Future Water Association

Informing, Innovating, Influencing

Horizon Water Infrastructure

Leakage and Metering Conference

Meeting Metering Targets for AMP8

ARUP

Welcome to Birmingham Office

Fire Alarm

Test takes place on **Fridays at 09.30am.**

If you hear the fire alarm and the instructions to evacuate, please follow our Fire Marshals out of the building using the marked escape routes and proceed to the Assembly Point in **City Centre Gardens** behind Birmingham Library.

DO NOT use the central stairs to evacuate

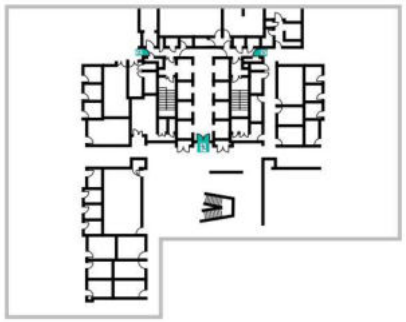
When using the stairs please always observe the following

Do Not use mobile phones or other devices while using the stairs.

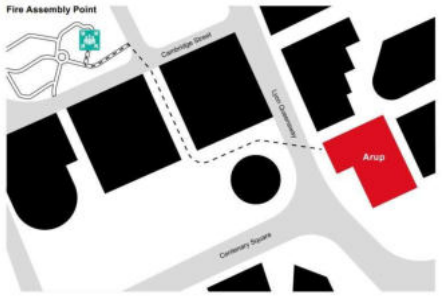
Hot drinks and food should not be carried on the stairs.

Hold on to handrails wherever possible.

Please always wear your ID whilst in the building



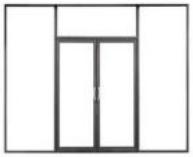
Fire Exit x3 on each floor plate



Assembly Point
Cite Centre Gardens

First Aid

For First Aid assistance contact **Reception** or call **0121 213 3888** from any phone.



The glass doors leading to the lift lobby and toilets are automatic and activated by using your ID/ Visitor pass. Please **DO NOT** push or pull these doors.

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Opening Remarks

Paul Horton, CEO
Future Water Association

Our Mission

Future Water Association

Informing, Innovating, Influencing

Since forming in 1986, Future Water Association has aimed to shape the future of our industry by informing, innovating and influencing.

We are the voice of the water sector, advocating with Government, industry, members, and the public.

Through collaboration, innovation and honest dialogue, we can facilitate positive change in the UK water industry.

Our theme for 2025 is Transformation of the Water Sector.

This year at FWA

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Hosted 20+ events.

Awards Ceremony recognising the incredible people that make up our sector.

Represented our members at multiple industry events across cyber, net zero, innovation, skills.

Released a series of 3 podcasts on transforming the sector with Horizon Water Infrastructure.

This year at FWA

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Policy impact

Held 3 webinars to inform our response to the Cunliffe Commission.

Worked directly with the Commission.

From the draft report, there were areas of significant correlation with our input.

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Cunliffe Report

Thematic Area	Alignment Level	Notes
Strategic Planning & Vision	✅ Strong	Shared call for long-term, integrated strategy
Regulatory Architecture & Culture	✅ Strong	Agreement on systemic reform and culture shift
Environmental Integration	✅ Strong	Aligned on coherence, priority-setting
Ownership & Governance	✅ Medium-High	Different emphasis but same reform goals
Infrastructure & Innovation	✅ Strong	Agreement on visibility, standards, incentives
Workforce & Skills	✅ Medium-High	FWA stronger on detail (cyber, skills strategy)

Upcoming Events

14 July 12.30-1.30pm Online	Networks November Launch Webinar
15 July 12.30-1pm Online	A Year in the Life of a Future Water member
09 September 10.30-3pm Bristol	Cyber Resiliency in the Water Sector

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Networks November 2025

4 Nov — 9:30am - 3:30pm — A Year in Water Review — London

6 Nov — 9:30am - 3:30pm — Asset Resilience and National Standards Workshop — Stantec London

11 Nov — 9:30am - 4:00pm — Thinking as a system: Digitising Assets and Data Standards — Bristol University

13 Nov — 9:30am - 3:45pm — Could the future of water be grown not built? — Online

18 Nov — 9:30am - 3:30pm — Leakage Workshop with Spring, WRc and Ofwat — Swindon

19 Nov — 9:00am - 4:00pm — Networks for Growth - Making Water Connections Work for New Builds — Online

20 Nov — 9:30am - 3:30pm — Emerging Talent Sector Entry Session — L+G Manchester

25 Nov — 9:00am - 12:00pm — Procurement for Innovation Roundtable — Xylem Letchworth

27 Nov — 9:00am - 4:00pm — Water Dragons at FloodEx — London

02 Dec — 10:00am - 12:00pm — **Future Water Report Card 2.0 Release** — London

WWW.FUTUREWATERASSOCIATION.COM

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OVARRO CONNECTING TECHNOLOGIES

AHS PIPELINE INNOVATION

eps

TRANSFORMATION PARTNER

Horizon Water Infrastructure

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Metering Group

Chair: Tanya Dady, Smart Solutions Director at Dayworth Consulting

Future Water's Metering Group is working to drive consistent, future-ready metering across the UK. With a focus on smart adoption, interoperability, and customer engagement, the group supports industry-wide collaboration to meet government targets and reduce leakage.

Key focus areas:
Standardisation & technical alignment
Smarter rollout strategies
Data use & accessibility
Customer trust & education
Policy & regulatory support
The group also contributes to sector-wide thinking through the Future Water Report Card and Water Commission engagement.

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Speaker:

- *Tanya Dady, Horizon Water Infrastructure*

Metering in AMP8 – Meeting Ambition and Delivery

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- *Speaker:*
  - *Steve Formoy, MOSL*

Smart Metering in the Business Retail Market

Smart metering in the business water retail market

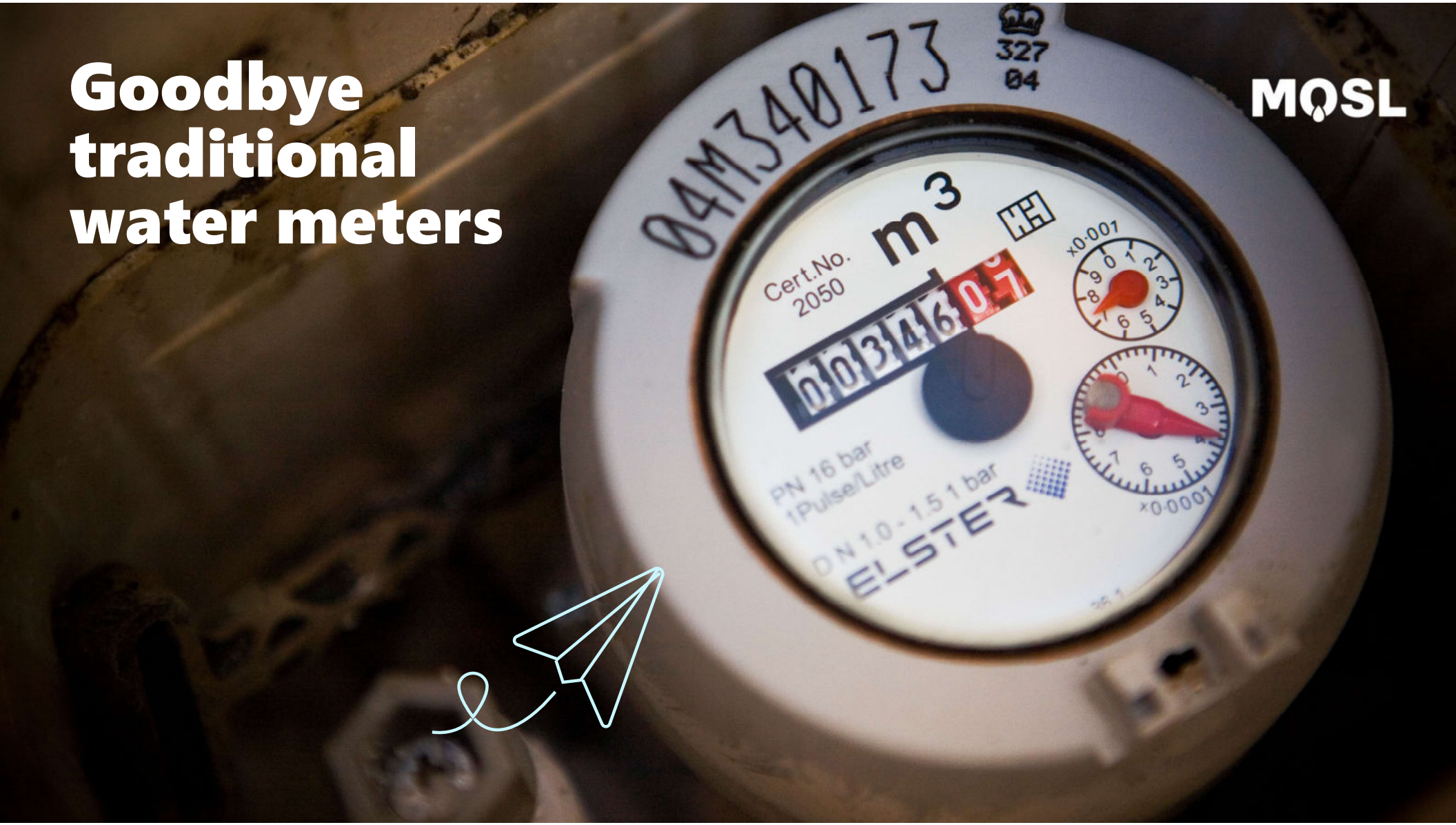
Future Water Association

Steve Formoy
Finance Director

4 July 2025

Photo: Thames Water

Goodbye traditional water meters



Hello smart

Hello smart

- Hourly remote reads
- Detailed, granular data
- Faster, more accurate bills
- Find and fix leaks
- Identify spikes in usage
- Sector benchmarking
- Comparability

Hello smart

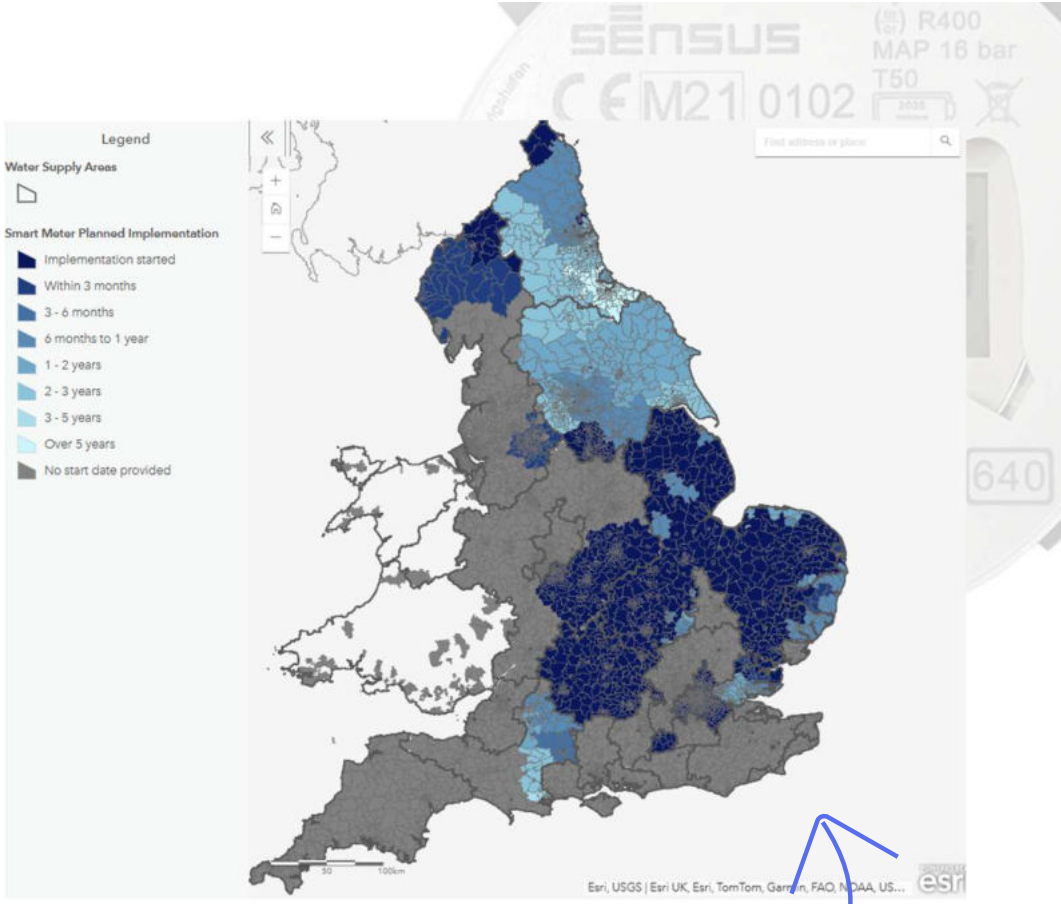

% NHH smart meter rollout
75
50
25
0
2024/25
2025/26
2026/27
2027/28
2028/29
2029/30
MOSL
elster
10M166462
m3

