e-Cargo

The eCargo Training System provides an environment for technical and procedural training of aviation security and the CARGO supply chain as regulated by IATA and EU in the context of ACC3 (protected supply chain limited to certified forwarders, carriers and GHAs). e-CARGO is the base module of a full e-CARGO laboratory.

This training laboratory takes specific consideration of the ACC3 ('Air cargo and mail carrier operating into the Union from a Third Country Airport') programme.

Description

The system provides an optimized environment to practice the IATA regulations and procedures for efficient and compliant air cargo management and security management.

It implements the IATA eCARGO-XML standard, following the Industry Master Operating Plan (MOP), mapping the relevant processes and security features from the initial shipper to the final consignee.
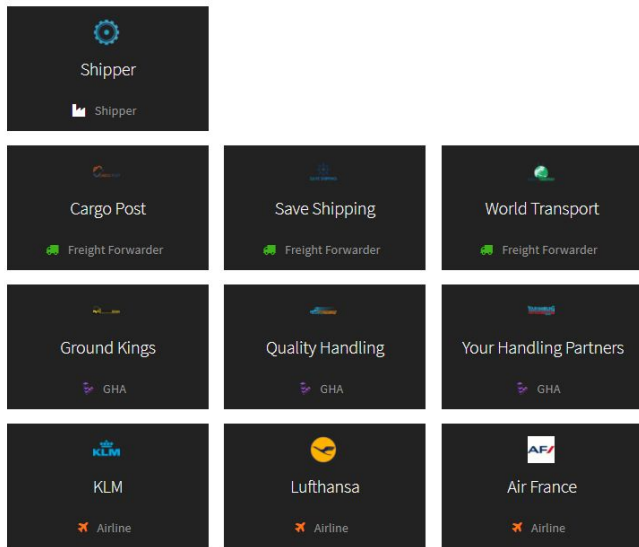
The core version of eCargo is software-based and preinstalled on a server.

It can be extended with a real Cargo SCADA and conveyor system as well as a X-ray scan simulator or an x-ray scanner.

Features

The conception of the system takes account and supports training in the context of the following regulations:

- IATA e-Cargo
- ACC3 Programme of the European Union
- Dangerous Goods Regulation (IATA Regulation 618 Attachment "A")
- IATA ULD Regulation
- IATA CARGO-XML message protocols and standards
- IATA Aviation Cyber Security Toolkit
- EUROCONTROL Manual for National ATM Security Oversight

- The interconnection of the processes with Flight Plan and Flight Data Processing Systems
- Cybersecurity Training for eCARGO processes and secure supply chains
- Cargo flow management and analysis with Conveyors, SCADA and PLC control (extension)
- Cargo X-ray scan (extension)

Parts

Parts of the Basic Version

The e-Cargo system consists of:

- FreeScopes software for unlimited use within the premises or intranet of the customer (access given through the corresponding component or SkyRadar CloudServer)
- One (1) license for SkyRadar FreeScopes software utilization
- One (1) e-Cargo Software including e-AWB, e-CSD, e-DGD, e-ACI, ULD-configurator, a small Flight Plan and Flight Data Processing system on one (1) server
- One (1) Cyber-Attack Experimentation on one (1) server
- One (1) Cyber-Attack Simulation on one (1) server

Topics

e-Cargo is a training environment for the following subjects:

- General end-to-end process training including the roles of forwarders, ground handling agents, carriers and customs
- e-AWB (e-Airway Bill)
- e-CSD (e-Cargo Security Declaration)
- e-DGD (e-Dangerous Goods Declaration)
- e-ACI (e-Advanced Cargo Information)
- ULD Configuration

- One (1) license for e-Cargo software utilization
- One (1) Operating manual in English language freely downloadable.

Prerequisites

- Computers with latest HTML5 enabled browser. Current versions of Chrome, Firefox, MS Internet explorer, Opera and Safari are able to read HTML5.
- One (1) SkyRadar CloudServer

Extensions

- SkyRadar Cloud Server
- All applications of the SkyRadar Modular Radar Training System Family
- SkyRadar Cargo SCADA & Conveyor System
- SkyRadar X-Ray Scan Simulator

SkyRadar's e-Cargo software is accessible by an unlimited amount of concurrent users. It can be extended by a broad range of solutions required for ICAO and EuroControl ATCO and ATSEP training programs as well as IATA qualifications makes SkyRadar the preferred choice of many aviation academies and IATA TrainAir Plus accredited institutions. Many universities and military academies use SkyRadar's hardware and software solutions within their qualification, education, training or research programs.

Detailed Description

This Cargo Handling Training System provides an environment for technical and procedural training of aviation security and the CARGO supply chain as expected by IATA and EU in the context of ACC3 (protected supply chain limited to certified forwarders, carriers and GHAs). Computers get access the LAN or Wireless LAN, enabled through the SkyRadar Cloud Server.

