

Integrating multiple, state of the art detection tools to improve
targeted inspection

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Targets

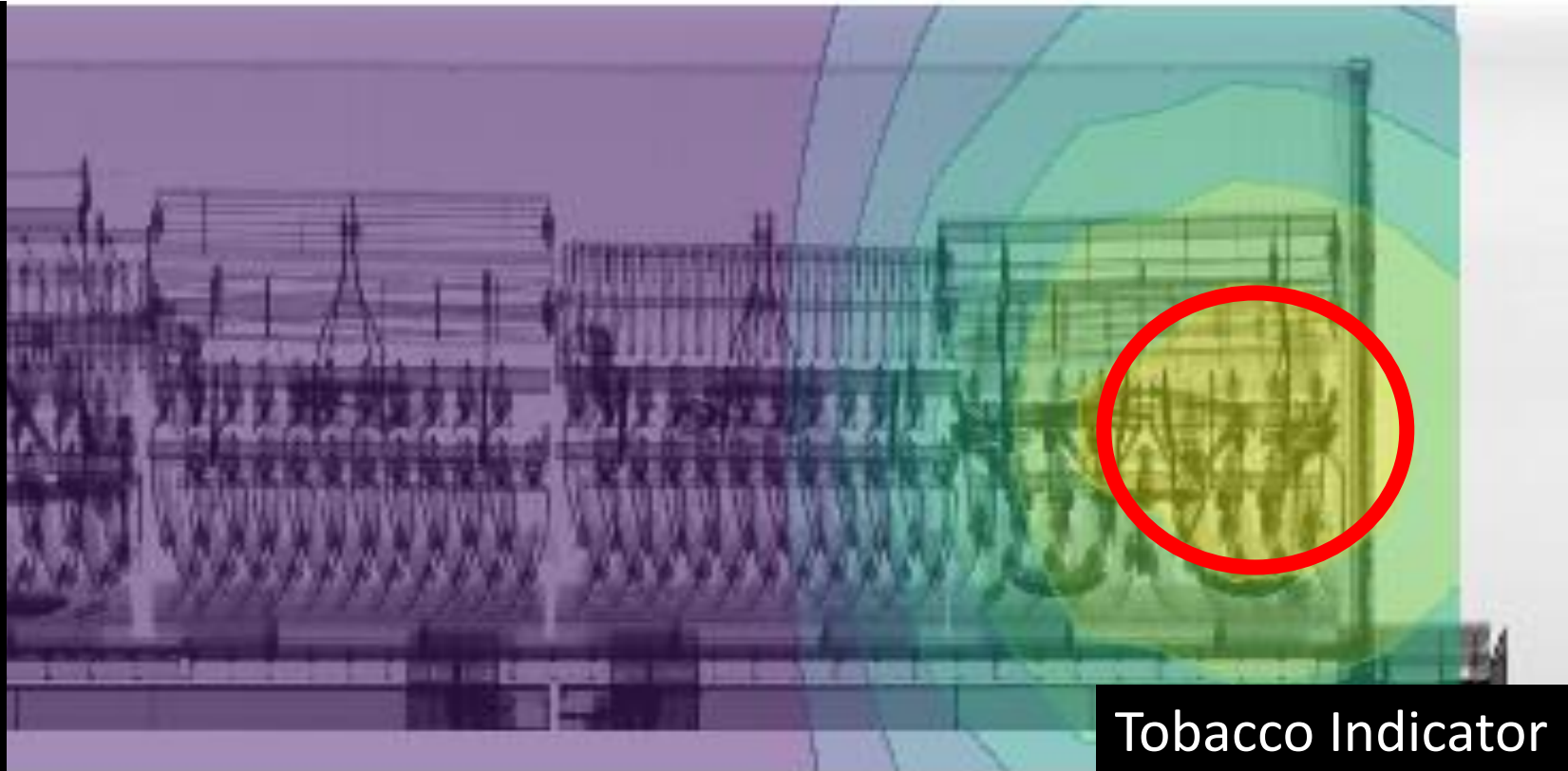
- No single technology can prevent illegal and dangerous goods crossing international borders in cargo containers



- One or more specialist tools are used for each target
- Some high tech / some low tech
- Customs know, from experience, how to apply each tool