Challenge #1
Rollout

- Risk of prioritisation of smallest, easiest-to-install smart meters
- Need to prioritise medium and large meters: 13% of SPIDs represent 72% of consumption
- Address ‘hard to read’ and ‘long unread’ meters
- Different rollout speeds risk creating data ‘fast lane’ and ‘slow lane’
- Biggest impact on retailers and customers operating in multiple wholesaler regions

Challenge #2
Customer journey

- Smart metering is a ‘national rollout being delivered regionally’
- Important that key elements of rollout are handled consistently
- RWG managing coordination between wholesalers and retailers to manage customer expectations:
  - Advance notification of installation
  - Language used: “upgrade” or “replacement”?
  - Handling period between meter install and connection to network



RWG

Challenge #3
Data sharing

- Wholesalers' sharing smart meter data with retailers is key
- Significant increase in volume of data from smart metering
- Currently no standard approach – risk of a patchwork of solutions
- Approval given to develop a central smart meter read 'hub'
- Spring 2026: creation of hub
- Summer 2026: connect hub to central market system

Challenge #3
Data sharing

Solution **must**:

- Enable wholesalers to share data easily and efficiently
- Improve the control of data flowing into CMOS

Solution **should**:

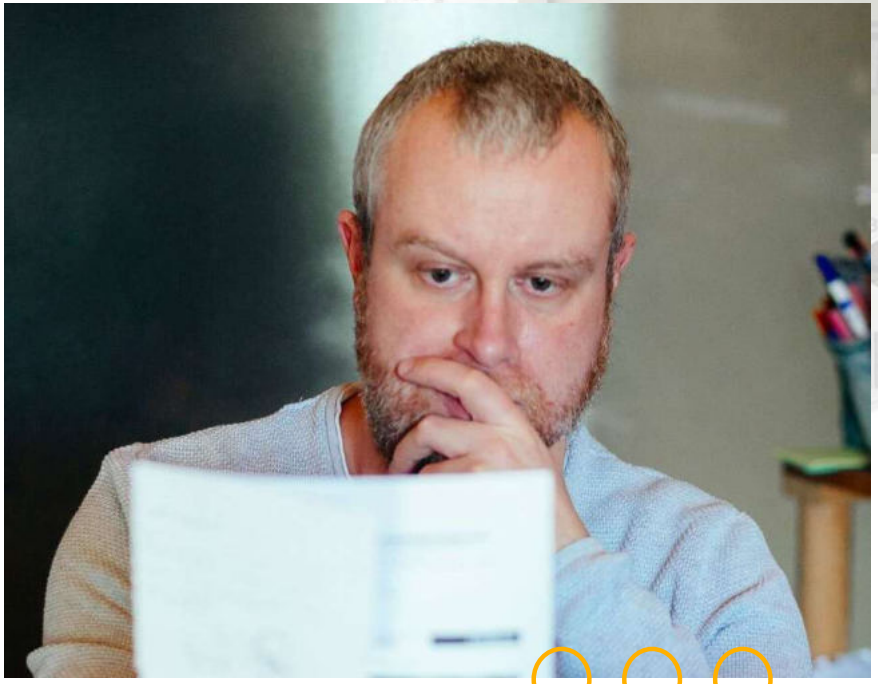
- Enable Retailers to develop new, innovative products, services and tariffs
- Provide external parties access to aggregated data (e.g. Ofwat)

Challenge #3
Data sharing

- Mobilising programme team
- Delivery partner appointed
- Detailed requirements gathering due to begin
- New ‘Advisory Forum’ being formed
- For more information or to get involved, email comms@mosl.co.uk

Challenge #4
Confidence in data

- Retailer and customer confidence in smart meter data is key
- Data must remain accurate throughout the transfer process
- Flags in central market system must be correct
- All meters must be capable of outputting to a standard format
- Appropriate data format/quality controls before entering CMOS
- Audits of existing data in systems and field inspections



Final thoughts

- Exciting potential from smart meter data
- Data sharing is critical to maximising benefit for market and customers
- Enormous potential to drive awareness, competition and innovation for customers
- Opportunity to deliver "national rollout regionally" – not in silos
- Consistency and standardisation will be key, but needs proactivity

Thank you.

steve.formoy@mosl.co.uk

Photo: Thames Water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Water Dragons Competition
HYDROSAVE
wrc
Independent | trusted | innovative

Complete Cyber

vault

eVault

Defending Meter Networks with Cutting-Edge Cyber Resilience

Evan Jones | 04/07/2025

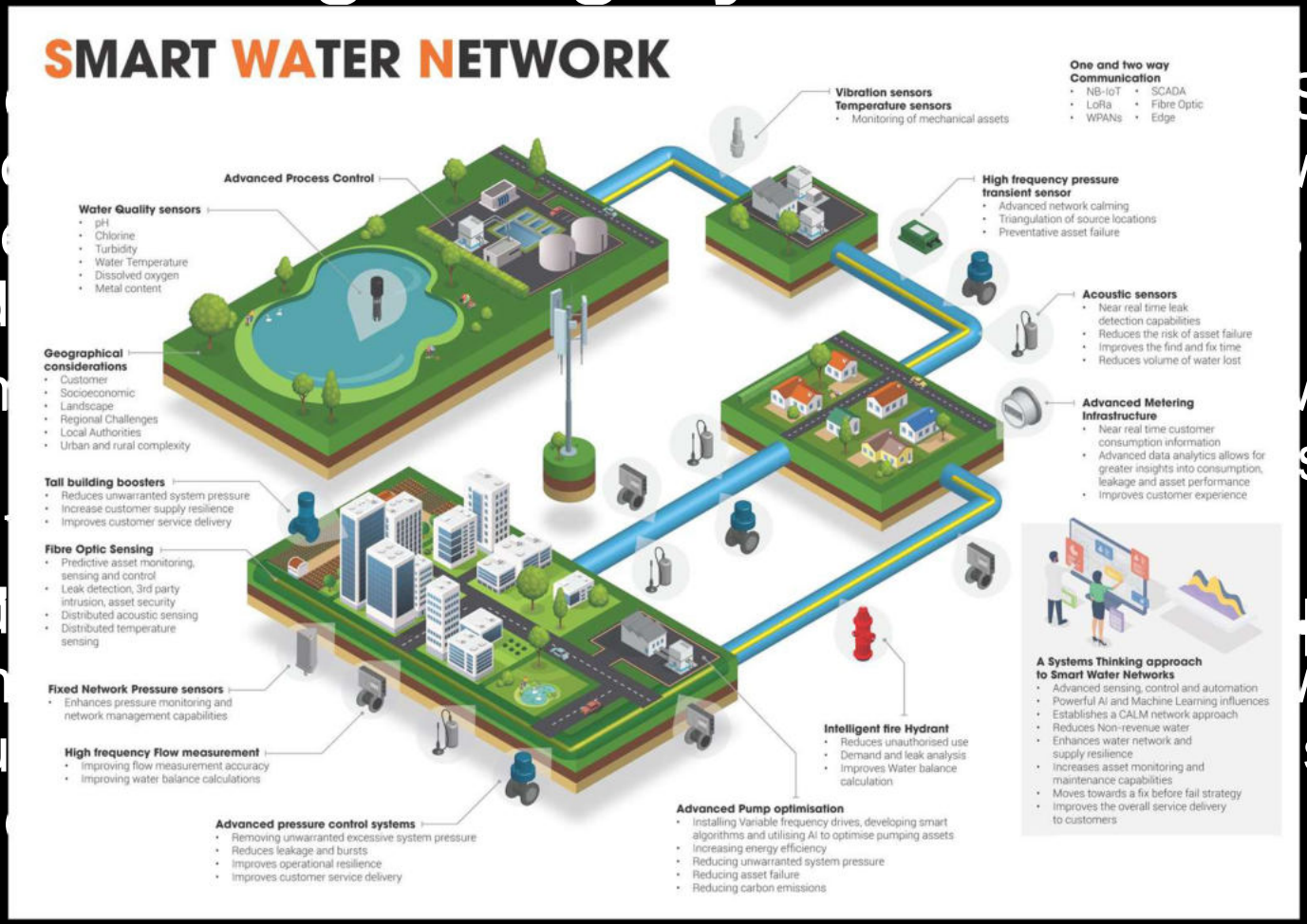
Complete Cyber & Vault Brand

- Complete Cyber established in 2014 to support building resilience for Clients in the Critical National Infrastructure (CNI)
- Complete Cyber is a technical consultancy and managed services provider, we offer:
  - Security Design Reviews, Cyber Assurance and Security Engineering Services
  - Security Testing Capabilities
  - Security Operations Management
- In 2022, Complete Cyber developed Vault, a brand to support the release of new Innovative Products to market with a view of addressing core issues identified in Industry, these being:
  - Integration Costs for Security Products are hard to justify Return on Investment
  - Security tooling requires extensive experience, including awareness and training from internal employees to leverage new technologies

Smart Metering & Legacy Networks

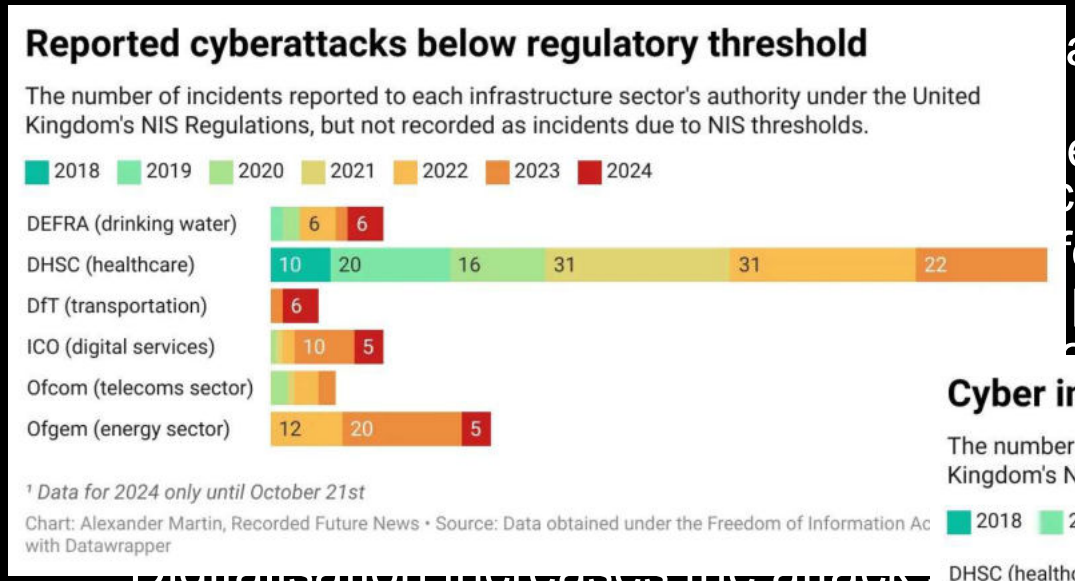
- Utility n… Supply is built up… will have increas… support better d…
- Problem… with Legacy … security health, …
- Distribu… meter solution… will make it difficu… sks of these n…

28.7 **Waste Water Facilities**



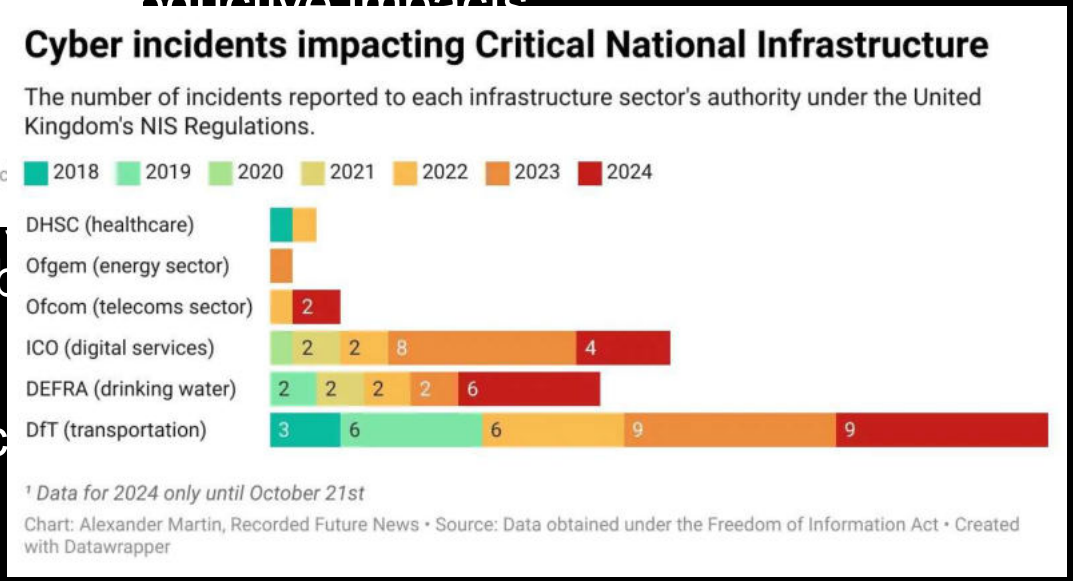
Figures estimated from OFWAT

Challenges Ahead



ation on Critical Infrastructure such

e Bill on Digital Service Providers
cted entities within Water sector
following:
Nations targeting Core National
oductive impacts



- **Return On Investment** (ROI) for b
  difficult to justify

https://energiteknikk.net/2025/06/hac

Introducing Edge Vault (eVault)

- A Plug and Play Inspector and Detector combined into a single unit
- Designed for users at site, e.g. maintainers, technicians and Operators which not only improves awareness training but up-skills users in the forthcoming Digital Maintenance
- Automated Cyber-health analysis of connected OT/IT networks that provides seamless analysis on the following:
  - Asset Inventory
  - Network Topology Mapping
  - Digital End Of Life Identification (Obsolescence)
  - Vulnerability Identification
  - Security Event Detection
  - Network Fault Analysis
  - Cloud Web Application for Centralised Data Analy
  - Further roadmap features to be built

Simple To Operate

Switch On, Connect, Input a Scan Name, Scan, Wait

So Why eVault?

