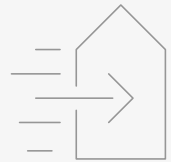
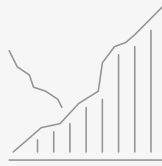
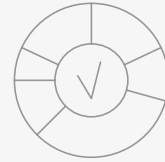




# The Case for AI in Cross-Border Trade



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## A NOTE FROM OUR CHAIRMAN

My first introduction to Eurora was a conversation with its founder Marko Lastik in 2018. At the time, I was writing the standard on the mapping between the Universal Postal Union (UPU) and the European customs data model, this formed the topic of our conversation.

In the years since its founding, I've enjoyed watching the company and its platform flourish, and was honoured to be invited to join last October as Non-executive Chairman of the Supervisory Board. My work with Eurora goes hand-in-hand with my work for the UPU and its 192 member countries, streamlining cross-border compliance and ensuring a truly universal network of up-to-date products and services.

To say that the last few years have been challenging for logistics providers and the ecommerce sector would be an understatement. As well as a host of global crises, we've also had to manage an increasingly diverse and complicated regulatory environment. Regulations including the US STOP ACT, Singapore's new GST rules, Dubai's customs duty charges, the UK Customs Declaration Service and Canada's CARM importing regime are just a handful of the changes senders have had to keep pace with recently. All require customised and high-quality data.

Data – and data quality – is at the root of the compliance challenges we're dealing with as an industry. The regulatory burden brought on by authorities seeking to more accurately record cross-border shipping at a parcel level and combat tax evasion has pushed many to breaking point. But for those that recognise it, data also presents an exciting opportunity to not only tackle these problems head on, but combat wider operational challenges as well.

● ● Data – and data quality – is at the root of the compliance challenges we're dealing with as an industry

We know that cross-border cart abandonment, for example, is needlessly high. Over 40% of US shoppers admitted to abandoning their cart because duties and taxes were vague or looked unrealistic<sup>1</sup>. But for ecommerce businesses using the latest data technologies to automate compliance reporting, extending that functionality to provide accurate, real-time calculation of duties and taxes for individual shoppers is the work of a moment.

And as an industry, we need to start embracing technology, because more disruption is on the way. When the new edition of HS codes came into effect at the beginning of last year, the scope of the mandate took most shippers by surprise. Yet, we're on track to repeat it, with incoming regulation around transport security, tax and sustainability likely to cause more disruption, not least because very few of those impacted are seemingly aware of the changes.

That's where solutions like Eurora's become a necessity; automating customs reporting and compliance and keeping abreast of regulatory and policy changes across a fragmented postal world. Big changes are coming, and authorities will continue to step up data collection and reporting requirements. Over the next three years it's going to be increasingly obvious which businesses have the technology to optimise and thrive through regulatory changes – and which do not.



# 40%

of US shoppers admit to abandoning their cart because duties and taxes were vague or looked unrealistic.



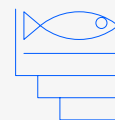
**Walter Trezek,**

Chair of the Consultative Committee, Universal Postal Union  
Non-executive Chairman of the Supervisory Board, Eurora

## NO DATA, NO SHIPMENT

The global trade environment is increasingly volatile. Once-in-a-lifetime events are now commonplace, and we're all well versed in dealing with pandemics, geopolitical tensions, energy supply crises and rampant inflation.

Each of these factors have had a profound impact on global supply chains, but industries navigating these choppy waters also have other issues to contend with. Businesses that rely on international shipping are now also dealing with fragmented trading regimes, country-specific standards, varying rules of origin, tariffs and sanctions on a daily basis.



The six digit HS code for 'fish' is determined by multiple factors, including whether it is:

- frozen
- fresh
- dead
- alive
- saltwater
- freshwater

### Shifting regulatory landscapes

The growth of ecommerce and the resulting increase in the volume of packages sent internationally has prompted more scrutiny from regulators around fraud and tax evasion within cross-border trade, increasing the complexity of compliance. In 2021, advanced electronic data (AED) became mandatory within the Universal Postal Union (UPU)<sup>2</sup>, with designated operators required to report on packages ahead of sending them.

