



PASSPORT
SYSTEMS INC

SMARTSCAN™

SCANNING AND INSPECTION SYSTEMS

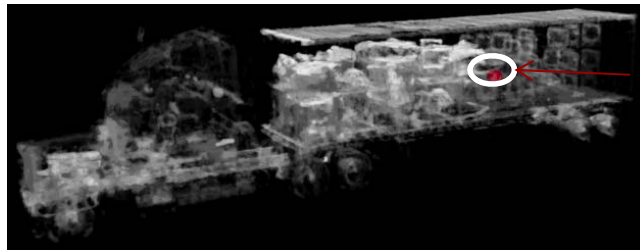
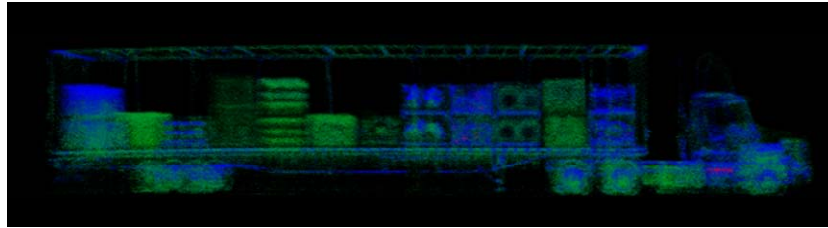
Steve Korbly
skorbly@passportsystems.com
ADSA-CBP 6/21/2018

Work Supported in part by U.S. Department of Homeland Security Domestic Nuclear Detection under competitively awarded Contract No. HSHQDC-12-C-00059. This support does not constitute an express or implied endorsement on the part of the government.

All claims and representations contained herein are those of Passport Systems, Inc. alone
Copyright © 2018 Passport Systems, Inc.

Key Technologies Overview

EZ-3D™

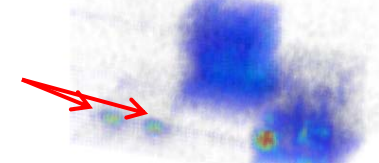


Automated detection

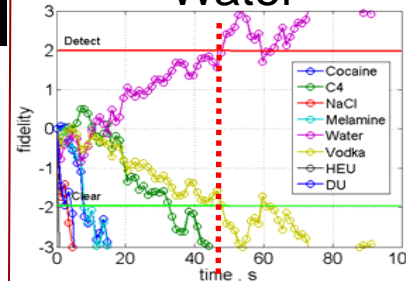
Large Scale 3D Imaging

Materials Identification

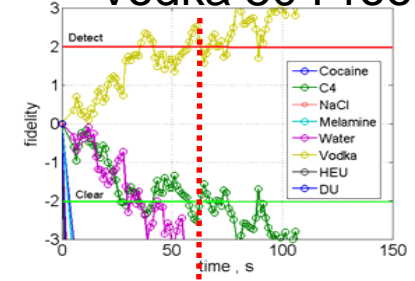
Bottles of Unknown Liquids



Water

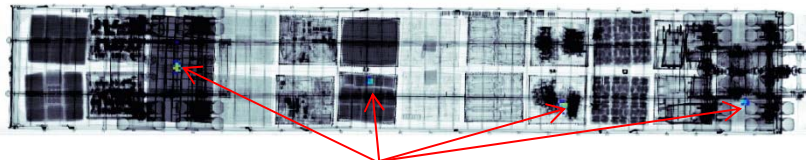
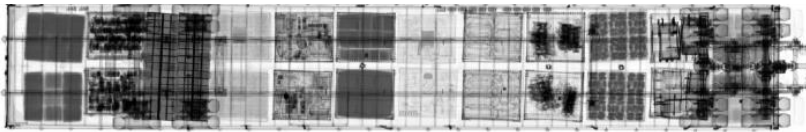


