

WCO news

Issue 1 / 2022, No. 97

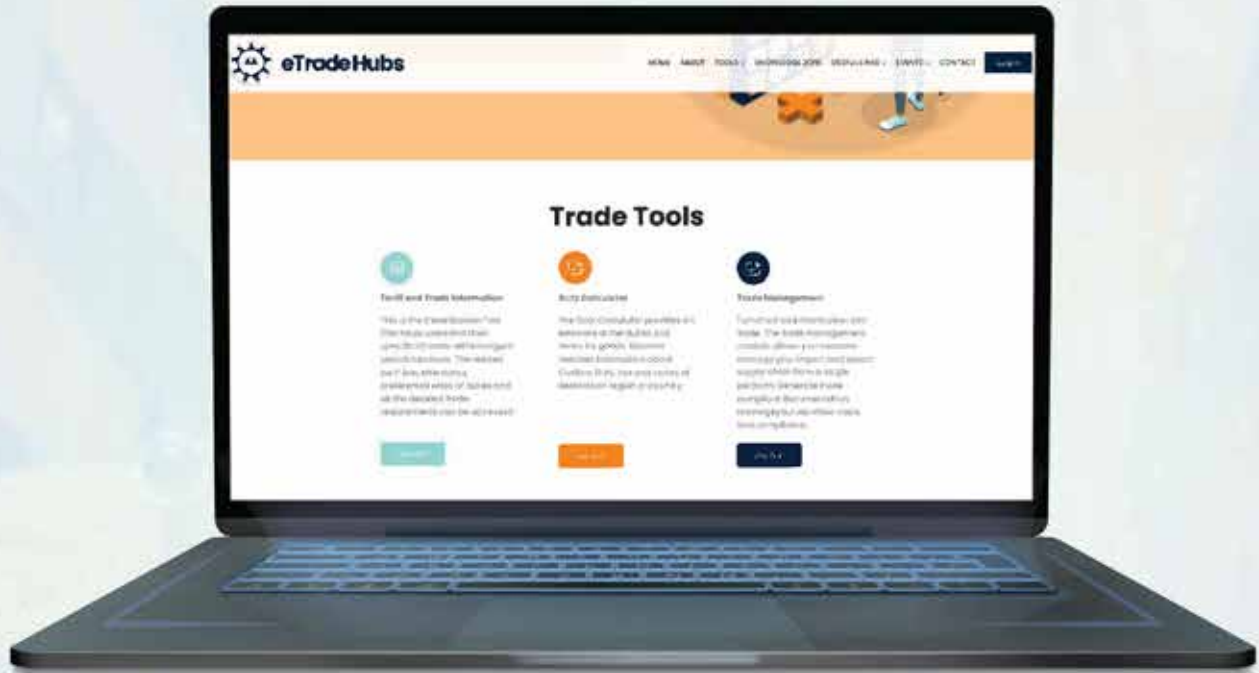
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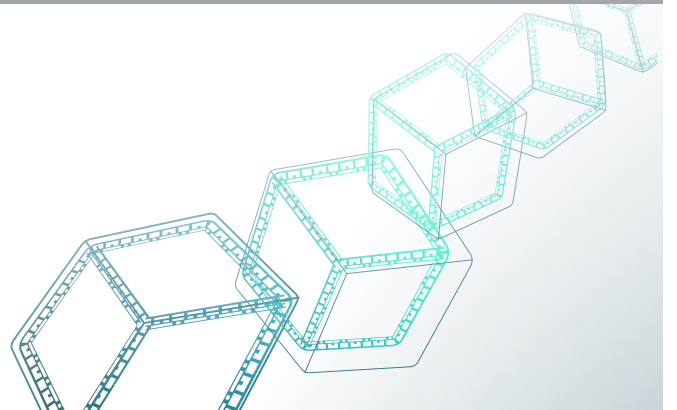
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Editor / Writer Laure Tempier

Publication Assistant Sylvie Degryse

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Advertising

Bernard Bessis bernard.bessis@bb-communication.com

Publisher

World Customs Organization

Rue du Marché, 30, B-1210 Brussels, Belgium

Tel.: +32 (0)2 209 94 41 - Fax: +32 (0)2 209 92 62

communication@wcoomd.org

www.wcoomd.org

Editorial note

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Distinctive Communication

Operation STOP II: Key trends

By the WCO Secretariat

In 2020, the WCO Secretariat ran the first ever Operation STOP initiative to assist Customs enforcement services in enhancing their capacity to control the medical products which are generally used to diagnose or treat COVID-19. An article¹ listing the achievements of the Operation was published in the 94th edition of *WCO News* in February 2021. That year saw the worldwide launch of COVID-19 vaccination campaigns, and the Secretariat took the decision to launch a second Operation STOP, this time adding vaccines to the list of targeted products. Operation STOP II ran from April to September 2021.

A preparatory stage focused on vaccines

Before and during the Operation, webinars on raising awareness surrounding the COVID-19 vaccines were organized in close collaboration with five pharmaceutical companies in order to provide Customs services with an overview of the main features of the vaccines approved by WHO, their legal supply chain and the identified fraud mechanisms. Some companies also updated this information throughout the Operation.

Training sessions on the use of the IPR CENcomm communication tool were also organized to ensure that participating administrations fully understood the tool's functions and the WCO's data requirements.

Results

A total of 83 administrations reported 3,434 seizures or detentions relating to illicit targeted products, including 13 seizures or detections of vaccines, which amounted to:

- 195.5 million units of medicines, as well as the equivalent of 13.4 million doses of COVID 19 and other vaccines (57%);
- 156.7 million units of medical devices (43%), mostly face masks.



The term “illicit” refers to those medicines and medical products which have been smuggled or have not been declared, those which are not presented with the requisite documentation, counterfeit or date expired medicines or medical products, and medicines or medical products which have been transported in improper conditions.

Many of the targeted products are subject to health authority regulations, and the vast majority of detentions or seizures were made because the products concerned lacked marketing authorization, a declaration of conformity or a licence.

In addition to face masks, the medical devices seized included oxygen therapy devices (5%), such as oxygen concentrators, oxygen cylinders, ventilators and oxygen regulators. Pulse oximeters, used to measure oxygen levels in the blood, were also trafficked. The vast majority of cases (66%) involved a failure to present the requisite documentation.

Most of the 13.4 million COVID-19 vaccine doses (3.7% of all illicit products) were detained on export, due to the absence of requisite documentation and licences. In one instance, 20,000 doses were seized on import because the vaccine in question had not been approved in the destination country and the importer had no authorization. In another instance, 10,000 doses were seized due to improper transport conditions.

¹ See <https://mag.wcoomd.org/magazine/wco-news-94/operation-stop-achievements-and-future-prospects>.

Two attempts by airline passengers to smuggle vaccines and two further attempts to smuggle vaccines in mail parcels were also reported.

The medicines seized or detained included anti-infective agents, in particular anti-malarials, antibacterials, anti-parasitics and anti-viral agents. Numerous illicit imports of ivermectin – an agent marketed as an anti-parasitic treatment and approved by some countries' health authorities as a COVID-19 treatment – were reported, including in countries where it is not approved as a medicine for human consumption. The same is true of muscle relaxants, which are likewise used to treat COVID-19 but are not universally approved.

It should be noted that no fewer than 94% of all ivermectin seizures or detentions involved their concealment in mail parcels. All products combined, 1,220 seizures or detentions were carried out on packages transported by postal or express courier operators.

Counterfeit products

Illicit medicines intercepted due to the absence of requisite documentation or as a result of attempted smuggling are often released once the relevant documentation has been provided or a fine has been paid. In most seizure or detention cases (66%), no further investigation was undertaken to determine whether the products were counterfeit, given that this did not appear necessary. Only 4% of the seizures were made – sometimes in part – on account of intellectual property rights infringements. These cases mainly concerned face masks.

Vaccination record cards

Many Members adopted the “COVID-19 vaccination passport” in 2021, and falsified vaccination record cards then began to emerge. The participating Customs authorities reported only a few attempted cross-border consignments of such documents using mail parcels, although open information sources report numerous such attempts.

Arrests

The control measures and actions coordinated with other enforcement services led to 16

arrests in six countries for the illegal trafficking of products linked to COVID-19. In Namibia specifically, one individual who sold ivermectin tablets online was arrested by police following an alert issued by Customs.

Collaboration with the market surveillance authorities

Some administrations explained that they could not play an active role in the Operation because product quality and conformity control is the responsibility of organizations other than Customs, in particular health agencies. However, the Customs administrations are responsible for ensuring that all products are declared in the proper manner. It is important to note the need to establish close cooperation between the market surveillance authorities and the national Customs administrations. Participating administrations upstream of the Operation were therefore asked to ensure that mechanisms for exchanging the data and information required for effective cooperation were in place. In order to heighten Customs officers' awareness of this matter, several articles had been published in *WCO News* No. 94.²

Data volume and quality

The figures reported during the Operation do not account for all actions undertaken by Customs to combat the trafficking of products linked to COVID-19. Although the participant countries had a communication platform (IPR CENcomm) at their disposal for exchanging information and reporting completed seizures and detentions, not all participants used it, or at least not exhaustively, for multiple reasons: the form for inputting data was too restrictive or not tailored to its purpose; there was a poor or no Internet connection, a lack of feedback from field officers, no cooperation with health authorities, a lack of resources for inputting data into the IPR CENcomm; and data-sharing restrictions applied in connection with data protection policy.

In addition, the quality of information reported via CENcomm was sometimes not good enough to be used by analysts and investigators. These issues had already been identified during the first iteration of Operation STOP.

More information

Stop@wcoomd.org

² See <https://mag.wcoomd.org/magazine/wco-news-94/focus-controlling-product-quality-and-safety>.

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Unlocking potential: latest news and testimonials about the Career Development Programme

By the WCO Secretariat

It takes time and dedication for Customs officers to become familiar with WCO tools, instruments and recommended practices in the course of their daily work. First, there are numerous amounts of them. Second, some are highly technical, and getting to grips with them requires training from WCO staff or experts. In addition, in some areas (such as leadership), benefiting from the work of the WCO goes beyond simply acquiring knowledge: officers are asked to participate actively through practical exercises and role play, and even to open up to others.

In 2009, with financial support from Japan Customs, the WCO Secretariat created the Career Development Programme (CDP) to enable Customs officers from developing countries to immerse themselves in WCO work, acquire as much knowledge and skills as possible, and grow at the professional and personal level. CDP participants, known as Professional Associates (PAs), usually work at the Secretariat for 10 months. Besides following tailor-made workshops, they also assist Secretariat staff in their daily tasks. This enables PAs to gain experience of working in an international environment and to build a network of Customs experts, which will be useful both for their own professional needs and for those of their administrations.

Since the Programme's inception, 115 Customs officers from 77 developing Members have taken part. They usually maintain close links with the work of the WCO. Some former PAs have represented their administrations at various WCO meetings and events, and some have taken part in capacity building activities as experts. Remarkably, more than 10% of them have come back to Brussels to work for the WCO Secretariat and therefore serve the entire Customs community. The testimonial attached to this article is one of many which the Secretariat has received over the years¹.

More information

<http://www.wcoomd.org/en/topics/capacity-building/activities-and-programmes/people-development/learning/development-programmes/career-development-programme.aspx>

¹ Some of them have also been published in WCO News: <https://mag.wcoomd.org/magazine/wco-news-88/working-as-a-wco-professional-associate/> and <https://mag.wcoomd.org/magazine/wco-news-82/developing-data-analyst-skills-how-the-wco-contributes-to-expanding-this-specialized-area-of-work/>

Life after the CDP? It's bright.

By Noor Syahira Binti Haji Hiri, Head of the Organizational Development Unit, Director's Office, Johor Customs, Royal Malaysian Customs

The CDP enabled me to unlock my potential. I was to do things I never thought I could do and discover skills I never thought I had. In 10 months, I changed. I was an ordinary Malaysian girl with a rather limited vision of what her future could be. I am now a confident professional, aware of all the opportunities which are open to me and not afraid to take them.

On returning home, it took me some time to readjust to my environment. I was back at the post I had held for the last 10 years at the Customs Office of Johor, one of the 13 states of Malaysia, located in the south and linked to Singapore by causeways. But this did not last long. I was soon to head up an administrative division, with the mission of reorganizing and restructuring it. The way the division was working was rather chaotic. Together with my team, we introduced some basic management theories and injected order and efficiency into our processes. Within eight months, we managed to organize three external meetings, one Convention, and one trip to Sabah (another of Malaysia's 13 states). The division became a benchmark for other divisions at Johor Customs. Colleagues started to look up to us, asking about our methods and processes and trying to learn from us.

Eight months after taking on that position, I was transferred to the Management Services and Human Resources Division of the General Administrative Branch at Johor Customs. I was the first and only woman to head such an important division. The Johor Customs Director was keen to see more women in senior positions and trusted me to lead a team tasked with rethinking policies and finding solutions to identified issues, with very limited resources.

In April 2021, I was reassigned to lead the newly created Organizational Development Unit, reporting directly to the Director. The role of the unit is to observe, analyse, conduct research, identify process bottlenecks, report on operational performance and suggest changes and improvements to the Director. The position is challenging and enriching.

On a lighter note, I am in charge of welcoming new recruits and motivating them to do their best. Speaking to a large audience was not easy for me before joining the Career Development Programme. Now, I really enjoy it, and it is a change at which I am surprised. I see every one of these talks as an opportunity to share my journey and to expand the outlook of new recruits. I tell them that at Customs they can have a career which will enable them to go on learning while serving their people, their country and maybe – one day – the entire Customs community through the WCO.



CLiKC! - A goldmine of learning opportunities for Customs officers

By the E-Learning Team, WCO Secretariat

A wide range of online courses, e-learning modules, videos and webinars are made available to Customs officers via CLiKC!, the WCO learning platform. Thousands of officers have already registered on the platform. Below is an overview of what CLiKC! currently offers, and what is in the pipeline.

