



Science and Technology



TRANSPORTATION SECURITY & EXPLOSIVES CHARACTERIZATION

SYNCHRONIZED MARKERS FOR X-RAY SYSTEMS

SYNCHRONIZED X-RAY MARKER SYSTEM TO ELIMINATE BAG MISIDENTIFICATION WHEN REMOVING A BAG WITH A POTENTIAL THREAT DURING X-RAY SCREENING AND INSPECTION

When screened property is flagged for potential risk at a security checkpoint, it is pulled from the processing line for manual inspection. If luggage items are similar in shape or size, operators may accidentally pull the wrong item from the line, and a potential threat might be carried to boarding gates without timely interception. When this happens, airports may need to shut down or conduct additional passenger screening until the correct flagged item can be located.

Researchers at the Transportation Security Administration (TSA) co-developed the Synchronized Markers for X-ray Systems (SMXS) as a solution for operator error when pulling screened property for additional inspection. These markers, which are visible to the naked eye and reactive to X-rays, are strategically placed on the scanning belt of an X-ray scanner. This unique feature allows scanner operators to precisely identify the item of interest and remove it from the scanning line for inspection.

KEY BENEFITS

- + Provides consistent, spatially synchronized reference points on X-ray display and belt
- + Improves tracking and removal of flagged items
- + Safely increases security checkpoint efficiency

STAGE OF DEVELOPMENT

Proven System

PARTNERSHIP SOUGHT

License

INVENTORS

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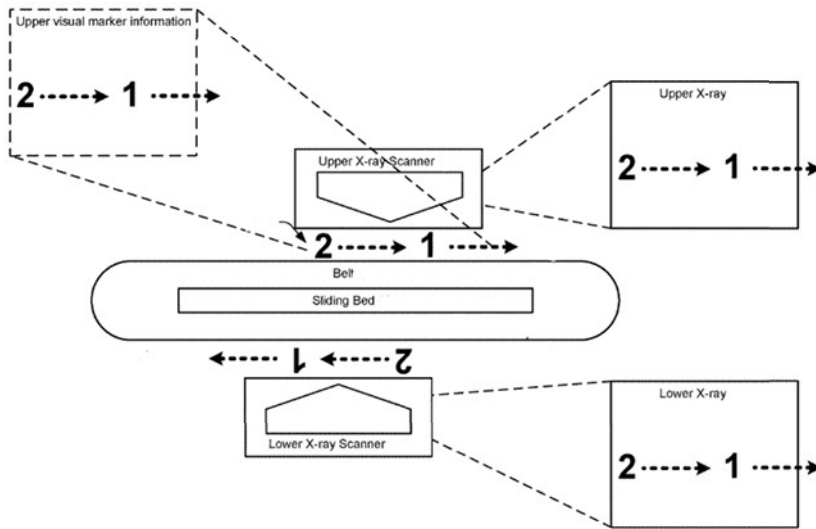
DHS COMPONENT

Transportation Security
Administration

The Technology Transfer and Commercialization Branch (T2C) within the Office of Industry Partnerships (OIP) of the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) serves as the centralized point to manage technology transfer activities throughout DHS and the DHS laboratory network. T2C@hq.dhs.gov

THE TECHNOLOGY

SMXS creates visible reference points for multiple-scanner X-ray systems where the upper and lower belt surfaces move in opposite directions. System operators can strategically place pairs of numbers on the scanner belts' upper and lower surfaces. These numbers absorb or reflect X-ray beams to contrast with the belt and scanned items. As one number passes the upper X-ray scanner, the second number in the pair simultaneously passes the lower X-ray scanner. The result is a synchronized visual marker that appears in both scans, which helps operators clearly see an item's position within the scanning system monitor image and physically on the scanning belt.



A diagram showing aligned SMXS marker placement on the scanning belt of an upper X-ray and lower X-ray system.

APPLICATIONS

The technology has several potential end uses:

- + Passenger, building, or venue screening
- + Mail parcel screening
- + Food inspection
- + Manufacturing quality control

PATENT INFORMATION

US Patent numbers 10,539,707 and 10,884,157



CONTACT INFORMATION

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<https://www.dhs.gov/science-and-technology/technology-transfer-program>



TECHNOLOGY SOLUTION