

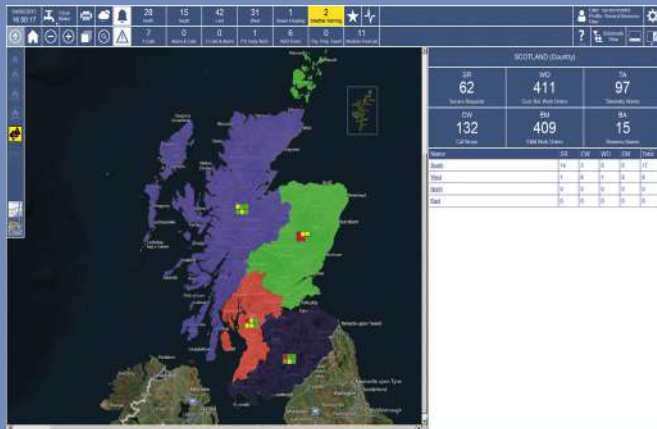


Reservoir at Edinburgh, Scotland



## Scottish Water Scotland

### Scottish Water



The Situational Awareness Application

*“While we continue to develop our Situational Awareness system, we have already seen significant benefits through the early identification of business events and thus the protection of our service to our customers. As we move forward, the functionality developed to date will not only continue to improve our reactive response, but fully support the delivery of a more proactive service from our ICC to both our internal and external customers.”*

**Bernie Rodden**  
Manager of the ICC

### Introduction/Overview Synopsis

Scottish Water provides clean, safe and high quality drinking water to 2.5 million households and 156,000 business premises across Scotland. Every day, they provide 1.35 billion litres of clear, fresh drinking water and take away 945 million litres of waste water, which they treat before returning to the environment. In 2010, Scottish Water established an Intelligent Control Centre (ICC) to serve as their central hub for all their operational activities across Scotland. The vision was that the ICC would allow Scottish Water to respond in a timely and effective manner to emerging business events to minimise risk and impact on both the customer and Scottish Water.

In order to achieve this vision Scottish Water engaged with ICONICS with the goal of building a solution that would revolutionize the way in which they

could understand business events and ensure effective response arrangements for many years to come.

A number of options were considered by the ICC to achieve this goal, ranging from replacement of existing telemetry systems to procurement of a new integrated solution—with the clear aims of supporting Scottish Waters Overall Performance Assessment (OPA) measure and enhancing the management of business events. By applying an “Internet of Things meets Big Data” approach, the ICC Team devised a data-driven software solution based upon ICONICS GENESIS64™ software that supports Scottish Water on its journey to becoming a trusted and leading organisation in Scotland. Scottish Water is now in a better position to understand its data and respond effectively to customer service events throughout the country.

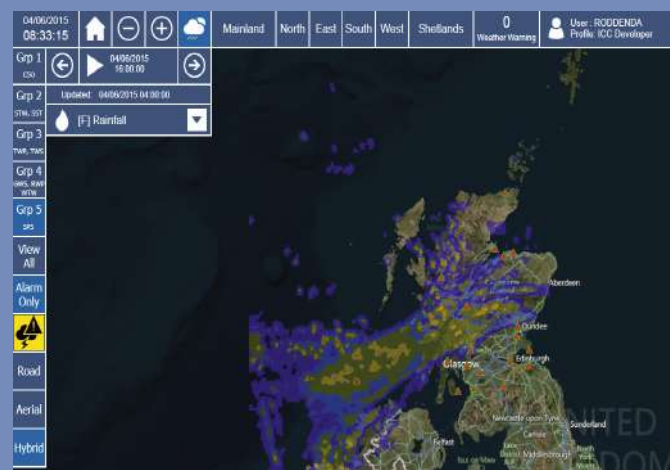
The ‘Situational Awareness’ application has been so successful that Scottish Water and ICONICS are now helping operational teams around the world to consider implementing a similar data-driven solution. This system intelligently combines and displays telemetry, customer contacts, weather data, fleet and work management into a single integrated view, combining thousands of events and monitoring hundreds of thousands of data points per week. That data, supported by business rules and logic, has given the team deep insights, enabled better diagnostics, and has allowed for far more intelligent customer-focused decisions.

The ICC’s success has, to date, been measured by their ability to influence a number of business problems including:

- Protection of OPA points, particularly in relation to Interruption to Supply (ITS) events.
- Support the delivery of operational efficiency costs (£3.8 Million).
- Support the attainment of the Customer Experience Measure (CEM) target.
- Provide the ability to proactively intervene or solve ‘interruptions to supply’ within 6 hours. In other words, to ensure that all premises across Scotland do not experience unplanned interruptions to supply lasting more than 6 hours.



Scottish Water Call Centre



Live Weather Data with Business Alarms

### The ICC’s Business Problems

Bernie Rodden, Manager of the ICC explained to us that, “At the commencement of the ICC, Scottish Water had a number of key aims associated with the development of our Situational Awareness requirements including:

1. The ability to improve the speed of identification of various business risks that had the potential to impact on the service to our customers.
2. Ensuring we had the capability to link various sources of business intelligence including telemetry, customer, weather and workflow activity data, etc. to support the early identification and response to, business events.
3. Having a system that was flexible enough to both develop and enhance in house to meet future business needs.”

Historically in order for the ICC to gain an understanding of the events occurring in an operational area information needed to be manually checked and consolidated from a number of disparate systems. As with any manual intervention this has a greater chance for human error to occur, with decisions taking longer to be reached and/or being potentially based on incomplete information.

