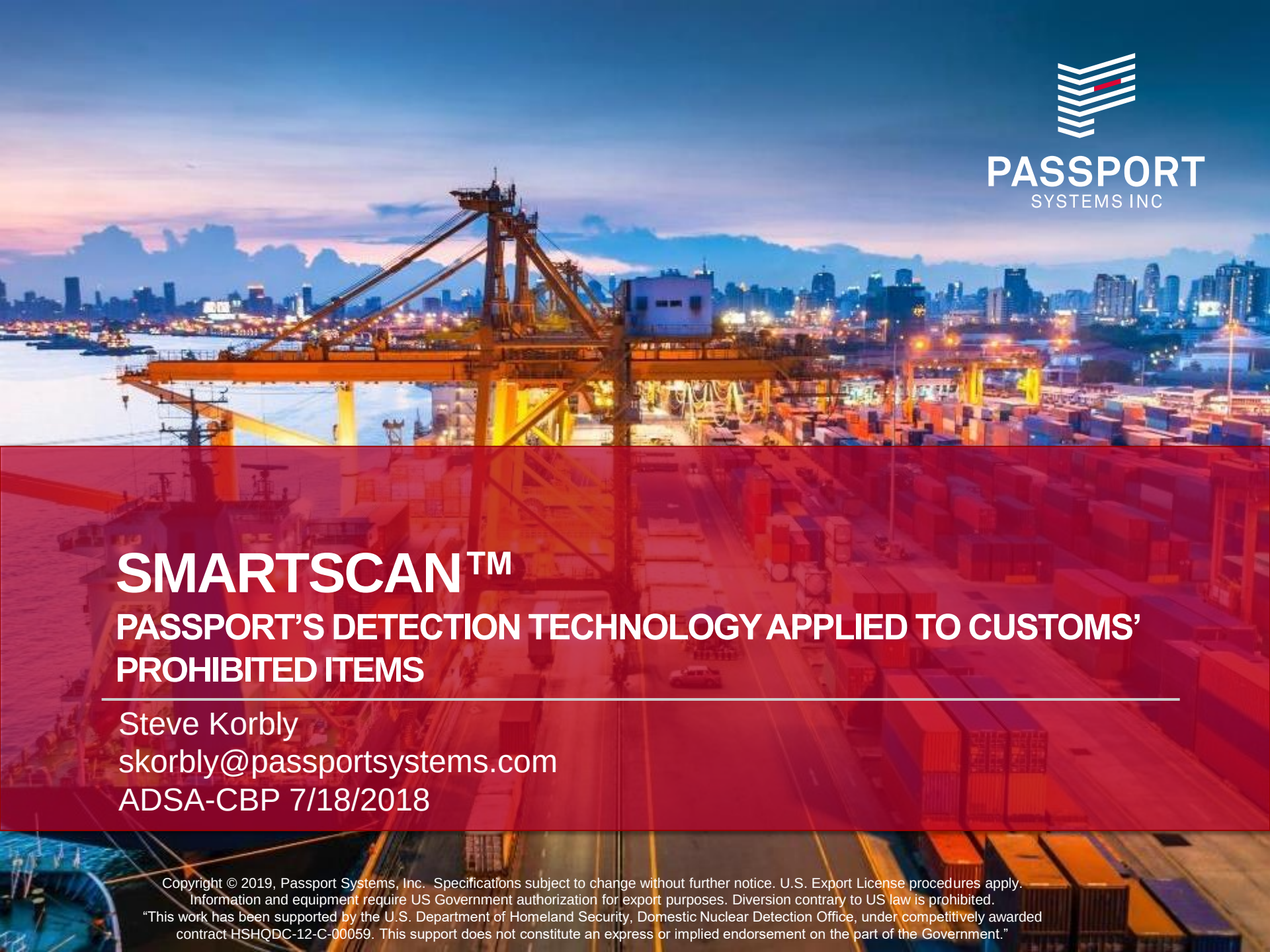

PASSPORT
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SMARTSCAN™

PASSPORT'S DETECTION TECHNOLOGY APPLIED TO CUSTOMS' PROHIBITED ITEMS

Steve Korbly
skorbly@passportsystems.com
ADSA-CBP 7/18/2018

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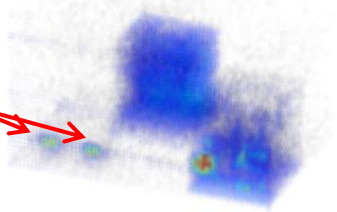
