Water Discovery Challenge

Discover the water sector

31st Jan 2023

Ofwat

Delivering in partnership:

CHALLENGE WORKS a nesta enterprise

isle

ARUP

Water Discovery Challenge

Welcome

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CHALLENGE WORKS
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South West Water

Carly Perry

spring

Paul Horton

Future Water Association
Informing, Innovating, Influencing

Water Discovery Challenge

Q&A

Ask your questions on Slido
sli.do/discovery311

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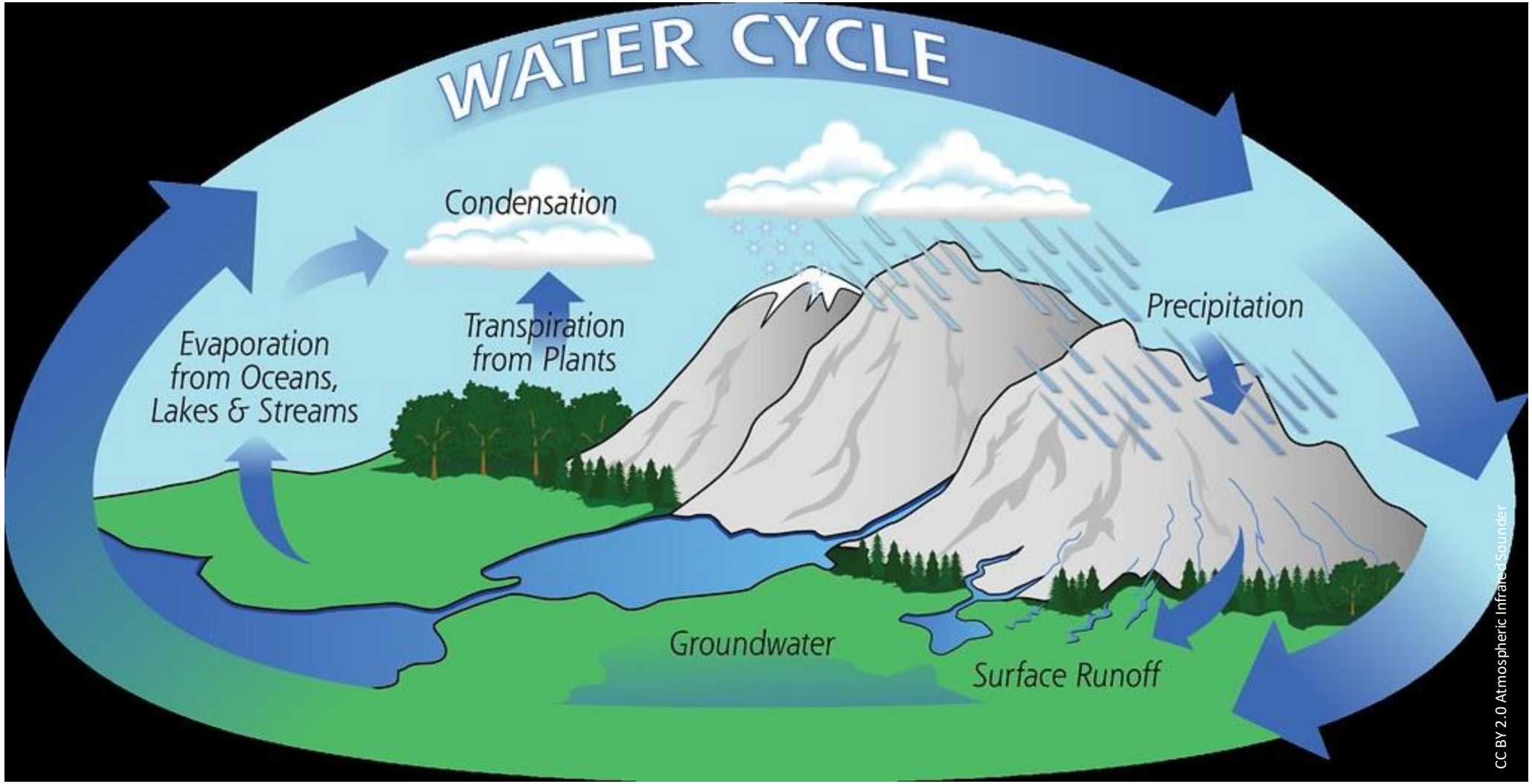
Aim of the session today

This webinar will provide an introduction to the structure of the water sector in the UK with a focus on England and Wales. It will also explore the key players and wider innovation ecosystem landscape and will provide and will also touch on innovation challenges and opportunities.

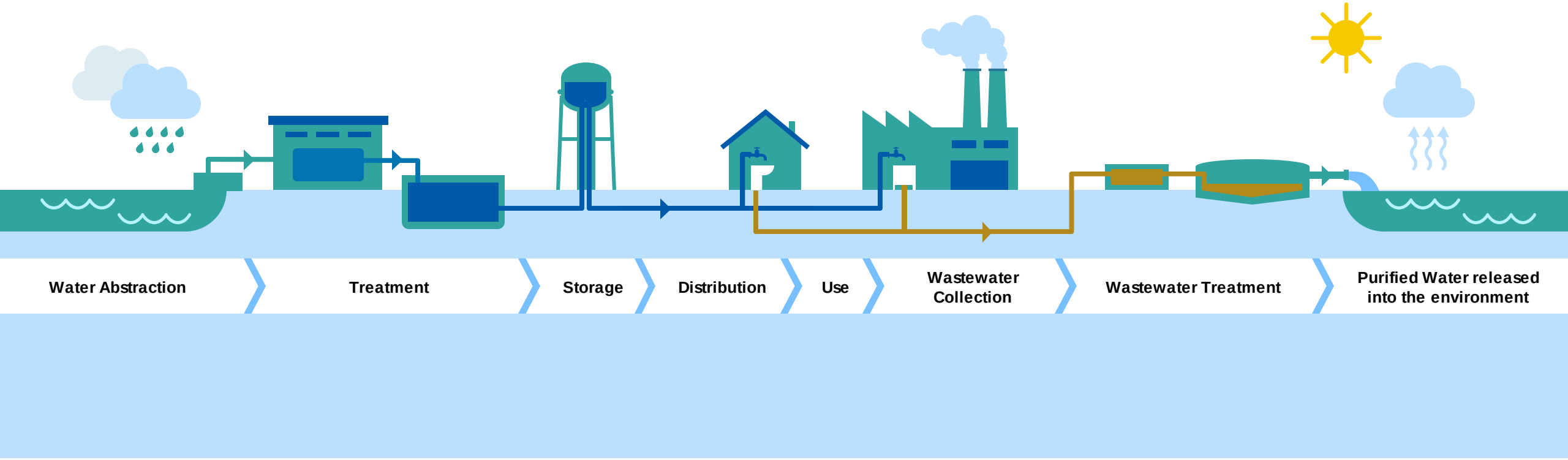
Agenda

- The water sector
  - Water environment
  - Structure of the water sector
  - Regulation of the water sector
  - Wider ecosystem
- Innovation opportunities and challenges
- Discover Spring
- English and Welsh supply chain perspective: Future Water Association
- Q&A

