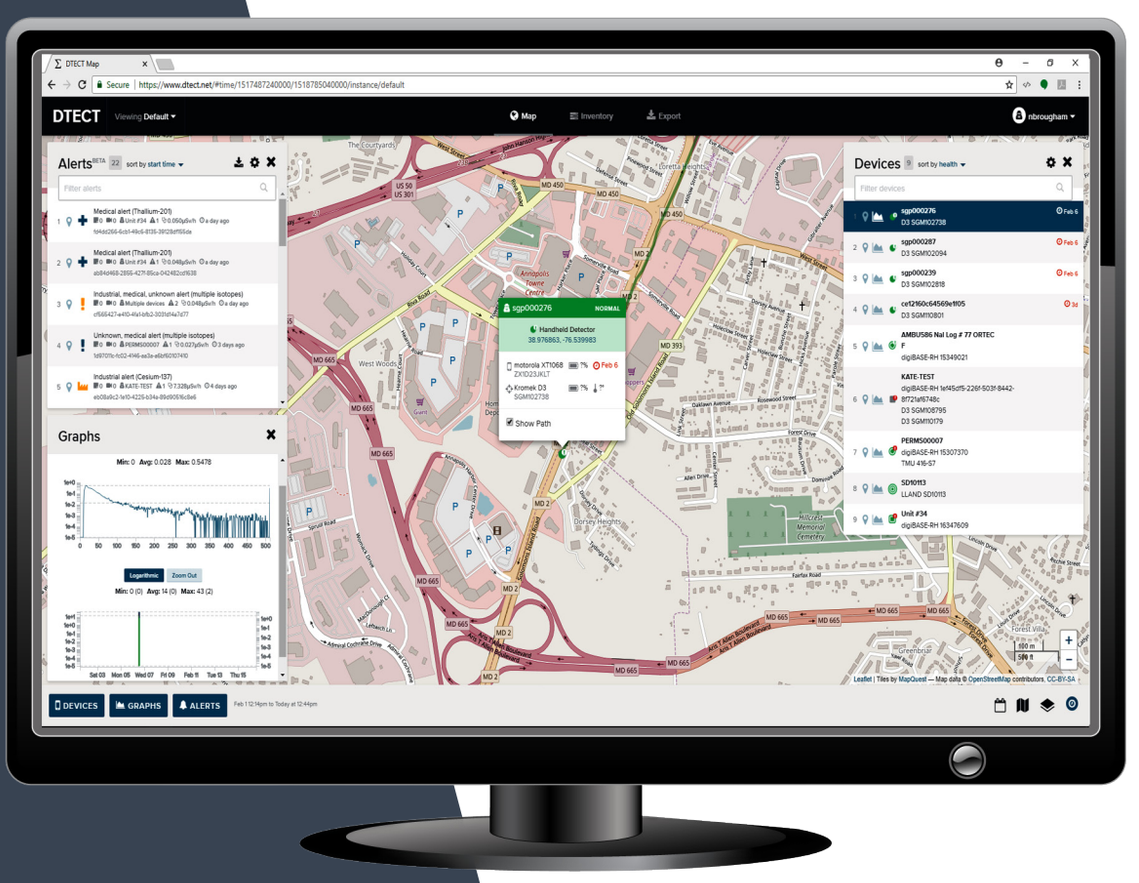
kromek
detect image identify



D3S NET

Safeguarding cities from the threat of nuclear ‘dirty bombs’

The flagship product, D3S, is the world’s most advanced, portable, nuclear detection device used by counter-terrorist agencies to protect civilians, key infrastructure in cities including ports, borders and transport hubs

The Next Generation Radioisotope Identification Device (RIID)

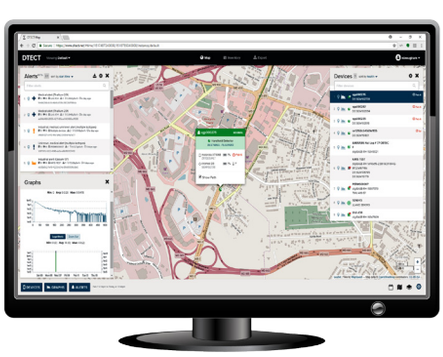
- Discreet detector and discreet mobile phone interface
- Convenient – always on, compact, lightweight, belt-wearable or in-pocket
- High performance – size of an PRD, sensitivity and performance of a conventional handheld RIID
- Actively search for and identify threats with dual mode – search and confirmation
- Rapid, visible, audible and tactile alert/alarm
- Little to no user training required
- Deployed on staff carrying out their day to day duties
- DARPA tested and approved (DARPA-SIGMA Program)

