



**Asia-Pacific  
Economic Cooperation**

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**2025/SOM3/SCCP/021**  
Agenda Item: 5.14a

## **Artificial Intelligence (AI)-based Risk Management of Korea Customs Service**

Purpose: Information  
Submitted by: Korea



**Second Sub-Committee on Customs  
Procedures Meeting  
Incheon, Korea  
30 July–01 August 2025**

**2025 APEC SCCP**

# AI-based Risk Management of Korea Customs Service

KCS Director

**Goo-chun, Jeong**

July 30, 2025

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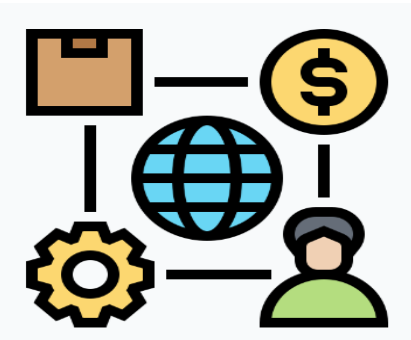
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**KCS Clearance Infrastructure**

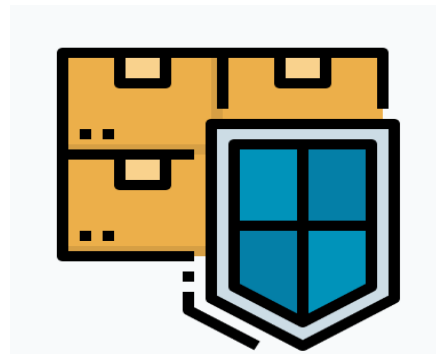
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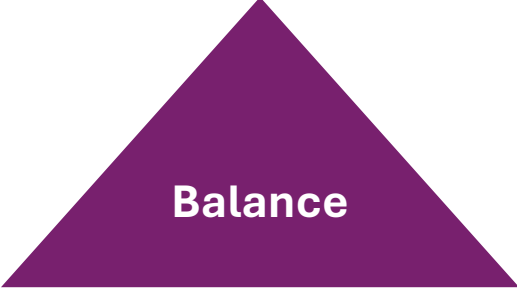
## Integrated Risk Management is essential



