



WHAT WE DO

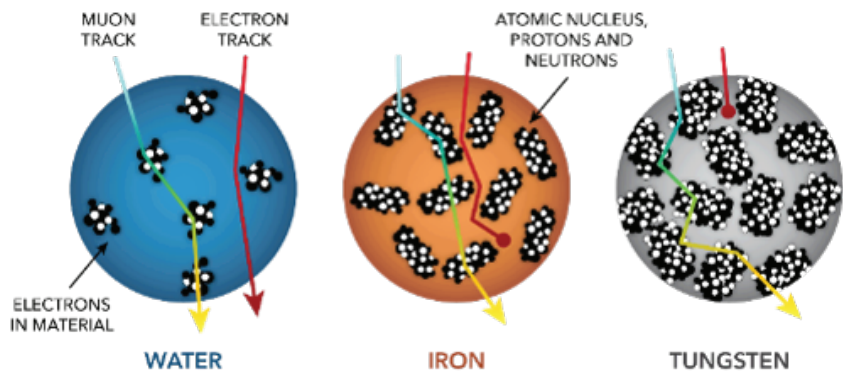
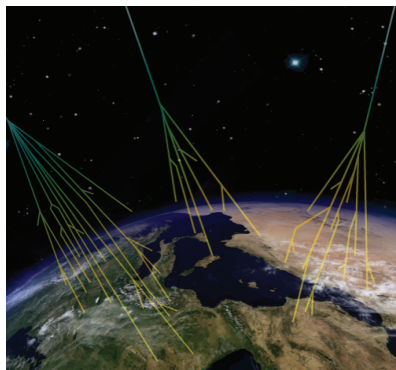
Decision Sciences combines leading-edge science, systems integration, hardware and software development and manufacturing to provide advanced security and contraband detection systems that improve the safety and security of the global community.

OUR STORY

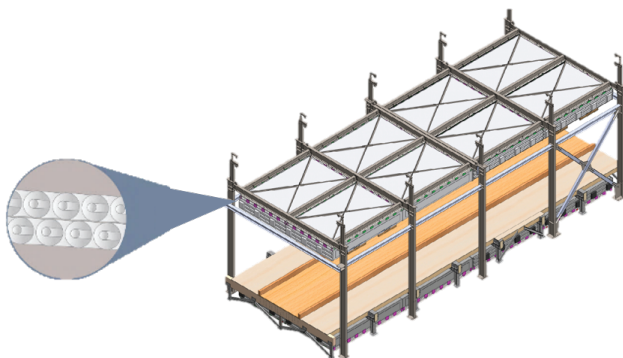
Scientists at the U.S. Department of Energy's Los Alamos National Laboratory (LANL) were developing proton radiography techniques for a variety of applications and discovered Cosmic Ray Tomography that uses naturally occurring cosmic ray particles to discriminate materials. A perpetual, worldwide and exclusive license to the Intellectual Property (IP) from LANL was received by Decision Sciences and led to the development of the Multimode Passive Detection System (MMPDS) to create 3D images of containerized cargo for the maritime, land border crossing, defense and critical infrastructure markets. Decision Sciences has taken this technology from the lab to the marketplace with deployments of the Multi-Mode Passive Detection System (MMPDS) around the world.

WHAT IS COSMIC RAY TOMOGRAPHY?

Cosmic Ray Tomography is a technology that uses naturally occurring muons and electrons to generate 3D images. Cosmic rays shatter in the Earth's atmosphere to produce a harmless flux of muons and electrons that continuously rain onto Earth. As the cosmic rays penetrate materials, their trajectory is changed based on the density and atomic number of the contents they interact with.



The system's hardware allows MMPDS to detect muons, electrons and radiation. Arrays of aluminum drift tubes are arranged across the top and the bottom to form a drive-thru portal.





CAPABILITIES OF THE MMPDS

The MMPDS tracks cosmic ray particles through even heavily shielded materials and computes a 3D image of cargo contents. Unlike harmful x-ray and gamma-ray scanners, MMPDS is a safe solution that produces no active ionizing radiation source of any kind. It is designed to be part of a Primary Screening Solution which allows operators to analyze cargo all while continuing their standard operations. The capability for MMPDS to penetrate materials and provide actionable information is completely unmatched by competing technology. Operators have access to an intuitive user interface that provides 3D visualizations, image slicing, material discrimination and customized classification. MMPDS is adaptable to new threats and trends via advanced data modeling that incorporates artificial intelligence and machine learning that allows operators to identify:

- Unshielded and shielded radiological material
- Anomalies in cargo - non-uniform areas, hidden voids and humans
- Detects the presence of threats and contraband such as:



WHY IS THE MMPDS DIFFERENT?

MULTI-MODE PASSIVE DETECTION SYSTEM (MMPDS)

- ✓ 100% safe with no ionizing radiation
- ✓ A totally passive system with no safety exclusion needed
- ✓ Provides detection and material classification
- ✓ 3D visualizations and image slicing
- ✓ Low cost maintenance and no moving parts
- ✓ High operational availability
- ✓ Can penetrate over 1,000 mm of steel

X-RAY / GAMMA RADIATION SYSTEMS

- ✗ Produces harmful ionizing radiation
- ✗ Requires safety exclusion zone
- ✗ High risk of error and no material discrimination capability
- ✗ Requires operators' visual interpretation of 2D image
- ✗ High cost maintenance and replacement parts
- ✗ Low operational availability
- ✗ Limited to penetrating past 400 mm of steel

MMPDS IS THE ONLY EXISTING SYSTEM CAPABLE OF PASSIVELY DETECTING SHIELDED NUCLEAR MATERIAL, CONTRABAND OR ANOMALIES IN CARGO.