

7th European Conference on ICT for Transport Logistics

Title: Risk Assessment Profiling
Procedure (RAPP) for Air Cargo
Security

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1. Objective of research

- Introducing a new security process for air cargo originating from both Low and High Risk countries –

Risk Assessment Profiling Procedure (RAPP) for air cargo security.

Less technological screening of cargo shipments



2. Overview on air cargo security after 9/11

- Post 9/11: Special focus on air passenger security, less focus on air cargo security.
- Cargo is loaded on both all-cargo airplanes and passenger airplanes

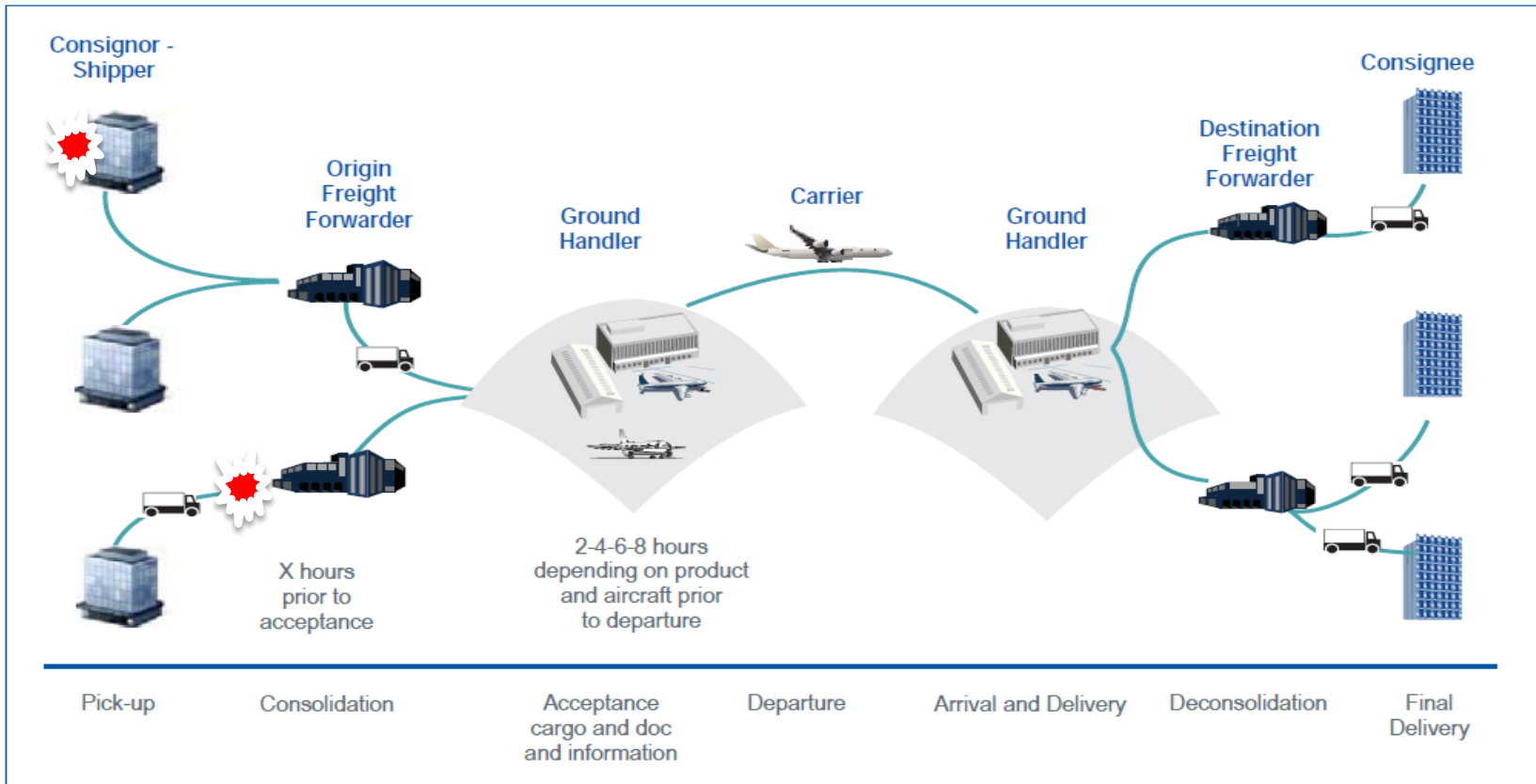


Terrorists try to bypass the strict air passenger security and **target the cargo instead**