In the same year, the EU introduced its VAT e-commerce package<sup>3</sup>, removing VAT exemptions for cheaper products and introducing three new types of VAT for businesses selling cross-border to consumers in the union.

● ● In a worst case scenario, an error could result in fines, seizures or delays.

### HS2022 increases complexity of compliance

The new edition of the World Custom Organisations (WCO) harmonised system (HS) came into effect in January 2022. It is the foundation for customs tariffs in over 200 countries, and forms a common framework for classifying goods by assigning every parcel shipped a six digit number.

HS codes therefore provide a wealth of information, and customs authorities use it as a basis for calculating tariffs, taxes and duties – it also serves as an important source of data on international trade and for meeting EAD requirements. But the system is far from simple. Different goods are classified in different ways; some by type, some by material composition, others by use or function, and within those classifications are a host of subheadings. In total, the harmonised system includes 5300 articles with heading and subheadings, arranged in 99 chapters and 21 section groups.

A fish, for example, doesn't receive a HS code for 'fish', its code is dependent on whether it is frozen or fresh, dead or alive, saltwater or freshwater, as well as a host of other characteristics. Determining the correct six digit code to accurately represent a product is increasingly difficult, particularly for marketplaces and logistics companies, which don't control the quality of the data provided to them. They're managing thousands of parcels a day classified by senders – and every single one needs the correct code assigned.

HS codes are updated every five years. The latest update, the HS2022 edition, sought to address gaps in trade statistics, introducing 351 sets of amendments that reconfigured many classifications and subheadings for a range of products, including technologies that had advanced beyond the last edition and were difficult to accurately classify<sup>4</sup>. The review enabled more accurate capture of information by customs authorities, but it further complicated compliance for senders.

To add even more intricacy, HS codes are not limited to the WCO's six digits. It is standard practice for economies signed up to the system to require additional



Harmonized system includes:

**5300**

articles with headings and subheadings

**99**

chapters

**21**

section groups

codes alongside WCO's, meaning HS codes vary in length depending on the destination authority and can be extended considerably beyond the initial six figures; we've seen codes reach as many as 15 digits. This system means the same products often require different codes if they are being shipped to different destinations.

### There's nothing quite as expensive as non-compliance

In most cases, the sender has full legal responsibility for ensuring the codes are correct. A best case scenario would see incorrect classifications generate higher tax and duties than goods are liable for. In a worst case scenario, that error could result in fines, seizures or delays.

- ● In the future, the data sent ahead of a shipment will need to confirm a product's raw materials, report every stage of its supply chain and quantify its carbon footprint.

In the EU, penalties vary by member state. In the UK, the penalty regime for non-submitted value added tax (VAT) is determined by the behaviour that caused the error as opposed to the size of the error, and may range from 30% of the VAT due for an accidental misreporting to 100% for deliberate tax evasion<sup>5</sup>. While in the US, deliberately violating export administration regulations can cost businesses up to \$1m in penalties, while an accidental mistake by a corporation can incur charges of \$50,000 or five times the value of the export, whichever is greater<sup>6</sup>.

And the requirements around HS codes continue to be updated at a national level. For example, in Feb 2023, Slovakia and Czech ports added an additional two digits to required HS codes when updating T1CIM bulk documentation for train transportation. And at the start of this year, the EU, UK, Canada and GCC all published new country-specific HS nomenclatures.

The last three years have seen a number of major regulator changes introduced, including the US STOP Act and the EU's Import Control System 2 (ICS2). The shifting regulatory landscape isn't going to slow down any time soon, with incoming changes such as ICS2, release 3 next year, and the European Commission's ViDA (VAT in the digital age) package, currently slated for 2025.



UK penalties for VAT errors range from:

30%  
to  
100%

of VAT due, depending on the severity of the omission.

### The increasing importance of data

Just as we saw with the HS2022 edition, data capture and advanced reporting requirements will become more nuanced as the scope and utility for data increases. In the next three years, parcel data will be used for more than just calculating duties and taxes. It'll be an intrinsic requirement for transport security, product safety and sustainability reporting. The data sent ahead of a shipment will need to confirm a product's raw materials, report every stage of its supply chain and quantify its carbon footprint.

