## Assessing technologies to counter the diversion of small arms and light weapons

### Side-event to the PoA Review Conference 4

26 June 2024 Sarah Grand-Clément, UNIDIR

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## Why examine the use of technology?

- Significant attention has already been devoted to develop measures and initiatives to strengthen counter diversion of conventional weapons and related components
- Some technologies have been the focus of discussions in multilateral forums or even tested for strengthening counterdiversion initiatives
- However, there is a gap between increased attention on the potential use of technology and actual broad-scale use for countering diversion





# Phase 1: Framework to identify and assess technologies to counter diversion of conventional weapons

Aim of technology use

2 Identification of potential technologies that respond to the stated aim

Analysis of the context of implementation

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## Parameters for the assessment of the technologies







## Parameters for the assessment of the technologies

		Lifecycle stage		
		Pre-export		
Less complex technologies			More complex technologies	Transfer
<ul> <li>2D codes</li> <li>Chemical coding</li> <li>DNA coding</li> <li>Document authentication</li> </ul>	<ul> <li>Electronic seals (eSeals)</li> <li>Global navigation satellite system (GNSS) and mobile tracking</li> <li>Near field communication (NFC)</li> <li>Radio-frequency identification (RFID)</li> </ul>	<ul> <li>Sensors</li> <li>Internet of Things (IoT)</li> <li>Distributed ledger</li> </ul>	<ul> <li>Big data analysis (AI)</li> <li>Natural Language Processing (NLP) (AI)</li> <li>Computer vision (AI)</li> </ul>	Post-delivery
		Technology (DLT)		Counter-diversion element
				Prevention
				Detection
				Identification

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## Systemic barriers and options and avenues to overcome these

- Fragmentation among the multiple actors involved in SALW;
- Practicalities of technology development and adoption;
- Lack of infrastructure (digital, physical, regulatory) surrounding the technology;
- Cost of technology;
- National security considerations;
- Lack of sufficient knowledgeable personnel; and
- Need for data and data management.

- Strengthening international and regional collaboration and interagency cooperation;
- Building up the evidence and knowledge base;
- Undertaking institutional capacity-building and individual training; and
- Reinforcing or establishing the appropriate physical, regulatory and digital infrastructure

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## Thank you for your attention



Assessing technologies to counter the diversion of small arms and light weapons Sarah Grand-Clement (UNIDIR)

#### EXECUTIVE SUMMARY

Based on a socies of stakeholder engagements, this paper examines the relevance and applicability of 14 technologies to support or strengthen effects to counter the discussion of small arms and light weapons (SAW). The technologies examined are: 20 notes, therein all encoding, DNA coding, document aritemitication, electronic seals, DNSS and mobile tracking, mac-field communication, cabio-Separaty identification, season, minerest of things, distributed lodger technology, big data analysis, natural language processing, and computer vision.

All technologies were assessed as having potential relevance in helping to counter SAUW diversion. The types of inclusions in technologies identified as most relevant tended to differ depending on the life cycle stage (i.e., pro-expect, transfer or pool-diblery) and counter-diversion distants (i.e., prevention, detection or identification), with technologies better suited as detecting or dentifying diversion ashter than preventing its occurrence. However, because the choice of a specific technologie, or a communication theory to beip counter diversion, direction and specific technologies, or a communication theory to beip counter diversion.

Infrastructural and cost requirements were assessed as posing the highest barriers to the successful implementation of the technologies. Additionally, the adoption of a technology will also necessful expressions are not expression of the technology of the the multiple acters involved in SALW, practicalities of technology development and adoption, lack of infrastructures (digital, physical, regularous) sucrossful field transport, and the node of the multiple acters involved in SALW, practicalities of inflicient knowledgeable personnel, and need for data and data unsurgement.

The paper provides a non-exhaustive overview of possible options which could be undertaken to overcome or mitigate these barriers, including strengthening international and regional collaboration and inter-agency cooperation, building up the evidence and knowledge base, reinforcing or establishing the appropriate physical, regulatory and digital infrastructure, and undertaking institutional capacity-building and individual training.

