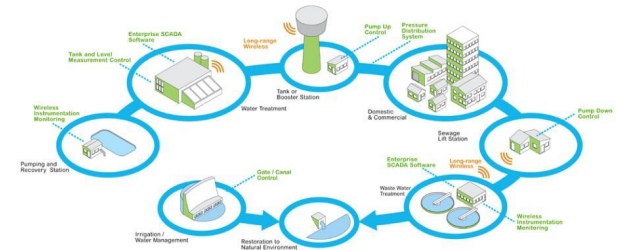


Object oriented, wide area SCADA for critical Infrastructures in WWW, O&G and Electrical Energy integrated SCADA and ready to use Telemetry features  
Wide range of open protocols and interfaces:  
DNP3, IEC60870-5, WITS, Modbus, OPC, SQL, ...

# Target Markets – Remote Management of Critical Infrastructure

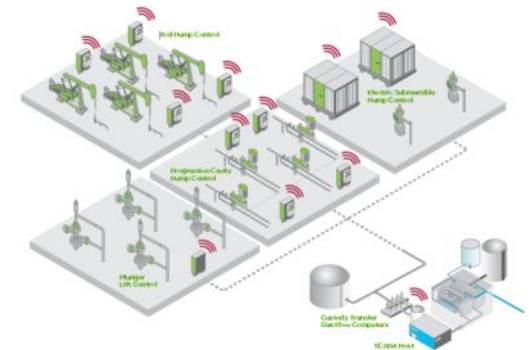
## Water and Wastewater

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



- **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



## Integrated with Telemetry offer

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

## 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

## Advanced Design Environment

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