- Critical Operational Technology (OT) often requires high-levels of assurance (Safety, RAMS and Cybersecurity) to integrate new Digital technology. This is incredibly expensive and resource consuming - eVault is only ever temporarily connected, and safe to listen to OT networks, making it simple to integrate
- Adoption of Digital Maintenance and Awareness Training is key for protecting our Infrastructure - eVault encourages users to question and analyse findings to support skill-set building, leveraging Human Factors into the design to influence this mindset
- Integration costs often reach 5-7 figures when using OT market leading Cyber vendors on sites estimated at over 100-200 endpoints, which when compared to eVault on a monthly subscription cost is more cost effective
- Support for Maintenance to provide Asset Management insights through telemetry will also blend two functional domains into a single portable unit and therefore makes adoption highly agile
- Enforces compliance adoption in areas of the Cyber Assessment Framework (CAF) by providing evidence on Assets, Monitoring and Testing

Cost Benefit: eVault Versus Competition

	Conventional Security Vendor Option	eVault Option
Time To Integrate	9-18 months *	Less than 2 weeks
Number of Endpoints	Capped License / Endpoint *	Capped on Assets/month with flexible increasing over threshold allowance
Required Resources	Approx. 7-9 resources (Project Delivery + SOC Team)*	1 resource (to review data in the portal)
Estimated Cost	5-7 £ Figures+ *	< £66K (Mid-Tier Subscription)

*Based on working on integrating multiple security monitoring and coordinating/under

Market Fit & Size (UK Lense)

Product is suitable for multiple sectors, and is therefore interoperable across other sectors: Oil & Gas, Transport & Nuclear. However consideration for the Water Sector:

Operation Technology
Cybersecurity Product
Average Cost = £120K/year

Utility Companies
20 UK

Market Size
£62.5M

Critical Suppliers/OEMs/Consultancies
+500 Companies UK

Target Market Size
£6.25M

10% Market Share

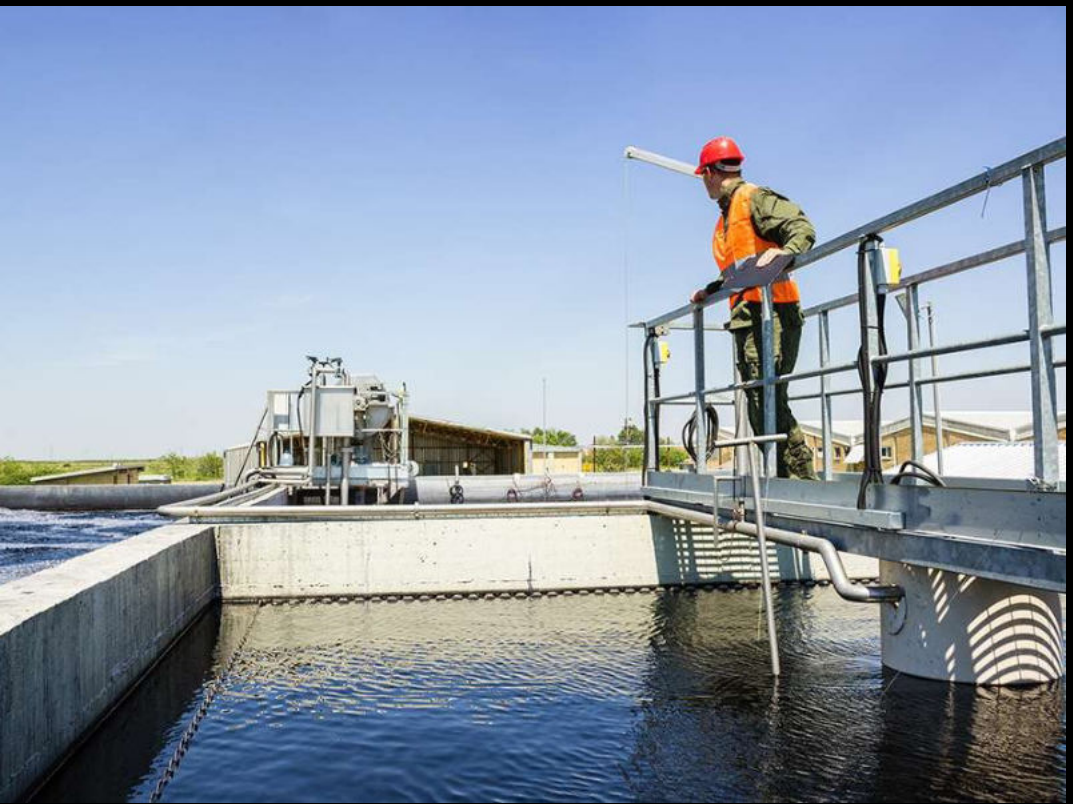
Q&A

What We Are Looking For?

- Innovation-based Trials for feedback and validation of our TRL 5/6 eVault product with Utility and OEMs working in the sector

Questions & Answers

Contact Us



LET'S TALK WITH COMPLETE CYBER!

Complete Cyber LinkedIn Page

completecyber.co.uk

contactus@completecyber.co.uk

National Innovation Centre, Zoological Dr, Dudley
DY1 4AW, First Floor

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Chair: Tanya Dady, Horizon Water

Infrastructure

Speakers:

Andy Haig, Vodafone

Natalie Lampton, Landis and Gyr

Learning from Energy – What can water adopt and adapt?


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Break

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Speaker:

Sam Barton, Baringa

From Framework to Roadmap – The Ofwat & Baringa Smart Metering Report

Learning from experience: what the rollout of smart metering in energy can teach us about smart metering in water

Report Overview

Future Water Association

03 07 2024

Context & Approach

Scope of the report

- Ofwat have created a £100m 'Water Efficiency Fund' for AMP8, which aims to ***"stimulate a transformative, sustained, and measurable reduction in water demand"***
- Ofwat commissioned us to write a report on how the fund could be used to **improve the outcomes** from the rollout of smart meters, based on **lessons from the energy sector**.

About Baringa and our Smart Metering experience

- We have provided specialist advisory services to water and energy sector clients for 20 years.
- **Energy: We helped government set up the Smart Metering Programme** in energy and have been supporting Ofgem, energy suppliers and the Data Communications Company ever since.
- **Water: We currently support multiple water companies and 3rd parties with their smart programmes** so have an in-depth understanding of the challenges faced today.

FT FINANCIAL TIMES statista | UK'S LEADING MANAGEMENT CONSULTANTS | 2018 – 2024

Best Workplaces in Consulting & Professional Services Great Place To Work. UK 2023 | Best Workplaces for Women Great Place To Work. UK 2023 | Best Workplaces for Wellbeing Great Place To Work. UK 2023 | Certified B Corporation

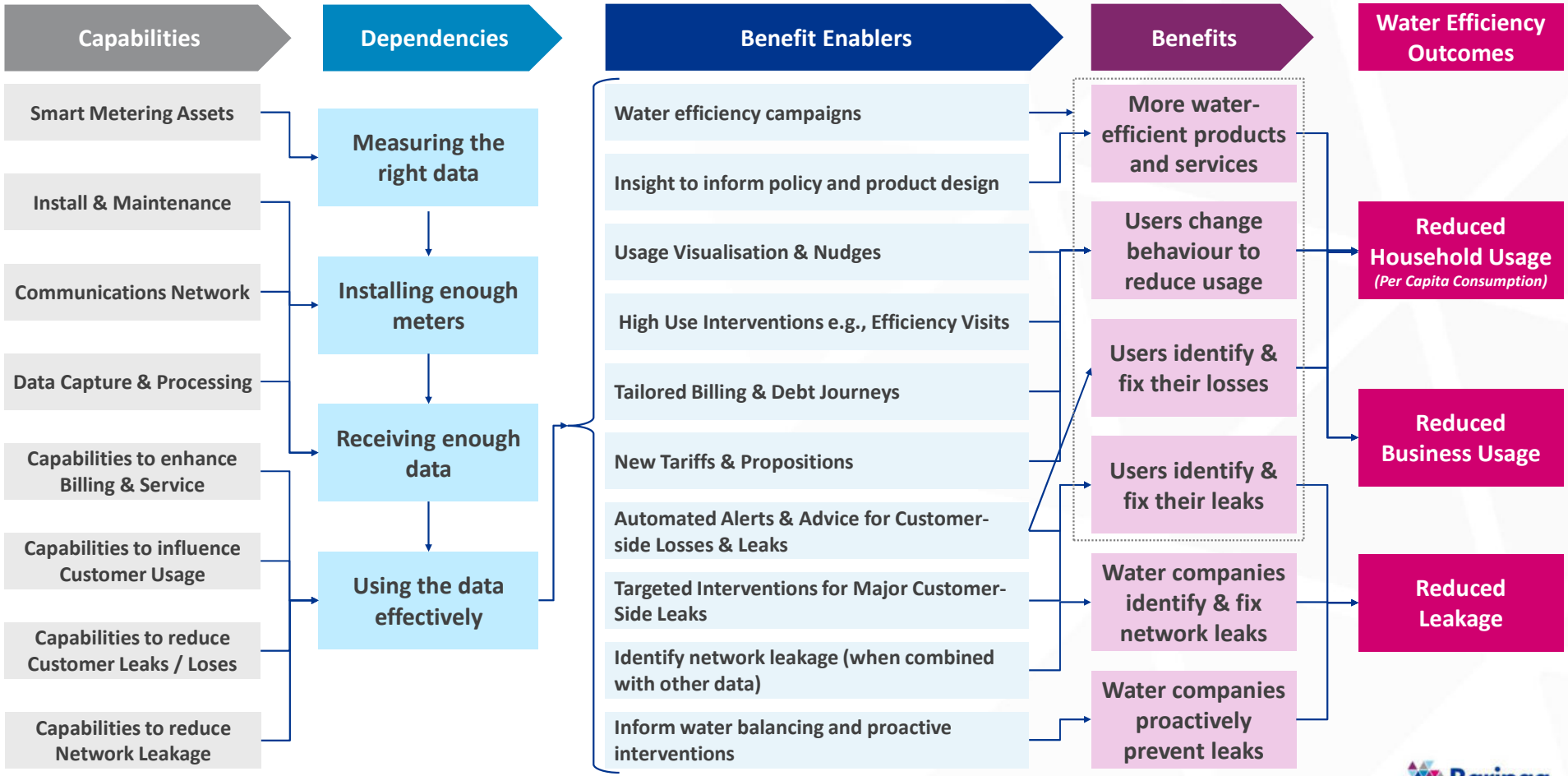
Approach

1. **Interview stakeholders:** Interviews / round tables with over 70 stakeholders from c. 50 companies
   - Water:
     - Industry bodies: WaterUK, Waterwise, CCW, MOSL, UKWIR
     - 10 Water companies
   - Energy:
     - DESNZ, Ofgem, Smart Energy GB, DCC, Alt Han
     - 5 Energy Suppliers
   - Supply chain (energy and water):
     - 12 Meter manufactures & comms network providers
     - 4 Meter Installer companies
2. **Review literature:** Reviewed over 40 metering related reports, journals and articles to identify lessons learnt and identify evidence for the report.
3. **Consult Subject matter experts:** The report was also informed by Baringa colleagues who have extensive expertise across the energy and water smart meter roll outs.
4. **Identify lessons, findings and recommendations:** we have now written our report, which concludes the scope of this piece of work. The date of publication is not yet confirmed due to the election announcement.