Join CLiKC! and....

- learn about **Integrity** in Customs.
Languages: English, French, Spanish, Portuguese, Russian and Arabic
- develop your understanding of effective **Customs procedures, processes and standards**, with courses on the WCO's Revised Kyoto Convention, the WTO Trade Facilitation Agreement, Coordinated Border Management, Customs transit, Single Window and many more.
- develop skills in **Data Analytics**.
Two levels: beginner and intermediate
Languages: English, French, Spanish, Arabic and Russian
- gain an understanding of **Gender Equality** in Customs.
Two levels: beginner and advanced
Languages: English, French, Spanish and Russian
- learn how to plan and complete a successful Customs project with the **Project Management in a Customs Environment** course.
Languages: English
- learn about the principles of revenue collection, and the international Conventions, tools and instruments applied to the classification, valuation and origin of goods, with courses and videos on the **Harmonized System, Customs Valuation, Rules of Origin** and **Transfer Pricing**.
Languages: English, French

2021 in numbers



7072

New Customs officers registered



13,879

Courses completed



5

Online curricula: the Virtual Customs Orientation Academy, the Fellowship Programme, the Integrity Learning Programme, and the Master Trainer Programme on Customs Valuation and Rules of Origin.

- strengthen your knowledge of passenger controls in an International Airport setting with the **Air Passengers Control** course.
Languages: English, French, Spanish and Arabic
- develop your knowledge of the legislative framework governing aviation with the **COLIBRI: Monitoring and Controlling General Aviation** course, and learn how to carry out effective controls in order to track down unlawful activities.
Languages: English, French, Spanish and Portuguese
- Learn about the international trade in wildlife and how it is regulated with the **CITES: An Introduction** course.
Languages: English (French and Spanish coming soon)











We develop new courses on a regular basis, as well as translating existing ones and organizing learning events. Upcoming courses include:

- Data Analytics – Advanced **NEW**
- Harmonized System – Foundation course **UPDATED**
- Leadership and Management Development **UPDATED**
- WCO Data Model **UPDATED**
- Customs Valuation **UPDATED**
- Disaster Management and Supply Chain Continuity **NEW**
- Combatting illicit medicines and counterfeit/substandard medical supplies **NEW**
- Sanctions **NEW**
- Dual use goods **NEW**
- CITES: An Introduction - in French **NEW** and Spanish **NEW**
- CITES: building enforcement capacities **NEW**

Another reason to register on the platform is that the Secretariat has turned to virtual communication to deliver training and technical assistance to Members, and some online activities are taking place on CLiKC!.

The registration procedure is as follows:

1. Go to the CLiKC! Home page (<https://clikc.wcoomd.org>).
2. Select the “Get registered” tab at the bottom of the page.

RANK by popularity	Course	2021 course completions
1	 Integrity In English	1110
2	 Integrity In Spanish	968
3	 Data Analytics – Beginner In English	954
4	 WTO Trade Facilitation Agreement In Spanish	923
5	 Integrity In French	624
6	 Rules of Origin In English	622
7	 Air Passenger Controls In English	546
8	 WCO SAFE Framework In English	479
9	 Harmonized System In English	463
10	 Customs Controls In French	398

Are you a new Customs recruit? The Virtual Customs Orientation Academy is for you!

Twice a year, a letter is sent to WCO Member administrations, inviting them to nominate candidates for the Virtual Customs Orientation Academy (VCOA). Over a period of 14 weeks, the selected officers follow tutored online courses focusing on core Customs competencies, international standards and conventions, as well as the concepts of clearance procedures and related practices, and how to apply them in the workplace. The VCOA takes place on the CLiKC! platform.

3. Complete and submit the registration form, and wait for your account request to be approved by your country’s National Coordinator.
4. Once your account is approved, login and go to the “Find Learning” tab to explore and enroll onto the courses.

More information

<https://clikc.wcoomd.org>
elearning@wcoomd.org



the 97 chapters of the HS while visualizing actual pictures of items. Users earn points every time they manage to classify a good properly. They start with the chapter level (2 digits) and progress up to the heading level (4 digit). The “game” is available in Korean but the WCO Secretariat and RTC Korea have plans to develop an English and French versions.

Way forward

The WCO/RTC Korea team plans to distribute the full set of equipment of the inspection course to



graphic design. Funding was secured through the WCO Customs Cooperation Fund (CCF) provided by Korea government.

The course was finalized in September 2021 and is available in both English and French, the two official languages of the WCO. It takes officers to a container yard and a bonded warehouse with the mission to carry on inspection. Officers must choose between three scenarios focusing respectively on drugs, IPR infringing items, and explosives. To find the illicit shipments, they are provided with documentation. Gaming elements include accepting special missions to find items to receive rewards.

A high memory computer, a TV screen, headsets, hand-held controllers as well as two sensors to track the devices are needed to deliver the course. This equipment was first installed at the RTC Korea premises and in November 2021 at the WCO Secretariat in Brussels.

A game to learn how to classify goods in the Harmonized System (HS)

The second game-based learning tool is called the “HS Code Game”. It enables users to go through

all RTCs and to develop the course for computer or mobile phone. This will make it more accessible. It will be made available on the WCO CLiK! platform.

The team is also examining the possibility of developing other content using augmented reality. The difference is virtual reality creates a total-immersion simulation, whereas augmented reality superimposes the real world with 3D images, captions and other elements. The latter enables developers to create content of various degrees of difficulty.

The ultimate objective is to create a community of individuals dedicated to the development and sharing of solutions based on the latest methods and technologies while making learning fun and interactive. Contact us if you wish to participate in this project or receive more information.

More information

capacity.building@wcoomd.org

cbcti@korea.kr

Destination... Data!

Abflug Departures Terminal 2										
Flug	nach	über	planmäßig	aktuelle	Gate	Check in				12:05
Flug	nach	über	planmäßig	aktuelle	Gate	Check in	abfliegend	verlassen	Gate	Check in
TP 557	Lissabon		13:35	13:35	603	Check-in				
LH 2004	Asterdam		13:50	13:50	603	Check-in				
LX 1105	Zürich		13:50	13:50	K03	Check-in				
LH 109	Frankfurt		14:00	14:00	K03	Check-in				
LH 2040	Berlin		14:00	14:00	K03	Check-in				
LH 1278	Bilbao		14:00	14:00	K03	Check-in				
LH 1858	Ancona		14:20	14:20	664	Lufthansa				
LH 2885	Hannover		14:20	14:20	K03	Lufthansa				
3 625	Bangkok (BKK)		14:25	14:25	H38	308-313				
LH 2112	Bremen		14:30	14:30	608	Lufthansa				
LH 100	Düsseldorf		14:30	14:30	H39	Lufthansa				
LH 1920	Palma de Maiorca		14:35	14:35	6	Lufthansa				
LH 1578	Budapest		14:35	14:35	K	Lufthansa				
LH 2268	Brussels		14:40	14:40	618	Lufthansa				
LH 1574	Krakow		14:40	14:40	611	Lufthansa				
LH 1830	Valencia		14:40	14:40	6	Lufthansa				
LH 1670	Cluj-Napoca		14:45	14:45	H39	Lufthansa				
LH 1568	Colonne		14:45	14:45	604	Lufthansa			670	Lufthansa
LH 217	London (LHR)		14:45	14:45	H	Lufthansa			H4	Lufthansa
LH 225	Lyon		14:45	14:45	6	Lufthansa			624	Lufthansa
LH 1649	Moscow		14:45	14:45	623	Lufthansa			605	Lufthansa
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LH 2398	Basel (BSL)		14:55	14:55	665	Lufthansa			K	Lufthansa
EN 8196	Florence		14:55	14:55	664	Lufthansa			672	Lufthansa
LH 2042	Berlin (TXL)		15:00	15:00	626	Lufthansa			810	Lufthansa
LH 111	Frankfurt (FRA)		15:00	15:00	620	Lufthansa			818	Lufthansa
EN 8204	Venice		15:00	15:00	669	Lufthansa			836	Lufthansa
LH 1644	Gdansk		15:05	15:05	607	Lufthansa			866	Lufthansa
LH 2464	Helsinki		15:05	15:05	6	Lufthansa			K	Lufthansa
LH 2168	Leipzig / Halle		15:05	15:05	613	Lufthansa			H33	Lufthansa
LH 1928	Naples		15:05	15:05	K16	Lufthansa			L	Lufthansa
LH 2160	Nuremberg		15:05	15:05	627	Lufthansa			H	Lufthansa



A few words about the WCO theme for 2022

By Kunio Mikuriya, WCO Secretary General

Each year, the WCO Secretariat chooses a theme that it deems relevant to the international Customs community and its partners. In 2022, it is inviting Customs administrations to “Scale up Customs Digital Transformation by Embracing a Data Culture and Building a Data Ecosystem”.

“Digital Transformation” is a catch-all term for describing the implementation of new technologies and processes to improve business operations. Data culture, simply put, means an organizational culture that prioritizes data-driven decision-making. It empowers people to ask questions, challenge ideas and rely on concrete insights, not just intuition or instinct, to make decisions. Such a culture must be coupled with a high-performing data ecosystem. The term refers to the programming languages, algorithms, services and general infrastructure an organization uses to identify data sources and to collect, store, transform and analyze data.

Some of the enabling actions without which it will be impossible to achieve the desired transformation are the following:

- establishing formal data governance to ensure that relevant, accurate and timely data is available, thereby increasing confidence in the data;
- making use of the standards developed by the WCO and other institutions regarding data format and data exchange;
- ensuring appropriate management of data to ensure that the right people have access to the right data and that data protection regulations are respected;
- adopting progressive approaches, such as data analytics, to collect and successfully exploit data to drive decision-making;
- enhancing staff data literacy, in other words, the ability of staff to interpret and analyze data accurately;
- making data available to the public and to academia, in order to enhance transparency, stimulate the production of knowledge and enable dialogue with civil society.

WCO Data Strategy

All WCO Members are rich in data, but a large majority of them lack resources and skills to effectively become data-driven organizations and implement the actions mentioned above. To





support them, the WCO Secretariat has placed data-related topics on the agendas of several committees and working groups, organized awareness-raising seminars, developed e-learning modules and published a *Capacity Building Framework for Data Analytics*, as well as issuing practical publications and including many articles on data-related topics in the *WCO News*.

Moreover, a team of experts has been put in place under a project called BACUDA, which brings together Customs and data scientists with the objective of developing data analytics methodologies, including algorithms in open-source programming languages.

The Secretariat is also continuing to look at ways to collect and share data on Customs administrations with the aim of enhancing the way it delivers capacity building, undertakes data-driven assessments and works with international experts to respond to requests for assistance.

Since September 2021, the Secretariat has been working on developing a strategy aimed at:

- ensuring coherence among WCO data-related initiatives and building a corporate vision on data;
- making the WCO a hub for Customs statistics and knowledge of data-related practices, strategies and technologies applied to Customs;

- delivering evidence-based recommendations as part of technical assistance and capacity building support;
- reflecting the diversity of Customs data usages and adopting a holistic perspective by looking beyond the traditional field of targeting, to post-clearance audit, resource optimization, anti-corruption, impact evaluation and support for policymaking.
- preparing the WCO and its Members for open governance, in other words governance that puts into practice the principles of transparency, participation and accountability. Under this concept, data generated by public services are considered as “commons”.

The WCO Data Strategy has been developed around three building blocks, namely data sharing, creating communities of practitioners, and assisting Members with their transition to data-driven organizations. The Strategy document also addresses implementation challenges and highlights the issues to be discussed. An overview of the Strategy content was presented at the December 2021 session of the Policy Commission, where it received positive feedback from Members. A more elaborated draft will be presented at the June 2022 Council sessions for discussion and, I hope, approval.

The WCO Data Strategy has been developed around three building blocks, namely data sharing, creating communities of practitioners, and assisting Members with their transition to data-driven organizations.

Dossier contents

Let me now turn to the actual contents of this Dossier. It starts with an article by the Secretariat on the WCO Data Model – the common language for border management-related processes which enable information to flow seamlessly across different IT systems. The article focuses on the latest data requirements and processes which have been included in the Model through collaboration with stakeholders in the maritime, food safety, waste management and postal sectors. In addition, it offers some practical guidance to Customs administrations which are considering adopting the Model and calls on economic operators to use it in their commercial processes, as it covers some of the data elements found in commercial documents such as the invoice, packing list and bill of lading.

This is followed by an article by the Botswana Unified Revenue Service (BURS) introducing various projects dealing with the collection, analysis and sharing of data. The author emphasizes that a culture of innovation has emerged within BURS, and that the working environment supports creative thinking and the generation of new or improved products, services and processes.

The third article presents the results of, and lessons learned from, the first International Survey on Customs Administration (ISOCA), which was co-managed by the WCO and the IMF with the aim of collecting quantitative and qualitative data on Customs administrations and enabling comparisons to be made between countries that share common features. A higher number of participants is required for the Survey to provide a global view of the roles played by Customs administrations, and of their practices. I hope more administrations will participate

in future editions of the Survey, which will be simplified to strike a better balance between the need for accurate data and the burden of data collection.

In the next article, Dominican Republic Customs introduces the tools it has developed to measure the time required to release goods and support the Government's Release in 24 Hours (D24H) Programme, whose objective is to turn the Dominican Republic into the logistics epicenter "par excellence" of the Caribbean region.

The following article takes us to Niger, where the Customs Administration recently financed a study into the use of satellite imagery to analyze cross-border trade flows. The article presents the information collected and explains that it will be used to reorganize operational services and provide efficient links within the territory.

The final article in this Dossier sheds light on the need for harmonization in the digitization of trade documents. This article by the ICC introduces the ICC's Digital Standards Initiative (DSI), a collaborative cross-industry effort to advance the digitization of trade globally through the adoption of a set of standards.

