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EMEA USERS CONFERENCE

BERLIN, GERMANY • SEPT 26-29, 2016



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Adoption of the PI System to support United Utilities' Business Challenges

Presented by **Kevin Woodward – Operational Technology**
Paul Verdon – Production Planning



Agenda

- About United Utilities
- Business Challenges
- Applications and Use Cases / How the PI System has been applied to date
- Production Planning Use Case
 - Results Obtained and Business Impact
- Future Direction
- Conclusions

About United Utilities

WHERE WE OPERATE



Business Challenges

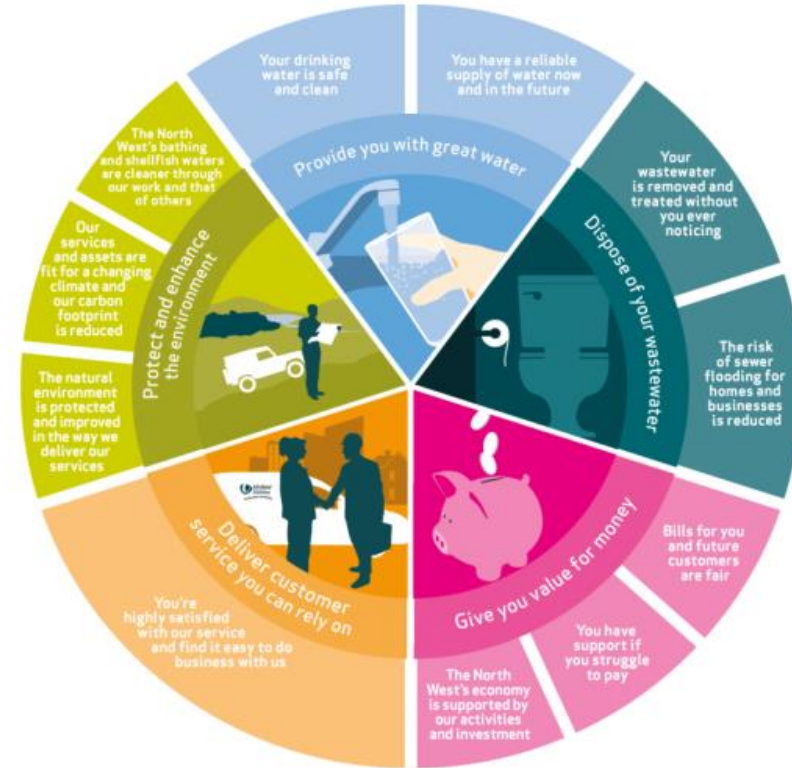
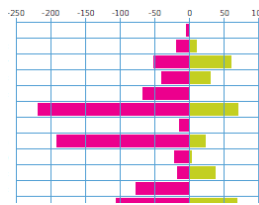
- Regulatory and customer commitments
- Changing environment
- ODIs, leakage, blockages
- Reduce Totex – Capex and Opex
- Apply intelligence and innovation