The ideal result

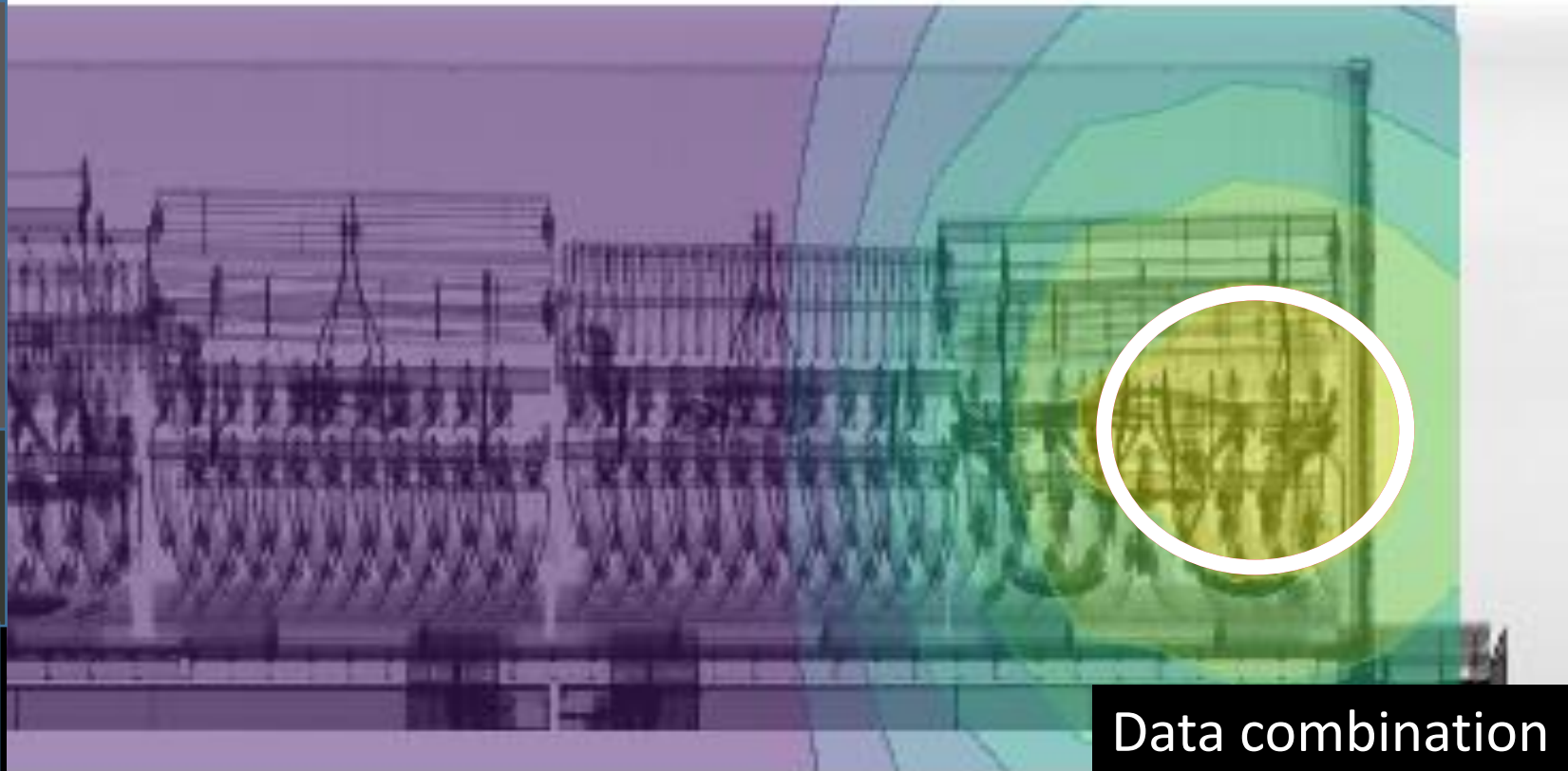
- ✓ Origin
- ✓ Route
- ✓ Manifest
- ✓ Predictive Analytics
- ✓ Radiation Signature
- ✓ High Energy Cargo X-ray
- ✓ X-ray Material Discrimination



Machine learning: Uses all of your data to get the most from your tools

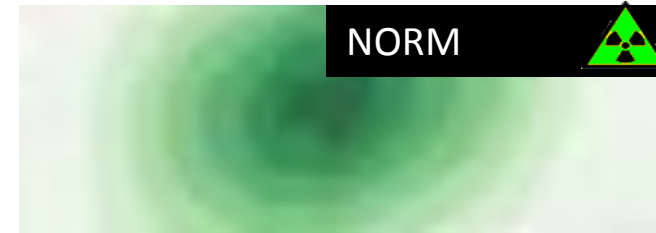
Where can we start?

