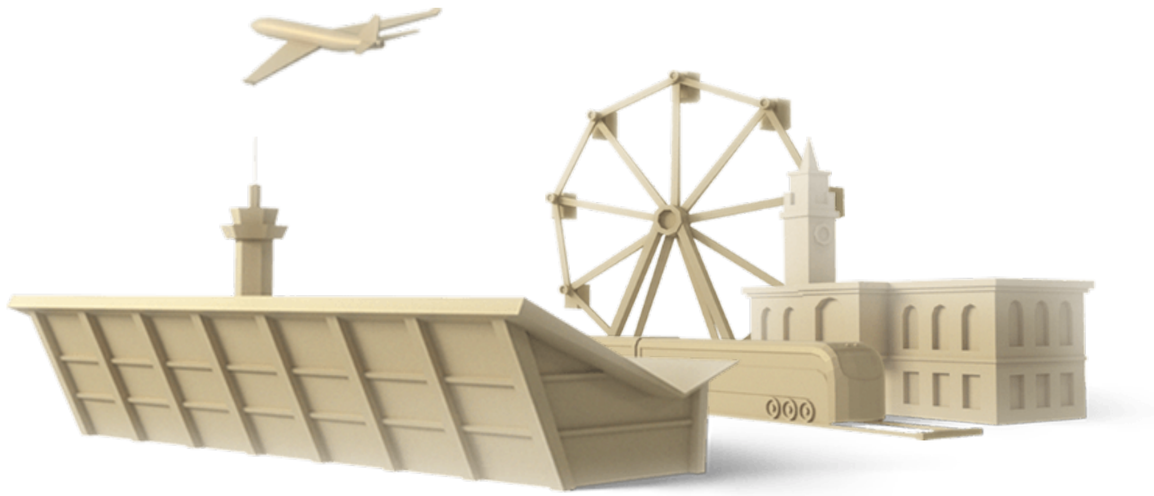
KÄRSA



Potential for touch-less inspection of cargo and packages using mass spectrometry

www.karsa.fi © Karsa Ltd
Dr. H.J. Jost, CEO, hj.jost@karsa.fi
21 June 2018 ADSA-CPB-01

Ultra-sensitive detection of threat molecules

- Screening cargo and mail, detect threat particles without touch <0.1% FA or vapors as low as ppq; AI/ML data analysis
- Use world leading sensitive, robust mass spectrometery originally developed for atmospheric research
- Demonstrated on explosives at airport (TRL 6), currently extending to more explosives, drugs, TIC, CWA....
- hj.jost@karsa.fi +358 45 699 5005

What do the most cited geoscientist and a bomb sniffer have in common?

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Atmospheric Pressure Chemical Ionization Mass Spectrometry (APCI)

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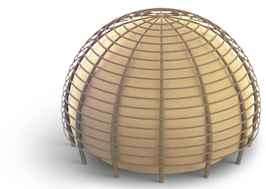
Atmospheric Pressure Chemical Ionization Mass Spectrometry (APCI)

OK, enough gibberish!

APCI technology has proven robust and reliable through years of worldwide measurement campaigns

