



## United Utilities' Industry-leading Innovation Lab

After United Utilities' liaison meeting with British Water, we caught up with Kieran Brocklebank, head of innovation at United Utilities, to find out about the Innovation Lab event

*Mark Coates, senior international director of infrastructure policy advancement at Bentley Systems and immediate past chair of British Water's U.K. Forum*

United Utilities delivers 1.8 billion litres of water a day to more than seven million customers and more than 200,000 businesses in the North West of England.

Keeping water flowing across the region requires a vast behind-the-scenes operation, which involves 86 water treatment works, 165 reservoirs, 43,000 kilometres of water pipes, 79,000 kilometres of wastewater pipes, and 584 wastewater treatment works. Maintaining and improving a network, predominantly built in Victorian times, means that United Utilities supports more than 22,500 skilled jobs across the region.

United Utilities says that their purpose is to provide great water for a stronger, greener and healthier North West. Being passionate about supporting a stronger North West means that United Utilities is particularly keen to enable businesses in the North West to grow.

At the British Water Annual Conference, Jane Simpson, United Utilities' director of capital delivery, commercial & engineering, explained more about what this growth will mean.

Going forward, the utility will do less with tier one and more with tier two and tier three suppliers. This change will enable more businesses and workers in the North West to develop expertise and skills, strengthening those companies and individuals and, in turn, improving and strengthening the North West economy as a whole.

United Utilities is also passionate about innovation, as it enables them to provide a better service to customers by making their experience better, faster, and cheaper.



The utility has been celebrated by Ofwat as having one of the most embedded innovation cultures with the water sector. It has driven innovation by making it a core value that is linked to every employee's annual appraisal and bonus process. This initiative is successful because it places the onus of innovation on individuals, wherever they are in the business.

While operating in a heavily regulated industry, United Utilities has worked hard to evolve its company culture into a place where experimental learning is embraced in a safe space, as well as where the appropriate checks and measures are baked into its innovation process. Developing a learning culture with checks and balances gives employees the ability and confidence to suggest improvements, as well as deliver on them.

Embracing this innovation culture has helped United Utilities to lay the foundations of its groundbreaking Innovation Lab event. For the past five years, United Utilities has run an Innovation Lab with external

suppliers from across the world with the aim of encouraging suppliers to work with the water sector. The utility's Innovation Lab event also looks to accelerate how ideas are tested and adopted.

This 14-week innovation programme provides successful applicants with the opportunity to test their solutions in a live environment, while gaining access to and building relationships with senior United Utilities executives, with the potential to lead to longer-term commercial partnerships. More than 600 businesses from across five continents have submitted their ideas for consideration to the industry-leading Innovation Lab. The first four Innovation Lab events led to United Utilities testing 30 new concepts, with 12 proven "world firsts." They also led to five long-term contracts with suppliers who are new entrants to the water sector.

Some of the successful innovations that have come out of the lab series include:

- ♦ **Artificial intelligence (AI) to speed up wastewater asset inspection:** United Utilities is using AI to help speed up repairs to its network of wastewater pipes by semi-automating the review of CCTV inspection footage.

Since the introduction of CCTV for pipeline inspections in the 1950s, the process of reviewing footage has remained largely manual—and very time consuming.

The increasing volume of work across the water sector has highlighted the need for modernisation.

Every year, United Utilities inspects more than 1,000 kilometres of pipeline using CCTV cameras. This process generates thousands of hours of footage, which had been manually reviewed to check for pipe damage or obstructions that could lead to flooding.

With the Innovation Lab, United Utilities has adopted cutting-edge technology to dramatically speed up the process. After a successful partnership with VAPAR, an Australian AI company, CCTV survey processing times have been reduced from 10 days to two days—an 80% improvement. VAPAR uses AI to speed up pipeline repairs by semi-automating the fault detection process from inspection footage.

Founded by two female engineers in Australia, United

Utilities first began working with VAPAR in the second Innovation Lab held in 2019. VAPAR uses a collaborative intelligence approach, which sees AI being used to support human expertise.

- ♦ **AI to assess pipe health and predict failure:** U.K. firm Datatecnics took part in the first Innovation Lab and have since developed five new products, which boost the resilience of water networks by using AI software and innovative hardware to assess pipe health.  
  
Datatecnics' Critical Infrastructure Pipeline Protection System® is able to take an inert pipe surface of any material and transform it into a digital reporting environment.  
  
After gaining backing from United Utilities, they have co-created new products and services that are helping United Utilities to predict failure before it occurs. Building on this achievement, they have won a place on the prestigious Imagine H2O Accelerator programme and have gone on to secure extra investment.
- ♦ **3D printing:** ChangeMaker 3D has produced the first 3D concrete printed wastewater chamber to be used in the U.K. water sector and identified the huge potential for 3D printing in the water sector. Their work with United Utilities has always had a focus on increasing social value for the North West.  
  
ChangeMaker 3D have now won new investment from Ofwat's Innovation Fund to work with United Utilities and others to continue their development, creating an environment where the digital skills of the future are identified and training material developed.
- ♦ **Water quality:** Altitude Thinking from Grangemouth has developed a series of autonomous, remotely operated vehicles to collect water quality samples and data from difficult to reach locations.

[United Utilities' fifth series of the innovation lab has just begun.](#)

It will be interesting to see what other improvements lab participants bring to the sector in future years.