Vodka 80 Proof



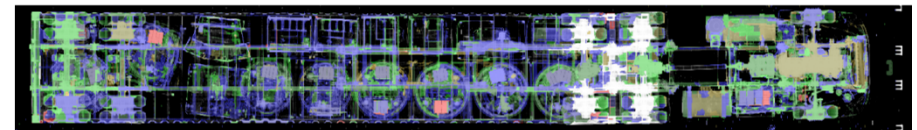
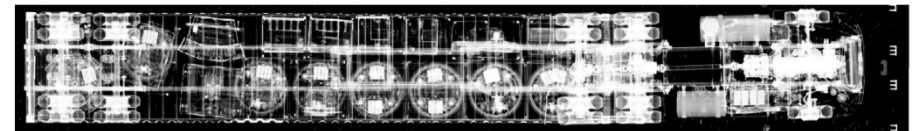
Elemental ID

Photofission



Automated Fissionable Material Detection

Imaging



- CRNE & economic capability. Extends to various pathways/venues
- Capable of developing new modalities, applications and technologies

Copyright © 2018, Passport Systems, Inc. Specifications subject to change without further notice. U.S. Export License procedures apply. Information and equipment require US Government authorization for export purposes. Diversion contrary to US law is prohibited.

"This work has been supported by the U.S. Department of Homeland Security, Domestic Nuclear Detection Office, under competitively awarded contract HSHQDC-12-C-00059. This support does not constitute an express or implied endorsement on the part of the Government."



Overview

- Technology Capabilities
- SmartScan3D system
- Future Configurations

Passport Technologies

Technology/ Capability	Functionality / Output
EZ-3D™	3D image in density and atomic number. Voxel size of 1"/2.5cm
Photofission	Identifies presence of shielded nuclear material at speed of commerce
Material Identification	Provides elemental composition of a volume
Transmission X-ray	Conventional X-ray image
Passive Radiation	Detects and identifies radioactive materials.
Data Fusion	X-ray/3D image Active/Passive High Z/Fissionable Manifest/3D/atomic ratios Video/

- **Active techniques enabled by high duty cycle X-ray beam(s)**

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 m², tunnel ~ 50 m long

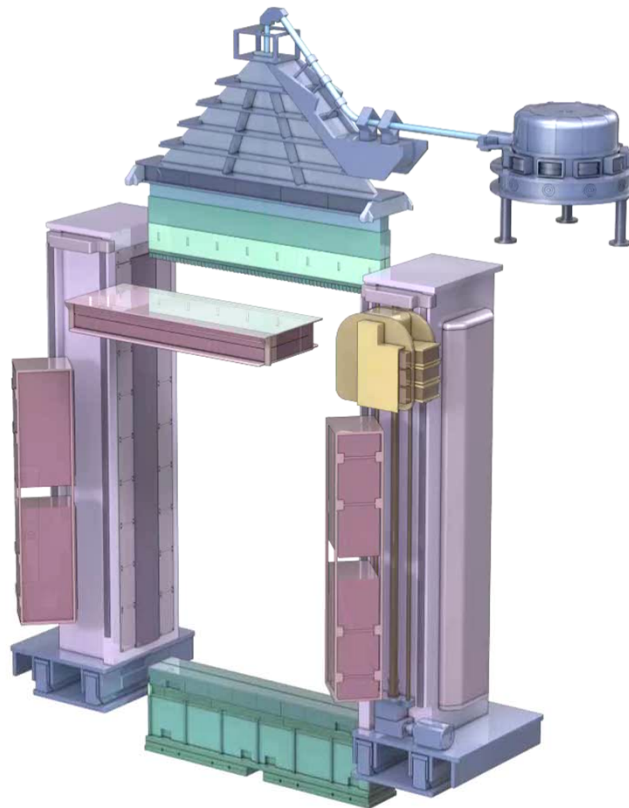
■ Key Features/Benefits

- 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

Copyright © 2018, Passport Systems, Inc. Specifications subject to change without further notice. U.S. Export License procedures apply. Information and equipment require US Government authorization for export purposes. Diversion contrary to US law is prohibited.