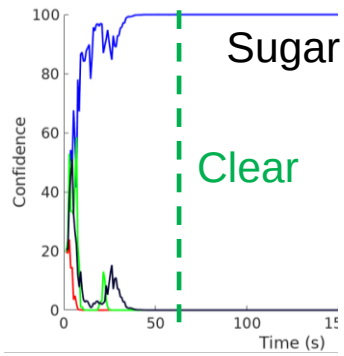
So What? Who Cares?

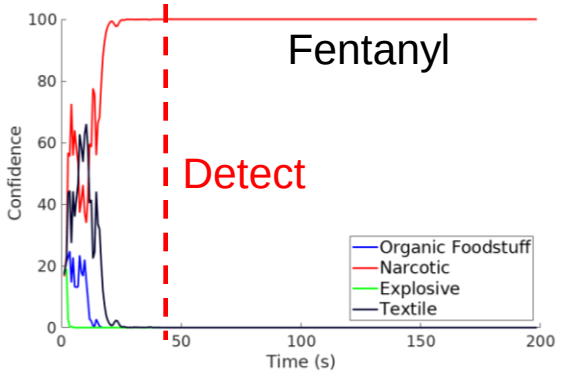
- Space: Anomaly detection and resolution. Material Identification.
- Problem: *Anomalies in cargo containers identified*
- Solution: *3D imaging. Materials ID*
- Results: PD=60%, PFA=<1% on >10 kg in 40'
- TRL: *8*
- Contact: skorbly@passportsystems.com 978.263.9900

