
AVEVAWORLD
PARIS

Thames Water use AVEVA System Platform and move to a Standardised Modular Approach for their Site SCADA Applications

Alex Gray – Head of Operational Technology

Stephen Wigley – Operational Technology Technical Manager

Who's Speaking Today

Thames Water – Operational Technology Team

Stephen Wigley CEng MIET

Thames Water

Operational Technology – Technical Manager

20+ Years at Thames

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Thames Water

Head of Operational Technology

4 Years at Thames

Agenda

1. Who are Thames Water
2. Before AVEVA System Platform
3. An Informed Design
4. Architecture
5. Where to next?
6. Summary

Thames Water - Core Information

The Geography

Total Area = 13,000 km^2

Water:

Customers = 10m

Network Length = 32,000 km

Treatment Sites = 97

Volume = 2.6 bn litres/day

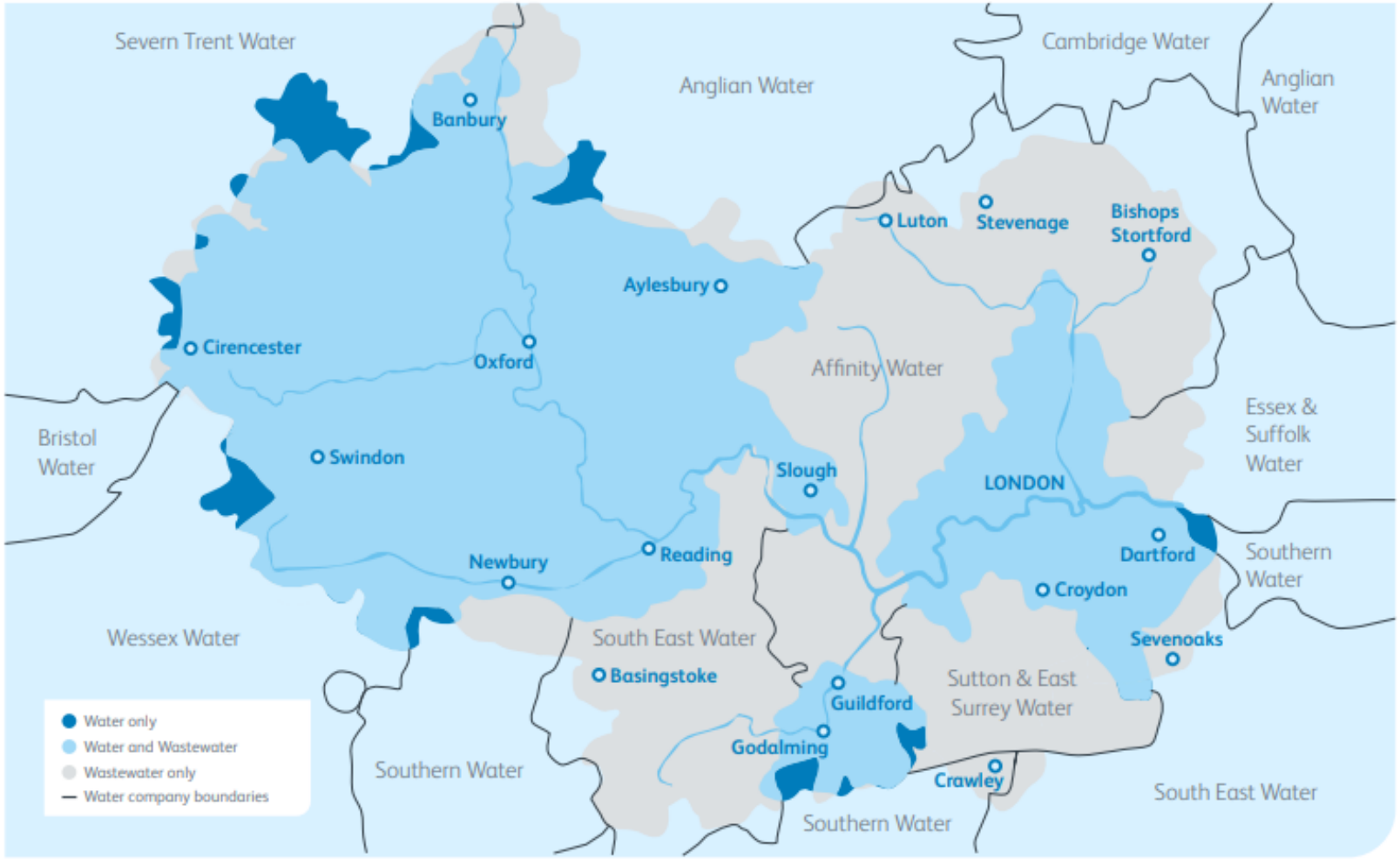
Wastewater:

