

# **BAG-INTEL**

## **Project overview**

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**BAG-INTEL at a glance**

[Click here to watch the video](#)





# Operational scenario

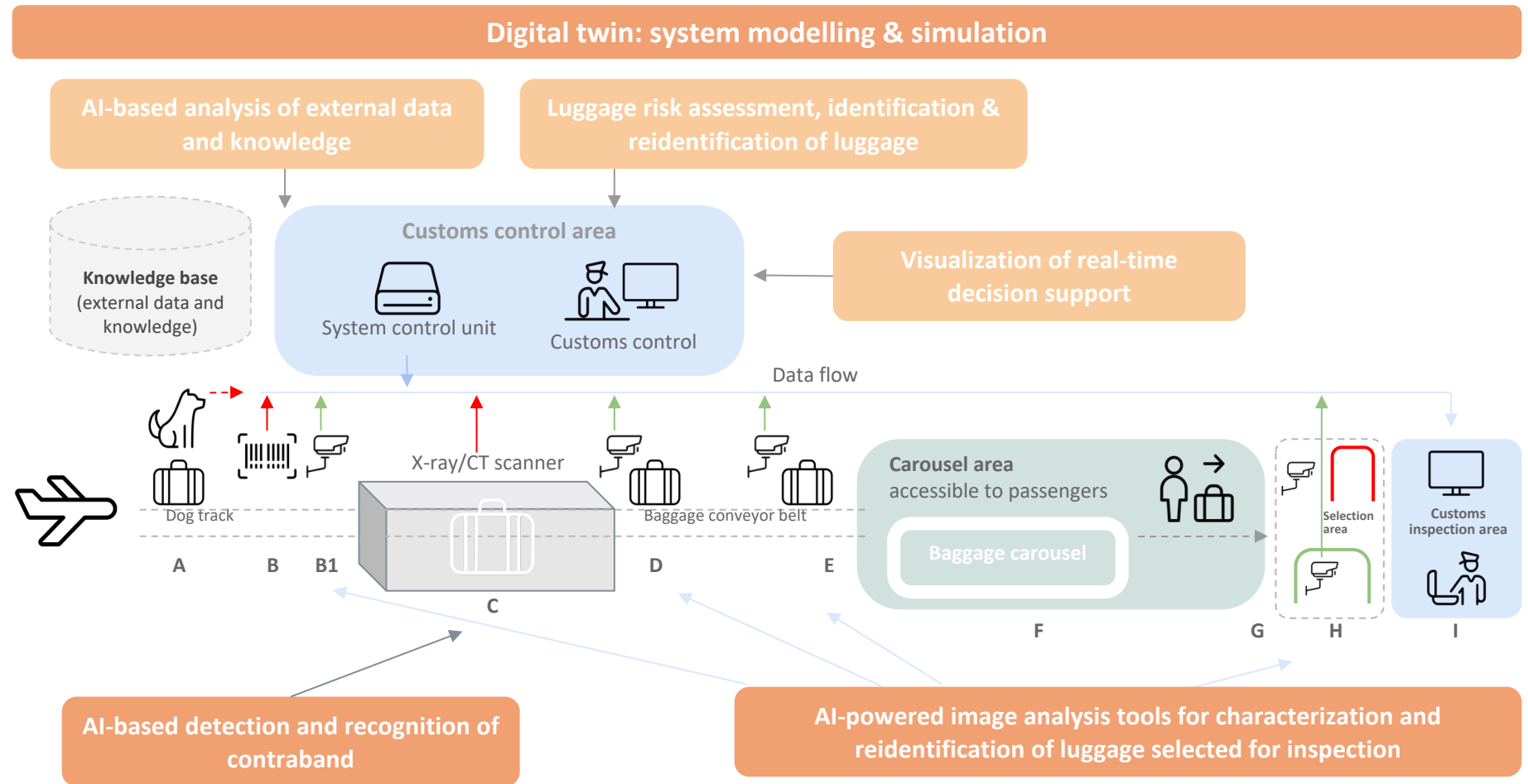


# Operational scenario

## CUSTOMS CONTROL OF PASSENGER BAGGAGE AT INTERNATIONAL AIRPORTS



The 'BAG-INTEL system overview' presented in Figure 1 illustrates the solution under development.