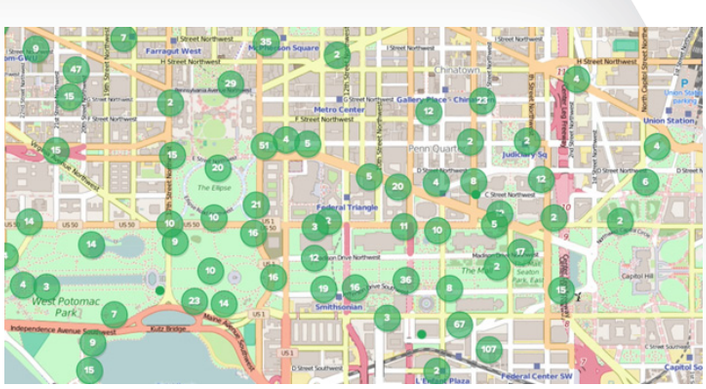
Far exceeds the RIID standard, identifies 22 extra isotopes, 4 times faster

One detector
One smartphone
3 modes of operation

PRD **RIID**

switch from PRD to RIID
at the touch of a button
or
upgrade further still to
a cloud-based NETwork





Sigma 1,000 detector mapping

D3S PRD and D3S ID

Convenience of a PRD, sensitivity of a RIID

The D3S is one of the fastest and most accurate isotope ID devices on the market. At just five inches tall it's smaller than your average smartphone. It is small, powerful, wearable and discreet. It will help you carry out wide area searches when used in conjunction with an Android smartphone.

The ID App provides real-time alarm and adjudication in seconds easily detecting even very low levels of radiation rapidly, even if they pose no significant risk.

Both D3S PRD and ID show dose for personal safety and in alerts. The D3S ID also far exceeds the ANSI standard N42.34 for RIIDs, identifying ***22 extra isotopes, four times faster***.

D3S NET

D3S NET allows unprecedented situational awareness of the radiological and nuclear environment.

All the powerful features of the D3S ID built into a **NETworked** solution.

The D3S enables wide area mapping with data sent via Android smartphone to a remotely hosted server with remote, real-time identification and adjudication of alarms.

Also acts as local identification device of isotopes.

Following a successful pilot with the National Capital Region Fire and Emergency Services (Washington, USA) which achieved over 2,000 miles of radiation coverage daily, the SIGMA/D3S system has been used for high profile special events monitoring, over 1,000 detectors successfully deployed on the Washington Mall and full deployment in the Port Authority of New York and New Jersey (PANYNJ).

Fully operational SIGMA system in place comprising D3S IDs, in-vehicle detectors and static detectors.

The networked system is now used as the model for vastly improving the capability for Nuclear Security in highly populated areas.

How do you create the ultimate field of detection?

Take several to a thousand D3S IDs and network them together

The SIGMA Program

The SIGMA Network, developed as a US DHS/DARPA program, is a comprehensive network providing:

- cost-effective, continuous radiation-monitoring
- networkable systems covering large cities or regions
- real-time mapping with increased sensitivity

It has been successfully deployed in cities and with security forces in varying operations: urban, tactical and event-based scenarios.

Helping you to:

- Assess the situation
- Manage the risk
- Make informed decisions within seconds

Picture: Michael Dicenza

SIGMA Platform Components

Cloud-based System

D3S NET consists of D3S detector, SIGMA LE Android app and SIGMA (cloud) Network.

The data collected is stored in the D3S NET cloud system, hosted by Amazon Web Services (AWS) and provides analysis and visualization for a large network of detectors.

SIGMA Network

Viewed on DTECT website

Identification

N42 Report

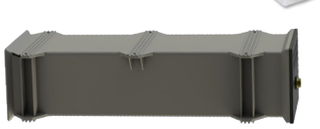
Web-based Situational Awareness & Analysis UI

External System Integration

Handheld RIID

Static D3S Nodes

Large Volume In-land Detector



In-Vehicle Detection System

Highly configurable mobile solution for real time source ID

An advanced mobile radiation detection and source identification system that can be easily configured for mobile and static applications.

The detector system consists of two NaI(Tl) scintillators and a 6LiF neutron detector combined with the PCS algorithm to maximise the detection and identification performance in complex urban environments.

Meets ANSI N42.43.

In-vehicle

Static D3S Nodes

D3S Node is an always-on fixed D3S sensor that constantly uploads data to the network. it is used to protect key areas.

