Smart Scanning Solutions & SGS D-TECT®

Cargo Image Analysis Solution
For Ports & Customs

SGS

SGS experience in non-intrusive inspection

SGS is the leader in the provision of Non-Intrusive Inspection (NII) of Cargo, Vehicles and Baggage Services.

With over 20 years of experience spanning across the globe, SGS finances, owns, operates, and maintains several non-intrusive equipment (cargo scanners, pallet scanners, radiation portals, trace detection systems, radiometers, etc.) from the most important manufacturers in the world: Astrophysics, Rapiscan/AS&E, NUCTECH, Smiths Heimann.

SGS is responsible not only for executing the infrastructure and hardware aspects of the project implementation, but also for the hiring and training of new and existing personnel, both for SGS staffing and the client's side.
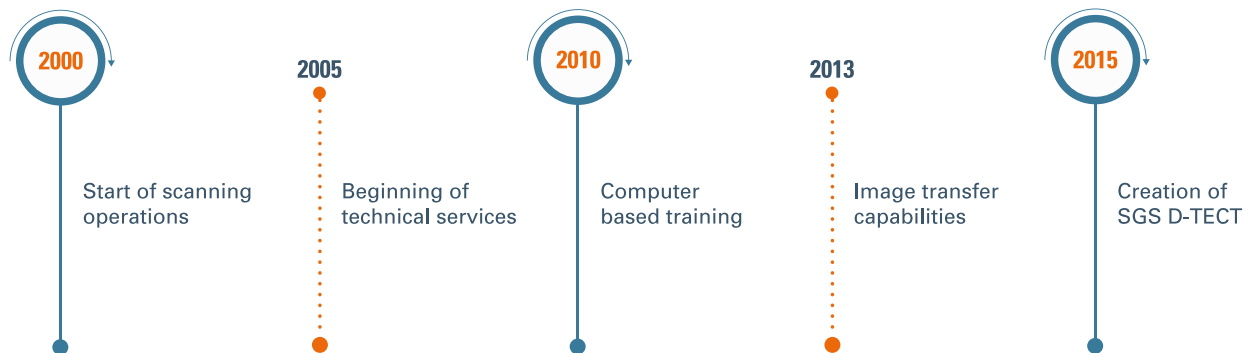
SGS D-TECT®

Since 2015, SGS has developed and deployed the first universal application for image centralization and screening management, SGS D-TECT®, compatible with the top market brands and models of cargo scanning equipment (NII equipment) available in the world.

SGS D-TECT® creates a unique operational environment where users can work in a fully digital remote interpretation of radioscopic images from a single platform, anytime, anywhere.
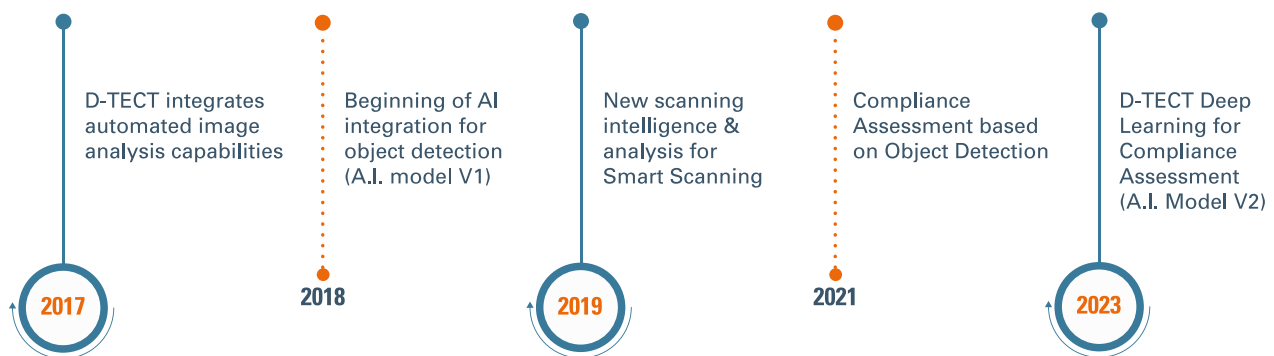
SGS D-TECT® is not just an image analysis tool. It is the right ecosystem for any high-end x-ray scanner as it supports its integration within the operational workflow, allows remote screening, and provides real time information and KPIs on scanner related performance to the management level and all the decision makers within the customer organization, in a simple and user-friendly interface.