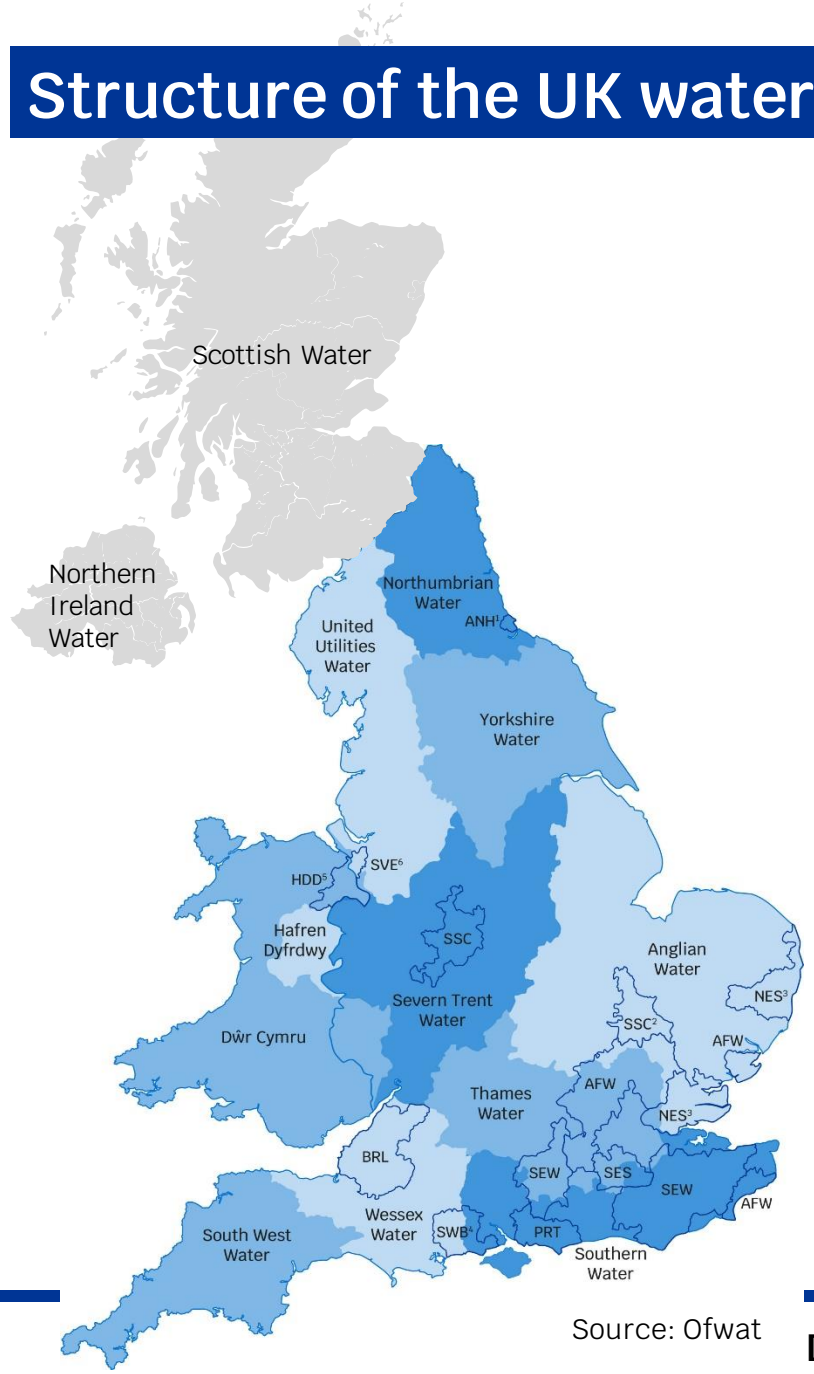
The water environment



The Water & Wastewater Services Cycle



Structure of the UK water sector



Source: Ofwat

Water and Sewerage Companies (WaSCs)

- ANH Anglian Water
- WSH Dŵr Cymru
- HDD Hafren Dyfrdwy
- NES Northumbrian Water
- SVE Severn Trent Water
- SWB South West Water
- SRN Southern Water
- TMS Thames Water
- UUW United Utilities Water
- WSX Wessex Water
- YKY Yorkshire Water

Water Only Companies (WOCs)

- AFW Affinity Water
- BRL Bristol Water (merged with South West Water)
- PRT Portsmouth Water
- SEW South East Water
- SSC South Staffs Water
- SES Water

& New Appointments and Variations (NAVs)

These companies came together to develop the UK 2050 Water Innovation Strategy (also with Scottish Water and Northern Ireland Water and other organisations)

Regulators in the water sector (England and Wales) Household

International influence/input

World Health Organization ( )

National Governance

Government and regulators

defra

Llywodraeth Cymru Welsh Government

Environmental Regulators

Environment Agency

Cyfoeth Naturiol Natural Resources

Economic Regulator

Ofwat

Drinking Water Regulator

dwi

Statutory Body Consumer Representation

CONSUMER COUNCIL FOR Water

CYNGOR DEFNYDDWYR Dŵr

Regional operators

Regional Water & Wastewater Companies

Customers & Retailers (for non-household customers in England)