Trade Facilitation

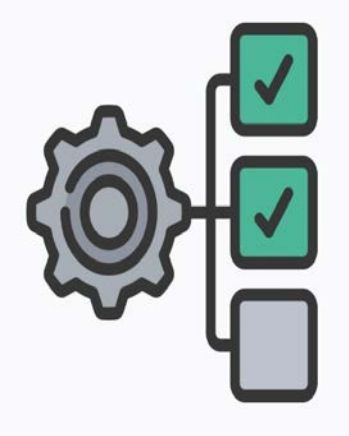


Trade Security

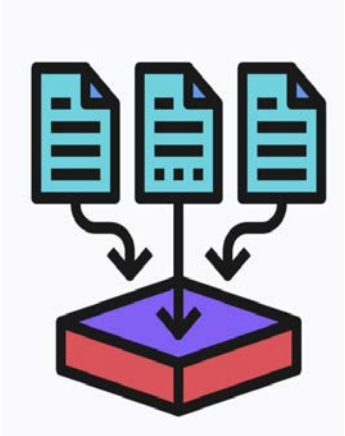


Balance

## Customs Border Targeting Center established in Feb. 2017 For Integrated Risk Management



General Management



Intelligence



Risk Analysis

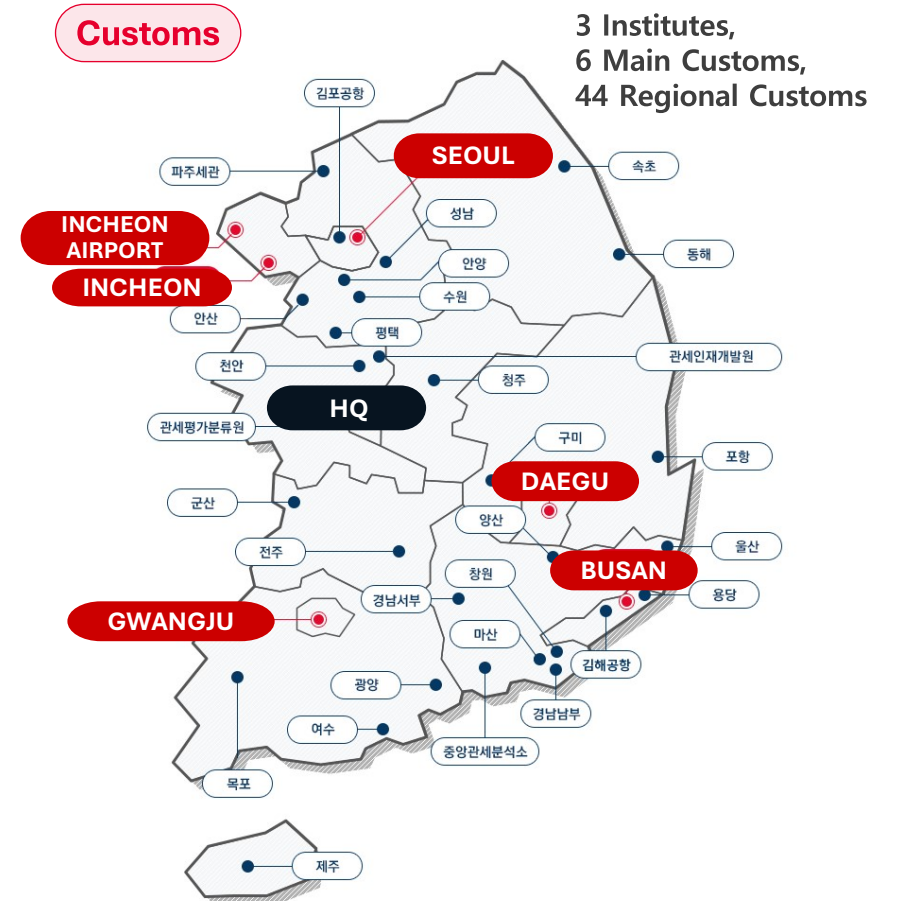
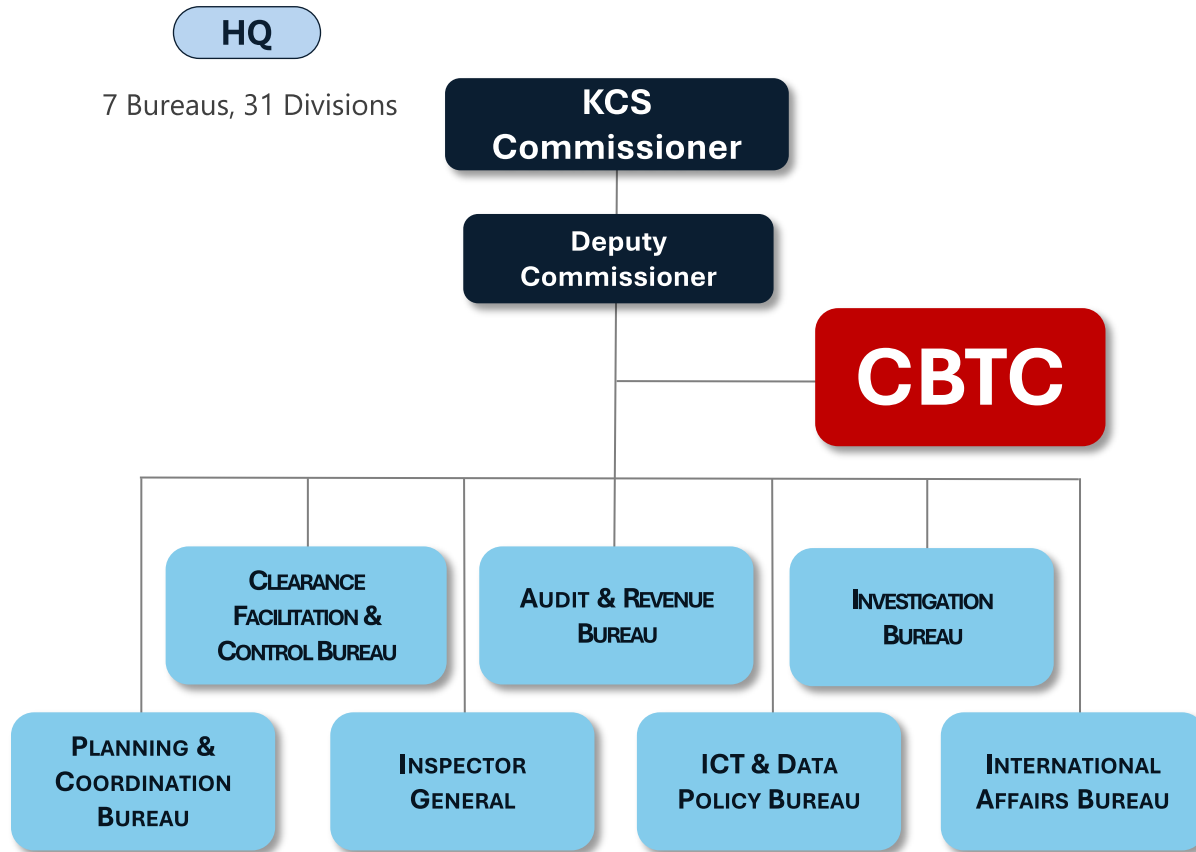


Selectivity



Targeting high-risk goods

## Organizational Structure



## CBTC Mission

### Major Task

- ▶ Preemptively prevent high-risk and life-threatening cargo and goods at the customs border through documentation and careful selection