## Integrated SCADA Functions

- Web-Server
- Historian
- Reporting generation
- Alarm redirection

## Enhanced Security

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

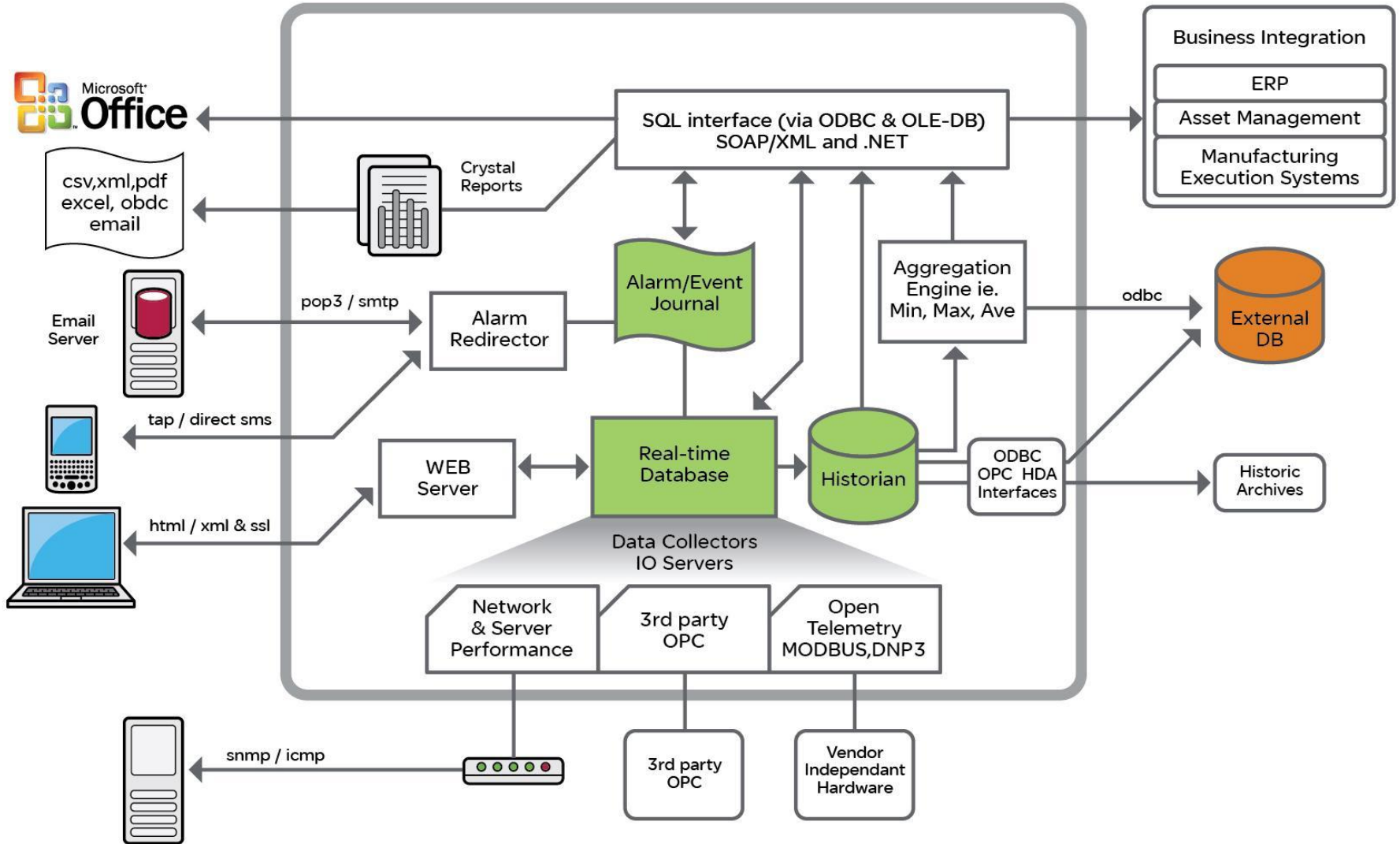
## Reliable Operations

- Triple Server redundancy
- Dual LAN and WAN redundancy

## Scalable Design

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

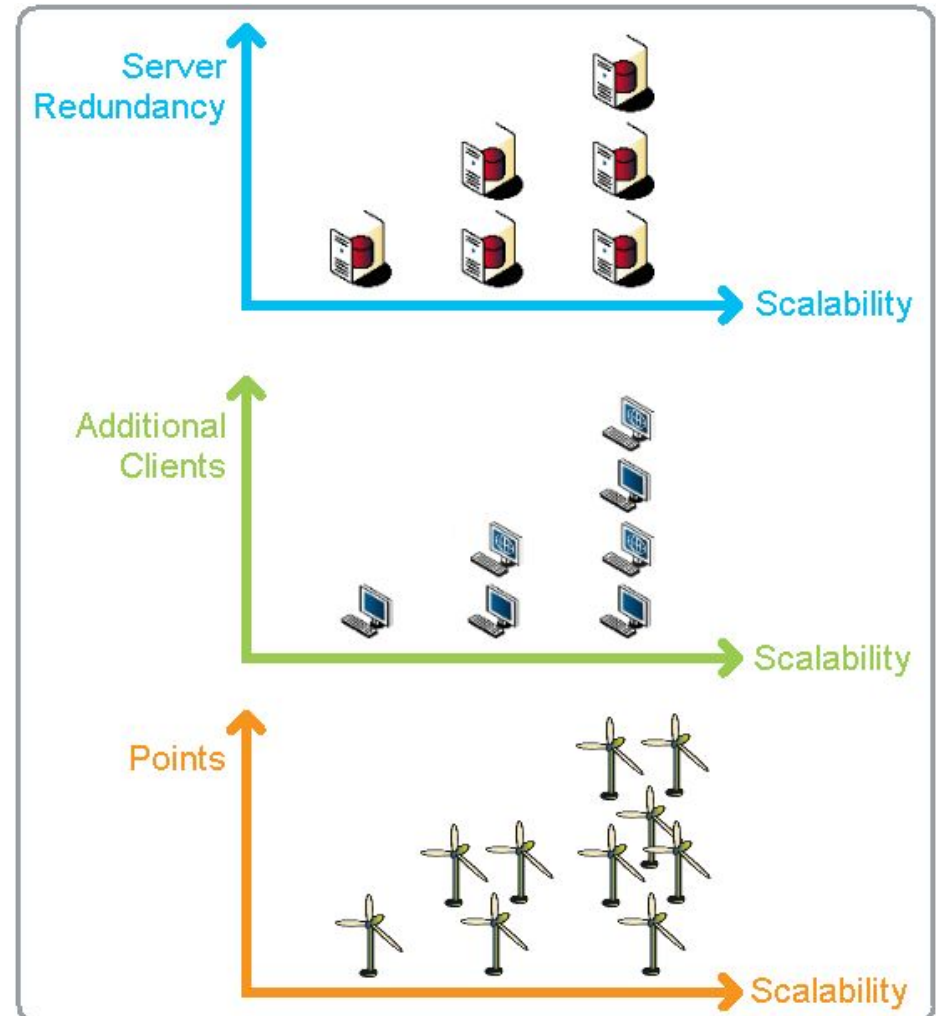
# Architecture



# Scalability for Investment Protection



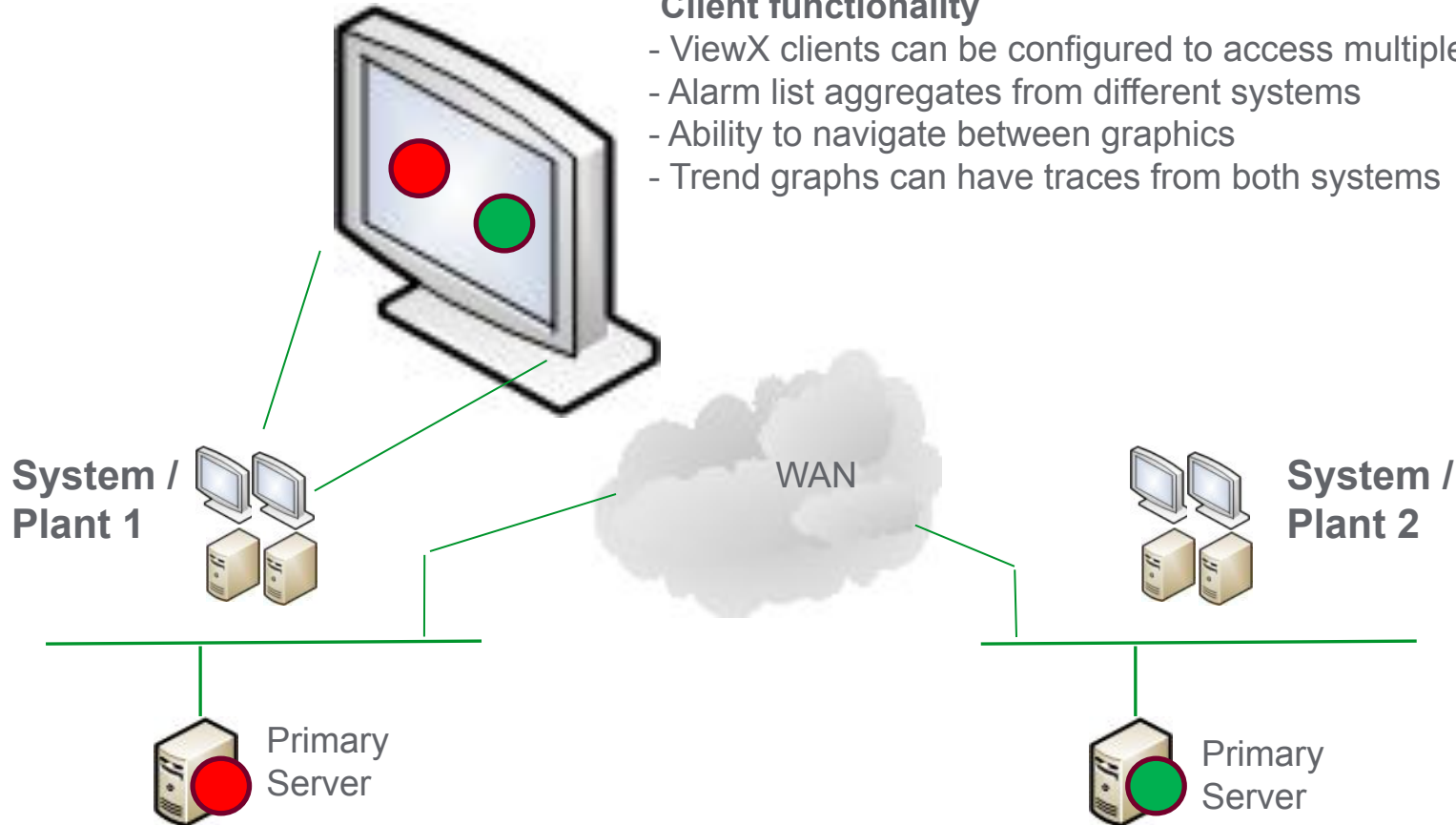
- Accommodate future expansion plans
- 32-bit or 64-bit platform
- Standalone to triple redundancy
- 250 Points to 450k Point licenses
- Full capability and Web clients