Materials Identification

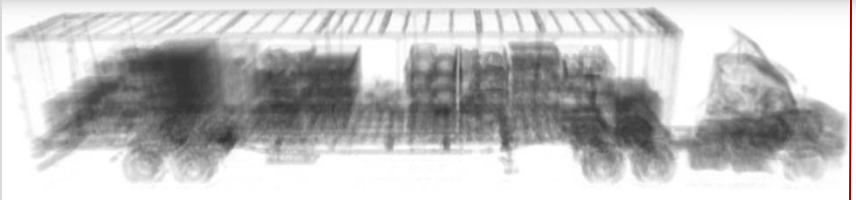
Packages of Unknown Materials

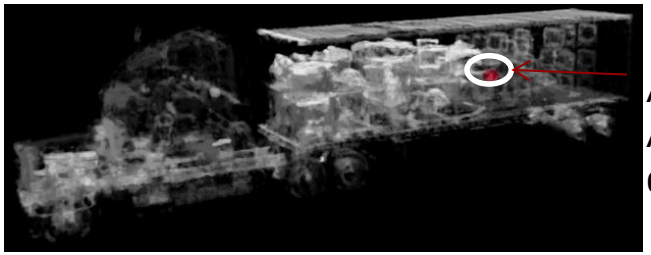






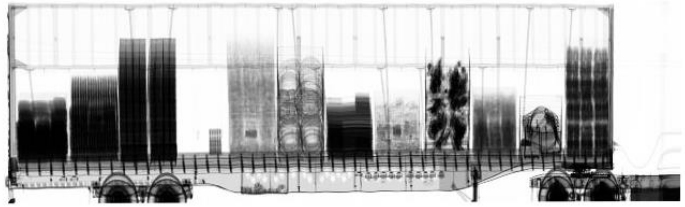
EZ-3D™

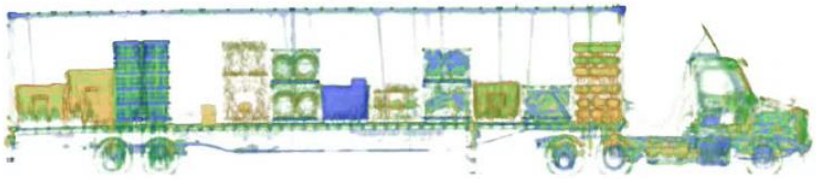




Automated Anomaly detection

Data Fusion





Large Scale 3D Imaging

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Customs Problems:

- Deployed NII technologies do not automatically detect carefully concealed contraband in high-density/complicated cargo.
  - Better automated anomaly detection is needed
- Limited secondary inspection technology to deal with the increasing number of suspicious cargos flagged by newly deployed MEPs.
  - Secondary technology to identify narcotics without opening the cargo container is needed.
  - Verifies with high confidence further inspection

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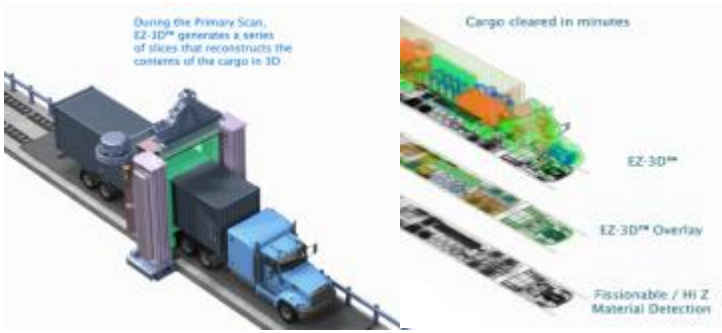
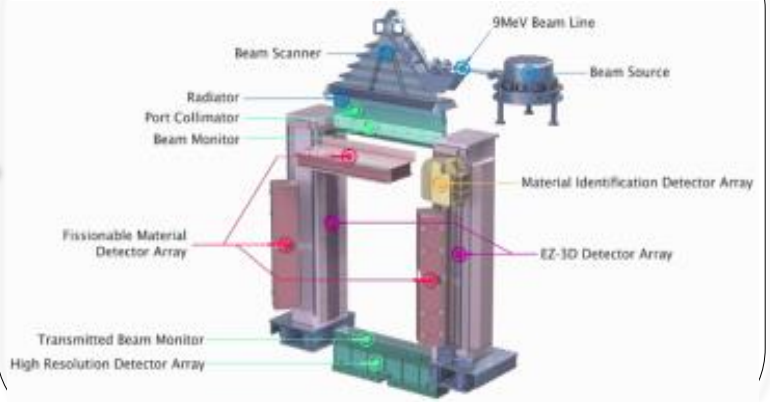
SmartScan 3D™ Overview

Full Capability Scanner…

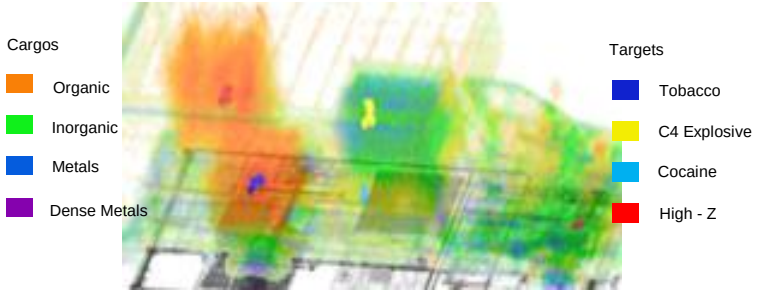


Automatically detects anomalies in high-density cargo

…Using Advanced Core Technology…



…To Provide Material Contents Information …



Confirms and identifies contraband without opening the cargo

SmartScan 3D Delivers:

Automatic detection at Initial Scan

Anomaly Identification at Verification Scan

- Improves security and revenue outcomes
- Eliminates unnecessary physical inspections
- Reduces manpower requirements
- Clears cargo faster (less storage) !