Customers = 16m

Network Length = 109,000 km

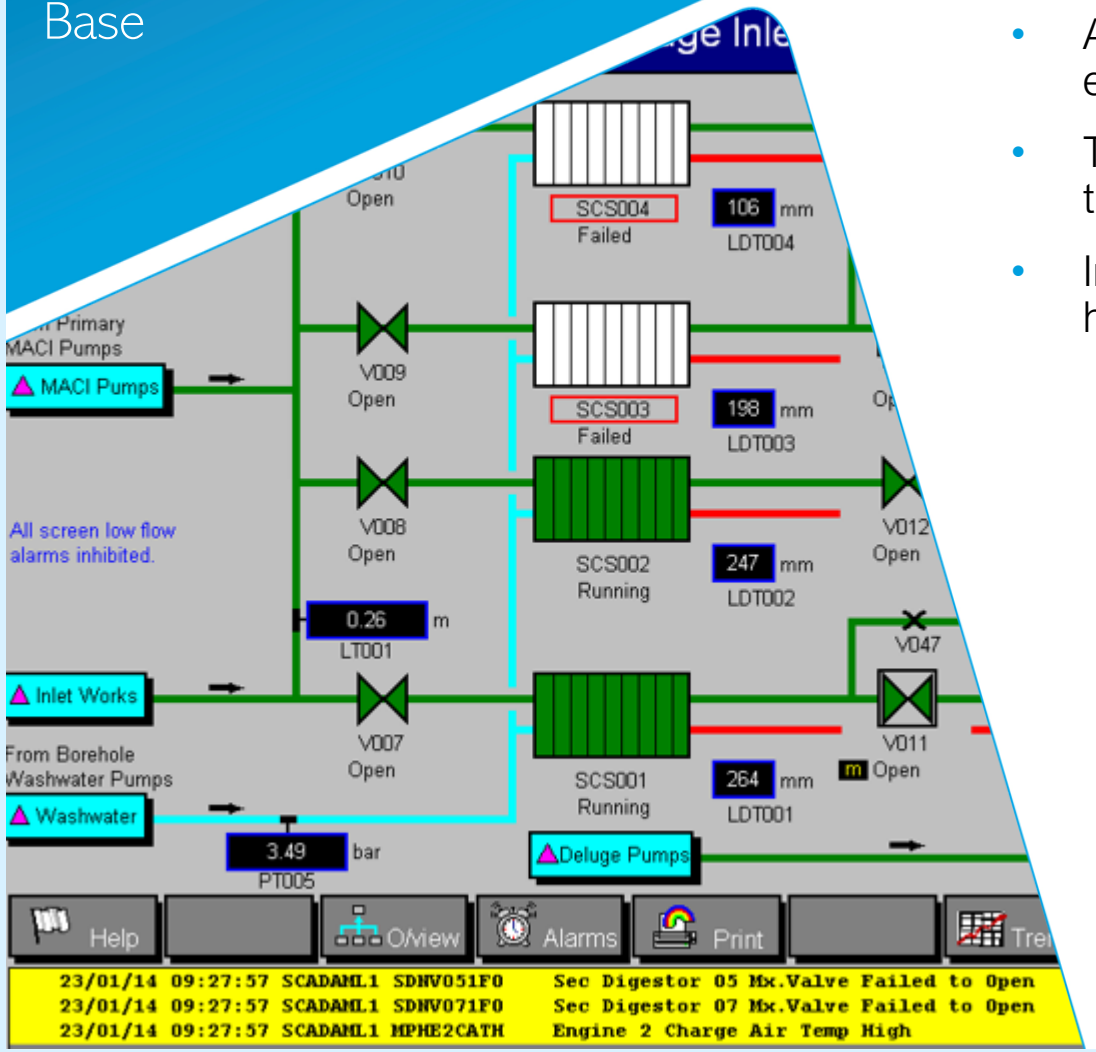
Treatment Sites = 353

Volume = 4.7 bn litres/day



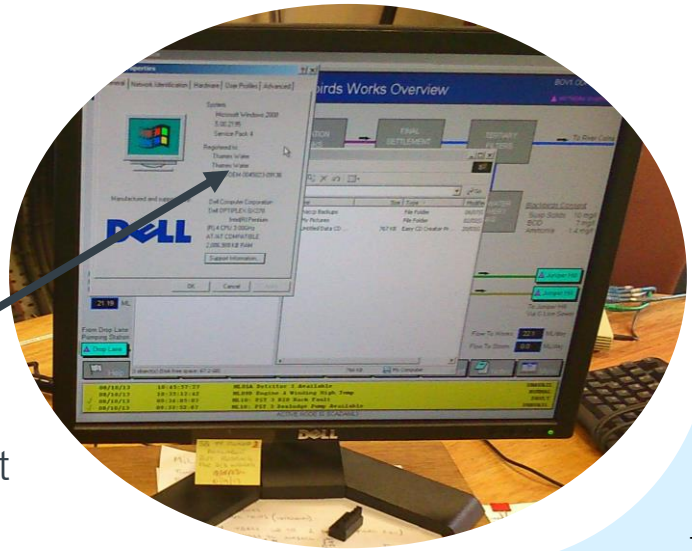
Before System Platform

Disparate SCADA Installed Base



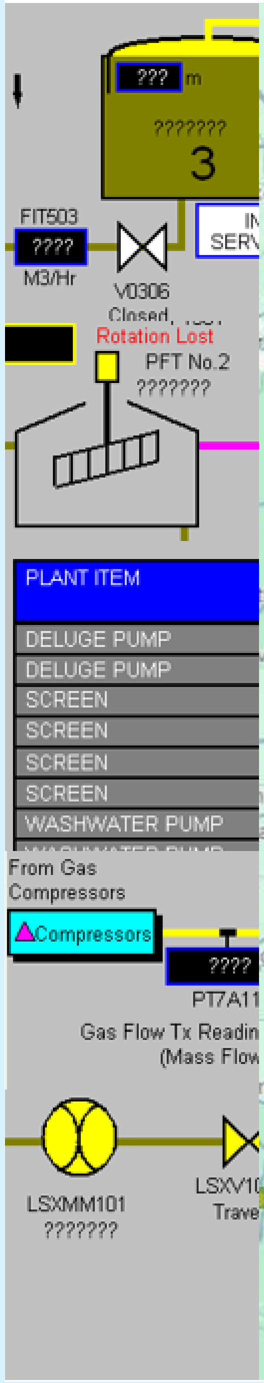
Business Case for Change

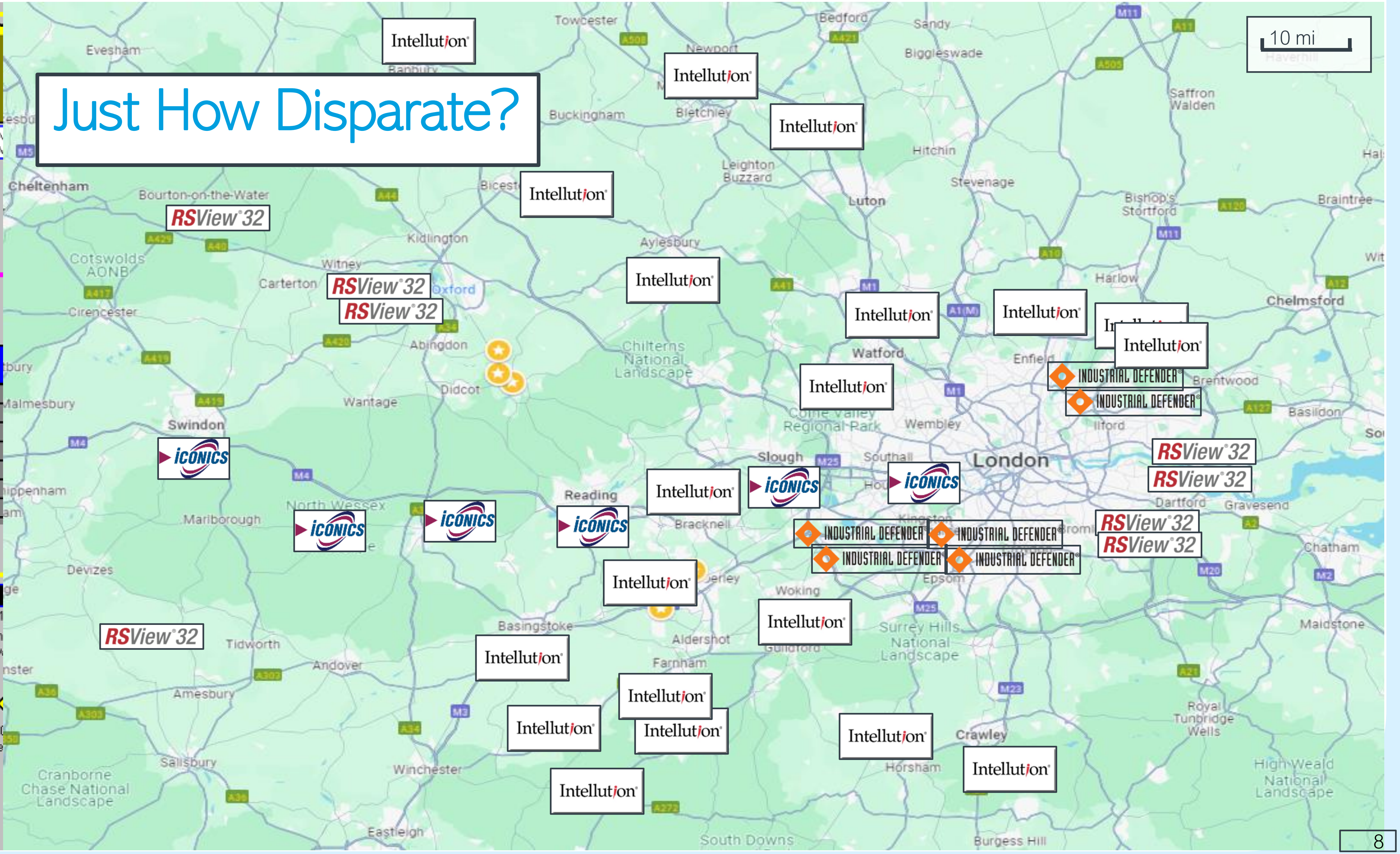
- Thames Water have a very large, spatially distributed physical asset base.
- Assets are spread across regions with varying population equivalents (PE), topography, geology, and land use.
- The site SCADA systems were all isolated from one another and the central services historians.
- In most cases, only the local machine provided access to historical data.



The eagle eyed will spot Win2000 👀

Just How Disparate?





No System the Same

A Mixed Bag of End User Experience

Some of the reasons for the disparate spread of SCADA Technology

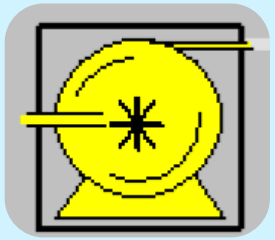
- Technology available during system installation.
- Limited governance ensuring system alignment.
- Upgrades were not holistic, usually linked to growth schemes, which led to organic growth at different rates across the estate.
- Multiple System Integrator methodologies.