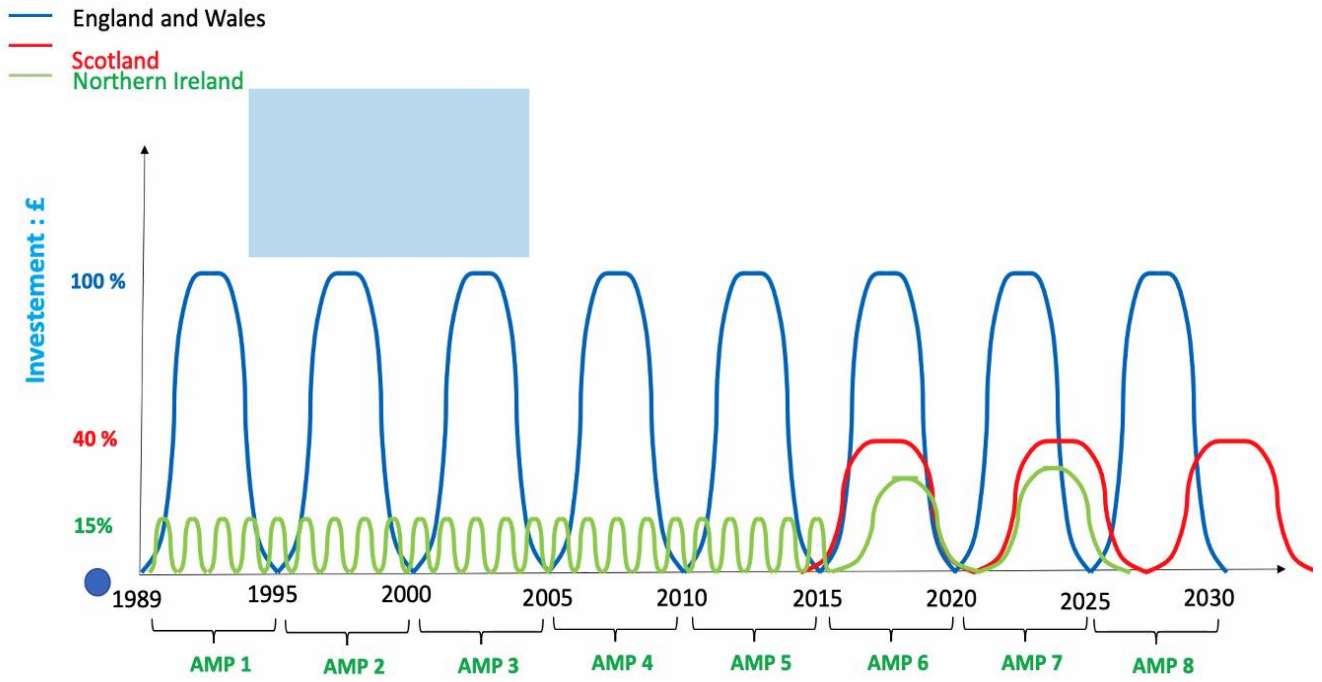
The regulatory cycle

PR & AMP

- Price Reviews (**PR**) followed by an Asset Management Period (**AMP**)
- Ofwat plays a vital role in overseeing the market

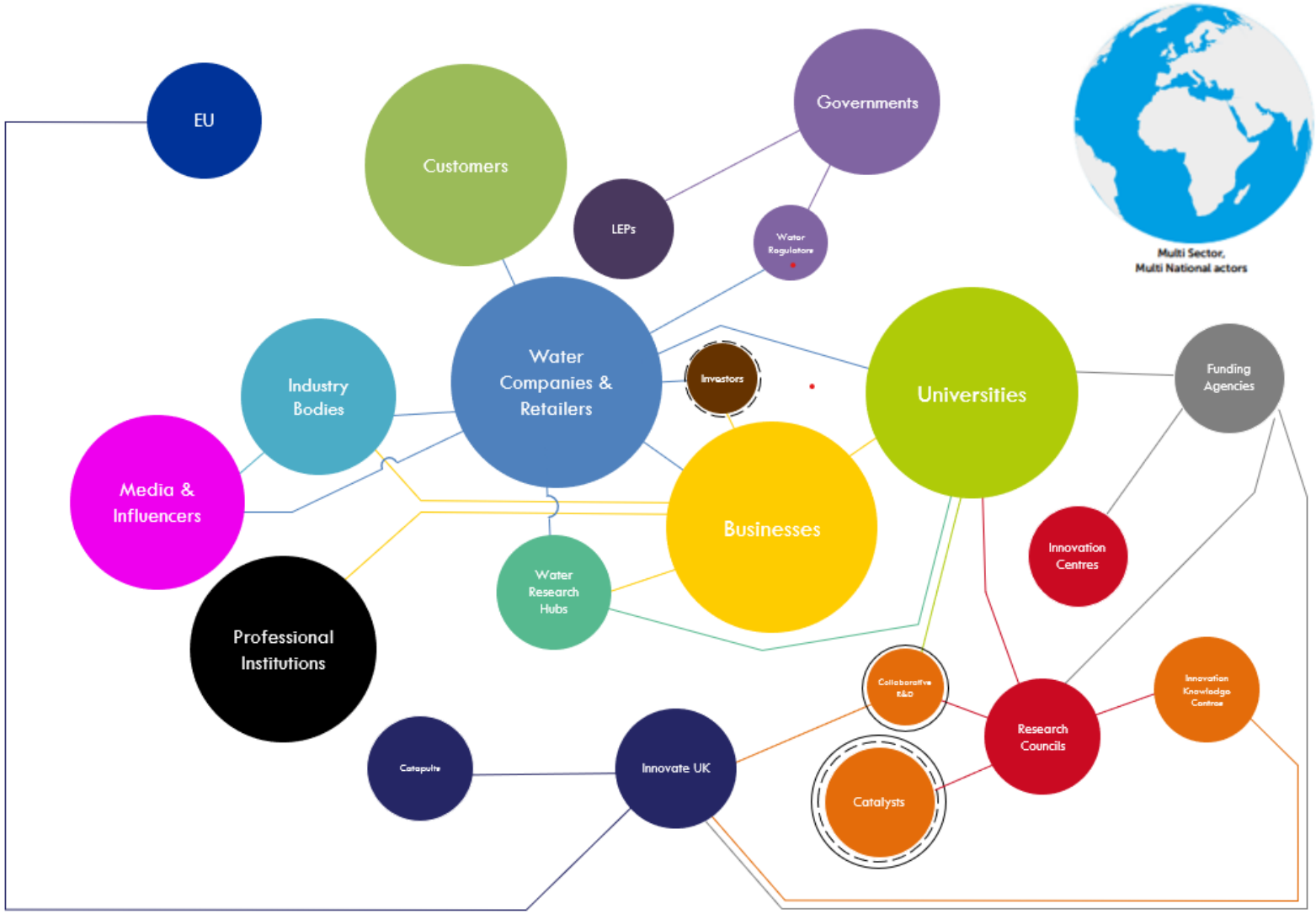
How?

- 5 Year Business Plans submitted to Ofwat for scrutiny and approval
- Ofwat issues draft and final determinations which set out a five-year price and service package



PR24-and-beyond-Our-reflections-on-lessons-learnt-from-PR19.pdf (ofwat.gov.uk)