Without data, there will be no shipment.

## AI: THE ULTIMATE DATA TECHNOLOGY

Data will be the key facilitator for cross-border trade and already its relevance has overtaken that of physical infrastructure. While transportation methods are largely interchangeable, the need to accurately classify and report on each parcel is essential – Advanced Electronic Data (AED) is fast becoming a standard requirement when shipping across-borders.

Reporting at a parcel level, with varying classifications and changing national

requirements, is now too complex to manage manually. Once policies like ViDA, ICS2 and the STOP Act take full effect, reporting manually will no longer be an exercise in ensuring perfect compliance, rather it'll be about reducing the risks and mitigating the impact of inevitable errors. The regulatory environment is simply too diverse and complicated for human teams to manage alone.

## ● ● The relevance of data has overtaken that of physical infrastructure.

Digitalisation sits at the centre of this change. Improvements in digital technologies provided the opportunities for authorities to refine data collection, and it is data technologies in turn that will provide senders with cost-effective tools to augment the capabilities of their human teams.

Artificial intelligence (AI) and machine learning (ML) are the ultimate data technologies. This software analyses massive data sets, identifying patterns and trends in near real-time, and predicting a set of likely outcomes based on those trends. In the context of cross-border trade, AI/ML has a number of applications and a broad range of uses.

For e-commerce and logistics companies, AI can streamline reporting and reduce inaccuracies that lead to fines or seizures. For example, it can automate HS code assignment, using product descriptions and numerical values such as weight, volume, price and quantity – as well as the unique requirements of the customs authority at the destination – to automatically assign accurate codes to hundreds of thousands of parcels in mere seconds. It can instantly screen for denied parties, or accurately calculate duties and taxes for consumers in any destination at point of sale.

**“AI gives you flexibility and options,” explains Eurora’s Manager of AI Monitoring, Kristi Helekivi. “Take HS code allocation, you know it is going to change, whether that’s nomenclature, classification rules or the code itself. It’s the work of an hour or two to update those changes when you’re using a machine, it’s a very different and far more involved undertaking for human teams.”**



In short, AI frees compliance teams from days of monotonous, manual work, giving them time to focus on the more nuanced and technical tasks that can't be automated. Perhaps most critically of all, AI has the potential to reduce friction for consumers, providing clarity over duties and taxes upfront, as well as preventing delays at the border.

## ● ● Properly managed, senders’ data can be leveraged to provide insight, create efficiencies, optimise recipient experience, boost revenue and drive innovation.

At an industry level, there are also huge gains to be made from the fast, accurate reporting on individual parcels facilitated by AI. Increasing the quality and real-time availability of data from senders not only eases the flow of goods across-borders and enhances security, it also allows for quicker identification of trends around international trade.

AI/ML provides designated operators, e-commerce and logistics companies the means by which to optimise through a changing regulatory landscape. But data is an increasingly precious commodity, and the businesses embracing data technologies today stand to reap the benefits far into the future. Properly managed, their data can be leveraged to provide insight, create efficiencies, optimise consumer experience, boost revenue and drive innovation.

**“That’s the beauty of technologies like AI and ML,” explains Eurora CEO of US operations, Chris Lentjes. “They’re modular. You might start out using them to automate HS code allocation, but that same data has multiple uses, and businesses can scale them quickly. In the HS code example, the same system can easily be used to calculate tax and duties, and it’s an incremental upgrade from there to include IOSS/OSS registration and management. If you’re automating that, then you can very easily provide recipients with accurate duty and tax calculations at point of sale, and then build on top of that to automate the collection of those duties from the consignee. Once businesses take that first step with this tech, then possibilities really are limitless.”**



This is a turning point. As data becomes more critical to every facet of operations – but particularly cross-border trade – we’ll start to see a divergence. On one side, the businesses that embrace and leverage AI and ML to outperform their competition. And on the other, those that didn’t.



Eurora AI/ML processes up to 5,000 calls in less than 100 milliseconds with an accuracy of:

## INTRODUCING EURORA

Eurora uses AI to automate compliance processes, simplifying and accelerating global trade. Customers such as DPD, SkyNet, Joom Logistics and Wish rely on our technology to process countless packages a day.

