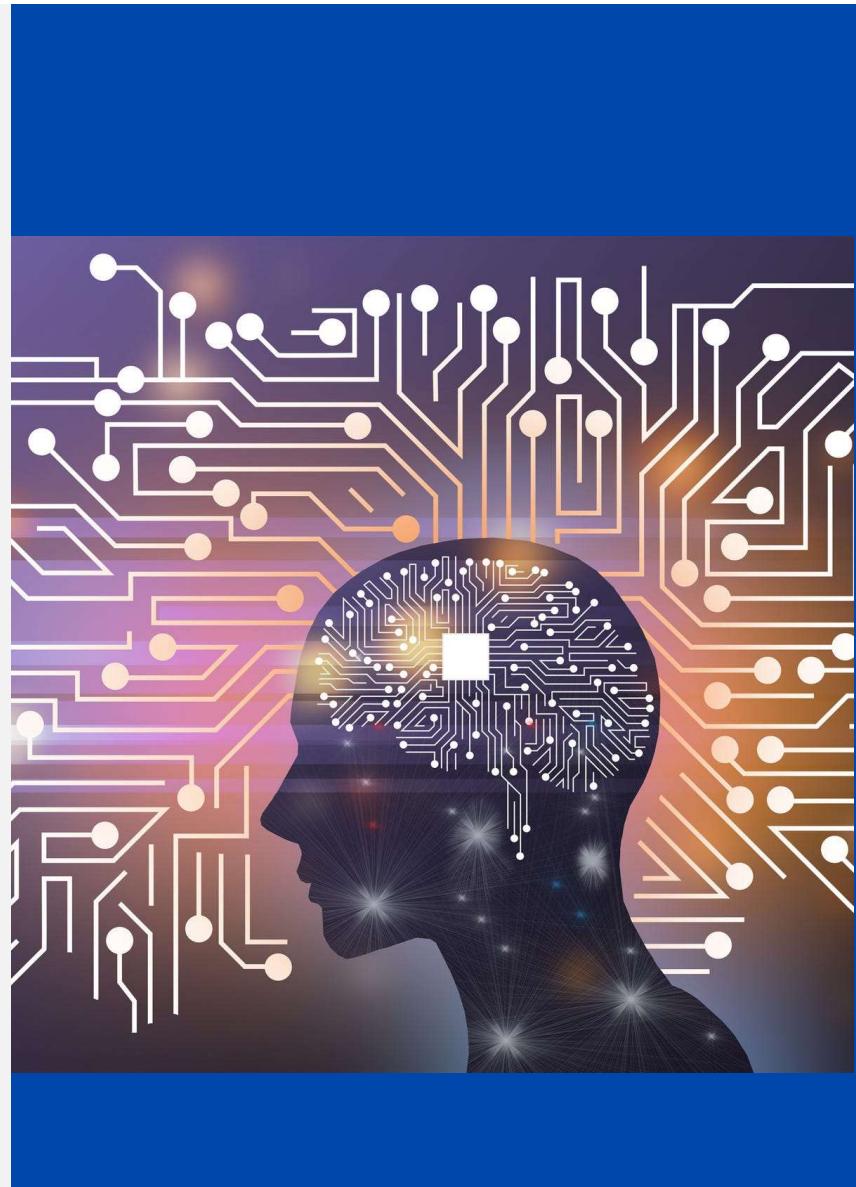

PARCEL-INTEL

Building the "Brain" of Modern Customs for E-Commerce

[WCO 2026 Technology Conference Hackathon](#)



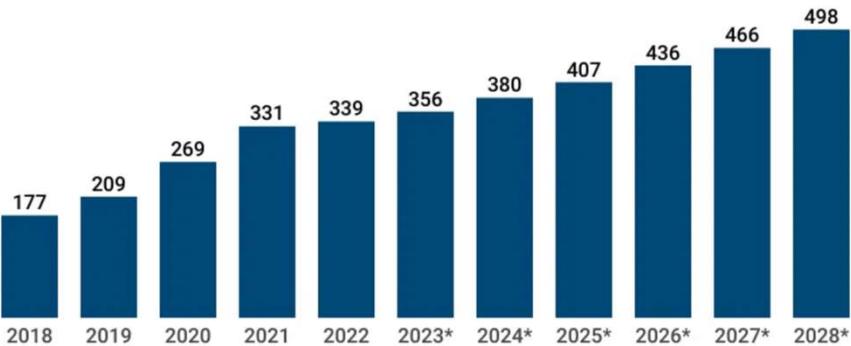
The E-Commerce Explosion

121 Billion

Parcels Shipped in 2025 (+10% YoY)

