

TRANSFORMATION ON TAP

Situational Intelligence—Creating positive customer experiences for water utilities



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Collaboration and Situational Intelligence in a Water Utility Context

A Water Utility customer service unit deals with two types of customer enquiries and service requests. The first type relates to the retail side of business, covering billing, charges, metering and typically involve revenue and payment matters. The second type relates to operational service issues like: lack of water supply, low pressure, leaks, sewer blocks, sewer collapses and water quality problems.

In tackling operational issues, customer service units typically interact heavily with the control center who often investigate incidents logged by the customer service unit and field staff where a field visit for investigation and resolution is required.

Collaboration for improved performance

In fact operating a water network and managing effective communication with customers and other stakeholders like regulatory bodies, environmental agencies etc is a collaborative effort involving many other departments and functions besides the customer service unit and the control center.

The ability to collaborate by sharing, visualizing and analyzing information across customer services, the control room, field operations, asset maintenance, planning, regulation and communications departments, coupled with an ability to understand how events and systems correlate & change across space and time, can help utility staff take actions which significantly improve a water utilities performance.

Situational Intelligence for effective collaboration

Situational intelligence is a term frequently used in the military. In crisis situations, the air force for example uses high quality and real time information from a variety of sources; from satellite images to video surveillance to mobile phone communication signals and the position of suspected insurgents. A comprehensive awareness of situation on the ground coupled with intelligence is used to increase effectiveness and reduces the need for forces on the ground. A good situational intelligence solution can greatly increase effectiveness and reduce the number of armed forces required in combat.

'Situational intelligence' is another word for 'business intelligence' with the ability to rapidly evaluate history and present circumstances even as they are changing with a focus on analyzing data that is relevant to a particular decision across space and time.

Today situational intelligence is in use in a variety of disciplines and industries from the military to air traffic control to utilities and advanced manufacturing.

Situational intelligence solutions can help a water company improve its customer service, operational effectiveness and environmental performance.



Customer Service

Typically about 35 to 45% of the inbound customer contact a water & waste water utility in the England & Wales experiences, is for operational issues (non - billing, charging, metering related). The economic regulator OFWAT has placed 50% of the qualitative score for SIM (Service Incentive Mechanism – a scheme for incentivising companies for better customer service) on customer satisfaction for customers who have made contact for operational issues (Both water and waste water).

Situational awareness solutions can help water utilities anticipate problems and prevent customer calls as well help in prompt resolution of customer calls which can be practicable in a single visit. For example customer service staff can spot an alarm and relate it to a customer service request resulting in more informed field engineers who can strive to resolve the two problems in one visit.

Customer services can have more informed and professional engagements with customers when they can see the combination of alarms, asset status (e.g. a turned off valve) open customer service requests and field crew location.

Situational intelligence solution can help the customer services to understand the impact on customer experience over time across regions and the factors which led to the change in customer experience by taking into account customer feedback data, call data from the telephony and integrated voice response systems, written correspondence management, email management and web channel management systems.

Similarly knowledge of events and their change over time can help the staff to do more effective planning and proactively manage customer experience during major incidents and outages.

Operational efficiency

Nearly 40% of water and waste water utilities costs are operational costs with contracted and hired services, materials and power accounting for nearly 25% of the costs. Moving towards a culture of anticipating problems can help reduce the need for emergency works and hence the amount of contracted and hired services consumed. Similarly, a good situational intelligence solution can help the water utility to react better to changes in the network and make more efficient changes to the production plan keeping operational costs under control.

Environmental performance

Environmental performance is one of the most important aspects of water utilities performance not just from a regulatory standpoint but also from public perception, reputation and corporate responsibility.

Helping reduce the environmental impact of incidents requires collaboration in resources, knowledge and expertise. A situational intelligence solution can offer the cross functional information and analytical tool for this sort of analysis. For example one can rubber band a specific geographical area and go forward and backward in time