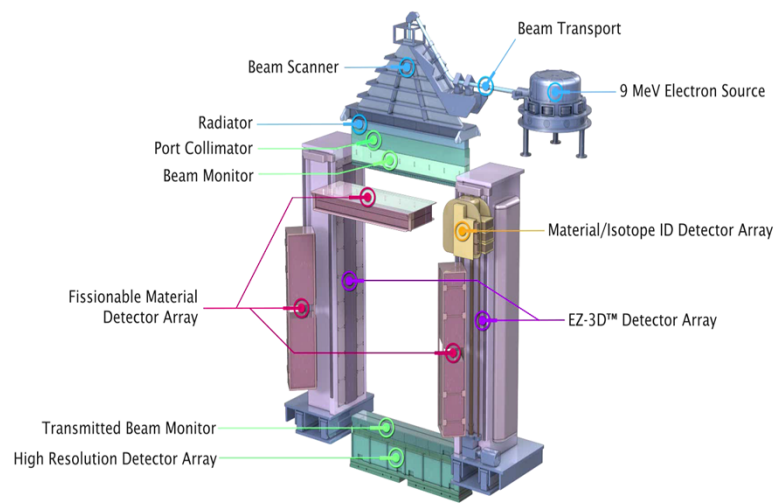
“This work has been supported by the U.S. Department of Homeland Security, Domestic Nuclear Detection Office, under competitively awarded contract HSHQDC-12-C-00059. This support does not constitute an express or implied endorsement on the part of the Government.”