### The Vision and Selection of ICONICS

The development of Situational Awareness was very much an evolutionary process that started back in 2012 when Scottish Water decided to upgrade their water network schematics. At the time, the team needed some way of connecting their new state-of-the-art schematics with their customer and enterprise data. Remember, one of the key goals of the ICC was to reduce risk to

service. A key aspect to this is understanding the link between the performance of SW assets and customer service as these are seen as key factors in the decision making process.

A high level set of approximately 50 capabilities went out to market and 10 leading suppliers were whittled down to a handful of providers. But the truth is, no one could really do everything that Scottish Water wanted. Based on Scottish Waters evaluation of the market they updated their initial focus in order to maximize business benefit based on the capabilities of the available solutions. As result, ICONICS was chosen based on the agility, power and connectivity capabilities of their product suite.

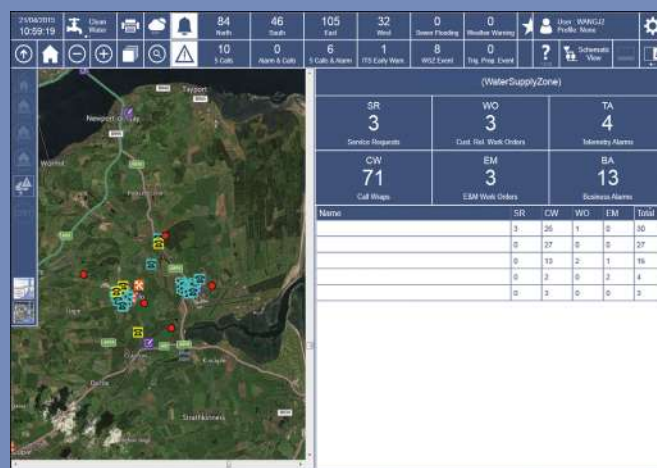
At this point, Phase 0 had already proven the simplicity of building an ICONICS-based solution.

“It was clear to us that the simplistic nature of the tool set and available functionality would enable the flexibility to drive a range of business improvements aimed at enhancing the service and experience provided to our customers” Bernie Rodden stated. This was clearly illustrated by the ability of the ICC to quickly create schematics and displays to aid in monitoring key areas for such high profile events such as the Commonwealth Games, the Ryder Cup, Open Golf and Edinburgh Marathon.

The concept for Phase 1 was based around an even bigger question: ‘Now that we know the relationship



ICC Team Members Evaluating Requirements



Geospatial View Displaying Real-time Customer Data with Alarms

The set of 50 capabilities evolved into 150 requirements, which became known as ‘Phase 0’. ICC staff no longer needed to switch between multiple systems to try to establish the root cause of a problem. No, after Phase 0, the ICC team were able to view all their enriched network schematics overlaid with real-time customer data and business rules. True holistic decision making suddenly became possible. The potential was huge!

**Phase 1 and the Benefits of SA**

The ICC team had managed to tie the elusive gap between ‘the event’ and ‘the customer’, but they weren’t finished there. While Phase 0 was busy being deployed, the ICC and the ICONICS consultancy team had already made plans for a second phase, ‘Phase 1’.

between events and customers, how do we proactively prevent events from happening?’ While Phase 0 delivered schematics enriched with customer and work activities, the ICC identified that the key to answering this question was the creation of a geospatial display to show events as they occur, and which uses reference information to create a ‘complete picture’. In addition to the information displayed as Phase 0, the ICC also looked to develop the capabilities of the system further and obtain additional benefits by also integrating; current, forecast and weather warnings from the Met Office; Scottish Water’s telematics system (Masternaut); the display of Operational zone boundaries and also including events from the Operations Log (used to monitor both planned and unplanned work along with its ITS implications).



The idea became a plan, and the plan became reality, but not before Scottish Water enquired about splitting the Phase into two deliverables to maximize benefits quickly. So why split the delivery of Phase 1? Well, one of the largest multi-sport events across the British Commonwealth returned to Scotland for the first time in 28 years in 2014; the Commonwealth Games. To ensure that everything ran smoothly for Scottish Water and its customers during this prestigious event, Scottish Water asked if Phase 1, Release 1, could be completed specifically ahead of Glasgow 2014. ICONICS was agile enough to accommodate their needs and deliver an initial core function version, on time and of high quality.

data sources and business rules, by allowing alarms to interact with customer call information geospatially, Scottish Water can use this solution to help identify the source problem of hundreds of alarms or customer calls. This can, and will, fundamentally help Scottish Water.

The potential and expectations now in Scottish Water just keep growing. The evolutionary process of the Situational Awareness project looks to continue. The ICC have upcoming plans to integrate more telemetry systems and to develop a live management dashboard. The more long-term thinking lies around mobility and linking weather forecasts into their business rule logic. There are many potential opportunities to add further



*Danny Rodden, Duty Manager,  
Using the SA Application*



*Plant Workers*

Situational Awareness has allowed Scottish Water to not only respond more quickly and more effectively to the needs of their customers, but it's given them the ability to proactively respond to scenarios where their assets or customers may potentially have been detrimentally affected. Let's take the example of flooding. By taking live telemetry of sewer levels and associating this with the anticipated Met Office precipitation levels, preventive flooding action can be taken and staff deployed to mitigate customer impact. Sometimes, of course, it's not possible to predict where and when events are likely to emerge from; for example, if a water main bursts. This is where the solution has truly added value. Amongst other

intelligence to the system, and just as importantly the ability exists to customise and develop a number of these capabilities within the ICC in order to further enhance customer service.