# 98%

**“We have a global network of branches with strong domestic networks and global coverage, and are agile enough to adapt quickly,” said Tommy Erasmus, CEO of SkyNet Worldwide Express. “Partnering with Eurora allows us to support our small and medium sized shippers, giving them access to IOSS import validation and HS code automation not readily available to smaller exporters. This restored access to EU markets for many UK businesses post-Brexit, and continues to be a selling point for shippers all over the world. The ability to communicate in advance to the end consumer the full array of traditionally hidden VAT and duties payable on import, and enable payment upfront, not only reduces costs for the consumer but provides a seamless and accelerated clearing and delivery process on arrival in the import country of delivery.”**



Founded in 2018, Eurora was an early pioneer of AI in cross-border trade and was one of the first to apply natural language processing to the problem of cross-border compliance and parcel classification. Today, our platform and API remain cutting edge, using multimodal models to return information for parcels based on urls, online product descriptions, images and numerical data.

We operate in a sector that experiences catastrophic changes every single year, and landmark changes at least every five years. To meet these unique requirements takes an exceptional technical team. As such, all our models are proprietary – built in-house – and our research and development teams regularly explore additional applications and integrations for both open source components and third-party solutions. The result is a platform designed to deliver specifically for this use case, enabling us to achieve accuracies of 98%. Eurora works closely with academic institutions throughout Europe, and have done since our founding, taking an active

- ● Our platform and API use multimodal models to return information for parcels based on urls, online product descriptions, images and numerical data.

role in establishing best practices around commercial AI and its application to international trade.

Commercial AI is still in its infancy – Gartner estimates that only 54%<sup>7</sup> of models built are ever productionised. This is the result of a number of factors, not least of which is a tendency to keep technical teams and domain expertise separate. Yet, to build solutions with real utility, technical teams need to work hand-in-hand with subject matter experts, ensuring models include the right parameters, consider the right data, and can deliver meaningful value for end users.

**“A truly global tool needs to understand the differences between markets. There are social and cultural nuances in product descriptions and categorisations that need to be captured and included in our models to ensure Eurora’s outputs are as accurate for senders in Rotterdam as they are for those in Riyadh,”** explains **Karl-Oskar Masing, Eurora’s Head of Data Science**. **“We take a hybrid approach to modelling, including the knowledge of industry leaders, academics and policymakers in our AI and ML models. This gives our customers complete confidence that Eurora is the compliance champion they need.”**



Eurora offers a broad feature set, providing four modular applications for managing tax service, trade compliance, customs efficiency and duties and tax collection. Our solutions include product harmonisation, IOSS/OSS registrations and management, duty and tax calculation and collection, restrictions screening and VAT reporting, among others.

We’re leveraging the very best of human understanding and technology to provide a real-time taxation and regulation database which automates decision making to ensure compliance with existing and incoming regulations around the world. This means our partners can focus on expanding their core business, rather than navigating the complexity of cross-border regulation alone.

## THE FUTURE OF CROSS-BORDER TRADE

The mandating of electronic data in advance of shipping by authorities worldwide heralds the start of data-driven, cross-border trade. At the moment, policymakers are focused on security and tax evasion, but the utility for accurate, real-time data is far reaching. From tackling last mile delivery issues to reducing carbon output, data will sit at the heart of every sender’s business in short order.

**“There is no future for cross-border trade that doesn’t include AI. The volume of data that we’re talking about is massive, it requires an advanced machine to manage it.”** says **Kristi Helekivi, Manager of AI Monitoring at Eurora**, **“Once we accept that, then the question becomes ‘how can we use AI?’ There are many different ways and places in the process that AI can enhance and add value. The more data you have, the more patterns you can identify – that unlocks opportunities we haven’t had before.”**



The industry is waking up to this and, as data maturity inevitably increases and more solutions become available to manage it, then regulations will branch out to facilitate more holistic data capture around cross-border trade.

- ● At the moment, policymakers are focused on security and tax evasion, but the utility for accurate, real-time data is far reaching.