### 7 PRIORITIZED RISK AREAS

TAX EVASION

UNFAIR TRADE

DESTRUCTION OF ENVIRONMENT

MENACE TO NATIONAL SECURITY

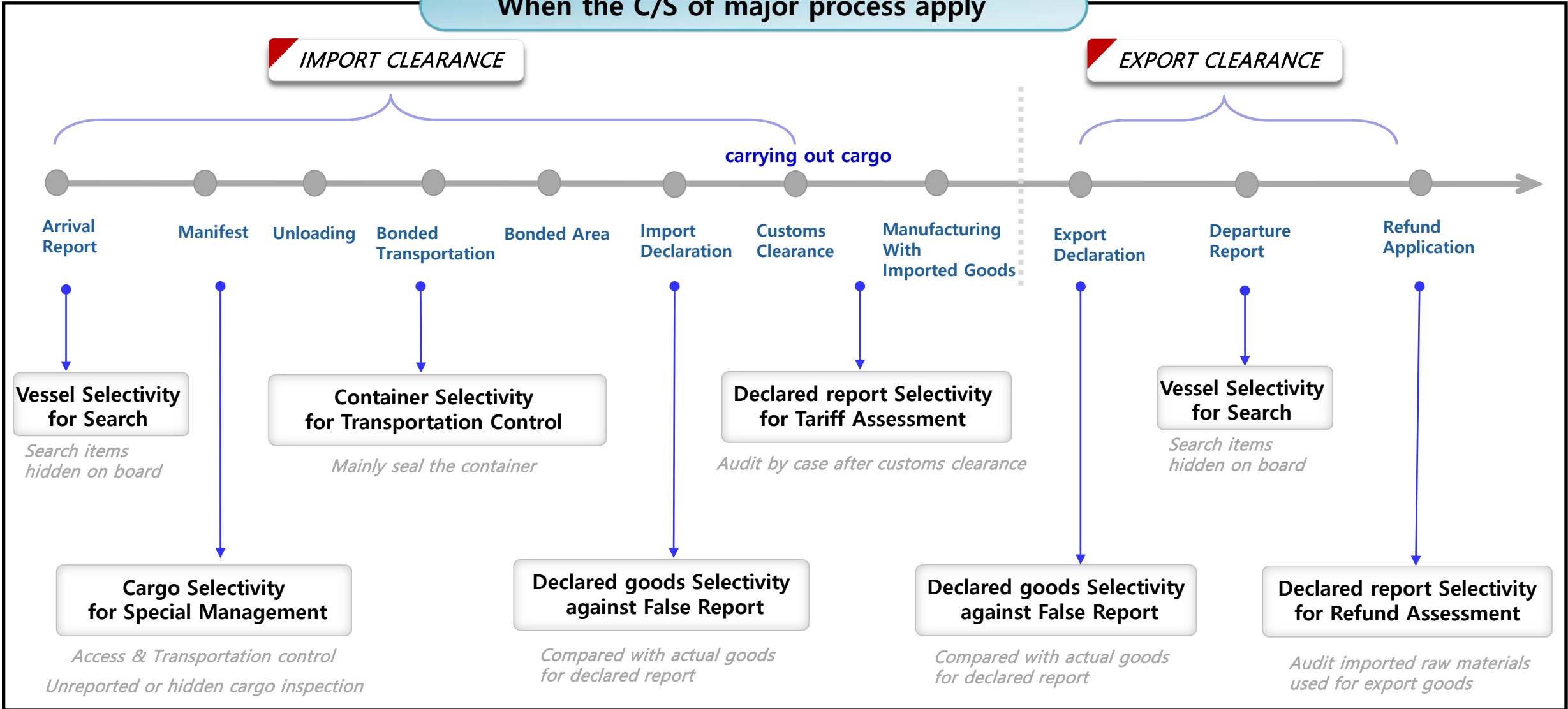
THREAT TO PUBLIC HEALTH

ILLEGAL FOREIGN EXCHANGE