Many other articles published in this edition of the *WCO News* directly or indirectly touch on data and on the role that information technology plays in making us more efficient. And this is true of all the editions of our magazine. You have heard or read it many times: in today's world, it's all about data. Data is strategic, and we all stand to gain by sharing experience and expertise on how best to manage it in a holistic way.



Making digital collaboration possible: the WCO Data Model - latest developments and implementation guidance

By the WCO Secretariat

In October 2021, the World Trade Organization (WTO) reported that, despite COVID-related interruptions, container throughput in international ports remains at or near record levels¹. Even if the growth in cross-border movement of goods is not evenly distributed among countries, it is no longer feasible for any border control agency such as Customs to manually process import, export and transit processes without creating major disruptions to cross-border trade.

Customs administrations have been exploring digitization for several decades now. Today, all of them (with very few exceptions) report that they are using some sort of computerized system for their clearance processes. A key lesson learnt is that the digital transformation of Customs is not an overnight process, but a journey during which many IT solutions have to be experienced as technologies evolve or emerge, from basic standalone software for data input of Customs declarations to sophisticated, multi-module web-based systems.

The need for a common language

While the primary and pragmatic focus in implementing digital technology might be to transform the paper-based process into an electronic one, making systems interoperable with other systems is equally critical. Disconnected computerized systems built in silo will not

make it possible to get rid of bottlenecks and inefficiencies.

According to the *WCO Digital Customs Maturity Model*², the capability of an IT system to interoperate with other systems at the national level – either within the organization or with other government agencies in a Single Window environment – and at the international level is the primary indicator for evaluating the maturity level of a Customs administration in terms of digitization.

A fundamental requirement for successful communication between individuals is that they all speak the same language. This is also the case for communication between electronic systems. A common language is required to ensure that information flows seamlessly across different IT systems. In this regard, the WCO, through the Data Model Projects Team (DMPT), has developed and is maintaining the WCO Data Model (WCO DM).

The WCO DM is a compilation of clearly structured, harmonized, standardized and reusable sets of data definitions and electronic messages, to meet the operational and legal requirements of cross-border regulatory agencies, including Customs, which are responsible for border management. As a global standard, the WCO DM has been organized in such a way that

¹ https://www.wto.org/english/news_e/pres21_e/pr889_e.htm

² Page 15, Information Technology (IT) Guide for executives <http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/tools/it-guide-for-executives.aspx>

the complex nature of the data requirements for various cross-border procedures can be developed and understood in a simple, consistent and harmonized manner.

Interoperability

The WCO DM is a universal language for Customs processes which facilitates interagency digital collaboration at national and international levels. It was also created to facilitate the work of economic operators in fulfilling regulatory requirements.

In accordance with the General Annex of the Revised Kyoto Convention (GA - RKC), Customs administrations retain the right to determine the data required for Customs declaration. Therefore, each country using the WCO DM may request different data. However, they all should use a similar language and have harmonized the way that data requirements must be submitted.

In other words, wherever the standard is in use, economic operators can submit data requirements in the same way. This means that they do not have to establish different methods to fulfil the requirements, and this significantly reduces the cost and complexity of complying with export/import formalities as operators can essentially use the same system to comply with different administrations' requirements.

Enabling the interoperability of business-to-government IT systems, as described above, was the primary objective of the G7 (the world's seven largest so-called advanced economies) when it took the initiative of creating the Model and handed its maintenance and development over to the WCO back in 2002. By streamlining export/import data requirements, G7 leaders wanted to increase their countries' national competitiveness.

Latest developments

The WCO DM, aimed at enabling seamless digital collaboration, has been developed to address all necessary data requirements of cross-border regulatory procedures in the context of a Single Window environment. In order to simplify its architecture, the components of the WCO DM are organized into small building blocks called information packages (IP). Each information package is a subset of the WCO DM which is relevant to a specific context.

Certain information packages, such as those for Customs declarations or cargo reports, are

directly related to Customs procedures and are therefore maintained by WCO working bodies. Some other information packages are related to data requirements and processes which fall under the competence of other international organizations. The WCO continuously engages with those organizations to ensure that they request the creation of an information package when digitizing data reporting processes. Recently, the WCO Data Model Projects Team (DMPT) has worked with stakeholders in the maritime, food safety, waste management and postal sectors.

Port formalities

The DMPT is supporting the International Maritime Organization (IMO) in updating its *IMO Compendium on Facilitation and Electronic Business (IMO FAL Compendium)*. This Compendium is a tool for software developers that design the systems needed to support transmission, receipt and response, via electronic data exchange, of information required for the arrival, stay and departure of a ship, persons and cargo in a port. The *FAL Compendium* harmonizes the data elements required in respect of a port call and standardizes electronic messages with the aim of facilitating the ship-to-shore exchange of information and the interoperability of Single Windows, thus reducing the administrative burden for ships linked to formalities in ports.

The collaborative work undertaken by the IMO and WCO teams has resulted in the alignment of the WCO DM, particularly the IMO FAL Derived Information Package (DIP), on the Compendium. The updated IMO FAL DIP has been incorporated in WCO DM version 3.11.0, released in December 2021. In addition, practical guidance on implementing the *IMO FAL Compendium* using the WCO DM has been developed and published, including a *Message Implementation Guide* which provides additional technical information for implementers.

To promote the IMO FAL DIP among maritime authorities/operators, the WCO has been working with the International Association of Ports and Harbors (IAPH). The two organizations have recently decided to develop *Customs - Ports Cooperation Guidelines* to support communication efforts and further promote the convergence and integration of Customs – Maritime Single Windows.

Food safety electronic certification

The WCO Data Model Project Team has also supported digitization initiatives in the area of food safety certification. It has contributed to the work of the Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS) to update the *Guidelines for Design, Production, Issuance, and Use of Generic Official Certificates*. The updated Guidelines state that the WCO DM CODEX Derived Information Package (DIP) is to be used as a base model when developing certificates for paperless certification of food which are aligned on the CODEX reference data model. The Codex Alimentarius Commission (CAC) approved the updated Guidelines in November 2021, and work to align the WCO DM DIP on the amended CODEX data requirements has started.

Postal consignments

The Universal Postal Union (UPU) and the WCO jointly developed CUSITM, an electronic standardized message to be used by postal operators to transmit mail item information to Customs authorities, and CUSRES, another message enabling Customs to respond to a CUSITM message. The two messages were aligned on the WCO Data Model and a related WCO DM DIP was created. However, this DIP was only included in the Annex to the Joint Message Standards.

In 2020, the UPU Standards Board proposed that the two message standards be revised to include data related to pre-loading cargo referral processes for security purposes. The DMPT not only aligned the respective WCO DM DIPs related to postal consignments, but also required that they be included in the main part of the message specifications. The objective was to ensure that Customs and Postal operators use the WCO DM when developing systems enabling electronic Customs – Post exchange of information. This is of critical importance to Customs administrations in terms of being able to process data from postal operators and other Customs administrations properly in their automated clearance or risk management systems. At its November 2021 meeting, the WCO – UPU Contact Committee approved the changes to the Joint Message

Standards, along with the *Message Implementation Guides*.

Notification and consent procedure related to the movement of waste

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal provides for a control system with regard to transboundary movements of hazardous and other wastes. Parties to the Convention are required to implement a notification and consent procedure known as “prior informed consent” (PIC). The WCO Secretariat has engaged with the Basel Convention Secretariat to explore options for a system that would allow for the automation of the procedure. Pilot projects on the electronic exchange of information and other initiatives may be established in the coming months, based on the deliberations of the Fifteenth Meeting of the Conference of the Parties to the Basel Convention, to take place in June 2022. Use of the “DangerousGoods Class”³ (WCO ID 12C) might be a starting point for progressing in this area and facilitating the dissemination of information via and between Single Window environments in different jurisdictions, in a standardized and harmonized manner.

WCO DM now available through a Web App

The DMPT is committed to producing annual releases of the WCO DM in order to keep it up-to-date. A transparent maintenance procedure was put in place to enable interested parties to request changes to the WCO DM. The WCO published WCO DM version 3.11.0 in December 2021, as a result of the maintenance process conducted by the DMPT from September 2020 to May 2021.

As already mentioned, in addition to incorporating changes requested by Members, WCO DM 3.11.0 introduced two new Message Implementation Guides, one for implementing the IMO FAL Compendium and the other for implementing the WCO - UPU Joint Message Standards.

Previous versions of the WCO DM were made available on the WCO website in a downloadable format. Version 3.11.0 is published as a web application⁴ (App) aimed at enhancing user

3 A Class, in the context of the WCO DM, is essentially a group of data elements that provides detailed or specific information relating to cross border transactions. The “DangerousGood Class”, for instance, includes the dangerous goods technical specifications, their pollutant type, their flash point temperature, their regulation code, etc.

4 <http://datamodel.wcoomd.org>

experience in working with the WCO DM. The App displays WCO DM components and helps users navigate easily through different WCO DM data objects, e.g., classes, data elements and information models.



In accordance with the WCO Council Decision of December 2020, the WCO DM is available free of charge to all interested parties. Those interested in accessing the WCO DM must connect to the App and examine the Terms and Conditions of use.

Implementation guidelines

The ultimate objective of the WCO DM is to enable interoperability of systems at the global level. For this purpose it will need to be widely adopted by WCO Members.

In order to increase the level of adoption of the Model, it is crucial that international legal instruments make direct reference to it. The comprehensive review of the Revised Kyoto Convention (RKC), which is currently underway, opens up some opportunities here. The DMPT considers it essential that the WCO DM be included in the body of the Convention as a way of enabling progress towards global interoperability.

Nevertheless, WCO Members have already committed to adopting the Model by issuing the *Recommendation of the Customs Cooperation Council concerning the use of the WCO Data Model*. This Recommendation calls on Members to:

- Adopt the WCO Data Model for the identification and definition of all cross-border regulatory data requirements related to pre-arrival/pre-departure formalities and procedures for import, export, and transit;
 - Use the WCO data elements, their names and reference numbers (WCO IDs), the data element descriptions and the character representations (including the suggested code lists) in describing and composing electronic messages; and
 - Use the standard electronic messages described in the WCO Data Model for Government to Government and Business to Government /Government to Business electronic data exchange.
- WCO Members that are considering the adoption of the WCO DM may take the following steps:
- identify the areas for implementation: the Model covers a lot of procedures related to Customs law (e.g., imports, exports, transit, cargo report, manifest, Authorized Economic Operators), as well as trade regulations (e.g., origin, phytosanitary, food safety, animal health, endangered species, environment, cultural goods).
 - identify the data requirements of the selected process: this involves taking stock of the list of data that each selected process requires. This step could be accomplished by examining the existing legal framework, which may include a list of the data elements in one of its technical Annexes, examining the databases of existing information systems, or examining the data fields used in paper forms. When the selected process involves different government agencies, each agency usually has its own data requirements which will need to be harmonized. In other words, data requirements will have to be grouped based on their meaning and purpose, and similar data elements will have to be reconciled into one.
 - map the list of national (or regional) data requirements to the WCO DM and develop a “My Information Package” (MyIP): selected data elements will have to be matched to the WCO DM. The mapping exercise results will create a MyIP which will become a subset of the WCO DM. Ideally, all data elements should find their match in the DM. If not, non-matching elements should be disclosed in the MyIP as “extensions”. As such, the MyIP could indicate the level of conformity of a national dataset to the WCO DM. “Extensions” should be temporary, which means that solutions should be found for those data elements.
 - implementing the MyIP in the IT system: the MyIP acts as the data blueprint, and should guide the overall data design of the system. Implementing the WCO DM in an IT system

In accordance with the WCO Council Decision of December 2020, the WCO DM is available free of charge to all interested parties. Those interested in accessing the WCO DM must connect to the App and examine the Terms and Conditions of use.

ensures that the system can receive and/or produce data that comply with the WCO DM technical specifications. Ideally, this step should be taken once there are no longer any “extensions” in MyIP, to ensure maximum conformity to the WCO DM.

Economics operators

By making the Data Model free of charge for economic operators, the WCO hopes more of them will adopt it. If economic operators should align on the Model to comply with cross-border regulatory agencies’ requirement, they may also

use it in their commercial processes. Although the Model was not developed to support the digitization of commercial documents, it does cover some of the data elements found in commercial documents such as the invoice, packing list and bill of lading. This alignment will enable information to flow smoothly along the supply chain, allow data to be re-used easily by the various supply chain parties, and enhance the integrity and quality of the data.