INDUSTRIAL
INTERNET
OF THINGS

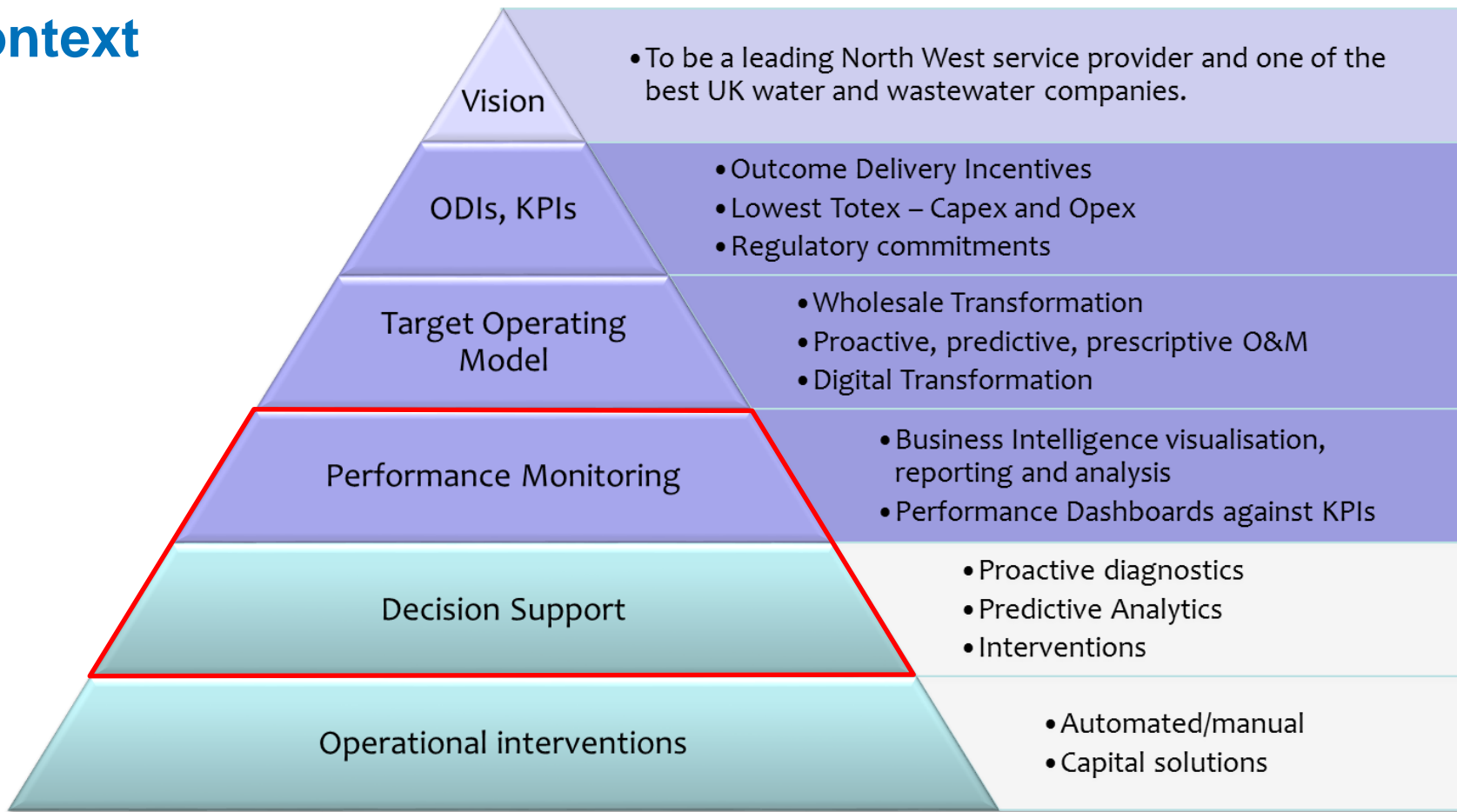


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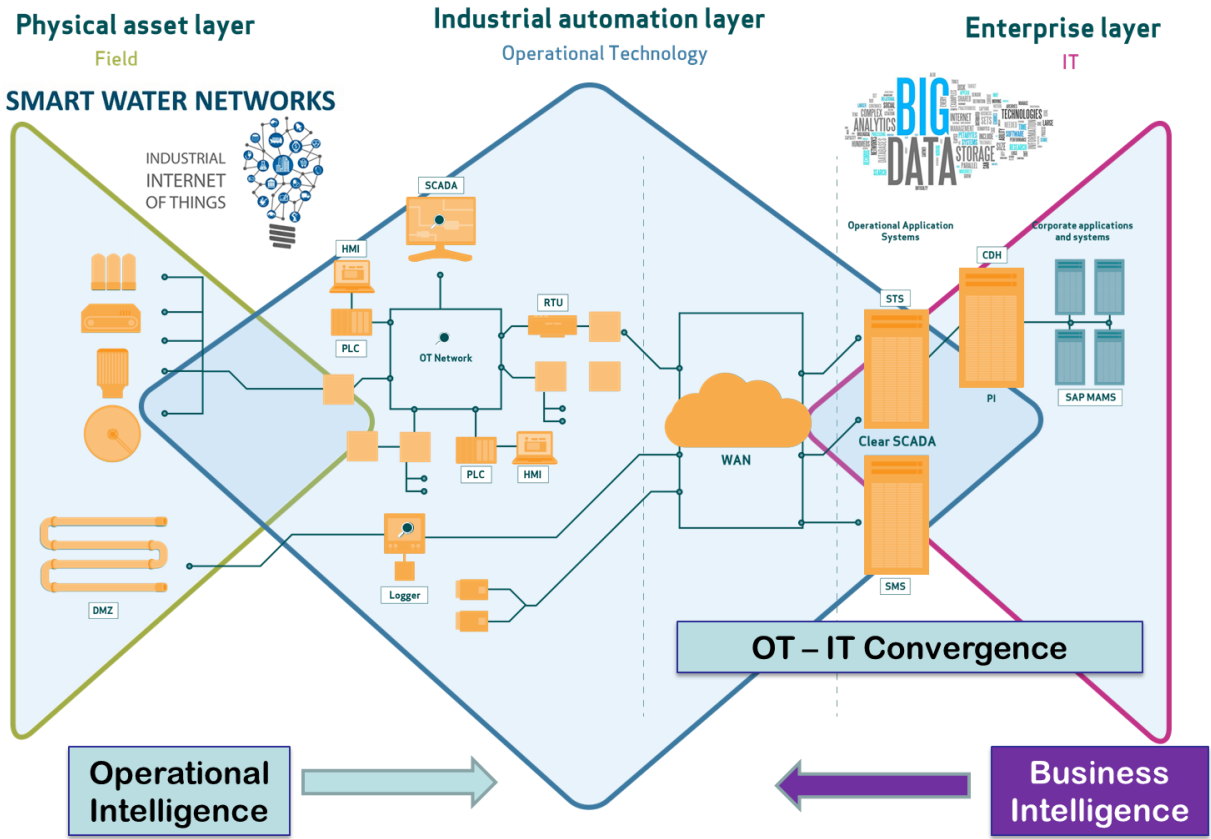
Towards Water 2020



Context



Operational Technology at UU



Use Cases

- Real-time Dashboard
- Water Network Event Recognition
- Regional Sludge Operational Management
- WTW Event Recognition Proof-of-concept
- Production Planning (Paul Verdon)

Real-time Dashboard

- Introduced 10 years ago
- 25 Water sites, 65 Waste Water sites
- Provides reports, CHP and PPC data, Mcerts data, UV, BAFF data
- Dedicated site equipment and infrastructure
- Built on “old PI System” infrastructure, V3.4
- Still being widely used



