Yorkshire Water and the Telemetry Real-time Strategy

Operating Yorkshire Water as a Production Plant

Presented by
Nick Hook, *Telemetry Team Manager*
Steve McGuin, *Technical Lead*
Agenda

• Introduction to Yorkshire Water
• The Telemetry Strategy
• Operating YW as a Production Plant
• YW and OSIsoft PI System Solutions
• Future Work
• Questions
Yorkshire Water – our business

- Supply 1.24 billion litres per day
- Treat 1 billion litres of waste water per day
- Over 2 million bill paying customers
- 65,600km of clean and waste water networks
- 86 water treatment works (1.3bn l/day)
- 600 waste water treatment works
- 2,250 pumping stations, 2,200 CSOs
- 650 reservoirs and water storage
- 2,200 distribution management areas
Our water supply network

Yorkshire Water Data Centres

Reservoirs 45%

Rivers 33%

Groundwater 22%

Reservoir Group
New Raw Water Mains
New Treated Water Mains
New Treated Water Mains Rural
Telemetry IT – sensor to screen

Sensors and instruments

Outstations and Regional Telemetry Units

SCADA

Control Room and Field Staff

Business and Operational Data

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The history of telemetry at Yorkshire Water

1980s: Many different individual systems - 65 local systems, 40 suppliers

1990s: 1,000 outstations
A move towards a Single Supplier and a Regional view, established Regional Telemetry System (RTS) - Alarm and Event Management. Established a Regional Operations Control Centre (ROCC)

2000s: 6,000+ outstations
Organic growth, remote intervention, regional optimisation, below ground asset monitoring.


2010: PI-TSV Data. SCADA Site Data. PI AlarmView. PI Notifications.

2011: SharePoint 2010 Integration and Silverlight – Production Dashboards
The telemetry strategy

Broaden the Footprint
Monitor Anywhere

Add Intelligence
Operational Dashboards

Automate and Intervene
Safe Remote Control

Optimisation

Business Cycle
Operating as a ‘Production Plant’

We’ll be running Yorkshire Water like a production plant …..

We’ll know we are running the company in an optimal way

If something happens we’ll model the impact and remotely re-configure as appropriate

*Eyes, Ears, Hands & Brains*
Aligning telemetry with the business need

Central Outstation control, SCADA Reach out
Site: manual via SCADA, manual via HMI, PLC set points

Central Reporting, OSIsoft PI System, ABB PGiM, DG alarm sequences DSS2 (alarm reduction)

Field devices sensors, instruments, loggers
Site networks SCADA, outstations
WAN, PSTN, GPRS, GSM

Remote Monitoring & Intervention
Remote Monitoring & Intervention

Intervene
Site SCADA iFix, PLC logic

Collect / Command
Site: SCADA hard disc and PLC memory

OSIsoft PI Server

Analyse / Control
Site: manual via SCADA, manual via HMI, PLC set points

Store / Retrieve

Measure / Modify
Real-time data within ‘The Business Cycle’

Measure

Instruments Supplier A

Collect

Defined Interfaces

OSIsoft PI System

Store & Retrieve

Defined Interfaces

Analyse

Calculations

Published Services

Intervene

Financial

Telemetry Apps

Asset Systems

Business Apps

Real-Time Business Cycle

OSIsoft PI System

Real-time data within ‘The Business Cycle’
Our PI System implementation – Year 2

- PI iFix SCADA Interface (~100 sites) (Clean and Waste Water Treatment)
- PI UFL Interface – Cello (~6000 Loggers) (Flow and Pressure Measurements)
- UFL – Hawkeye (~1000 devices) (Combined Sewer Overflows - CSO)
- UFL – Radar Rainfall (~34,200 points) (Meteor Group)

Service Oriented Architecture (SOA)

Microsoft SharePoint 2010

Business Process Management (BPM)

PI Servers (HA Collective)

PI iFix SCADA Interface
PI AF Servers
PI ACE Servers
PI ProcessBook, PI ActiveView, PI AlarmView, PI DataLink

Data
Analytics
Meta Data

Visualization

Thin Clients

Thick Clients

Clean and Waste Water Treatment
Flow and Pressure Measurements

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Energy dashboards – Year 1

- Energy Management Dashboards
- Strategic and Tactical Information
- 23 Shining Star Sites
- PI iFix SCADA Interface
- PI to PI Interface
- PI Module Database
- PI ACE
- PI ProcessBook
- PI ActiveView
- Integration Partners - Capula
Energy dashboards – Year 2

- Enhanced Dashboards
- Strategic and Tactical Information
- 55 Strategic Sites
- PI iFix SCADA Interface
- SharePoint 2010
- Microsoft Silverlight
- Web Part Development
Dashboards and the trend viewer

- YW Silverlight Application
- Graphical View of real-time data
- Zoom, Span, Multiple Tags, Calling Outstation
- Export Data to CSV format
- PI Module Database / PI AF
Control room alarms - Year 1

- Migration of Telemetry Alarms
- Flow and Pressure Alarms
- PI UFL Interface
- PI Asset Framework
- PI System Explorer
- PI ProcessBook
- PI ActiveView
- PI AlarmView
The future of telemetry

### Active Alarms

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<th>Time</th>
<th>Sea Name</th>
<th>Alarm Point</th>
<th>Priority</th>
<th>Value</th>
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Yorkshire and the OSIsoft PI System

- PI Servers
  - (HA Collective)
- PI ACE Servers
- PI AF Servers
- PI ProcessBook, PI ActiveView, PI AlarmView, PI DataLink

- Visuals
  - (Thick Clients)
- Microsoft SharePoint 2010
- Business Process Management (BPM)

- Business Logic
  - (Thin Clients)

Visuals
- (Thin Clients)
- Service Oriented Architecture (SOA)
Thank you