# Operational scenario

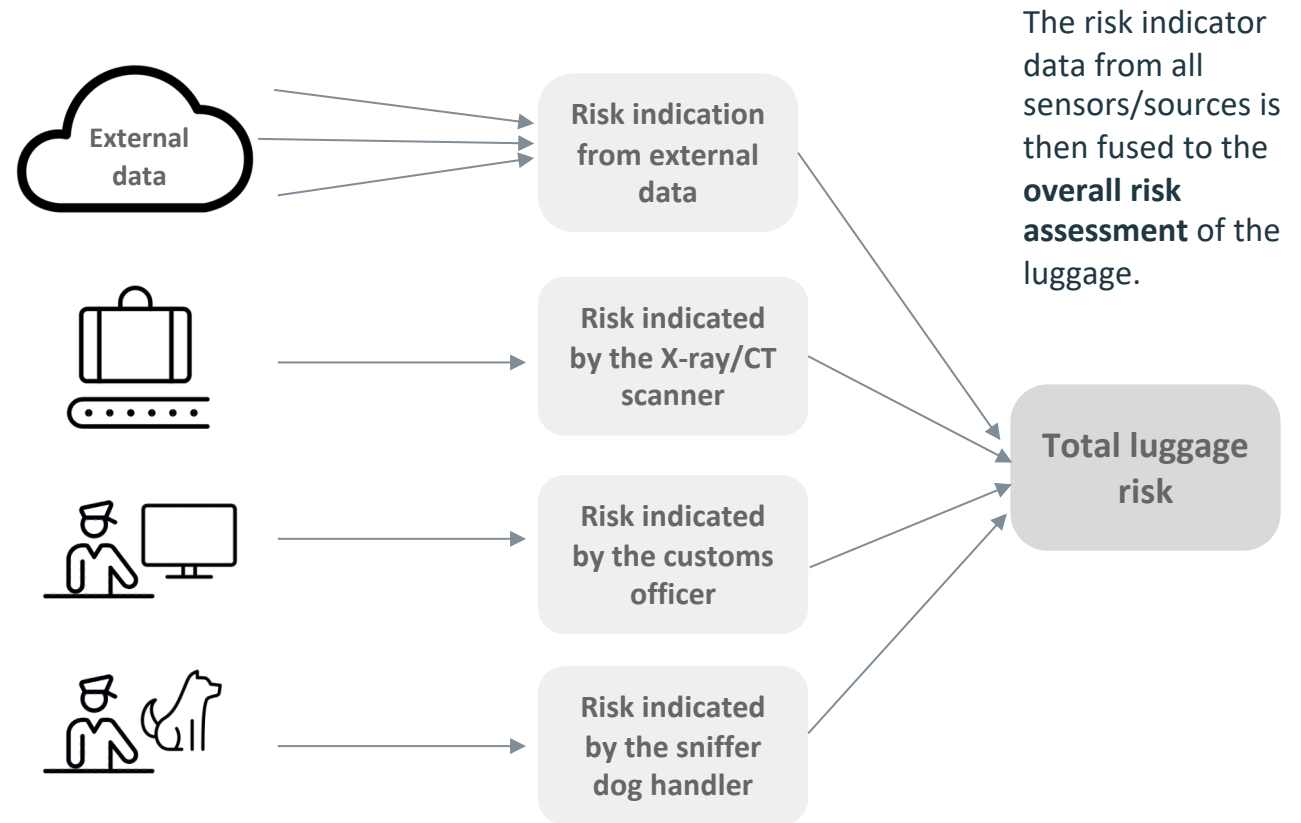
## CUSTOMS CONTROL OF PASSENGER BAGGAGE AT INTERNATIONAL AIRPORTS



Upon flight arrival, when the luggage is unloaded and placed on the baggage conveyor belt, the **customs risk** of each piece of luggage is **assessed using AI-supported tools** under the supervision of the customs control officer(s).