Baringa

Smart metering is a critical enabler of water efficiency benefits

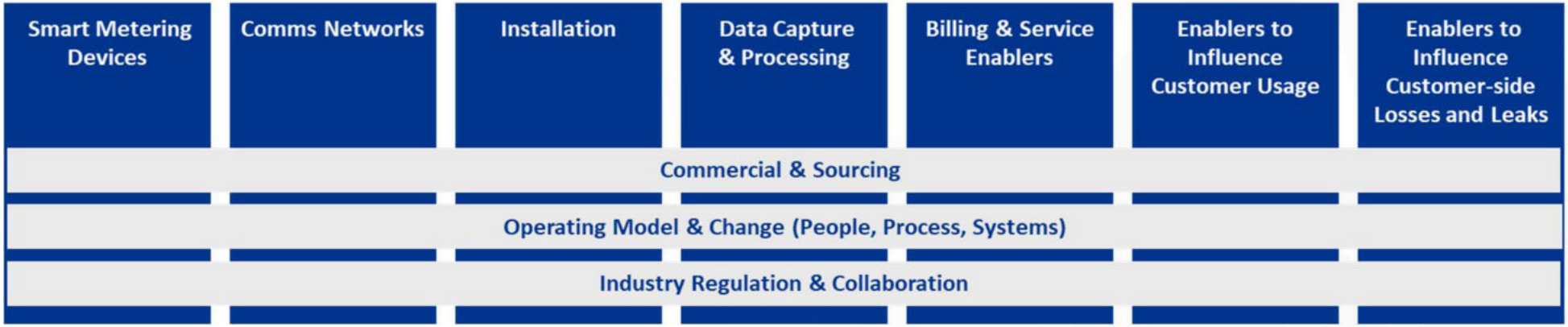
Illustration of the water efficiency benefits from Smart Metering in Water and the capabilities required



For Non-Households these may be delivered via Wholesalers and/ or Retailers

Our Framework

We used a capability framework with stakeholders to understand lessons from energy and water…



… to identify the following risks to the success of smart metering in water:

We do not measure the right data	We do not collect enough timely data	We do not install enough meters	We do not analyse data quickly and effectively	We do not use data effectively to improve billing & service	We do not engage customers effectively on their usage	We do not engage customers effectively on loses & leaks

We do not procure efficiently or drive a continuously improving supply chain

Water companies do not deliver the level of transformation required to deliver the benefits

The industry lacks the regulatory and collaborative mechanisms required to optimise delivery

Recommendations

Central governance and coordination
to set and drive standards; share best practice; and identify and resolve common issues:

- Establish a smart delivery governance capability.
- Develop a sector-wide business case and roadmap.
- Establish and govern performance reporting.
- Establish Technical and Operational standards and guidance.
- Establish Benefits Realisation standards and guidance.
- Assess and mitigate supply chain risks.

National campaigns
to promote water efficiency, the role of smart meters and the consumer action required:

- Establish national campaigns to increase engagement.

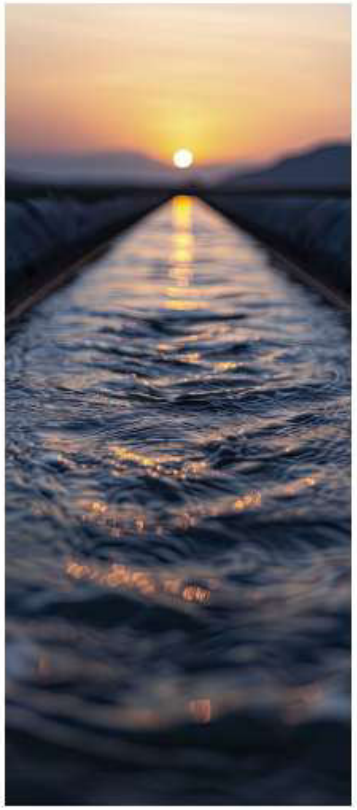
Investment in joint-sector solutions and innovation:

- Invest in new joint-sector solutions.
- Establish and govern data standards and data sharing.
- Enable smart tariffs and incentives.

Regulatory / Policy interventions for consideration:

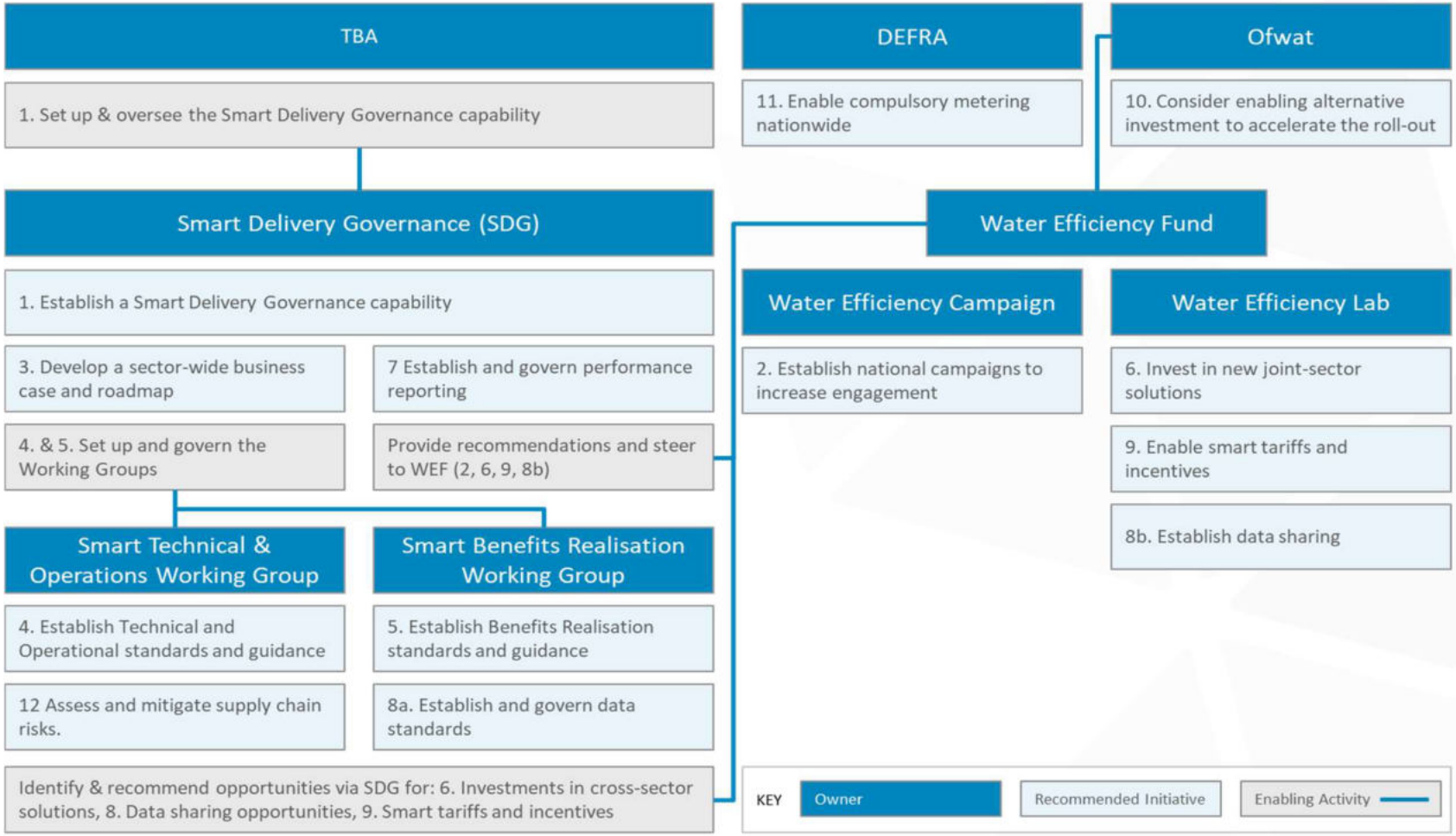
- Consider enabling alternative investment approaches to accelerate the roll-out.
- Enable compulsory measured charging nationwide.

A potential governance model for the ownership and delivery of the recommended initiatives is provided below, but this will require further consideration as part of the next steps.



Baringa

Draft ownership and governance model for consideration

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Water Dragons Competition
HYDROSAVE
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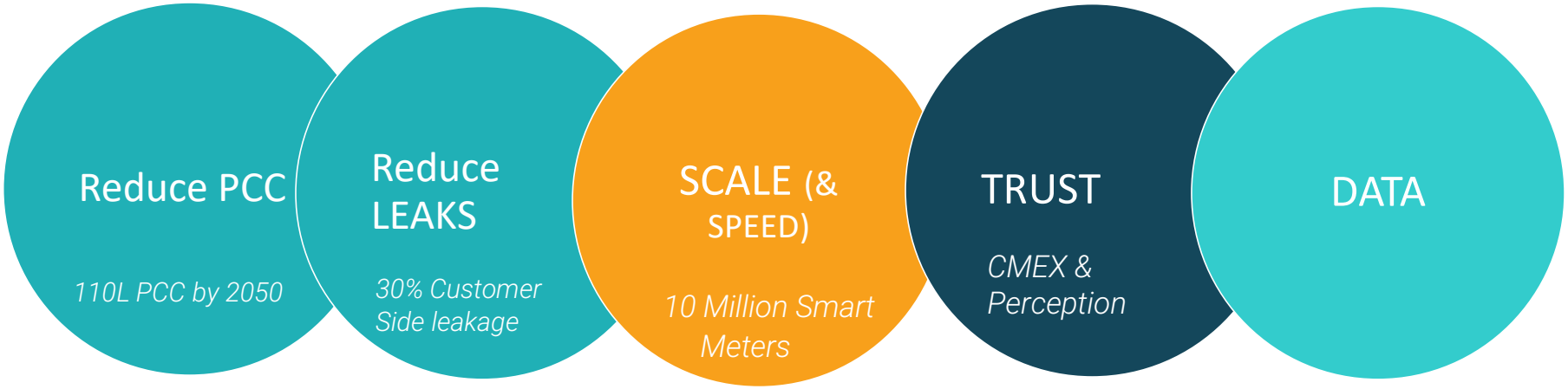
Independent | trusted | innovative

Presenting a SAAS Customer-Centric Smart Metering & Leakage Solution

Presented by Orlaith Senior and Clement Lapeyre

The AMP 8 challenges:



Smart Metering is the enabler, but how can we achieve these outcomes?

advizzo

Advizzo connect people to data

through a unique & highly experienced **customer-centric SaaS** solution in smart metering, for water & energy utilities.

People are the consumers. People are the solution.

People **determine the outcomes**

Connecting people to data:

Utility CRM & Meter Data Management

DATA

API

Behavioural & Data Sciences Software

advizzo

API

WIDGET

Your customers

PCC

CSL

TRUST

SCALE

advizzo

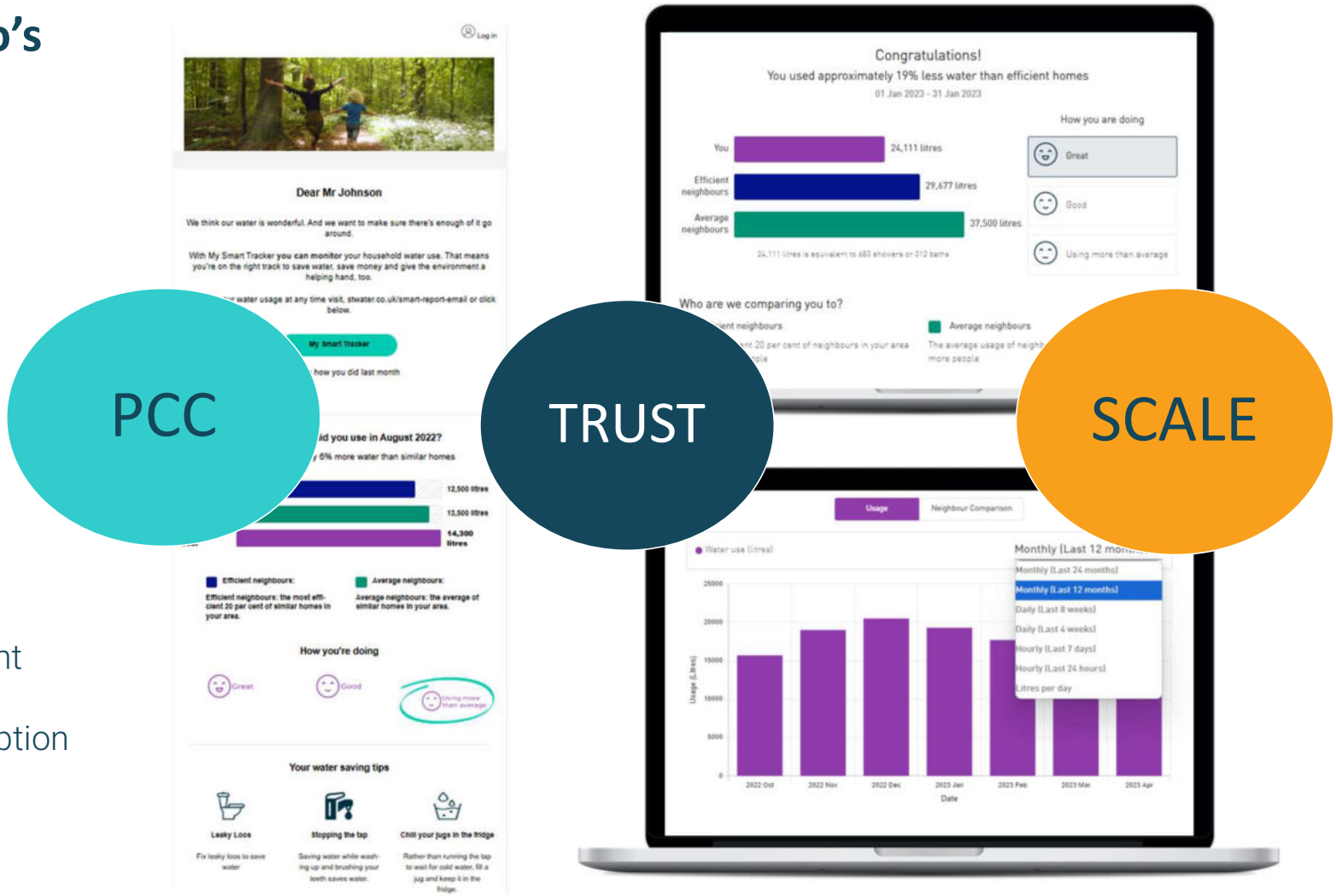
The key components:

How does Advizzo's engagement platform work?