2. Overview on air cargo security after 9/11

2.1 Air cargo supply chain:



Source: Bart (2010), ICAO (2013)



2. Overview on air cargo security after 9/11

2.1 Air Cargo Supply chain:



Known Consignor:

- Originates the shipment for ist own account
- Follows security rules and standards



ACC3 / RA3 validation

ACC3:

- Security requirements set by the European Union for air cargo carrier or mail carrier for transporting goods from a third non-EU state.

Sources: Department of transport, tourism and sport (2010) ,Macario et al. (2012).



2. Overview on air cargo security after 9/11

2.2 Different approaches:



United States:

- 100% technological screening for cargo on board passenger planes



European Union:

- No technological screening if the cargo originates from a Known consignor with a secured supply chain
- ACC3 is mandatory

Source: Bart (2007), European Commission (2014)



2. Overview on air cargo security after 9/11

2.3 Technology resources :

X-RAY machines:



Limitations:

1. X-ray does not detect explosives.
2. Non-effective for high density and nonidentical shipments
3. Dependency on the qualities and the experience of the machine operator

Source: Crowely and Butterworth (2007)

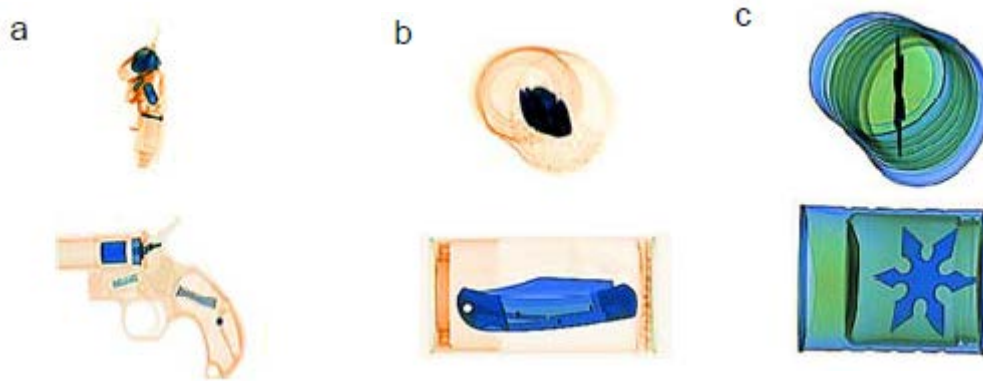
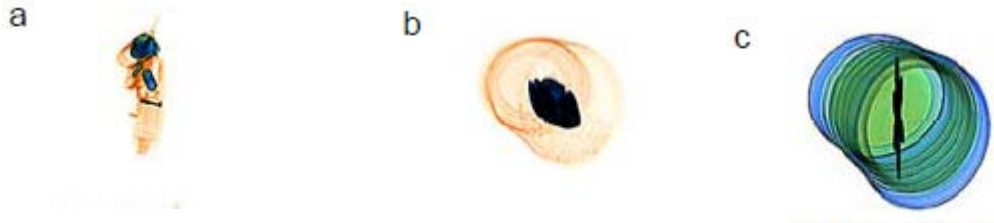


2. Overview on air cargo security after 9/11

2.3 Technology resources :

X-RAY machines:

4. Objects are difficult to recognize when depicted from an unusual viewpoint



Source: Schwaninger (2009)



2. Overview on air cargo security after 9/11

2.3 Technology resources :

Explosive Trace Detector (ETD):

Limitations:

1. Non-effective if shipment surface is not contaminated with explosives
2. Non-effective if a sample is taken poorly



Source: Crowely and Butterworth (2007)



3. Passenger profiling

3.1 The Israeli method of passenger profiling :

Risk assessment tool for detecting terrorist method of operation



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Principles:

- Increasing the role of **the Human factor**.
- Analyzing the threat by determining the **level of risk**.
- Adjusting the right **technological tools in accordance to the risk level**.
- Focusing on **suspicious passengers**.