## Digitalising tax to collect data

Tax is one of the first frontiers when it comes to data collection. Realistic data enables authorities to accurately tax goods being shipped, and many are extending that to include previously exempt products. At the beginning of this year, Singapore followed the example of the European Union, Norway and the UK, charging goods and services tax (GST) on low-value imports, raising the GST rate from 7% to 8% at the same time. For senders, these changes add to the compliance reporting burden, while increasing the cost of goods to consumers.

For ecommerce, there are further significant changes to VAT liability on the horizon. The European Commission's ViDA (VAT in the digital age) package is due to be introduced in 2025. This will mandate the use of the IOSS model – currently optional – for those sending goods to consumers in the European Union.

ViDA is an attempt to streamline the burden and costs of VAT compliance for businesses carrying out transactions in multiple member states, and aims to centralise registration and reporting of tax via OSS (one-stop-shop) for senders in the EU, and IOSS (import one-stop-shop) for those outside of it, providing the value of their goods don't exceed 150 eur.

**“This next stage of the EU VAT e-commerce package will create a single VAT number for all parcels imported into the EU, linking VAT to the ID of an individual parcel and its electronic invoice,” says Chair of the UPU Consultative Committee and Non-executive Chairman of Eurora’s Supervisory Board, Walter Trezek. “This will allow customs authorities to establish a database of all goods being imported into the union. That is an incredibly valuable tool, and the EU isn’t the only authority seeking to build it.”**



In 2023, Singapore goods and services tax (GST) rose from:

7%

to

8%



By linking multiple data sources for a single parcel, authorities can build a holistic picture of the goods being imported, collecting a wide range of data, such as the materials used in production or information about the supply chain.

**“This data has practical applications, allowing for security checks and evaluation to be conducted at a consignment level and reducing friction at the borders,” explains Walter. “Longer term, and as sustainability initiatives heat up, I’d expect authorities will use this transparency around consumer goods to calculate fee obligations for packaging, sustainability and carbon allocation.”**

**“But the possibilities for a database of this nature are endless. It will also likely be leveraged for product safety, quantifying that the materials and labour involved in the production of a single item are safe and conform to labour laws. With real-time access to trade flows, it could even be used by central banks to predict inflation.”**

- ● By linking multiple data sources for a single parcel, authorities can build a holistic picture of the goods being imported.

## Sustainability

It goes without saying that a database linking each and every parcel, its content and packaging, and detailing its fulfilment journey, will be a huge enabler of many sustainability initiatives as well.

For starters, it will make it possible to calculate the environmental impact of every parcel sent internationally. As net zero targets approach and the focus on sustainability heats up, regulators will put more pressure on industries to quantify and limit their impact. The possibility of a cross-border carbon tax is a source of open speculation<sup>8</sup>, while the EU’s Carbon Border Adjustment Mechanism will ensure

importers are liable for the same carbon price as domestic manufacturers<sup>9</sup>. A postal sector European standard for calculating and declaring greenhouse gases and carbon emissions is already in the works (Draft EN 17837), it is aligned with the existing requirements for transport and logistics (ISO/DIS 14083) and transport services (EN 16258). As an industry, we're not far away from having accurate data consistently available to support these calculations. Which means senders are not far away from having to report the environmental impact of every single parcel they send.

## Transport security

In the near-term, authorities have set their sights on transport security; aided by the development of advanced electronic data (AED).

Information sent in advance of every parcel will be consolidated to provide complete manifests for the containers or vehicles it is shipped in, not only reducing the likelihood of illicit substances crossing the border but also ensuring the most appropriate method of transport. A container including lithium batteries, for example, will be precluded from air freight since the pressure during a flight could cause a fire.

- ● It won't be long before senders are required to report the environmental impact of every single parcel they send.

Sound familiar? We've already witnessed the start of data use in transport security. In the US, the STOP Act came into force in January 2021 (although the postal service lacked the infrastructure to fully enforce it from that date) and requires all senders to provide advanced electronic data for packages entering the country. While in the EU – with the exception of some member states that received extensions – ICS2 requirements came into force in March 2023, requiring carriers transporting packages into or through the union to provide data for their entire shipment in advance of its arrival, making HS codes mandatory on all customs forms.

