HydroPoint shuts down water waste with an Internet of Things Solution

About HydroPoint Data Systems
HydroPoint is the proven leader in 360° smart water management solutions targeting the area of greatest waste in urban water use, landscape irrigation. As a 2014 EPA WaterSense® Manufacturer Partner of the Year, the Company offers WeatherTRAK®, the most complete and effective smart irrigation management system proven in over 25 independent studies and chosen by leading landscape professionals. From Walmart to Los Angeles County, WeatherTRAK has been helping commercial, government, education, and multi-home organizations maximize water savings, reduce operating costs, and minimize risk since 2002. In a single year, HydroPoint’s WeatherTRAK customers cut 15 billion gallons of water, $137 million in expenses, hundreds of thousands of man hours, and 62 million kilowatt hours of energy, illustrating that 360° smart water management makes for smart organizations.

Situation
More than a decade ago the founders of HydroPoint spotted a problem few others had seen, and set out to fix it. Landscape irrigation in homes and commercial properties was often controlled by timers or manual valves, with little regard to how much water was needed. Often too much water was used…and wasted. So HydroPoint developed WeatherTRAK, a system that analyzes multiple atmospheric and geological factors to pinpoint exact water needs. But the company also needed a reliable, cost-effective way to transmit WeatherTRAK wisdom to thousands of irrigation controllers and valves.

Solution
HydroPoint decided to use an Internet of Things (IoT), machine-to-machine solution to connect irrigation control points and sensors to its system for analyzing climate and determining water needs. The company chose AT&T to provide the wireless network, customized network access and a self-service management platform to support the data transport requirements. Each control and sensor has its own subscriber identification module (SIM) card, for each device, so each can be individually contacted for control and data collection. As a result, of its solution, HydroPoint saved customers more than 15 billion gallons of water and $137 million in expenses in 2014 alone.

Saving a Precious Resource
From their corporate headquarters in Petaluma, California, north of San Francisco, executives at HydroPoint Data Systems can see clearly what a water shortage means. Today’s California ‘mega drought’ has brought wildfires, water shortages, usage restrictions and potentially staggering agricultural losses. But long before the drought became critical, HydroPoint knew the importance of this precious liquid resource. Since its founding in 2002, HydroPoint’s mission has been to save water. Fresh from selling another technology startup, founder Chris Spain and his co-founders Chris Manchuck and Peter Carlson looked to focus on the environment. “We’re data geeks and we didn’t find any real deep data on water use,” Spain said. “We started HydroPoint Data Systems and began looking at the end-use segment. We were shocked to see where the waste was really occurring. From 40 to 60 percent of all urban water use goes to outdoor irrigation, and of that anywhere from 30 to 100 percent is wasted.”

HydroPoint Data Systems Facts

**Business Needs**
Efficiently manage commercial and residential urban landscape irrigation to reduce costs and save water

**Networking Solution**
M2M solution including customized wireless network access, Custom Access Point Network, SIM cards and service management platform

**Business Value**
Advanced water needs analysis governs water use, saving water and money while providing a positive return on investment for HydroPoint subscribers

**Industry Focus**
Smart irrigation management

**Size**
43 employees
The problem, Spain explained, is that most of the 45 million irrigation controllers used across the United States are just not very smart. They are timers, and that’s all. “They do a great job keeping time, but that is not really relevant to what the landscape needs,” he said. As a result, water runs into the streets from overly soaked landscapes or sprinklers spray in a rainstorm. And the problems don’t end there.

**A Need for Intelligence**

“You’re not just wasting water, but you’re causing a host of issues downstream,” Spain said. “It just keeps rippling.” Over-watering can hamper plant growth or even kill costly plantings. Excess runoff can erode the landscape or flow off site, carrying fertilizer, pesticides and animal waste into the watershed. A broken valve or water line, left undetected, could cause untold harm. But simply turning the irrigation system down or off is no answer. The HydroPoint team determined intelligence was needed.

Digging deeper into irrigation management, the team created a better way to determine the landscape’s need for water – better than unreliable ground moisture sensors, and far ahead of dumb timers.

“We found this gold standard for agriculture called ET – short for evapotranspiration – a four point weather index that calculates how much water has evaporated from the soil and transpired from the plant,” Spain explained. Industry standard ET is calculated using wind, humidity, solar radiation and temperature inputs. Specialized ET weather stations are available, but are too widely spaced to provide the pinpoint, site-specific data HydroPoint was seeking. The team needed more precision.