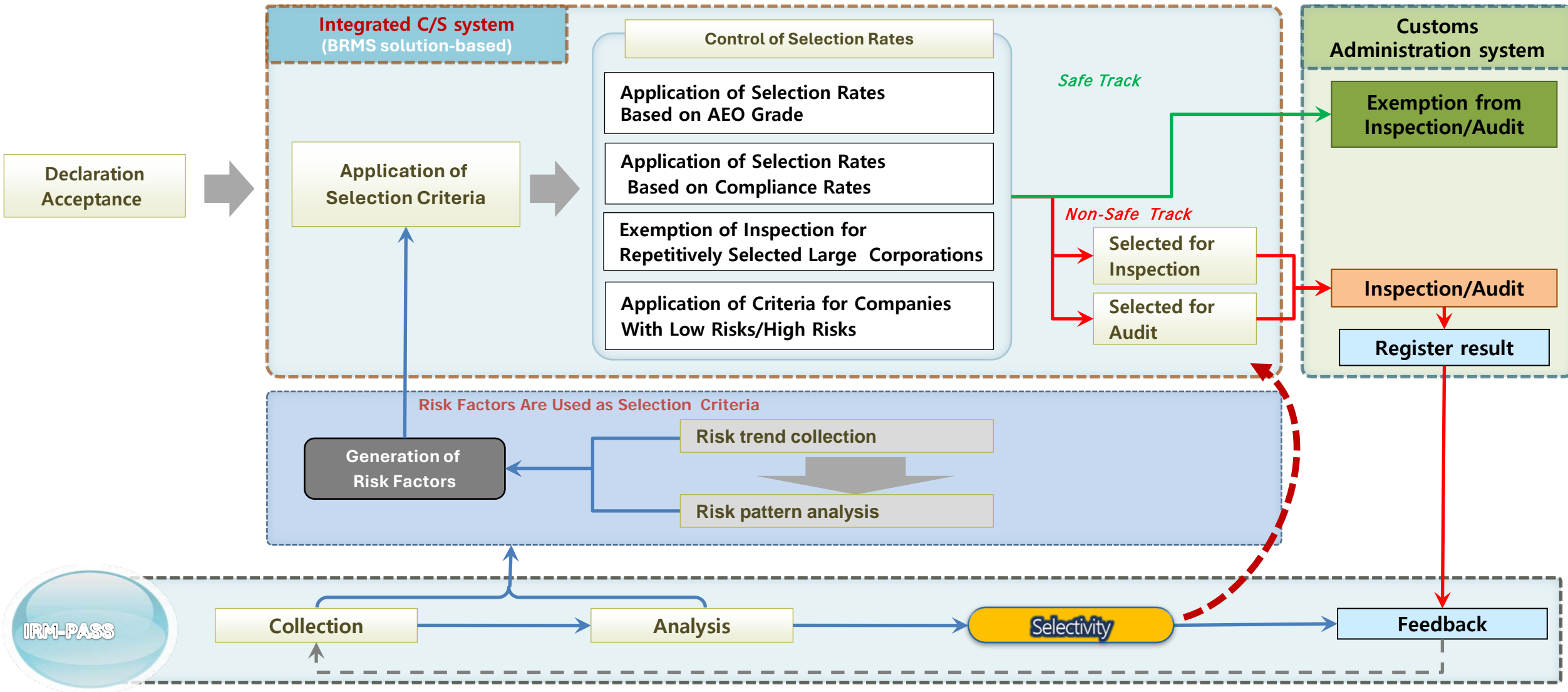
IN/OUT BOUND SMUGGLING

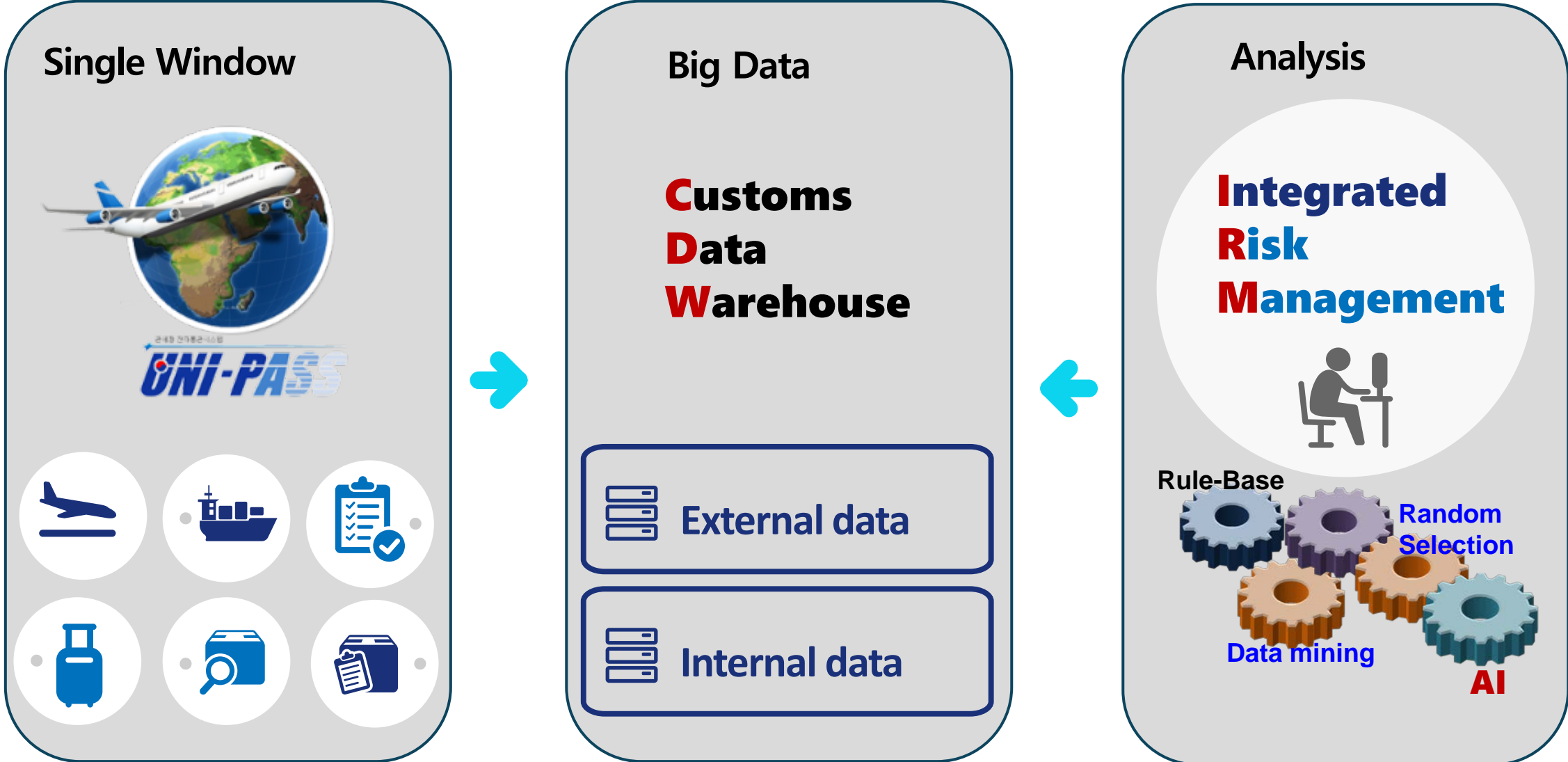
# Customs Border Targeting Center

When the C/S of major process apply



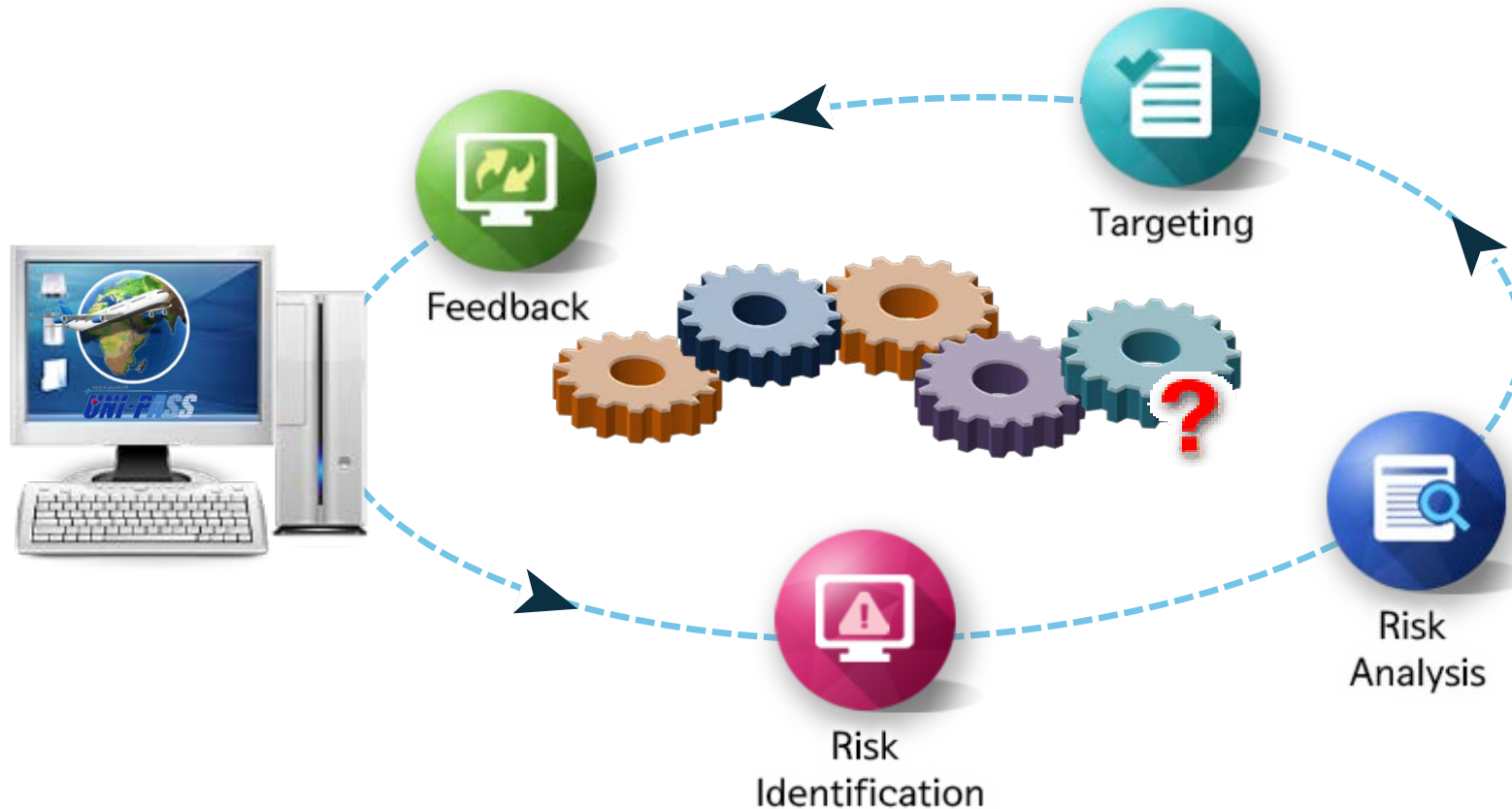