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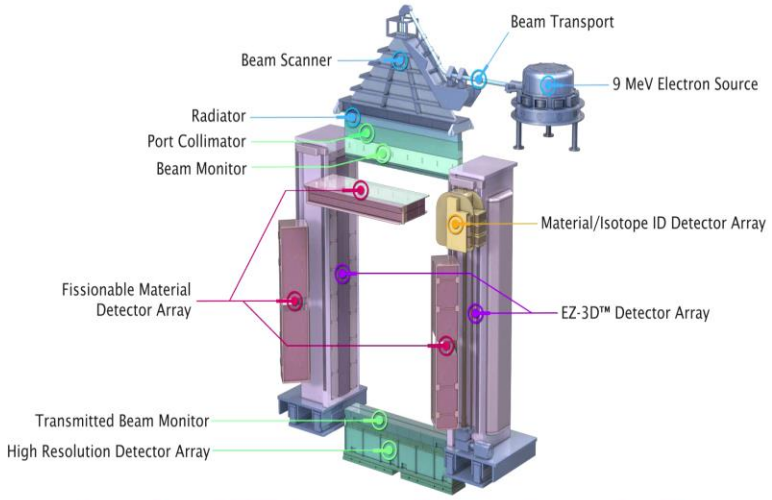
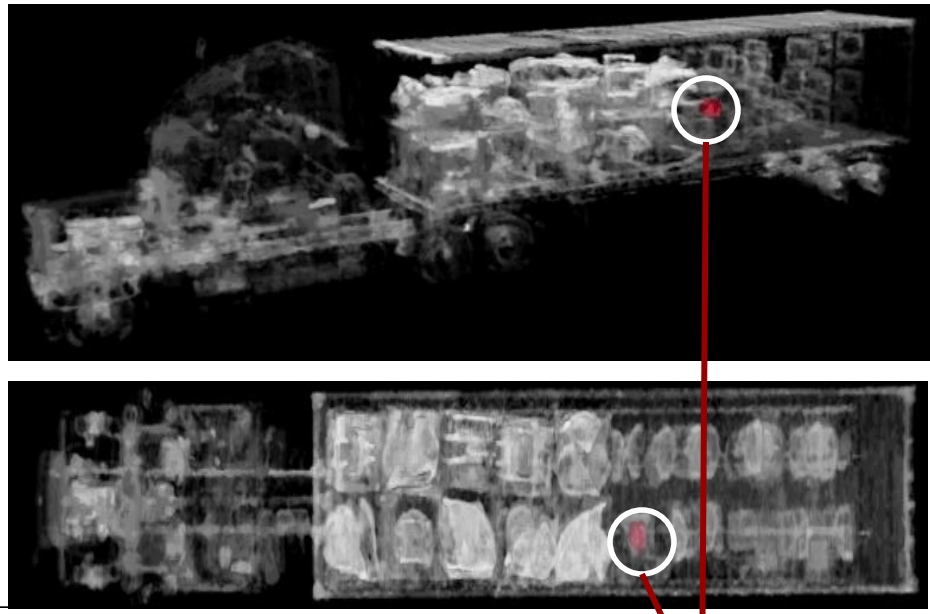
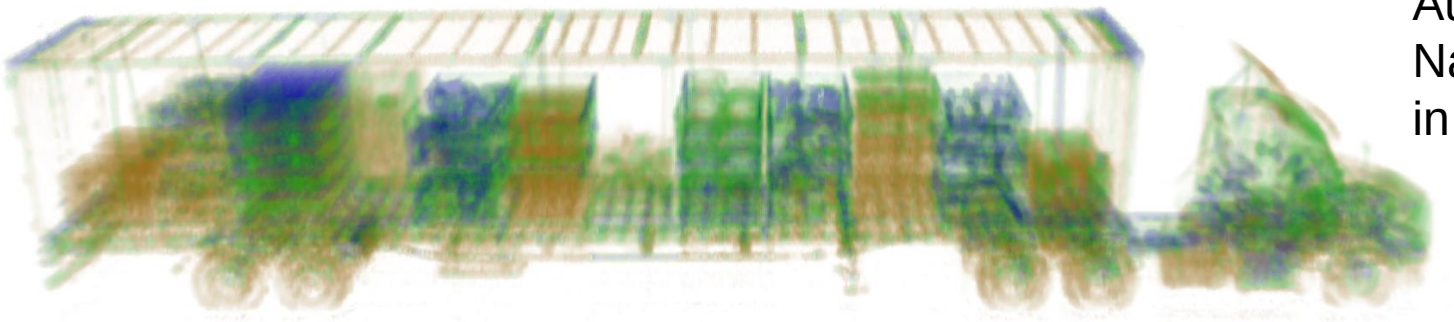
Solution 1 - EZ-3D™