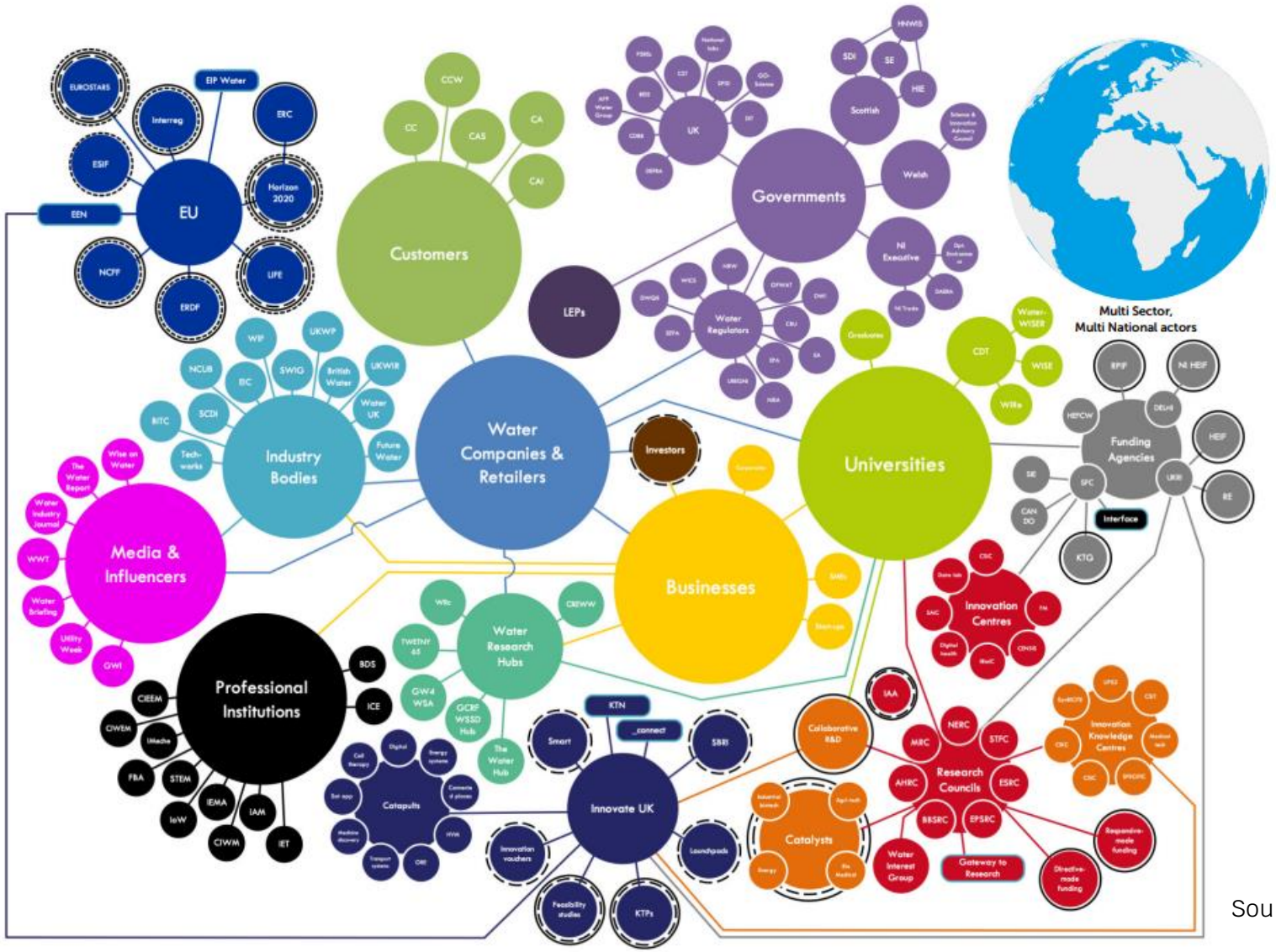
Wider ecosystem and innovation landscape



Source: UK 2050 Water Innovation Strategy

Discovering the water sector. Questions: sli.do/discovery311

Wider ecosystem and innovation landscape



KEY — — Funding for business —— Funding for academic & research organisations ----- Funding for other Network brokerage tool

Source: UK 2050 Water Innovation Strategy

Innovation Challenges and opportunities

Oliver Raud

South West Water

Exciting time to be part of water sector transformation…

The water sector faces unprecedented challenges in the UK and globally.

- Climate change
- Population growth
- Ageing Asset Bases
- Just and fair transition to Net Zero, circular economies
- Data-driven, AI and digitalised systems
- Increasing expectations of environmental stewardship and regulatory performance

All are challenging conventional approaches to water management and the operations of Water Only and Water and Sewerage Companies.

The water sector is changing but BAU is simply not enough

Then…

- Water sector criticised for speed at which innovation is developed and deployed.
- Difficult to get into the sector, as an innovator.
- Traditional industry priding itself as a silent-service, favouring reliability over experimentation.

Now…

Unprecedented collective energy and ambition to leverage innovation to support:

- Co-creation of practical, cost-effective solutions to current and future operational challenges.
- Delivery of "*multi-capitals approach*" that creates benefits to the environment, society, customers and the economy.
- Development and deployment of technologies, skills and innovation culture that enables the water sector to rise to the challenges we face, as a civilization.

When opportunity presents itself, don't be afraid to go after it...

DRINKING WATER QUALITY

How can upstream catchment management improve raw water quality and reduce treatment costs?

Can more effective, efficient and resilient process streams, plant and equipment be developed?

How can risks from plumbosolvency be reduced?

WASTE WATER QUALITY

What are the sources and impacts of emerging contaminants and pollutants and how can these be removed?

How does human behaviour impact sewer networks?

How would a circular economy for bioresources work?

POLLUTION INCIDENTS

How can machine learning, AI and remote sensing predict and prevent pollution incidents?

Can autonomous vehicles be used to prevent pollution incidents and in event response?

Could big data analyses identify antecedent conditions of failure?

RESILIENCE

Can smart water networks improve network management and reduce supply interruptions?

How might social, behavioural and financial incentives reduce water use?

How can rainwater harvesting and re-use increase supply resilience?

What will be the impact of future climate change scenarios?

LEAKAGE

How can remote sensing and drone technology be used to detect leaks?

Can non-invasive technology be used to test for leaks in the live network?

How can modelling be used to assess the probability of leaks at a regional scale?

Can leaks be repaired as part of a self-healing network?

An introduction to Spring

How is Spring helping to accelerate innovation across the water sector?


spring
Accelerating
Water Sector
Transformation
Spring is an innovation accelerator that enables collaboration within and beyond the water sector to drive transformational innovation

UK Water Innovation Strategy 2050

spring Accelerating Water Sector Transformation

The first step in change is understanding your challenges and creating an ambition for the future

PROVIDING THE SERVICES SOCIETY NEEDS, EXPECTS AND VALUES

AMBITIONS FOR 2050

Customers have trust and confidence in the service that the water sector provides

Water services are accessible, affordable for all, protect vulnerable customers and lead to zero customers in water poverty by 2030

Service provision is transparent, and customers and communities work with water companies to improve service and decision making

PROVIDING CLEAN WATER FOR ALL

AMBITIONS FOR 2050

Drinking water supply is low impact and sustainable

UK water supply is reliable with zero interruptions

We provide enough water for all across the UK

PROTECTING AND ENHANCING NATURAL SYSTEMS

AMBITIONS FOR 2050

Wastewater services are environmentally sustainable

We work with customers to halve freshwater abstractions, leaving more water in the environment

Water companies work in collaboration with customers and communities to have zero uncontrolled discharges from sewers

Emerging contaminants and lead are dealt with effectively causing zero harm for people and the environment

We have developed, protected and enhanced our natural environment

We have used natural solutions to improve our resilience to current and future challenges

DELIVERING RESILIENT INFRASTRUCTURE SYSTEMS

AMBITIONS FOR 2050

We work with customers to develop resilient human, physical and digital systems which can adapt to known and unknown future challenges

Our assets are maintained for the long term providing economic, social and environmental value

ACHIEVING NET ZERO CARBON

AMBITIONS FOR 2050

We have achieved operational and value chain carbon negativity

We have implemented carbon sequestration across the water sector

Customers, communities, water companies and the supply chain work together to achieve carbon neutrality across the value chain