- **Manual Crisis:** Traditional inspection methods cannot scale to millions of daily parcels.
- **Split Shipments:** Strategic division of orders to evade de-minimis thresholds.
- **Revenue Leakage:** Billions lost globally due to undervaluation and misclassification.

Global Shipping & Delivery Package Volume Share
(in billions)



Source: Based on Pitney Bowes' assessment of 13 international markets representing 3.8 billion or 47.5% of the global population

*Projections

The Problem



Massive volume of small parcels overwhelming traditional inspection



Split shipments to avoid **de-minimis thresholds**



Revenue leakage from duty-free exploitation



Dangerous/restricted goods hidden in parcel flows



Manual classification too slow for modern volumes



Risk-based targeting needed but difficult to implement



Key Stat: Traditional methods can't scale to **millions** of daily parcels

Our Solution



PARCEL-INTEL: An Automated Intelligence Engine



Real-time Risk Lane Assignment

Real-time risk lane assignment



CSV Upload Processing

Processes CSV uploads of e-commerce orders

Can also work with other data sources



Automated Analysis Pipeline

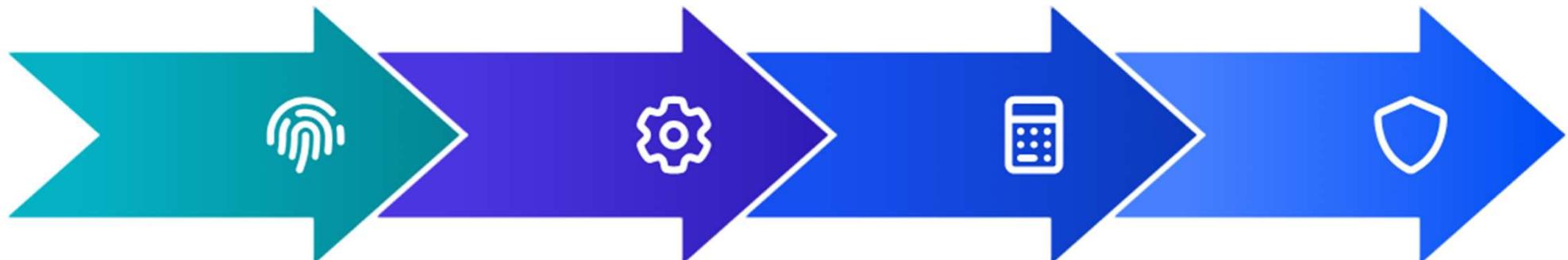
Automated 4-gate analysis pipeline



Memory-Efficient Processing

Memory-efficient data processing to handle millions of records

Architecture - The 4 Gates



Gate 1: Identity Engine

Aggregates orders by importer + address + date
Detects split shipment patterns
Identifies de-minimis threshold breaches (1,000 AED)

Gate 2: Classification Engine

AI-powered HS code prediction from descriptions
Pattern matching using product keywords
Confidence scoring for classification quality

Gate 3: Valuation Engine

Currency conversion (INR → AED)
De-minimis rule application
Tariff-based duty calculation
Chapter-specific rate lookup

Gate 4: Protection Engine

Dangerous goods detection (lithium, weapons)
Restricted items flagging (drones, precious metals)
High-value precious metal validation (>5,000 AED)
Multi-category risk assessment

Risk Lane Assignment

✓ GREEN Lane (Facilitation)