SmartScan 3D™ Automated Cargo Inspection System



Automated Narcotics Alarm in 3D space



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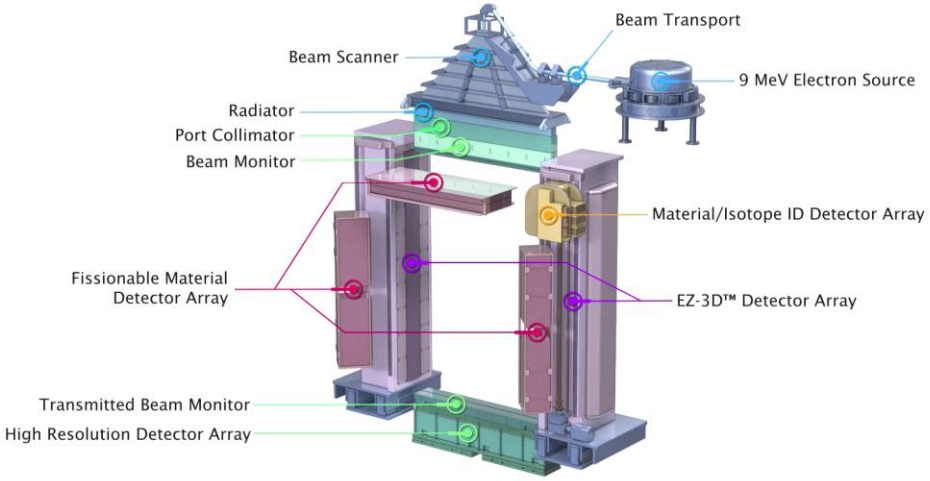
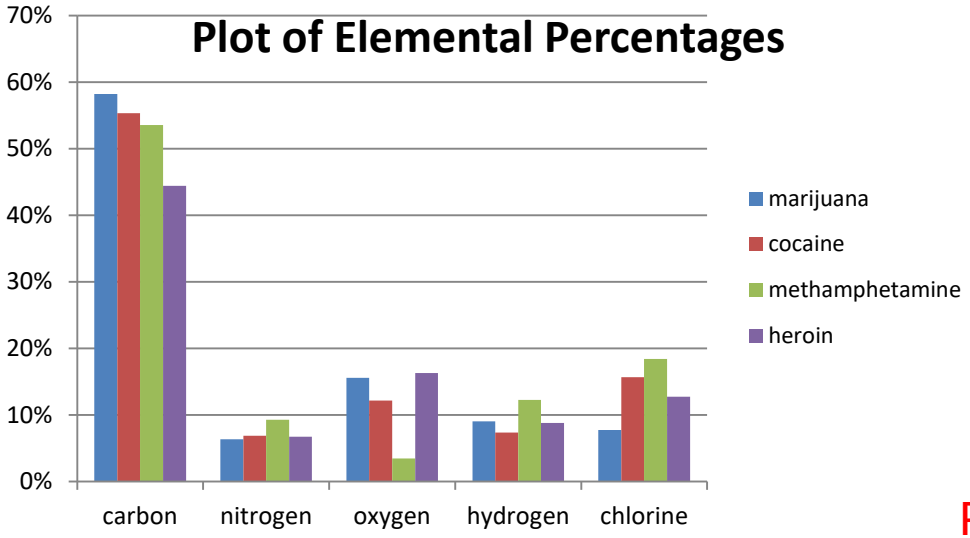
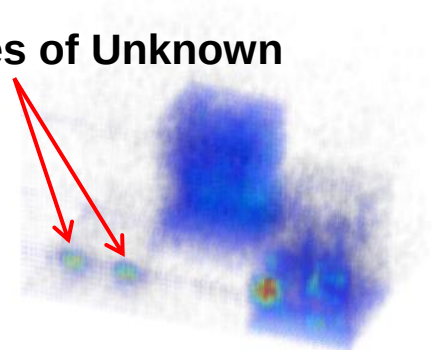
Solution 2 - Material Identification