- ✓ Inform
- ✓ Dynamic
- ✓ Embedded in portal
- ✓ Personalised
- ✓ Transparency
- ✓ Frame & context
- ✓ Actionable insights

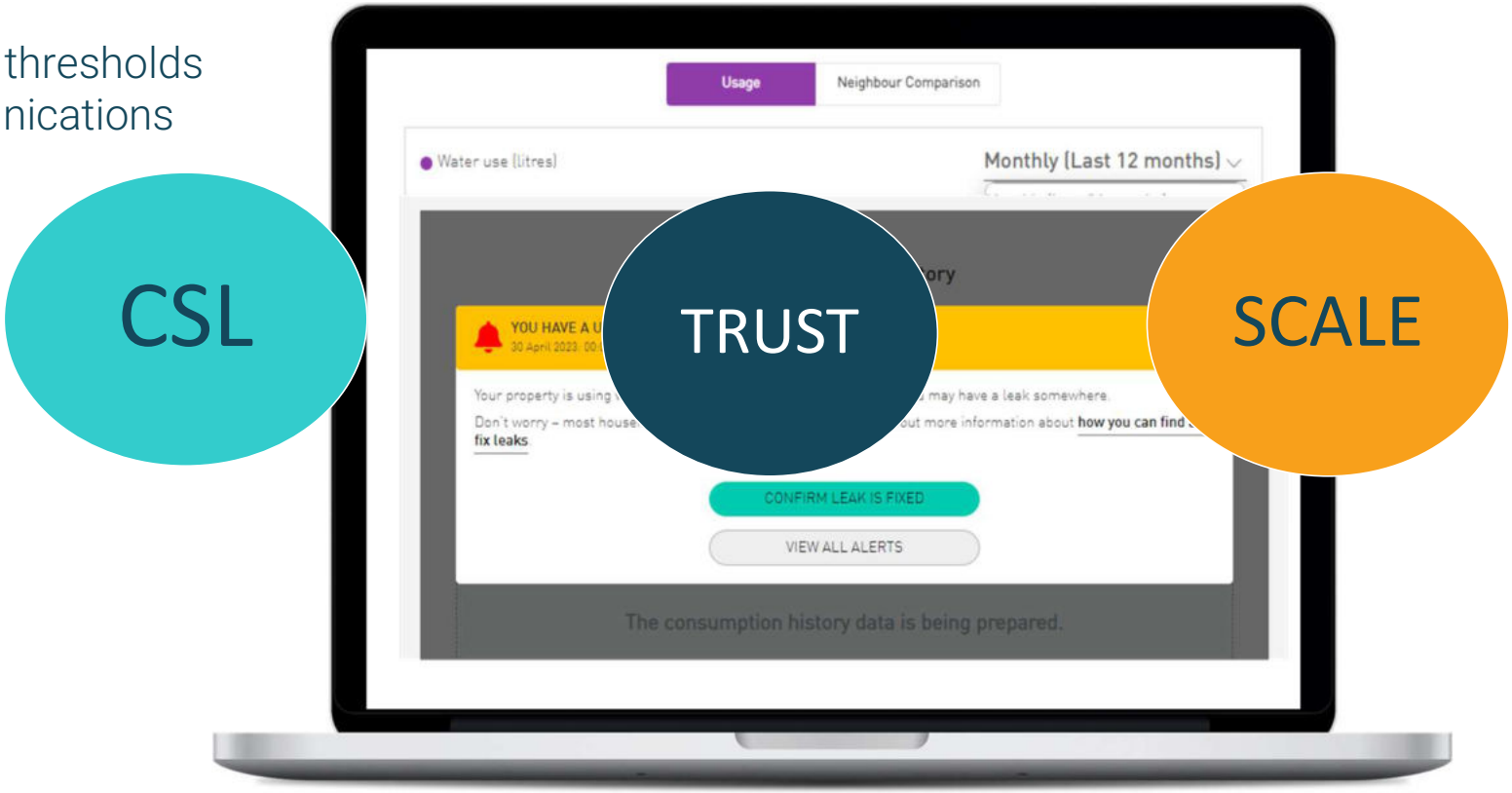
RESULTS:

- ✓ User Experience
- ✓ Increased engagement
- ✓ Empower & Trust
- ✓ Drives down consumption
- ✓ All at scale

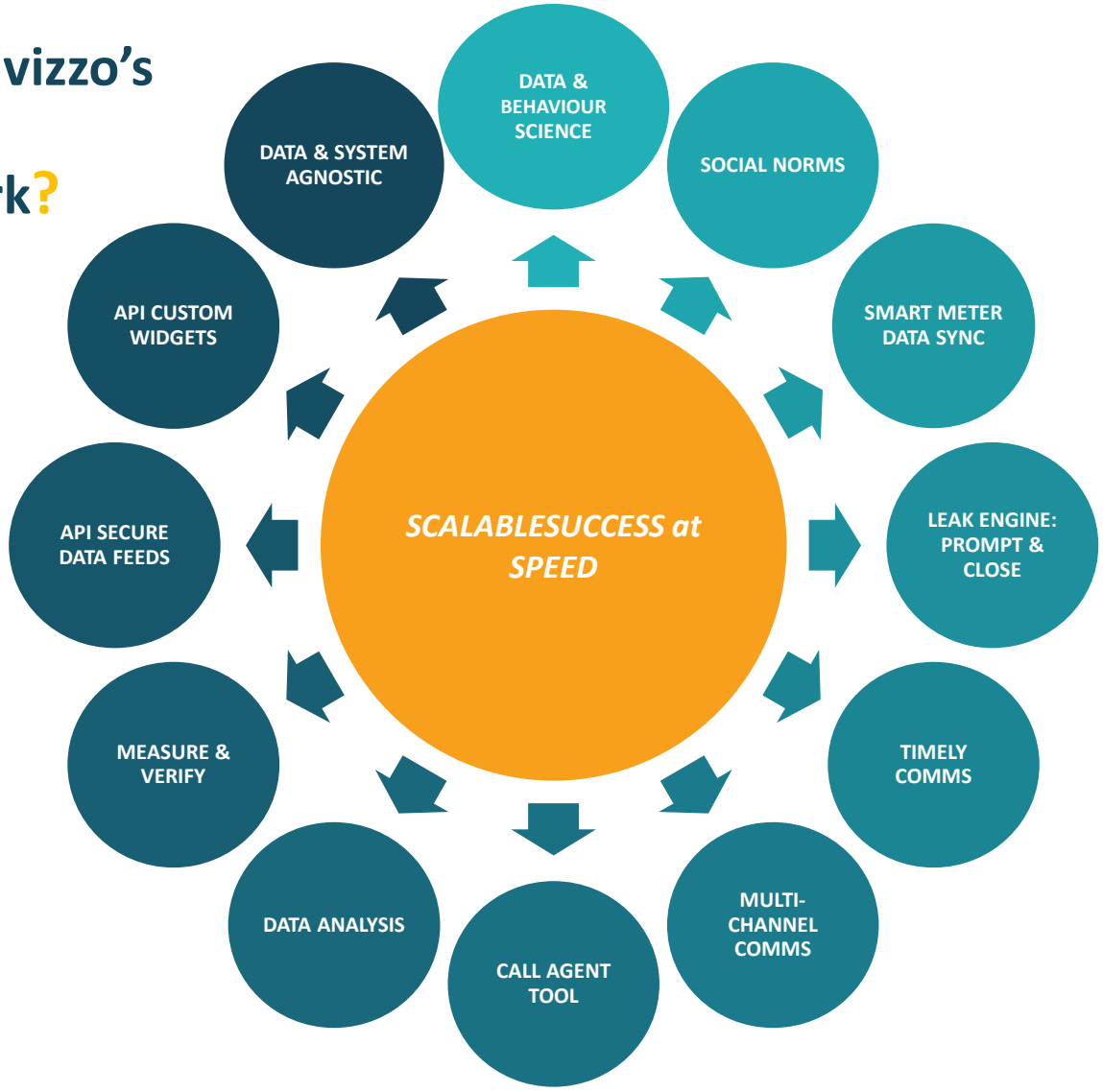


The Leak Engine:
Tackling Customer Side Leakage

- ✓ Identify: Configurable thresholds
- ✓ Drive Action: Communications
- ✓ Self Fix / Home Visits
- ✓ Measure
- ✓ Close & Report
- ✓ Success
- ✓ At Scale

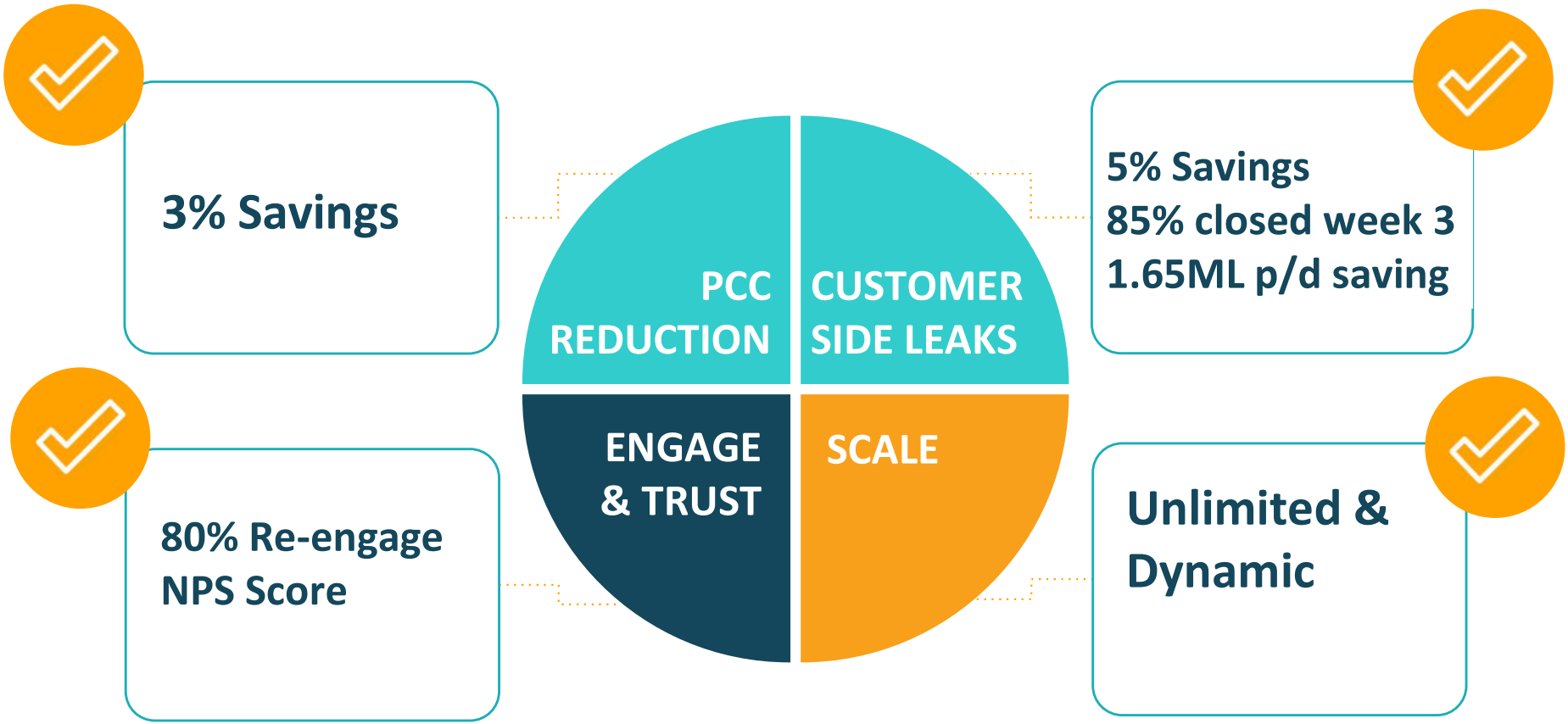


Why does Advizzo's engagement platform work?



A combination of ALL: ***data & behavioural science, engagement, analysis, technical expertise & 10 years experience of working with water & energy utilities.***

Does it work? The results:



advizzo

Internal build vs *SaaS partner & collaboration…*

PEOPLE:
Skills & Experience

ESTABLISHED
TECH & SUBJECT

8X
SPEED (Time & Experience)

££££
COST
Reduce by 100%

>600x
SCALABLE

Ongoing development (& maintenance)

IMPACT: Prove Results/ Savings

RISK: Security & Compliance

Customisation & flexibility

Industry (not unique)

Innovation & Longevity

Get the best out of a *SaaS partnership approach*

advizzo

Note: Deployment timeline (average of 24 months), Cost/TCO estimates, Scaling metrics are based on industry standard estimates from SIs and leading analyst firms.