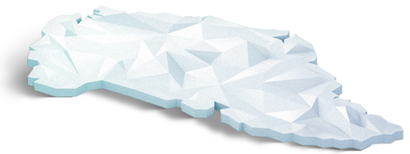


CERN:
SWITZERLAND

UNIVERSITY OF
HELSINKI

HIMALAYAS

BOREAL FORESTS



POLAR SITES:
GREENLAND

Team

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Chief Executive Officer

ALEKSEI SHCHERBININ
Chief Product Officer
Chief Financial Officer

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Senior Scientist

OSKARI KAUSIALA
Algorithm Engineer

JAYAPRASAD BOJJA
Senior Software Specialist

VERNER HEMMILÄ
Product Development Engineer

JYRI MIKKILÄ
Director of Engineering

World leading sampling and detection experts

150
PUBLICATIONS

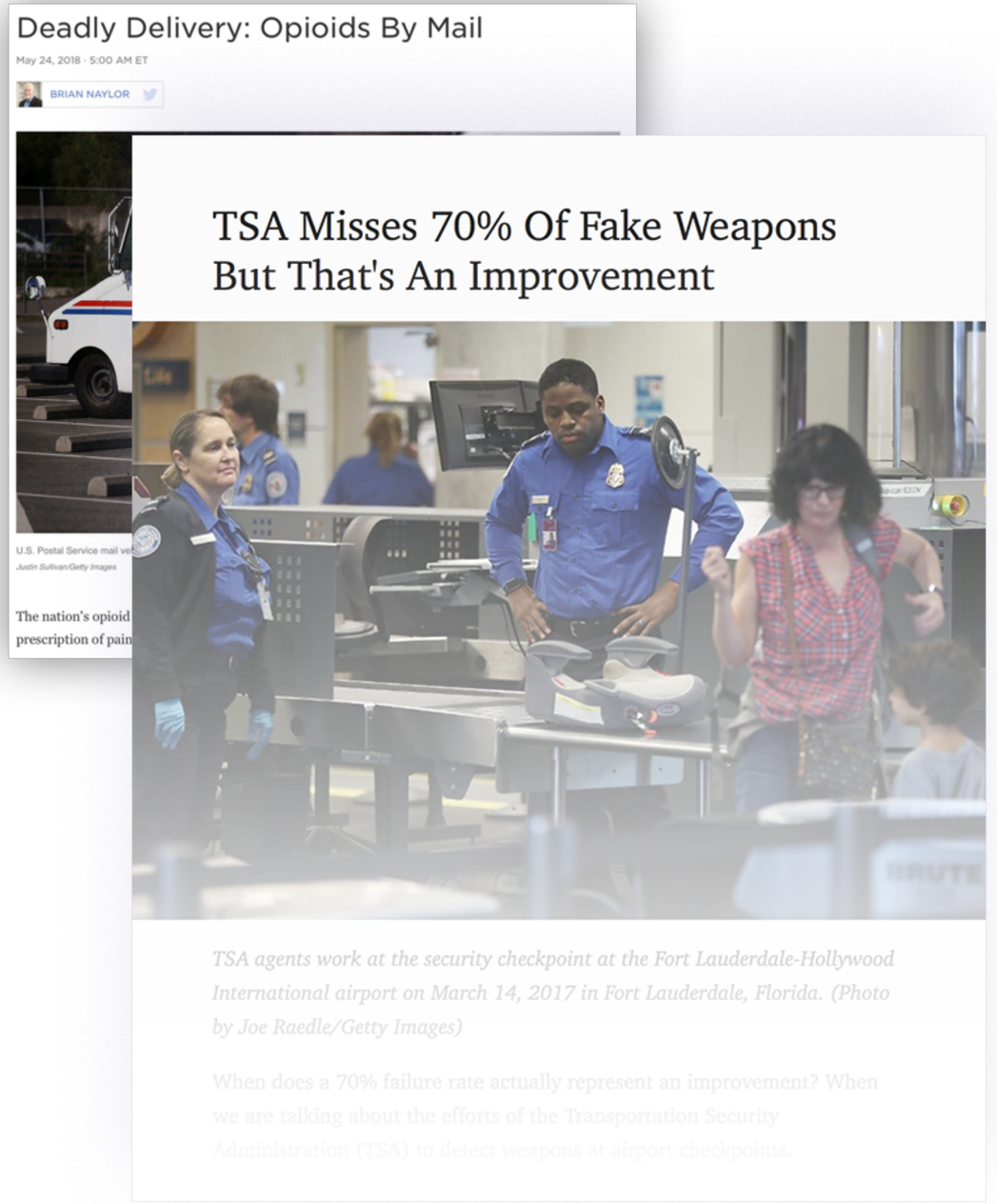
12
IN SCIENCE/ NATURE

4
RELVANT PATENTS

Silicon Valley veteran CEO

The Problem

We live in a world where terrorists are trying to disrupt our way of life and too many people loose their lives to illicit drugs.