**“ICS2 requires the highest possible quality of entry summary reports for air freight,” explains [Chair of the UPU Consultative Committee and Non-executive Chairman of Eurora’s Supervisory Board, Walter Trezek](#). “The requirements are very HS code centric, with a heavy focus on the description of the goods – both with codes as well as written descriptions. On the 1st March 2024, the introduction of ICS2 release three will expand this to include all transport modes.”**



Carriers are responsible for compliance, which means that retailers that fail to accurately assign HS codes may find their products classified by logistics providers, designated operators and couriers that don't know the product, leading to inaccurate tax and duty charges, or delays at the border.

## IN SUMMARY

Data is the key component for commercial success in 2023, and will be long into the future. From mandatory reporting in advance of shipping to tackling last mile delivery issues, meeting sustainability targets and optimising consumer experience – reliable, real-time data is no longer a nice to have, it's essential.

Which means data maturity (the data infrastructure, architecture and skills available to a business) is fast becoming a competitive differentiator. The businesses that will succeed and thrive in a world powered by data will be those that are currently

investing heavily in organising and structuring theirs. This will put them in the best possible position to leverage emerging technologies like AI and ML, and optimise through change.

And change is coming. Governments and regulators around the world are waking up to the benefits offered by more precise and holistic data capture. Real-time cross-border data can provide insight to better understand economic drivers and macro trends, identify recession in real-time, control illicit substances, manage carbon emissions... the list goes on, and it is one that will drive massive amounts of regulatory change in the coming years.

- ● The businesses that will succeed and thrive in a world powered by data will be those that are currently investing heavily in organising and structuring theirs.

To discover how you can leverage the latest data technologies to stay on top of compliance, deliver an exceptional experience to your consumers, and streamline cross-border shipping, contact Eurora's specialist team today.

## Glossary of regulation covered in this report

### Europe and the UK

The Customs Declaration Service (CDS): Came into force 1 October 2022 and replaced the previous CHIEF (Customs Handling of Import and Export Freight) as the reporting system for UK imports.

Import Control System 2 (ICS2): The EU's advanced cargo information system, ICS2 is designed to improve customs security and efficiency. It requires carriers transporting packages into or through the union to provide data for their entire shipment in advance of its arrival and enforces HS codes on all customs forms. ICS2 has three release dates (March 2021, 2023, and 2024), next year's final release will extend requirements from current air freight requirements to maritime, road and rail.

VAT in the digital age (ViDA): Release is currently slated for 2025 but that introduction is likely to be pushed back due to industry readiness. Designed to streamline the burden and costs of VAT (value added tax) compliance for businesses carrying out transactions in multiple member states, ViDA aims to centralise registration and reporting of tax via OSS (one-stop-shop) for senders in the EU, and IOSS (import one-stop-shop) for those outside of it, providing the value of their goods don't exceed €50.

Draft EN 17837: Provides a common methodology for calculating and declaring greenhouse gases (GHG) and carbon emissions from parcel logistics and delivery. Status is pending.

ISO/DIS 14083: Published March 2023, provides a methodology for calculating and reporting greenhouse gas emissions generated by transport chain operations. Status is under publication.

EN 16258: Released in 2012, it provides a methodology for calculating and reporting energy consumption and greenhouse gas emissions for both freight and passenger transport services.

T1CIM bulk documentation: A change in customs clearance for delivery to Czech Republic and Slovakia in February 2023 saw the retirement of T1CIM bulk documentation for train transport in favour of T1 NCTS

### North America

STOP Act: Intended to prevent the importation of illicit drugs into the US, the STOP Act came into force in January 2021. It requires all senders to provide advanced electronic data for packages entering the country.

Canada Border and Services Agency (CBSA) Assessment and Revenue Management (CARM): Intended to update and streamline the process of importing commercial goods into Canada, this is a long-term initiative with two release dates (May 2021, October 2023). It requires advanced electronic data via an online portal, the second release will add additional functionality such as offsetting options and harmonised billing cycles.

### Asia Pacific

Singapore Goods and Services Tax (GST) update: In 2023, Singapore introduced GST to low value imports and raised the GST rate from 7% to 8% at the same time.