Cargo SmartScan™ System Operation

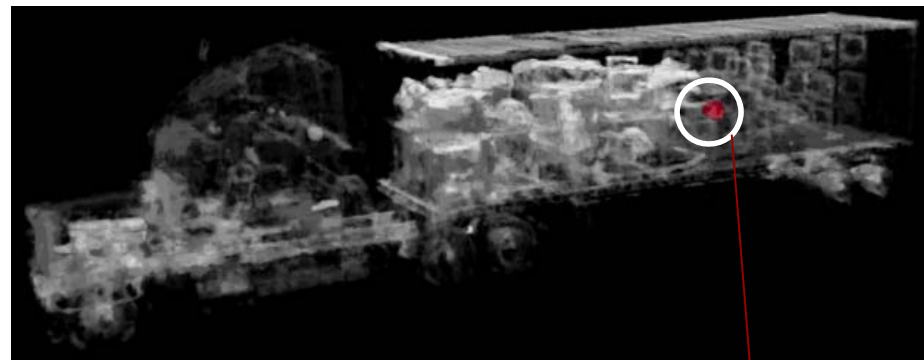


SmartScan 3D™ Automated Cargo Inspection System

EZ-3D™ Summary & Examples

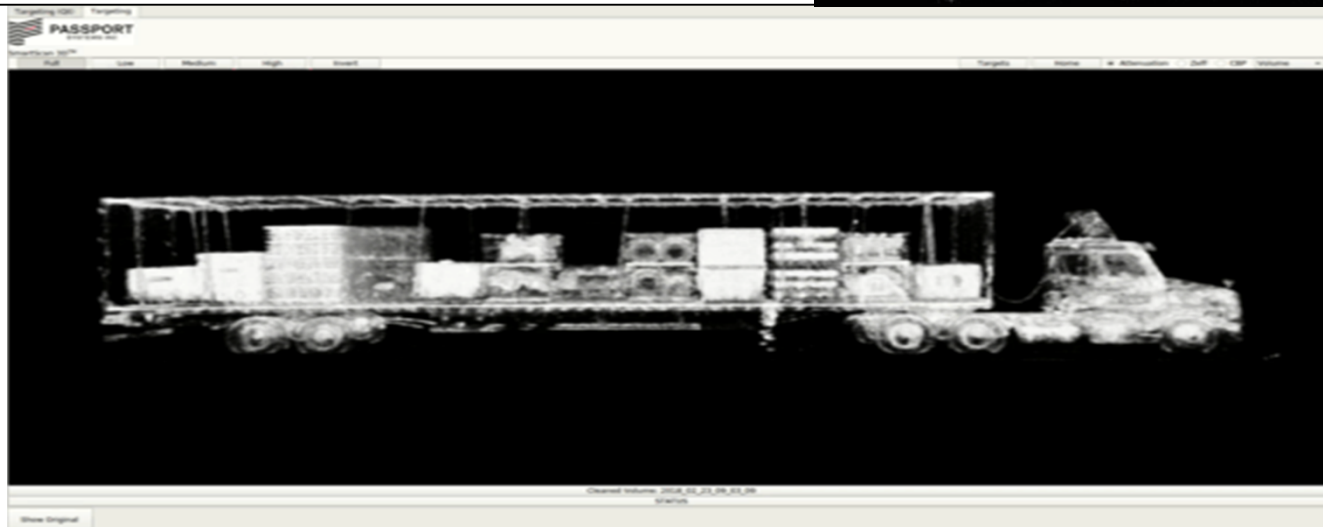


SmartScan 3D™ Automated Cargo Inspection System



Automated
Explosive Alarm

2.5 cm³ image
Voxel size



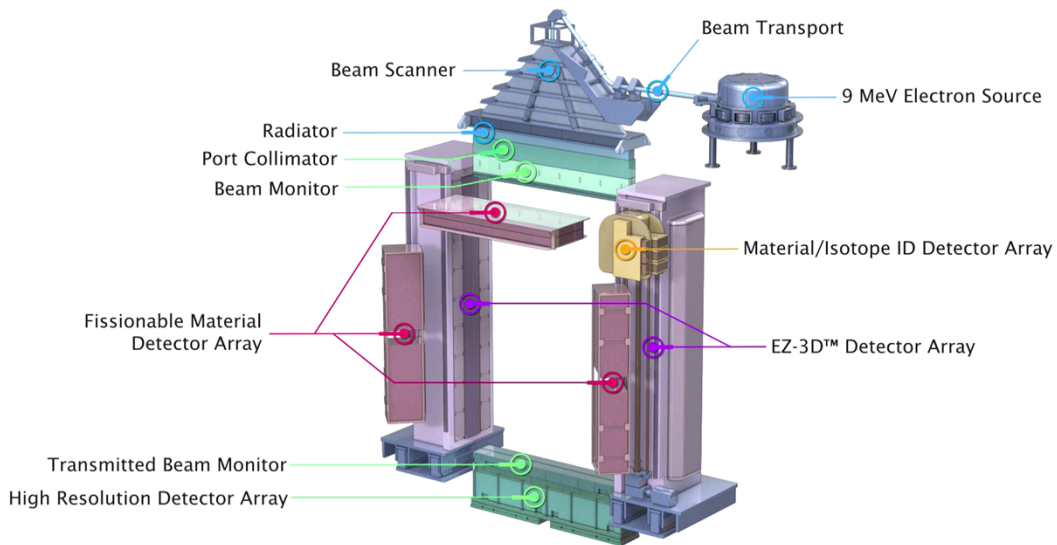
Copyright © 2018, Passport Systems, Inc. Specifications subject to change without further notice. U.S. Export License procedures apply.

Information and equipment require US Government authorization for export purposes. Diversion contrary to US law is prohibited.

"This work has been supported by the U.S. Department of Homeland Security, Domestic Nuclear Detection Office, under competitively awarded contract HSHQDC-12-C-00059. This support does not constitute an express or implied endorsement on the part of the Government."