Why is this a challenge?

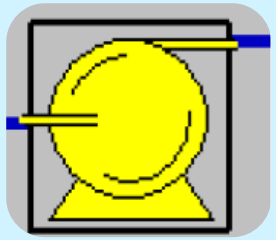
- Operators manage multiple sites or regions.
- Switching between different SCADA systems with varying principles could cause confusion, increasing risk from error in control decisions.
- Training burden for different SCADA systems raised OPEX, exacerbated by the number of operators and legacy system variations.
- Data not structured in a common framework.

Rockwell FT View Pump

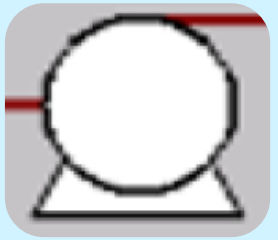
ID RTAP Pump



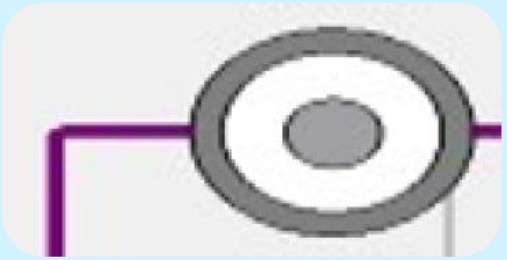
Iconics Pump



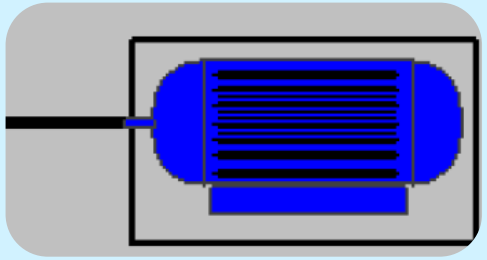
Intellution Fix32 Pump



Sludge Screen Site A

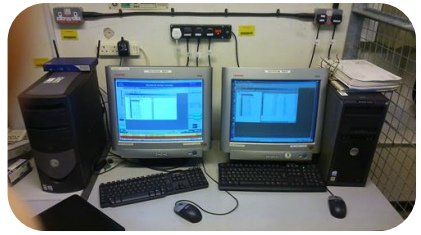


Sludge Screen Site B



Timeline

Largest Operational Technology Transformation Programme in Thames History



Aveva World 2024

Enough was Enough

Success Phase 2

1989 — 19 Years of SCADA Growth

2008 — Planning (PR09)

2010 — AMP5 SCADA Programme

2015 — 2014R2 Upgrades

2022 — 2022R2 Upgrades

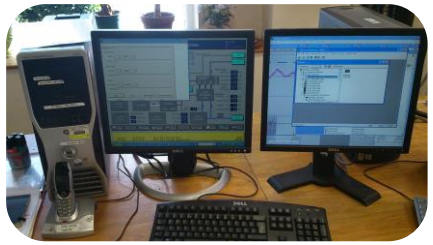
2025 — Future Initiatives

2030+

Privatisation

A new beginning

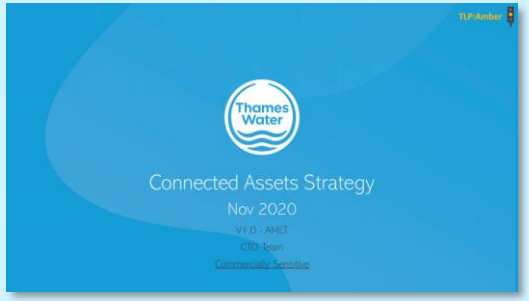
Success Phase 1



An Informed Design

Regulation, best practise, experience and requirements all inform the design

Internal Operational Technology Strategy



Cyber security standards and guidance:

- IEC62443
- NIS
- OG86

In flight programs:

- NIS-R compliance programs
- Secure remote access
- Alarm reduction program

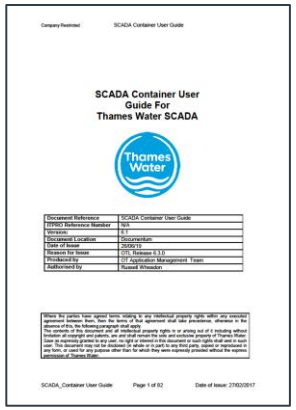
OTL – Object Template Library maintenance manual

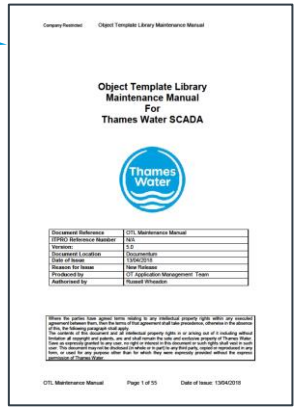
OTL – Object Template Library user guide