Scanning services factsheet

2000 — Start of scanning operations

2005 — Beginning of technical services

2010 — Computer based training

2013 — Image transfer capabilities

2015 — Creation of SGS D-TECT

OVER 20 YEARS OF EXPERIENCE IN SCANNER OPERATIONS

2017 — D-TECT integrates automated image analysis capabilities

2018 — Beginning of AI integration for object detection (A.I. model V1)

2019 — New scanning intelligence & analysis for Smart Scanning

2021 — Compliance Assessment based on Object Detection

2023 — D-TECT Deep Learning for Compliance Assessment (A.I. Model V2)

SGS Smart Scanning Solutions integrates not only top market brands in the market scanners but also peripheral technologies to create seamless scanning operations.

- Drive through scanning (vehicle drive through the scanner tunnel and the scan is performed automatically)

- Radiation monitoring (detecting non-natural source of radiation within the containers). Since 2018, we have the capability of interfacing the readings from the RM panels within SGS D-TECT alongside the radioscopic images both for Portal and Gantry type of scanners

- Optical Character Recognition (OCR) for container Number and License Plate Recognition 'LPR' system both in western and Arabic characters.

- Under vehicle Surveillance (UVSS) images integration

- Material discrimination (Organic, inorganic and metallic materials are differentiated on the radioscopic images with colors)
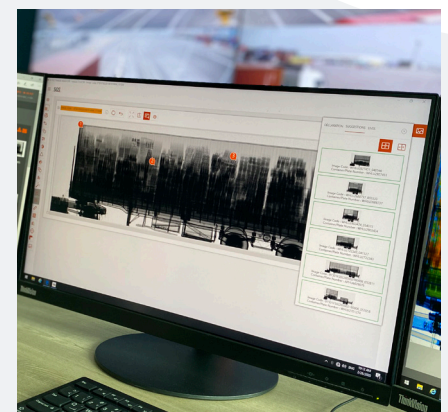
- CCTV with 24hours recording and the capacity to extract video sequence

- Interconnection with Traffic Management System and weight bridges

- Interconnection with Customs Management System and Port Management Systems for monitoring and organization of the scanning process in an integrated manner both with the Customs and Ports authorities

By combining the scanner equipment to SGS D-TECT® as an integrated module, Ports & Customs gain access to a universal viewer which centralizes and harmonizes images from any scanning equipment manufacturer and interfaces with various Customs Management System providers.

SGS D-TECT ® automatically matches scanned images, container's pictures, and measurements from the radiation portal to their respective export file (export declaration, manifest, bill of lading).

The scan can take place at any moment during the entry process as the matching of the image with the export file is performed when both are available.

Images to be analyzed can be filtered per user's profile with specific criteria, such as the country of origin or type of goods and the user has the possibility to see batches of images of the various containers included in the export file.

Our unique value proposition

DATA CENTRALIZATION & REMOTE ACESS

One-stop solution to gather, harmonize, and analyze images from multiple locations and multiple devices from different manufacturers