More information

<https://datamodel.wcoomd.org/#/user/contact>

Customs-hub

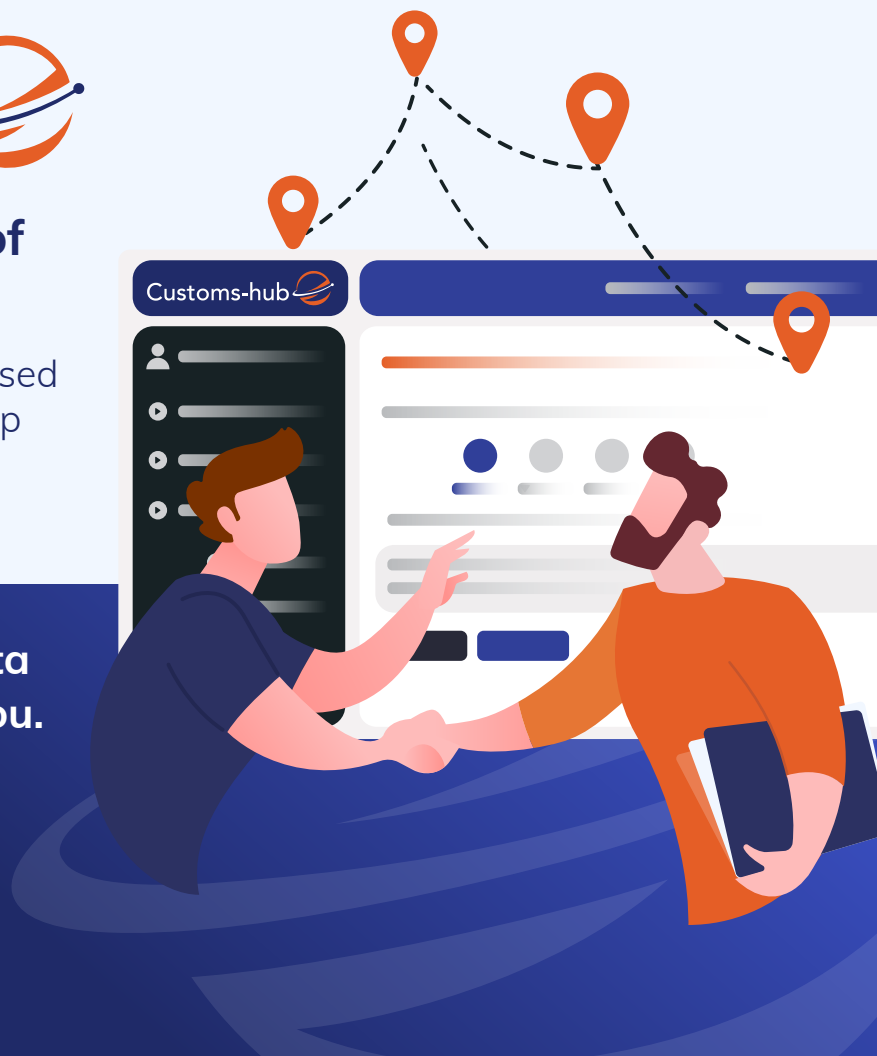
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How Botswana Customs is leveraging data-driven technologies to rethink ways of doing, working, measuring and collaborating

By Jimmy Mokganedi, Principal Officer, Customs Reforms, Botswana Unified Revenue Service

The Botswana Government wants to build a tech-driven economy, in other words, an economy where development is driven by the potential of available technologies and the innovations they unlock. The Botswana Unified Revenue Service (BURS) shares that ambition and is leveraging technologies - more specifically, data-driven technologies - for its business operations. This is evinced by the Service's investment in various projects, which are described below.

A new Customs Management System for process digitalization

The transition from the Automated System for Customs Data (ASYCUDA++) to a new integrated Customs Management System (CMS)¹ in 2017 was the starting point for the digitalization of various processes and procedures. For example, the system has enabled BURS to implement online payments, with traders transferring money through the declaration processing platform

and using the reference number it generates. Once payment information is in the system, the declaration is cleared and routed to the next processing stage.

The new CMS also provides for a Single Window platform, through the "Other Government Agencies" (OGA) module. The module enables other government border agencies to receive required data. BURS has enrolled the Botswana

¹ See <https://mag.wcoomd.org/magazine/wco-news-90/botswana-national-trade-platform/>

Bureau of Standards (BOBS) on the Single Window and is at a testing stage with other agencies, including the Botswana Police and the Ministry of Trade. Deploying the Single Window in these agencies, as well as automated processes such as online payments, is relatively easy as the Single Window platform is web-based.

BURS has also interfaced the CMS with the Licensing and Registration System of the Department of Road Transport and Safety to enable automated data exchange on the clearance and registration of imported vehicles. Once the clearance process is completed by Customs, information such as the chassis number and the engine number is transmitted to the Department's system for verification purposes prior to registering the vehicle.

Performance measurement

BURS aims to be an agile organization and its strategic plan is updated every five years. To monitor implementation of the plan, Key Performance Indicators (KPIs) have been developed for each business area. For example, under revenue collection, data related to the amount of duties, taxes and levies is collected, as well as the level of these contributions to the GDP. In the compliance area, the percentage of on-time income tax and VAT filing rate is calculated, as well as the positive rate of inspections based on risk profiling. In the service delivery area, we look at the percentage of satisfied customers. To assess the implementation of services, we look at the percentage of registered operators using these services. Most of these KPIs were developed with the assistance of a consultant in collaboration with a project team lead by the BURS Strategy Office.

BURS also makes use of a Balanced Scorecard which defines and then links each business area to strategic objectives, targets, initiatives, and measures. The Scorecard is used to keep track of the execution of activities and to monitor the consequences arising from these actions. For example, under the section related to financial perspective, there is a strategic objective called "Maximize revenue collection" which is linked to KPIs, Measure, Baseline data, Target and Programmes. Business data are updated according

to specific timelines and compare with target data, enabling the Strategy Office to monitor progress.

Automated data exchange at the international level

As long as the WCO Data Model and the Unique Consignment Reference are used, the CMS can also be interfaced with foreign IT systems to exchange data on agreed information fields. So far, BURS has such an arrangement with the South Africa Revenue Service (SARS) and the Zambia Revenue Authority (ZRA). The motto of this arrangement is "Your export is my import".

By exchanging data, BURS and SARS have simplified the data reconciliation process used to determine trade statistics between their respective countries. These are essential for calculating the share of Customs and excise duties collected by Members of the Southern African Customs Union (SACU) which has to be allocated to each of them². Data discrepancy has been reduced.

Exchange of information with Zambia falls under the "One Stop Border Post" project where some of the data submitted to the export country is automatically transmitted to the import country for pre-clearance verification and risk management purposes.

Centralization of data related to non-intrusive inspection

BURS has several types of non-intrusive inspection equipment at its disposal:

- fixed cargo scanners at major ports of entry,
- mobile cargo scanners, and
- baggage scanners at the international airport.

In early 2020, BURS established an Image Analysis Centre where the images and data generated by the cargo scanners are analysed. When a declaration is routed for examination by the risk engine, the Customs officer in charge of the case will decide whether the cargo should be sent for scanning. If this is the case, the officer operating the scanner at the port of entry and the cargo handler will receive a notification through the IT system. The images and related data will then be transmitted to one of the Centre analysts, who

A culture of innovation has emerged within the organization. In other words, the working environment supports creative thinking and generates new or improved products, services and processes. These have been created cooperatively by bringing together various individuals, teams and partners with complementary ideas, knowledge, and skills.

² Customs and excise duties collected by SACU Members are put into a common revenue pool, which is later shared among them. The "sharing formula" compensates the Member State who imported more from other Members. The objective is to promote trade between SACU Members. Before calculating the revenue shares, statistics experts do a data reconciliation exercise during which the export value and volume from the exporting country is compared with the import value and volume of the importing country.

will decide whether there is a need to perform a physical examination and transmit this information to the officer in charge of the case. At every step, data is generated electronically and flows from one Customs unit to the other.

By bringing all image analysts together, the Centre enables them to work closely as a unit and exchange expertise. Each member of the unit was trained on image analysis by an external consultants up to a “train the trainer” level with the aim to build internal training capacity.

Corridor Trip Monitoring System

Botswana is a landlocked country connecting the southern African hemisphere with central Africa. It is the transit hub for a high volume of cargo coming from, or going to, the Port of Durban in South Africa and the Port of Walvis Bay in Namibia.

Under the current COVID-19 regulations, commercial truck drivers should use designated

transit routes and ports of exit, and should stay in the country only for a specific time. However, there have been cases where cargo has been diverted and drivers have stayed in the country more than the allowed time.

To enable efficient monitoring of the drivers and trucks, a regional electronic Corridor Trip Monitoring System has been developed for all Member States of the Southern African Development Community (SADC), the East African Community (EAC) and the Common Market for Eastern and Southern Africa (COMESA). It allows regulatory and law enforcement agencies to record and monitor driver wellness data, such as COVID-19 test results. It also enable them to track the driver, crew and truck movements against pre-approved route plans.

The System was installed in 2021 at major border posts and is being rolled-out to other posts along the transit routes.



Using Free Trade Agreements as a Strategic Management Tool to Improve Competitiveness – globally

There are already more than 500 notified free trade agreements (FTAs) around the world to enhance trade among the participants and offer potential duty savings to companies yielding a competitive advantage. However, companies can leverage such savings potentials and competitive advantages only by complying with a number of complex rules and maintaining detailed documentation. This requires to establish a process for the calculation of the origin of goods which conforms to the law and auditing requirements to avoid possible fines and future unplanned costs.

This is where MIC OCS supports you! It provides the necessary tools for the entire process of managing the origin of goods for a multitude of FTAs: From automated obtaining of supplier's declarations using an innovative supplier web portal, to optimized calculation of the origin of goods based on multi-level bill of materials to the preparation of outbound supplier's declarations. MIC OCS helps to ensure that you enjoy the benefits offered by FTAs in order to keep or improve your competitive position.

You want to know more about MIC OCS? Please contact us:

MIC, Tel.: +43 732 778496, sales@mic-cust.com

Reform Tracker

In terms of procedures, Botswana is focusing on the implementation of the World Trade Organization's Trade Facilitation Agreement. To monitor and track implementation progress of the Agreement provisions, a web-based platform was developed in 2021 with technical assistance from UNCTAD. The platform is used by the National Committee on Trade Facilitation (NCTF) to update and share progress on measures led by the various agencies taking part in the Committee. Currently, the NCTF is undertaking a gap analysis with each agency through online questionnaires created and managed through the Tracker. The tool is flexible and could be used to monitor progress of any initiative. However, work needs to be done to develop the tool's analytical capabilities.

Mobile application to declare goods

In order to enable informal traders and travellers to declare goods to Customs via their mobile smart phone, BURS has developed a mobile application which is accessible on the Google Play Store. The objective is mainly to encourage them to submit declarations before they arrive at the border post and so reduce waiting times. A further objective is to enable border posts to manage human resources more efficiently and provide faster clearance, while ensuring that the submitted declarations are properly dealt with. Currently, the application is only open to informal traders but it will soon be accessible to individual travellers. Other categories of traders who have a deferred account with BURS can use the application solely to pay duties and taxes every month, when the payment is due.

Challenges

Like most organizations which have embarked on digitalizing and automating their processes and procedures, BURS is faced with challenges such as system interoperability and scalability. In some instances, the same system cannot be used for multiple tasks, or systems cannot interact or function with others. Sometimes, projects cannot be carried out due to a lack of regulation, or they require legislation to be amended.

In addition, one should not underestimate the importance of change management. Change must be seen as a process to be managed. For every project, steps should be taken to identify and plan what needs to be done to encourage everyone (Customs and other agency staff, traders and citizens) to adapt to and embrace the BURS new way of working. This is an area where BURS still needs to improve.

Conclusion

All the initiatives mentioned might seem to be baby steps, but they have brought quality benefits to the country. Traders have reported significant reductions in clearance times and costs. In its Doing Business Report published in 2020, the World Bank estimated that average clearance time for export formalities was 5 hours while the import time was 4 hours. Botswana was ranked rank 55 in the world and 3 in Africa. The report mentions the implementation of the new CMS and the introduction of scanners at ports of entries as the two measures having had major impact on trade facilitation.

All these initiatives need to be valued as they have enabled BURS staff to learn by doing and by reflecting on their experience. This is especially true for the officers working as developers and programmers in the IT division and for those working on the modernization programme in the Customs Services division. A culture of innovation has emerged within the organization. In other words, the working environment supports creative thinking and generates new or improved products, services and processes. These have been created cooperatively by bringing together various individuals, teams and partners with complementary ideas, knowledge, and skills. If BURS has not always been on the right track, at least it is on the learning track.

More information

mjimmy@burs.org.bw
www.burs.org.bw



Surveys

Collecting data on Customs administrations: lessons learned from the first International Survey on Customs Administration (ISOCA)

By the WCO Secretariat (Valentina Ferraro and Maka Khvedelidze) and the Fiscal Affairs Department of the International Monetary Fund (Azael Perez and Elizabeth Gavin)

Co-managed by the WCO and the IMF, the first International Survey on Customs Administration (ISOCA) was finalized in June 2020 and a report presenting some of the results was released in November 2021. Whilst a higher number of participants is required for the Survey to provide a global view of the roles Customs administrations play and their practices, this first edition served as a proof of concept, demonstrating the feasibility of collecting data on Customs to support analysis and research at the national and international level.

The International Survey on Customs Administration (ISOCA) was created to collect quantitative and qualitative data on Customs administrations and to enable comparisons to be made between countries sharing common features (e.g. income level or gross domestic product; landlocked or coastal; geographic region; trade volume; population; size of the administration and mandates). It is co-managed by the World Customs Organization (WCO) and the International Monetary Fund (IMF).

ISOCA covers most aspects of an administration, such as Customs revenues by type, details on offences, time required to release goods, cost of collection, performance standards, workforce characteristics, general management, border cooperation arrangements, automatic exchange of information, technologies for goods in transit, mobile teams, duty and tax exemptions.

As such, the data collected through ISOCA can be used to:

1. support strategic planning, communication, reporting to national authorities, advocating for investment, and improving resource allocation;
2. understand historical performance;
3. establish performance baselines;
4. develop benchmarks to identify additional powers, trends in support function policies, composition and skills of human resources;
5. provide sufficient data to facilitate research; and
6. identify specific needs for technical assistance and capacity building.

The inaugural round of the Survey was launched in June 2019 and finalized in June 2020, and the data collected correspond to fiscal years 2016 and 2017.

There was strong initial commitment by Customs administrations to participate in the Survey, with 102 responding positively to the invitation of the WCO and the IMF (93 of them were WCO Members). However, 30 of them did not complete the Survey and 21 did so only partially. A number of reasons were advanced to explain the lack of response. For example, while data collection began prior to COVID-19, some administrations reported remote work as a challenge in collecting the required data. The high abandon rate can also be explained by the lack of knowledge of the possibilities offered by the data reporting system. For example, some coordinators did not share data entry responsibilities by delegating the filling of the forms online. In the end, only 51 administrations provided submissions meeting minimum quality standards for both fiscal years (46 of them were WCO Members).