Water Network Event Recognition

Alert Banner

Real-time Analysis

Alert Details

Alert ID	574272
Dominant Trigger	Flow up
Automated Root Cause	Open PMV fault
Priority	1
Count	2
Consequence Priority Score	15
Timestamp	17/04/2015 05:15:00
Status	Investigating

Geographical Information

DMZ	09 (Tameside)
WSZ	247 (STALYBRIDGE)
DMA	247-10 (HERON AVENUE)
Control Type	PMV
Feature Number	44044197

Additional Information

No. Domestic Properties	2794
No. Industrial Properties	97
Mains Distribution Length	26.700020
Fluid Category (Business Risk)	2.316326

[Closed Valve Details](#) [Cascading DMA Details](#) [DMA Control Type Details](#)

Update Alert Details

Automated Root Cause - Open PMV fault

Alert Status

User Root Cause

SAP Work Code

SAP Work Order Number

[Update](#)

Alert Triggers

Set RTS and/or Tramlines

Enter Expiry Date ☐ Set RTS/Tramlines [Update RTS / Tramlines](#)

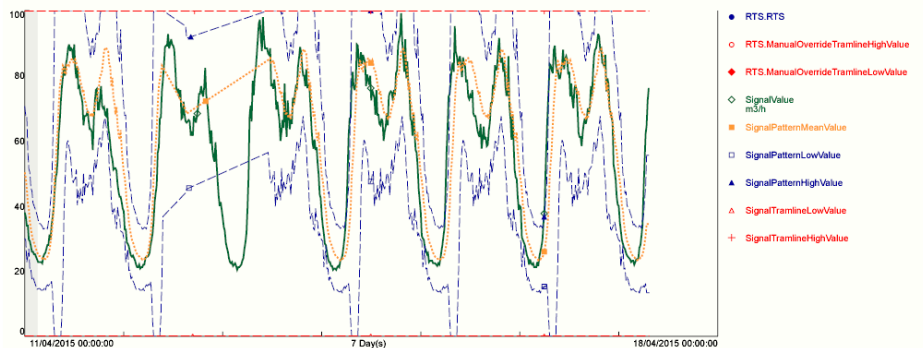
Select Signal	Signal	Trigger Type	Trigger Zone	Signal Value	Signal Deviation	Signal GS Feature Number	DMZ	DMA/DPA	ExpiryTime	Set RTS	Manual Low Value	Manual High Value
<input checked="" type="checkbox"/>	H52134_02	Flow up	B	61.999200	31.081554	45866765	Tameside	247-10				

[View Selected Signals](#) [Analyse Signal](#)

PI TimeRange

Start Time End Time

Real Time Analysis [1]



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Regional Sludge Operational Management System

SharePoint



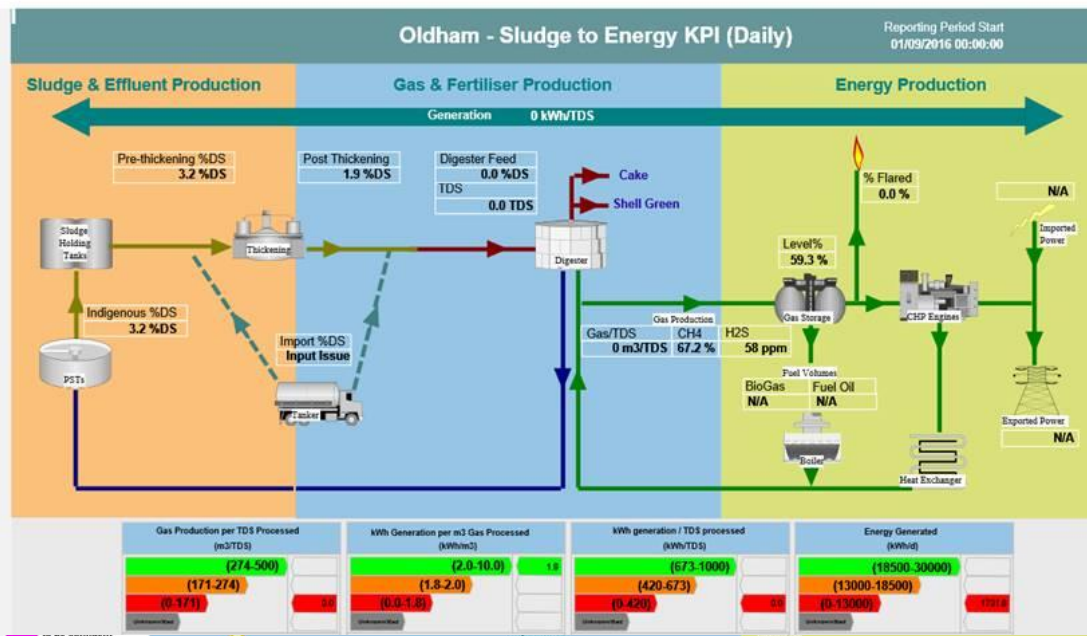
Dashboards and Monitoring

Period: ▼ Daily Sludge Dashboard Sludge to Energy KPI Digestion Monitoring Compliance

Start Time:
End Time:

SludgeToEnergyKPI

- Cheshire
 - Bromborough
 - Crewe
 - Ellesmere Port
 - Warrington
- Manchester
 - Bolton
 - Bury
 - Davyhulme
 - Oldham
 - Stockport
- Merseyside
 - Liverpool
 - Southport
 - St Helens
- Ribble
 - Blackburn
 - Lancaster

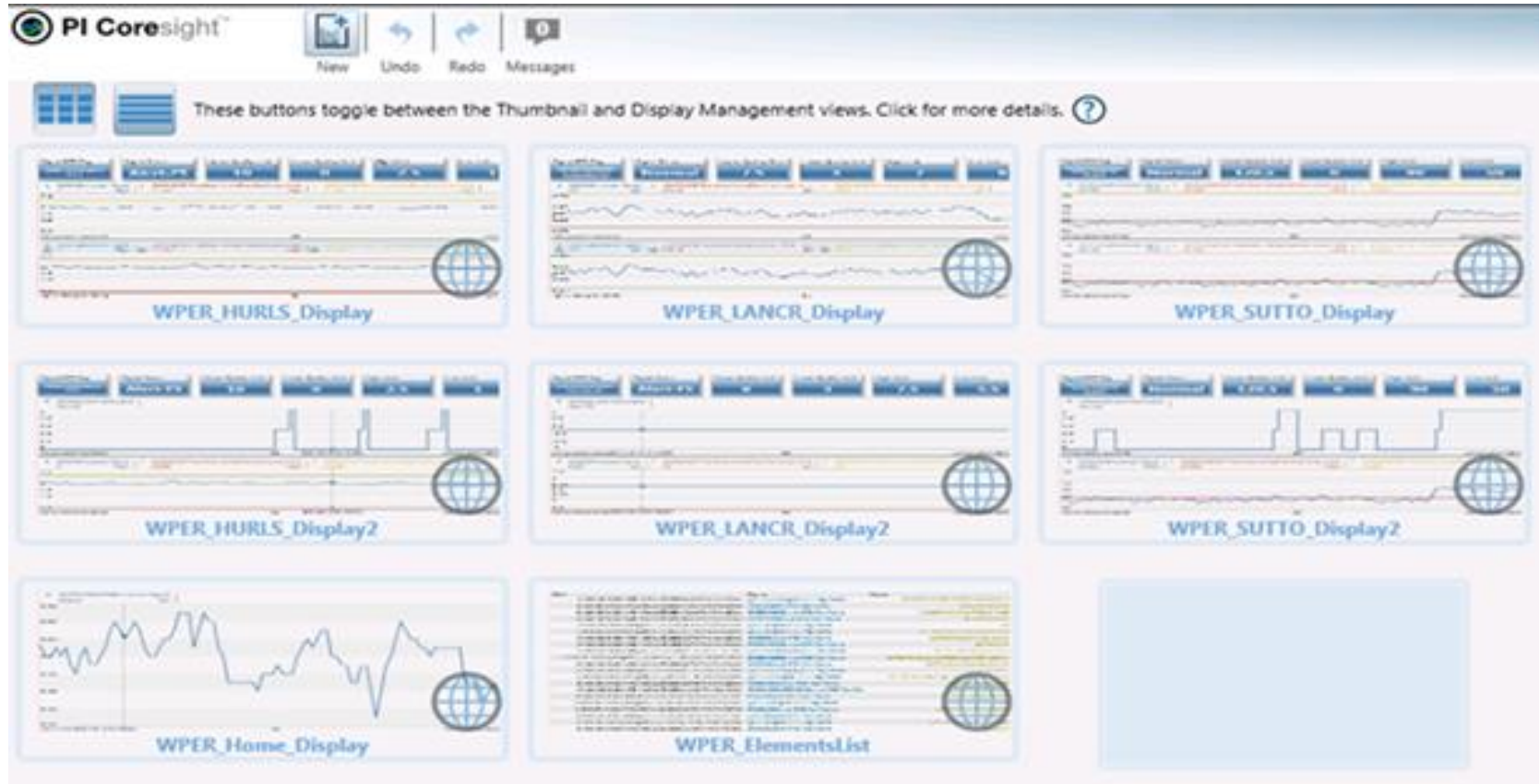


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WTW Event Recognition POC



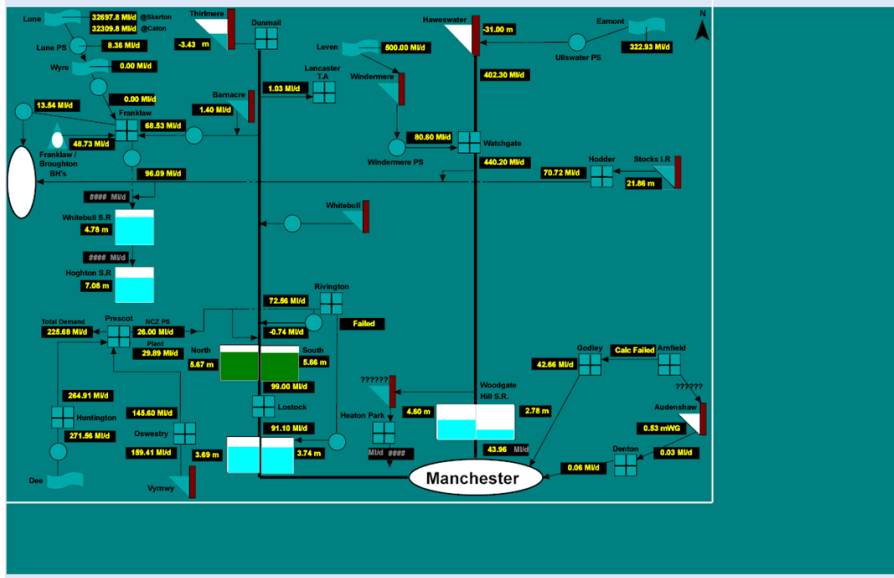
Production Planning

Paul Verdon

Water Production Planning Manager

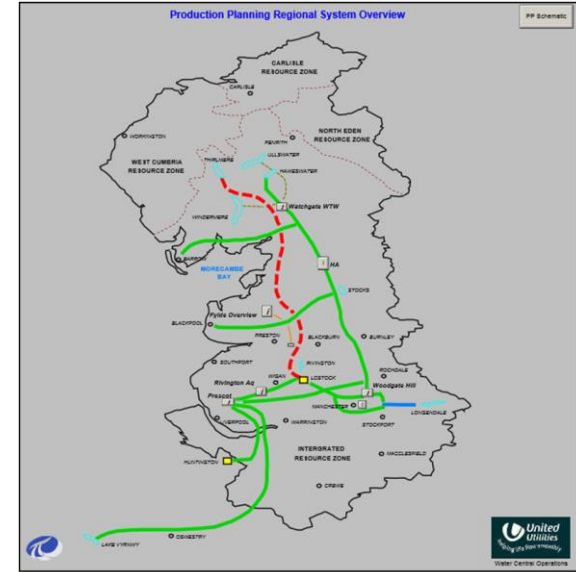
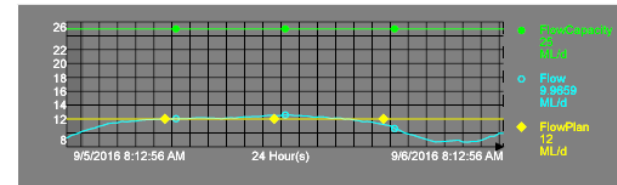
Production Planning Challenge

- Fundamental changes in the way we operate the regional supply system.
- Changes to Data, People and Processes



Production Planning Solution

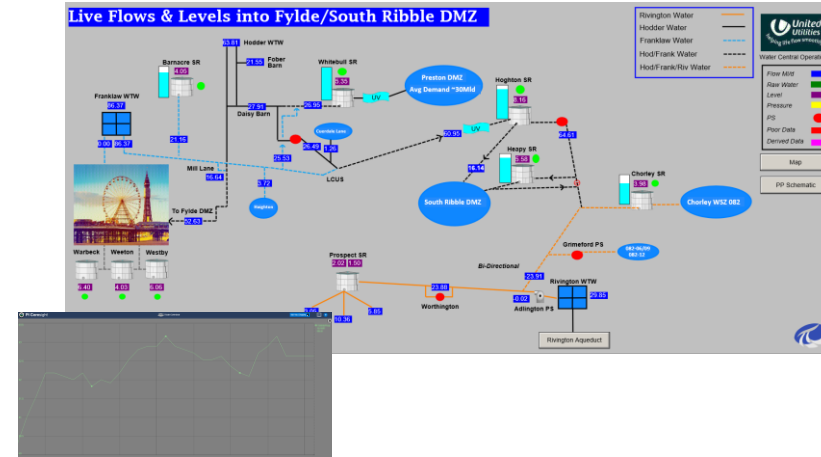