# Distributed Server Architecture

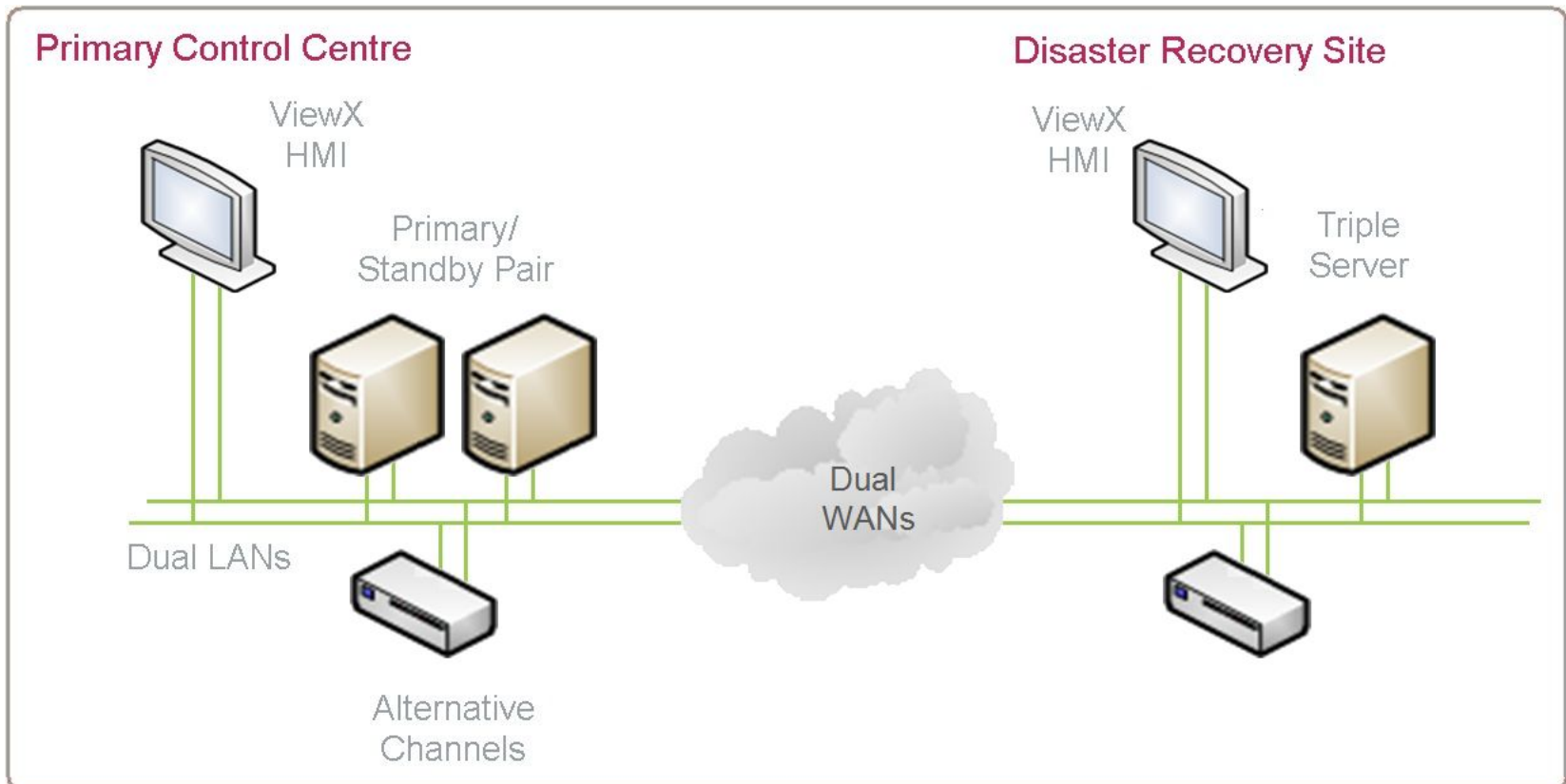
## Client functionality

- 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

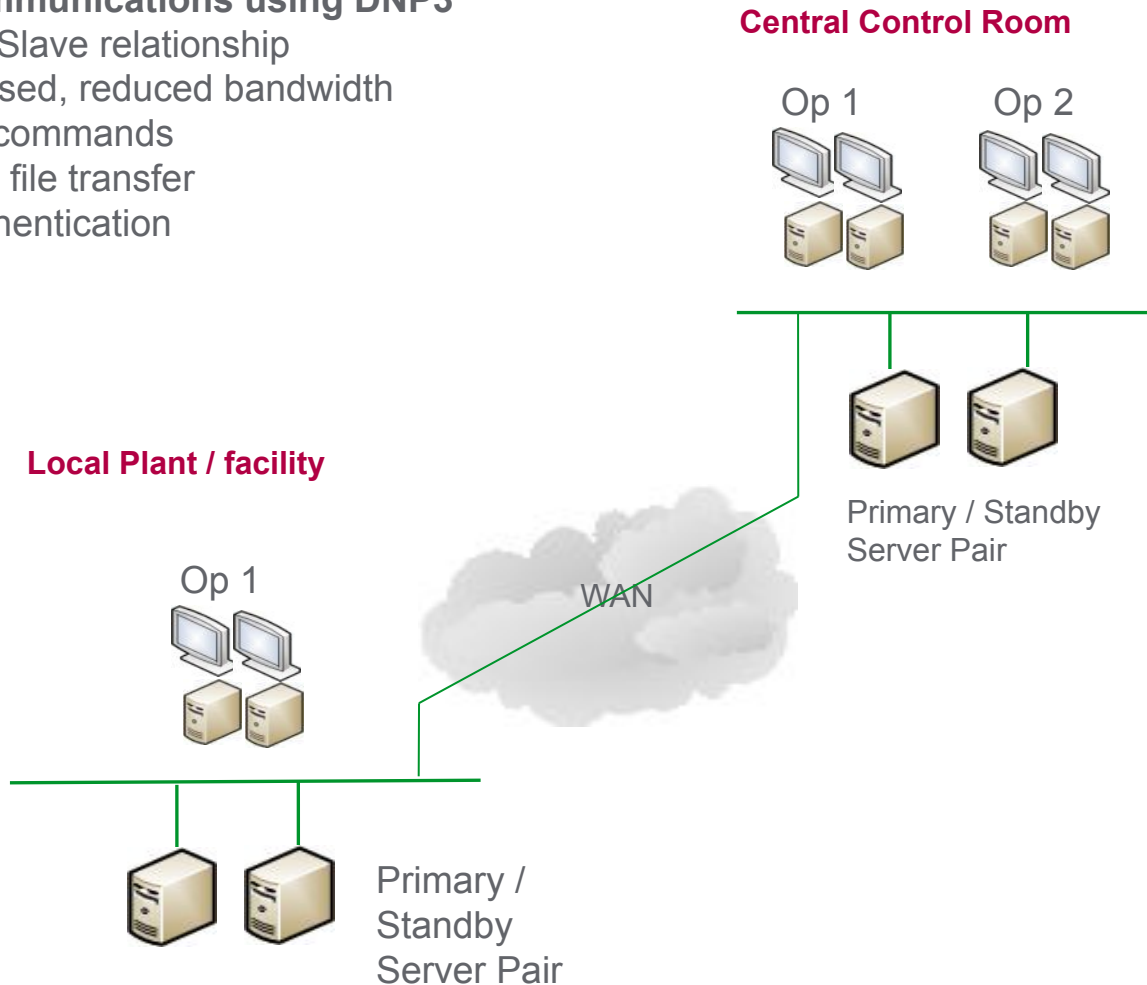
- Up to 3 Redundant Servers
- Standby Server can be located at remote site