The entire data collection and review process took more than a year. Reminders were sent and extensions provided to participants. Innovative online guidance tools and mechanisms were developed to facilitate completion of the Survey, such as the possibility to delegate the responsibility of collecting and entering data in the online data collection platform.

The no-answer rate for some questions requiring numerical responses was extremely high, which may be indicative of a difficulty in some administrations in obtaining the data and suggest limitations in their data architecture, data management and reporting systems.

Despite participation being lower than expected, the data collected represent the most comprehensive available set of data on Customs administrations and their practices. While there is clearly a need for more Customs administrations to participate in the future, this first Survey serves as

a “proof of concept” for the collection of Customs administration data.

Results

In November 2021¹, the WCO and the IMF released a report presenting some of the first Survey results. Results were grouped into three categories: performance-related data; profile data; and data on practices and institutional structure. In addition, depending on the issue addressed, Customs administrations were often grouped in one of two ways:

- by standard grouping: small states (population less than 1.5 million, all income levels) / lower income / higher income; and
- by geographic location: island state / landlocked country / other countries.

The report is available online² and we invite readers interested in the results to consult it.

Some key lessons learned

The first round of the Survey should be seen as a proof of concept demonstrating the feasibility of collecting Customs administrations' data

Although the database established during this first edition of the Survey presents opportunities for improvement, the Survey itself served a critical purpose in providing a “proof of concept” for the collection of Customs administrations' data. It needs to be seen as a “prototype”, or a demonstration model which gives an idea of the kind of aggregate analysis that could be done if more countries were to participate in the Survey.

A survey similar in design and purpose to ISOCA, the International Survey on Revenue Administration (ISORA), is the product of the collaboration of five international organizations to collect

“Some of the requested data were not recorded in a harmonized manner in our systems and not all were readily available in our Customs Management System. We had therefore to consolidate missing data from different internal and external sources.”

Mauritius ISOCA
Coordinators

“We did not incur any additional cost to participate in the Survey. We were able to provide the data that was sought by the Survey without undue trouble. We do expect that as the group of participants broadens the data will potentially be more useful to us for further analysis and decision-making.”

ISOCA Coordinator from
Ireland

1 The report can be consulted at <http://www.wcoomd.org/en/about-us/partners/publications.aspx> and <https://data.rafit.org/?sk=8234d071-b89c-4876-8bba-791b9a33ddf&slid=1635259677768>.

2 <http://www.wcoomd.org/en/about-us/partners/publications.aspx> or <https://data.rafit.org/?sk=8234d071-b89c-4876-8bba-791b9a33ddf&slid=1635259677768>

data on tax administration practices, structures and performance directly from tax administrations³. Some of the lessons learned in the development of ISORA were taken into account during ISOCA's development.

One of the lessons is that, despite intensive preparation and efforts, a survey of this type, covering all countries from the smallest to the very largest, inevitably needs live, comprehensive testing. Even though three of the organizations managing ISORA had been administering separate surveys to collect data on tax administrations – which actually informed the design of ISORA – a major revision of the survey was undertaken after two iterations to improve data quality. A simplified and shortened set of questions to be answered on an annual basis was compiled, which was supplemented by a periodic questionnaire. Despite data collection taking place in 2020 while staff in many administrations were working remotely, 156 administrations completed this streamlined third ISORA. The data from the 2020 survey have been released publicly for the first time, and data collection from the fourth survey will soon be complete.

Another lesson is that participation increases during a second round. One of the reasons is that second-time participants found the data reporting system easier to use. Moreover, the organizations managing the survey realized that supporting participating administrations remains essential, even in an established survey.

Providing assistance and reviewing data submission is key

Taking into account lessons learned when undertaking ISORA, a WCO-IMF Technical Working Group was established to provide assistance, answer questions and conduct data quality review in liaison with each Survey participant's representatives. The latter often provided data that did not match data their administrations had

already provided elsewhere. Reviewing the data was essential to ensure that any differences compared to other surveys or reports could be explained, and to ensure coherence across datasets and across countries. Elementary data items have to be based on compatible concepts, definitions and classifications so that they can be meaningfully combined and can be compared over time.

More time was required to complete the Survey due to the COVID-19 pandemic but the crisis also shed light on the importance of data

The COVID-19 pandemic increased the length of time needed by countries to provide information required in the Survey. This raises fundamental questions in terms of the sustainability of the data policy when priorities and resources are shifted towards relatively short-term but urgent tasks. We might be tempted to think that, at periods of crisis, there is no time for general assessment and benchmarking. But one should not forget that the implementation of a robust and coherent data strategy can assist the organization in ensuring organizational resilience, in other words, in responding and adapting to incremental change and sudden disruptions.

While delaying the collection of data that were not considered critical to the response to COVID-19, the pandemic has also increased interest in data analysis, highlighting the need to develop data interpretation skills at all staff levels. It has also shed light on the importance of data collection and interpretation, and the danger of incomplete information and biased data, especially in comparative settings⁴.

Some administrations need to strengthen data collection capacity and data sharing

ISOCA also highlights the limited interest in sharing data or the lack of hierarchical support to do so. Some very modern and well-equipped administrations did not

“Whilst the data collected through the ISOCA Survey could not be used for benchmarking purposes due to the low response rate, the first round of the Survey showed that the data collection process itself was feasible. The National Tax and Customs Administration of Hungary has supported and will continue to support this initiative.”

ISOCA Coordinator from Hungary

Participating in the ISOCA Survey enabled us to self-evaluate our performance in a number of key areas. It is a timely and important initiative, however the data collection was time-consuming because it was the very first exercise of this kind and there is clearly room for improvement.”

ISOCA Coordinator from Georgia

³ The five organizations are: the Asian Development Bank (ADB), the Inter-American Center of Tax Administrations (CIAT), the International Monetary Fund (IMF), the Intra-European Organisation of Tax Administrations (IOTA), and the Organisation for Economic Co-operation and Development (OECD). CIAT, IOTA, the IMF and the OECD signed an MOU in 2016. Ahead of the second round of ISORA, the ADB joined the partnership.

⁴ George, Bert & Verschuere, Bram & Wayenberg, Ellen & Zaki, Bishoy. (2020). A Guide to Benchmarking COVID-19 Performance Data. *Public Administration Review*. 10.1111/puar.13255.

submit data, or did so in such a limited way that it could not be used by the analysts.

There seems to be a need to develop a stronger data culture in some administrations and to develop capacity to produce key indicators as part of day-to-day operations, enabling them to measure their performance and to guide their strategic, tactical and operational decisions.

Greater awareness of the benefits of the Survey should drive administrations' engagement in the process.

The WCO and the IMF hope that, in the future, more Customs administrations will join this common effort to collect quality data for the benefit of the entire Customs community. The two Organizations are aware of the need to strengthen their engagement strategy and to ensure that the respondents assume ownership of the process, in view of its anticipated benefits. A stakeholder engagement strategy is also needed to ensure not only data coherence, but also data usability and accessibility.

Way forward

Although a higher number of participants is required for the Survey to be meaningful, the WCO and the IMF now know that the tool developed to collect the data operates efficiently. The two Organizations are also aware of the need to simplify the ISOCA Survey to balance the need for accurate data and the burden of data collection, and to better exploit the benefits that the online platform offers.

Their objective is to integrate the expectation of Customs administrations regarding the use of data at the design

stage of the Survey, thus ensuring that the collected data are relevant and can improve decision-making. Metrics must meet criteria in terms of legitimacy, functionality, and technical validity to ensure their internal adoption and fitness for purpose.

To achieve this, the WCO and the IMF need to garner the support of some Customs administrations. Any administration interested in partnering with them in this process is therefore warmly invited to contact them.

More information

isoca@wcoomd.org
fadrafit@imf.org

ISOCA digital platforms

Two digital platforms are deployed as part of the ISOCA Survey:

- a data collection platform, called the [Revenue Administration Fiscal Information Tool \(RA-FIT\)⁵](#), lists a series of digital forms. Data collection responsibility can be shared between multiple actors, or “data owners”, at the national level; and
- a data dissemination platform, called the [ISOCA portal⁶](#), which is accessible to accredited officials from administrations which have participated in the Survey. The information stored on the portal includes aggregate and country-level data. The portal has built-in analytical capabilities. A query tool enables users to break down data to a granular level, visualize connections and trends between multiple datasets, and create data charts and graphs and benchmark variables.

“At times it was difficult to complete the Survey and I couldn’t answer some of the questions due to the fact that my Administration did not have an updated database. This Survey enabled me to show my superiors that there is an urgent need to equip ourselves with a number of essential tools to ensure the smooth running and modernization of our Administration.”

ISOCA Coordinator from Niger

⁵ <https://datacollection.rafit.org>

⁶ <https://data.rafit.org/isoca>



Transforming Dominican Customs through effective data analysis

By Carlos Canelo Cohen, Business Intelligence Manager, Strategic Planning and Economic Analysis Management, General Directorate of Customs, Dominican Republic

Today, a lot of what we do generates data. These data can be analysed in real time thanks to hyperconnected infrastructures – a state of communications where electronic and computer devices of all kinds can communicate among each other to whatever extent each individual user desires – as well as increased data storage and processing capacity, artificial intelligence, machine learning and artificial neural networks. Data can be transformed into information and then translated into intelligence that allows us to make decisions objectively.

The General Directorate of Customs (DGA) of the Dominican Republic has taken steps towards a data culture where decision-making is based on data analysis. It has set up a Department in charge of Planning, Economic Analysis, Statistics and Business Intelligence to spearhead the process and break with the traditional ways of doing things.

In the article *Evolution of Data Analysis at Dominican Customs* (92nd edition of *WCO News*, June 2020), we explained that a data warehouse

had been built with clean import and export information, as well as a database recording a breakdown of revenue collections by tariff code and by type of revenue.

We wrote that the Department had developed several applications for the purpose of collecting and analysing various types of information in order to examine in depth trade flows and determine taxpayers' profile and behaviour. Information of particular interest included data from the General Directorate of Internal Taxes (DGII), release times, market prices, market intelligence data, mirror data, and data related to the arrival of containers and payment of handling fees.

We also announced that we were working on the automation of the Time Release Study (TRS). An initial TRS had been carried out in accordance with the guide provided by the WCO. It enabled us to identify critical data collected by the Port Authority that were not being captured in the DGA system, or if being captured, were not reliable.

Together on time

A great deal has changed in the DGA since the publication of that article. In August 2020, a new administration took command and set the objective of turning the Dominican Republic into the logistics epicentre par excellence of the Caribbean region.

DGA Strategic Plan 2022-2026

- Purpose: To be a benchmark in terms of management and to act as a commercial hub connecting the Caribbean region to the world.
- Mission: To facilitate legitimate trade and protect society, while improving revenue collection and ensuring transparency.
- Vision: To promote economic development in an efficient and inclusive manner.

Starting from the premise that time is a key factor in attracting new cargo volumes and foreign investment into our country, the DGA launched the "Release in 24 Hours" (D24H) programme under the motto "Together on time" in June 2021. The main objective is to motivate all importers regardless of their size and business area to do all they can to have their imported merchandise released within 24 hours. This programme was launched together with the implementation of a new risk engine (MOR) and the acquisition of new scanners in the main ports of the country.

Measuring the time required to release goods has always been important, but it is critical for the D24H programme. The Department in charge of Planning, Economic Analysis, Statistics and Business Intelligence therefore has recently focused its attention on developing applications to automatically measure the time taken to move a shipment, from the time the ship sails into a Dominican port, until the vehicle carrying the shipment leaves the port. The data is then used to monitor the impact of adopted measures, to spot bottlenecks and to push for reforms to improve the Customs clearance process.

Methodology

A meeting was organized with representatives of all the entities involved in the clearance process. The advantages of measuring cargo release times were discussed, as well as the methodology to be used to do so and the scope of the project.

Participants were enthusiastic and decided to meet weekly. Together, they identified the various data that were needed and established a real-time information exchange protocol with two terminal operators (DP World Caucedo and Haina International Terminals) and with the Association of Shipping Lines. Information from shipping companies and ports could now be received. A means of collecting external data on the movement of ships was also developed.

As a result, the Department of Economic Analysis and Statistics was able to map and automate the entire importation process according to the methodology established by the WCO in its Time Release Study (TRS).

TRS findings

One of the findings of the TRS carried out in January 2021 was that, on average, shipping lines were presenting only 11.70% of manifests 48 hours before arriving at the port. This is an extremely low figure which limits the capacity to plan port operations.

It was also found that only 20.8% of Customs declarations were filed in advance, limiting the capacity of border agencies to plan inspections effectively and ultimately to speed up the cargo release process.

Apps

Ship and Cargo Tracking



The objective of this application is to track ships in real time and receive shipment manifests in advance. It was created in record time overnight in order to track a single vessel that was to unload 2,500 containers at the Port of Caucedo. The application was later modified to include all ships that sail to Dominican ports.

Through this application, Customs can:

- identify the estimated time of arrival of the ship;
- identify high-revenue and high-risk cargo by processing manifest data through the newly acquired risk engine;
- notify shipping lines that manifests must be submitted at least 48 hours prior to arrival;
- monitor the effectiveness of the risk engine by automatically calculating statistics on inspection rates and outcomes.

Table 1 - Ship and Cargo Tracking: targeted processes, actions taken and impact indicators

Process	Actions taken	Indicator	Before	After
Cargo Manifest Submission	Allowing manifest to be corrected free of charge before the arrival of the ship.	% of manifests submitted 48 hours prior to arrival	11.70%	35.10%
	Implementing the port monitoring module in the Customs management system (SIGA). The module records the time and date related to each individual stage in the handling and processing of a container.			
	Enabling shipping lines to self-approve documents and automate manifest data entry.			
	Sending automatic notifications to shipping companies informing them to submit manifests within 48 hours of arrival.			
	Issuing a weekly report on manifest submission time statistics to each shipping company.			

D24H application

The “Release in 24 Hours” (D24H) application allows Customs to follow the cargo clearance process from the time the ship arrives until the shipment leaves the port.