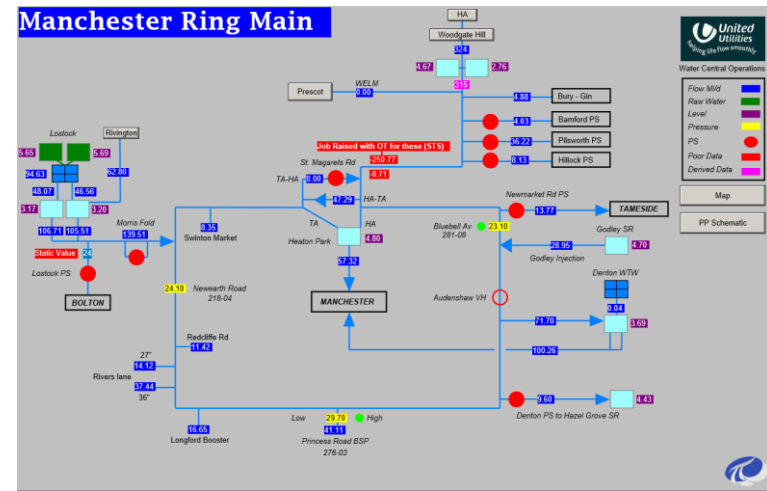
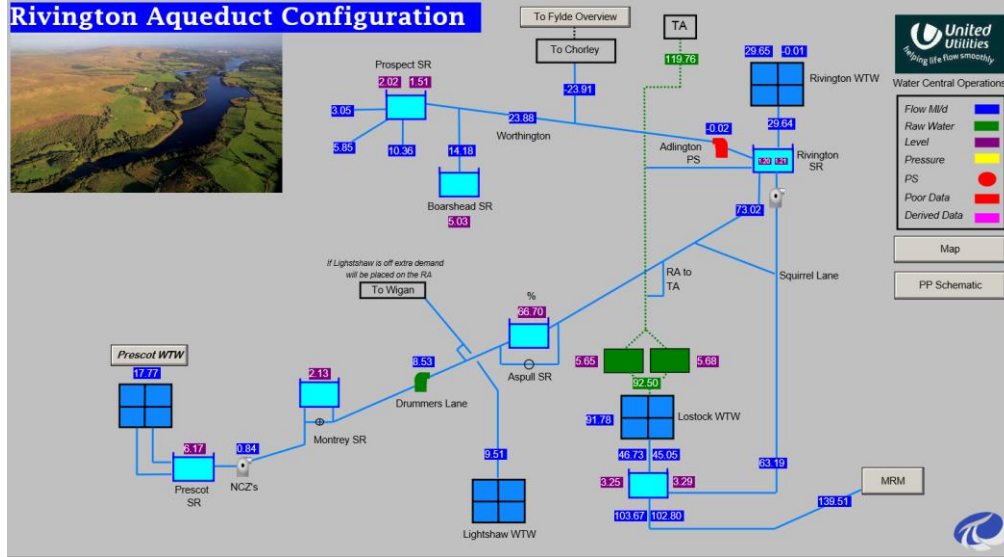
- ✓ Integrated telemetry data from 380 asset locations (000's Tag points) from the PI System to provide visualisations to track the execution of weekly production plans.
- ✓ Integrated information from PI System into the water modelling package to generate optimised production plans.
- ✓ Verified, repaired and carried out end to end testing of telemetry flow meters and level instruments water network sites.
- ✓ Trained the Production Planning Team, IT and OT in the use of the PI application and produced updated business processes.
- ✓ Implemented processes and procedures and increased Production Planning Team from 3 to 7 to manage the optimisation of water production.