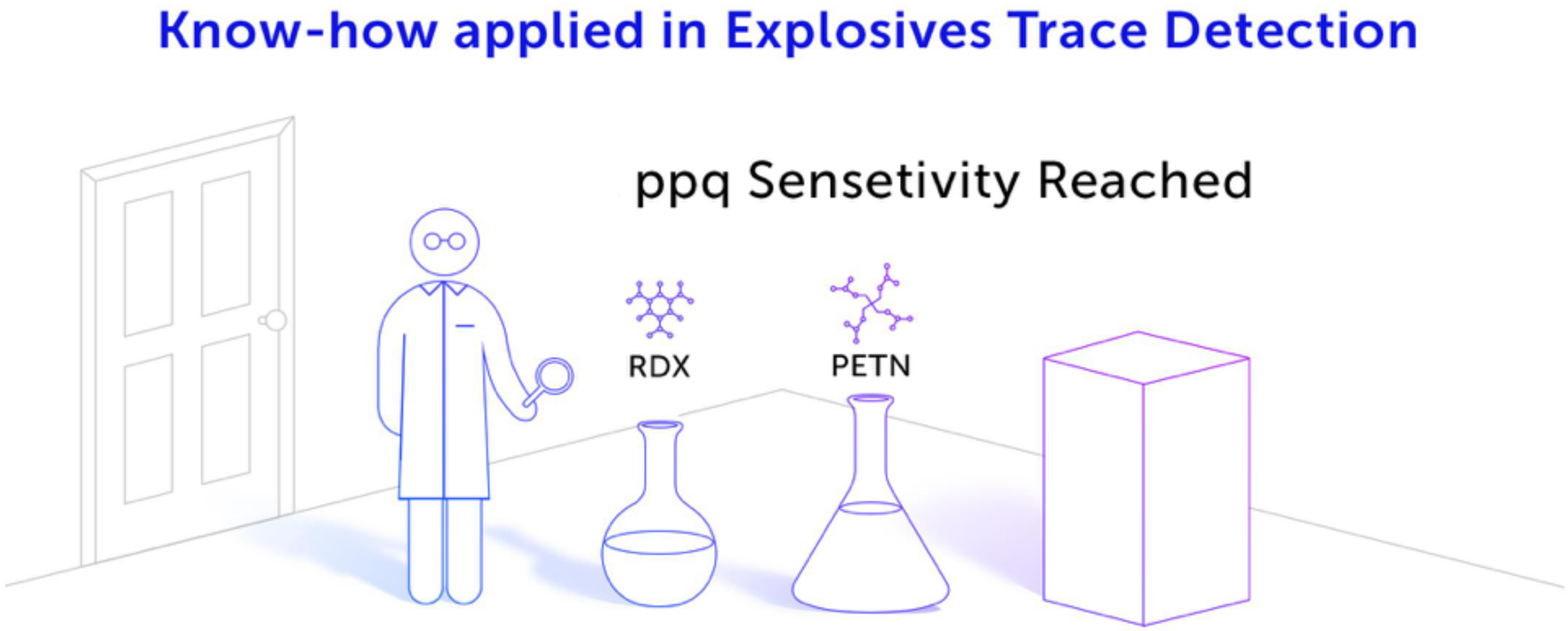
Solution

Karsa creates innovative molecular threat detectors.