This application can be used to:

- break the merchandise clearance process down into nine different stages;
- analyse the clearance process according to more than 30 variables;
- filter information according to types of importers, goods, processes (physical inspections), among other aspects; and
- calculate the time required for the release of goods for each stage.



Table 2 - D24H application: targeted processes, actions taken and impact indicators

Process	Actions taken	Indicator	Before	After		
Declaration submission	Enabling importers to attach the bill of lading (BL) to the declaration	% of declarations filed in advance	20.80%	41.50%		
	Impeding the entry of special characters					
	Avoiding data duplication	Average total cargo release time			6d 1h	4d 21h
	Enabling importers to link the BL to the manifest					
	Creating a simplified AEO programme					
Presentation of the inspection result	Automatically closing multiple alerts with no findings	Average time	1d 10 h	21h		
	Automatically deactivating the inspection process when two requests for correction have been approved					
	Setting up an alert when the value stated on the declaration differs from that specified on the manifest					
	Enabling errors to be corrected automatically					
Approval of the inspection result	Sending electronic notification to taxpayers	% of declarations processed by Customs within 24 hours	60%	71%		
	Developing an electronic information board in the Single Window application (SW App)					
	Issuing statistics reports through the SW App					
	Issuing notifications through the SW App					
	Enabling access to the SW App using passport number					
Payment	Enabling importers and brokers to update contact information					
	Notifying payment requests to importers and brokers via e-mail					
Approval of the declaration	Automatic approval for clearance of import declarations					
Cargo release approval	Implementation of the cargo release service with DP World Caucedo to replace two existing clearance processes (Customs clearance and private port clearance) by merging them into one	% of shipments released within 24 hours	3%	11%		
	Addition of AEO certification status to the cargo release data					
Release of cargo	Automated cargo release at the Port of Caucedo following the implementation of the cargo release service					

Cargo release by importer

This application provides an overview of the behaviour of each importer in the clearance process. It enables Customs to:

- segment the clearance process into 9 different stages for each importer,
- filter results according to more than 30 variables.



Table 3 - Cargo release by importer: targeted process, actions taken and impact indicator

Process	Actions	Indicator	Before	After
Cargo clearance	In the Large Taxpayers Department, designated agents keep track of AEOs and large importers throughout the clearance process	Time required for AEOs to release goods	1d 5h	17h
	Creation of the "taxpayer service centre" department to provide guidance to all importers whenever problems arise			

Impact

Since the start of the programme on 1 June 2021 to 31 January 2022:

- a total of 451 companies have been certified as AEOs;
- 68% of declarations submitted by AEOs were released within 8 hours;
- 17,137 containers were released within 24 hours;
- 4,049 importers have used the taxpayer service centre and have received a response within 24 hours.
- 68.5% of the importers for which cargo was released within 24 hours are small and medium-sized businesses.

All applications provide a user-friendly dashboard. Analysts can easily create reports and share some of the information with stakeholders. For example, AEOs receive data on their transactions. This has motivated many companies to request AEO certification, thus promoting voluntary compliance.

The processes managed by other border agencies have not yet been assessed, but we are working on doing so by connecting our applications through the Single Window environment. In the

coming months, we should be able to monitor the processes managed by around 95% of all actors involved in the importation of goods through the D24H application and be in a position to identify ways of improving them.

We are also working with the DGA's Sub-Directorate of Technology on the development of a mobile application which would enable importers to use their smart phones to track their cargo from before its arrival at the port until the moment it is released.

These new applications are merely an example of the many initiatives we have taken towards efficient, data-based decision-making. Working on simple projects that have the greatest probability of success and provide speedy results enables us to convince senior management of the value of investing in data collection and analytical tools.

The General Directorate of Customs of the Dominican Republic is a modern administration in the sense that it aims at the continuous improvement of its processes through effective data analysis.

More information

c.canelo@aduanas.gob.do
www.aduanas.gob.do

Geospatial data at the service of Niger Customs

By Dan Bouga Boukari, Head of the Data Analysis and Reform Unit, Niger Customs, Nicolas Saporiti, Geo212 Director, and Romane Delteil, geographic analyst

In the June 2019 issue of *WCO News*,¹ the WCO Secretariat encouraged Customs to examine the use of geodata for more effective border management. In Niger, the Customs service recently financed a study into the use of satellite imagery to analyse cross-border trade flows. This paper presents the information collected and explains how it will be used to reorganize operational services and provide efficient links within the territory.

The borders of Niger

Niger is a landlocked country that shares land borders with seven countries. Goods exported, imported and in transit are transported by land over a vast territory. In addition to managing legal trade, the mandate of the Customs service is also to combat a variety of illegal trafficking, particularly drugs, gold and humans in the north of the country. The territory's size and border porosity represent a considerable challenge.

This is compounded by increasing insecurity along these borders. For almost a decade, the country has been countering attacks by the Boko Haram armed group around Lake Chad and by other terrorist groups – mainly affiliated to Al Qaeda and Islamic State – in the Liptako-Gourma region on the Mali-Burkina Faso border. The latter is

also a stage for criminal activity, banditry and community conflicts.

While the Customs service has a physical presence on the ground, it is sometimes limited and fails to seize all trade flows or to optimize the organization of services and their operations. In response to these constraints, it was decided to carry out a geospatial study using, in particular, satellite imaging to list and map the main centres of cross-border trade and signs of developing activity.

Geospatial expertise to analyse flows

The study was supported by the World Bank and was entrusted to Geo212, a geo-intelligence and imagery consultancy company. The analysts started from the assumption that flows of goods

1 <https://mag.wcoomd.org/magazine/wco-news-89/potential-uses-of-geodata-for-border-management/>

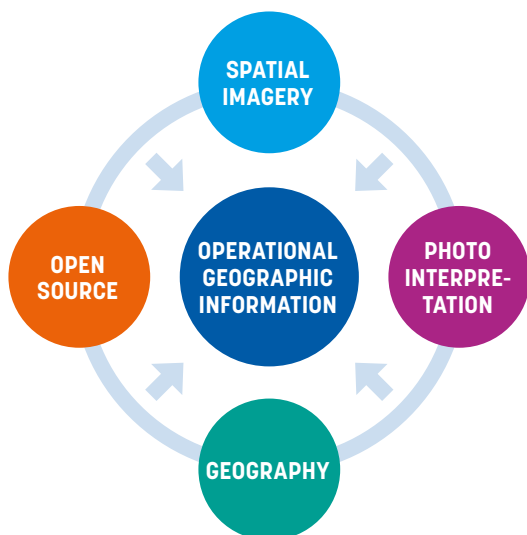
generate enrichment, which leaves traces on the ground. These “markers” include, for example, urban development, the enlargement or creation of markets and storage facilities, the creation of new transit routes or increased trafficking flows on known or alternative routes.

The study focused on two aspects of the territory:

- trade centres, a general term that includes towns and transit zones; and
- the road transport network (since road transport is the most important means of transport in Niger).

The analysis required several essential skills:

- **spatial imagery skills**, involving a knowledge of the provision of the data (costs, frequency of acquisition, spatial resolution, etc.);
- **photo interpretation skills** (object detection and identification, time observation);
- **geographic skills**, involving a knowledge of how to connect the results of observations to a context (political, security, economic) and to a geographic situation, whether local or more global; and
- **open source skills** (mapping and statistical portals, press articles, reference works and other documentation), involving a knowledge of these sources and the ability to classify, manipulate and interlink them.



The combined use of this varied expertise makes it possible to produce useful and accurate geographic information, i.e. information that reflects the reality of the terrain. This makes it possible to construct original geographic analyses which are essential for taking decisions in response to the specific needs of Customs officers.

The analytical method

A general analysis of the entire territory of Niger was first carried out to identify the principal cross-border trade centres in Niger and in neighbouring countries, and the routes that link them. A total of 71 towns involved in cross-border trade in Niger were selected, characterized and related to each other (Figure 1).

Figure 1: Example of links, Niger/Nigeria border area and main trade routes

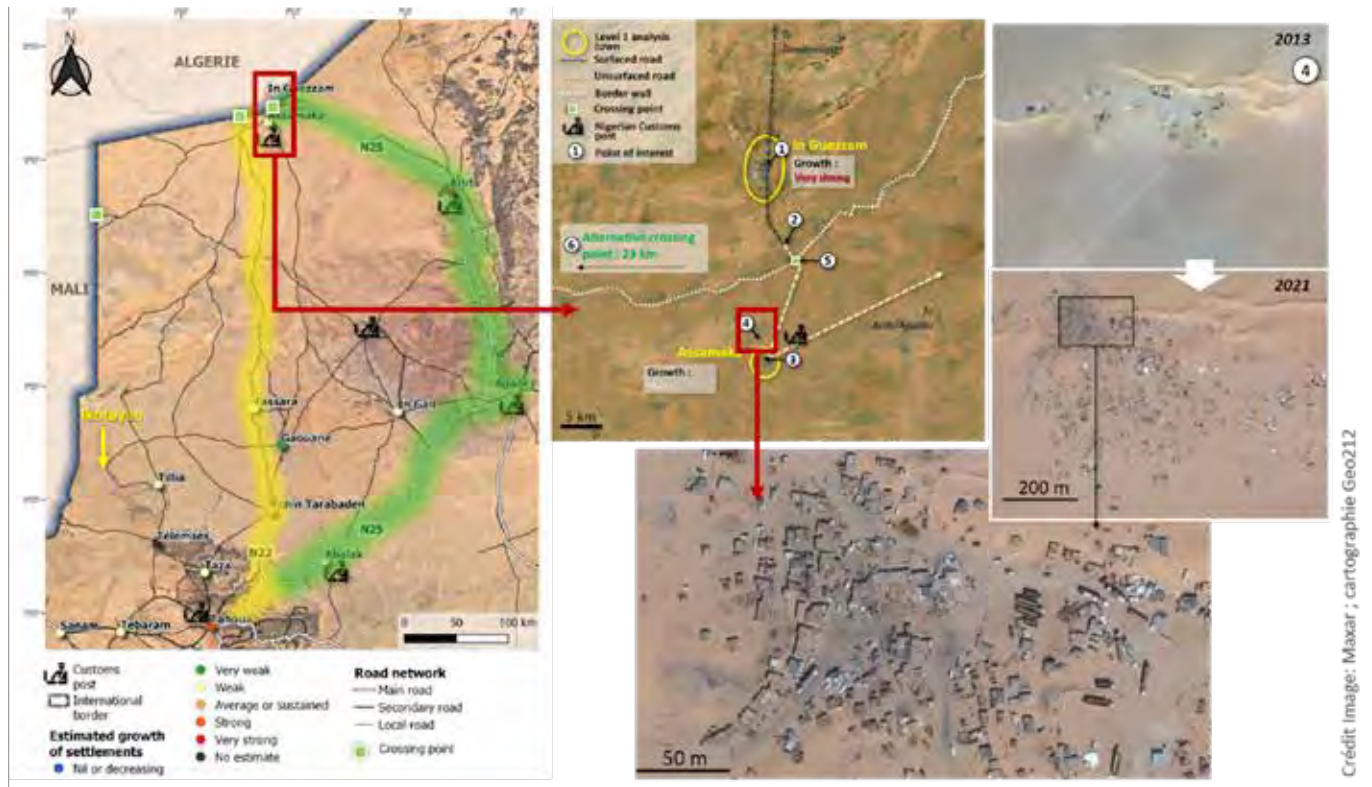


This preliminary analysis then made it possible to present a mapping of the estimated growth of these towns over the previous 10 years (Figure 2) to identify the most dynamic border areas.

Figure 2: Estimated growth of towns involved over a period equivalent to the decade of 2010-2020



Figure 3: Multiscale analysis of a cross-border transit zone, from the national corridor to the Assamaka crossing point to the Niger/Algeria border



A total of eight areas of various sizes likely to have active cross-border corridors and two known transnational corridors were then identified for closer examination. The contribution of the Customs services was essential during this stage. Dialogue between Customs staff and Geo212 analysts made it possible to adapt the methodology very closely to operational needs. The analysts stressed the topographic and anthropomorphic characteristics of the border of each of the eight zones, identified the main and alternative crossing points and listed particular points of interest. The known corridors were then examined to highlight, alongside the official routes, the alternative routes likely to be used within Niger itself and for crossing borders.

This second analysis was based on very high resolution (submetric) satellite imagery which made it possible to observe the development of locations in detail (growth of small settlements, structuring within cities, appearance of storage facilities or border posts, etc.). The analysts were able to link some changes in the security context (militarization of an area, appearance of camps, destruction of villages, etc.) and produce a global vision of the cross-border dynamics of each zone.