# Customs Border Targeting Center



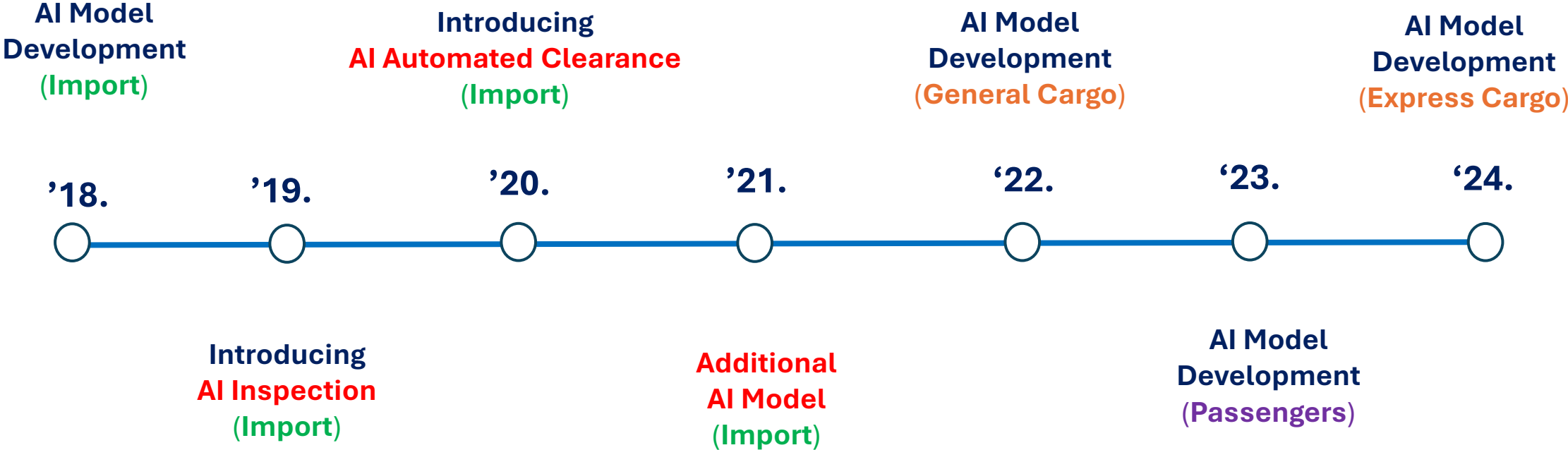


## (Risk Patterns) Evolving & Diversifying

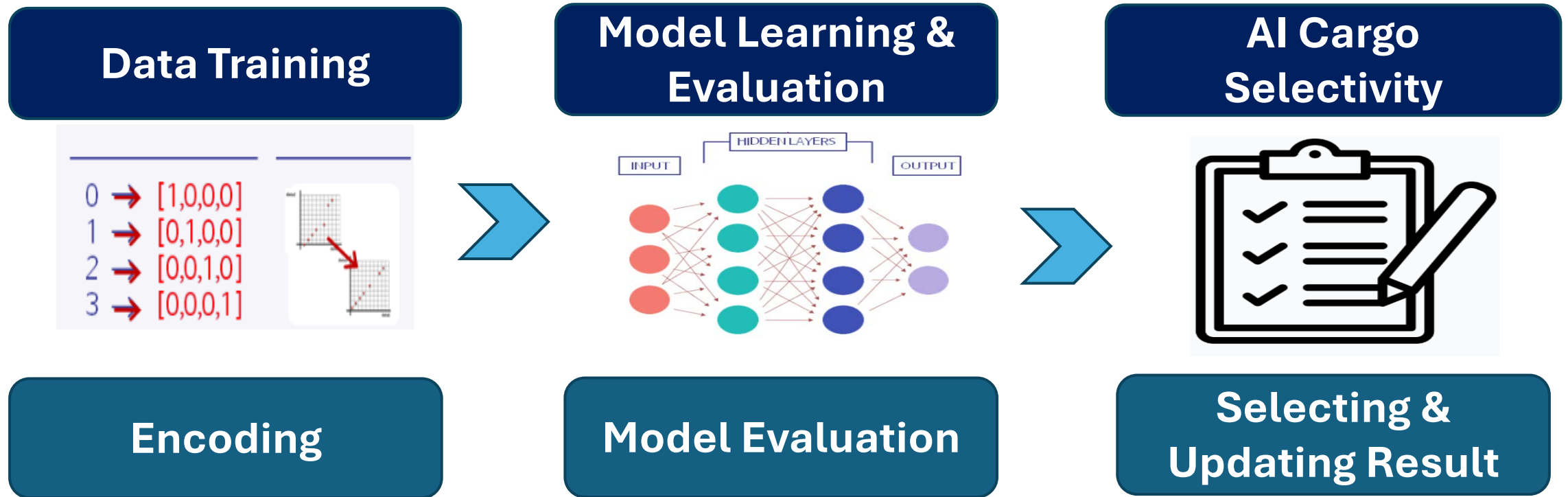
(Time span: 15 Days) Risk Identification, Analysis, Targeting