“With high-performance computers, there’s a way to calculate each of these parameters for every 100 meters or square kilometer of the country,” Spain said. HydroPoint modified the system, incorporating more than a century of weather history and passing eight million data points every day through their powerful computers to calculate ET – the key indicator of water need – nearly everywhere. An independent study showed HydroPoint’s ET Everywhere site-specific data was right on target. What HydroPoint was seeking. The team needed more precision.

**Making the Connection**

With precise data on irrigation needs in hand, HydroPoint required a M2M solution to put that data to work: to communicate in real time with thousands of end points. In essence these are miniature computers, equipped with circuit boards, processors and memory that calculate water needs and turn irrigation systems on and off. Others are sensors that report on water flow.

With an M2M solution central to HydroPoint’s success, the company demanded high performance. Said Spain, “for me as a CEO there are three critical components: the reliability of the network, which is essential, the scope of the network which is equally important, and the customer service.”

HydroPoint chose AT&T to provide the wireless network connecting its control devices to the ET database, as well as the thousands of SIM cards that identify each controller. Discussions with competing carriers had proved unconvincing. “They say they’re into machine-to-machine but you can’t fake experience,” he said. “What we like about AT&T is they’ve been doing this for a while.”

The AT&T wireless network is one of the most important links in the whole process,” Spain added. “It’s communicating real-time in two directions, so we have a mirror on the database up in the cloud as well as what’s on the ground. Each controller does the calculation and analysis, but that’s also verified and vetted in the cloud.”

HydroPoint uses the AT&T Enterprise on-Demand service delivery platform to track and manage the SIMs, access help desk support, manage the rate plan to balance usage and handle other network management issues. The AT&T account manager has provided additional support. “She’s been very proactive and very forthcoming with us,” said Peter Carlson, HydroPoint co-founder and Vice President, Product Management and Technology. “She has really been an advocate for AT&T and HydroPoint as a partnership team.”

**Customers Dive In**

Projects begin with a detailed mapping of each site, including soil type, plants, terrain and the locations of controllers identified by their SIM card, valves, water meters and more. These maps provide property managers with valuable information, often for the first time. Every detail is potentially important.

“While we’re still not the biggest AT&T M2M user, the service, support and proactive attention to our needs have just been phenomenal.”

– Peter Carlson, VP, Product Management and Technology, HydroPoint Data Systems

“We used to say our system is all about putting the right amount of water at the right place at the right time,” said Spain. “Now it’s about getting the right data to the right person at the right time.”

HydroPoint’s data-driven approach to irrigation is just what big property owners need. Their operations can be complex – some manage hundreds or thousands of properties. With HydroPoint they can view and manage their irrigation performance at the level they want – as a whole, by region or state, or narrow their focus to a single factory or store. They can even check the performance of an individual controller. With better data, customers can act.

“The first step is to get visibility and management into that system,” Spain said. “If you’re saving 35-40 percent of your water bill, you can reinvest that into your irrigation system to realize even greater savings.”

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Spain said systems typically pay for themselves in three years, but some sites pay back in as little as three months. Equally important is the almost 62 million kilowatt-hours of energy saved that would otherwise be needed to move and treat water.

**Showing They Care**

In addition to saving resources, HydroPoint helps customers comply with water restrictions and improve their image. Property managers play an important role in maintaining a company’s reputation for environmental stewardship. With its selection as 2014 WaterSense Manufacturer Partner of the Year by the EPA, HydroPoint has been recognized nationally for its commitment to water efficiency efforts in the U.S. Its customers can reassure stakeholders that they are exercising state-of-the-art care.

These benefits have helped HydroPoint build a blue-ribbon list of clients that includes nine of the top 10 real estate management companies, cities, leading corporations, home builders, school districts and many others. They have also achieved a remarkable customer retention rate of 93 percent. The reason, Spain said, is HydroPoint’s drive for results.

“I think you can tell a company’s culture when you just walk in the door,” he said. “People like to work with us because we’re about getting the job done like we would expect if we were the customer. At HydroPoint we are big believers in the golden rule.”

The AT&T relationship has been there from the start. “When we were extraordinarily small AT&T didn’t treat us like a small company,” Carlson added. “They treated us as a customer, independent of our size. While we’re still not the biggest AT&T M2M user, the service, support and proactive attention to our needs have just been phenomenal. My advice? Make sure you’re hitching your wagon to somebody who’s going to be there over the next 10-20 years.”

For more information contact an AT&T Representative or visit www.att.com/iot.