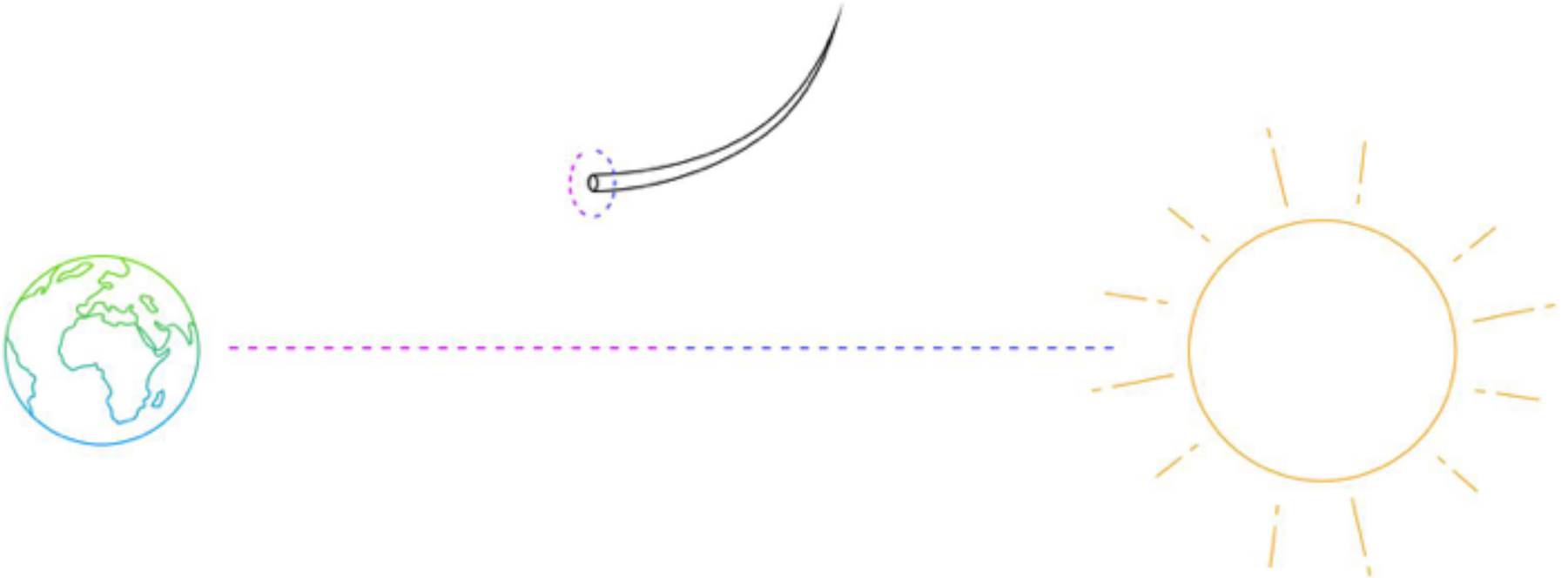
Milestones

2014

measurements
of explosives



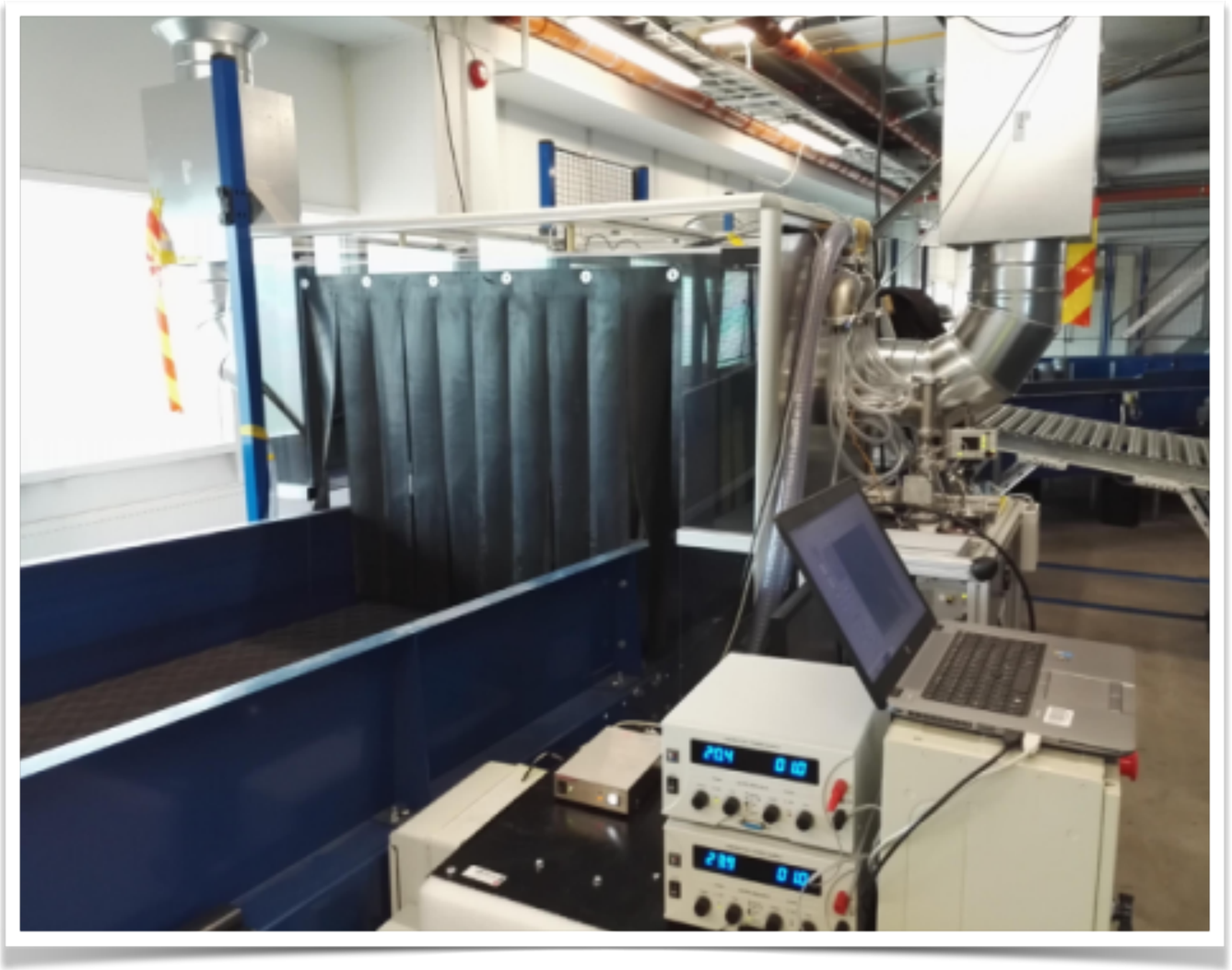
Diameter of a hair
corresponds to 1 part per quadrillion
of distance between Earth and Sun