TRUST: Collaborate & Partner with a Big Data House

> **70 BILLION**
> METER DATA PROCESSED

> **57 MILLION**
> EMAILS & LETTERS

14 CRM & BILLING INTEGRATIONS

10 METERING INTEGRATIONS

ORACLE UTILITIES

RapidXtra Billing and CRM

SAP

temetra

Itron

Embrace a *collaborative SaaS partner approach* to meet AMP 8 Challenges

Make smart metering *SMARTER* for your customers and outcomes with Advizzo's customer engagement and leak engine platform.

Connect & empower your customers to *their* data

Your customers determine your outcomes

Thank You

The Customer-Centric SaaS Smart Metering & Leakage Solution

Orlaith.Senior@Advizzo.com
Clement.Lapeyre@Advizzo.com

FINALIST

SOLARIMPULSE FOUNDATION

Severn Trent Water

partnering with

> Advizzo's Solution

Coventry, United Kingdom in 2023

THE CASE STUDY

Severn Trent Water (STW) provides drinking water and sewage treatment to 4.6 million customers across the Midlands down to Bristol and North Wales. Tasked by the UK water regulator with reducing home water leaks, STW implemented **Advizzo**'s water leak detection and customer engagement software in 2023. Utilising insights from users and smart metres, the solution enabled customers to identify and fix leaks whilst reducing water usage. With just two reminders, 70% of customers successfully addressed their leaks, demonstrating the effectiveness of this approach.

An average of 1,250 bathtubs of water, or over 100,000 litres, is saved daily. STW reports a leakage reduction of over 18 million litres in six months. The conservative economic benefit for 76,000 STW customers is £3,004,618 annualised.

£3,004,618
savings/year

100,000 litres/day
water saved

76,000 STW
customers subscribed

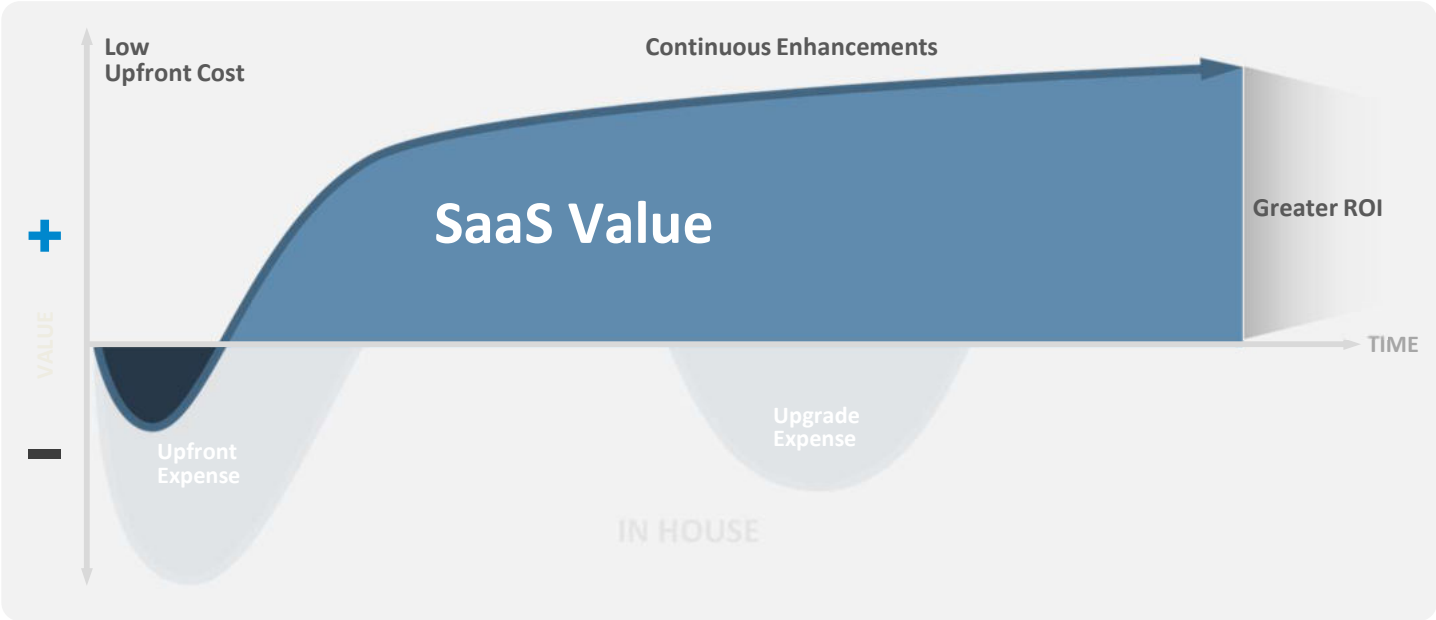
Building & Construction

Category
02

"The good news is we have already completed benefits quantification internally which shows proven benefits (in terms of demand reduction) for customers who have received Advizzo interventions. Our team is pleased with the results."

Severn Trent Water

Fast Time to Value with SaaS for Customer Engagement



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Speaker:

Ken Cartwright, AtkinsRealis

Update from Upstream

‘Leakage’ and our Upstream Networks

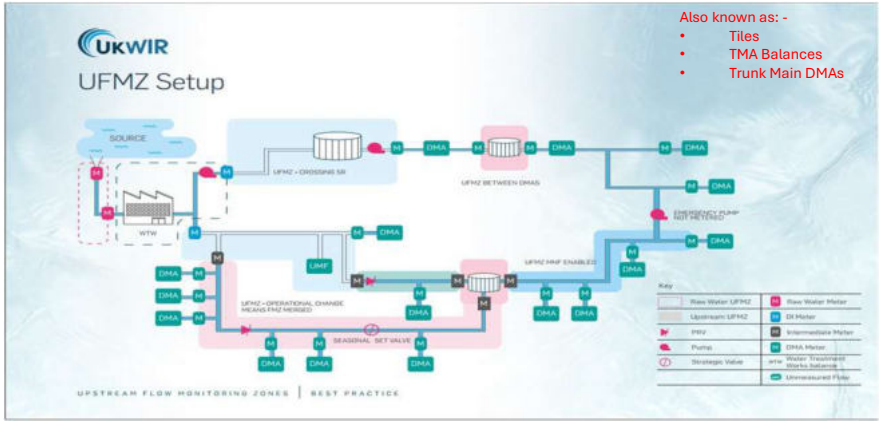
Ken Cartwright
Senior Associate Engineer

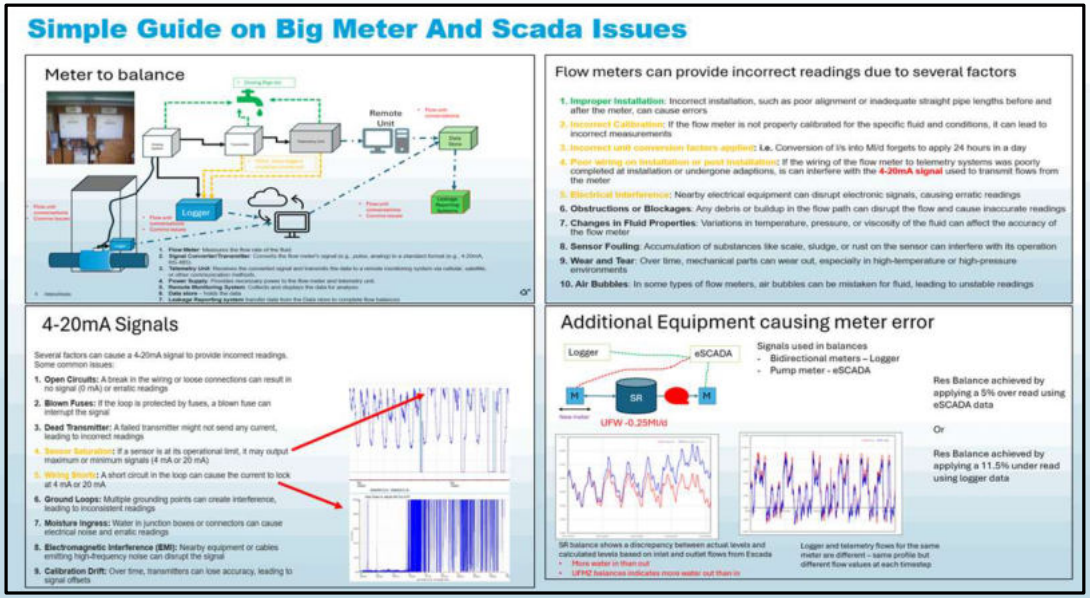
July 2025

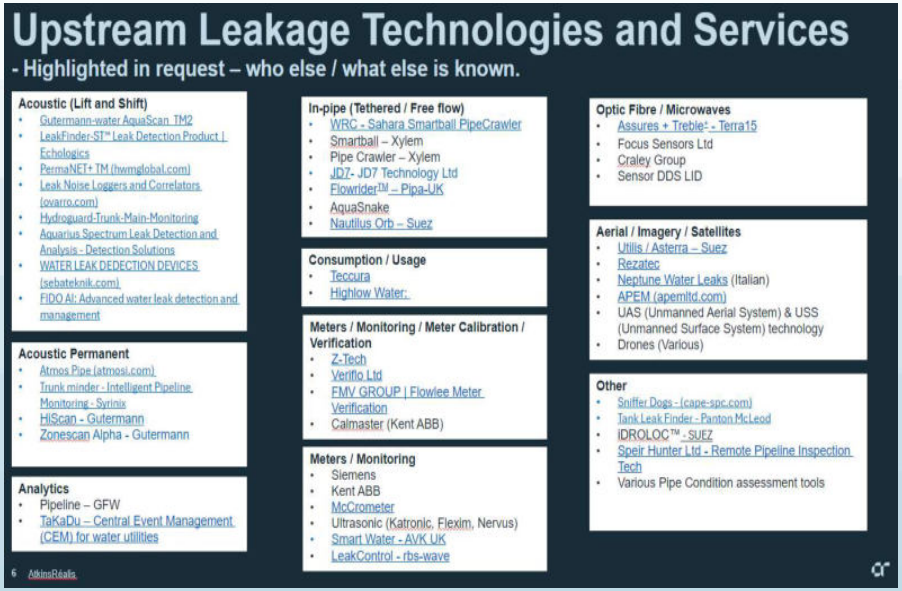
AtkinsRéalis

The Upstream Workgroup

- Formed in 2022
- Facilitated by AtkinsRéalis
- Free of charge for all Water Companies to attend
- Bi-annual meetings
- Guest presentations by Water companies, UFW software providers and suppliers of Trunk Main UFW detection equipment
- Sessions have been attended by 14 of the UK based water companies
- Session 8 held on 3rd July 2025







Components of Upstream Balance

Measured Distribution Input (inc. supplied / export from company)

- DI Uncertainty already reported in MLE
  - Is it transferable to flow balances?

Based on data provided by 6 companies to date

- DI Uncertainty varies between 1.02% and 5.09%, (Average - 3.18%)
- 199Ml/d potential volumetric error in DI
  - Daily consumption of 1.5 Million people.

Upstream UNMETERED CUSTOMER USAGE:

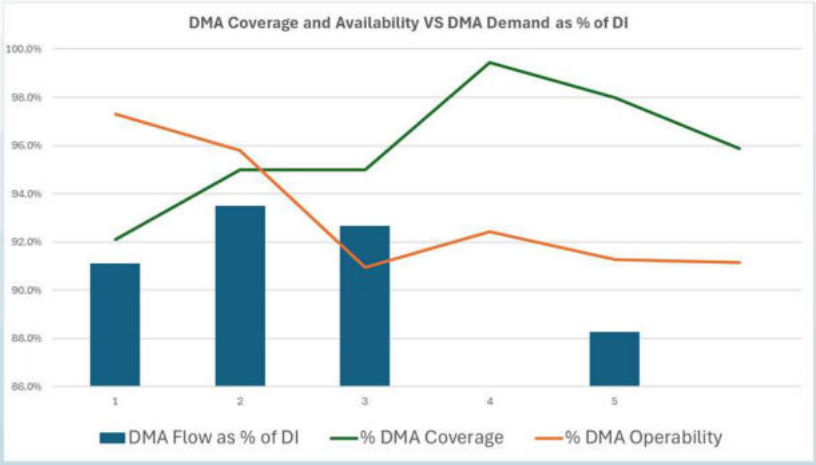
- Demand outside of DMAs
- Property assignments not scrutinised as within DMAs

Upstream METERED CUSTOMER USAGE:

- Only Major users logged
- Growth and NAVs ?

Water Delivered to DMAs

- Already Report on
  - % DMA Coverage
  - % DMA Availability / operability
  - % DMA Meter uncertainty
- Primary meter flows vs DMA Total Daily flows
- Dummy DMA
  - DMA or part of upstream balance?



