

The background of the slide is a blue-tinted photograph of a port. In the upper right, a large cargo ship is docked at a pier, with a crane visible. Below the ship, there are numerous stacks of intermodal containers in various colors, organized in neat rows. The overall scene is industrial and maritime.

# Rules of Origin Advisor: Automated Preferential Origin

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# Automating Origin: Perceptions & Perspectives

- Preferential origin (and origin writ large).
- Private sector origin practitioner.
- Structure of rules is complex and not readily understandable by non-experts.

# Origin Automation: Pre-Conditions

- The need is compelling.
- Born from personal experience.
- First & foremost: the Harmonized System (HS).

# Origin Automation is HS Automation

- The issue of HS automation was recently studied in a comprehensive academic working paper.<sup>1</sup>
- Keyword Search Tools + Machine Tool Predictors + Expert Systems.
- Keyword: matching words and phrases to the HS but where in the HS are the expressions “baby food” or “egg timers”?

1. “Customs tariff classification and the use of assistive technologies”, Grainger, 2023

# Machine Learning (ML) Predictors

- ML predictors essentially make “educated guesses” from data they have been trained on, and often include “confidence indicators” – which should not be understood as an indication of accuracy.
- “The quality demands of machine learning are steep, and bad data can rear its ugly head twice – first in the historical data used to train the predictive model and second in the new data used by that model to make future decisions.” (Thomas Redman, Harvard Business Review, 2018)

# Expert Systems

- Expert Systems / Decision Support Systems are another branch of applied Artificial Intelligence (AI). They are designed to emulate the approach that an expert would take in determining a product's HS code.
- HS Expert Systems should/must rely on HS GIRs, Legal Notes, authoritative rulings and specialized domain knowledge to overcome underspecified and ambiguous descriptions.
- Ability to record and explain the classification provided (i.e., a certificate of classification?) in terms of the HS itself.

# Comparison of Technological Approaches to HS Classification

	EXPERT SYSTEMS	KEYWORD ENGINES	MACHINE LEARNING TOOLS
Approach	Emulates the HS classification expert’s approach. Reasons its way through the classification process.	Searches indiscriminately. Enhanced engines use Boolean operators (AND, NOT, OR). Easy to make mistakes.	Probability-based approach (“educated guess”). Critically reliant on reliable and sufficiently representative training data for accuracy.
Capability	Understands everyday commercial goods descriptions, including complex items, trade names, etc.	No linguistic capabilities.	Understands everyday commercial goods descriptions.
User experience	Interacts intelligently and intuitively to resolve HS-critical underspecification/ ambiguity. Logic is explicitly shown. User maintains control.	Not interactive. Not intelligent.	“Black Box”.
Precision	Resolves deterministically to a single HS code.	Presents user with numerous, mostly irrelevant/incorrect “potential” matches.	Delivers a ranked list of “potential” matches with confidence factors.
Diligence	Considers and applies HS General Interpretive Rules (GIRs) and HS Legal (Section, Chapter) Notes.	No classification logic applied. No consideration of GIRs or HS Legal Notes.	No classification logic applied. No consideration of GIRs or HS Legal Notes.
Proof	Automatically generates audit trail, provides details of rationale.	No meaningful details kept.	No meaningful details kept.

# The Next Origin Automation Challenge

Customs officials necessitate goods to be categorized according to the current HS version, while ROOs mandate their classification in the version that defines the FTA's rules – in the absence of technical rectification how is any trader going to crack this issue?

This process must be fully or semi-automated in the system.

Furthermore, the PSRs in many agreements deviate from the HS, subdividing HS headings and/or subheadings to meet the origin needs, but leaving behind the HS.



# The Next Origin Automation Challenge

PSRs based on tariff-shift criteria require that the trader know the classification of the good to be traded, as well as ALL OF ITS COMPONENT INPUTS (i.e., the BOM).

When the PSRs are in an outdated version of the HS, this means that the potential correlations required are multiplied, and are more likely to lead to additional effort or errors.

PSRs in outdated HS versions can also lead to incorrectly identifying the rule to be applied, or to misapplication of the tariff shift criteria as materials' codes correlate to codes that erroneously meet (or fail to meet) the tariff shift requirements.

# The Challenge: Complexity Falls on Business

Companies, especially SMEs, are facing greater liability under self-certification regimes and need support.

The magnitude of the information challenge is growing beyond the capacity of individual firms to master it in addition to running their business.

Automated Systems must be able to manage the correlations and require user intervention in case of ambiguities.

# Coding Product Specific Rules

- A science unto itself- constant updating.
- Why not identify excluded classifications?
- Intuitive links to primary origin materials and related origin provisions (i.e., cumulation, de minimis, transport and certification requirements).

# Automated Origin: Next Steps

- In some ways, origin determination IS a complex and granular undertaking that sometimes can only be done on a product or even SKU basis.
- Nevertheless – facilitated data entry approaches are under investigation.
- Another massive challenge is getting the information required to determine origin (Bills of Material, product specifications ...).
- Open-source interoperable data standards for cross border tax and trade attestations (OriginBX –Oasis Open Project :[originbx-oasis.org](https://originbx-oasis.org)).



# Thank You!.....Questions?

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