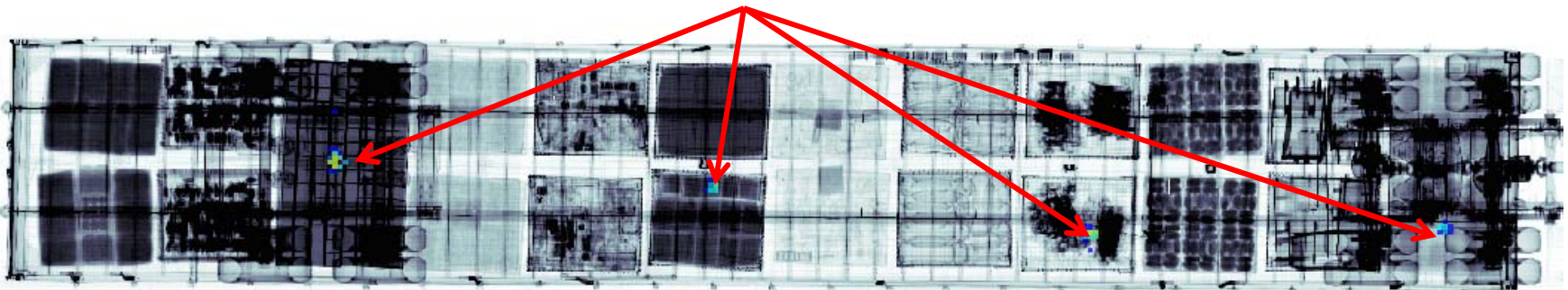
Photofission Summary & Example



- Pencil beam induces fission on actinides
- Fast neutrons detected & correlated with beam position
- Counts exceeding thresholds indicate fissionable material

SmartScan 3D™ Automated Cargo Inspection System

Fast Neutron Counts



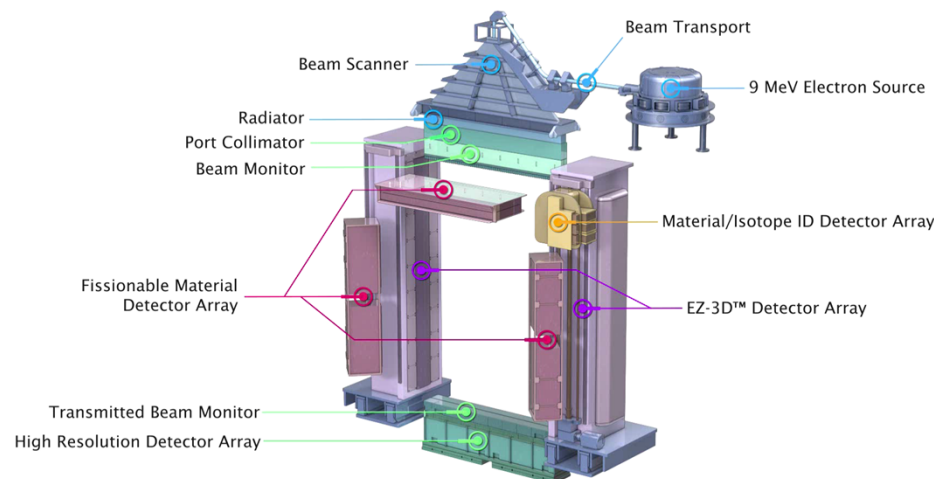
Copyright © 2018, Passport Systems, Inc. Specifications subject to change without further notice. U.S. Export License procedures apply.

Information and equipment require US Government authorization for export purposes. Diversion contrary to US law is prohibited.