Source: Hasisi, Margalioth & Orgad (2012), eds Zureik, Lyon & Abu-Laban (2011) and Hasisi and Orgad (2010).



3. Passenger profiling

3.2 Passenger profiling - suspicious signs

Behavioural signs	Passport signs	Nationality signs
1. Nervousness	5. Passengers who do not speak the language of the country issuing the passport	8. Country of citizenship
2. Lack of cooperation with the airport security officer	6. Passengers who do not match the passport photo or physical description entered	9. Country of residence
3. Contradictory statements	7. Passengers who have different names in the passport and the flying ticket	10. Ethnicity
4. Avoidance of answering		

Source: Hasisi, Margalioth & Orgad (2012), eds Zureik, Lyon & Abu-Laban (2011) and Hasisi and Orgad (2010).



4. Air cargo profiling

4.1 Risk Assessment Profiling Procedure (RAPP) for air cargo security



- Differentiation between cargo originating from low and high risk countries
- Full use of the known consignor and ACC3 programs
- Unique air cargo suspicious signs detected from the freight's documents and the external look of the shipment



4. Air cargo profiling

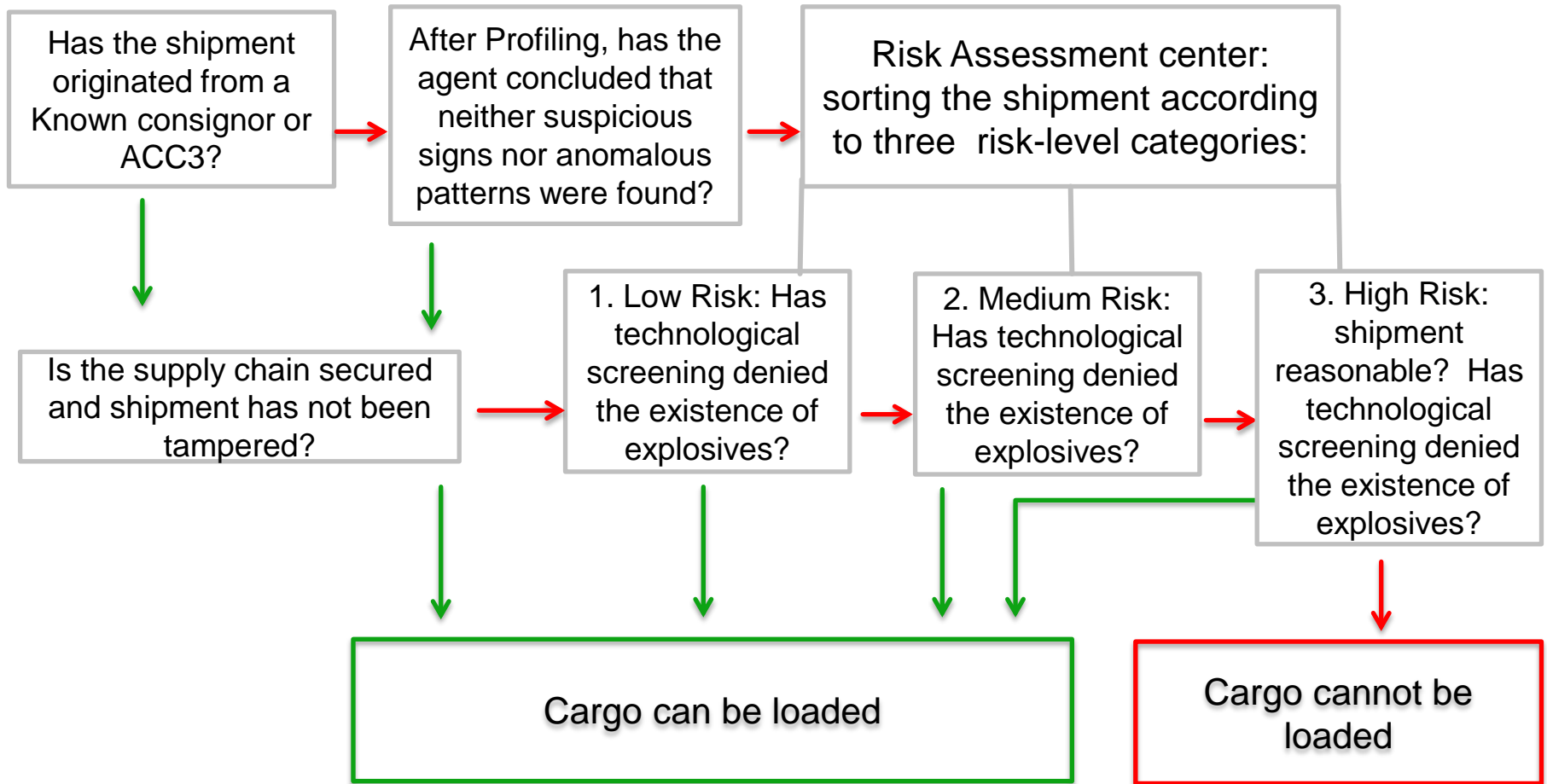
4.2 Air cargo - suspicious signs

Physical characteristics of the package	Dispatching mistakes	Anomalous patterns
1. Unusual odors	5. Poorly or illegibly typed or written addresses	10. Unexpected packages mailed from outside the United States
2. Sealed with excessive tape	6. Use of incorrect titles	11. Restrictive markings destined for a specific, high-profile person
3. Lopsided or uneven shape	7. Mailed with excessive postage	
4. Indications of liquid/powder leaking from the package	8. Addresses misspelled or containing only titles of recipient	
	9. No return address	

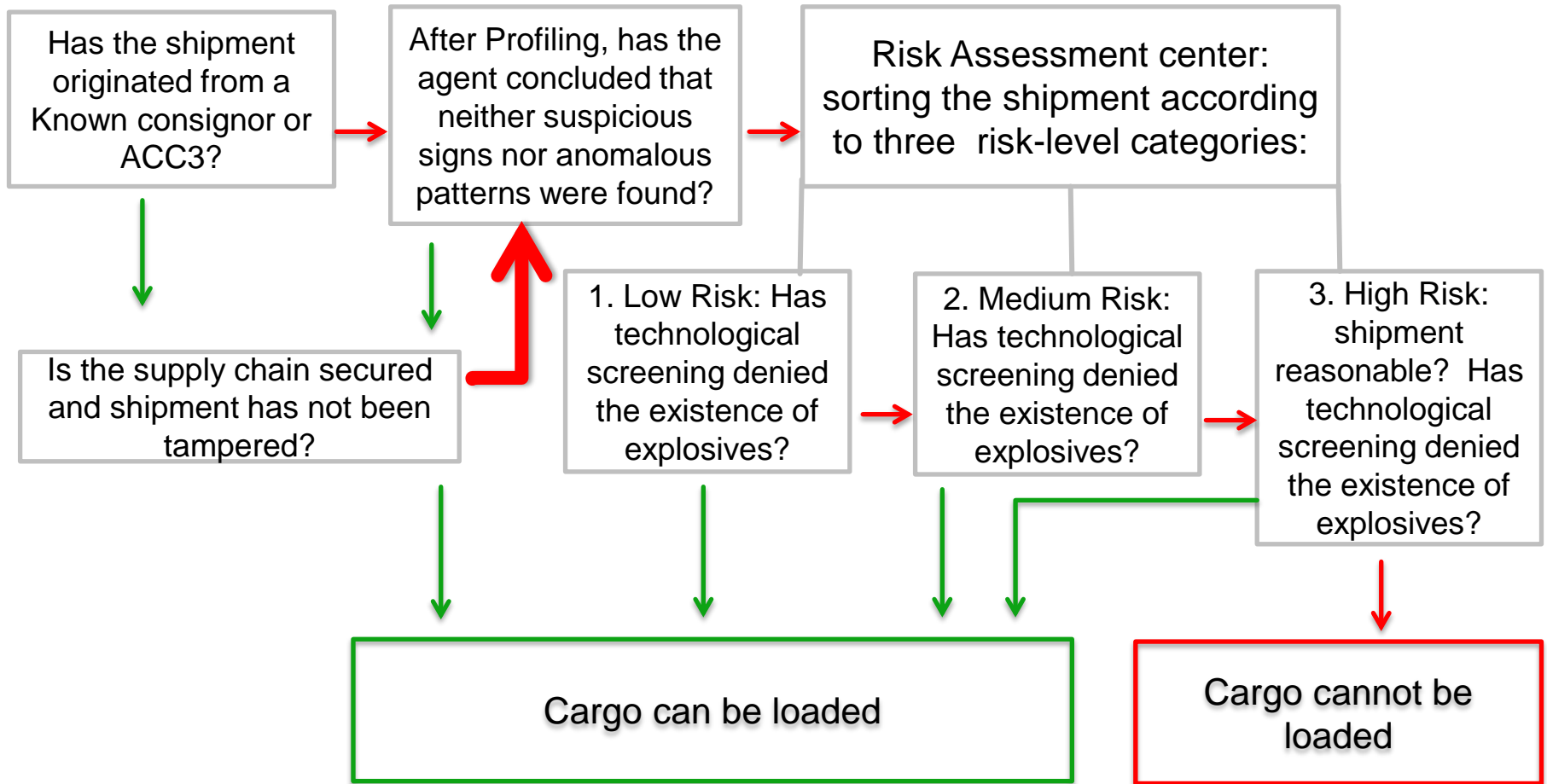
Source: Department of Homeland Security (2010a),