SSSK – Site SCADA Starter Kit Contents

F24 Section 4 Site SCADA

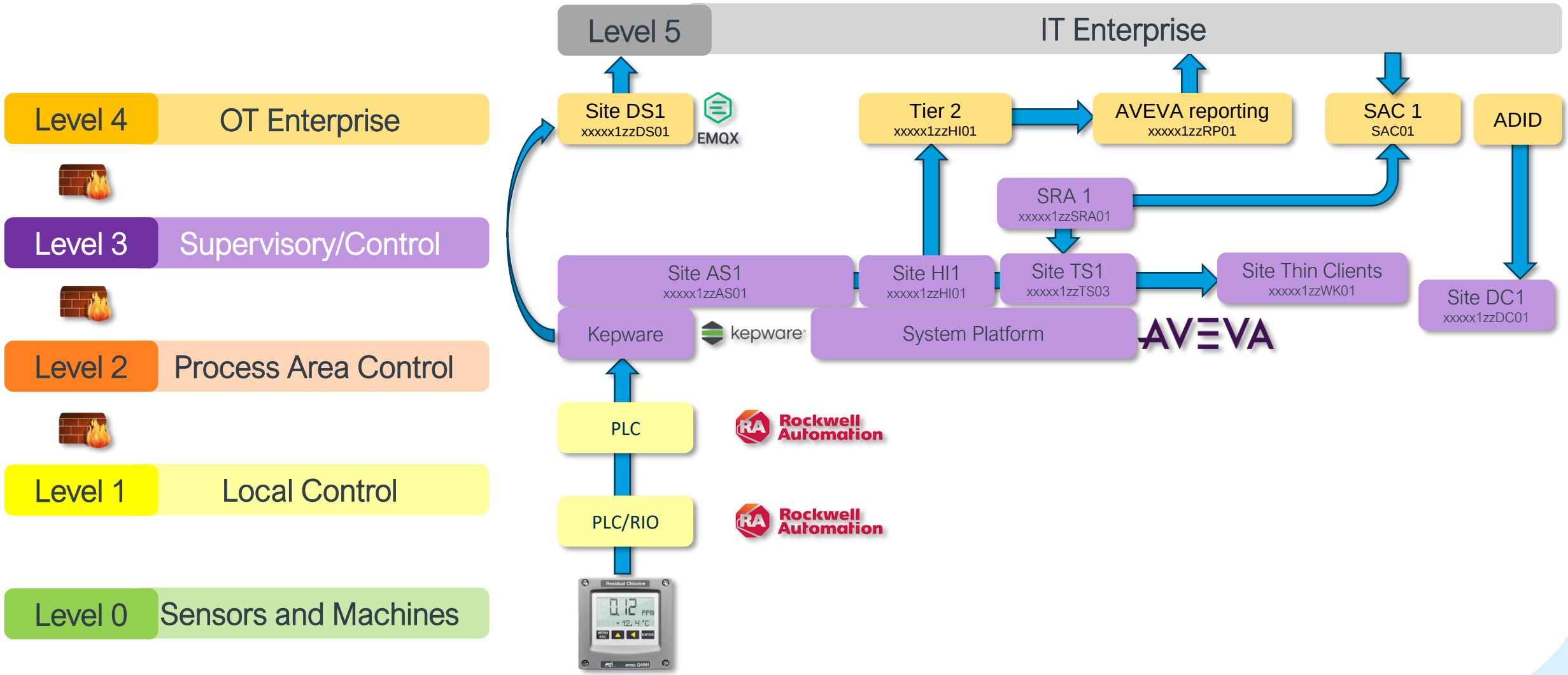
F24 Section 4a site object library





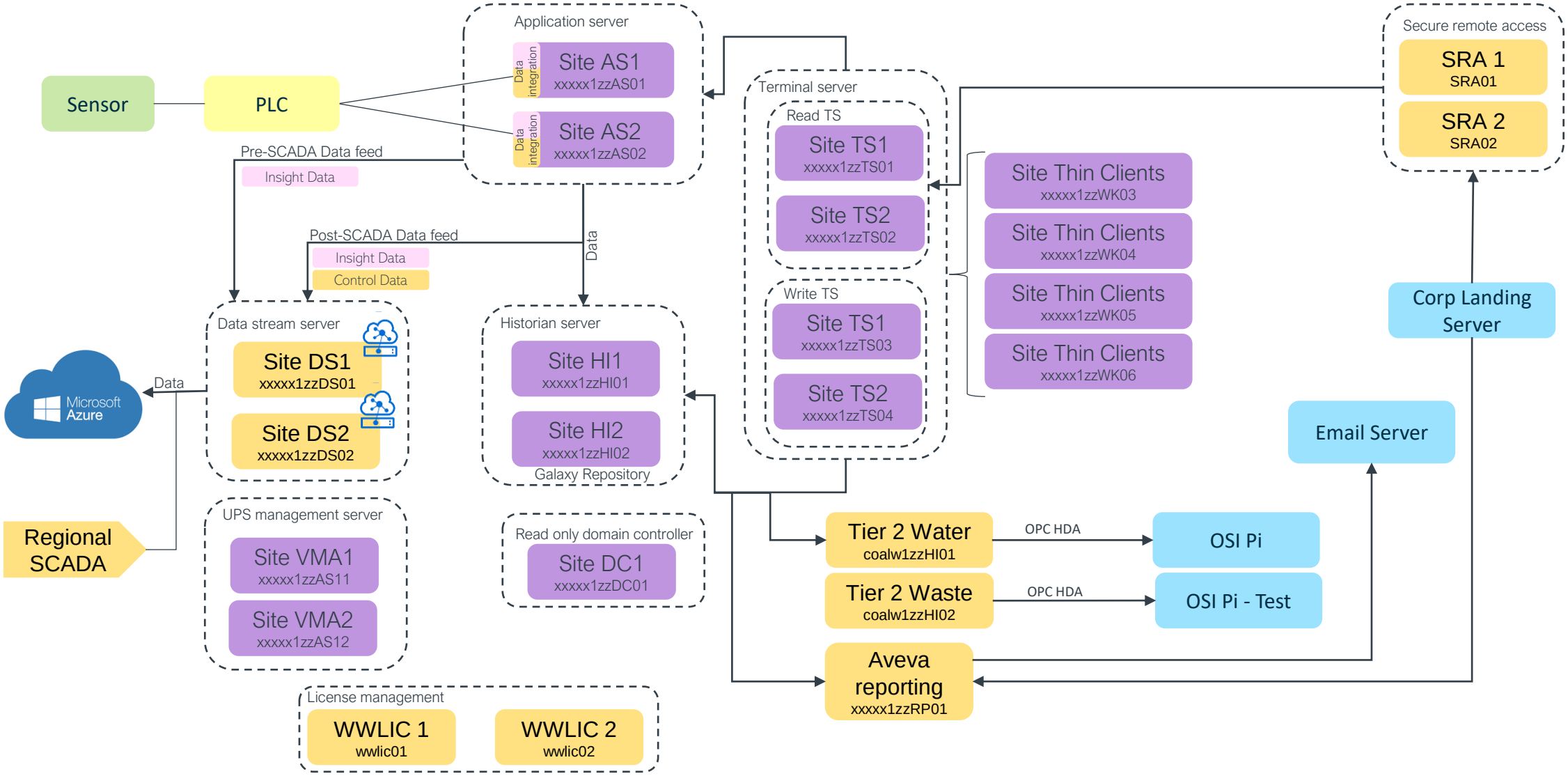
Architecture

The underlying build for our control room's



Architecture

Building System platform for resilience



AMP5 Lessons Learned

Technical Learnings to Take Forward

- Virtualisation
- Microsoft SCCM template builds
- UPS Autonomy
- Thin Clients
- Two Builds Small and Large
- RBAC
- Network design

Delivery Learnings to Take Forward

- Take the end user on the journey from cradle to grave
- Logging on (Domain Accounts)
- Visualisation
  - Mimic Layouts / Colours
  - Tagging
  - Trend Pens

Addressing deficiencies

3 things we wanted to change

- Remote access

Providing both corporate and control users with a common visual experience whilst ensuring control is secure.