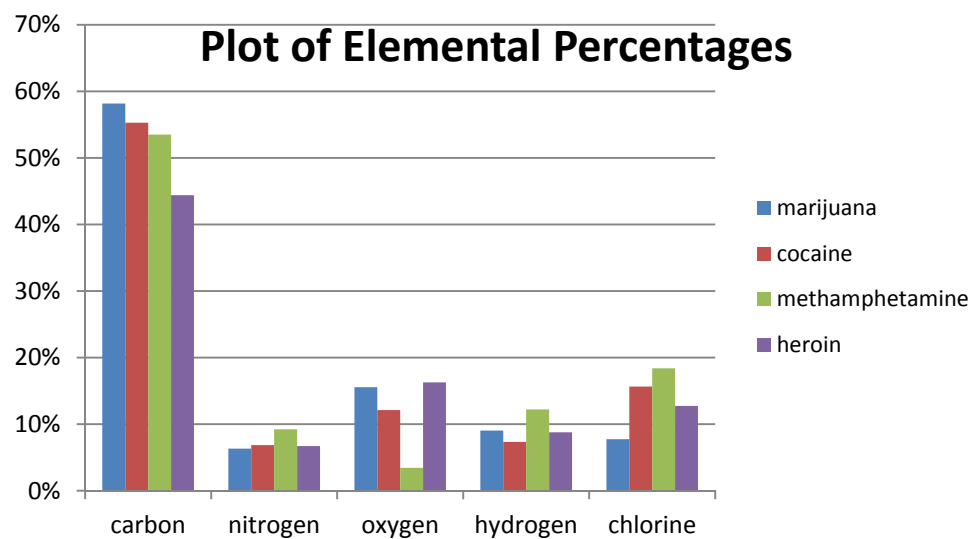
"This work has been supported by the U.S. Department of Homeland Security, Domestic Nuclear Detection Office, under competitively awarded contract HSHQDC-12-C-00059. This support does not constitute an express or implied endorsement on the part of the Government."



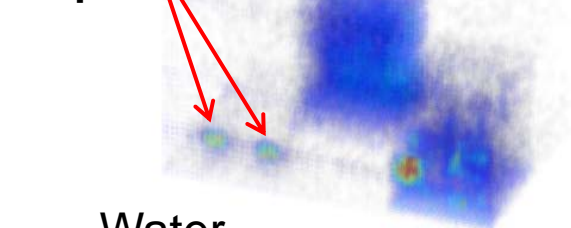
Material Identification (NRF) Summary & Examples



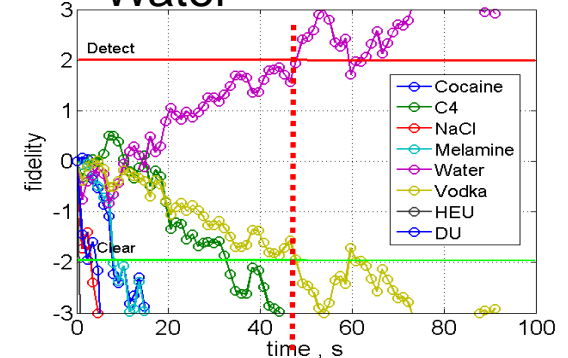
SmartScan 3D™ Automated Cargo Inspection System



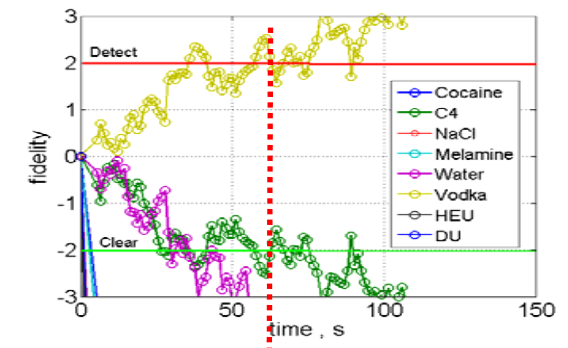
Bottles of Unknown Liquid



Water



Vodka 80 Proof



Copyright © 2018, Passport Systems, Inc. Specifications subject to change without further notice. U.S. Export License procedures apply.

Information and equipment require US Government authorization for export purposes. Diversion contrary to US law is prohibited.

"This work has been supported by the U.S. Department of Homeland Security, Domestic Nuclear Detection Office, under competitively awarded contract HSHQDC-12-C-00059. This support does not constitute an express or implied endorsement on the part of the Government."