TAKING A WHOLE LIFE APPROACH TO RESPONSIBLE CONSUMPTION AND PRODUCTION

AMBITIONS FOR 2050

We have maximised the recovery and reuse of resources to support sufficient resource availability for nature and society and achieved zero waste

We have sustainably achieved zero leakage

ENABLING DIVERSE FUTURE-READY PEOPLE AND PARTNERSHIP WORKING

AMBITIONS FOR 2050

We have a shared innovation culture which improves customer experience

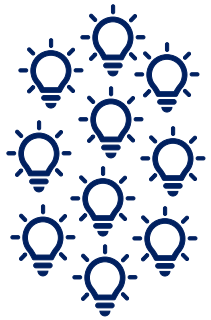
Collaboration pathways are paved between water companies, regulators, supply chains, SMEs, start-ups, academia, customers and other innovators to allow innovation to work

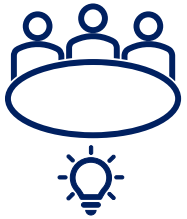
The whole sector's workforce has the skills and diversity of thought to take an active approach to prepare for and address emerging challenges

The UK regulatory framework has evolved to incentivise innovation to benefit customers and the environment

Spring Accelerator Process

Ideation | **Assessment** | **Collaboration** | **Adoption**

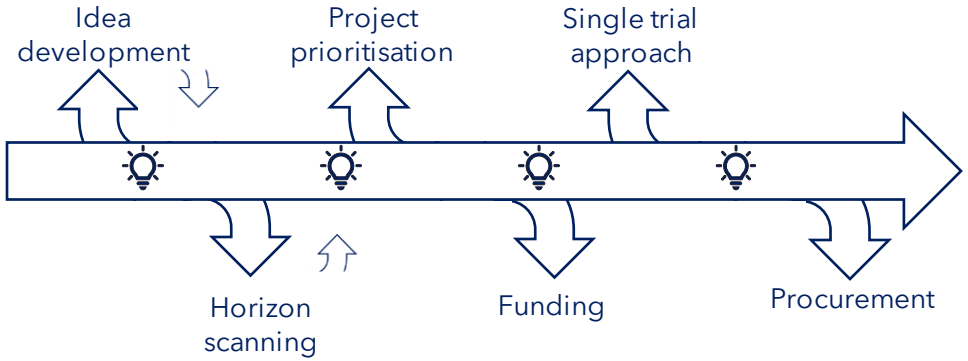




spring

UKWIR | TAG | Future Water Association (Informing, Innovating, Influencing) | ktn | WET NETWORKS | ARUP | WRC | Hydro Nation Chair (Net Zero - Scottish Water Sector)

Aspirational partners



17 ideas submitted

9 ideas through to Roundtable

4 ideas in to pitching

SME Review | Roundtable | Pitches

xylem SIEMENS

Cobalt Water Global

spring

Facilitate a collaborative project across the sector to build on existing trials and explore scaling the solutions.

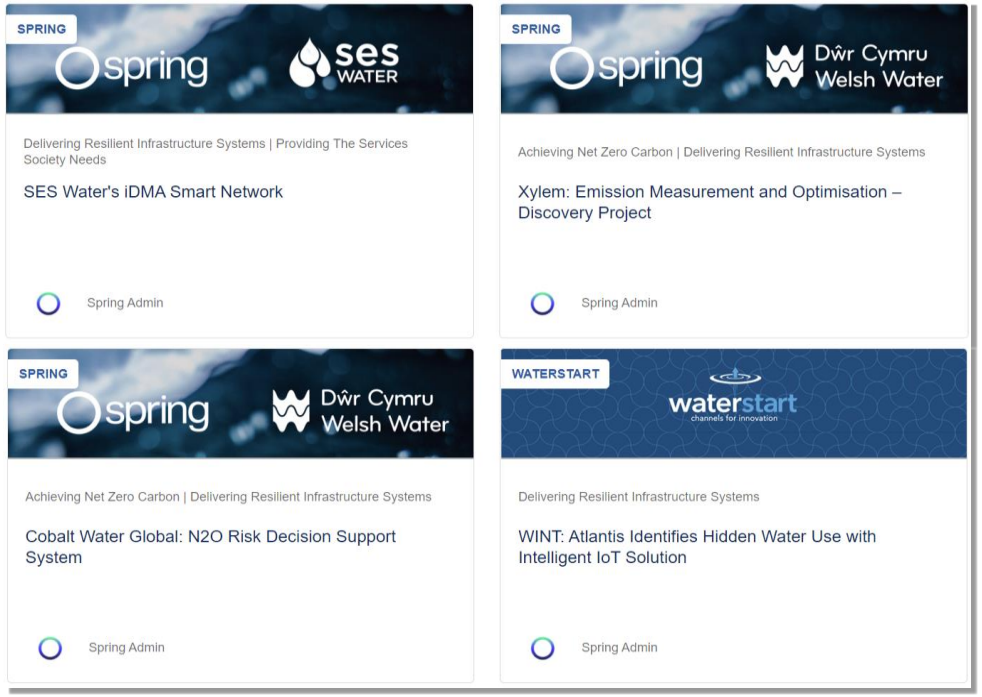
Achieving net zero carbon

Collaboration and mobilisation

Spring Knowledge Transfer Service

A centralised knowledge library on the Spring platform offering case studies of innovation projects to learn from

A blueprint for best practise knowledge showcase events across the sector



[Explore the Spring Knowledge Library]