- ✓ Origin
- ✓ Route
- ✓ Manifest
- ✓ Predictive Analytics
- ✓ Radiation Signature
- ✓ High Energy Cargo X-ray
- ✓ X-ray Material Discrimination



Bringing the data together from your tools

State-of-the-art Radiation Scanning:1



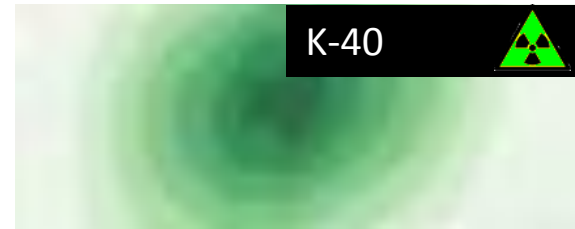
SAFE LEVEL
Naturally Occurring
Radioactive Material

Data Combination

Customs Systems



Manifest



Safe Level of Naturally Occurring
Radioactive Material

Input



Not as
declared



Combined Data

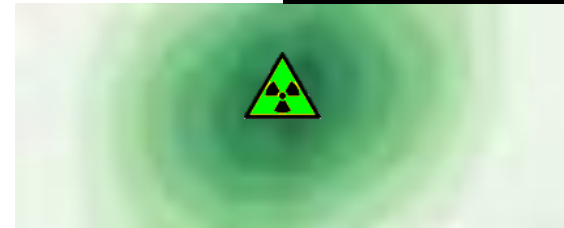
State of the art radiation scanning:2



Am-241



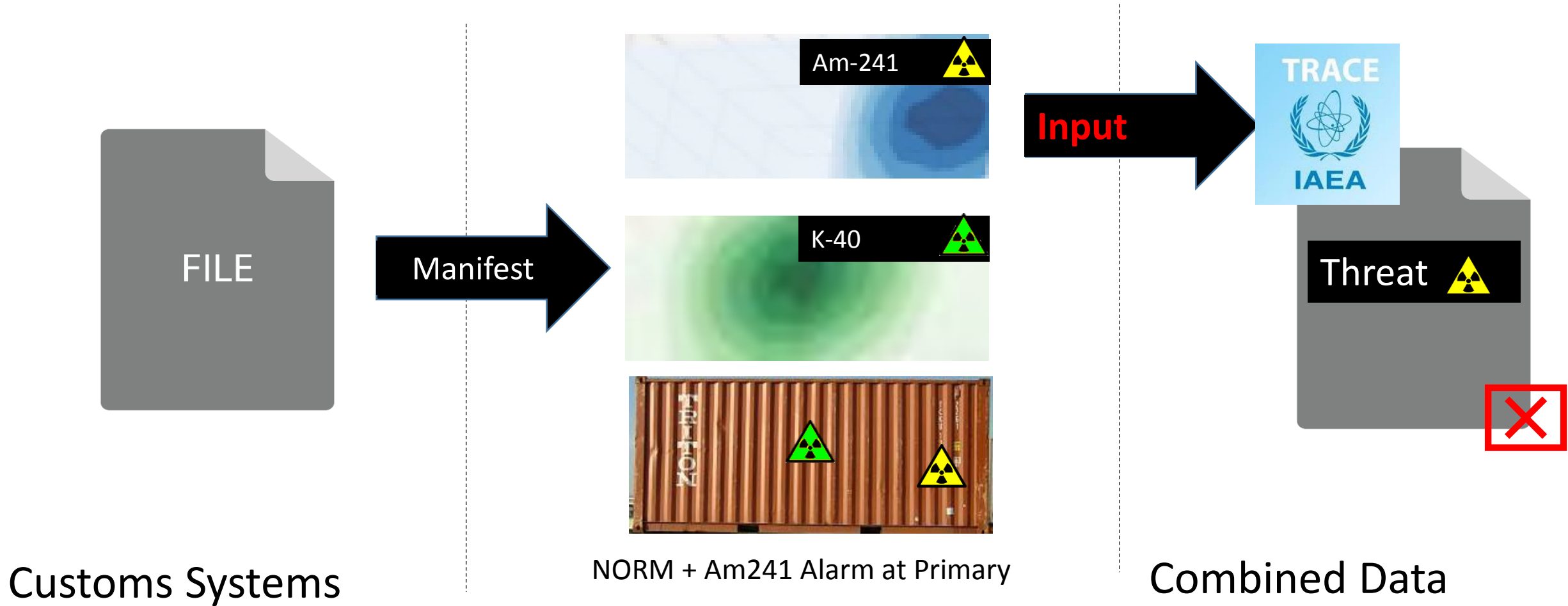
K-40



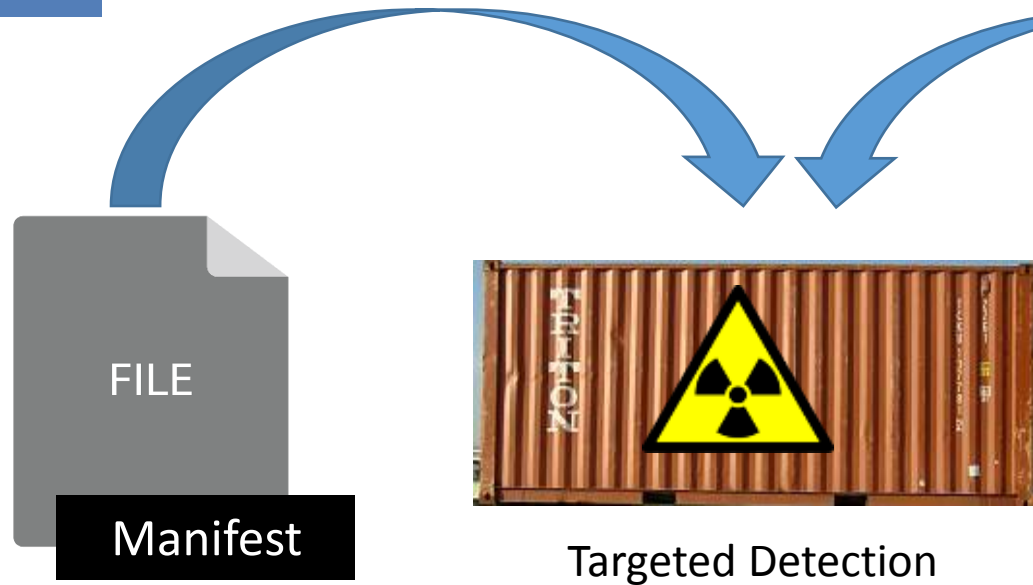
K-40



Threat Confirmation

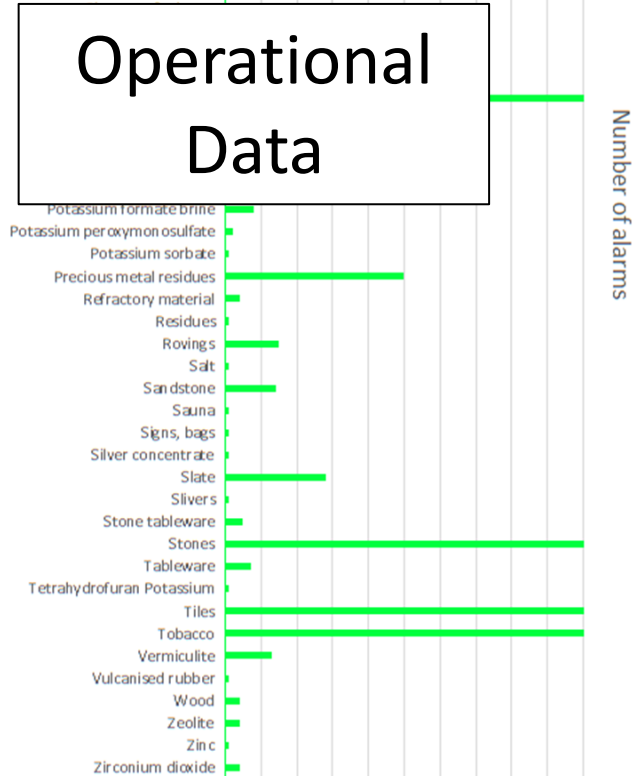


The Next Step?

