esri Australia

Water giant a hub of innovation

Queensland Urban Utilities

One of Australia's largest water retailers has secured a host of awards for an innovative location-based analytics solution that has seen the time required to identify faults in their network drop from minutes to just seconds.

Project overview ⊕

Determined to improve its decision-making capabilities and create efficiencies across the business, Queensland Urban Utilities (QUU) – Australia's fourth-largest water distributor and retailer – recognised the key lay in providing its personnel with easier and greater access to data.

With location playing a central role in virtually all QUU's operational and customer service operations, the organisation looked to Geographic Information System (GIS) technology to create a new way to view, manage and process its vast reservoirs of data.

The solution was Q-Hub – a platform that seamlessly integrates QUU's core business systems to provide a comprehensive, spatially-enabled snapshot of the entire QUU network at any given time.

QUU's business units – including customer service, operations, asset management and incident management – can now access real-time data feeds, historical and current asset and works information, and accurate customer data through four custom-built interactive mapping portals.

Tailored to the specific needs of each business unit, these portals enable QUU's existing, legacy systems to communicate with one another in a way not previously possible.

Ultimately, by providing instant, easy access to all key organisational data, Q-Hub empowers QUU to improve decision-making across the board, from determining where to assign field crews conducting maintenance checks, to highlighting areas for potential business expansion.

QUU in focus:

QUU – Australia's fourth-largest water distributor and retailer – supplies drinking water, recycled water and sewerage services to South East Queensland residents in the Brisbane, Ipswich, Lockyer Valley, Scenic Rim and Somerset local government areas.

The company delivers these services via a $5 billion infrastructure network that includes 125 water reservoirs, 40 water pump stations, 110 water boosters, 331 sewage pump stations, 27 wastewater treatment plants, and nearly 20,000km of water and sewerage mains. The company also answers more than 24,000 written enquiries and 290,000 customer phone calls per year.

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"The exciting thing about Q-Hub is that it has created an awakening within the organisation. Our staff, many of them non-traditional spatial users, can now clearly see the technology's value."

Nina Du Thaler, Chief Information Officer, QUU

The challenge:

Providing its staff – particularly those working in customer service, operations, asset management and incident management business units – with timely access to key business information was a challenge for QUU, which operated a number of disparate legacy technology systems which were not designed for interoperability.

Staff often needed to manually extract and analyse information from multiple programs. At times, this compromised their ability to respond efficiently during emergency situations – such as when a water main burst – delaying the dispatch of maintenance crews and hindering communications with affected customers. This resulted in heavy water and revenue losses, and large numbers of complaints from customers dissatisfied with the extended outages and lack of information.

QUU recognised greater coordination between their technology systems was essential to providing personnel with the information they required to effectively complete their work and make better decisions.

Specifically, QUU required an enterprise-wide solution that would:

+ Provide all personnel with rapid access to valuable asset and network information, and an up-to-date understanding of the status of QUU's network.

+ Facilitate greater automation in the compilation and analysis of information, to enable standardised and efficient decision-making in the areas of network planning, investment, operations, asset management and customer service.

+ Improve stakeholder engagement, by being able to provide advanced notice of when and where outages will occur in the case of planned works, and accurate and timely updates when unplanned incidents take place.

+ Enhance and maintain the integrity of QUU's data.

The solution:

QUU partnered with Esri Australia's Professional Services team to develop a geo-enabled, centralised system that integrates the company's various legacy systems – including operations, works, planning and asset management.

Instead of simply replacing QUU's existing systems, the solution – Q-Hub – is a new spatial environment which provides QUU with a common operating picture to view and manage its asset and network information.

Q-Hub features four service hubs – built around fit-for-purpose, interactive maps designed for each of QUU's targeted business areas – including:

+ **Q-Ops:** enables Control Centre operators to search, view and filter work orders, network information and asset histories to optimise the coordination of field maintenance crews and works.

+ **Q-Care:** provides the Customer Contact Centre with easy access to customer and property related information, allowing staff to proactively manage enquiries and communicate with customers. For example, Q-Care delivers a complete and accurate view of customers affected by network outages, enabling them to provide precise and up-to-date information on their status.

+ **Q-Plan:** provides planning teams with multidimensional information, including elevation contours, flood levels, supply and drainage zones, and current and historical work orders. The consolidation of this information supports investigations, maintenance and network planning decisions.

+ **Q-Alert:** a central hub for incident and emergency management teams. In addition to a combined view of all other service hubs, this system integrates external data to assist in the case of an emergency, including weather and climate information.

The innovations:

Real-time intelligence

QUU is at the forefront of a shift among water utilities – away from traditional system architectures to more integrated and responsive programs backed by advanced real-time analytics.

More specifically, Q-Hub is unique as it integrates previously disconnected information to deliver a single and live geographic view of the entire network.

While in the past it may have taken a week for data collected in the field to be widely accessible to office-based staff, this information can now be updated and accessed in real-time.

Viewing information spatially also allows QUU's staff to visualise their data, identify anomalies and draw inferences in ways previously not possible.

For example, Q-Hub empowers staff to identify service usage hotspots in the network, or areas where there are multiple jobs affecting a variety of customers, which could potentially indicate a wider issue requiring further action.

A new data model to suit current business processes

Outdated or incompatible legacy systems often present problems as businesses expand – however Q-Hub's purpose-built data model bypasses these concerns by using spatial technology as an integration platform.

The highly adaptable model works with existing systems, eliminating the need to undertake an expensive replacement program while also ensuring the integrity of historical data was maintained and migrated into the new system. The new model enables QUU personnel to easily access both historical and current business data to support day-to-day and strategic decision-making.

The outcomes: ⊕

+ **Enterprise-wide access to information.** By integrating QUU's software systems, all business data is captured and available for staff, providing a complete picture of operations at any given time. Additionally, by facilitating communication and interoperability between legacy systems, Q-Hub enables QUU staff – from field crews to executives – to share information quickly and more effectively.

+ **Real-time view of works data.** The system provides QUU's operational staff with a real-time view of network operations via interactive, easy-to-understand maps. A real-time view equips QUU staff with current information needed to make informed decisions, such as the ability to identify and assign field crews based on proximity, skill sets and equipment on board. Further, having a real-time view of the operations has seen the time required to identify faults in their network drop from minutes to just seconds.

+ **Enhanced customer service.** The system enables QUU's Control Centre to quickly identify the exact customers impacted by both planned and unplanned incidents and facilitate timely and efficient notifications. It also supports the Customer Contact Centre to respond appropriately to customer enquiries with accurate and up-to-date information.

+ **Increased maintenance and upgrade efficiencies.** By analysing historical data on job histories and network incidents, QUU's Network Control teams can identify clusters of locations with common issues and develop broad-based mitigation solutions in the event of future outages.

+ **Enhanced executive decision-making.** For QUU executives in particular, Q-Hub allows for future maintenance and operational areas to be analysed and forecasted more accurately.

> "There is no doubt Q-Hub has bound the organisation together. Understanding location and accessing a visual representation of what's happening in our business is extremely powerful. "
>
> **Nina Du Thaler,** Chief Information Officer, QUU

▷ **Solution mix:**

+ **Esri Australia Professional Services**
+ **ArcGIS for Desktop**
+ **ArcGIS for Server**

QUU is at the forefront of a shift among water utilities – away from traditional system architectures to more integrated and responsive programs backed by advanced real-time analytics.

> "In the past there could have been a 24-hour or even week-long lag between events in the field and details becoming widely accessible back in the office. Now this information arrives in real-time. "
>
> **Nina Du Thaler,** Chief Information Officer, QUU

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