Spring Overview

spring
Accelerating
Water Sector
Transformation

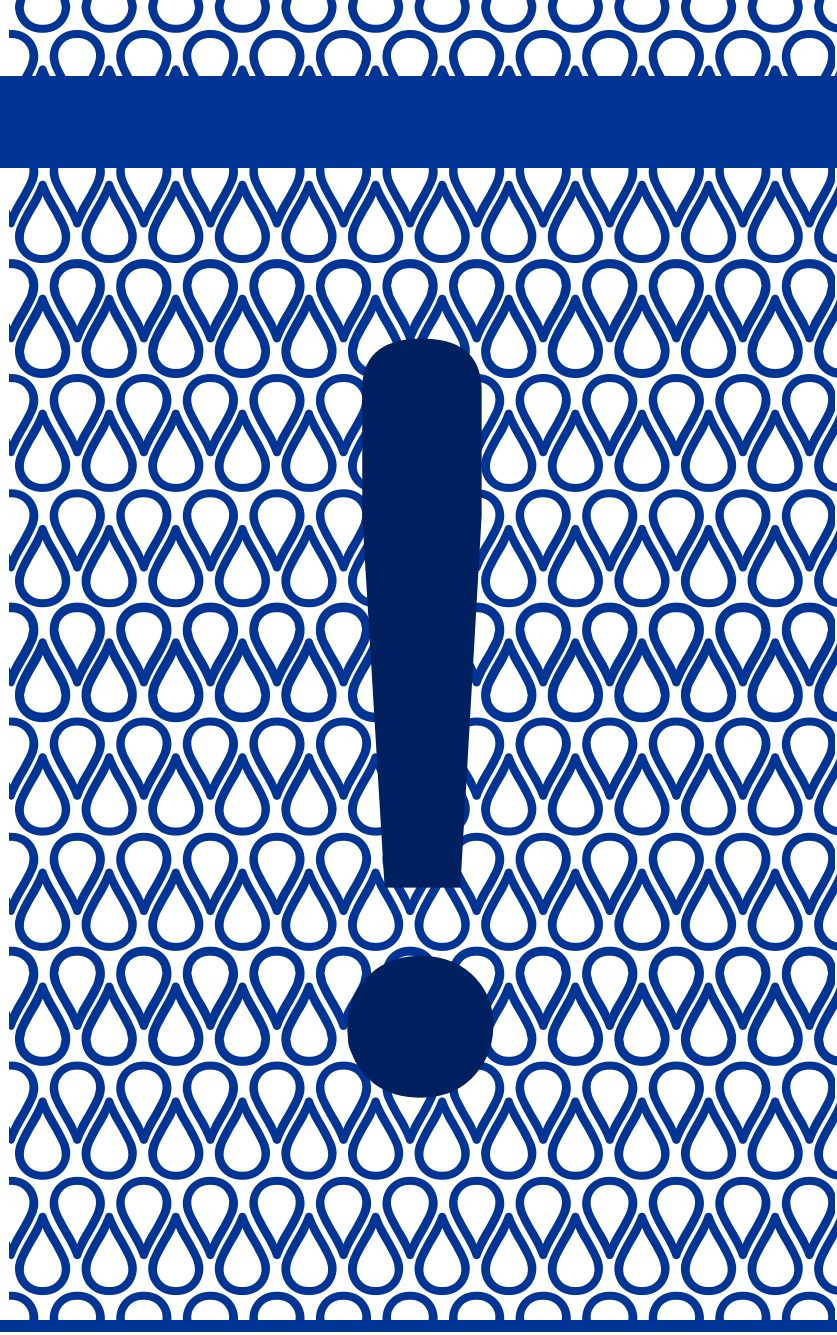
Spring is the water sector innovation centre of excellence across the UK & Ireland. We are here to facilitate collaboration within and beyond the water sector.

We support innovators by:

- Communicating the sectors priority innovation areas
- Facilitating collaborative innovation projects
- Helping share and scale effective solutions

For more information about Spring, contact:

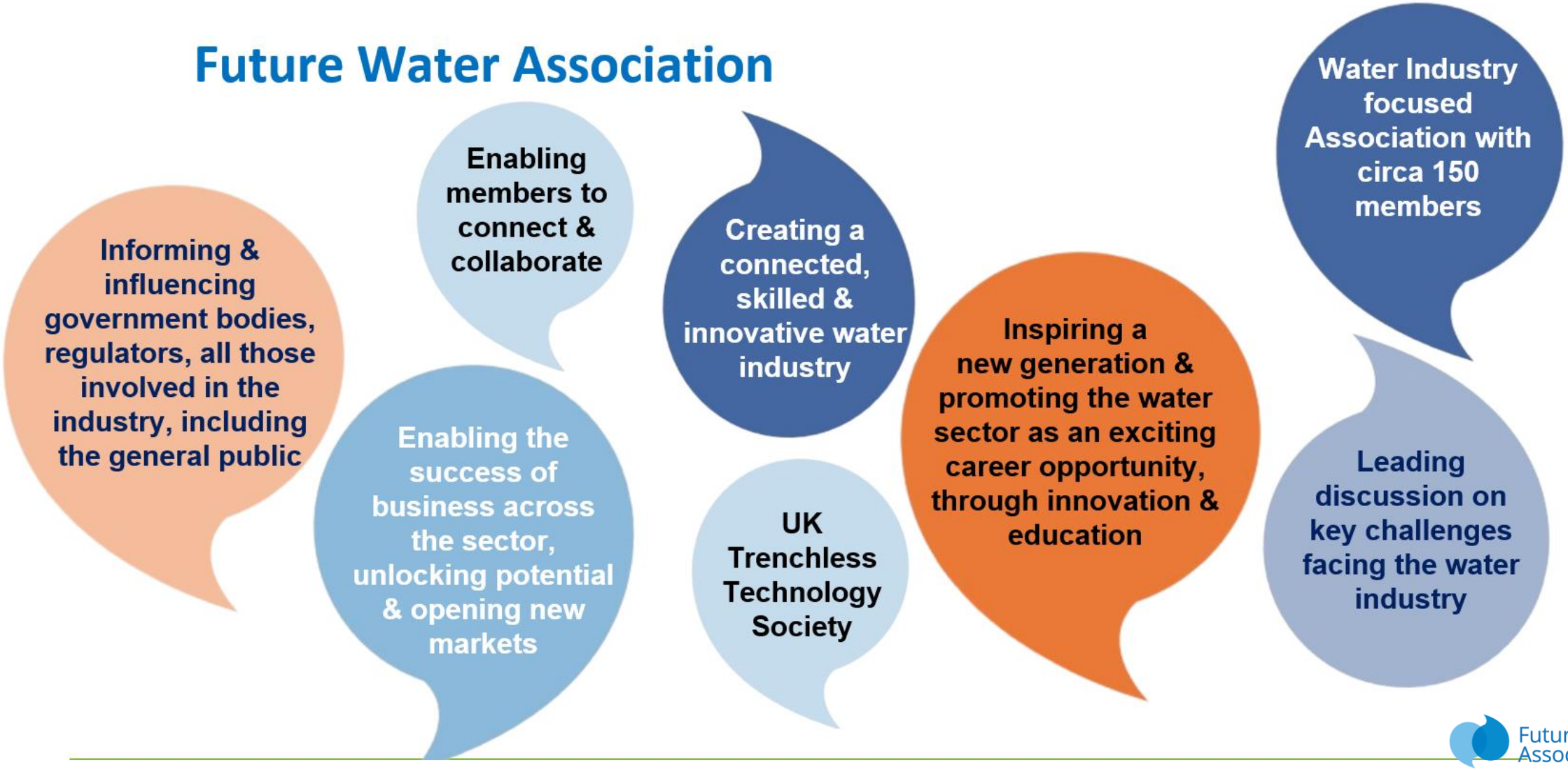
- w: spring-innovation.co.uk
- p: spring-innovation.force.com/spring/s/
- e: admin@spring-innovation.co.uk