Slide 9

CW2

Updated liquid images from marketing scan

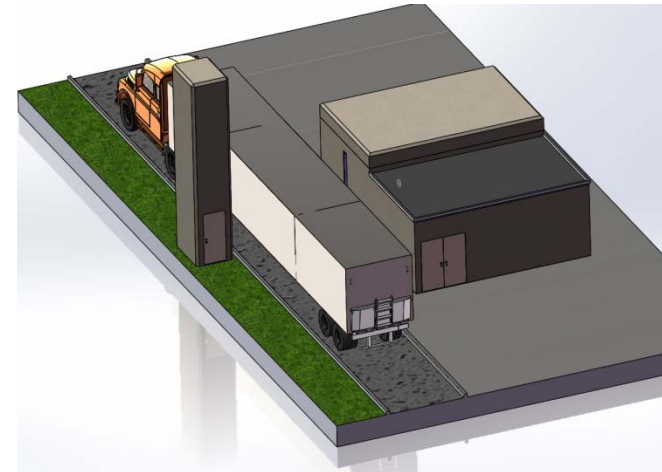
Cody Wilson, 6/2/2018

SmartScan™

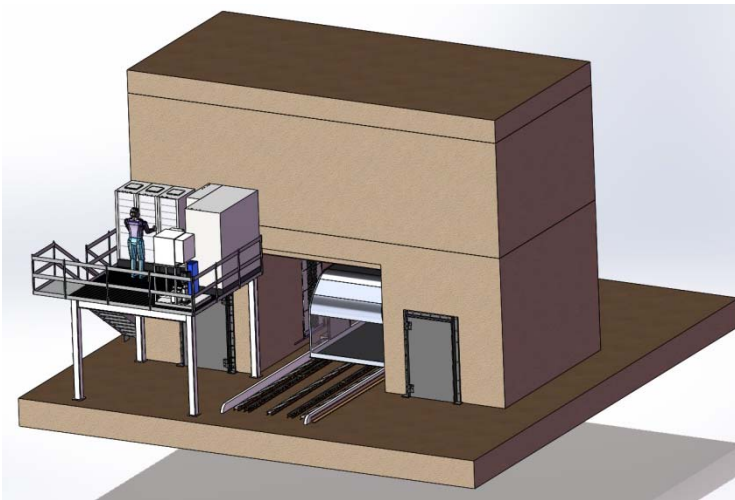
SmartScan™ 3D



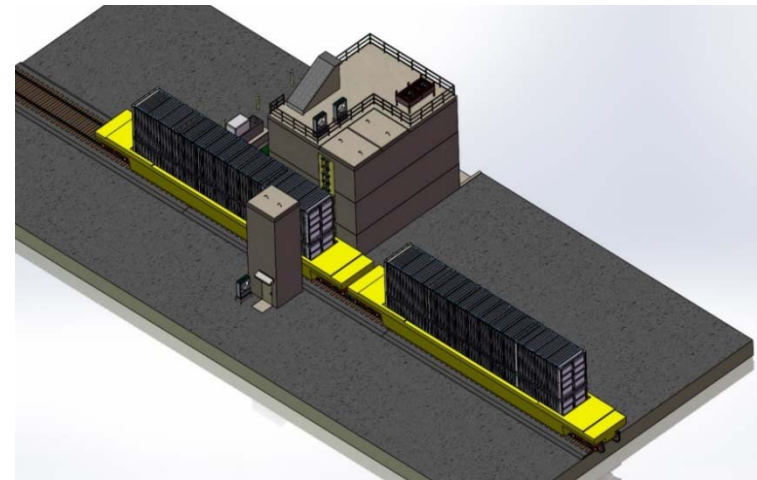
SmartScan™ Portal



SmartScan™ Air Cargo



SmartScan™ Rail



Copyright © 2018, Passport Systems, Inc. Specifications subject to change without further notice. U.S. Export License procedures apply. Information and equipment require US Government authorization for export purposes. Diversion contrary to US law is prohibited.

Summary

- Passport has developed several new technologies to support the customs mission
 - 3D imaging of large scale cargos
 - Material Identification
- Full capability scanner designed for secondary screening operational
- New configurations
 - High throughput
 - Air cargo