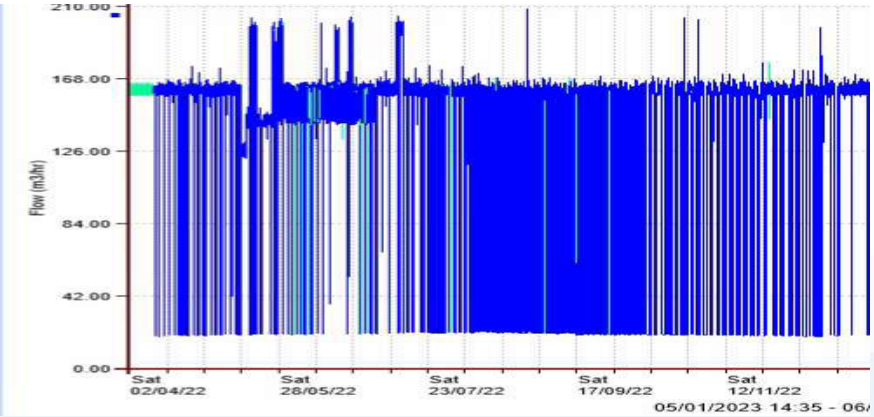
Validated Upstream UFW

- How to split Leakage from UFW?

Upstream Meter Issues

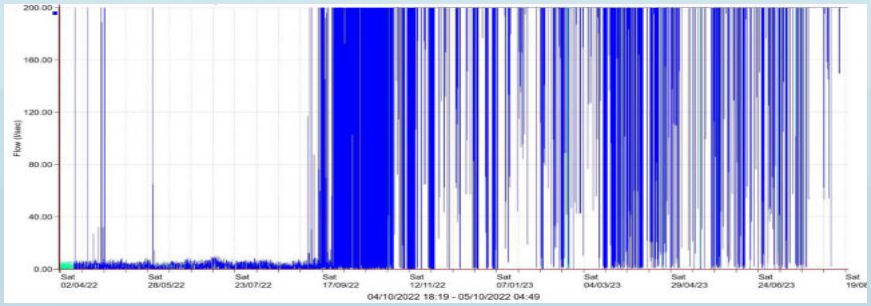
Zero Errors

- Zero offset on DI meter - **0.5Ml/d over read**



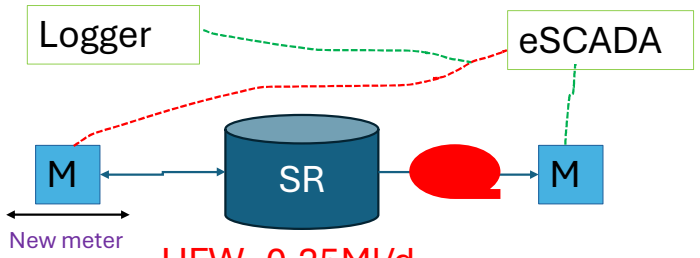
Signal Scaling saturation issues

- Meters going full scale – including on reporting area transfers

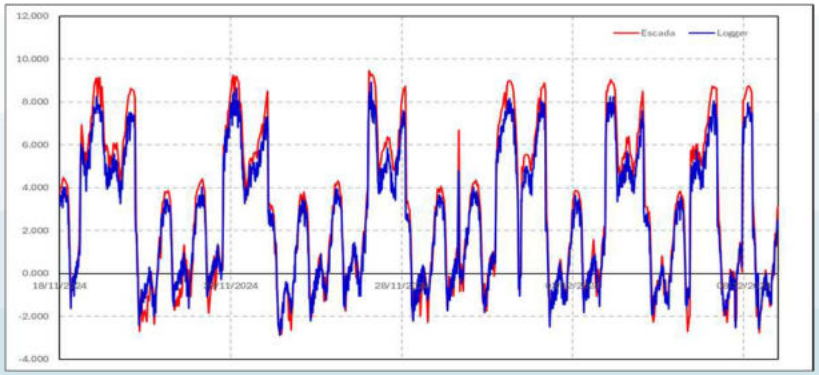


2 versions of the truth – Neither correct

- Logger under reads by 5%
- Scada Over reads by 11%
- Poor wiring and logger connection most likely cause of both errors



UFW -0.25Ml/d



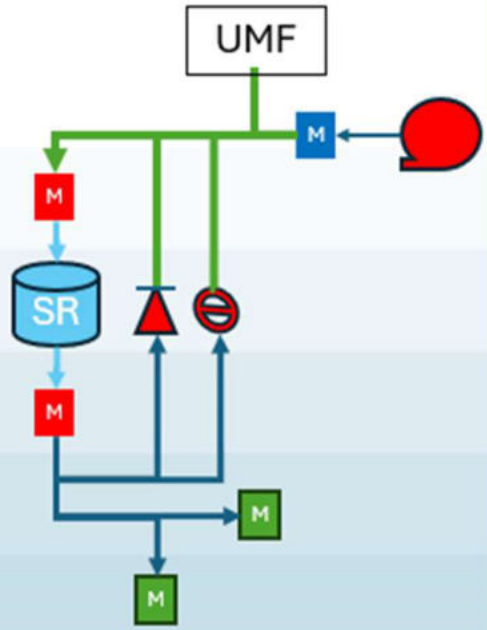
Helped to prove a DI meter over read by 3%.

- **Aging meter Stock**
  - ABB won't support old meter types with parts and software updates
  - Siemens 5000/6000 being phased out
- **Need specialist instrument techs / electricians**

Meters Lie
– Finding Real Upstream Leakage

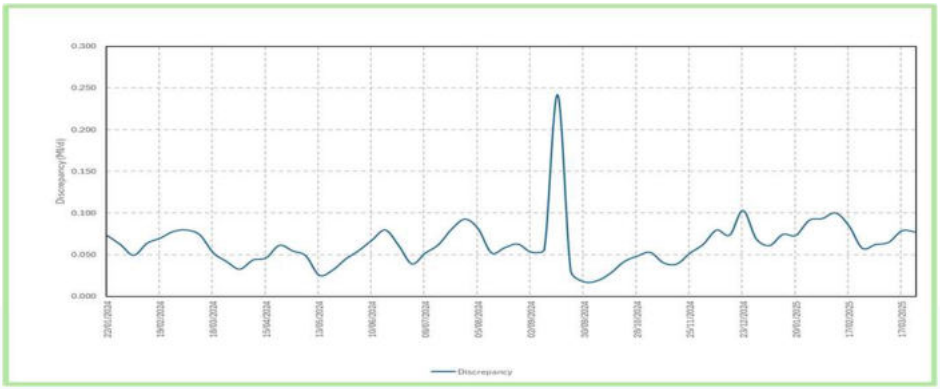
Assume meter wrong
3% under read

Assume meter wrong
11% under read



Leak found and fixed - **0.2Ml/d saving at time of fix**

Upstream Demand
Would Smart Metering Help Resolve these Issues?

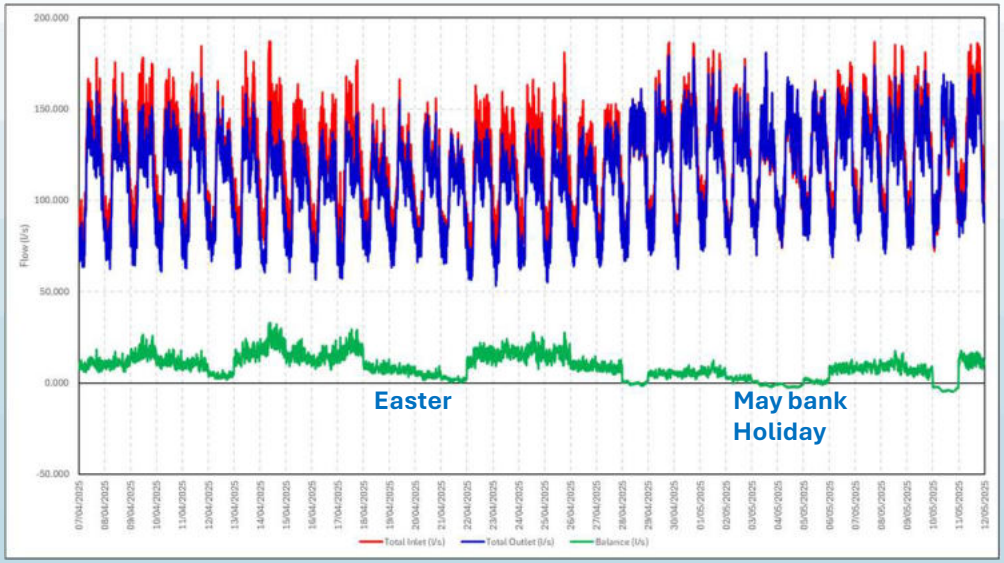


Trunk main UFW seems to have a 6 week pattern?

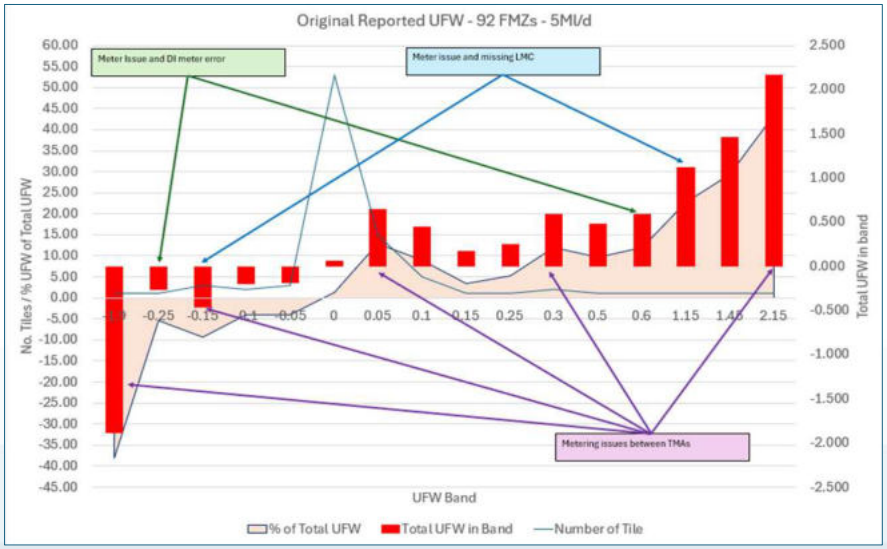
- Typical demand profile for a chicken farm
  - Big spike is the farm undertaking a major clean over a 2 day period.
- Billing indicates Annual average daily demand of 33m3/d

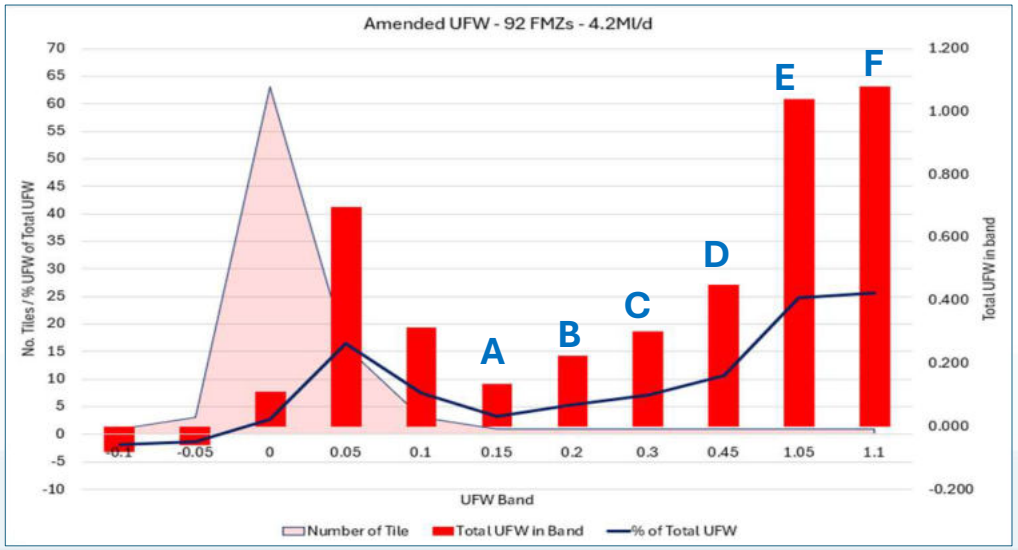
Area E

- DI – 10Ml/d
- Non-DMA demand – estimated 4.5Ml/d
- UFW 1Ml/d
- Model demand profiles applied in this calculation.
  - Suspect reality is 75% is missing demand
  - 30% may be leakage
- 0.23Ml/d of additional demand found to date



Large Meters and Demand Issue





- 16% reduction in upstream UFW
  - Validated DI meter error - 0.3Ml/d
  - Found MMC – 0.23Ml/d
  - 0.27Ml/d of leakage saving found in 2 areas
  - Improved understanding of which meter error and where to invest for new upstream metering
  - Improved understanding of gaps in upstream demand data

UFMZ	Inflow Ml/d	Non-DMA Demand Ml/d	UFW Ml/d	Notes
A	1.8	0.007	0.13	Demand based on 21 properties vs 51 postal addresses Know leak on tank to be replaced
B	1.5	0.027	0.2	Lots of farms and holiday cottages
C	2.5	0.041	0.3	Farms / camp sites.
D	6	0.1	0.45	UFW occurred when a DMA was split.
E	10	4.5	1	Still missing demand – UFW drops Easter and Bank Holidays
F	14	0.2	1.6	89km of mains – large rural network lots of farms and holiday parks

Summary

Measured Distribution Input (inc. supplied / export from company)

- Flow balances can validate the Volumetric impact of DI meter inaccuracy
  - Need to manage auditability / when to apply not apply
- Secondary metering and full e2e check on SCADA systems for all DI meters a must
- Need specialist instrument techs / electricians
- NEW Concern - Aging meters / lack of parts – High costs to replace vs less accuracy

***Upstream UNMETERED* CUSTOMER USAGE:**

- Huge need to improve data about properties supplied from upstream network (and Dummy DMAs)

Upstream METERED CUSTOMER USAGE:

- Get meters installed on NAVs / New developments
- Logging non household users (large consumption and seasonal users)
- Could smart metering plug this gap, especially for non households?