This training laboratory helps to train the planning, management and operation of secure supply chains with respect to

- Secure eCARGO supply chains including certified agents and communication, protected against malicious attacks, manipulation, data theft and intrusion of unregulated players.
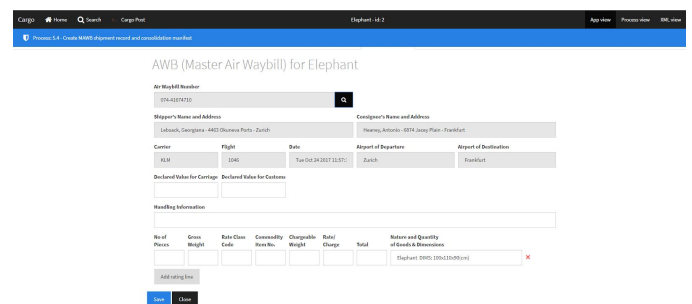
- Secure physical CARGO supply chains, with state-of-the art Surveillance, Control and Data Acquisition, RFID, integration into eCARGO and the possibility to isolate specific Unit Load Devices (ULDs) in a fully automatized approach
- Cyber Security Training subsystem, teaching the cyber-protection of the eCARGO supply chain
- Help air carriers and their supply chains to get ready for successful ACC3 designation.

2. Selecting a carrier
3. Generating a waybill and other documents
4. Reaching the shipment to the carrier (airline)
5. Completing ground handling activities
6. Loading the shipment at the port of origin
7. Unloading the shipment at the destination
8. Transferring the shipment to the freight forwarder at the receiving end
9. Reaching the shipment to the consignee
10. Enabling a view of the customs activity within the application

Subjects

SkyRadar e-Cargo (also referred to as "eFreight") is a simulation application based on the IATA e-CARGO standard and the air cargo industry transportation business process (Air Cargo Industry Master Plan) by the Air Cargo iQ Interest Group. Using this tool, you can track the movement of air cargo from the point of booking it with a freight forwarder as a consignor, and ensuring its arrival at the consignee.

1. Booking a shipment with a freight forwarder

Cyber Security System Trainer

The trainer allows to practice Cybersecurity activities around the eCargo supply chain.

The objective of these practical exercises is to help teaching system designers, managers and users as well as students to gain the following competences:

- Understand the nature and impact of cybersecurity threats and being able to judge airline system threats and vulnerabilities
- Learn to analyze latent threat-potential through security weaknesses in existing or new systems in a structured way and be able to close loopholes
- Learn to detect attacks and handle them with the objective to reach rapid system recovery and most limited damage

The trainer includes

- attack scenarios: sniffer attacks, insider threat, trojan horse, identity spoofing, upstream attacks, etc.

- defence scenarios: firewall, SSL, 2 factor authentication, etc.

Interactive simulator

The interactive simulator provides a guided learning environment. It includes 3 panels:

- The left panel consists of a status window, allocating the user / student within a process
- The middle panel shows a procedure a transaction, followed by the student
- The 3 panel simulates the procedure and a potentially involved thread scenario
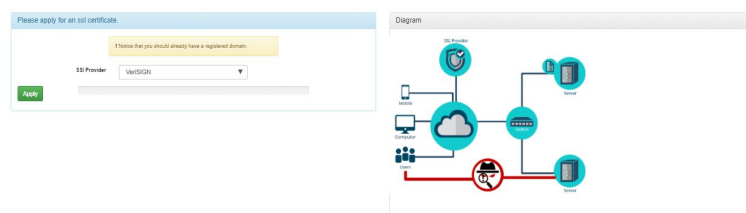
Trainer Cyber attack experiment environment

The cyber attack experiment environment allows to practice within the e-freight route network. It is connected to the Cargo Management and e-Freight (Training) System.

The trainer is equipped with a control panel, an analytics screen as well as attack panels for the teachers to activate threats.