IMAGE TRACEABILITY & DATA MATCHING

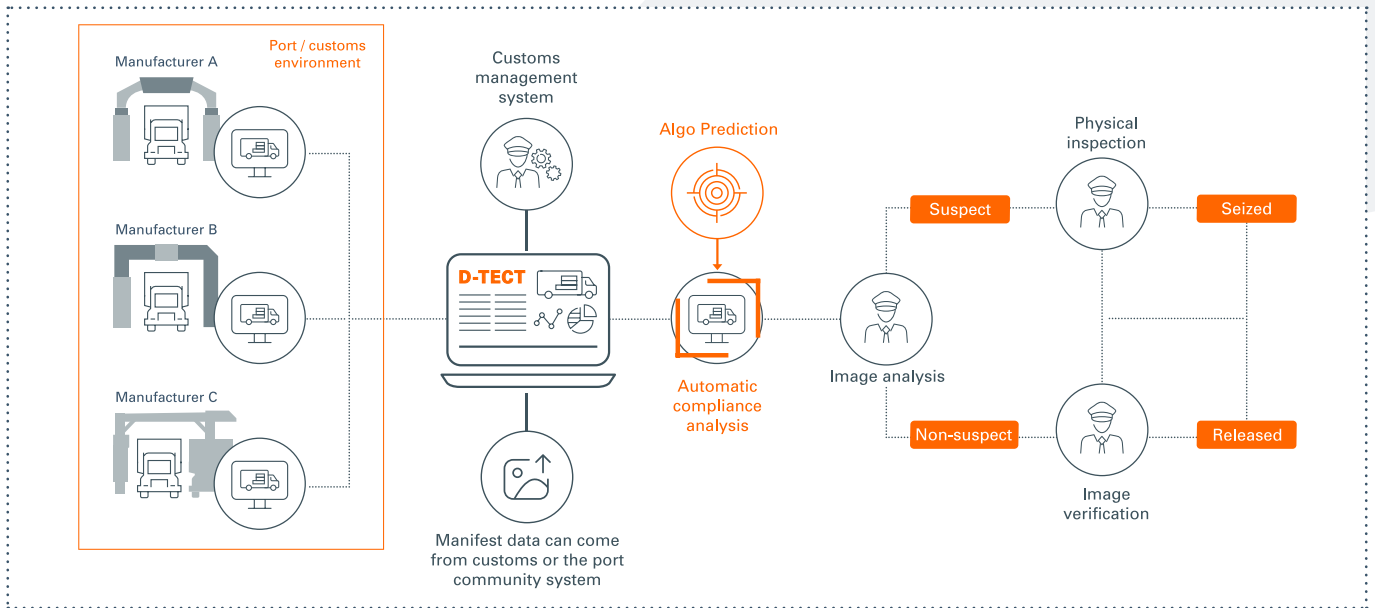Automatic OCR reading of number plate and container number to match image with declaration

IMAGE TRACEABILITY & DATA MATCHING

Automatic compliance assessment through A.I. modeling & smart scanning flow allowing customs to adjust control levels ton increase efficiency and/or compliance thresholds

SGS D-TECT® provides the following advantages:

- ☑ Improve the scanner operations by allowing government administrations to see in real time the scanned images from isolated container scanners in different locations, even if the images are being recorded by different brands of scanners.

- ☑ Reduce time and costs associated to the printing and manual transmission of images. D-TECT will avail the original format images in a secure manner to the authorities within a secure network.

- ☑ Automatically integrate the scanned images with data from other automated systems such as the Single Window and the Customs management system.

- ☑ Offer the possibility to relocate trained Image Analysts to a central command center as they will no longer be needed in remote locations.

- ☑ Provide all scanned images from remote scanners available for audit purposes. Data mining functions enable Management to audit the performance of individual scanner units, individual operators their actions, comments, and decisions.

