Post-Shipment Control

Burbach, 26th April 2022
Structure

1. Motivation
2. Labeling technologies at DND
3. DND Post Shipment Control Software
4. Summary
Prevention of illicit arms trafficking

The International Tracing Instrument

UN Fire arms protocol

Arms Trade Treaty

Small Arms and Light Weapons Guide

International Small Arms Control Standard
Requirements of customers, authorities, organizations

Marking of weapons due to political, military or logistical requirements

- Granting a machine-readable identification for all logistical processes
- Ensuring a continuous, transparent flow of information and goods
- Preventing, eradicating illicit trafficking in small arms and light weapons (SALW) and related ammunition

Political principles of the federal government for the export of war weapons

- Post-Shipment Control
Overview of marking technologies

- **DataMatrix-Code**
- **UHF-RFID (passiv)**
- **Forensic Marking**

- **Post-shipment control, weapon storage and administration**
- **Post-Mortem Analysis**
Labeling DataMatrix code

- Widespread 2D barcode
- High fault tolerance
- Can be read in any position

Stored data according to international standards

- GTIN (item number)
- S/N (serial number)
- CoO (country of origin)
- Ship to (recipient country)
- Caliber

```
GTIN(01): 04057533008696
S/N(21): 050215134004
CoO(422): 276
Ship to(421): 48455640
Caliber(3323): 000060
```
Labeling DataMatrix code

Concept

- Possibility to check inventory
- Label attached to each box
- Proven technology
- Easy, quick reading
- Equipment required: scanners

GTIN(01): 04057533008696
S/N(21): 050215134004
CoO(422): 276
Ship to(421): 48455640
Caliber(3323): 000060
Concept

- Integration of a passive UHF-RFID in the weapon
- RFID tags are not removable without damaging weapon
- Stored information identical to label
- Equipment required: RFID reader
- Contactless identification & localization
- No batteries required
- Robust against environmental influences
- Simultaneous detection of several transponders
System PSC App

Mobile handheld computer with DND PSC App

- SCAN RFID
- UHF-RFID
- SCAN DATAMATRIX
- DMC
- INVENTORY
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Forensic Marking

Requirements

- Traceability of found weapons
- Tamper-proof integration
- Externally not visible
- Minor intervention in the production process
- Can be visualized in the X-ray image
Solution

- Lasered labels with serial numbers
  - Labeling redundant
  - Single line
  - Three lines
- DMC
- Removing the tag will make the weapon inoperable
- Required equipment: X-ray device
Summary - Overview of marking technologies

DMC (DataMatrix-Code)
- On transport box

UHF-RFID (passiv)
- In Firing device

Laser marking
Implementend in launch tube

DMC Scanner
RFID Reader
X-Ray Device

Post-shipment control, weapon storage and administration
Post-Mortem Analysis
Thank you for your attention