



SensorInsight®

Oxfam International

Oxfam International is a global organization working to right the wrongs of poverty, hunger, and injustice. Oxfam saves lives, develops long-term solutions to poverty, and campaigns for social change. Oxfam International, founded in 1942, Oxford, United Kingdom, works in more than 90 countries, with programs in Africa, the Middle East, Latin America, across Asia and in parts of Eastern Europe. In Africa, Oxfam worked alongside local communities to expand the network of independent water points across Northern Kenya and Ethiopia.

Water maintenance is a matter of life or death in areas in Eastern Africa. During dry seasons water shortages and droughts ruin harvests, kill livestock, and drive up food prices as a result causing millions of farmers to lose their livelihoods and famine to spread across the country. Lack of access to safe, reliable water is an ongoing problem in East Africa. With thousands of water points in place, Oxfam needed a system in place for monitoring and maximizing the efficiency of the water lifecycle. At the time information about pump breakdowns, water consumption and stress conditions was not collected and analyzed effectively. Providing visibility and trend analysis capability allows NGOs and government agencies to respond more quickly to fluctuations and situations with the water supply.

Beyond the humanitarian motivations, the need for water management globally is apparent. Water usage has increased six times over since the turn of the century – twice the rate of human population growth. According to the World Bank, 1.1 billion people don't have access to safe water. 45% of water is lost due to leaks in aging water infrastructure around the world. And according to the United Nations, two thirds of the world's population is projected to face water scarcity by 2025. It's clear as a planet we are in the midst of a resource crisis, with the future looking even bleaker. We need to manage our water smarter. Water conservation is a critical aspect of sustainability in communities worldwide. And with the advances in technology, data storage, speed and connectivity, combined with previously inaccessible computing functions, we have the ability to analyze and optimize processes and systems, so that our goals of a smarter planet are within reach and achievable.

Oxfam International strived to get aid to people who needed it during times of famine, but wanted to create a longer term solution for water management to begin to anticipate problems in the future. They drilled boreholes and created schemes to ensure water was getting to the communities that needed it. With that system in place now they needed a way to manage it, which is where SensorInsight® and Element Blue came in. The solution was designed to capture, aggregate and display near real-time and real-time data on water levels, consumption and the number of people and animals visiting water points on a daily basis.

After a careful needs assessment, our team decided that SensorInsight® Dashboard combined with IBM technology, leveraging capabilities from the IBM Blue Mix and IOT Foundations solutions, would be the best solution for our clients' needs and budget. The SensorInsight® Dashboard would allow utility managers to monitor water systems for supply, demand, and functionality in accordance with variables such as temperature, time of year, and location. The approach was designed to provide real-time analytics, alerts and expert insight into water and energy systems, correlated with key operation and historical data. Element Blue's SensorInsight® is a low-cost, highly effective solution for this type of monitoring. Hosting on IBM SoftLayer drove down costs and offered an on-demand solution. The



system provides a low cost point of entry into data integration and analysis, and also works seamlessly with high-end IBM products such as IBM Intelligent Water.

First, we aligned data with performance – We focused on integrating existing data sources to enable collaboration and increase innovation capacity. Next, we analyzed patterns – We leveraged real-time data and new instrumentation to fill water information gaps, spot new patterns, and further increase innovation capacity. We built an integrated management system that allows Oxfam to add sensors for weather, water, power, meters, irrigation and soil. Lastly, we collected and analyzed the data to optimize outcomes – We executed a mass application of community insights and predictive analytics to enable intelligent decision support and strategic risk management. In doing this, we achieved optimal management across multiple domains.

For the project, Element Blue provided a Lead Architect, a Senior Industry Solutions Consultant, an Industry Solutions Consultant, an Infrastructure Specialist and a Project Manager. The project included a no-cost license for Element Blues’ SensorInsight®. The SI product provided ad-hoc historical analysis of multiple sensor measurements within or across domains. It also facilitated deep dive investigations into data with additional parameters allowing SME’s and Industry experts to gain new insight into their data. Element Blue offered a cloud hosted model which reduced cost to the customer significantly.

Within a matter of months, water managers in Eastern Africa were able to identify malfunctions in real-time, allocate the necessary resources to remedy issues, and provide smarter water to thousands of people and animals across Kenya and Ethiopia.

The system allowed for the:

- Ability for water managers to view all this information, from more than 1,000 water points, in one place
- A holistic view provides the status on the health of the network and insight into supply and demand
- Preemptive alerts to help manage and identify malfunctions pro-actively and minimize water shortages

As a big data platform for analytics, SensorInsight® provided a reduction in disease and drought in Eastern Africa.

The system allows water managers to prioritize travel in monitoring conditions resulting in a 50% reduction in travel and a 15% reduction in the field operations budget.

Water managers in East Africa use the system to monitor the number of cans of water that get filled each day and how many hours a day water sources are pumping water. SensorInsight® also allows them to monitor the systems health and create real time alerts for any problems that occur. Water managers use this data to prioritize solution efforts and proactively manage their systems to avoid or minimize water shortages. The groundwork has been laid for a system that can pull aquifer levels, rainfall, and multiple other forms of data together into the dashboard so that water is consistently provided to the people of the region, which will save the lives of people in the region and keep the agricultural economy healthy.

Element blue offered a fully supported hosted solution. Hosted in-house, we maintain required maintenance and support updates as necessary. Help desk support is available to identified Oxfam admins during regular business hours. We continue to provide standard help desk support to include user account support, remote and limited end user application assistance, issue escalation, trouble ticket management and reporting. We perform daily administration functions during normal us business hours that include application management, patches and updates, analysis of logs and perform log rotations, system restarts, and timely and reliable system administration procedures, such as backup and/or recovery.

SensorInsight®

Headquartered in Houston, Texas, SensorInsight® creates and markets an Industrial Internet of Things (IIoT) platform designed to provide insight across specific domains, including energy and utilities, transportation, manufacturing, healthcare, and smarter cities. The platform works by providing deep analytics and complete access to data systems in real-time. Plus, SensorInsight takes care of the software, hardware, and upkeep so you don’t have to, providing a complete IIoT Solution.