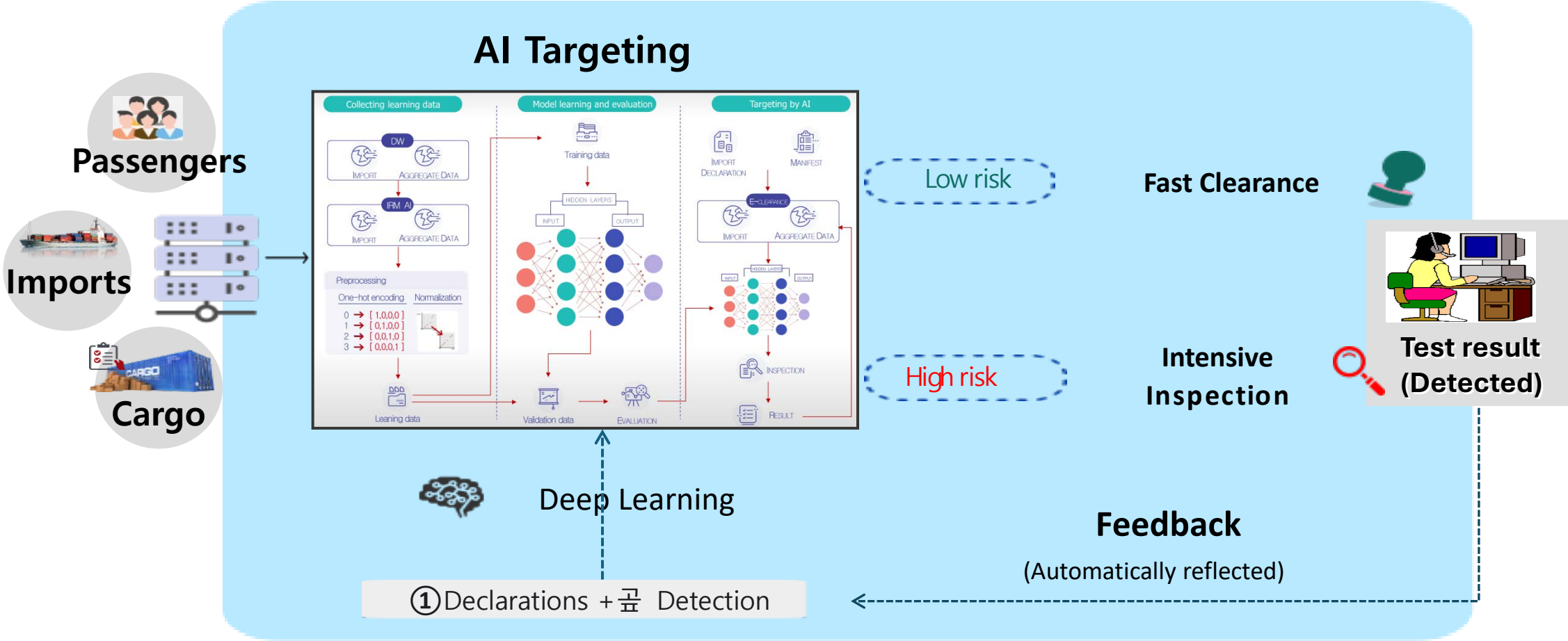
## KCS has used **AI Models for Targeting** of imports since 2019



KCS developed AI Cargo Selectivity based on **Big Data** and **Deep Learning**



# Risk Management Using Artificial Intelligence



◆ AI Targeting → **Low-risk**(Fast Clearance), **High-risk**(Inspection)

# Risk Management Using Artificial Intelligence



Algorithm Selection	Deep Learning	<b>FNN (Fully connected Neural Network)</b> <p>Classification (e.g.: IRM High-Risk Model)</p>	<b>CNN (Convolutional Neural Network)</b> <p>Image, Natural Language Classification (e.g. : Cat)</p>	<b>sLLM (Small Language Model)</b> <p>Query Inference (e.g. : chatbot)</p>
	Ensemble	<b>bagging</b> <p>Classification</p>	<b>boosting</b> <p>Classification</p>	<b>voting</b> <p>Classification</p>
	Etc	<b>AutoEncoder</b> <p>Singularity Identification</p>	<b>GAN (Generative Adversarial Network)</b> <p>Singularity Identification</p>	<b>Word2Vec</b> <p>Word Embedding</p>

Example

Example

Example

Example

## 2 types of AI Model (**High-risk, Supply chain**)

2019 AI Model	1. <b>High-risk model</b>	Advance declaration & detection, etc. (88)
	2. <b>Supply chain</b>	High-risk relationship within the supply chain
2021 AI Model	1. <b>High-risk model</b>	Advance declaration & detection + <b>investigation</b> + <b>audit</b>
	2. <b>Supply chain</b>	High-risk relationship within the supply chain + <b>import declaration</b> + <b>level of compliance</b>

2022  
AI Model

## 1. High-risk model

Advance import declaration & detection, etc. (102)

✓ Feature: Cargo management number , HBL, product name, arrival day, loading port, etc.



✓ Training data : Accumulated cases of cargo subject to inspection

## 2. Supply chain

Supply Chain High-risk Patterns(4)

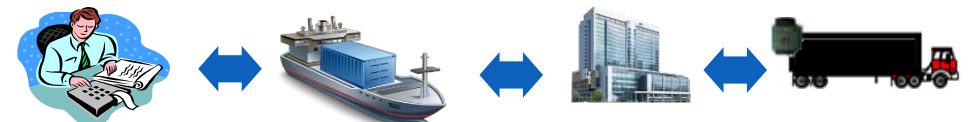
✓ Pattern1 : Freight forwarder+ Consignor + Planned storage locations

✓ Pattern2 : Cargo transportation broker + Destination Customs + Economy of departure

✓ Pattern3 : Consignee + Destination Customs

✓ Pattern4 : Consignee + Goods

- Training data : Accumulated case of imported cargo subject to inspection



2023  
AI Model

## 1. High-risk model

PNR\* Information & Inspection results, etc. (99)

\* PNR : Passenger Name Record

✓ Feature : Nationality, date of birth, departure point, period of stay, baggage, etc.

✓ Training data : personal baggage inspection results



## 2. Drug risk model

PNR Information, Declarations & Risk patterns (155)

✓ Feature : PNR, baggage weight, departing airport, nationality, date of reservation , etc.

