



The Computerworld Honors Program

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Final Copy of Case Study

Status:

Laureate

Year:

2013

Organization Name:

Temperature@lert

Organization URL:

www.TemperatureAlert.com

Project Name:

Temperature@lert Solar Cellular Edition

Please select the category in which you are submitting your entry.

Emerging Technology

Please provide an overview of the nominated project. Describe the problem it was intended to solve, the technology or approach used, how it was innovative and any technical or other challenges that had to be overcome for successful implementation and adoption. (In 300 words or less.)

Approximately 100% of farmers over water and 90% of water use in the United States is for irrigation. The juxtaposition of these two percentages paint a grim view of water shortages, wasted dollars, and runoff. That's where Temperature@lert's Solar Cellular Edition comes in to help save water and ultimately saving fuel. Farmers have a tendency to over water in order to prevent loss, which strains the water system. At the rate water cost is rising, over watering has some significant impacts on the Earth. Crop and plant growth is stunted by over watering and there is excessive runoff. Proper watering can reduce 70% of water usage without affecting crop yield. Using less water means less fuel is used to pump the water onto the field. The reduction of runoff ultimately improves water quality. Existing systems cost upwards of \$10,000. Temperature@lert's device provides similar functionality at a fraction of the cost and can be installed in minutes. One unit can save enough water in a year for up to 9,000 people (assumes a 200 acre farm, 6.21 gal water/cu ft on farm per year, 50% water reduction, and 50 gal/day of water use per person). Over watering is harmful to plants and crops. Plant leaves will

deteriorate and fall off, which leads to plant mold. Molding causes the plants' roots to become rotten and worn out; therefore, the plant ultimately perishes. Over watering in conjunction with changes in temperature can cause significant damage by frost. This is where the Solar Cellular Edition comes to the rescue. It is weatherproof and designed to operate using a solar panel that recharges internal batteries. Used with Sensor Cloud, the device communicates with a secure server by transmitting data and alerting to different conditions.

When was this project implemented or last updated? (Please specify month and year.) Has it incorporated new technologies and/or other innovations since its initial deployment? (In 300 words or less.)

The most recent Solar Cellular edition (TM-CELL540-S) was released on November 6, 2011, where the previous generation had won multiple awards including the MITX Innovation Awards and American Business Awards Gold Stevie for innovative technology and water conservation capabilities. These successful qualities were implemented into this latest generation: TM-CELL540-S. Essentially, the juxtaposition of solar power and cellular communication means that users are no longer tethered to any power or communication grid. Temperature@lert Solar Cellular Edition provides 24/7 monitoring to provide out of range temperature alerts to you via emails, text messages, and/or a telephone call. It will also alert you when the temperature returns to normal. Rechargeable batteries provide power even when it's dark or overcast for up to four weeks. This also allows for the software to be able to be updated remotely despite the location and type of sensor. Combining plug-and-play smart sensors, easy to setup hardware, cloud application, and low cost sets Temperature@lert ahead of the alternatives. The Solar Cellular Edition is Temperature@lert's weatherproofed and solar-powered model, which also offers an extended battery life. Similar to its predecessor, this system also runs on Sensor Cloud service. Although Cloud based applications are considered innovative alone, this Solar Cellular Edition illustrates that innovation can build upon innovation. The continued innovation and growth in reach and functionality illustrates Temperature@lert's comprehension of their users' needs and their dedication to surpassing such needs. Since its release, Temperature@lert has extended its reach to Europe, Australia, and Canada, further demonstrating the success of this bootstrapped start-up in spreading their message to avert disaster and save water and fuel.

Is implementation of the project complete? If no, please describe the project's phases and which phase the project is now in. (In 300 words or less)

Historically, Temperature@lert's Cellular Edition has found its way into the agricultural markets through traditional channels. The development of the TM-CELL540-S helped them expand deeper and faster in this historically underserved market. And they are very excited about the opportunity to help save our country's valuable fresh water resources. Beyond water conservation and the agricultural vertical, the latest generation Solar Cellular Edition also allows for remote locations to monitor critical areas' temperature without sending someone hourly or daily to check these crucial temperature readings. The device itself is complete; however, innovation doesn't stop so we continue development. The device handles smart plug-and-play sensors that require no set up, such as soil moisture, frost alert, leaf moisture, pressure, tank level, and wind speed.

