

What can technology do for customs

What customs want technology to do

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Security mission of the EU Customs

Key role in ensuring external border and supply chain security

Contribute to the security of the European Union

Support for the EU CBRN Action plan (DG HOME)

Maintain a proper balance between custom controls and facilitation of legitimate trade

Are in the frontline in the fight against fraud, terrorism and organised crime



Why do customs need detection technology?

Important element in the overall customs control and supervision process.

Technology typically generates an image, a number, a spectrum or a signal that is interpreted by our officers.

Interpretation is supported by information from the customs declarations and intelligence sources(if present)

Detection technology supports the field officers to make informed decisions to release the goods or to retain for further inspection.



Common challenges in the use of equipment

New and emerging threats

No single technology will do everything, **combination** and **integration** of different technologies are needed

Funding for equipment and maintenance

Understanding the capabilities as well as limitations of equipment

Equipment is used by non-technical personnel



Customs Detection Technology Project Group (CDTPG)

Discusses and exchange information on:

Customs use of detection technology

New technology that becomes commercially available

Recent Research & Developments results applicable to Customs

Technical specifications and public tender procedures



What are we looking for

100 % validated supervision of global supply chains with automated detection in data and goods

Innovation in detection in data and goods

For data : application of data-analytical instruments
For goods : uptake of new technologies and approaches

Integrated use of innovative technologies with data from customs declarations, intelligence, big data platforms, open sources to support a robust and informed decision making



What are we looking for

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Unified File Format of X-ray images (WCO initiative)

Automation and integration of existing and new emerging technologies identifying the largest amount of threat materials in detection architectures

International exchange of NII output (image, spectra, signal)

Standardized evaluation of customs detection equipment

Increased use of Automated Threat Recognition, AI, ML



EU security research projects

Automated Comparison of X-ray Images for cargo Scanning (ACXIS) with reference materials to identify anomalies



Proof of concept for algorithms for container/ trailers developed Targets; cigarettes, cocaine, weapons Test and train software is commercially available Way more and specific development is necessary



effective Container inspection at BORDer control points



Passive Radiation Detection

- Improved material ID to reduce nuisance alarms from NORMs
- Localisation of radioactive threats within containers



Enhanced X-Ray

- Reduced image distortions from oscillations
- Integrated radiation detection
- Improved material discrimination in organic range

Modular system of complementary NII devices adaptable for different border scenarios

Evaporation Based Detection
Chemical analysis of container air samples
Targets are drugs, explosives, etc.

Automated ports: Rotterdam (Fixed installations)

Sea ports: Gdańsk (Relocatable)

Land borders: Röszke (Mobile)



Photofission

- Uses same linear accelerator as high energy X-ray scanners
- Direct detection of Special Nuclear Material

Tagged Neutron Inspection

- Uses a neutron generator to provide information on elemental composition
- Targets are drugs, explosives, cigarettes



Essentials for the development of Algorithms

Access to Images

Information on the goods

Final inspection decision and feedback

Multiple iterations needed to train a model for a specific task



Additional complexity

- **1.** Variety in formats of the images and algorithms
- The UFF will solve this for the images, but
- What about comparable developments for the algorithms?
- **2.** What type of algorithm would give best results?
- Direct detection of items and materials

Indirect detection of anomalies in cargo or containers



Key challenges in future technology use

Managing current and future threat scenarios to be automated and integrated

The omnipresent human factor

Ethical and societal impact of new technologies



No time to sit back and relax, let's act together