- Dual LAN and WAN communication paths



# Tiered Server Architecture

## WAN communications using DNP3

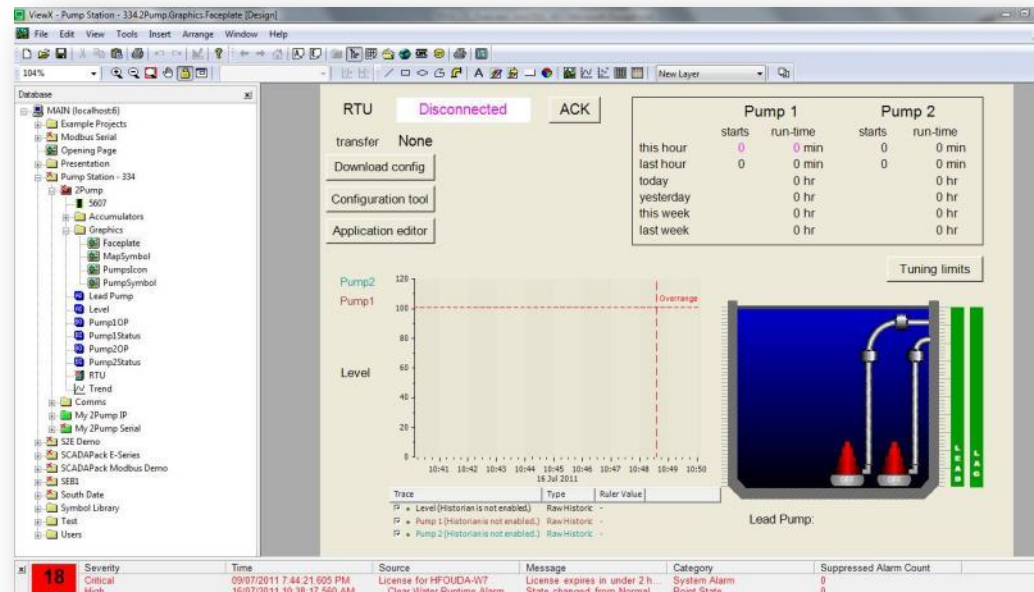
- Master / Slave relationship
- Event based, reduced bandwidth
- Remote commands
- Supports file transfer
- Data authentication