Currently, Temperature@lert is developing more sensor monitoring capabilities. The Solar Cellular Edition has been used in other industries besides agricultural, including industrial uses such as monitoring equipment in remote locations as well. By taking into consideration the possible uses of the Solar Cellular edition, we recognize other applications such as: (1) Remote location monitoring (2) Garden monitoring (3) Industrial equipment monitoring (4) Oil monitoring (5) Outdoor storage monitoring (6) Transport vehicle monitoring (7) Boat/Ship monitoring (8) Animal barn monitoring (9) Park monitoring (10) Cranberry bog monitoring (11) Irrigation system monitoring (12) Lake/Stream Monitoring. The possibilities are endless with our solar cellular technology and Sensor Cloud service.

Please provide at least one example of how the technology project has benefited a specific individual or organization. Feel free to include personal quotes from individuals who have directly benefited from the work. (In 300 words or less.)

Irrigation Automation, a Cape-Cod based company, has helped farmers protect multimillion-dollar crops for their entire history. The industry-leading Irrigation Automation has merged wireless communication technology with irrigation systems to help farmers manage and protect their fields and orchards to keep crops healthy and, most importantly, effectively and efficiently manage ever increasingly valuable water resources. With a combination of smart sensors, cellular communication technology, photovoltaics and existing irrigation and wind turbine systems, Frost Alert knows when irrigation is needed either to protect crops from frost or water crops when they need it. Frost Alert can be configured to take action automatically, concurrently alerting the farmer to the status of his fields and systems. Smart sensors include air temperature, soil moisture, and wind speed among others. "Temperature@lert's Cellular Edition and the advanced Sensor Cloud web browser interface was chosen because it is the most cost-effective, user friendly, reliable device of its kind on the market," says Kevin Connolly, President and Founder of Irrigation Automation. "We looked at several competing products and found the Temperature@lert device able to meet our company and customers' needs to help them manage precious water resources and protect million-dollar crops from killing frost damage. And the team there is a pleasure to work with, something very important in an industry where trust is one of our most important assets."

Would this project be considered an innovation, a best practice or other notable advancement that could be adopted by or tailored for other organizations and uses? If yes, please describe that here. (In 300 words or less.)

The Temperature@lert Solar Cellular edition could most certainly be considered any and all of the three. If the device were to be implemented globally by governments, there would be better water and fuel usage. Not only would this yield more crops to feed the hungry, but this would eliminate wasted dollars and wasted natural resources. Innovation-wise, the Solar Cellular Edition is the simplest and most fault-tolerant system to use on the market. With how quickly technology advances in some nations versus others, the ease of this device would allow anyone to be able to use this device and help conserve water. In regards to best practices, once the device is implemented at a government level, there would be a globally noticeable shift in water conservation, crop



yield, fuel savings, and cost effectiveness. The success of the Solar Cellular device would be a notable advancement because we would not only save water but create opportunity in greater crop yield resulting in a positive shift on the fight against hunger. Temperature@lert's goal is to avert disaster, and there's no disaster as great as wasting our most precious resource: water.

If there are any other details that the judges should know about this project, please note them here. (In 300 words or less.)

Although there are competitive models available on the market, Temperature@lert strives to make the perfect solution for their users' needs. They love a challenge and most certainly saving water is a challenge. Between water waste through over-watering and excess runoff, there is not only wasted water but fuel as well. Not to mention crop destruction through over-watering. By implementing our system, not only can you prevent over-watering, you can also monitor for frost among other environmental factors such as wind speed, wind direction, precipitation, and others. They want their users to be able to monitor their crops, equipment, remote locations, etc. regardless of availability of power sources. They truly believe that they can save water by using this device and be able to produce better crop growth. In the long run, they can see results in the saving of crops, fuel, monetary costs, and water. Constantly, there are space programs looking for water resources hence signifying water as a precious resource, demonstrating how truly crucial it is to conserve in order to sustain life.