PANDORA INTELLIGENCE

From Data to Decisions: How AI is reshaping cargo risk management

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Cargo compliance and safety

Carriers are required to be compliant with international rules and regulations, but it isn't an essay job!

The questions to answer

WHO is sending **WHAT** to **WHOM**

Do those goods require a special license?

Is the shipper a sanctioned entity?

Can the goods represent a safety hazard?

Do those goods require special handling?

Are theses goods allowed in country of transit?

Is it allowed to ship these goods to this destination?

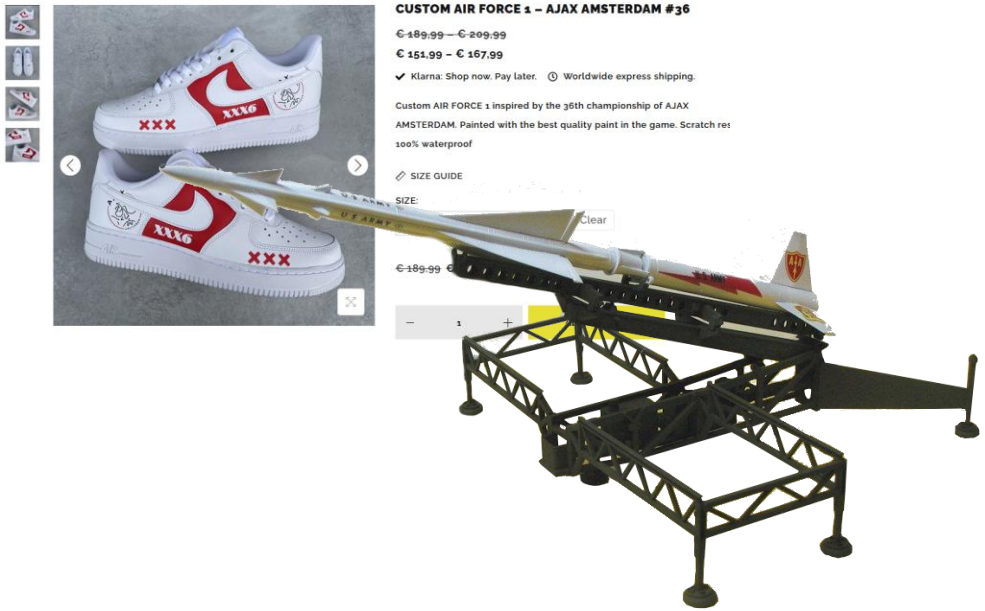
Is the consignee a sanctioned entity?

Some concrete challenges

The common industry solution is to use word-matching to detect potential risks, but that doesn't work

Goods

Lots of False Negatives (missed detections)
*Commodity description: "**NIKE Ajax**"*



Goods

Lots of False Positives (incorrect detections)
*Commodity description: "**Glue gun**"*

Glue **gun?**

Is definitively not the same

Some concrete challenges

The common industry solution is to use word-matching to detect potential risks, but that doesn't work

Shipper

Consignee

Lots of False Positives (incorrect detections)
Shipper and consignee names

Pandora + (International, Holding, Group, Management, Services, Company, Corporation, Capital, Advisors, Partners, Associates, Consulting) + (Ltd, S.A., B.V., GmbH, AD, Plc, A/S, LLC, A.E., ehf., S.p.a., SIA, SARL, Co., Inc.)

Goods

Miss-classification of goods
Commodity description

Lithium batteries (classified as Dangerous Goods) can be found in items such as:

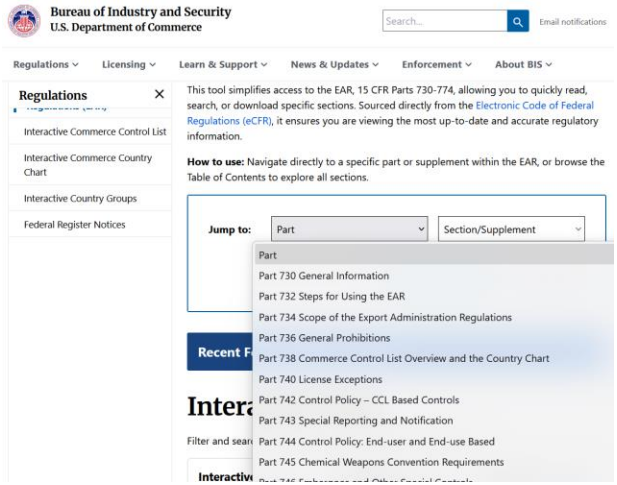
Some concrete challenges

The common industry solution is to use word-matching to detect potential risks, but that doesn't work

Goods

Complexity to find the right information, resulting in the inability to classify goods

Export Administration Regulations (EAR) of hundreds of pages



Articles about good types with broad specifications

a.3. "Microprocessor microcircuits", "microcomputer microcircuits" and microcontroller microcircuits, manufactured from a compound semiconductor and operating at a clock frequency exceeding 40 MHz;

Subset of matching products (from various sources)

Intel 80486DX4
Intel A80501-60
Intel KB80521EX180
Intel 80522PX266512
IDT C6-PSME200GA
IBM 486DX2-3.6V66GP
IBM PPC970-30B34H3
Fujistsu MB86907E
DEC Falcon 310ES
AMD K6-2/300AFR
AMD A80486DX2-66NV8T
Motorola XC68EC060RC60E
Cyric Cx486DX2-40GP
… etc.