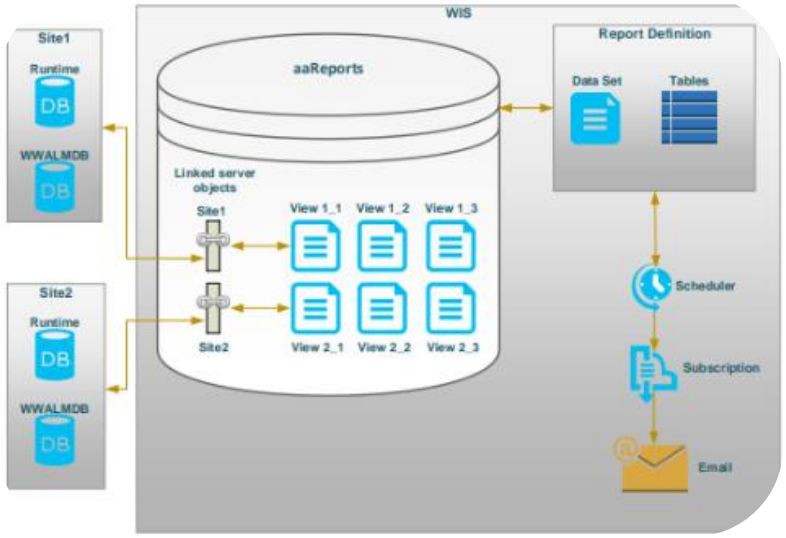
- Data Integration

Moving data between time sensitive control room environments with OPC-UA

- Reporting

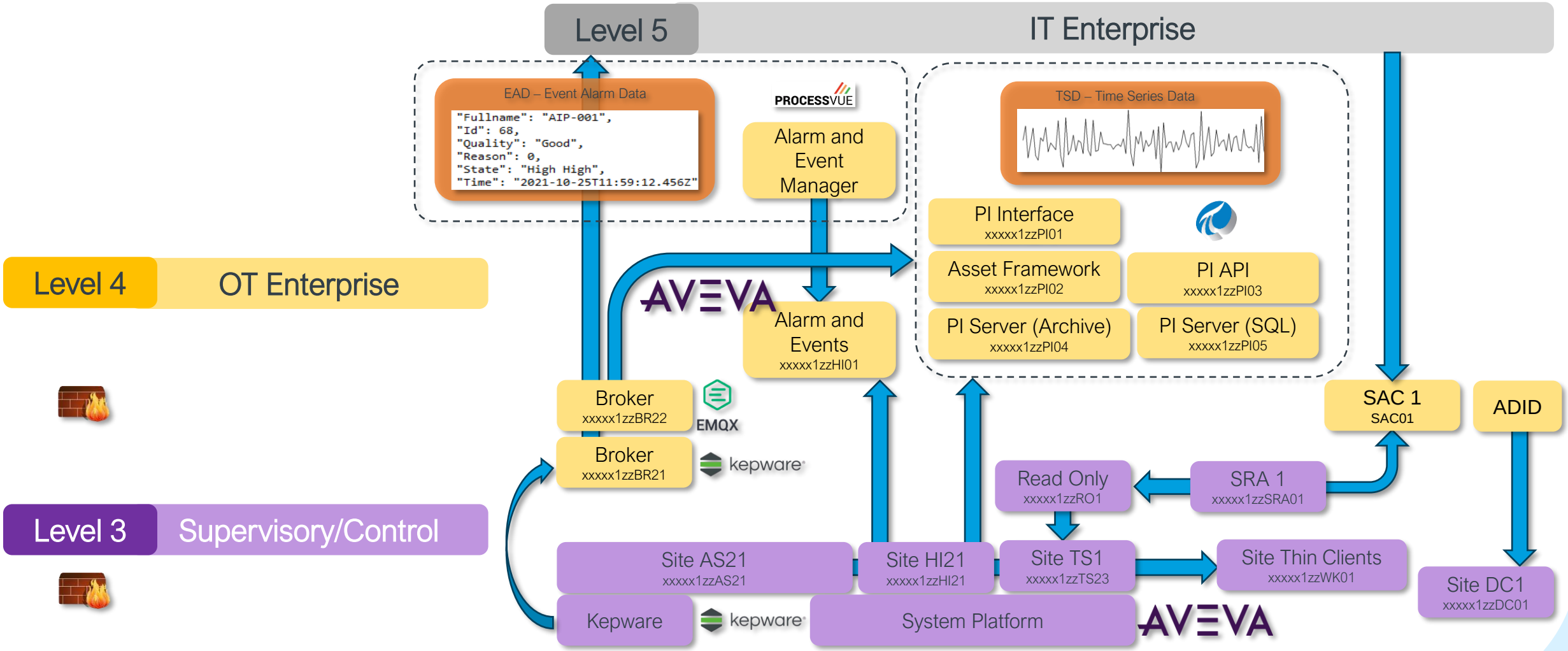
The demise of Wonderware

information server



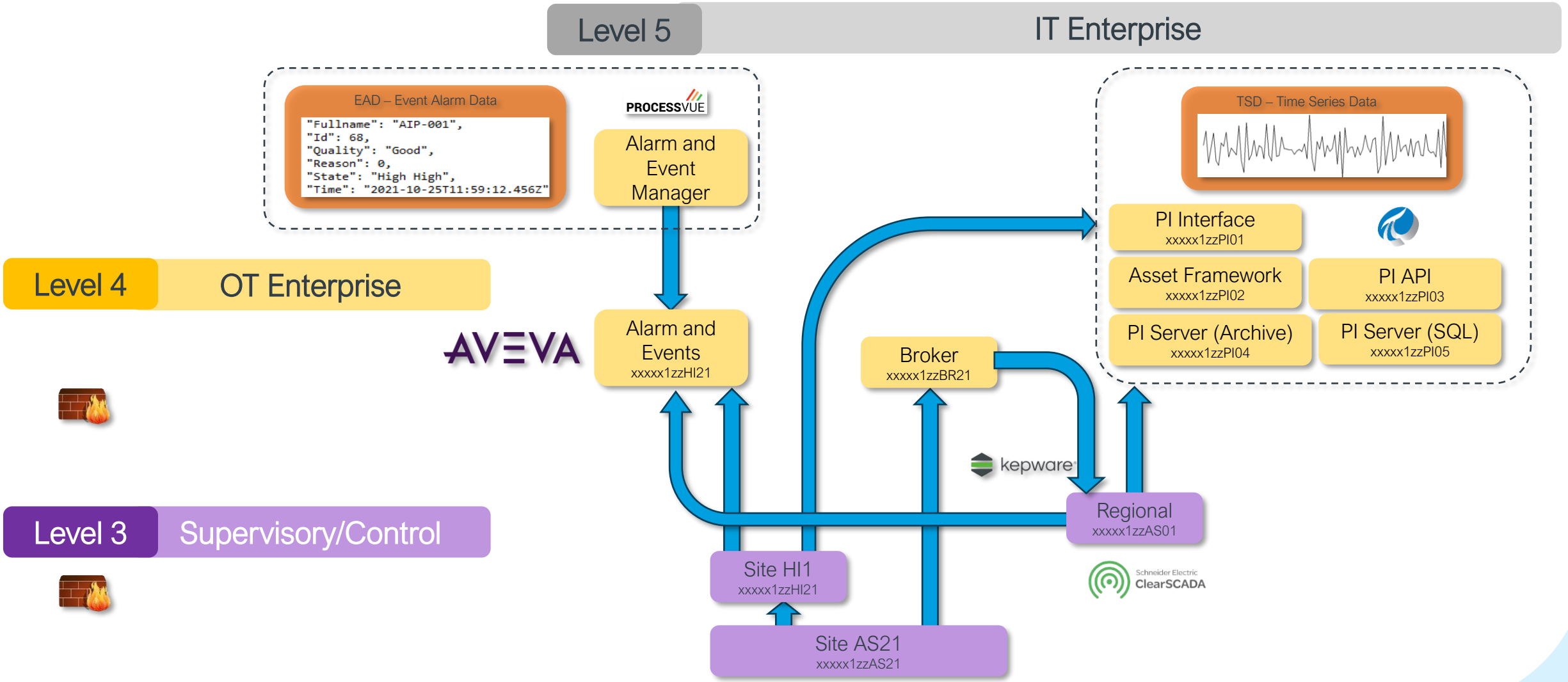
Architecture Vision 2030

Making data easy for our user's



Architecture Vision 2030

Joining our systems both in name and at the data layer



WATER AND WASTEWATER | ENGLAND

Thames Water optimises its operations with a standardized modular approach to Site SCADA