# Integrated Development Environment



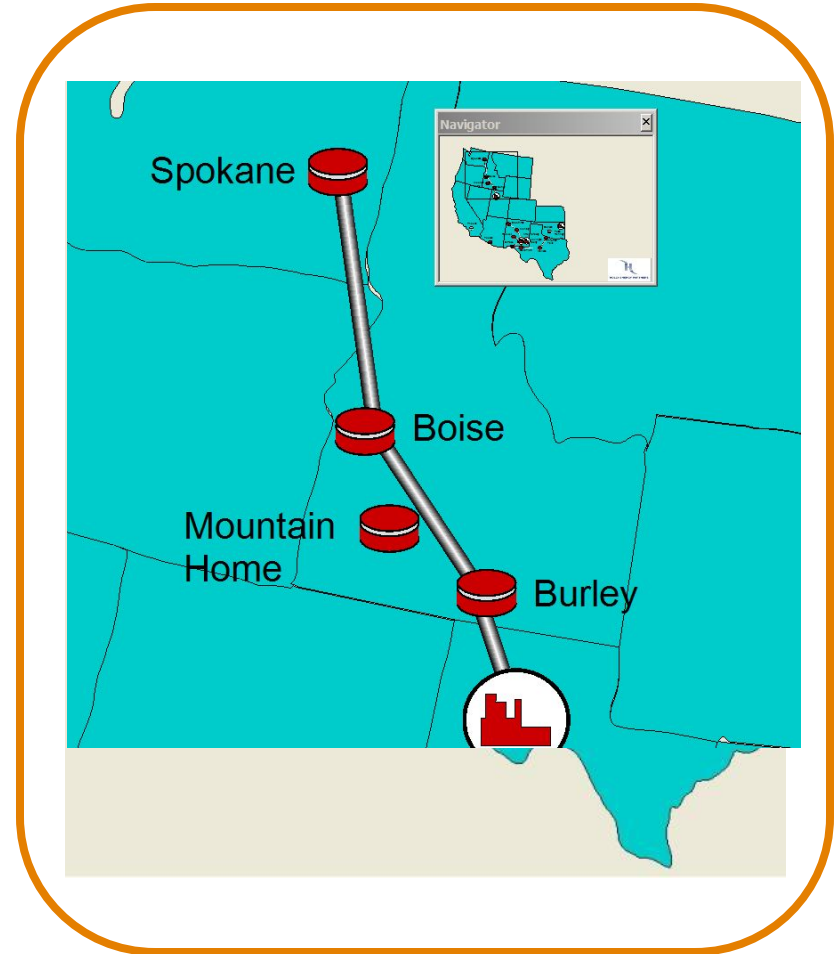
- **Integrated Development Environment** used for both Operators and Engineers – no separate development license
- Support for multiple programmers at the same time
- 'exclusive control' to prevent multiple users editing single object at one time
- Automatic audit log of all configuration edits
- Redundant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





# Vector Graphics

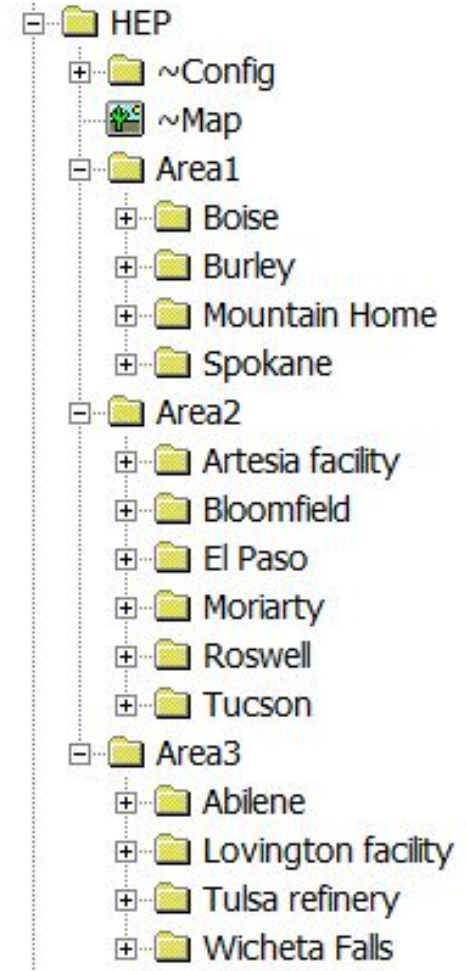
- Vector graphics are ideal for map display
- Independent of Windows resolution, no loss of detail
- Import AutoCAD format