The simulator represents a typical graphical user interface of an x-ray scanner with typical functions such as pseudo-colors, grayscale, organic, or metal.
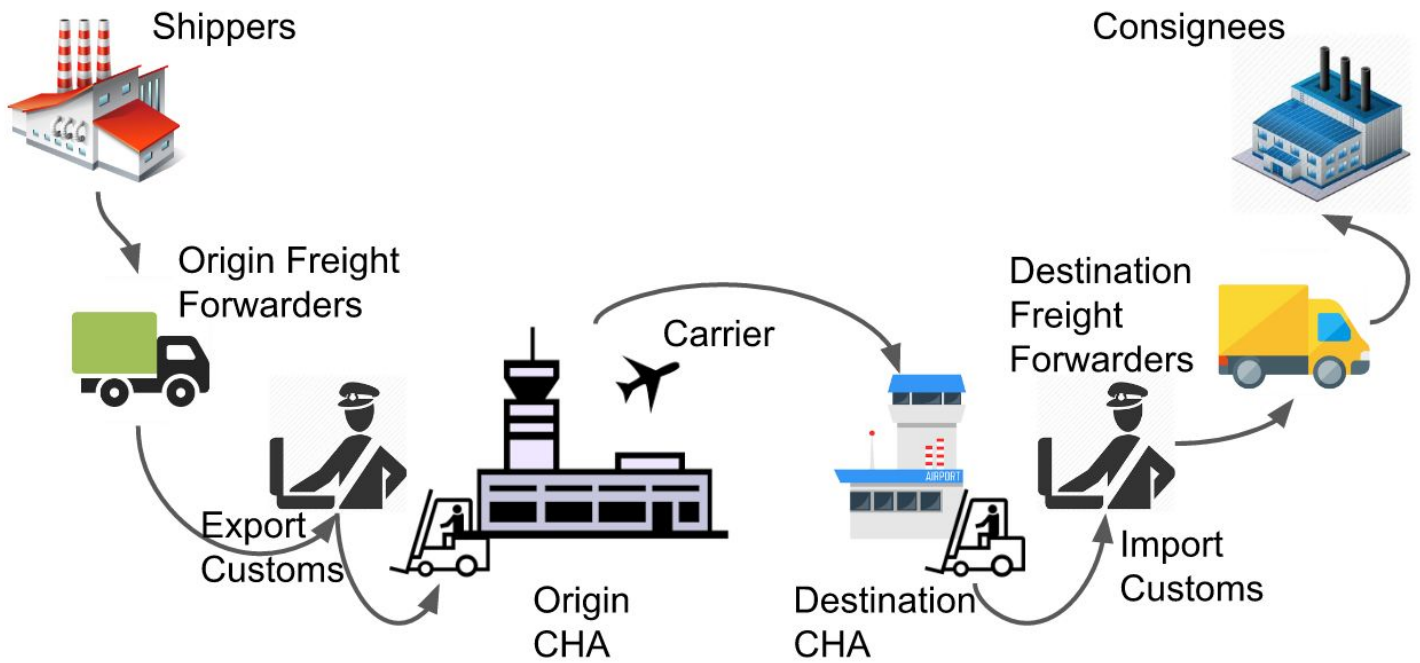
X-Ray Scan Simulator (add-on)

X-Ray Scan Simulator (add-on)

This simulator provides capability for student with image interpretation skills and experience to be able to detect a wide variety of threat items within a restricted time.
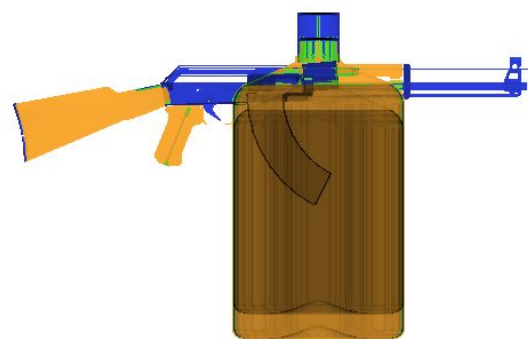
SkyRadar Cargo SCADA & Conveyor System (add-on)

SkyRadar's hardware cargo training system has a modern modular design and consists exclusively of high tech industrial components including

Drives, Control & Bus-Communication (ProfiNet, ASI)

Siemens SCADA and PLC control as just used in real CARGO applications

Modular Conveyor and Handling systems

The solution in fully integrated into the e-CARGO System. The hold and storage process is triggered by e-CARGO's Flight Data Processing system, process data are seamlessly exchanged between this system and e-CARGO.

Technical Specification, server hardware

Each application (e-Cargo, cyber security simulation, cyber security experimenter, x-ray simulator) is supplied preinstalled on an industrial rack server.

We provide for all applications the Hewlett Packard HPE ProLiant DL20 Generation9. Only the SCADA & Conveyor system as well as the CloudServer have a different hardware, due to their specific system requirements.

The HPE ProLiant DL20 configuration includes the following:

Intel® Xeon® Processor E3-1240 v5 (4 Cores, 3.50 GHz, 8M Cache)

8GB (1 x 8GB) DDR4 2133MHz UDIMM

1 x 1TB SATA 3.5" LFF Hot Plug

Network Adapter 10/100/1000 Mbps Ethernet LAN,

Integrated Bluetooth 4.0 and wireless LAN 802.11 b/g/n featuring Single Band

Integrated Intel Graphics Media Accelerator HD (DX10.1)