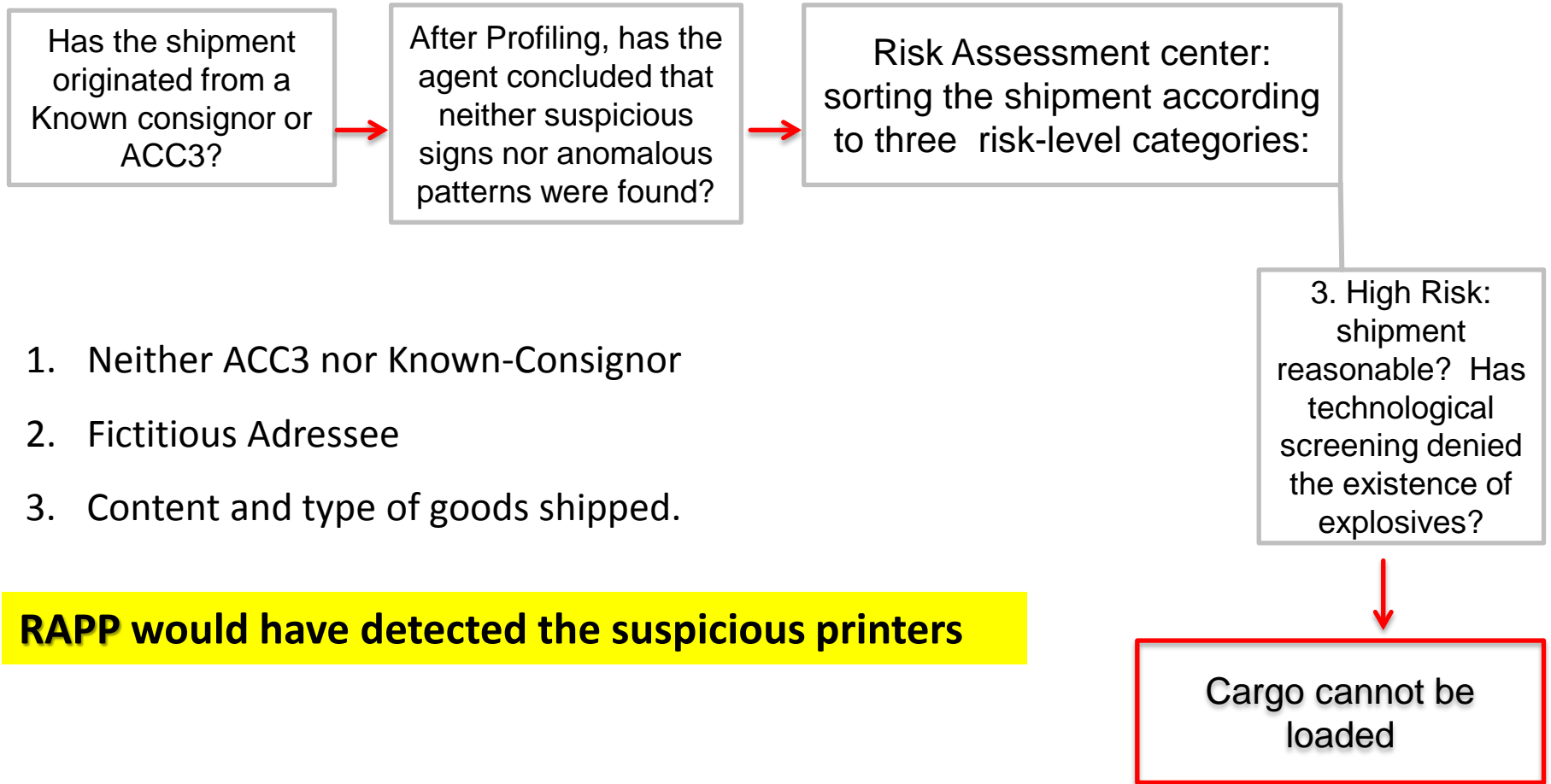
RAPP for cargo originating from Low Risk countries



