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Projects improved the human condition

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A low-cost water purification system that uses ultraviolet light to kill bacteria and GPS-driven **robots** that find and destroy landmines were two of the five projects that received the Tech Museum Awards on Wednesday, an annual competition that honors individuals and groups who use technology to improve the human condition around the world.

"The program is really just getting better and better," said Peter Giles, president and chief executive officer of the Tech Museum of Innovation in San Jose. "We have, I think, really captured something that is resonating with people in these challenging times, and there's some tremendous work that's being done out there to benefit humanity."

The awards began in 2001 after the United Nations released its State of the Future report detailing 15 global challenges. The five winners, two of whom are from Northern California, were presented \$50,000 checks at a dinner gala in San Jose Wednesday. However, the real benefit isn't the cash prize but giving exposure to some of the most interesting applications of high-tech around the world, organizers say.

For example, Ashok Gadgil, a 53-year-old research scientist at the Lawrence Berkeley National Laboratory, has developed a low-cost, low-maintenance water purification system to provide safe drinking water for some of the most impoverished areas of the world. So far, more than 200,000 people in Mexico and the Philippines are benefiting from his filtration system that uses ultraviolet light to kill harmful bacteria and viruses. A nonprofit organization in India is also getting ready to install in rural regions of that country his filtration system that costs about \$1.50 to provide drinking water to one person for a year, he said.

"We've got a long way to go," said Gadgil, who received the Affymetrix Health Award. "There are only about 200,000 people who get this drinking water every day and there are 1.2 billion people who need it."

Gadgil, who was born and raised in Bombay, India, said it had been his lifelong ambition to figure out a way

to bring safe drinking water to underdeveloped parts of the world after five of his young cousins died from water-borne diseases. But it wasn't until 1993, after a cholera outbreak in his homeland had claimed thousands of lives, that he started working nights and weekends to develop a low-cost water purification system.

By 1995, the design was finished and a year later it was licensed to Water Health International, a Southern California company that is installing the system around the world.

Kenneth Owens Jr., 44, a Humboldt State University math professor, and Paul Burgess, 28, a graduate student at the university, were given the Intel Environment Award for developing a Global Positioning System-based navigation setup that allows automated unmanned vehicles to sweep for land mines.

Their technology has already caught the eye of the U.S. Army, which wants to use the system in their demining vehicles.

But the inventors say their system is for more than just military application. They hope it can be used to stem the number of civilians, particularly children, who die or are maimed by land mines each year.

"There are about 45 million to 55 million land mines worldwide and they cause about 10,000 casualties per year, (mainly) children. People lose limbs, but (land mines) are often fatal to children since their vital organs are closer to the ground," Burgess said.

The other three winners were:

-- International Development Enterprises of Lakewood, Colo., which won the Accenture Economic Development Award for its Easy Drip system, which is an affordable micro-irrigation kit for poor rural farmers.

-- Andrew Lieberman from Asociacin Ajb'atz' Enlace Quich, who received the Microsoft Education Award for developing low-cost, bilingual technology centers in Guatemala that teach children both Mayan and Spanish.

-- Rodrigo Baggio of the Committee for the Democratization of Information Technology, who received the Agilent Technologies Equality Award for his efforts to bring access to PCs and the Internet to the poor in Rio de Janeiro, Brazil.

Jim Morgan, former chairman and chief executive officer of Applied Materials, who has been a key supporter of the awards, said he believes the Tech Awards are a great way for Silicon Valley to gain inspiration to develop technology to help humanity, not just for the bottom line.

"They are entrepreneurs, people whose motivation is to make an impact in the world," he said, referring to the Tech Awards winners.

This year, 580 nominations were submitted and they were judged by panels organized through Santa Clara University's Center for Science, Technology and Society. Five finalists in each of the five categories were flown to San Jose this week to show off their projects, meet potential investors and also attend workshops on marketing, branding and writing a business plan. E-mail Matthew Yi at myi@sfchronicle.com.

GRAPHIC: PHOTO (2), (1) Ashok Gadgil developed a low-cost, low-maintenance water purification system to provide safe drinking water. / Chris Hardy / The Chronicle, (2) Kenneth Owens (left), a Humboldt State University math professor, and Paul Burgess, a graduate student at the university, were given the Intel

Environment Award for developing a GPS-based navigation system that allows automated unmanned vehicles to sweep for land mines. / Chris Hardy / The Chronicle

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