DIGITIZING WATER FOR RURAL COMMUNITIES: FROM INFRASTRUCTURE TO SERVICE

By: Divirod

A constellation of events, including but not limited to the expected retirement of 60% of current rural water workforce in the next 4 years, a tight labor market, limited ability to mentor new reservoir managers due to budget constraints, increased frequency of compliance measurement and reporting requirements in many jurisdictions from daily to hourly; population demand and climate change driven water resource constraints and concomitant demands for improved resource availability forecasting; and more - all drive the search for more efficient and sustainable ways to to manage water resources usage and availability. Digitization of monitoring water that enables forecasting provides the solution to many of these problems.

Digitization, the process of converting information into a digital format, changes the way we measure and manage water. Digital systems such as remote monitoring and system automation offer convenience, efficiency, and cost savings to customers and businesses. Older, more traditional ways to measure water availability and information systems are limited by single point measurements, infrastructure, calibration and maintenance costs, and reliance on dedicated staff. Reliable, accessible, and integrated water data is more important than ever in a world where natural and human activity place stress on water resources, and a retiring workforce threatens the industry's current information management systems functionality.

Advances in digital technology, such as IoT and cloud computing, allow for smaller, hyperlocal, inexpensive instrumentation and secure, convenient, and cost efficient monitoring. . Traditional water measurement instruments like staff gauges, transducers, and bubblers are limiting. These methods are labor intensive, require constant calibration and must be in the water, which often leads to corrosion, measurement drifts and continual maintenance. A consequence of this is that aggregating inconsistent data ultimately leads to potential erroneous decisions when managing multiple water assets. Additionally, these instruments require expensive data logger hardware and IT infrastructure to transfer data. Until recently, the biggest barrier to modernizing existing systems has been cost, but digital solutions and DaaS and SaaS business models are paving the way for an affordable end-to-end water management system.

DaaS systems like Divirod leverage remote sensing, analytics, IoT, and the cloud to generate comprehensive information about watersheds that authorized users can access from anywhere. These digitized systems are automated and measure in near real-time, enabling rapid, data-driven knowledge and informed decision making. Unlike traditional systems, a DaaS solution simply requires a commitment to an affordable annual service subscription. The heavy lifting tasks of planning, integration, deployment and maintenance are done by the service provider. Typically, the subscription cost covers all scheduled and unforeseen maintenance which makes cost for these systems transparent and plannable. The provider provides service availability according to a pre-agreed Service Level Agreement (SLA). In a digitized system, customers can expect industry-leading measurement precision, multi-point measurements, and intercomparable datasets, all conveniently accessible by desktop or mobile device.

What a digitized surface water management system can do:

Short term (reactive)

- automated alerts for changes in water level and capacity
- quicker flood damage assessments
- automate processes and reduce exposure risk for workers to safety hazards for weather events
- fast and accurate reports for disaster management authorities
- greater efficiencies at no extra cost

Medium Term (real-time)

- remotely access data
- reduce exposure risk to safety hazards for workers during asset inspections
- aggregation and integration of data into a single platform
- early warning systems for critical water levels

Long Term (proactive)

- more data collection=stronger forecasting
- track year-on-year water availability for resilience and sustainability planning
- help design, implement, and verify benchmarks/policies
- ongoing support
- scalability
- mapped risk of flood-prone areas

Many climate- and human-driven phenomena are beyond our control. However, we get to choose the methods we use to measure and manage our water assets. Digitization offers an unprecedented ability to understand, visualize and predict how our hydrology and infrastructure are responding to various factors and stimuli without the financial costs, safety risks, or time loss associated with non-digitized systems. With a digitized system, 24/7 surveillance on all water assets allows operators to gain competitive vantage points and access data driven knowledge when they need it most, enabling decisions that support a resilient and more sustainable future for all.