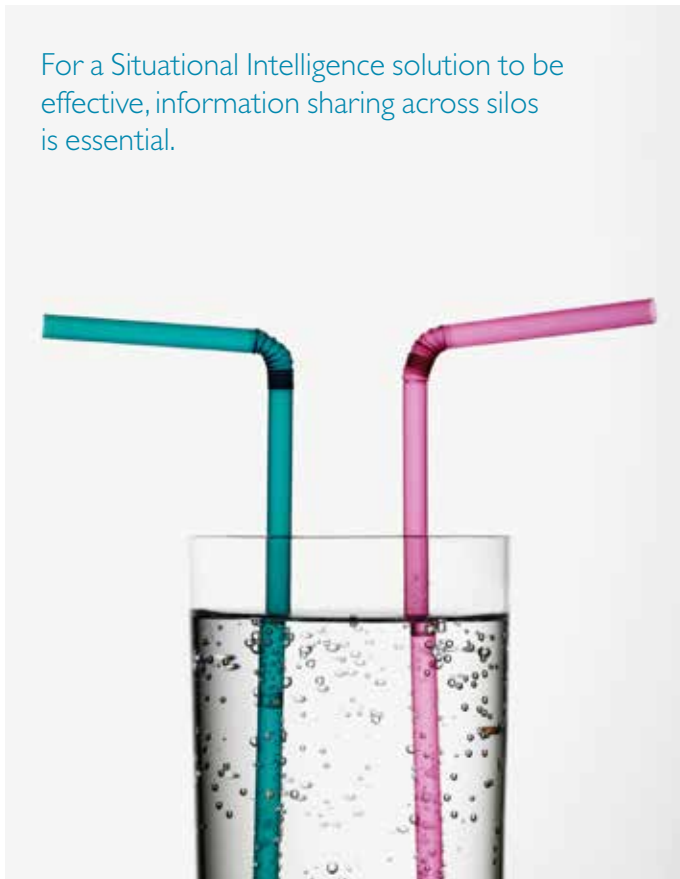
analyzing and visualizing a variety of parameters such as the amount of water contamination, correlation with real and expected rainfall and the impact in local catchment area.

Water leakage is a key area of environmental performance that is regulated and has significant implications in terms of both carbon footprint and efficiency. Situational intelligence solution can help view the change to pressure over time and alert operators in potential bursts based on pressure trends.

Apart from water leakage, the other common areas to be considered are water quality or pollution events, sewer flooding and collapse events.

Overall a good situational intelligence solution can help utility staff across departmental silos collaborate, visualize and analyze – enabling better decision making and ultimately better performance in customer service, better operational efficiencies and better environmental performance.

For a Situational Intelligence solution to be effective, information sharing across silos is essential.



Situational Intelligence Elements

In order to enable the collaborative working and situational intelligence and its positive impact on performance a few key aspects need to be considered.

Any situational intelligence solution should have the following five key elements:

- **Integrated information across silos:** The key to attaining benefits from situational intelligence is to enable information sharing across customer services, control room, field operations, production planning etc. The situational intelligence solution should be able to tap into the various organization data sources – e.g. CRM, ERP, EAM, GIS, and Telemetry etc.
- **An event processing and delivery framework:** Good situational intelligence solution cuts across organizational silos but this should be in search of information not data. It is important that this solution have the ability to recognize, visualize and act on events and draw intelligent conclusions on how they relate to each other. This requires a good event delivery and processing ability.
- **Visualization across space and time:** Having information across silos is good, but you need to be able to see what's important. This requires intuitive user interfaces and the ability to visualize information across space and time. For example, one should be able to see systems and events geospatially, geo-schematically and across time (in addition to traditional tabular reports and dashboards).
- **Real time analytics:** The ability to analyze information is central to good situational intelligence. A good situational awareness solution should enable drill down and analysis on specific factors for example asset risk vs alarms or what if analysis – for example projecting the pressure trend into the future.
- **Enabling organization structure and effective change management:** Finally the effectiveness of a situational intelligence solution is based on collaboration across traditional organizational silos. Having more and better technology ability can enable it, but the absolute key is an organizational structure and culture that enables and encourages collaboration. There are many different organizational structures which

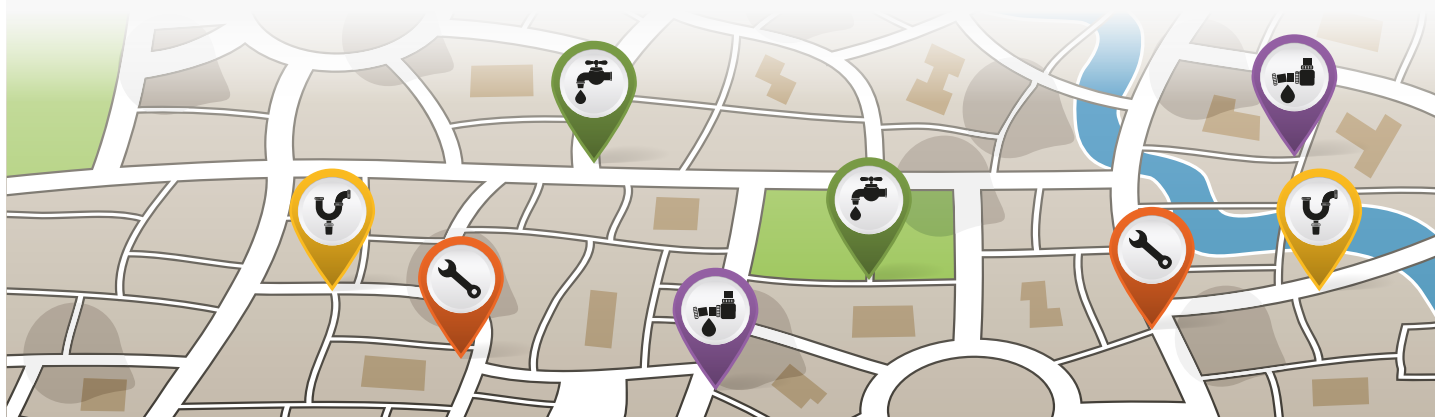
can enable it. One organization for example is doing a fundamental re-think of the roles and responsibilities of control room staff.