The applied **risk indicators** arise from 4 kinds of **sensors/sources**:

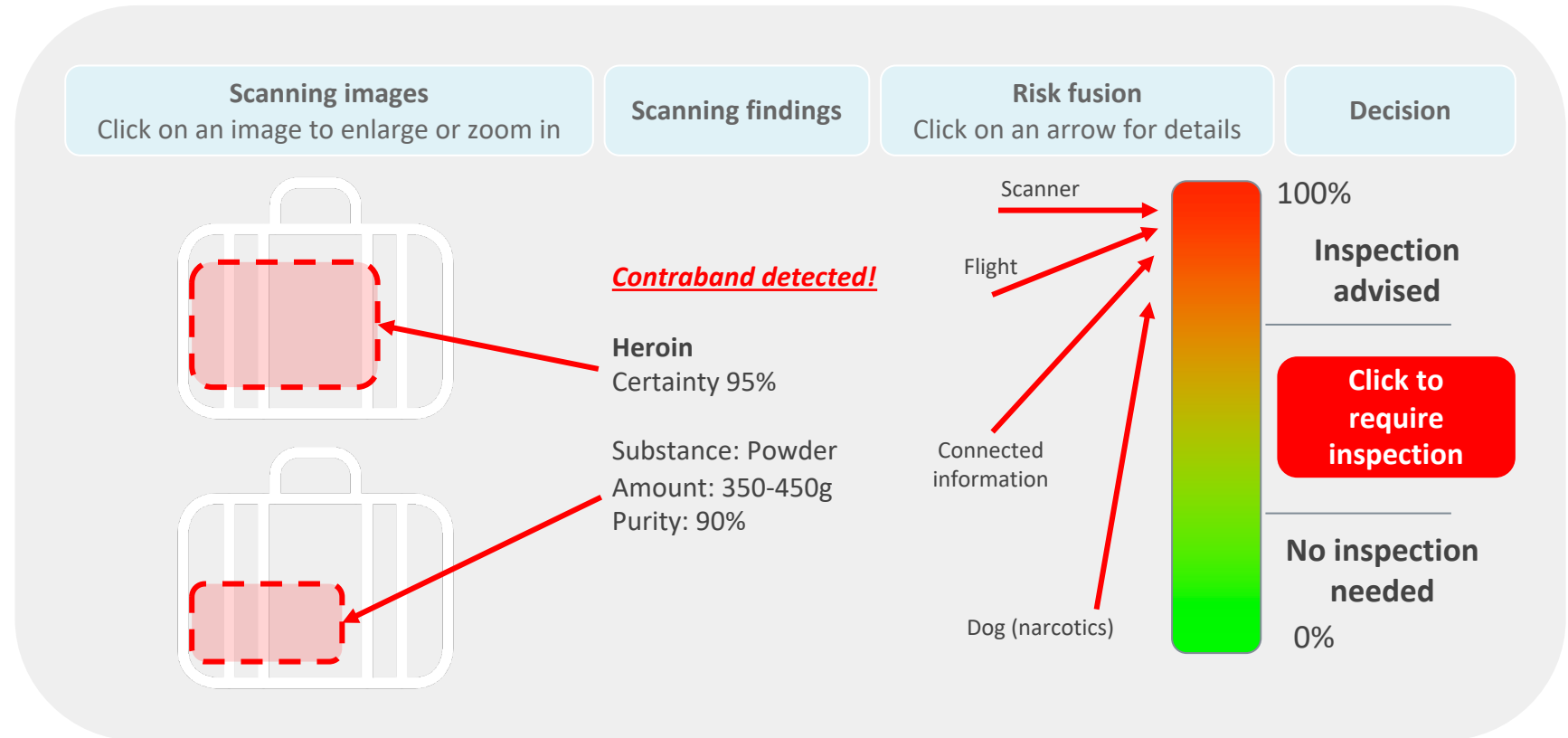
- **External data and knowledge**, such as the Passenger Name Record and the databases of Law Enforcement Agencies, where suspicious travel patterns and links to organized crime are recorded.
- **An X-ray/CT scanner** with absorption sensing and object recognition in the scanning image, which will be trained to detect/recognize various kinds of contraband, such as drugs, cigarettes, currency, etc.
- **The customs control officer** who may detect suspicious content that has not been detected and flagged by the scanner itself.
- **Dog handler input**, if the customs apply a sniffer-dog at the dog track before the X-ray/CT scanner.