SGS D-TECT® workflow overview

Manufacturer A

Port / customs environment

Customs management system

Algo Prediction

Physical inspection

Manufacturer B

D-TECT

Automatic compliance analysis

Image analysis

Suspect — Seized

Non-suspect — Released

Manufacturer C

Manifest data can come from customs or the port community system

Image verification

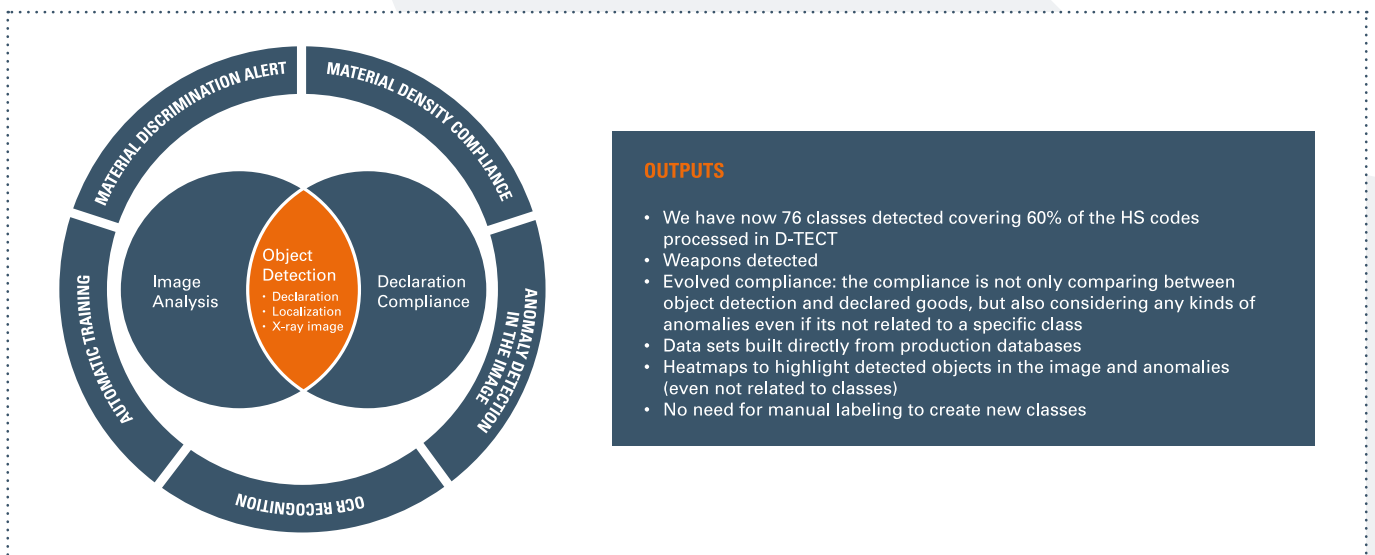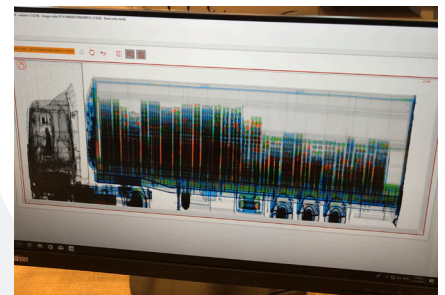# Integration of Artificial Intelligence (A.I.) in SGS D-TECT®

The SGS D-TECT® team has more than 5 years of experience on developing A.I. specifically in the field of X-Ray Images to support Customs assessments with automated image analysis.

D-TECT® A.I. is designed to support scanning operations via D-TECT's workflow before the image acquisition and after images/declaration are received.

The aim of D-TECT® AI is to support the maximization of image acquisition volumes while helping Customs to identify the riskiest images to be analyzed.

To do so, the system is grounded in:

- The Historical Data Prediction (HDP)

- Automatic Compliance Assessment module (ACA)