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#### **UNIDIR** UNITED NATIONS INSTITUTE FOR DISARMAMENT RESEARCH





## 2005 - 2024 ITI - Marking of Polymer

Gary Fleetwood – Manager

National Firearm Trace Program National Firearm Identification Database

Australian Criminal Intelligence Commission June 2024







International instrument to enable States to identify and trace, in a timely and reliable manner, illicit small arms and light weapons

III Marking - Polymer

• ...method is a national prerogative...

- Exposed surface
- Conspicuous without technical aids or tools
- Recognizable and readable
- Durable
- As far as technically possible, recoverable



International instrument to enable States to identify and trace, in a timely and reliable manner, illicit small arms and light weapons

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International instrument to enable States to identify and trace, in a timely and reliable manner, illicit small arms and light weapons

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International instrument to enable States to identify and trace, in a timely and reliable manner, illicit small arms and light weapons

- Dot Peening
- Laser engraving
- 'Window' allowing viewing to metal internal components
- Covert marking





International instrument to enable States to identify and trace, in a timely and reliable manner, illicit small arms and light weapons







International instrument to enable States to identify and trace, in a timely and reliable manner, illicit small arms and light weapons

- Applying metal serial number plates is not marking polymer
- Evidence of where ITI requirements & polymer have been a success ?
- What technology can recover serial numbers applied to polymer ?
- Covert marking between industry & law enforcement only.





International instrument to enable States to identify and trace, in a timely and reliable manner, illicit small arms and light weapons

www.nfid.acic.gov.au

www.gunnumber.com

Industry participants

## **TECHNOLOGY IN WAM**

#### SOMALIA

Programme of Action RevCon 4 Musadak Ahmed CMD Director, Office of National Security



24 June 2024 New York



### **MOBILE MARKING**







### WEAPON REGISTRATION PROGRESS

Total number of weapons registered: 30,219



### **UN MANDATED END USER VERIFICATION**



## TECHNOLOGY USED IN TRACING

#### TRACING THE UNTRACEABLE

CONFLICT

Programme of Action RevCon 4 Henry Leach Head of Somalia Operations ARMAMENT RESEARCH

26 June 2024 New York













## Non-Destructive Serial Number Recovery (ND-SNR)



## Fry's Reagent



- 5g of copper chloride in 25ml of ethanol
- 40ml of hydrochloric acid in 30ml distilled water



## **Effects of Marking on Metal**

Applied with downward force Stamped, Dot Peened



Applied without downward force

Laser Engraved, Etched











#### Use of Technology for Communication and Information-Sharing

Inter-American Framework



#### **PACAM** Program of Assistance on Control of Arms and Munition

- Umbrella program to support OAS Member States in reducing armed violence and **implementing CIFTA obligations** 
  - Holistic approach: actions to reduce illicit trade of firearms and ammunition through a supply and demand perspective
- Current phase is implemented with the support of the European Union
   2019-2025
  - 28 countries in the Caribbean and Latin America assisted
  - Components:
    - Legislative Assistance to Harmonize and Modernize Firearms Normative Framework
    - Operational Support on Weapons and Ammunition Management
    - IT tools for Record-Keeping and Information Sharing
    - Strengthening Transfer Controls
    - Promotion of Regional Coordination Tools
    - Prevention of Armed Violence at the community level





Funded by the European Union

MINISTRA STATE



See details

#### **Inventory Control Software (SAM)**

- Simple tool to promote inventory control of arms and ammunition of national stockpiles
- Considerations:
  - Developed considering PSSM good practices (MOSAIC 05.20 Cap 11, 11.1.2 11.1.3 e IATG 03.10)
  - Open-source coding to promote sustainability
  - Software installed locally or in the network of countries (countries own the software)
  - Developed in 2020; improved in 2023 (v. 2.0)
  - 15 institutions of 9 countries are using it
- Functionalities:
  - Available in Spanish and English
  - Multi-layer
  - Two-factor authentication
  - Auditable
  - Physical description, location, condition, entry and exit of arms and munition, external transfers, assignment to officers
  - Configurable alerts to users
  - Reports and statistics