Figure 4: Cartographic overview of the results of the analysis of cross-border areas

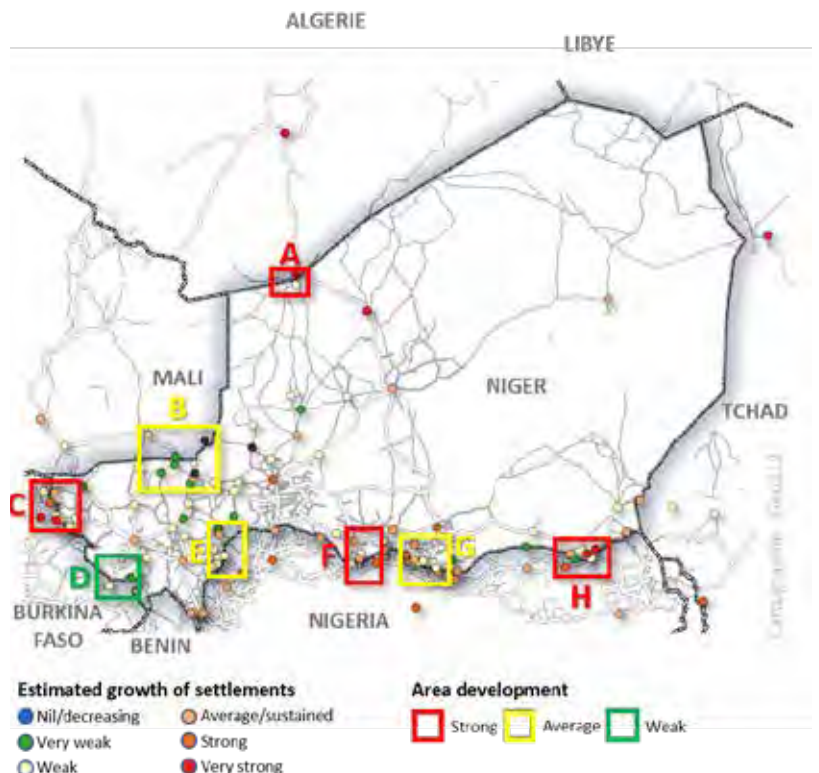


Figure 5: High resolution image of a very busy transit zone on the Algeria/Niger border, analysed in the study



Reusable results by Customs

All the observations are detailed and summarized in a very well-illustrated report that has been submitted to the Niger authorities. Moreover, the objects of interest and border crossing points identified have been compiled in a database given to the Customs service. The latter can now cross-reference their own data with the information provided. This will allow Customs to build new decision-making supports to guide the reorganization of operational services and ensure coverage which is more closely adapted to the territory.

Reflections have focused on the following points:

- creation of new Customs posts;
- removal or relocation of some Customs units;
- raising of the baseline proficiency of some Customs offices; and
- greater allocation of equipment for some operational units.

Geospatial data and border surveillance

This study has demonstrated the utility of current earth observation tools in analysing border

dynamics. These tools facilitate highly detailed observations in areas which are difficult to access for topographic or security reasons. They also allow temporal comparisons and development analysis. Future field change could therefore be followed setting up a monitoring service allowing regular updating geographic data. It would also be possible to identify which routes are actively used in some border areas: the number of lorries listed on the images and the multiplication of obvious traces are indicative of recent regular movement (Figure 5). These observations will be supported by future satellite constellations, that will make daily or even multi-day analyses possible.

More broadly, this work has highlighted the relevance of geospatial analysis for Customs, and there is no doubt that the work carried out with Niger, under the auspices of the World Bank, can be reproduced in other countries.

More information

www.geo212.fr

nicolas.saporiti@geo212.fr

Trade digitization on a global scale: how far are we?

By Hannah Nguyen, Deputy Director, ICC Digital Standards Initiative (DSI)

One positive outcome from the COVID-19 pandemic was the boost in the digitization of interactions and operations in many sectors of society. Digitization is a relatively easy concept to understand. It is the process of converting information into a digital format, in other words, bits and bytes. A digital version of an object, image, sound, document or signal (usually an analog signal) is generated through a series of ones and zeroes and can be exchanged automatically machine-to-machine without manual intervention.

Digitization is foundational and a prerequisite to digitalization, which in turn creates the favourable conditions for “Digital Transformation”, a catch-all term for describing the implementation of new technologies and processes to improve business operations.

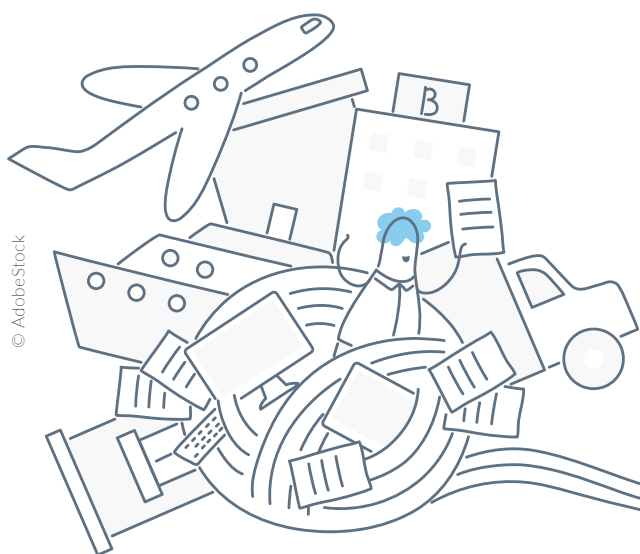
One area of the economy, however, seems to be immune to the phenomenon, even after two years of the pandemic: cross-border trade in goods. In most countries, trade and supply chain data that is exchanged among private sector participants (for instance, between shipper and financing bank)

and between private sector and public sector (for instance, between consignee and Customs) still continues to come in paper format. This data must be manually extracted, validated and entered multiple times into various IT systems before it can be consumed. The process is prone to errors, discrepancies and even fraud, generating risks and inefficiencies which show up as economic costs, as well as environmental costs.

The challenges behind limited adoption

There are several reasons behind the current situation:

- The lack of coordination of digitization efforts has resulted in multiple “digital islands”, each with its own set of standards and rules regarding how to digitize the data and exchange it. In this fragmented ecosystem, it is possible to connect one-to-one, but too costly and complex to connect one-to-many.
- There is no single view of available standards to facilitate such interconnection, including the common language to be used and elements of a trusted technology environment needed for seamless and trusted data exchange to occur.
- Not all countries have the appropriate legislative framework, including for Electronic Transferable Records (ETRs) to provide legal certainty to electronic negotiable instruments and recognize them as valid title documents.



A well-known example is the global business community's attempt for the past 20 years to introduce the electronic Bill of Lading (eBL), whose adoption stood at a dismal record of 0.01% as of the end of 2019. All of the above-mentioned challenges have contributed to low level of adoption. Specifically:

- The oldest eBL system started in 1998, and as of now, there are more than a dozen eBL platforms and systems which are operating independently from one another. All parties in the same transaction need to sign up to the same platform. This means that, in theory, one company may need to sign up to many different platforms if its transactions do not occur with the same parties all the time. Such an arrangement would be too costly and complex for most companies to implement at an operational level.
- Until recently, there was no single industry-wide standard for eBLs, with each eBL platform free to define and specify what data the eBL should contain and how to technically exchange that data within their own system.
- Electronic BLs are not legally recognized in all jurisdictions, save for Bahrain, Belize, Kiribati, Paraguay, Singapore and the Abu Dhabi Global Market, which have enacted the Model Law on Electronic Transferable Records of the United Nations Commission on International Trade Law (UNCITRAL). This means that even when

the parties may opt to use digital solutions to exchange BLs, they often have to convert the electronic documents back to hard copies when they reach jurisdictions where such ETRs are not yet legally recognized.

The stages towards Digital Transformation

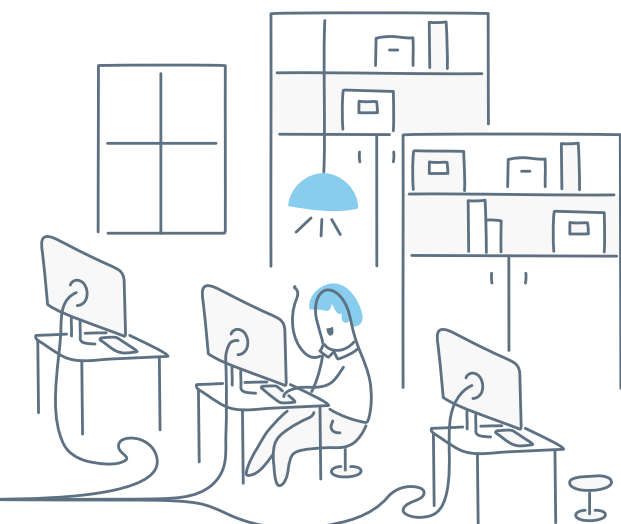
Stage	Definition	Example
1. Digitization	Creating a digital representation of physical objects or attributes	eBL, eATA, eTIR
2. Digitalization	Enabling or improving processes by leveraging digital technologies and digitized data	Amazon's online shopping service
3. Digital Transformation	Taking advantage of the fact that software-based processes can be developed and enhanced frequently to dramatically drive up the agility of the organization	Moderna data-centric operating model

The impetus behind the Digital Standards Initiative

Ideally, international trade would be underpinned by a common set of standards adopted globally and in a legally conducive environment, enabling supply chain participants to exchange data across sectors and borders efficiently.

With this in mind, ICC established in 2020 the Digital Standards Initiative (DSI) as a collaborative cross-industry effort to advance the digitization of trade globally. DSI operates under the guidance of a Governance Board consisting of policy makers from governments and international organizations, including the government of Singapore, the Asian Development Bank, the World Trade Organization and the WCO. The guidance provided by the latter has been instrumental in ensuring alignment between existing public standards and ongoing private sector efforts to digitize trade and supply chain processes.

As a first important step, a comprehensive knowledge centre was created in July 2021. Housed on the DSI website¹, it aggregates information and best practices on existing standards for key audiences, namely, company executives, policy makers, and developers. On an ongoing basis, our aim is to constantly improve and expand or update the coverage to ensure the knowledge centre remains relevant and useful for the majority of intended users.



1 www.dsi.iccwbo.org

The future looks promising as more and more countries look to align their domestic legislations in 2022 with the UNCITRAL Model Law on Electronic Transferable Records, notably the G7 countries³ which publicly agreed to a Framework for G7 Collaboration on Electronic Transferable Records in April 2021, which was also endorsed by the Republic of Korea and Australia.

For its initial phase, the DSI encourages international supply chain participants to adopt a set of standards, including foundational standards developed by the International Organization for Standardization (for example, for currency, country codes, messaging, and date or time), company identifiers (including Legal Entity Identifier and Decentralized Identifiers or DIDs), and standards that facilitate the interoperability of electronic trade documents and their exchange between different digital ecosystems.

More recent standards are also included, such as:

- TradeTrust², a framework developed under Singapore's Infocomm Media Development Authority. It comprises a set of globally accepted standards to facilitate the digitalization of documents used in international trade and logistics and their interoperability, and also a set of software components that connect to a blockchain backbone IT infrastructure.
- Digital Negotiable Instruments (DNIs), a framework developed by the International Trade and Forfeiting Association (ITFA).
- The Model Law on Electronic Transferable Records (MLETR) of the United Nations Commission on International Trade Law (UNCITRAL), a legal framework with which countries can harmonize their legislation and which enables the recognition of electronic equivalents of paper-based transferable documents. A step-by-step guide is available on the DSI website to disseminate lessons learned by first-mover jurisdictions in reforming electronic transaction laws.
- The Electronic Bill of Lading, an open-source standard developed by the Digital Container Shipping Association (DCSA).
- The Electronic Multimodal Transport Bill of Lading (eFBL) developed by the International Federation of Freight Forwarders Associations (FIATA).

An ecosystem approach to solve problems spanning sectors and borders

To accelerate digitization of trade and supply chains at scale, the DSI recognizes the importance of harmonizing all like-minded efforts which may be on parallel tracks towards the same goal. The following five principles underlie all the work: (1) reuse rather than re-create, (2) engage standard-setting bodies, (3) consider all available approaches and technologies, (4) prioritize accessibility to all trade participants, and (5) ensure appropriate capabilities within relevant industries are leveraged to overcome challenges. These principles create a safe and conducive space where convergence and harmonization can happen, as opposed to divergence and fragmentation.

In the last half of 2021, there was a series of developments in this direction. In August 2021, 30 industry leaders from a broad range of industry verticals and geographical regions were invited to join the DSI Industry Advisory Board (IAB). They represent professional industry associations (the International Port Community Systems Association - IPCSA, the International Federation of Freight Forwarders Associations - FIATA, the Baltic and International Maritime Council - BIMCO), not-for-profit standard organizations (GS1, the Digital Container Shipping Association - DCSA, the Global Legal Entity Identifier Foundation - GLEIF), service providers (Society for Worldwide Interbank Financial Telecommunication - SWIFT), freight and logistics companies, banks, retailers and commodity companies. By fostering a strong nexus with industry, the DSI's focus and implementation plans continue to be refreshed annually to match the needs of international business everywhere.

Moreover, in mid-December 2021, a Legal Reform Advisory Board (LRAB) was formed to drive legislative reform efforts needed to make digitalized trade a reality and provide more support to low-income countries where more capacity building is needed. LRAB Members include representatives of the Asian Development Bank, the Bankers Association for Finance and Trade, the Commonwealth, ICC France, ICC Germany, ICC Mexico, the International Trade

² See article published in the February 2021 edition of WCO News: <https://mag.wcoomd.org/magazine/wco-news-94/tradetrust-accelerating-the-digitalization-of-international-trade>

and Forfeiting Association and the United Nations Commission on International Trade Law.

If the past 24 months have taught us anything, one of the most important lessons is the value of collaboration and alignment. For instance, the business community, through the ICC Global Customs & Trade Facilitation Commission, has flagged the need for more harmonization in the implementation and application of WCO guidelines, regulations, and standards between Customs offices within and between countries, as more and more Customs processes go paperless. Another important alignment to achieve is how to reuse the standardized data, processes and technology increasingly common in the private sector to feed into border agencies' requirements without creating fragmentation or additional duplication for businesses, especially MSMEs.

The future looks promising as more and more countries look to align their domestic legislations in 2022 with the UNCITRAL Model Law on Electronic Transferable Records, notably the G7 countries³ which publicly agreed to a Framework for G7 Collaboration on Electronic Transferable Records in April 2021, which was also endorsed by the Republic of Korea and Australia. As the legal environment becomes more conducive, the adoption of key trade documents in digitized form, such as the electronic Bills of Lading, is set to rise against the decline of their paper-based counterparts. How fast we can move on that journey, however, depends very much on the harmonized effort of the various stakeholders or rowers, as we are all paddling in the same boat.

More information

hannah.nguyen@iccwbo.org

³ The G7 is an informal grouping of seven economies: Canada, France, Germany, Italy, Japan, the United Kingdom, the United States and the European Union.