 Production Status Graph

Production Planning Results

PI ProcessBook Mimics hosted in
PI Coresight

Benefits Achieved – reduced power
and chemical costs



Future Direction

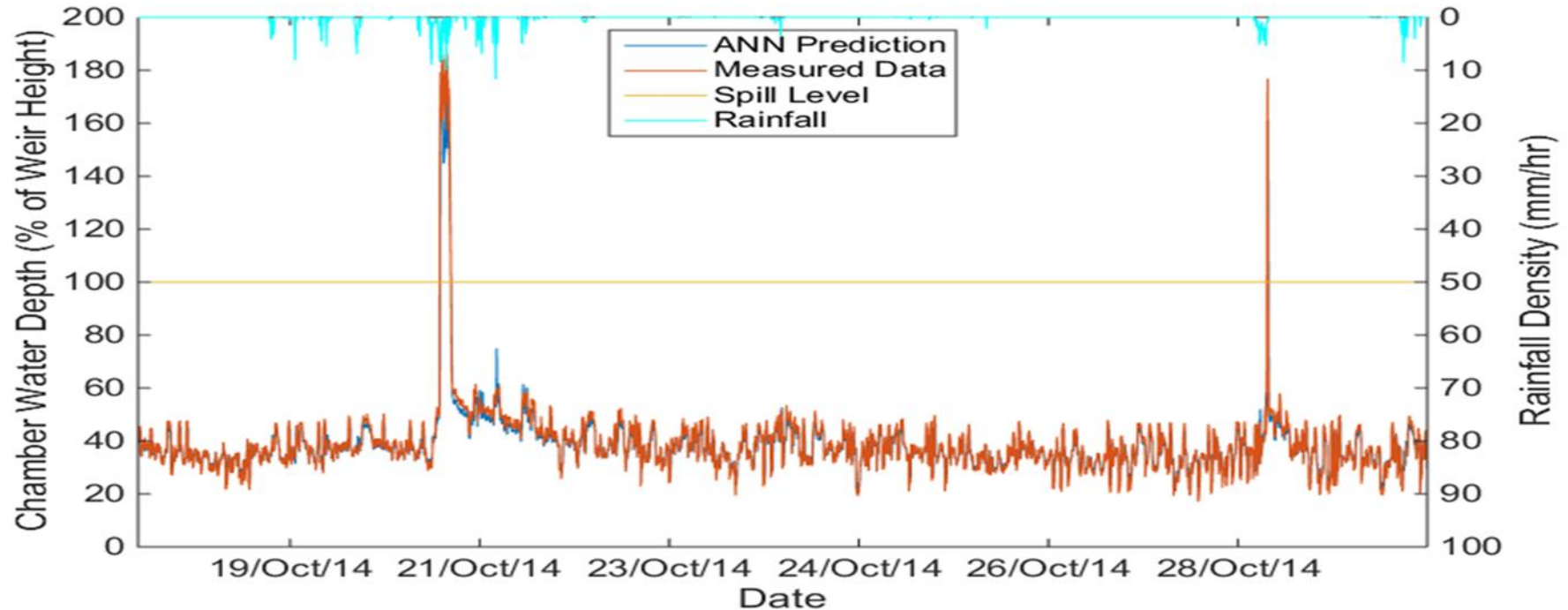
Innovation and R&D



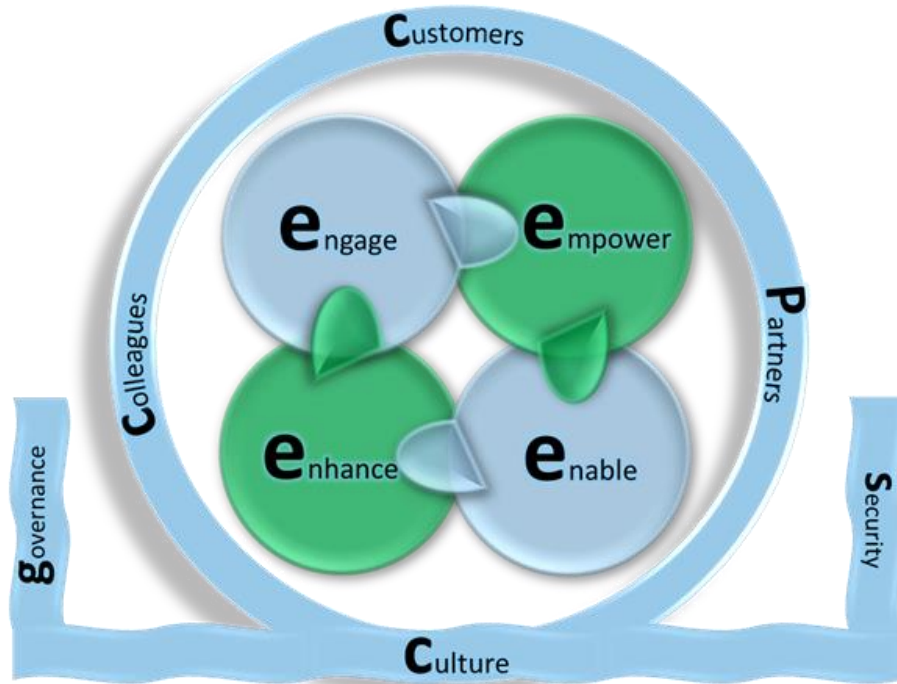
- Wastewater Network Event Recognition – Talia Rosin
- Water Network Event Localisation - Shaun Boatwright
- Water Process Event Recognition - Gerald Riss
- Event Management for Intelligent Water Networks – Irini Nikoloudi



STREAM – Blockage detection



UU Digital Strategy



Think big
Start small
Scale fast!