✓ Training data : passengers inspected, drug offenders



2024  
AI Model

## 1. High-risk model

E-commerce Information & Inspection results, etc.(110)

- ✓ Feature : HS10, Declared Quantity, Weight, Tariff rate, Transaction code, Declared code, Age, Declared date, Product name etc.
- ✓ Training data : E-Commerce import declaration and Inspection Result



## 2. Drug risk model

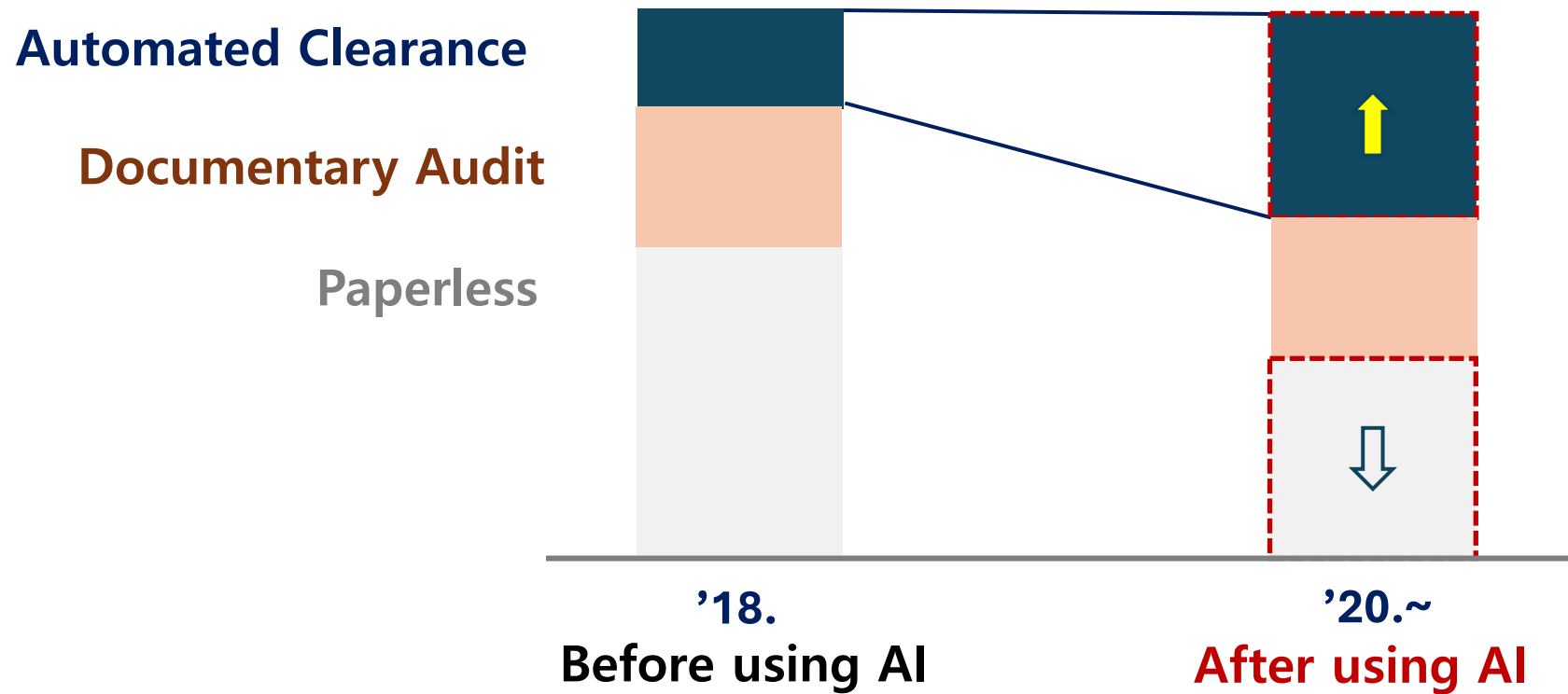
Personal Import, Investigation, Inspection Result(101)

- ✓ Feature : Taxable price, Customs duty reduction rate, Economy, Date(Declaration, Import), Phone Number, etc.
- ✓ Training data : Past Cargo inspected, drug offenders