Water Delivered to DMAs

- Improve DMA Coverage and availability / operability
  - If MNF can't work then Dummy DMAs should be part of upstream flow balance not DMA leakage calculation
- Use and Validate Primary DMA meters
  - DMA operability calculations can cause anomalies between Measured flow into DMAs and calculated DMA Total Daily flows. (great check though)

Validated Upstream UFW

- Volumetric balances are transferable to all areas – accept the reported number is UFW
- MNF method – only applicable to some areas
  - Not true representation of all upstream networks

thank you

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Lunch Break

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- *Chair: Tanya Dady, Horizon Water Infrastructure*
- *Debaters:*
  - *Doug Spencer, Anglian Water*
  - *Simon Bryant, Horizon Water Infrastructure*
  - *George Donoghue, Energi Shift*

To MAP or not to MAP?

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- *Speaker:*
  - *Jeremy Heath, SES Water*

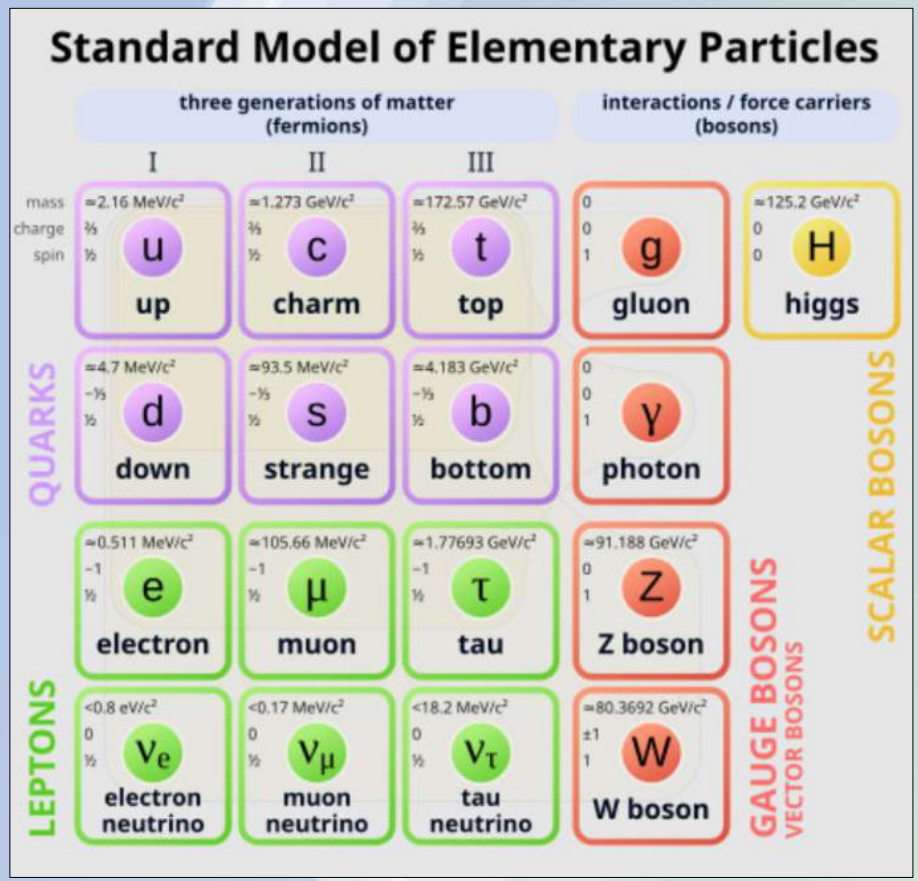
Quantum Leakage, Metering and the Future

Understanding leakage

- The UK water companies are struggling to meet the challenging reduction targets
- With mains replacement as a long-term solution and most companies Prevent approaches well developed, we will need to concentrate on Aware, Locate & Mend
- However, most of our understanding on the impact of measures in these areas is empirically derived. Faster location certainly reduces leakage, but by how much?
- For example, if I was able to reduce leak location times for slowly developing leaks by one day, what measurable actual impact would that have on leakage?
- We need to develop an approach that allows us to link our empirical approaches with the actual characteristics of leaks.
- A successful model would allow us to better develop leakage strategies and understand the costs and potential benefits of interventions

Quantum Mechanics

Quantum mechanics attempts to define the fundamental particles of matter.



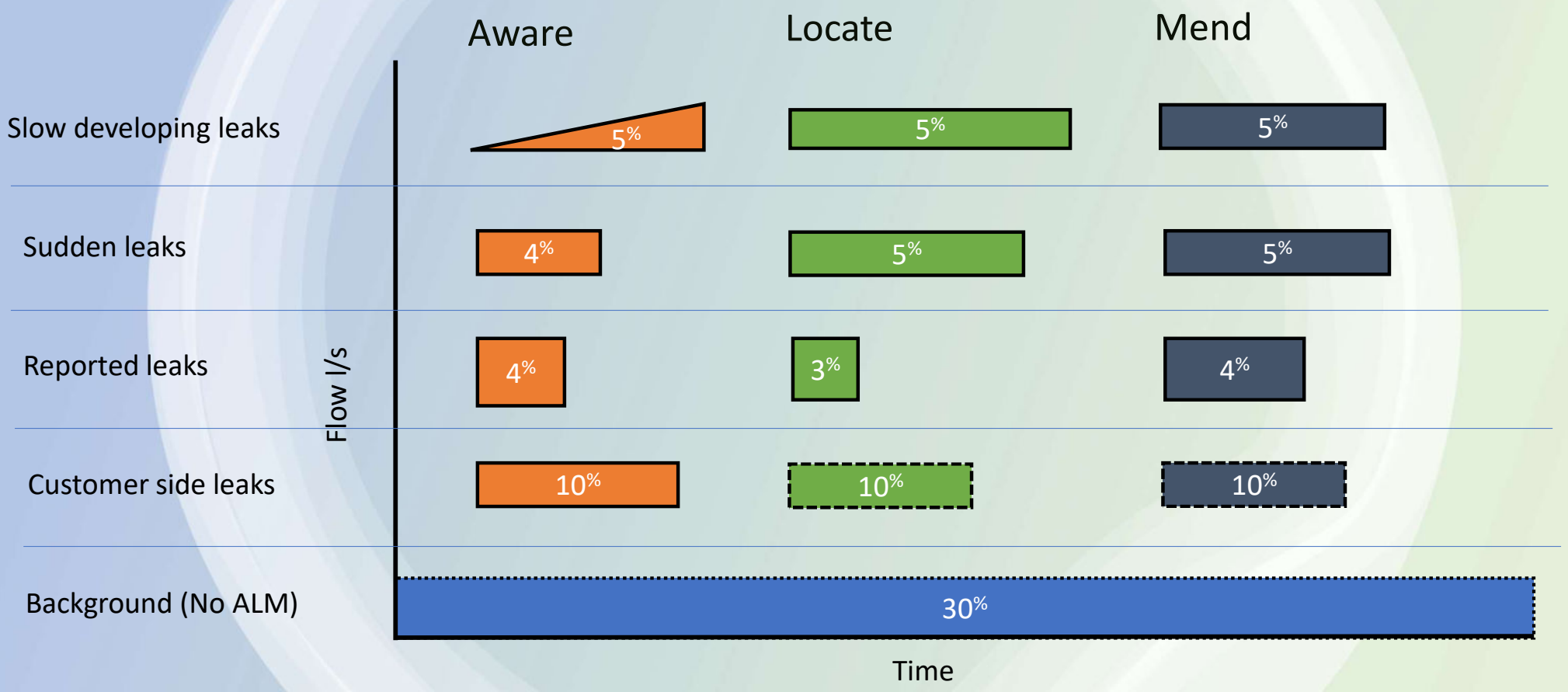
- Quantum simply means something that can be counted or measured in discrete units
- Physicist are attempting to unify the forces we understand empirically (like gravity) with the elementary particles
- Maybe this approach could also be applied to our understanding of leakage.

How would this work

- The fundamental property of every leak is the volume lost, which is a function of the flow rate and the time for which it runs.
- As our ability to change the flow rate is limited, our main impact on the volume lost is the time taken to repair it, once a leak has occurred.
- Rather than consider the leak runtime as a whole, this can be broken down into awareness, locate and mend times, which will have different characteristics and intervention methods.
- In addition, the type of leak (background, customer side, reported, erupting or slow developing) will have different characteristics and intervention methods.
- This approach allows us to start building an initial model of quantum leakage.
- QL could potentially be applied over varying timescales (years or months) and areas.
- Key concept is that the sum of the model components should equal our real losses

Quantum Leakage

The model is based on real losses, leak volumes and structured around ALM



Quantum Leakage

- Important to understand that this is not a leakage calculation approach but instead assists our development and implementation of leakage strategy and benefits.
- All of the QL allocations will be based on estimated numbers and averaged flows. As our knowledge increases, we will be able to better quantify these areas.
- It is entirely possible that we are missing significant areas in the model. We may need to identify the gaps and then find the “Higgs Bosons” of leakage.
- It is likely that QL models for varying timescales and areas will look different.
- At present QL is entirely conceptual. I have received support from the Leakage Managers group who view this as a potentially useful tool and from some consultants who are already working in this area.
- I am interested in views from the wider industry. Feel free to contact me to discuss.

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There isn't a single, universally accepted definition of a water meter in the UK, but the most commonly referenced definitions come from **UK legislation, water industry standards, and regulatory bodies**. Here are the key references:

1. **Water Industry Act 1991**
   - A water meter is defined as **"any apparatus for measuring or showing the volume of water supplied to any premises"** (Section 219). This broad definition includes all devices used for volumetric measurement of water consumption.
2. **Measuring Instruments Regulations 2016 (UK implementation of the EU Measuring Instruments Directive - MID)**
   - A water meter is defined as a **"device intended to measure continuously, memorize and display the volume of water passing through the measurement transducer"**.
   - The **MID (MI-001)** regulations set accuracy and performance standards for meters used in billing.
3. **Ofwat & Water UK Guidance**
   - Ofwat refers to meters in the context of billing and leakage management, emphasizing **approved meters that comply with MID and relevant British Standards**.
   - Water UK and WRAS (Water Regulations Advisory Scheme) provide additional guidance on installation, accuracy, and certification.
4. **British Standards (BS EN 14154 & OIML R49)**
   - These technical standards define water meters in terms of performance, accuracy, and durability for domestic and commercial use.

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Current Landscape:

- 60% domestic metering, 90% non-household metering
- Smart metering penetration: 12% domestic, 4% non-household
- Targets: 51% (2030), 75% (2040), 77% (2050) for households
- 55% (2030), 73% (2040), 74% (2050) for non-households

Discussion Points:

- Are the targets realistic?
- What are the main challenges?
- What enablers are needed?
- Implications for the industry

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Metering - SWOT

Strengths	Weaknesses
- Smart metering and AMR/IoT integration - Real-time monitoring and accurate data - Better leakage detection and revenue opportunities - Dynamic tariffs to encourage conservation	- Regulatory uncertainty Cybersecurity risks with smart meters - Economic pressures affecting rollout - Customer pushback and misunderstanding - Underdeveloped Non-Half-Hourly (NHH) market
Opportunities	**Threats**
- Innovation to reduce leakage and improve reporting - Responsive, consumption-based tariffs - Enhanced public engagement and conservation	- Policy inconsistency impeding modernisation - Data breaches reducing public trust

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The scorecard system used when making the assessment:

A+	97-100
A	87-96
B	80-86
C+	77-79
C	70-76
D+	67-69
D	60-66
E	51-59
F	1-50

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Grading: C *(Needs Improvement – Progressing but off track to meet long-term targets)*

Commentary:

- Metering remains a key challenge for the UK water sector, with smart metering rollout significantly lagging behind targets. While overall metering penetration is relatively high (60% for households, 90% for non-households), the adoption of smart meters is still very low—only **12% for households and 4% for non-households**.
- The government's targets—51% smart metering for households and 55% for non-households by 2030—are **ambitious but achievable**, provided the sector accelerates investment, standardisation, and workforce training. However, the long-term goals of **75% household and 73% non-household smart metering by 2040** will require significant regulatory and industry collaboration to avoid falling short.

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Discussion: Metering & Leakage – Realistic Goals or Wishful Thinking?


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Thank you.

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Join us

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