Innovation

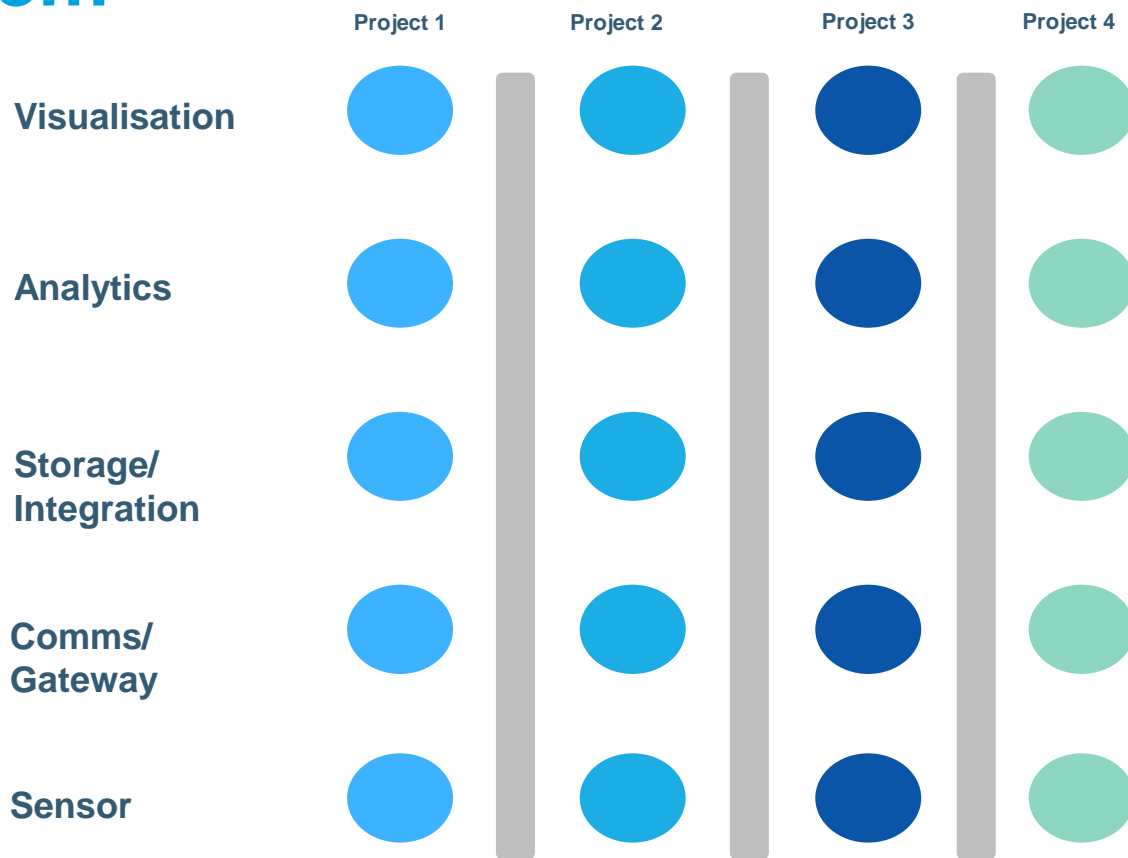


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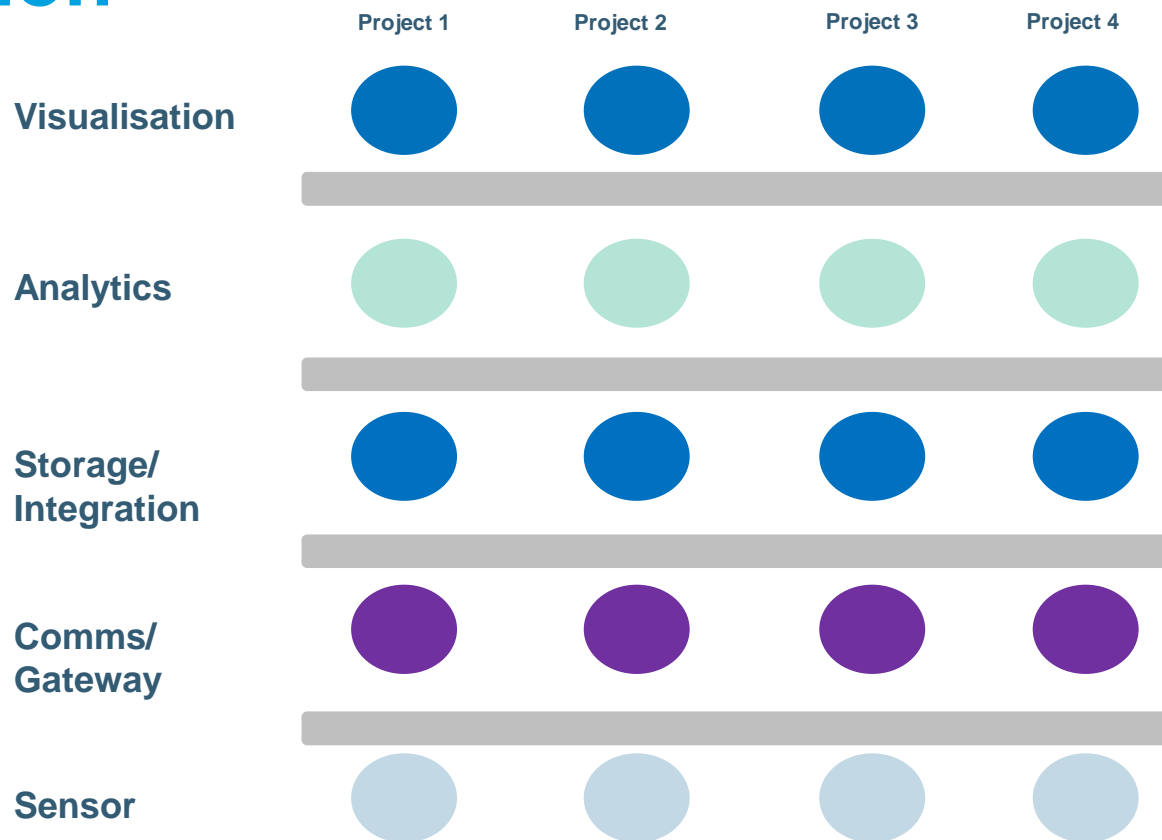
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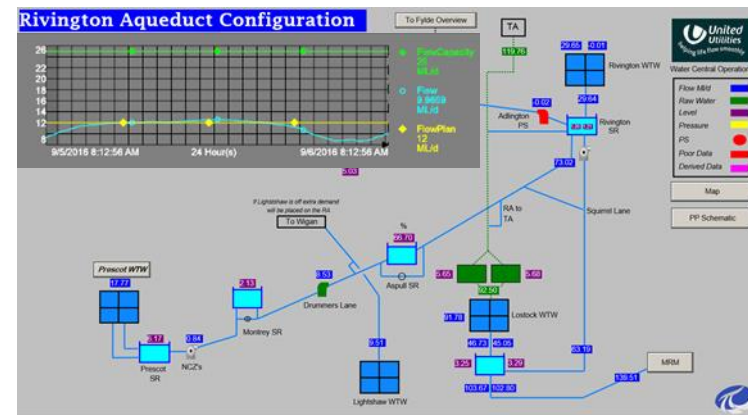
Problem



Solution



Conclusions



	Project 1	Project 2	Project 3	Project 4
Visualisation				
Analytics				
Storage/Integration				
Comms/Gateway				
Sensor				

Contact Information

Kevin Woodward

kevin.woodward@uuplc.co.uk

OT Strategy Manager

United Utilities



Paul Verdon

paul.verdon@uuplc.co.uk

Water Production Planning
Manager

United Utilities



Questions

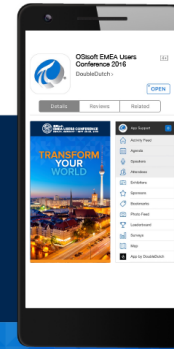
Please wait for the **microphone** before asking your questions



State your **name & company**

Please remember to...

Complete the Online Survey for this session



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감사합니다

谢谢

Danke

Merci

Gracias

Thank You

ありがとう

Спасибо

Obrigado



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