Milestones

H1 2016

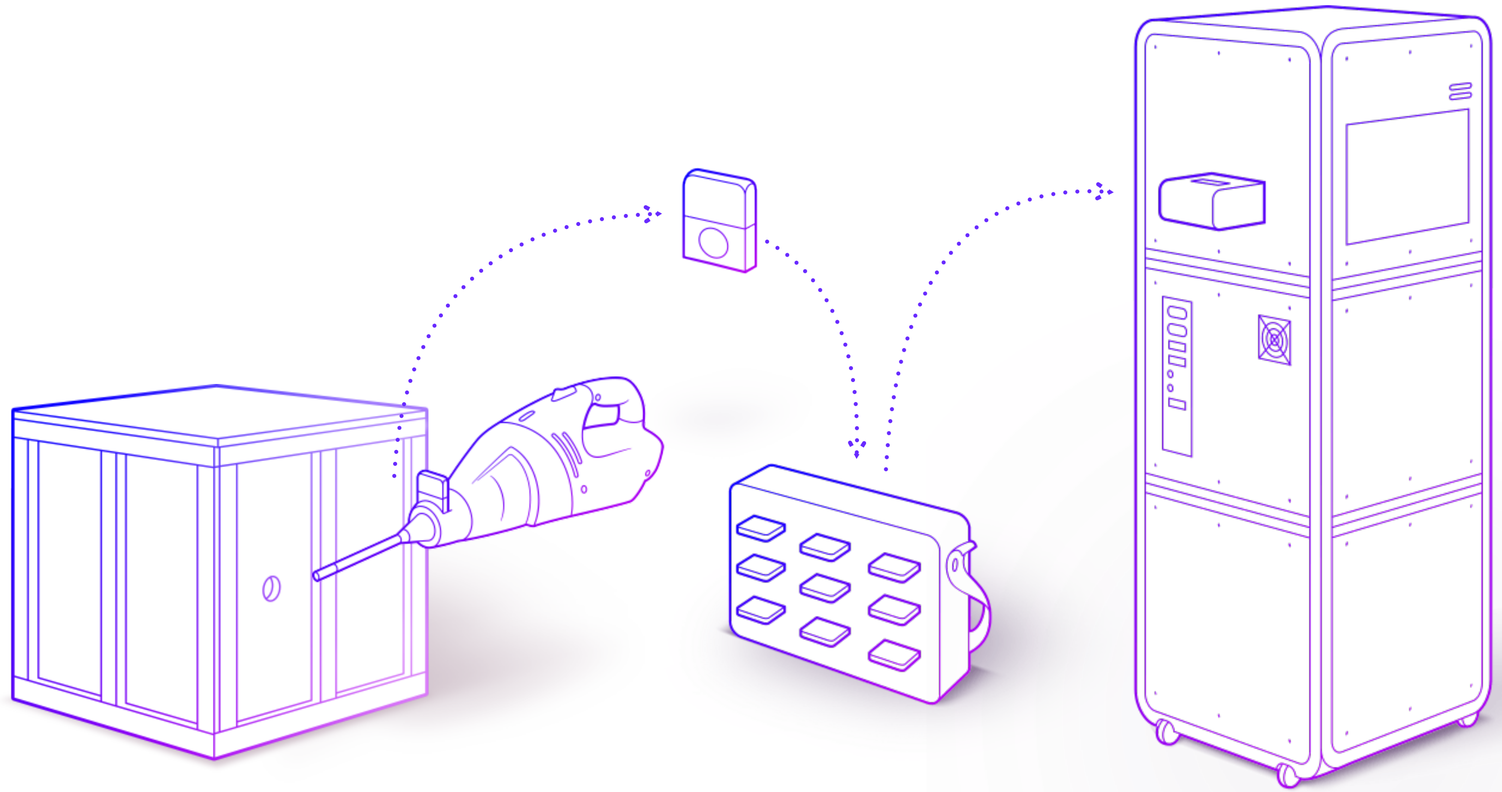
- 9000 bags scanned at airport
- < 0.1% false positives
- Up to 2000 objects/hour
- Detect ng amounts of explosives without touch