AI models – We built and then we borrowed

Building (2020)

Models built and trained based solely our own text and explanations to classify goods based on commodity descriptions.

At that time models couldn't handle such large volumes of data (at least not ours), and we had to compile our training sets manually, which required a lot of work and domain expertise.

67%
False positives

44%
False negatives

140s
To provide an answer

126
Days to build first MVP

45
Days for each upgrade

10.000+
Lines of code written

Borrowing (2023)

AI LLM from vendors became affordable so we chose one which could run large volumes while keeping all information confidential (not like ChatGPT-like services).

Their performance is higher, they require way less maintenance, we no longer need to buy/lease expensive (virtual) hardware, their cost per run is much cheaper.

Domain Experts

16%
False positives

3%
False negatives

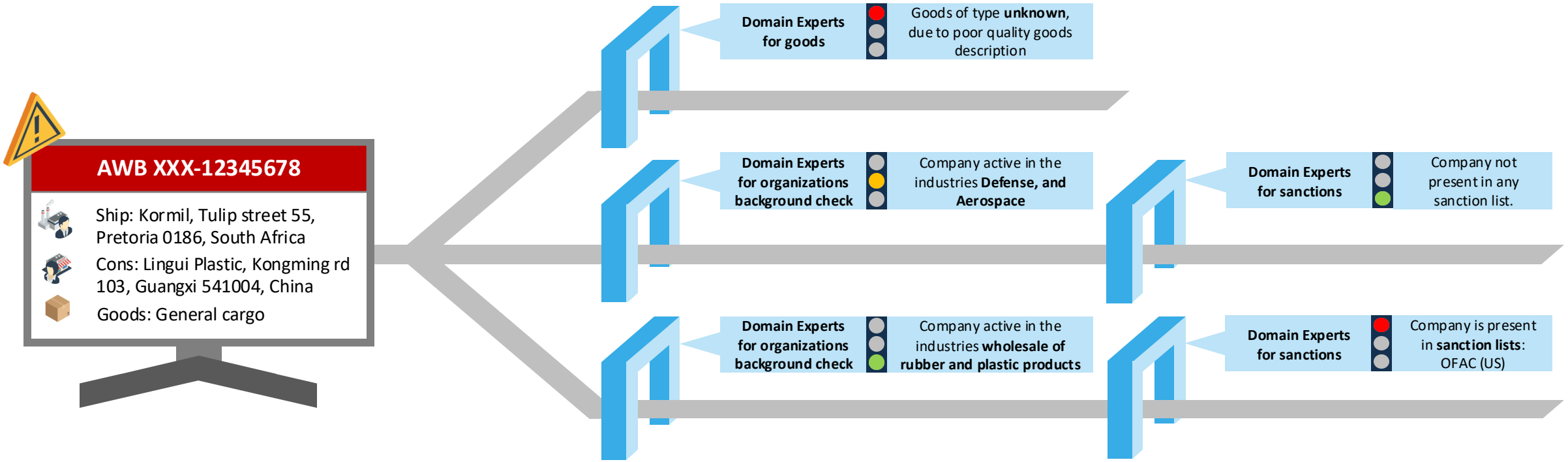
25s
To provide an answer

45
Days to build first MVP

7
Days for each upgrade

2.000
Lines of code written

We added smartness to enhance detection of risks



Risk level: High

Risk factors: Shipper is active in the ***Defense*** *and* ***Aerospace*** *industries*, and Consignee is a ***sanctioned entity***. The goods description is of ***poor quality***.

Details: The goods description is too poor in quality to conclude the about the compliance and safety of goods. That said, the shipper is active in the defense and aerospace industry, therefore there is a **high likelihood that the goods are of military nature**. In addition, the consignee is a sanctioned entity (linked to Iran aircraft manufacturing - source: OFAC).

The measurable results

By enhancing and automating detection of risks with the help of AI we managed to significantly support the compliance teams in their daily work.

Before (202)

32%
False positives

18%
False negatives

9min
In average to make decisions

0,29€/AWB
Compliance costs

23%
Of cargo assessed pre-acceptance

\+

Cargo Intelligence

Domain Expert – Commodities DG
Domain Expert – Commodities Lithium
Domain Expert – Commodities Military
Domain Expert – Commodities Dual-use
Domain Expert – Commodities Wildlife
Domain Expert – Website analysis
Domain Expert – Open-source analysis
Advanced sanction matching algorithms
Deny list UN numbers
Deny list HS codes
Deny list commodities
Deny list countries
Deny list entities
Safe list entities
Airport code translator
Advanced rules engine
Risk (level) scoring engine
Integration with Cargo Management System

=

After (2023)

11%
False positives

3%
False negatives

3min
In average to make decisions

0,16€/AWB
Compliance costs

100%
Of cargo assessed pre-acceptance

Lessons learned

- Make sure you understand the problem and thereby the underlying issues well
- Define criteria / KPI you wish to reach and accept that you can’t solve everything (ranking)
- Do POC / test solutions to assess their ability to solve your challenges
- Remember that AI is not always needed, certain tasks are better off with classic algorithms
- Ensure you have the right data for the job (shit-in = shit-out)