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## **Exchange of Information - Transfers**

- Strengthening of control over international transfers and border crossing points → effective measure to support the fight against illicit trafficking
  - Dispositions of PoA on licensing systems and export control
  - Obligations of CIFTA, Firearms Protocol, and Arms Trade Treaty
- CIFTA Article IX :
  - Establish or maintain an effective system of export, import National Context and transit licenses
- States Parties shall not permit the shipment or transit of materials without the issuance of the corresponding licenses by all countries involved in the transfer
   Delitivity of this without the issuance of the corresponding secure communication of the corre
  - **3**. Prohibition of shipment and transit without licenses
  - 4. The importing State Party shall confirm receipt of materials, at the request of exporting State Party

International Cooperation: requires fluid and secure communication between countries

 Paragraph 15 – Recommendations from the V Conference of States Parties to the CIFTA: "To develop, implement, and participate...in mechanisms, consistent with CIFTA, that facilitate the exchange of information on export, import and transit authorizations or licenses between the States Parties, as well as direct communication between the national authorities in charge of issuing such licenses."



## **Regional Situation\***

#### National Level:

- 89% have national legislation and systems for issuing licenses/authorizations of export/import/transit
- 82% of countries do not have effective channels of communication between licensing authorities and customs

#### **Regional Level:**

- 80% of the participants identified a need to strengthen tools to oversee international transfers, including communication with other countries:
  - 63% of countries do not have a direct channel of communication with their counterparts in other countries
  - 82% of countries do not communicate about the denial of licenses
  - 75% of countries do not inform participating countries over the revocation of previously approved licenses
  - Transit countries receive information mostly from transport carriers
  - Almost 50% of requests to confirm receipt are left unanswered by importing countries

\*Survey applied to OAS Member States in the context of developing the design of the MCTA (18 countries answered it)

How useful would be to have secure communication channels to exchange notifications about the issuance of export and import licenses, and for notifying...



If said system existed, would your country consider participating in this mechanism?



## **Challenges or Opportunities?**



Operational

- Absence of electronic legal frameworks and national systems that issue licenses
- Lack of standardization in information and nomenclature
- Data privacy laws

#### **Technological**

- Information security
- Integration with national
   systems
  - systems
  - Data Servers





#### **Sustainability**

Financing for the maintenance and management of the system







Regional Communication Mechanism on Licit Transfers of Firearms and Ammunition (MCTA)



- Objective: Offer a secure and direct communication channel between licensing authorities to exchange information about international transfer processes to reduce vulnerabilities and gaps that facilitate diversion
- Characteristics:
  - Safe web tool with different access levels and multiple languages
  - Decentralized system with data encryption → only countries involved in transfer will have key to access information
  - Real-time notifications (issuance/denial/revocation of licenses, delivery receipts, etc.)
  - Formulate alerts and exchange information
  - Standardize information through equivalence tables
  - Risk management repository
  - Database of processes (record-keeping)
- Optional Modules:
  - National licensing system (52% of countries still use paper-based systems)
  - Platform to integrate customs authorities

## **Development Process**



## **Planning** (Finalized)

- Definition of the scope of the system and basic needs
- Development of methodology

#### **Design** (Finalized)

- Definition of requirements and functionalities
- Identification of technological solutions

2



## **Design Validation** (Finalized)

- Review of the Technical Specification (20 countries)
- Political approval (V Conference of State Parties of CIFTA)

## **Development** (2024)

- Development of solution for
  - national system
- Piloting of national system
- Beginning of development of regional tool (MCTA)





#### **Development and Implementation** (2025)

- Finalization of regional tool (MCTA)
- Pilot with countries
- Adjustments and expansion
- Agreements with countries to implement the tool





## Thank you!

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