The Evolution of Information Technologies Driving Smart Water Management

BY CHRIS SPAIN

Irrigation technology, like all other technology, has continued to evolve and improve over the years. Just like our cell phones, tablets and automobiles, the new strides in “smart” technology have consumed the market, and have become the new standard in all industries, including landscape irrigation. Gone are the days of flipping open a Thomas Guide to find directions to a site, or driving in reverse without a backup camera. And now we are finally seeing the departure of the beloved irrigation controller timers or clocks as they are called. Beloved because what could have been simpler; you just eyeball a site, guess an irrigation time, and you were all set. What is amazing is how accurate some people were, but no matter how well a job some did, more weren’t; and to make matters worse, no one had the time to run around and adjust controllers as the weather changed. All of which paved the way for smart controllers.

While the main demand for smarter irrigation has always been to combat water scarcity, once landscape managers started to look at outdoor water management, they quickly realized that overwatering was wasting more than just water. Aside from excessively high water bills, overwatered landscapes were resulting in significant structural and plant damage, increased liabilities, and exposure to fines and compliance violations. Combined, this brought a major change to the industry, and has started a new era where water waste is no longer socially, economically or environmentally sustainable.

First, let’s review a bit of history. When smart controllers were first introduced to the irrigation industry, they focused on applying the right amount of water to the right place at the right times. The dream was that one could install a smart controller, set the controller to the “smart” setting, and, like magic, the site would instantly transform from water waster to water saver. The reality, however, was a bit more complicated. Although the first generation of smart controllers proved that weather-based irrigation was an improvement over a simple timer, the results were not as consistent as desired. These original smart controllers contained basic one-way communication in which the controller received weather data, and the smart controller’s “intelligence” would then water as needed. But what about the rest of the picture? What if something...
was happening at the controller on site? Broken sprinkler heads, slow leaks in the irrigation lines? With one-way communication, these controllers could not share data back to the Cloud, all that on-site visibility was not being captured and shared.

Now, with field-proven wireless technology and Cloud analytics (fancy show off words for cellular communication and the Internet), the focus has shifted to being able to deliver the right piece of site data to the right person at the right time. This data-driven shift was made possible when two-way wireless communications became affordable and ubiquitous. The ability to communicate with these controllers in real time and operate hundreds or even thousands of stations and flow sensors from a central, remote location gave new meaning to the term “smart.” For the first time, it was possible for contractors to manage both large and small sites from one location. Contractors are now able to be automatically alerted to any landscape issues immediately, and remotely test and verify the issue before making a lengthy trip to the site. This significantly changed landscape maintainers daily schedules. No longer do they spend their entire days in their trucks visiting site after site or trying to guess which site to visit first. Now their days are split between “online” time and their field time, which has now been dramatically decreased. This change in workflow has increased staff efficiency, reduced the number of truck rolls and expenses relating to it, as well as keeping documentation and records centrally managed — never losing key pieces of information. Today, creating compelling, accurate reports is as easy as selecting the print button.

With the Internet and Cloud technology in full swing, as well as severe drought conditions affecting a majority of the country, smart irrigation has become more than just efficient irrigation scheduling. It is about using data and the knowledge the data provides to help organizations make their sites and businesses smarter. Whether it’s water budgeting tools, integrated site survey applications, smart phone apps, or water agency compliance monitoring, the goal is the same. In the smart irrigation industry, this utilization of turning data into knowledge delivers a powerful combination of accuracy, visibility, and efficiency.

We believe that the next evolutionary step in achieving the full potential of truly “smart” irrigation is, in a word, flow. Flow visibility and control ultimately ensures the most effective smart water management is being maintained 24/7. To be clear, there are a lot of sites with smart irrigation controllers that do not have flow that are saving water; but, eventually, being blind to your real-time water use is going to cost you, and never at the right time or place. The demand for accurate flow solutions at a competitive cost has never been greater. In 2015, our company has seen more than a three-fold increase in flow product sales. With real-time flow data, smart irrigation controllers are at their smartest, making it possible to identify leaks, system breaks, controller setting errors, and even water theft. However,
many flow sensors lose accuracy at low flow rates, which can lead to inaccurate readings for low-flow systems such as drip irrigation. Affordable retrofit flow solutions with higher-resolution flow sensors that accurately measure high-efficiency drip systems are now available to help with this problem.

Even though almost half of all sites experience water line breaks at one time or another, more than 90 percent of sites don’t have any kind of flow management. Adding flow technology to a two-way smart irrigation controller provides not only water-use data visibility, but also the control to make remote, immediate real-time changes. This technology makes it easy to respond to catastrophic breaks and leaks, protect property assets, and manage water resources effectively.

So, what’s next on the horizon for new smart water management technologies? We think the next areas for technology improvements that will make a meaningful impact on the industry will be more reliable and affordable infield wireless communication solutions, and enhanced Cloud-based flow management solutions for complex sites that deliver intuitive graphical user interfaces for balancing complicated flow demands (that don’t require a Ph.D. to operate).

In the meantime, don’t let an early bad experience with the first-generation smart controllers scare you from checking out how far smart irrigation solutions have evolved. We are now in a truly new era, where the tremendous power and efficiency of information technology has made its way into the hands of landscape professionals — and they actually like using it, day in and day out. Why? Because it saves them and their customers time, money and water. In the end, that is the evolutionary goal of smart water management: less stupid, more smart. And few things are dumber than wasting time, money and water when there is a whole wild world to enjoy.

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