Large Volume In-land Detector

The large volume detector is a networked, modular, spectroscopic gamma detector capable of stand-alone operation in extreme environments or as a subcomponent of larger systems.

The PCS algorithm maximises the detection and identification performance in low SNR conditions.

Specification

- 16” x 4” x 2” NaI log detector
- Sourceless automatic gain stabilization and calibration
- Absolute energy calibration accuracy and stability to better than 0.5%
- IP67 rating and suitable for operation in extreme environments including ambient temperatures of -40°C to 55°C
- Ruggedized design with internal thermal management ensures outstanding stability and reliability
- Modular design weighing 39 lbs, measuring 8” by 8” by 32” and consuming less than 12 watts average*

** For ambient temperatures above 20°C*

How can you monitor an airport for the presence of radioactive materials in a facility that covers many square kilometres?

D3S NET - Integrated detector network that guards against the threat of nuclear terrorism and the illicit movement of nuclear materials

- Multiple detectors
- Multiple locations
- Paired with a smartphone
- Fixed and mobile sensors
- Continuously mapping radiation levels
- Cloud augmented WAN continuously assesses data against threats

Picture: Ken Yam

Out-of-the-box Solution

Event Case

D3S nuclear event case is designed for rapid in-field deployment. Sending a team into the field creates the ultimate field of detection creating a wide area network can be controlled from anywhere.

The all-in-one ruggedized transport provides storage, wireless induction and USB charging stations and post-deployment secure and portable storage.

Contents include:

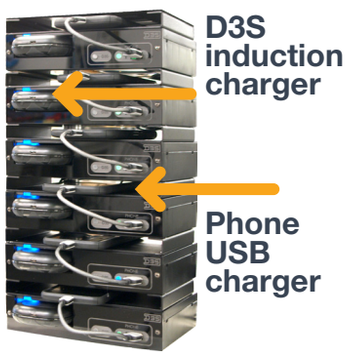
- 10 D3S detectors
- 10 Smartphones with local ID and network app
- 10 D3S pouches
- 2 stacks of 5 induction charging stations with 1 external power cable, enabling charging within case
- USB cables
- Manuals

Accessories

Charging stations

The charging stations can be taken out of the Event Case to form a stack, allowing easy storage and charging of both phone and D3S at the same time.

D3S can be charged by wireless inductive charging or via USB.



Belt-wearable pouch

A pouch can be supplied with every D3S to provide an easy and portable way of carrying the device and can be worn on a belt or a MOLLE vest.

SIGMA isotope ID list

Americium-241*	Indium-111	Radium-226*
Antimony-124	Iodine-123	Scandium-46
Barium-133*	Iodine-131*	Selenium-75
Bromine-82	Iridium-192 in various shielding*	Sodium-22
Caesium-134	Lutetium-177	Strontium-90***
Caesium-137 in various shielding*	Lutetium-177m	Technetium-99m*
Californium-252****	Manganese-54	Thallium-201*
Chromium-51	Molybdenum-99	Thorium-232*
Cobalt-57*	Neptunium-237	Tin-113
Cobalt-60 in various shielding*	Palladium-109	Uranium-235*
Europium-152	Plutonium-239*	Uranium-238*
Fluorine-18**	Plutonium, reactor grade in various shielding*	Uranium, depleted in various shielding*
Gallium-67*	Plutonium, weapons grade in various shielding*	Uranium, highly enriched in various shielding*
Gold-198	Potassium-40*	Yttrium-88

Notes:
* Mandatory radionuclides as defined in ANSI N42.43
** Beta+ emitting radionuclide
*** Beta- emitting radionuclide
**** Neutron emitting radionuclide

D3S Specification

- Isotope library far exceeds ANSI and international standards
- 42 radionuclides – 22 more than ANSI N42.34 standard
- 69 unique signatures which accounts for shielding and mixed configurations
- Discriminates between Medical, NORM, Industrial and SNM classes
- Gamma-ray detector
  - CsI(Tl)
  - 7% resolution at 662KeV Gamma energy range
  - 10,000 cps maximum Gamma throughput
  - 30 keV to 3 MeV
  - 20 µSv/h (2.0 mR/h) at 662 keV dose rate
  - 1 Sv/h (100 R/h) at 662 keV with high dose module
- Neutron detector
  - Non-3He
  - 9 cps in a 1 neutron per cm^2 field
- Easy single button operation with LED indicator
- Instant reachback
- 12 hour battery life (24 h with add-on battery pack)
- USB or induction charging

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