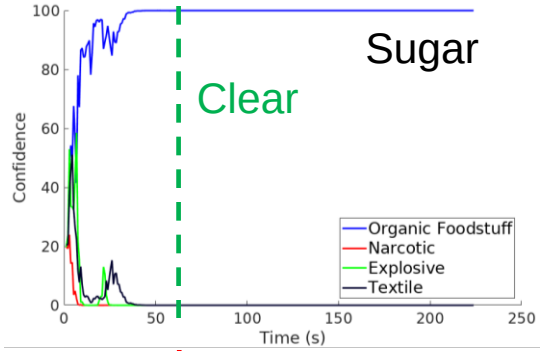


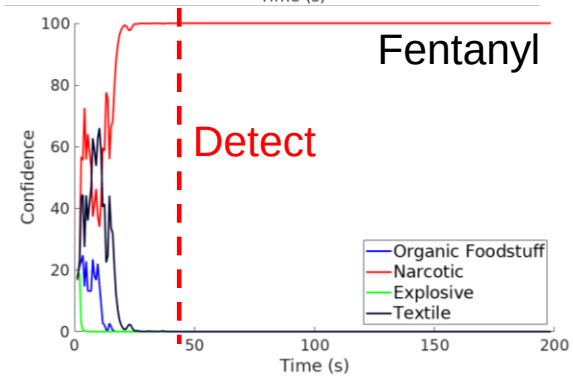
SmartScan 3D™ Automated Cargo Inspection System



Packages of Unknown Material







Provides Manifest Verification

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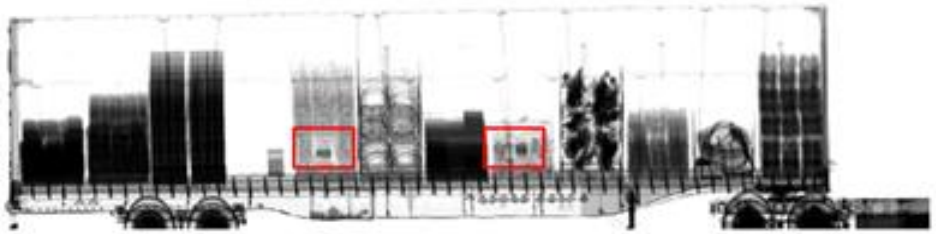
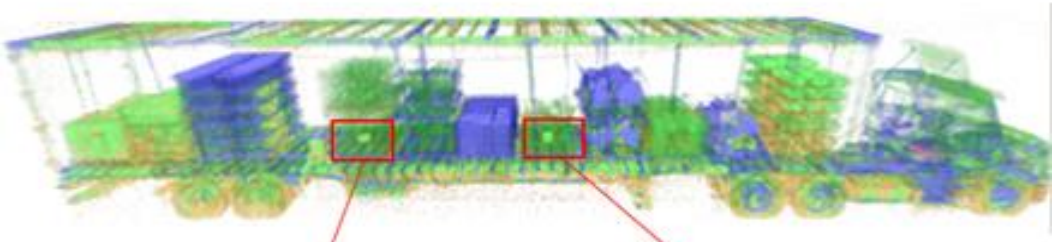
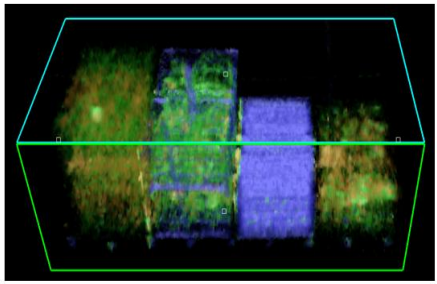
Anomaly Identification Examples