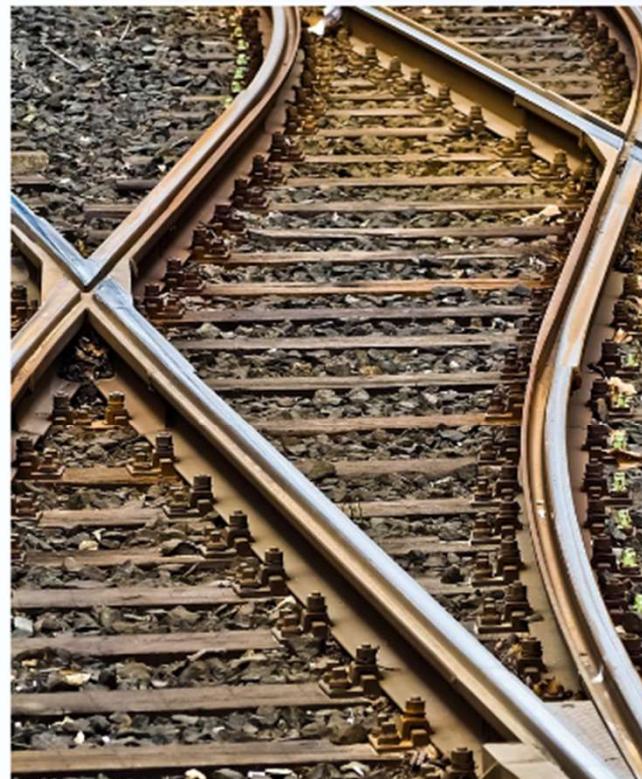
Clean shipments, low risk

Automated clearance

⚠ RED Lane (Enforcement)

Dangerous goods flagged

Full physical inspection required



⚠ YELLOW Lane (Assisted)

Low HS confidence OR split shipments

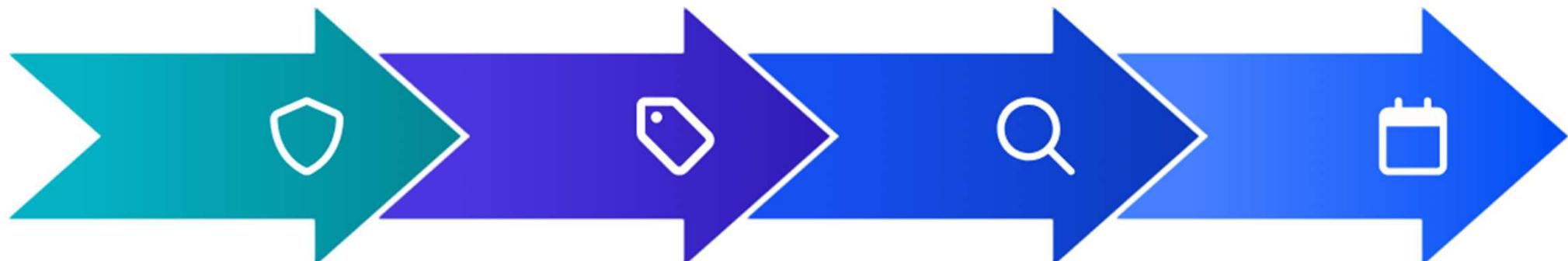
Requires review but not full inspection

🛡 BLACK Lane (Security)

Critical security threats

Immediate intervention

Key Features



1. Split Shipment Detection

Daily importer-address aggregation

Automatic threshold breach flagging

Revenue protection

2. HS Code Classification

Regex-based pattern matching

Extensible rule system

Confidence scoring

3. Risk Intelligence

Multi-category keyword matching

Value-based precious metal detection

Dangerous goods identification

4. Advanced Reporting (NEW!)

Date range filtering

Risk lane filtering

Keyword-based search

Filtered CSV export

Dashboard Overview



Real-Time Intelligence Display

Total orders processed

Estimated duty revenue

Split shipment count

Risk items flagged

Lane distribution charts

Interactive Tabs Overview

Risk Lanes

Split Shipments

Risk Items

Duty Calculation

Importer Summary

Total Orders Processed

Track the total number of orders processed through the system in real time.

Estimated Duty Revenue

View the calculated estimated duty revenue generated from shipments.

Split Shipment Count

Monitor the count of shipments that have been split across lanes or categories.