# Object Oriented

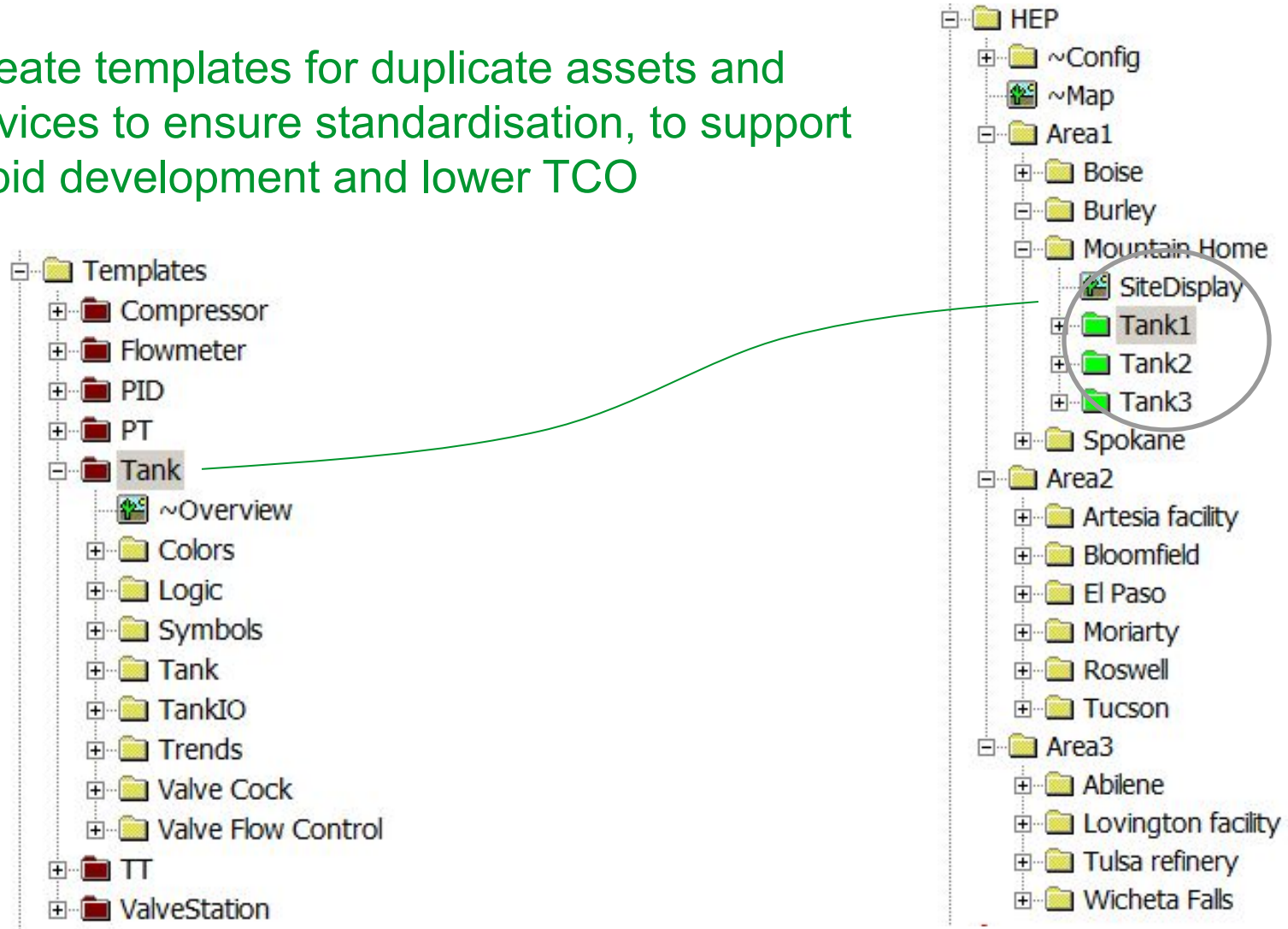


- Object based architecture to develop reusable object templates
- Low level objects represent single devices (pumps) with associated
  - Tags, alarms & events
  - Security
  - communication parameters
- High level objects represent entire sub-systems and typically comprise groups of devices