Side View X-ray: Anomalies Detected

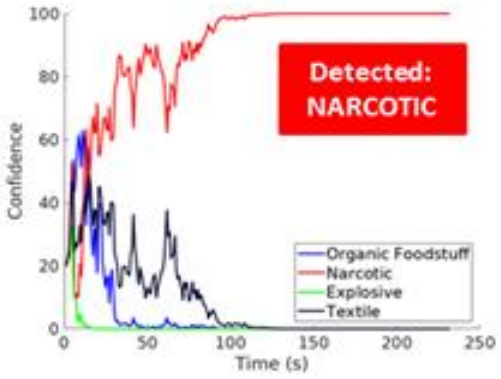


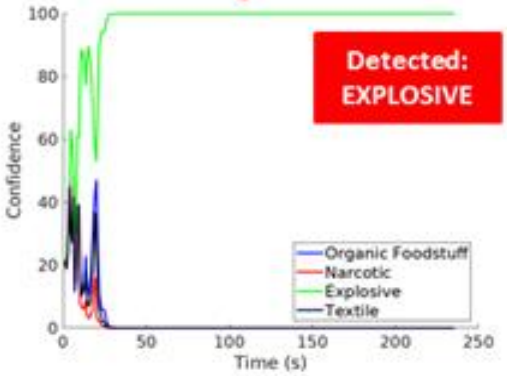
3D Image: Anomalies Located and confirmed organic





Material ID: Anomalies Confirmed





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Boston Facility

- Built with funding from US DHS R&D program
- Construction completed at Massport in 04/2017
- Successfully concluded performance testing in Q4 2017
- Available for site visit and demonstration

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Summary

- **SmartScan 3D** detects and identifies >20 different types of dangerous contraband – more can be added
- **Initial scan** with **EZ3D** automatically detects concealed & shielded organic material in high-density cargo
- **Verification scan** with **NRF** identifies suspicious materials without opening the cargo
- False positives found in the **initial scan** are resolved in the **verification scan** – cleared cargos can proceed
- Deployment at the high risk POEs is required to maximize performance capabilities
- TRL Level 9 – **SmartScan 3D** is ready for deployment

Steve Korbly - skorbly@passportsystems.com

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BACKUP

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SmartScan3D

- Key Technologies
  - High Duty Cycle X-ray source
  - Variable intensity source
  - Photon/Neutron counting
- Facility/Environmental
  - “Cabinet X-Ray System” under the US FDA CDRH CFR 1020.40 regulations
  - No standoff zone
  - ~ 600 m^2, tunnel ~ 50 m long

- Key Features/Benefits
  - Primary scan: Entire container ~1 minute
  - Conventional X-ray image
  - 3D image in Density and Atomic Number
  - Detects Contraband by the Elemental/Density composition in minutes – without opening the container
  - Automated Fissionable Material Detection/Clearing
  - Secondary Contraband scans: Region of Interest, 2-5 minutes