Risk Items Flagged

Identify and flag items considered risky for further review and action.



Customs Intelligence Dashboard

WCO 2026 Hackathon

>Total Orders

200,001

Processed through 4 logic gates

Estimated Duty

AED 8,191.59

Revenue protected from split shipments

Split Shipments

511

De-minimis threshold breaches detected

Risk Items

4,552

Dangerous/restricted goods flagged

Risk Lanes

Split Shipments

Risk Items

Duty Calculation

Importer-Day Summary

Risk Lane Distribution

GREEN 129529

64.8%

Facilitation

- ORD-2026-34215936: Shaftesbury London Men's Solid...
- ORD-2026-83366901: Allure Auto CM 690 Car Mat Tat...
- ORD-2026-12681993: Enthopia Back Cover for iPad 2...
- ORD-2026-46060928: Pristine Towels Cotton Bath To...

YELLOW 65415

Assisted

- ORD-2026-61847419: Tossido Solid Men's Muffler
- ORD-2026-29216856: Strawberry Lenceria Women's Ta...
- ORD-2026-45764646: First Smart Deal Plant Contain...
- ORD-2026-61787751: iBall 300M Wireless-N ADSL2+ 3...

RED 3657

Enforcement

- ORD-2026-92699144: Lab No. 4 Analog 30 cm Dia Wal...
- ORD-2026-27805330: Shortkut enterprises Model no ...
- ORD-2026-45865292: Power Smart Quick Charging Pac...
- ORD-2026-34391403: GAGA Canvas Painting
- ORD-2026-30515142:

BLACK 1400

Security

- ORD-2026-19182989: Trudeau Stress-Less Wheel Pizz...
- ORD-2026-90520566: Pratha Wheel Pizza Cutter
- ORD-2026-15631812: Go Hooked Rolling Pizza Cutter
- ORD-2026-61779502: Allen Cooper 4507 Party Wear
- ORD-2026-83720541: Allen



Split Shipment Detection

Detected 511 split shipment attempts breaching the 1,000 AED de-minimis threshold

Importer	Address	Date	Daily Total (AED)	Orders	Status
Shamma Al Darmaki	60989 Myers Ridge, C...	2026-01-01	AED 1,032.64	3 items	BREACH DETECTED
Abdulrahman Bin Huwaideen	51163 Bennett Gatewa...	2026-01-07	AED 1,048.34	3 items	BREACH DETECTED
Ayman Al Ansari	435 Gutierrez Lodge ...	2026-01-29	AED 1,092.12	3 items	BREACH DETECTED
Nawal Al Ghurair	4769 Jacob Isle, Sui...	2026-01-12	AED 1,080.11	2 items	BREACH DETECTED
Rawdha Al Otaiba	08153 Bush Expresswa...	2026-01-20	AED 1,072.68	3 items	BREACH DETECTED
Noor Bin Lootah	656 Browning Harbors...	2026-01-12	AED 1,007.20	2 items	BREACH DETECTED

⚠️ High-Risk Items Flagged

Order ID	Product	Risk Category	Action Required	Reason Codes	Value (AED)
ORD-2026-19182989	Trudeau Stress-Less Wheel Pizza Cutter...	DANGEROUS_GOODS	FLAG_FOR_PHYSICAL_EXAM	RISK_WEAPON_KEYWORD	AED 35.16
ORD-2026-92699144	Lab No. 4 Analog 30 cm Dia Wall Clock...	DANGEROUS_GOODS	FLAG_FOR_INSPECTION	RISK_LITHIUM_BATTERY	AED 33.00
ORD-2026-27805330	Shortkut enterprises Model no 428 Mobile...	DANGEROUS_GOODS	FLAG_FOR_INSPECTION	RISK_LITHIUM_BATTERY	AED 19.76
ORD-2026-45865292	Power Smart Quick Charging Pack For PAN ...	DANGEROUS_GOODS	FLAG_FOR_INSPECTION	RISK_LITHIUM_BATTERY	AED 34.76