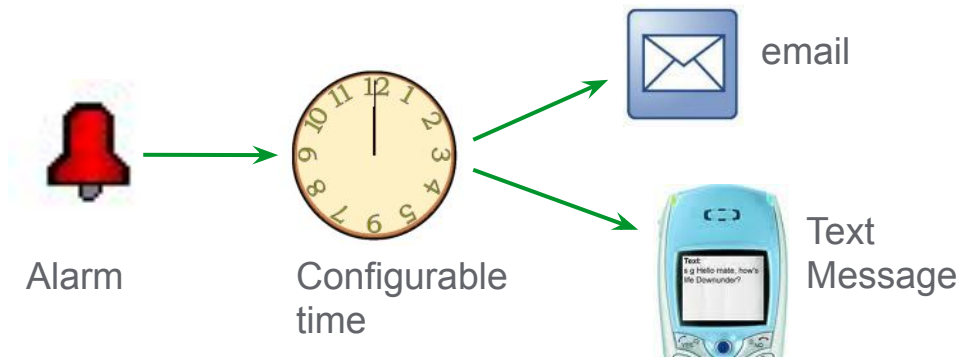
# Use of Templates

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



# Alarm Management

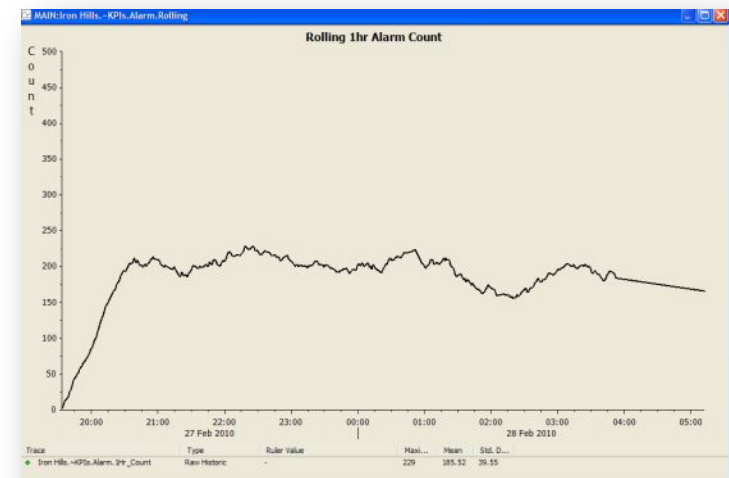
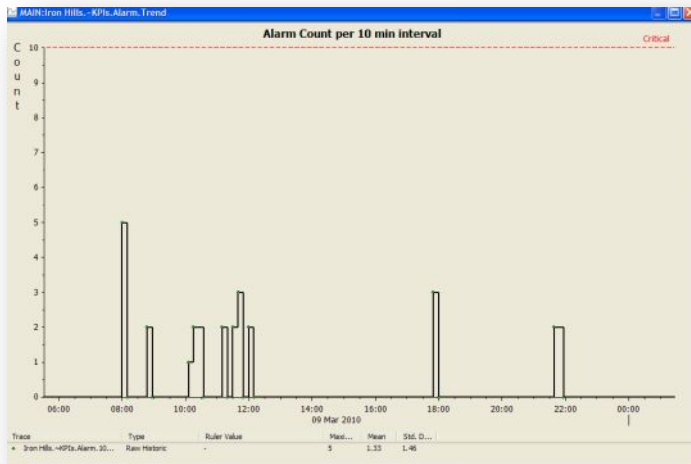
- 1000 alarm severity levels
- Associated help page
- Filter by area
- Send alarm to email and/or SMS text message
- Escalation of alarms based on business rules
- Built-in logic engine can be used for advanced alarming



# Alarm Management



- 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

The screenshot displays the ClearSCADA interface with two main panels. The top panel, titled 'Embedded trends', shows four real-time line graphs for 'My CPU workout' with 'Overrange' and 'Underrange' indicators. The bottom panel, titled 'Processed Historic', shows a bar chart and a step chart for 'CPU 10min average' with a table below it. The table has columns for 'Type', 'Ruler Value', 'Minimum', 'Maximum', and 'Mean'. The 'Processed Historic' view also includes explanatory text and a 'next' button.

Type	Ruler Value	Minimum	Maximum	Mean
Roadshow.12 Trending -NTMon.CPU2	2.5	100	39.48	

Represents advanced trending usually only found in 3rd party applications.

Common analysis includes min, max, ave, stddev, range, variance, sum etc.

This is referred to as aggregate data. You can also display these as numbers on a mimic.

PS. Remember whatever is on the trend can be 'cut to the clipboard' and pasted into Excel.

# Reporting

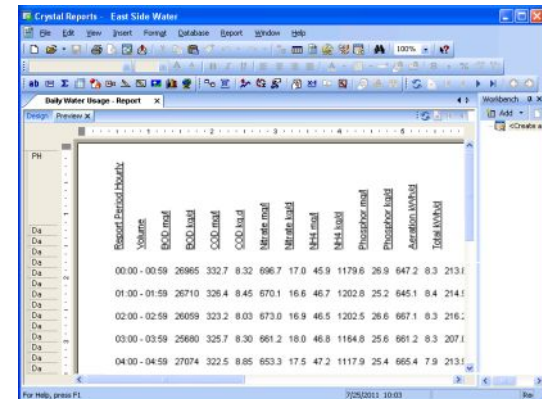


- Enhanced database query and reporting to optimise information sharing
- Scheduler allows for creation and distribution of reports with pre-configured templates
- Open industry standard interfaces for seamless integration with business systems



Water Quality Report : Daily

Water Inlet		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	76.2	
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	692	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



## ● Multi-Level Security Handling

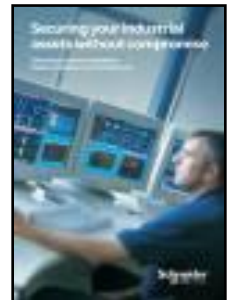
- Based on individual, groups and equipment type
- Audit Trail for all configuration changes and operational actions