English and Welsh supply chain perspective

Paul Horton, Future Water Association

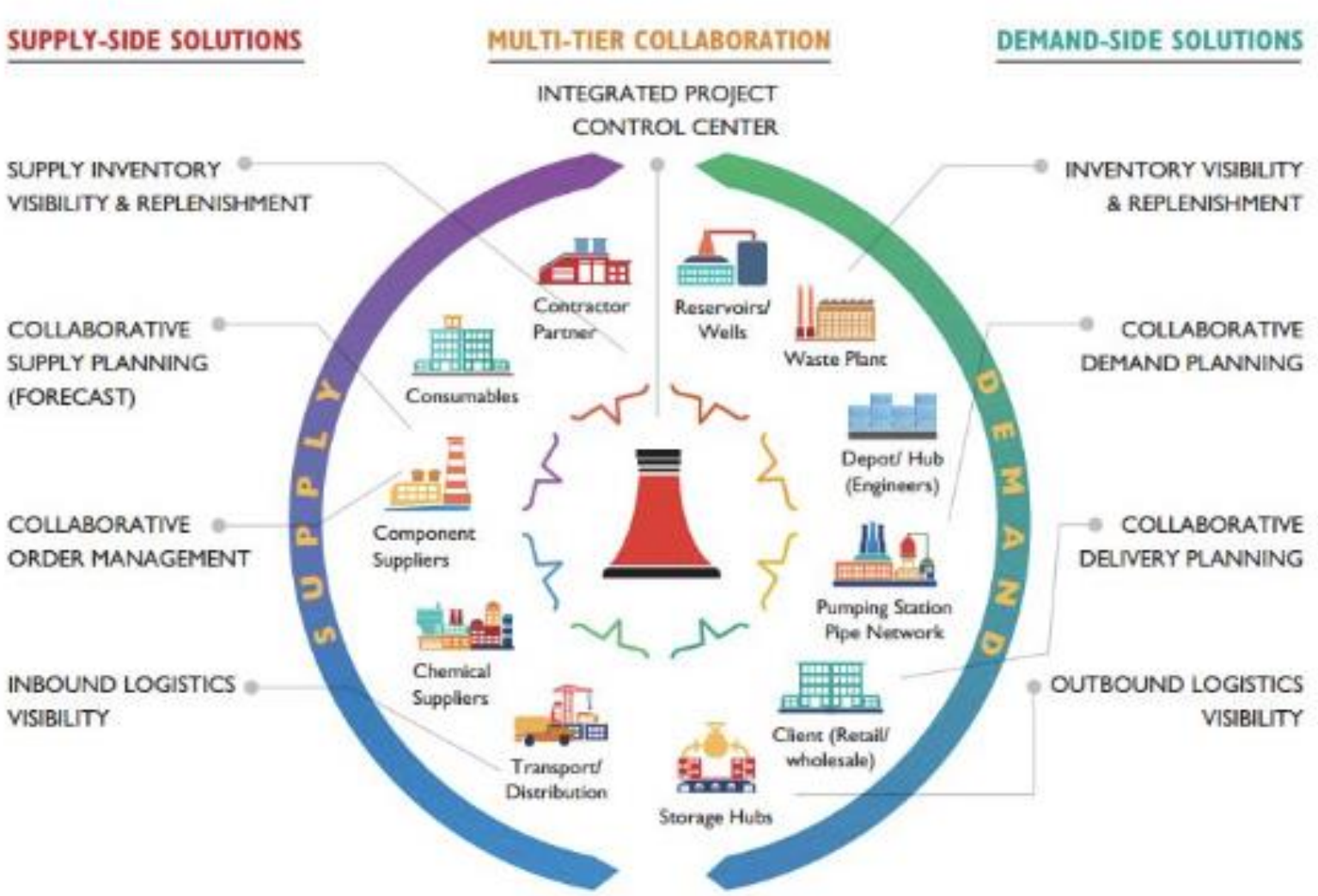
Future Water Association



Future Water Association
Informing, Innovating, Influencing

Discovering the water sector. Questions: sli.do/discovery311

Innovation



Discovering the water sector. Questions: sli.do/discovery311

Future Water– Water Dragons

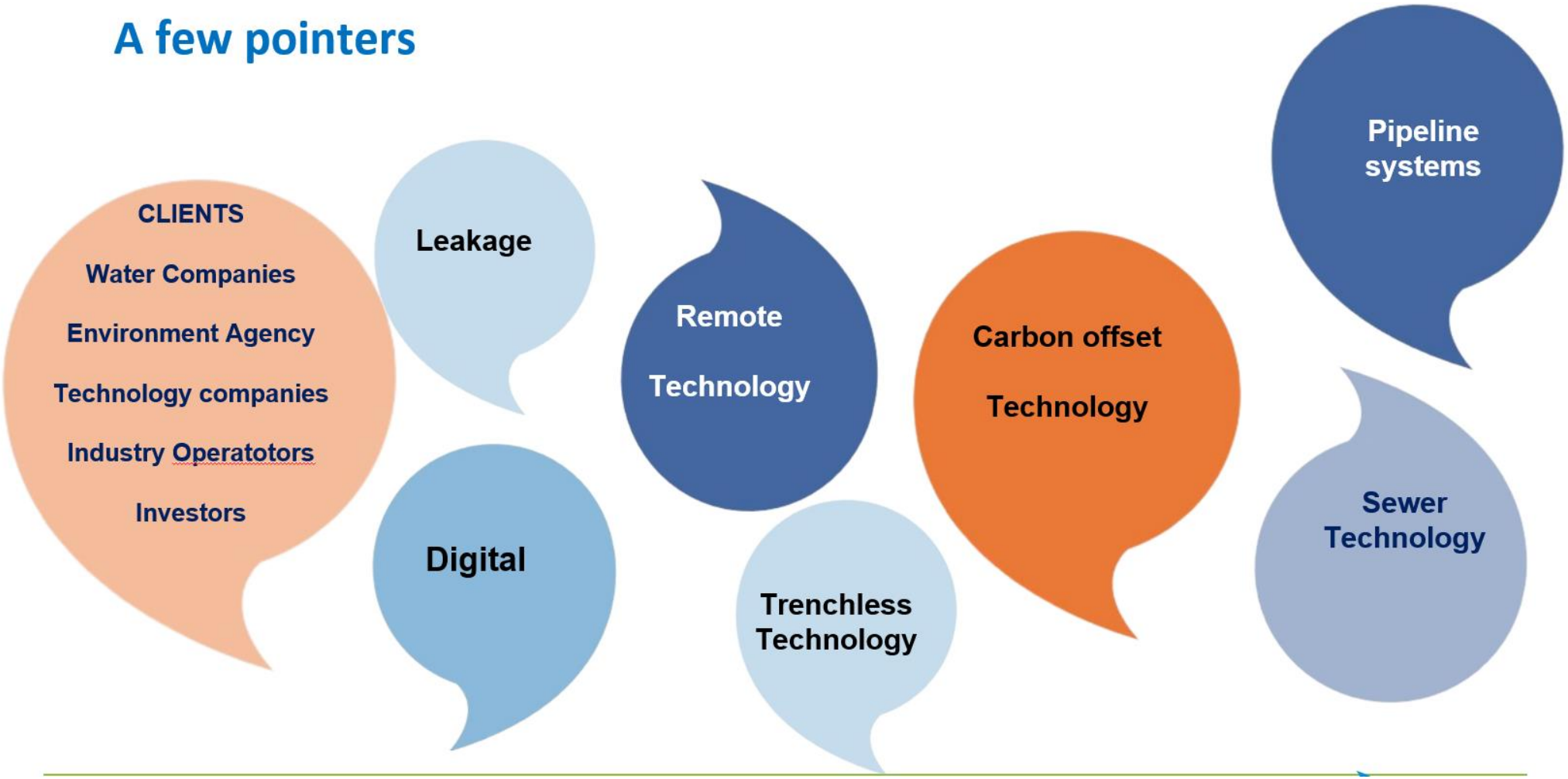
- Like all the best ideas, the fundamentals underpinning Water Dragons are simple and straightforward. Companies pitch their innovative product or service to the judges or 'Dragons', who cross-examine the presenters, focussing on.