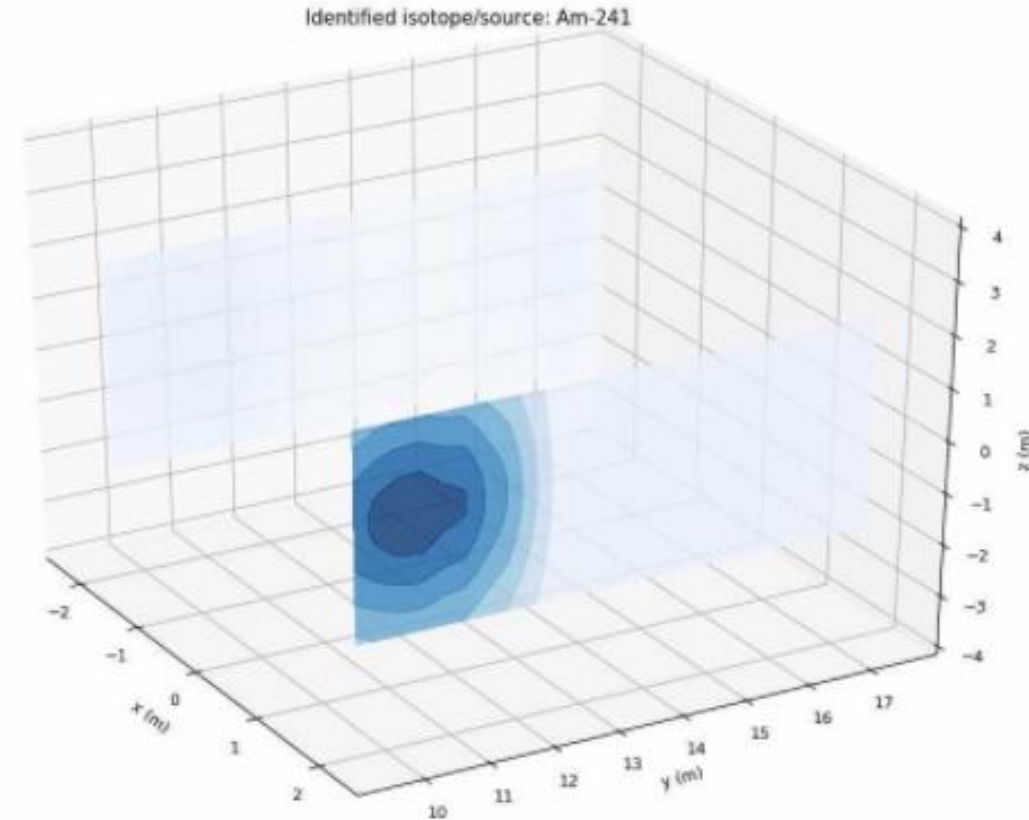


Machine Learning

- ✓ More Efficient
- ✓ Higher fidelity
- ✓ Higher success rate



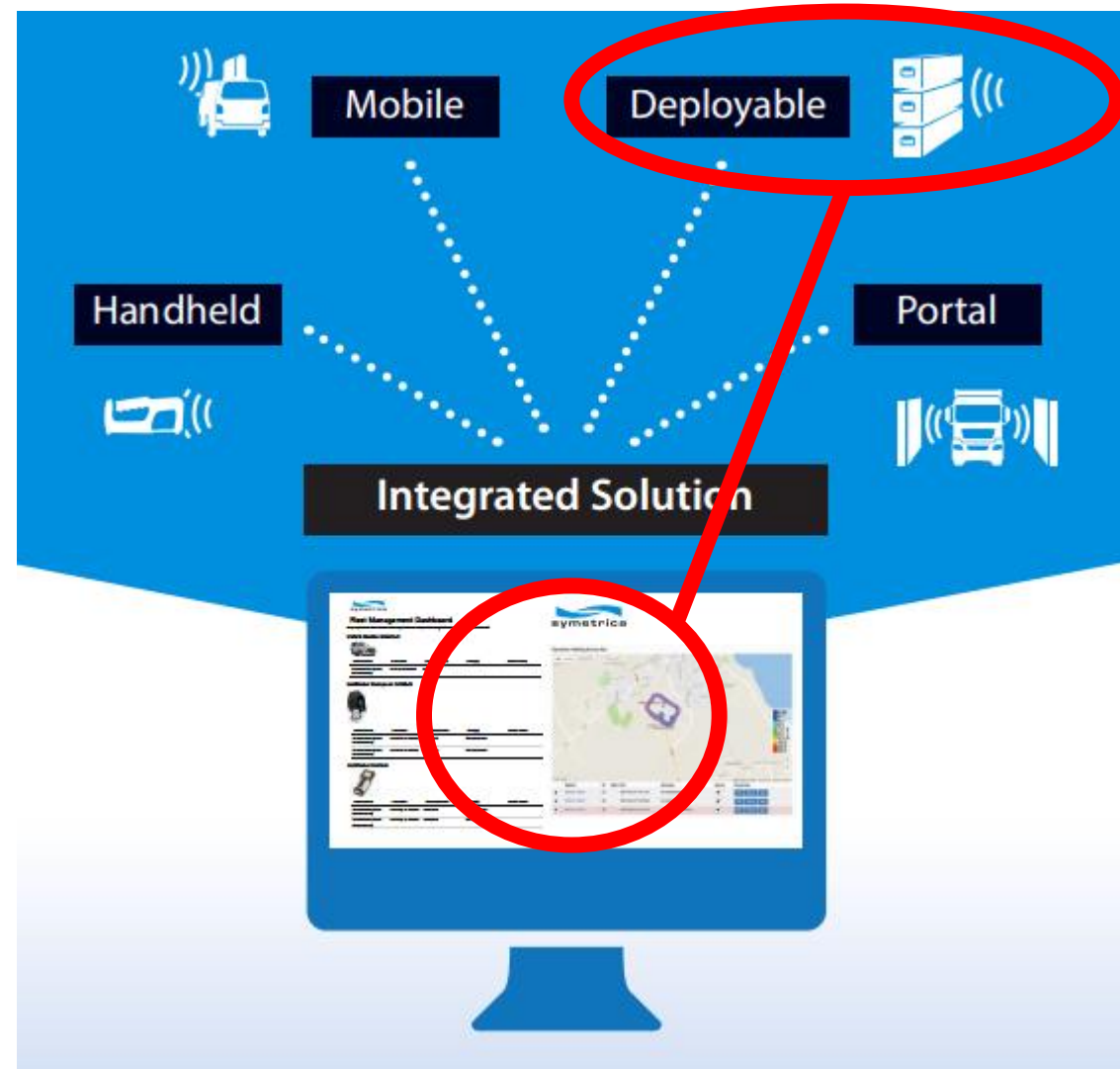
Combination with NII Inspection



MIQE (E!9481)

- Modular Mobile Solution
- Vehicle Independent
- Integrated Digital Data Transformation
- Real-Time Reach Back

