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## **Wireless Sensor Water-Conservation Project Wins \$10,000 Grand Prize in 2005 Crossbow Smart Dust Challenge**

### *Top 5 Winners' Sensor Projects Use Crossbow Wireless Motes to Better Society*

**SAN JOSE, Calif. – Feb. 14, 2005** – Crossbow Technology, Inc. ([www.xbow.com](http://www.xbow.com)), the leading end-to-end solutions supplier in wireless sensor networks and the largest manufacturer of Smart Dust wireless sensors, announced today the winners of its 2005 Crossbow Smart Dust Challenge. The \$10,000 Grand Prize winning team is Dave Parsons and Bill Jeffries of H2Options, Inc., a water-conservation company in Oakton, Va., who demonstrated how Crossbow's wireless Motes can be used as a monitoring system for water usage and leaks in multi-unit housing complexes.

The H2Options project, which can scale from hundreds to thousands of wireless sensors depending on the size of the apartment or condominium complex, can result in significant cost savings on maintenance and water consumption, Parsons said.

"Finding a leaking water fixture can be a formidable task," he said. "Metering systems are impractical in most buildings because of the layout of the water distribution piping. There's a need for a system that can detect and report leaky water fixtures in real-time."

H2Options' winning project created a Crossbow network in which electro-mechanical water flow sensors were mated to Crossbow MICA2™ Motes, which continuously monitored individual water fixtures in a large complex. To conserve battery power, coordinator nodes linked the sensor Motes with multi-hop communications to the base station. When a leak was indicated, an alert was generated, informing maintenance of the location and nature of the leak. For more information, e-mail [info@h2options.com](mailto:info@h2options.com).

### **About the Crossbow Smart Dust Challenge**

The 2005 Crossbow Smart Dust Challenge represented the best executable ideas for wireless sensor networks that demonstrate how it is used, programmed and deployed to positively impact society. The winners were announced at the Second International TinyOS Technology Exchange Feb. 11 at the University of California-Berkeley.

The other Smart Dust Challenge winners were:

- In second place and winning \$2,000 was MAS-net, a team from Utah State University in Logan: Zhen Song, Zhongmin Wang, Pengyu Chen and Anisha Arora. They created a mobile actuator sensor network

(<http://mechatronics.ece.usu.edu/mas-net/XbowComp/>), merging Crossbow's sensor Motes with mobile robot technology to diffuse contamination monitoring, such as characterizing and/or removing poisonous fog. They envision that the robots combined with the wireless sensor Motes will help protect against environmental hazards or terrorist attacks.

- A team from Civil Data Systems ([www.civildata.com](http://www.civildata.com)) and Northwestern University, Mat Kotowsky and Hasan Ozer of Evanston, Ill., placed third for \$1,000. They used Crossbow's wireless Motes for surveillance of the structural health of critical infrastructure components, such as bridges, tunnels, buildings, pipelines, etc. ([http://www.iti.northwestern.edu/research/c\\_projects/dowding/micro.html](http://www.iti.northwestern.edu/research/c_projects/dowding/micro.html)). In their project, the sensors on structures were polled regularly so responses could be graphically compared with past readings to identify trends and automatically alert authorities of impending problems.
- A father-and-son team, Claude and Brian Wiblin, from RadSurvey Systems ([www.radsurvey.com](http://www.radsurvey.com)) in Crownsville, Md., placed fourth and won \$500 for their entry to make society safer from radioactive contamination. The Wiblins used Crossbow wireless Motes to provide new visual aids that show the precise location and level of radioactive contamination on a map. Claude Wiblin is a certified health physicist with 27 years of experience decontaminating nuclear facilities. He said that visual maps showing the radiation levels of contaminated surfaces have long been sought by those in the profession. The project is unique because it can be used indoors, is not proprietary, and uses graphics to show visuals before and after a decontamination process.
- And in fifth place for \$500, Derek Slovin and Lyndon Pham from Boston University's Department of Electrical and Computer Engineering Group invented a new algorithm in a project titled, "Location Tracking Through Belief Propagation with Applications to Ecology and Environmental Biology." This Belief Propagation algorithm used Crossbow Motes for habitat and environmental monitoring. The team combined network algorithms with signal processing to yield a distributed, adaptive and robust technique for data collection.

All of the Smart Dust Challenge entries were based on the TinyOS operating system. Crossbow's open architecture is based on TinyOS, which enables highly intelligent multi-sensing devices to dynamically and reliably self-organize to efficiently capture and send detailed physical data anywhere, anytime.

## Smart Dust Challenge Judges

The Smart Dust Challenge judges included:

- California State Sen. Debra Bowen, D-Redondo Beach, whose work focuses on giving people tools to protect their privacy and their pocketbook, investing in California's natural resources and its children, and helping people gain access to and make sense of state government.

- Vinton G. Cerf, senior vice president of technology strategy for MCI, and widely known as one of the "Fathers of the Internet" as the co-designer with Robert Kahn of the TCP/IP protocols and the architecture of the Internet.
- Gary Morgenthaler, general partner with Morgenthaler Ventures, which has worked with outstanding entrepreneurs to build world-class companies for more than 35 years.
- Two editors from Sensors magazine ([www.sensorsmag.com](http://www.sensorsmag.com)), the only publication dedicated to meeting the information needs of design and production engineers involved in the design, application, and implementation of sensor systems: Stephanie vL Henkel, executive editor; and Melanie Martella, features/products editor.

The entries were judged on: impact to society; originality of concept; commercial value/benefit to user; ingenuity of bringing concept to deployment; and completeness of demonstration (including programming, packaging, clarity of presentation, efficiency, and thoroughness of idea and execution).

Crossbow plans to repeat the Smart Dust Challenge. For more details later this year, please visit [www.xbow.com](http://www.xbow.com) or see Sensors magazine ([www.sensorsmag.com](http://www.sensorsmag.com)).

## About Crossbow Technology

Founded in 1995, Crossbow Technology, Inc. is the leading end-to-end solutions supplier in wireless sensor networks and the largest manufacturer of Smart Dust wireless sensors. Crossbow has for years been at the forefront of creating and deploying smaller, smarter, wireless sensing devices and mesh networking platforms for large-scale defense, environmental, agricultural, industrial monitoring and control, building automation, security and asset tracking applications.

Crossbow's open architecture, TinyOS-based platform enables highly intelligent multi-sensing devices to dynamically and reliably self-organize to efficiently capture and send detailed physical data anywhere, anytime. Crossbow is also a leading supplier of inertial sensor systems for aviation, land and marine applications and other instrumentation sensors. The company has shipped more than 500,000 of its Smart Dust and other advanced sensors to more than 1,000 customers, including select Fortune 100 and other leading industrial, defense, technology, civil engineering and manufacturing companies. The company's strategic partners include Intel Corporation.

Headquartered in San Jose, Calif., Crossbow has distributors in 24 countries worldwide. The company received its ISO 9001/2000 Certification in May 2002, its FAA Certification for the AHRS500GA in January 2003 and its FCC Certification for the MICAz in October 2004. Contact Crossbow at +1-408-965-3300, e-mail [info@xbow.com](mailto:info@xbow.com) or visit Crossbow on the Web at [www.xbow.com](http://www.xbow.com).

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