The ability to perceive events and elements in the environment within a volume of time and space, coupled with the ability comprehend their meaning and project them into the future is of value in a lot of different domains. Indeed a lot of applications of this ability stem from aircraft

and air traffic control but also from utilities and advanced manufacturing systems.

Apart from visualization and analysis capabilities the situational intelligence solution needs to be integrated with a communications management solution to keep the customers and stakeholders informed.

What's going on, where and when? Situational Intelligence holds the answers, providing the ability for utilities to visualize information geospatially and across time.



Business Case Considerations for Situational Intelligence Solution

The Business case for Situational Intelligence is around the improvement in organization performance through effective visualization, collaboration and analysis. Typically data against the following parameters can be measured and used to develop a business case for situational intelligence.

- Water main burst events and time taken to address
- Major supply interruptions or low pressure calls and time taken to address
- Service requests and calls for the same event
- Water loss which can be prevented through quicker and proactive handling of leaks
- Sewer blockage or collapse related events and time taken to address
- Water quality and pollution events and time taken to address
- Fines paid / potentially avoided through improved regulatory & environmental compliance
- Customers impacted in each event
- Customer service inbound calls likely to be avoided
- Alarms needing field work and time taken to address
- Weather events leading to sewer flooding, Water main bursts and supply interruptions
- Average traffic density in the areas of water events
- Energy costs of water loss and maintenance activity
- Cost of staff involved in analysis of events

Apart from the tangible benefits some of the other factors to be considered are company reputation, brand, as well as perception from regulators.

Conclusion

In times of economic hardship, water utilities will have limited ability to increase prices and will in addition will face pressure on water revenues from the advent of metering in the Water industry.

At the same time, climate change and a growing population are likely to put more pressure on improving infrastructure. Therefore in order to improve performance Water utilities will need to strive to get more from their infrastructure.

Effective collaboration across the different departments in a water utility (e.g. control room, customer service, planning, field operations etc.) coupled with tools for situational intelligence can help a water utility get more out of the existing IT investments and

improve performance in customer services, operational efficiency and environmental impact.

The key to such a collaborative solution is organizational change which enables such collaboration coupled with a good situational intelligence technology solution.

Such a situational intelligence technology solution should be able to provide an integrated view across different organizational information systems (e.g. Telemetry, CRM, ERP, EAM, GIS etc). Such solution should be able to recognize process and correlate key events across the organization. The solution should also provide the ability to visualize this information across space (geospatial and geo-schematic) and time. Finally, the solution should offer the ability to analyze the above information in real time and project the same across space and time.

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About Wipro's Energy, Natural resources and Utilities (ENU) SBU:

Wipro's Energy, Natural resource and Utilities (ENU) Strategic Business Unit (SBU) has over the last decade established itself as a trusted partner to clients across the globe to address their business challenges using its deep industry domain competency and technology expertise. It has over 6600 dedicated consultants serving businesses in the water, oil & gas, metals, mining, agriculture products, natural gas and electricity industries. Having a strong relationship with over 40 customers spread across Americas, Europe, India, Middle East, Southeast Asia, Australia and New Zealand, the ENU SBU has been continuously investing in building competencies to help them do business better. Recently, Wipro has acquired SAIC's Global Oil and Gas business unit, reinforcing its focus on this industry.

About Wipro Technologies

Wipro Technologies, the global IT business of Wipro Limited (NYSE:WIT) is a leading Information Technology, Consulting and Outsourcing company, that delivers solutions to enable its clients do business better. Wipro Technologies delivers winning business outcomes through its deep industry experience and a 360° view of "Business through Technology" – helping clients create successful and adaptive businesses. A company recognized globally for its comprehensive portfolio of services, a practitioner's approach to delivering innovation and an organization wide commitment to sustainability. Wipro Technologies has 135,000 employees and clients across 54 countries.

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