Funded under Eurostars-2 joint program with co-funding from the Horizon 2020 research and innovation programme.



New Capabilities

Discovery Mobile Platform: One IP65 platform, Multiple CONOPS



Single Sided



Dual Sided



Re-Deployable

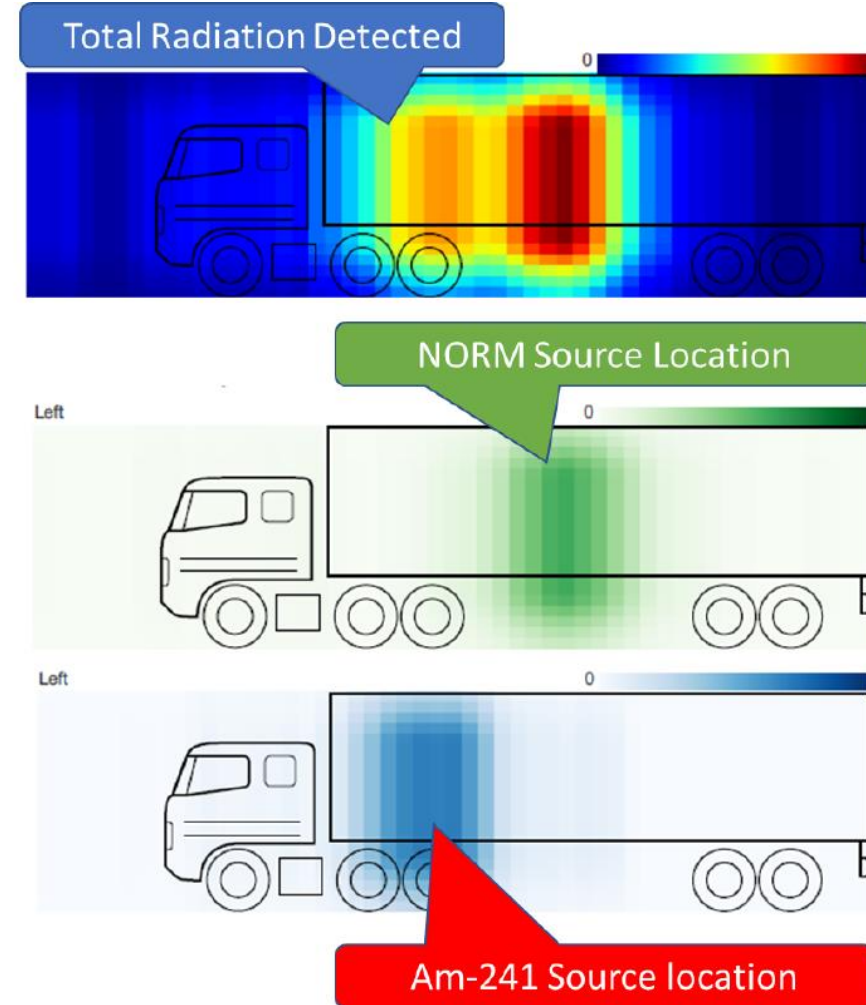


De-mounted

Isotope classification, Isotope ID and real time remote reach back

What does it look like?