## ● 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

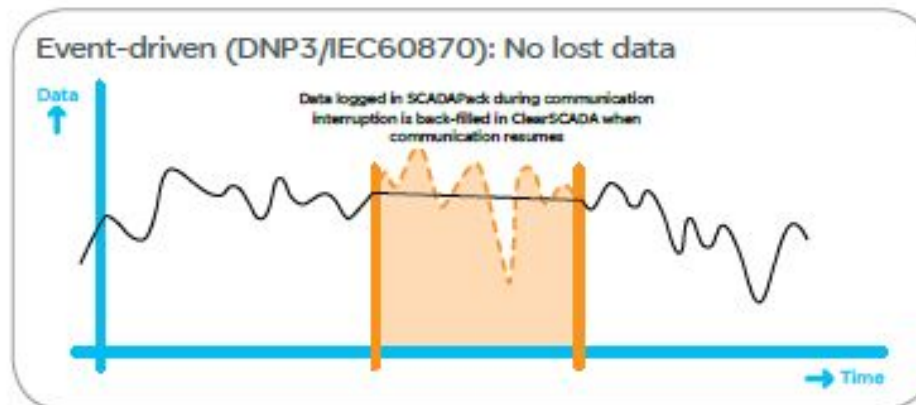




# Built-in Telemetry Functions



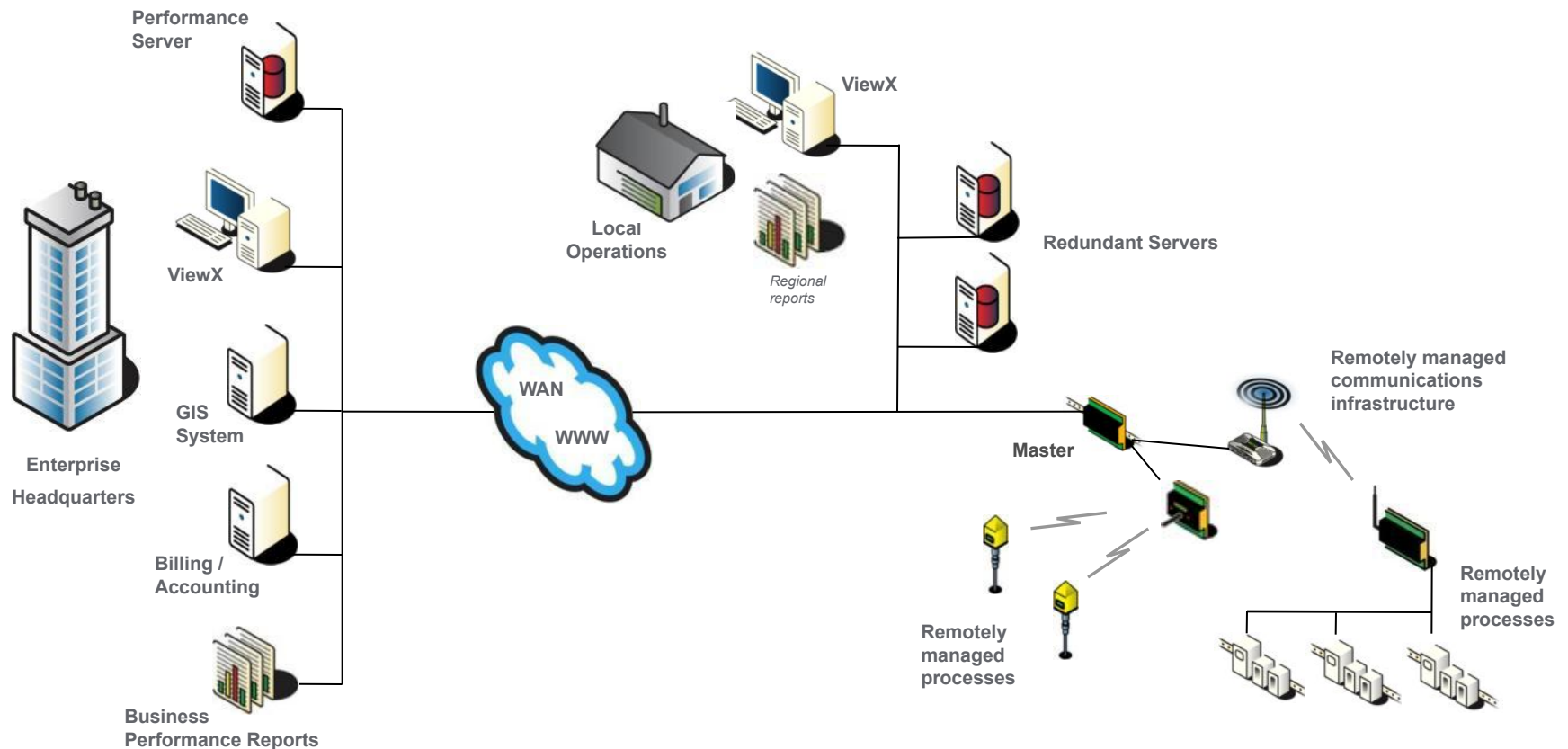
- Optimised to manage remote assets with event driven protocols
- Local data storage
- Automatic back-filling
- Multiple WAN communication handling



# Integrated with TRSS Hardware



## Seamless Integration



# Ready for Business Integration



- 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.



- Pipeline gathering systems
- Energy services offices
- Company storage fields
- pipeline systems
- Interconnecting pipelines



# ClearSCADA – Applications



## Water Supply System

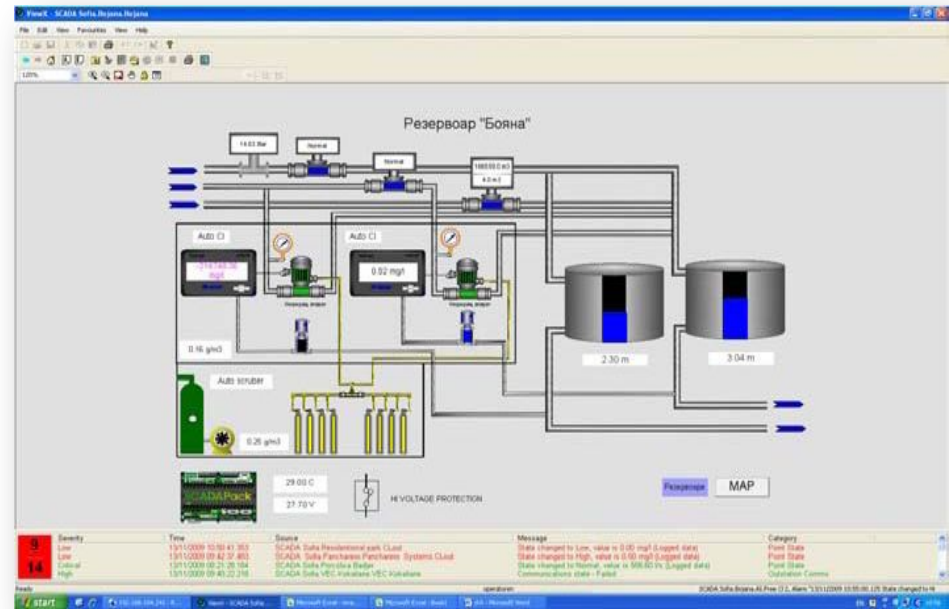
### Application:

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. Once 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



- 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

