Flashback: Rapid scanning for radiological threats

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Decision Sciences' Multi-Mode Passive Detection System: Rapid scanning forradiological threats

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Every Wednesday, *R&D Magazine* will feature a R&D 100 Flashback, chosen from our R&D 100 Awards archive of winners. This week's flashback is Decision Sciences and Los Alamos National Laboratory's Multi-Mode Passive Detection System (MM-PDS), which won the R&D 100 Award in 2013.

The Earth's upper atmosphere is under bombardment by cosmic radiation that produces showers of pions, which rapidly decay into a constant flux of muons (some 200 m^2/sec) that shower objects on Earth. Since the muon angular trajectory changes as a function of the density and atomic weight of the material traversed, a unique "signature" for the

substance can be developed. The ability to identify distinct material density enables the Multi-Mode Passive Detection System (MMPDS), developed by Decision Sciences International Corp. and Los Alamos National Laboratory, to quickly detect unshielded to heavily shielded nuclear threats, as well as gamma rays, with near-zero false alarms.

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