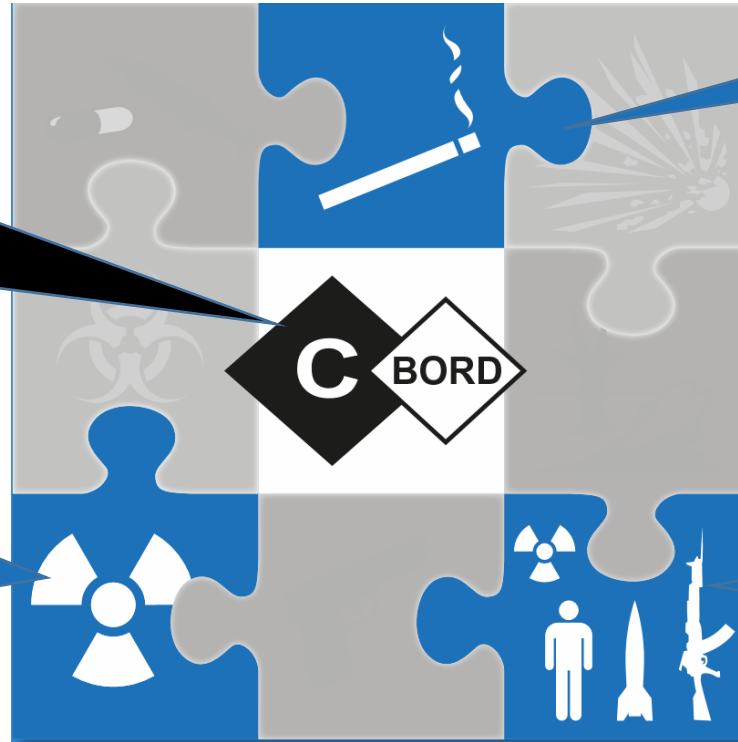
Instant reporting, control & management
of your radiation sensor network



The C-BORD Platform

Bringing
Technologies
Together

Increasing
automated
inspection



Adding Targets

Responding to
changing threats

What does it look like with X-rays?

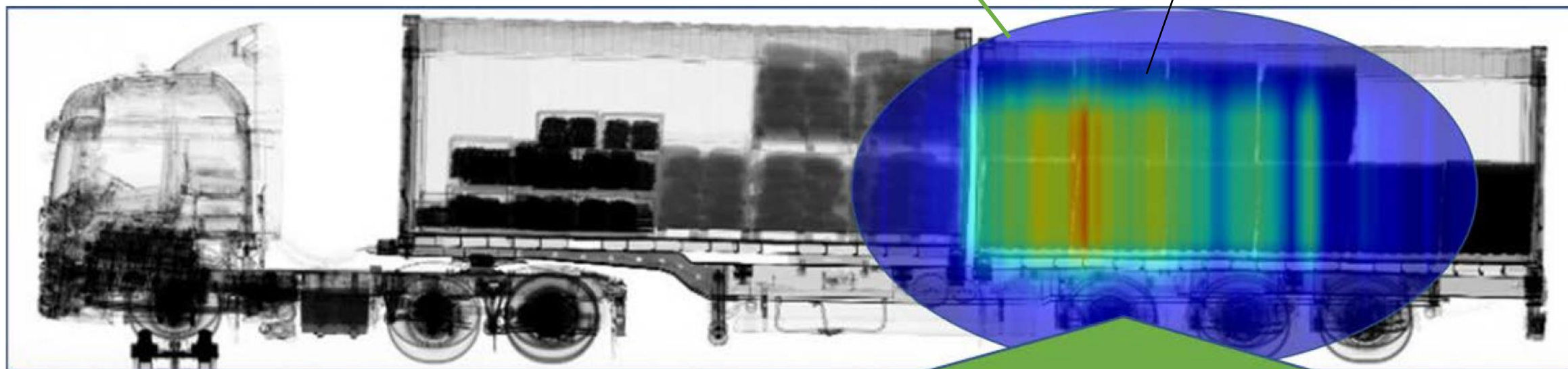
Detection: SAFE NORM

K-40 + Ra-226 + Th-232

Declaration: 690721

Ceramic Tiles

NORM (K-40, Ra-226, Th-232)