# Operational scenario

## CUSTOMS CONTROL OF PASSENGER BAGGAGE AT INTERNATIONAL AIRPORTS

Based on the **overall risk assessment** of the luggage, a **decision** whether the luggage is suitable for **manual inspection** is taken (as illustrated in Figure 3).



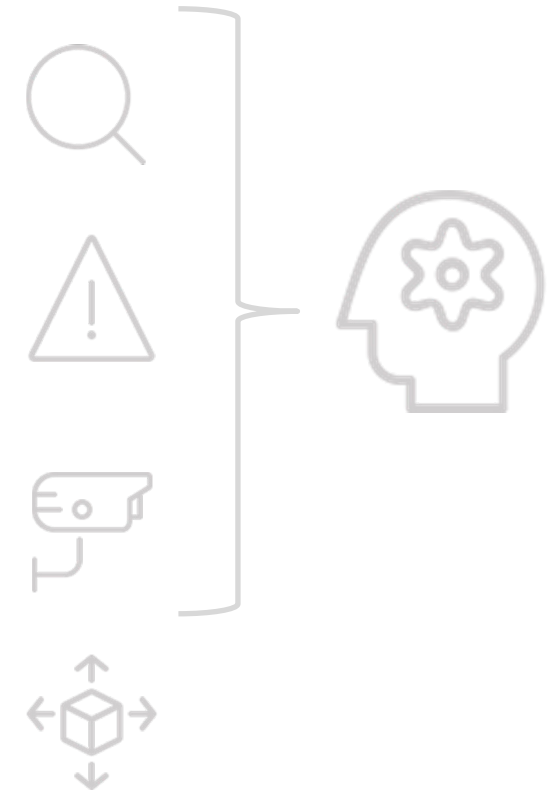


## **BAG-INTEL features and capabilities**



# BAG-INTEL features and capabilities

- **AI-powered functionality for enhanced detection** of contraband in X-ray scanning of luggage
- **AI-powered risk assessment** based on the analysis of external data (Passenger Name Record and Law Enforcement Agencies data)
- **AI-camera-based end-to-end reidentification** of luggage
- **Digital twin** for system visualization and performance optimization







**Going beyond the  
state of the art**



## Going beyond the state of the art | today

- The security scanning of outgoing luggage is quite well-developed but **we cannot say the same about the customs scanning of incoming luggage.**
- Utilization of external data for the risk assessment is, in general, **not exploited to its full potential** for the customs control.
- While some airports apply radio-frequency identification (RFID) tagging for the customs reidentification of luggage, this method has several **disadvantages**:
  - **the smuggler may find and remove the tag** upon collecting the luggage and before entering the customs area at the exit of the baggage delivery space
  - **tags must be manually placed in/on the luggage and then removed** before the traveller leaves the customs area following the inspection of their luggage
  - relatively **high operation and maintenance cost**
  - **environmental impact** due to production and disposal of tags



- Improved **effectiveness** of the customs control processes:
  - ✓ more contraband will be detected,
  - ✓ the cases of manual inspection, which do not lead to finding contraband, will decrease,
  - ✓ ideally, only luggages containing contraband will be inspected manually.
- The AI-camera based re-identification is **non-intrusive**, avoiding all the disadvantages of alternative solutions.



# Reach out to BAG-INTEL >



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**BAG-INTEL** 

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