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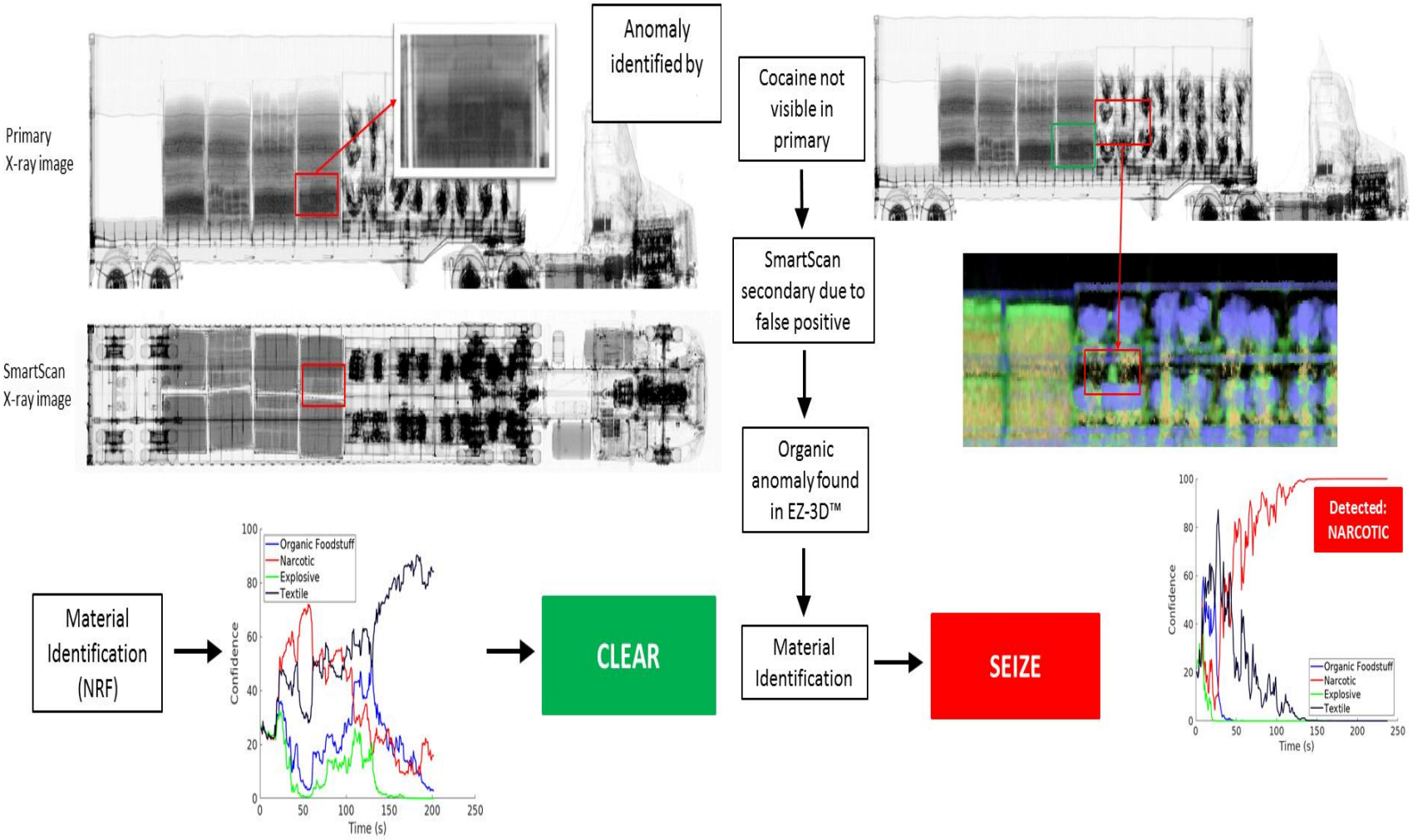
Resolution Example



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