💰 Duty Calculation Results

Total Duty Payable: **AED 8,191.59**

Order ID	HS Code	Item Value (AED)	Daily Total (AED)	Tariff Rate	Duty Payable (AED)	Status
ORD-2026-34215936	6105.90	AED 43.96	AED 43.96	0%	AED 0.00	DE-MINIMIS EXEMPT
ORD-2026-83366901	8708.29	AED 40.48	AED 80.92	0%	AED 0.00	DE-MINIMIS EXEMPT
ORD-2026-12681993	4202.32	AED 65.96	AED 65.96	0%	AED 0.00	DE-MINIMIS EXEMPT
ORD-2026-46060928	6302.60	AED 12.10	AED 12.10	0%	AED 0.00	DE-MINIMIS EXEMPT
ORD-2026-28430820	8708.29	AED 70.36	AED 109.96	0%	AED 0.00	DE-MINIMIS EXEMPT

Importer-Day Summary

Importer	Delivery Address	Date	Daily Total (AED)	Item Count	Split Shipment
Marwan Al Jaber	40716 Jill Fort, Yas Isla...	2026-01-16	AED 43.96	1	NO
Salama Al Madani	3616 Brian Mountains Apt....	2026-01-25	AED 80.92	3	NO
Suhail Al Yamahi	74042 Gregory Haven, Corn...	2026-01-06	AED 65.96	1	NO
Butti Al Shamsi	9203 Walter Trail, Apt. 2...	2026-01-03	AED 12.10	1	NO
Jamal Al Mansouri	8529 Daniel Cliffs Suite ...	2026-01-25	AED 109.96	2	NO

Demo Workflow

1. Upload CSV

Upload the ecommerce_orders.csv file to begin processing.

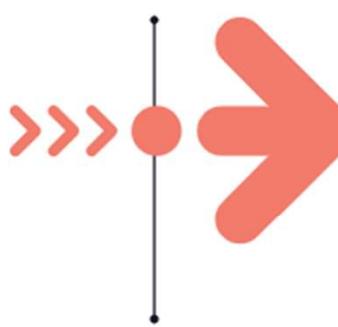


2. Auto-Process

Watch automated 4-gate intelligence processing in action.

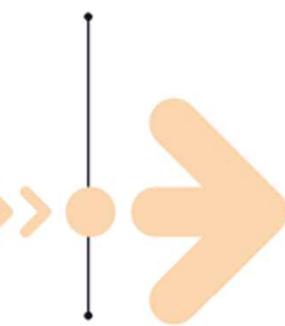
3. View Dashboard

Review top-level metrics, duty revenue, and risk flags.



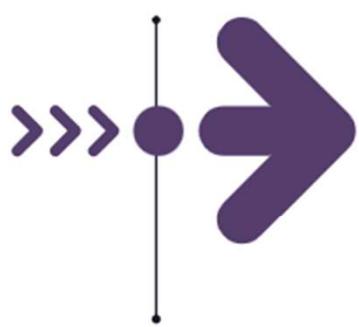
4. Advanced Reports

Filter by different criteria



5. Export Enriched Data

Download the full results in a specialized CSV format.



Real-World Impact



Revenue Protection

Automatic split shipment detection

Accurate duty calculation



Security Enhancement

Dangerous goods flagging

Restricted item identification



Efficiency Gains

95% automation rate

Focus inspections where needed

Process thousands of parcels/hour



Extensibility



HS Code Rules

Add new product patterns

Update classification logic

Regional tariff adaptation



Risk Keywords

Country-specific restricted goods

Emerging threat patterns

Seasonal adjustments



Integration Ready

REST API wrapper (future)

Database backend (scalable)

External AI model connection



Future Roadmap

Phase 02

Intelligence Scaling

- Machine learning integration for advanced HS classification
- Automated image analysis for parcel content verification
- Real-time API endpoints for platform integration

Phase 03

Predictive Analytics

- Trader reputation scoring and risk profiling
- Predictive modeling for emerging fraud trends
- Automated seasonal risk adjustment engine

Phase 04

Global Integration

- Blockchain-based document verification
- International data sharing and collaborative targeting
- IoT integration for end-to-end supply chain visibility



Thank You!