Challenge

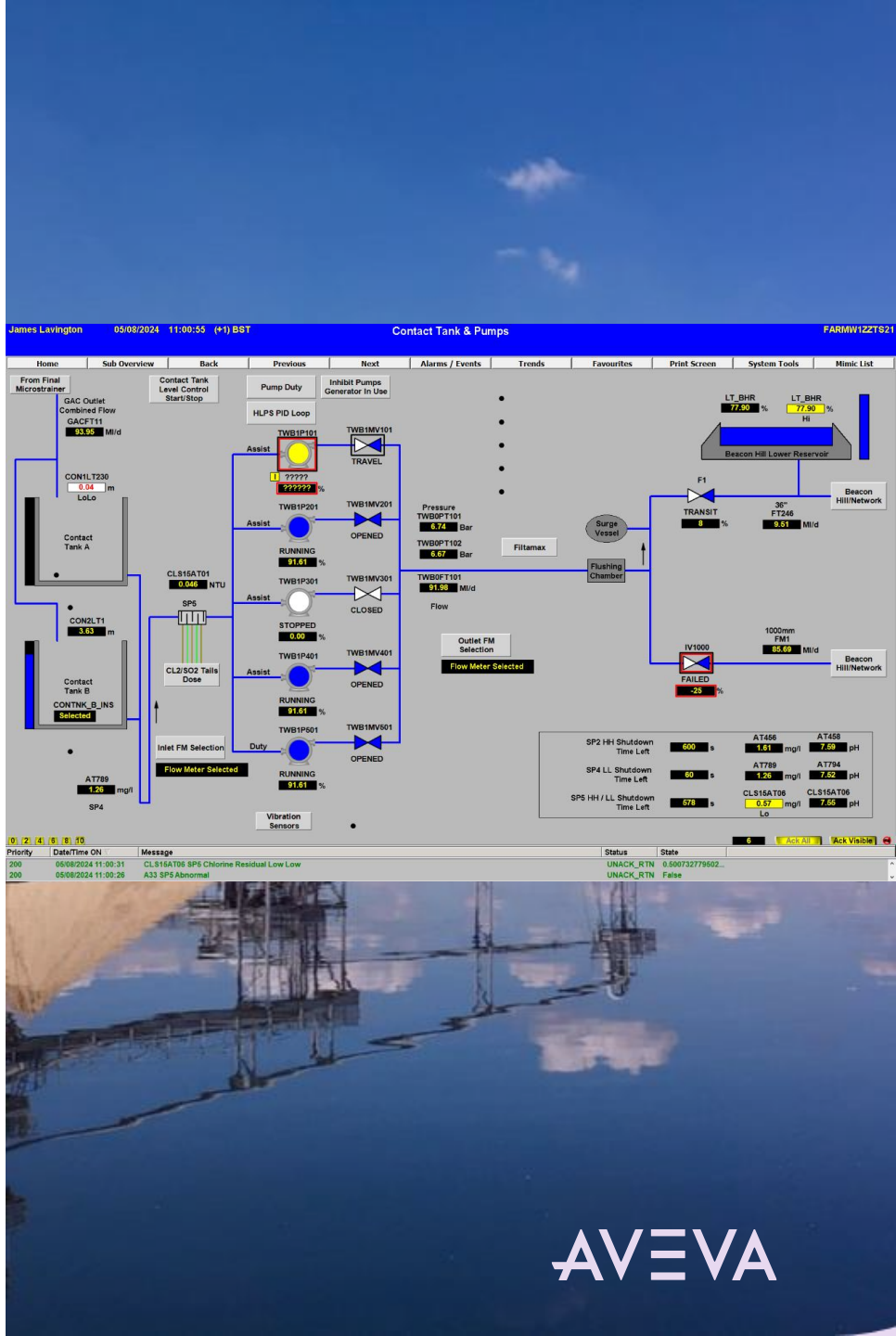
- **SCADA systems**: usually isolated to their specific sites.
- **System Evolution**: over long durations led to varied deployments across the estate.
- **Products Variety**: based on “flavor of month” at time of installation.
- **Data and Risk**: "Fit and forget" approach leaves unsupported assets and data risks as regulatory compliance demands increase.

Solution

- Legacy Replacement: Thames replaced 50+ sites using the AVEVA System Platform.
- Standardised Approach: A templated, standardised approach was used, adaptable for systems of different sizes.
- Consistency: across all database construction and visualisation

Results

- **Standardised SCADA System: drives significant value and potential. Setting us up to be better enabled to meet our executive strategic objectives: Pollutions, Leakages, HSW…**
- **Data Availability: by aligning database structures and increasing data access for more business users.**
- **Common Information Model: was introduced, transferable across various business areas.**



It's everyone's water

Thank You Paris ☺

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