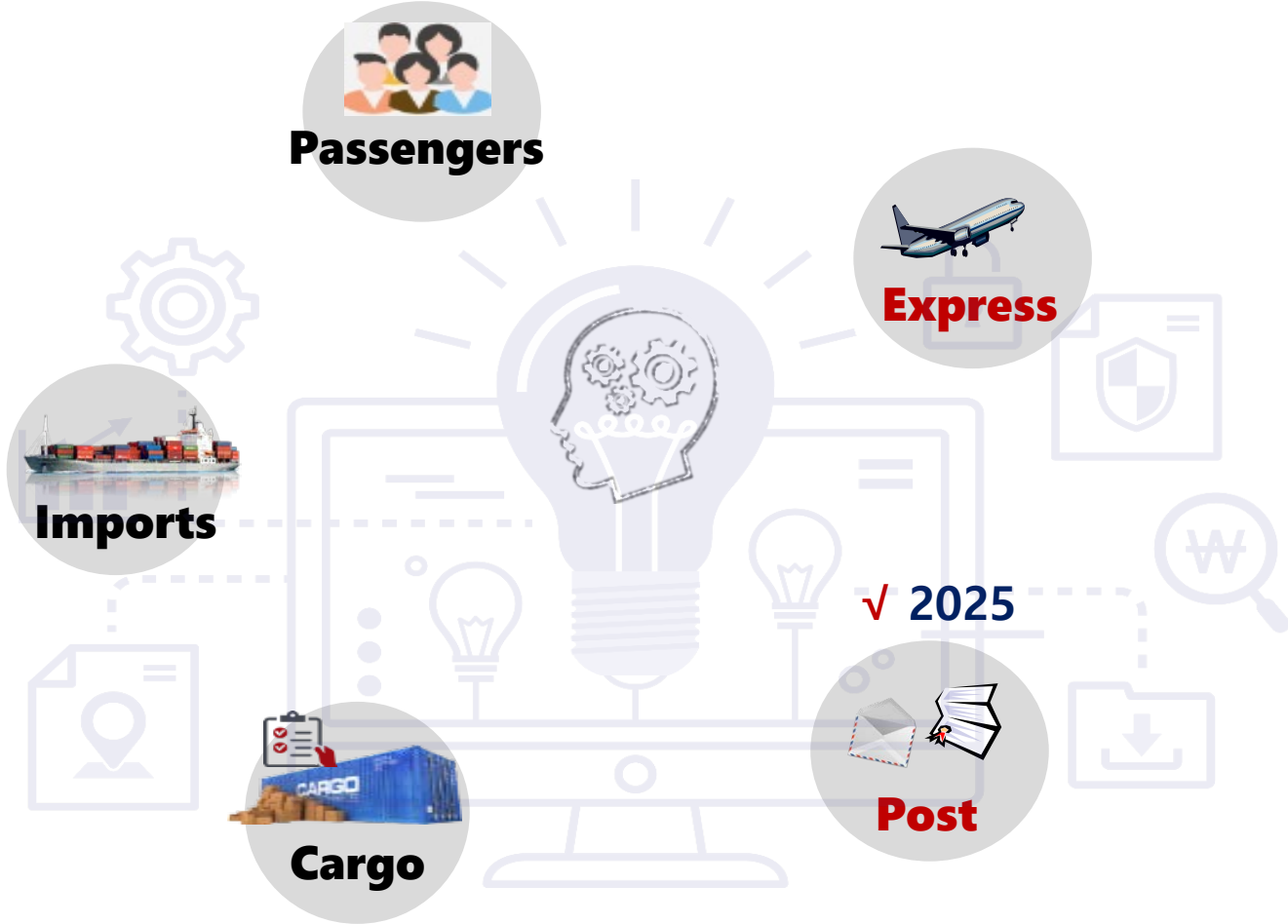


# Risk Management Using Artificial Intelligence

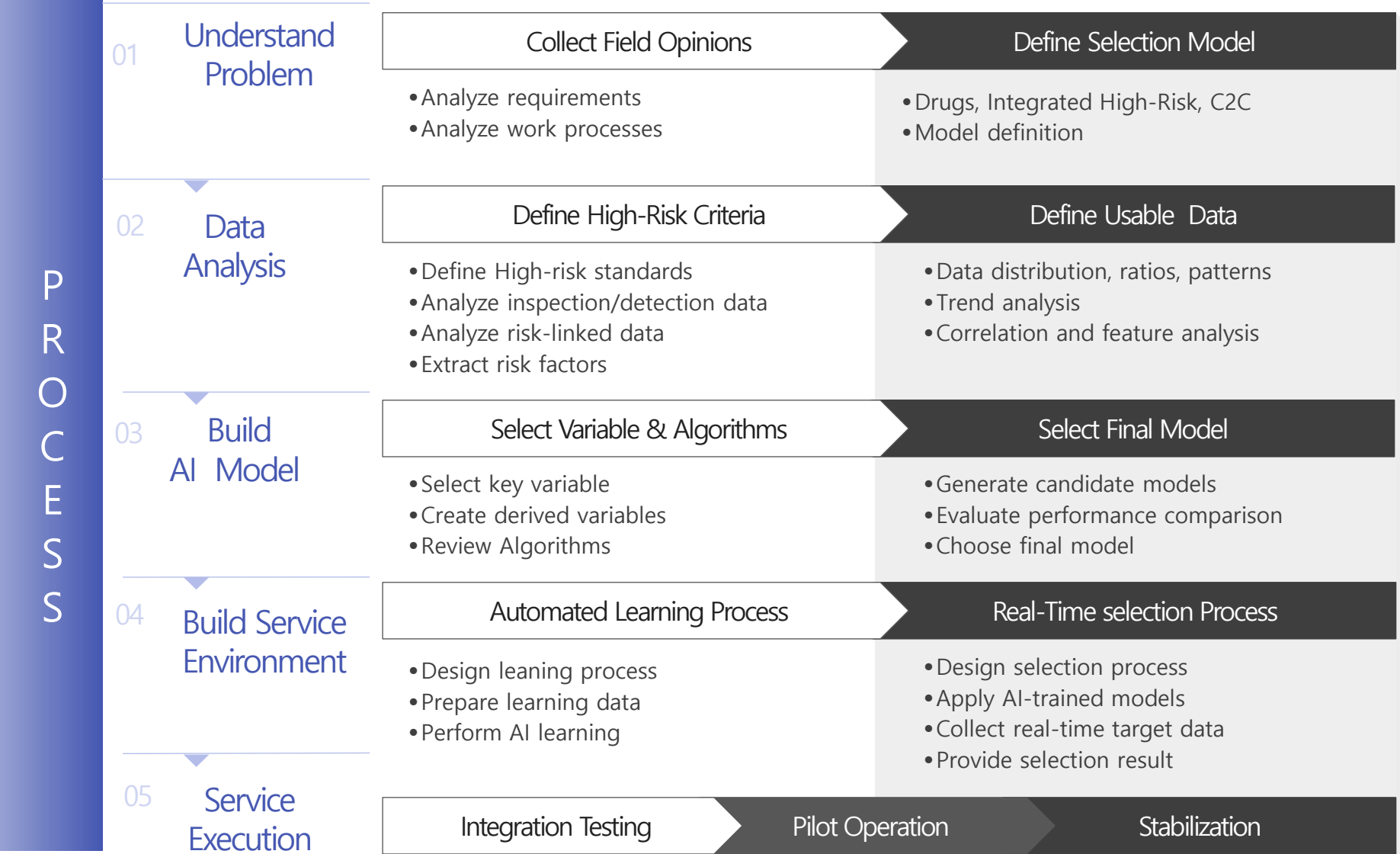
The AI model clears Low-Risk Import Declarations automatically.  
This **reduces the workload** of customs officers.



We plan to further expand into **International Post**

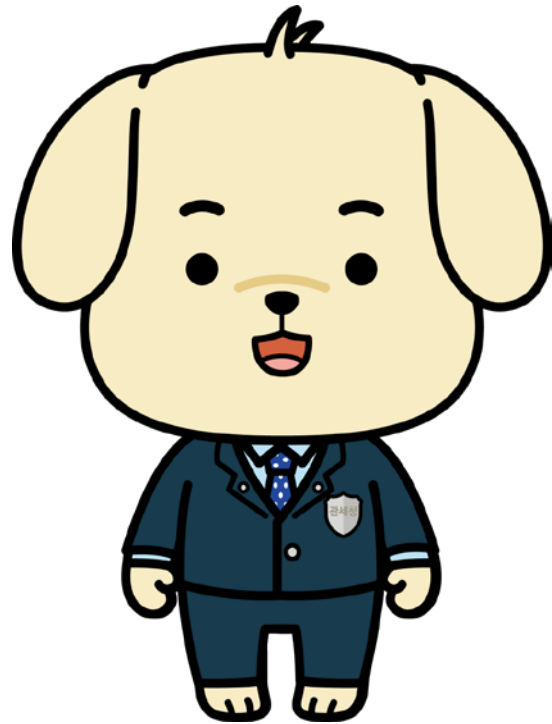


# Risk Management Using Artificial Intelligence



## AI-Based Selection Service





**Q&A**

**Thank You!**