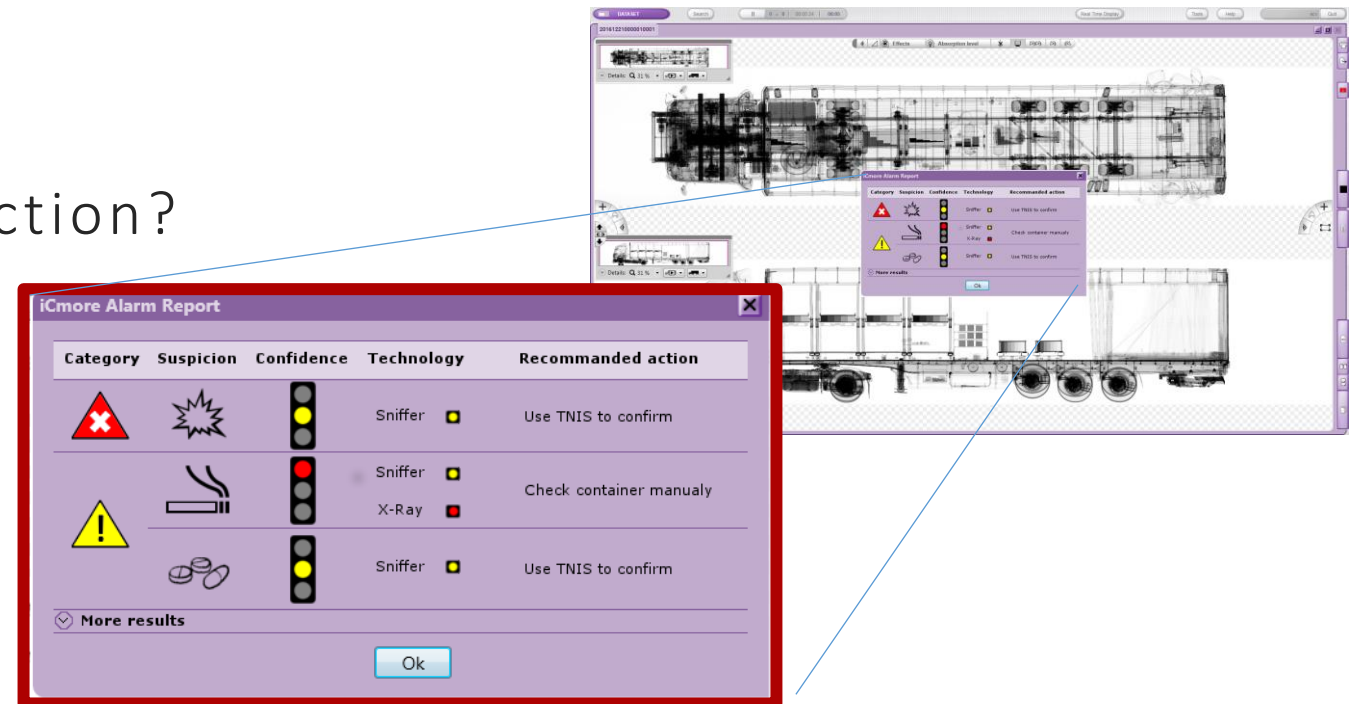


9MeV X-ray with radiation overlay from Dutch Customs Gantry System

Integration Dec 2017

The C-BORD solution is about to enter integrated platform testing :

- ✓ Multiple Technology Integration
- ✓ Combined Inspection Logic
- ✓ Improved Probability of Detection?
- ✓ Reduced False alarm rate?
- ✓ Operational test 2018



IN THE REAL WORLD

- **Gdańsk seaport - Deepwater Container Terminal**

“Rapidly relocatable checkpoint for ports”

- **Toolbox: 4 technologies**
 - Passive
 - Improved X-ray
 - Evaporation Based
 - TNIS

- **April 2018**



- **Hungarian Rösztke land border crossing “Mobile checkpoints”**

- **Toolbox: 3 technologies**
 - Passive
 - Improved X-ray
 - Evaporation Based

- **May 2018**



- **Rotterdam seaport “Fully automated seaport”**

- **Toolbox: 5 technologies**
 - Passive
 - Improved X-ray
 - Evaporation Based
 - TNIS
 - Photofission

- **June 2018**



Final public workshop
Oct/Nov 2018 in Rotterdam

Please join the “C-BORD Community” to stay informed and attend the workshop:

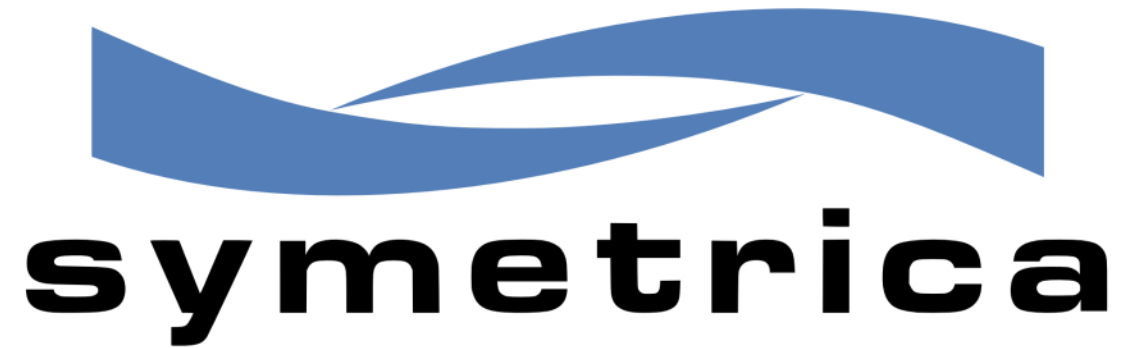
<https://cmt.eurtd.com/>

C-BORD



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Thank You

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