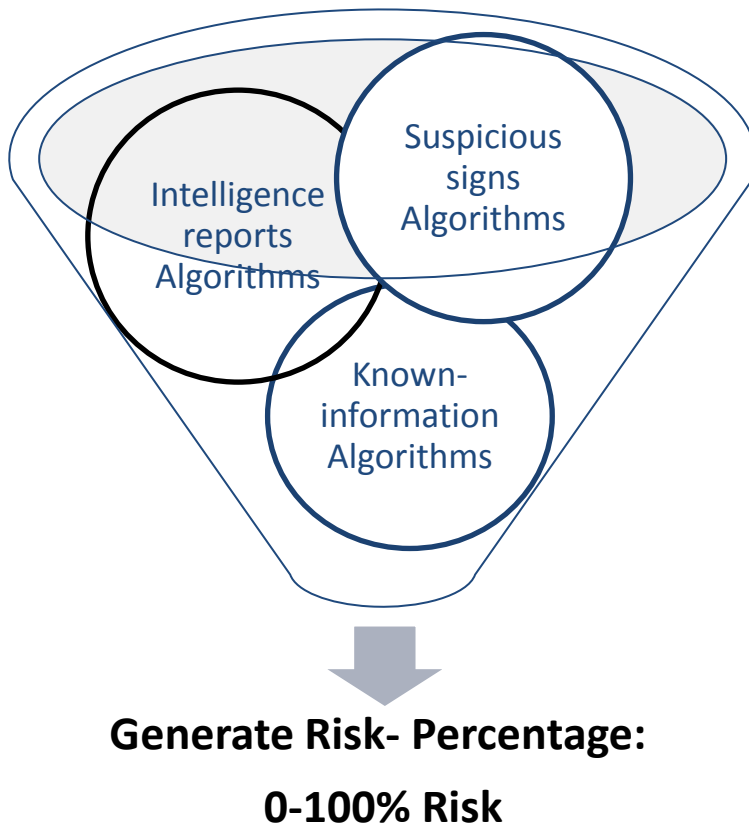
RAPP for cargo originating from **High** Risk countries