MATERIAL DISCRIMINATION ALERT

MATERIAL DENSITY COMPLIANCE

AUTOMATIC TRAINING

Image Analysis

Object Detection
- Declaration
- Localization
- X-ray image

Declaration Compliance

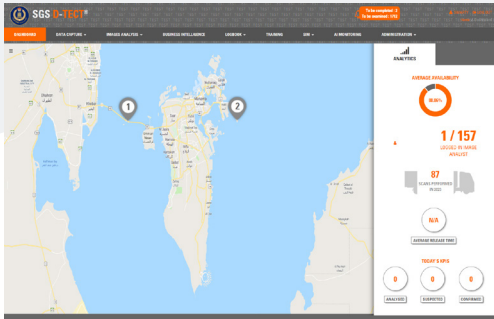ANOMALY DETECTION IN THE IMAGE

OCR RECOGNITION

OUTPUTS

- We have now 76 classes detected covering 60% of the HS codes processed in D-TECT
- Weapons detected
- Evolved compliance: the compliance is not only comparing between object detection and declared goods, but also considering any kinds of anomalies even if its not related to a specific class
- Data sets built directly from production databases
- Heatmaps to highlight detected objects in the image and anomalies (even not related to classes)
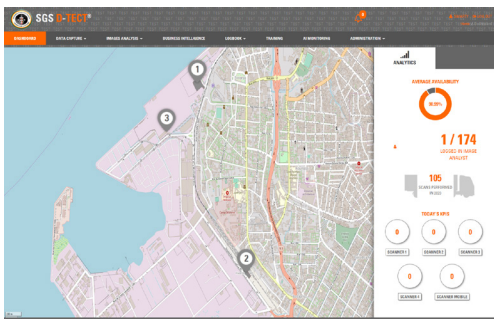- No need for manual labeling to create new classes

Proven Track Record

SGS has successfully deployed the Smart Scanning and D-TECT® solutions in multiple countries:
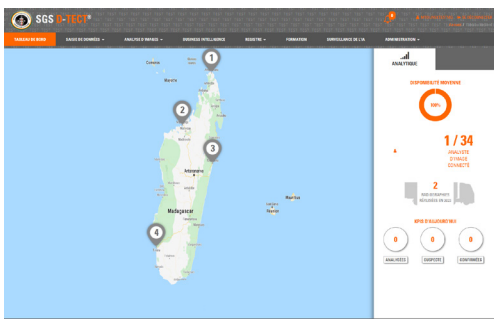

PORTAL SCANNER HARDWARE & SOFTWARE SOLUTION IN CAMEROON

This contract centered on the financing, deployment, and installation of 4 Portal scanners for the 100% scanning of containers (Import, export, transit and empty) located at the Douala Port as well as the deployment of SGS D-TECT solution. The project includes two Control Rooms, one in Douala and the second within Yaoundé's Customs HQ.

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MADAGASCAR

As a module of SGS Single Window solution, D-TECT allows the national integration of the images and accessibility at Customs' main offices in Antananarivo. In this operation, we have a mix of Mobile and Gantry scanner units

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SGS is the 1st to deliver a 100% scanning operation on a port's import / export operations

More than 70 units inspected under SGS FAT/SAT technical services

Over 1,500 (tbc) operators trained in image analysis, radiation safety and scanning

Over 1.5 million images are generated every year by our operations

45 seconds – Image transmission time (in a dedicated network of 100MB)

We deliver 97.5% reliability and availability for all our operating equipment

We have delivered scanner services in more than 15 countries with over 40 units

5 min – Average scanning time (from truck entering to image availability)

We run 24x7 operations all year round

Why SGS?

SGS is the world's leading inspection, verification, testing and certification company. SGS is recognized as the global benchmark for quality and integrity.

With over 98,000 employees strategically located around the world, SGS works across 7 focus areas and throughout the supply chains providing specialized business solutions that improve quality, safety, productivity and reduce risk. Our network of 2,650 offices and laboratories help customers navigate an increasingly regulated world by offering local expertise on a global scale.

SGS is a global specialist with worldwide experience in implementing and operating solutions for Governments that provide accurate and real-time data alongside effective revenue collection.

SGS has over 20 years' services & cargo image analysis globally

We are experts in:

- **Smart Data Matching**
- **Remote Image Analysis**
- **Image Calibration**
- **Artificial Intelligence**
- **Object Detection**

- **Declaration Compliance**
- **Anomaly and Threat Detection**
- **Data Centralization**
- **Radiation Measurement**
- **Double Energy**

- **Single Energy**
- **Binocular**
- **Backscatter**
- **White Label**

SGS.COM

FOR MORE INFORMATION :

To obtain further information on how SGS can help you, please contact dtect@sgs.com

✉ dtect@sgs.com

WHEN YOU NEED TO BE SURE

SGS