  - Have they clearly identified the potential size and value of the market?
  - Have the presenters thought through how their innovation would be implemented?
  - How will its introduction impact on existing operations, working practices and systems?

Future Water Association
Informing, Innovating, Influencing

Innovation

A few pointers



water dragons

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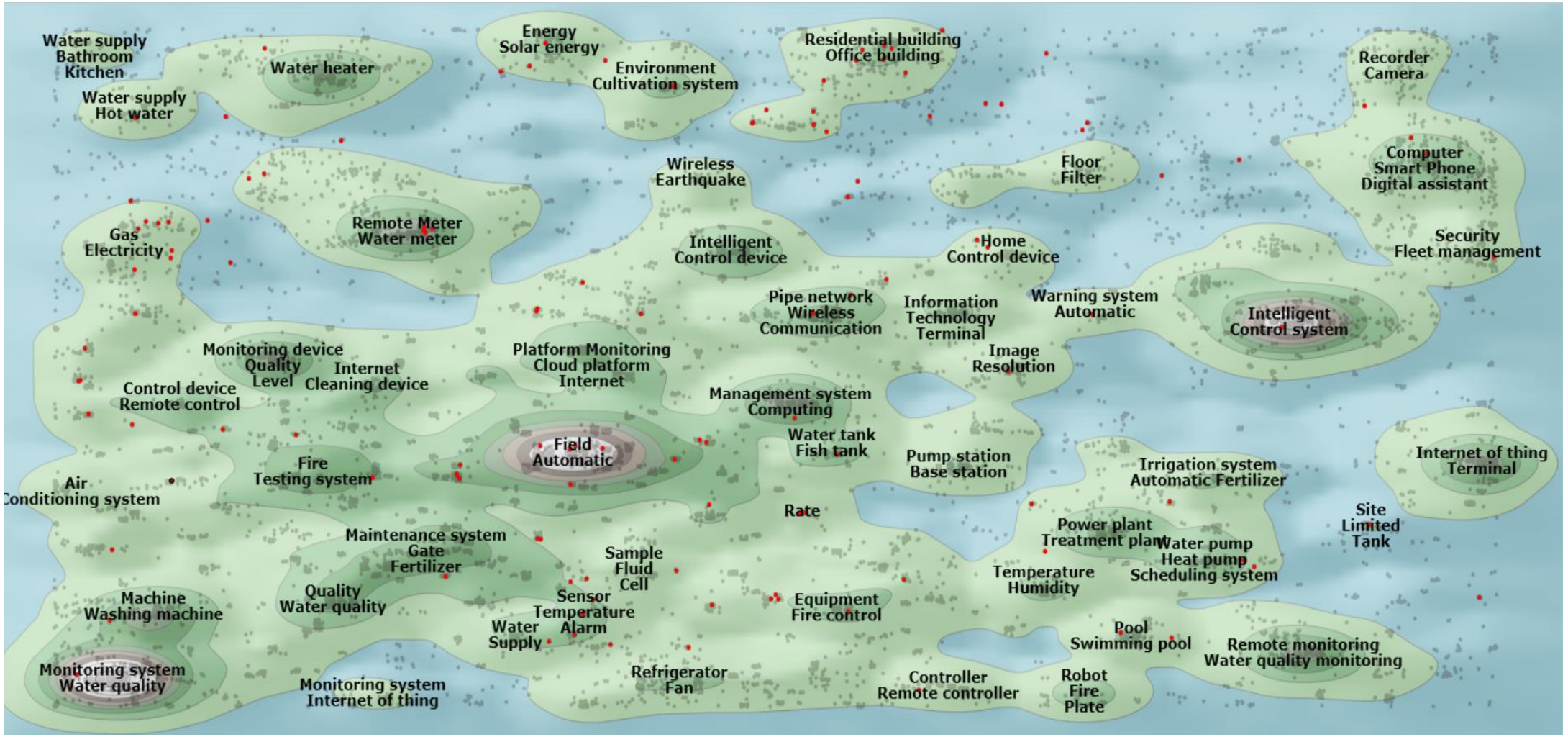
Informing, Innovating, Influencing

Discovering the water sector. Questions: sli.do/discovery311

ThemeScape – Remote Water Management

DWPI Use (with dot display) – UK Patents highlighted with RED dots



Discovering the water sector. Questions: sli.do/discovery311

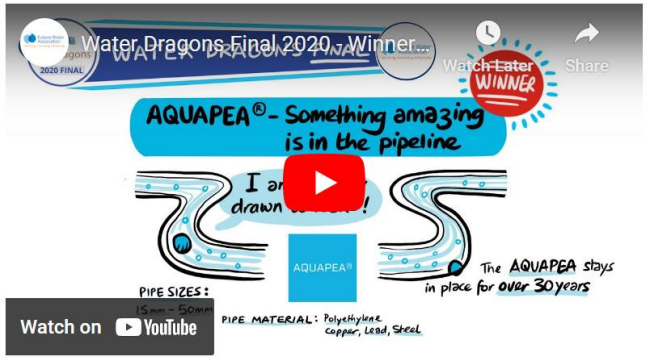
Future Waters – Water Dragons – Success

- International Heat Winner – FloNergia Inc. – *FloMov™*
- Highly Commended – AquaSensing – *Battery-free Leak Detection*

Qinov8 and their leak seeking solution declared 2020 Water Dragons winner

The innovations pitched to the Water Dragon judges during the 2020 final held on 26 April 2021, ranged from virtual water audit solutions to stabilising and enriching soil with the use of polymers. Despite the high standard of all five entries, there could be only one winner, and on this occasion that winner was Qinov8 with their innovative solution to finding and repairing leaks in pipes, the AQUAPEA®. Read more about the final.

Click on the graphic below to watch Qinov8's winning pitch and see how they respond to questions from the judges.



Discovering the water sector. Questions: sli.do/discovery311

What’s next?

What is next?

February

12-1pm 2nd Feb	Discover innovation opportunities
12-1pm 7th Feb	Discover here does our water come from and how we treat it
12-1pm 9th Feb	Discover how we distribute water and what challenges do we face
12-1pm 21st Feb	Discover how we transport and treat sewage and what challenges we face
12-1pm 23rd Feb	Discover how we maximise recovery and reuse of resources
12-1pm 28th Feb	Discover how we distribute water and what challenges we face

March

12-1pm 2nd Mar	Discover the impact of climate change
12-1pm 7th Mar	Discover a partnership approach
12-1pm 9th Mar	Discover how to successfully scale innovation in the water sector
12-1pm 16th Feb	Entry clinic

Water Discovery Challenge

Q&A

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