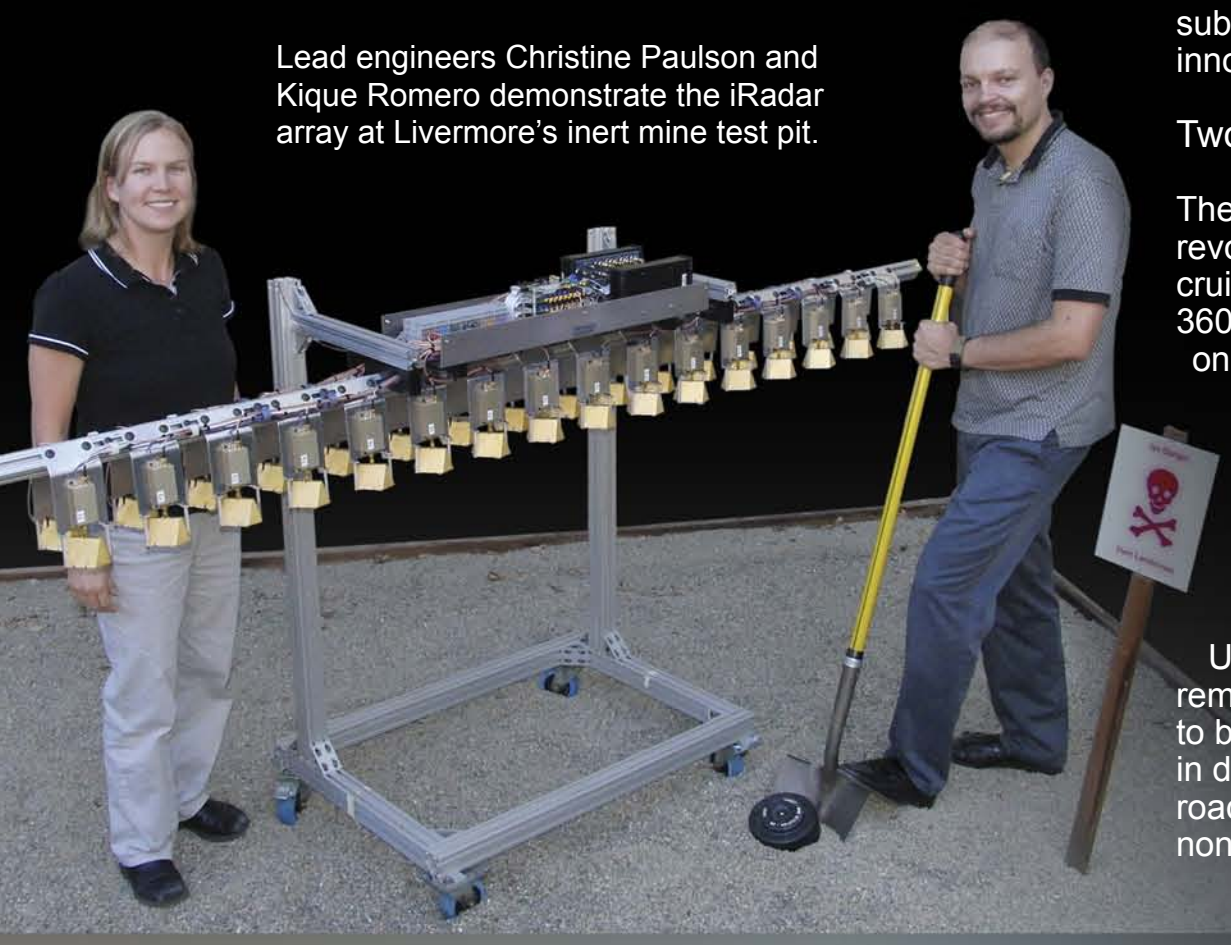
Lawrence Livermore National Laboratory

2009 Award Winner

Eradicating the Aftermath of War

Livermore's land mine detection technology has the potential to improve the safety of demining operations, while reducing the time and cost of these efforts. The land mine locator is an aerial detection system equipped with Livermore's land mine detection advanced radar concept (LANDMARC), which features an ultra wideband radar-sensing technology called iRadar and tomographic algorithms. Three-dimensional subsurface images enable users to distinguish mines from innocuous clutter with greater ease.



Lead engineers Christine Paulson and Kique Romero demonstrate the iRadar array at Livermore's inert mine test pit.

Two Technologies Combined

The land mine locator combines LANDMARC with the revolutionary Hystar helium-filled aerial platform, which can cruise at 72 kilometers per hour. The platform can also rotate 360 degrees while hovering or in directional flight. Operators on the ground in a mobile base-station vehicle wirelessly control the land mine locator. The raw data collected from the iRadar array are entered into a Livermore software application developed specifically to help detect and precisely locate land mines during demining operations.

Technology Soars over Alternatives

Unlike other methods, the land mine locater uses a remotely operated aerial platform, allowing mine detection to be performed without placing personnel or equipment in danger. Other potential applications are the detection of roadside bombs and improvised explosive devices, and the nondestructive evaluation of roadways, bridges, and buildings.

Development team for the land mine locator at Livermore: (front row, from left) Sean Lehman, Benjamin Fasenfest, Noel Peterson, Christine Paulson, Kique Romero, Pat Welsh, Bob Yamamoto, and Dave Chambers; (back row) Jim Zumstein, Brian Guidry, Mark Vigars, Philip Top, John Parker, Garth Pratt, Steven Bond, Greg Dallum, Peter Haugen, John Chang, John Breneman, and Matthew Breneman. (Not shown: Steve Azevedo, Christopher Gardner, and Jae Jeon.)

R&D 100

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