5. Case study - 2010 printer plot from Yemen



6. IT profiling

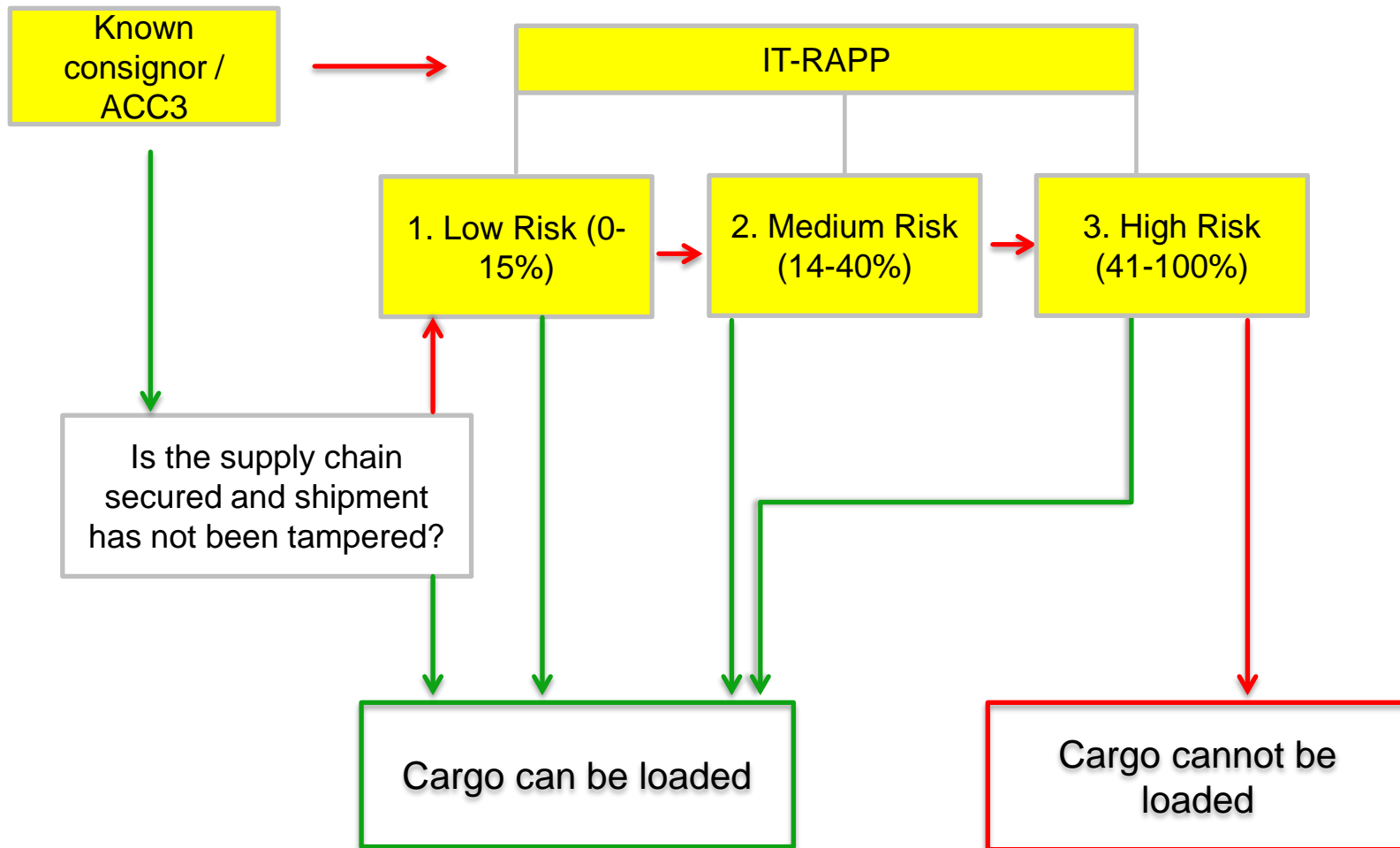


The Goal: Creating an IT-Profiling system for air cargo security.

1. Run air cargo suspicious signs Algorithms on the freight's documents
2. Combine real-time intelligence reports Algorithms
3. Check for already known-information Algorithms



IT RAPP



7. Conclusion

- RAPP **enhances** the level of **air cargo security**
- **Pro-active** approach
- RAPP enables to find **‘the needle in a haystack’**
- Integrate IT solutions:
What role would IT have on optimizing the profiling process?



Declaration

- The information and interpretations shown in this presentation as well as written in the paper are based on non-classified sources, which were gathered from open sources.
- The paper has been selected for publishing in the *Journal of Air Transport Studies*



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