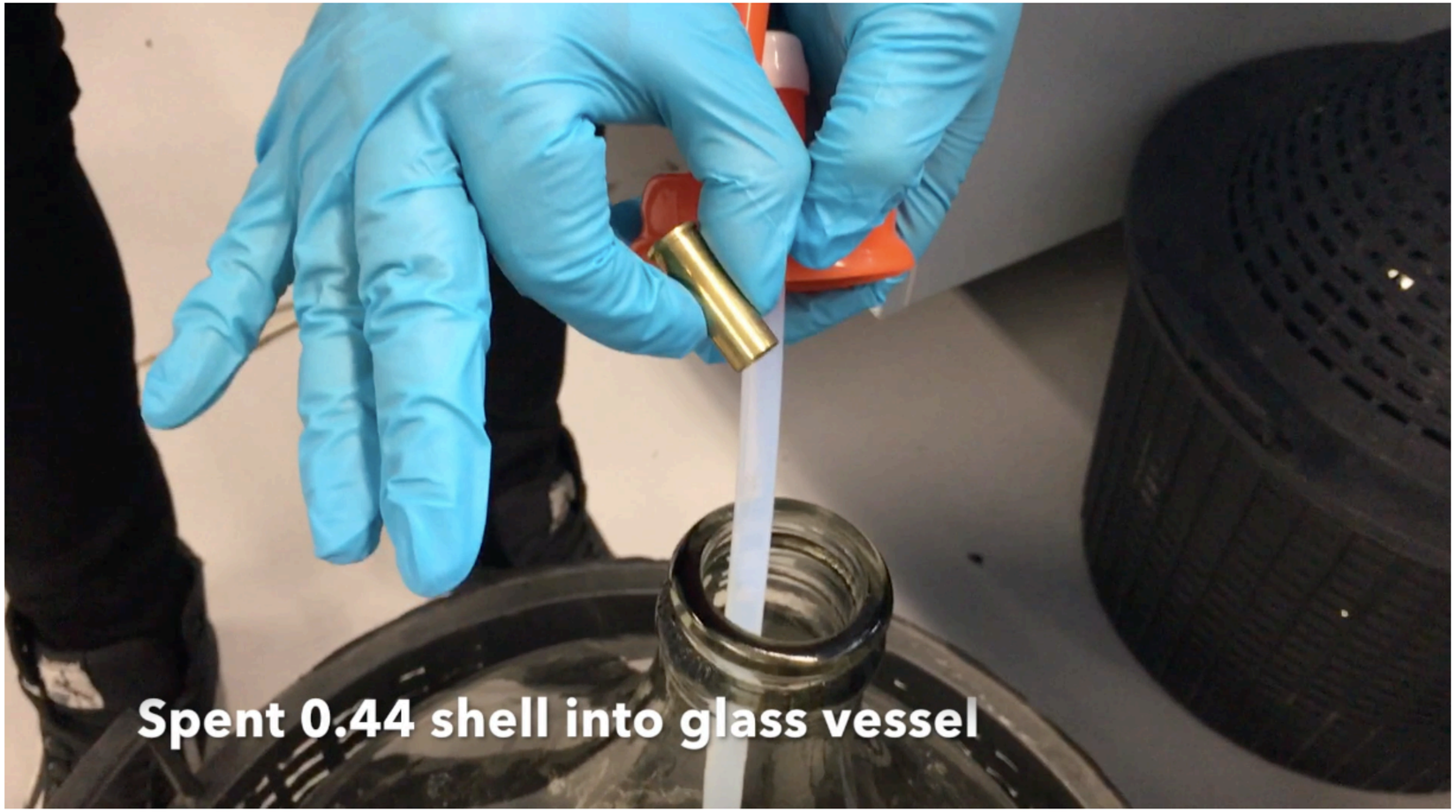
Scenthound™

Screening Air Cargo for Explosives Vapours

First certified product of its kind for upcoming ECAC Explosives Vapour Detection (EVD) standard



Movie



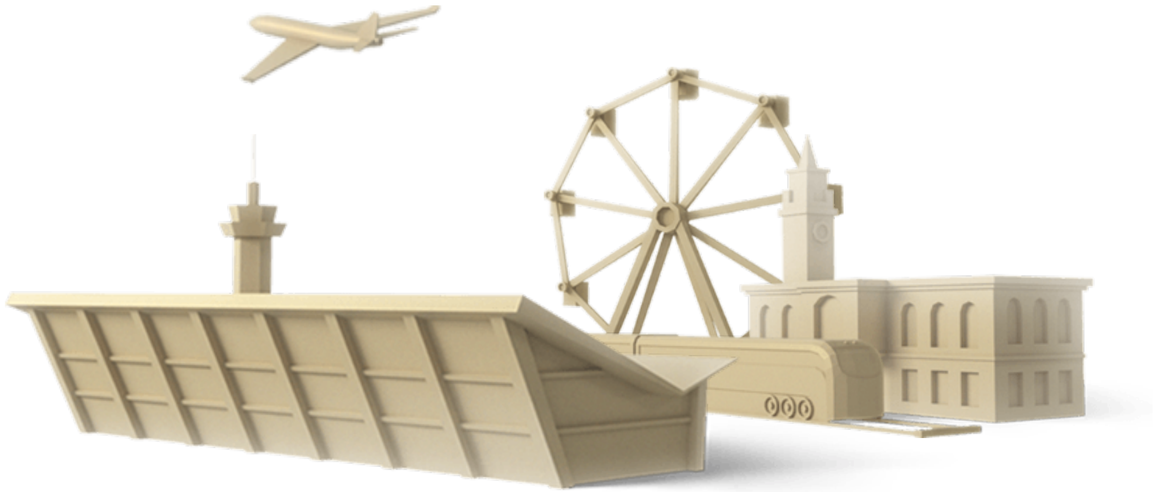
What does Karsa offer to CBP

- Proven touch less detection of explosives particles on outside of packages
- Demonstrated detection of explosives vapors from inside package
- Focused team of experts to solve sampling problems utilizing ultra sensitive, robust detection system
- Literature suggests APCI works for most threats, 10-1000x more sensitive than other methods
- Currently 14 explosives threats in library
- Planning to expand to 40 including drugs and CWA in 2019

What does Karsa expect from CBP

- Expecting to learn about CBP requirements:
    - priority of threats
    - Throughput
    - CONOPS
- AI and ML algorithms to detect threats in complex cargo background need data
- Looking for funding to demonstrate CBP relevant threats

KÄRSA



We are doing it for better security

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Sources:
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