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Managing export restrictions of COVID-19 vaccines: the experience of Belgium

By Werner Rens, Head of Marketing Department, Belgian Customs

In 2020, the European Commission signed Advance Purchase Agreements (APAs) with COVID-19 vaccine manufacturers on behalf of the European Union (EU) Member States to ensure affordable and timely access to COVID-19 vaccines for their population. Financial support had been given to vaccine manufacturers to enable them to increase production. At the end of 2020, some manufacturers announced that they would not supply the vaccine quantities which were destined for the Union and which they had pledged. This was in potential breach of their contractual commitments.

In January 2021, the Commission decided that exports of COVID-19 vaccine covered by an APA with the Union would be subject to authorization by Member States. This was in an effort to ensure timely access to COVID-19 vaccines for all EU citizens and to provide greater clarity on vaccine production in the EU and their exports. Commission Implementing Regulation (EU) 2021/111 making the exportation of COVID-19 vaccines subject to the production of an export authorization entered into force on 13 March 2021.

The Commission excluded from this scheme several particular types of exports, so as not to impact on the Union's international commitments. Examples were exports in the context of humanitarian emergency response, exports of goods purchased or delivered through the COVID-19 Vaccines Global Access initiative (COVAX), the United Nations Children's Fund (UNICEF), and the Pan American Health Organization (PAHO) with destination to any other COVAX participating country¹. The Commission was also mindful of APAs contracted by non-EU countries, including the expectations

of these countries that their deliveries would be met as much as possible. Moreover: "This Regulation should apply to exports of Union goods from the Customs territory of the Union. Therefore countries that form part of that Customs territory² need not be exempted in order to receive unrestricted shipments from within the Union."

The export authorization was to be granted by the competent authority of the Member State where the vaccines were manufactured. It had to be produced when the goods were declared for export or, at the latest, at the moment of the release of the goods. In Belgium, the authority competent for granting the authorization was the Ministry of Economy, and the verifying authority was Customs.

The Regulation established the following procedure: the manufacturer was to send a request with the related shipment data to the competent authority in writing or by electronic means. An authorization was needed for each shipment. The competent authority had to process the application as soon as it received it and issue a decision no later than within two working days after reception of all required information. The ID-number of the authorization needed to be mentioned in the related export declaration, to be checked by Customs before the release of the goods.

Belgium hosts many pharmaceutical research and development centres and some major production sites, including the Pfizer-Biotech production site, one of the two sites from which the company makes its COVID-19 vaccines (the other site is in Michigan, United States). Many logistics companies specializing in handling pharmaceutical

¹ See [EUR-Lex - 32021R0111 - EN - EUR-Lex \(europa.eu\)](#)

² The Customs territory of the Union is defined in Article 4 of the Union Customs Code. See https://ec.europa.eu/taxation_customs/territorial-status-eu-countries-and-certain-territories_en



products are located near the airports of Brussels and Liège.

The country was therefore directly affected by the Regulation and was involved in its implementation. The challenge was to enable Pfizer to continue exporting its vaccine as quickly as possible, while implementing the new Regulation.

The key was to enable direct communication between the three stakeholders: the manufacturer (Pfizer), the competent authority for the granting of the authorizations (Ministry of Economy) and the authority supervising the export (Customs). Among other things, a direct line was set up between the Head of the Customs Department of Pfizer, the Head of the Authorizations Department at the Ministry of Economy and the Head of the Marketing and Customer Service Department of Customs. Each had the phone number and email of the others.

It was also important to ensure that the export authorization application process was efficient, and a mechanism to share advance data on shipments requiring an authorization was put in place. At the beginning of each week, Pfizer

employees working in the department dealing with shipment planning provided data related to all shipments which were to be sent the same week, both to the Ministry of Economy and to Customs. The Ministry of Economy communicated its decision not only to Pfizer, but also immediately to Customs, directly to the officers in charge of verifying the shipments. This minimized the risk of delays.

Lastly, the IT Department of the Customs Administration developed a dashboard enabling Customs officers to visualize data related to exports of COVID-19 vaccines in real time. This greatly facilitated monitoring and verification of the shipments.

During the time the Regulation was in force, from 13 March 2021 until 30 June 2021, and as at the date of writing this article (February 2022), there have been no significant interruptions of Pfizer COVID-19 vaccine exports from Belgium.

More information

https://finances.belgium.be/fr/douanes_accises/entreprises/corona-informations-et-mesures

It was also important to ensure that the export authorization application process was efficient, and a mechanism to share advance data on shipments requiring an authorization was put in place.



How Brazil gave true meaning to partnership

By John E. Mein, Executive Coordinator at Procomex, and Jackson Corbari, Coordinator-General of the Customs Administration at the Secretariat of Federal Revenue of Brazil

Customs authorities often boast about working closely and in partnership with the private sector – but what does that really mean? In too many cases, working with the private sector turns out to be little more than a tick-box exercise, perhaps based on a couple of unproductive meetings a year. In order to derive real benefits from public-private sector cooperation, a strong partnership approach is required, based on constant and genuine communication, a willingness to share information and experience, and – above all – building genuine trust between all parties.

When Procomex, an alliance of business associations, started working in partnership with the Government of Brazil to improve and simplify foreign trade, its first aim was to modernise Customs procedures. Over the years, Procomex was able to create a unique collaboration with the Customs authority that led to a transformation of Customs processes. The work continues on several projects, such as further development of the Brazilian Single Window, the establishment of a Port Community System solution, and the revision of domestic logistics processes.

This could not have been achieved without the proactive, positive input and sheer hard work of the Customs authorities and stakeholders

across the private sector. Procomex Members and Customs worked through the challenges together and found new ways to simplify and streamline processes for foreign trade. What were the challenges? A legacy system, bureaucracy, and mistrust on both sides.

Legacy system

The existing IT solutions were bureaucratic, requiring information that did not enhance control capacities but created obstacles to foreign trade. Clecy Lionço, who was head of Brazilian Customs from 2001 to 2008, explained: “Brazilian Customs were computerised. The Integrated Foreign Trade System, Siscomex, implemented in the early 1990s, had provided a considerable advance

in the management of trade, even introducing the concept of a single flow of information, improving statistics and reducing discretion. But the emergence of new trade patterns and business models, together with developments in IT, required a new modernisation effort.”

To achieve this, Customs had to involve economic operators. Lionço said: “Customs needed the private sector to design and legitimise new ways to manage trade which would guarantee enhanced control capacities, a requirement after the terrorist attacks of 9/11, but also enhanced facilitation of legitimate trade.” Discussions started in 2013, and ultimately led to the creation of a Single Window. The main channel through which dialogue was engaged with the private sector was Procomex.

A neutral player

Procomex started out as an informal alliance of business associations, with 54 members in 2004. But it was a virtual organization without a proper, functional structure. Regina Terezin, Customs broker with *Cualidad Assessoria e Despachos Aduaneiros*, a Member of Procomex, said: “We thought that one year would be enough to modernise Customs. We rapidly found out that it wasn’t going to be that fast and it would take much more effort. We needed to have an institutional framework”. In 2005, the Procomex Institute was set up. “Today, it has 125 Members.”

Procomex and Brazilian Customs have formalized their relationship through an agreement. Procomex’s first task was to explain to Customs what the problems were. “We needed to compare views and decide what we wanted for the future, and why it was possible for us to help Customs solve the problems,” said Terezin.

There is a definite advantage for Customs authorities in not having to deal with too many organisations. Procomex does not represent a single interest or player in the logistics value chain. Its focus is to help bring the private and public sector together to work on foreign trade issues and, as processes move forward, also on domestic logistics issues.

Mistrust on both sides

The main challenge in setting up effective cooperation, said Lionço, was a cultural one – to break down the fear or prejudice existing in Customs regarding the relationship with the

private sector. Customs had “to engage the private sector in a proactive, participatory process, seeking improvements in trade management”.

This was a first for members of the Customs team. Although they had already worked with the private sector, they had never been asked to collaborate to such a degree. Hence, there was a degree of caution at the beginning.

Flavio Scorza, former Director of Trade Facilitation at the Secretariat of Foreign Trade, noted that there was also resistance from officials to changing well-established bureaucracy, “not because of any malicious intent but because there was a way of doing things that was deeply ingrained in the organisation’s culture.”

Fears and apprehension at all levels of the organisation only began to dissipate when joint work was carried out effectively over time. The process of building this change within Customs was “learning by doing”.

The strong support received from the highest levels of the Customs administration, the Trade Department and the Presidency was essential for keeping momentum, overcoming the resistance and, eventually, changing the mindset of key officials.

Private sector representatives were cautious too, at first. Scorza explained that most of the people involved in the project were not used to this kind of relationship with government agencies. “In some situations, if you are from the private sector you don’t want to expose your problems to the Government because you fear they will use it against you. But you have to expose the problems in order to solve them.”

He added: “At the beginning, there was some scepticism about the actual will of the Government to really promote changes. Therefore, the first contributions were limited by how far people thought our will to change would go. It took some time for trust to build and for people to go beyond minor suggestions to improve inefficient steps in the process. Being neutral, Procomex was able to make things fair for both sides and create a trusting environment.”

André Zanin, representing the Ship Agents’ Association, has been working together with Procomex since 2006. He said: “For the first time

in history, Customs was open to the views of the private sector about new regulations, and there was a lot of goodwill. Before that, Customs would just say: "Here is a new regulation – you have to follow it". For us, it was an amazing change."

Lucas Sanches, also from the private sector, agreed: "Government agencies are not the ones having to apply procedures. They just regulate. Procomex created trust with them so that we could sit around the same table, discuss problems and find solutions. Customs became helpers and showed its willingness to solve issues, rather than just imposing fines."

Stepping out of the comfort zone

Lionço also highlighted that "the signing of a cooperation agreement between Procomex and Brazilian Customs demonstrated that the private sector was more aware of its role in formulating and implementing proposals to improve trade management, and of the need to step out of the comfort zone of just demanding improvements. Procomex, by encouraging and maintaining communication between all interested parties, was fundamental to the involvement of the private sector."

Methodology

The methodology developed by Procomex is unique. It starts from the basis that true collaboration is about making everyone feel that they are a participant and that they are making a difference. The Customs modernisation project was started by getting people together around the table, so they could present their issues and suggestions. A survey was carried out to consult associations and their members about the issues that needed work. Meetings were organised to prioritise the issues and, based on that, specific working groups were set up.

"The emphasis was on trade facilitation, and reducing bureaucracy and costs", said Zanin of the Ship Agents' Association. "We realized that what is good for one it not always good for another. Our ship agents, having to deal with processes in their everyday routine, were very helpful as they shared their expertise and views as to how things could be better."

Public and private sector stakeholders were invited to contribute to the design of an enormous 'As Is' map, on paper on a huge wall. The map set out the legislation, processes, problems,

bottlenecks, etc. This took many hours to work out. Everyone had a different view of how he or she handled processes. Participants could see not only the differences between them, but also the things they have in common. This was very rewarding. Since the COVID-19 outbreak, this work has been done through video conferencing using digital post-it notes.

The company GE-CELMA has been a proactive private sector stakeholder in the Procomex project. Part of GE Aviation, it historically manufactured aircraft parts and engines, and carried out engine overhauls for the South America region. After 9/11 it had to rethink its strategy and develop international trade in order to survive. Ricardo Keiper, GE-CELMA's supply chain manager for South America, soon realised that in order for the company to compete internationally, processes would need to be developed to reduce the clearance times for imports and exports of parts. "We developed a very safe logistics chain worldwide, but that was not enough because we still had to prepare for Brazilian bureaucracy", he said.

Keiper added: "For the first time, we were able to tell the Customs representatives sitting with us what would be the best options, and they were able to tell us what was feasible or not, and what options we had." He was delighted that participants were able to give suggestions and explain how the system works. "We want to comply. If processes are efficient and aligned to the way different sectors work, then compliance is so much easier."

Ruy Jorge, former adviser to the president of Petrobras and an early supporter of the Procomex-Customs work, said: "Using the mapping process to collect everyone's ideas was very useful. Each person has unique views, his or her own "truth". This permitted people to have a vision of the entire process and the impact that each particular action had on the process. That was something that had never been done before."

Governments often adopt regulations "that really get in the way of solving the problem", said Jorge. "This time it was different. When you have two sides, they usually do not trust each other. They almost always believe that the other is taking advantage, or not being totally honest. Therefore, it was important to have Procomex as a neutral

"For the first time, we were able to tell the Customs representatives sitting with us what would be the best options, and they were able to tell us what was feasible or not, and what options we had."

Ricardo Keiper,
GE-CELMA's supply
chain manager for
South America

party representing all sectors, not just each sector with its own agenda.”

Setting out the “As Is” map, and presenting a visual rather than written representation of the processes, caused the challenges to become technical rather than political. “Customs representatives were used to listening to us and we would often sound only negative to them, making them feel accused and on the defensive,” pointed out Jorge. “But presenting a process as a map or drawing makes it much easier to change opinions. It becomes evident that everyone is part of a system and not isolated, and that creates the basis for dialogue. Everybody can then work towards a common objective of harmony.”

Single Window

Brazil historically has a reputation for its ‘heavy hand of State and bureaucracy’, said Tiago Barbosa, co-head of Brazil’s Single Window project at the Secretariat of Foreign Trade. “But in the past decade, the vision of the State has changed and Brazil has become more efficient.

The Single Window project is all about taking out the bureaucracy, simplifying all the processes and reducing costs.”

Sergio Garcia da Silva Alencar, Customs Operational Coordinator, works directly with the team in charge of developing the Single Window environment. “The integration of public and private sector systems and requirements is, I think, one of the most important issues in such a project”, he declared. This view is supported by Alexandre da Rocha Zambrano, co-head of the Single Window project at Customs. “To ensure access to the information required, you need to engage all stakeholders. By doing so you can enable them to be more competitive, while securing trade flows”, he added.

Procomex facilitated the development of a solution which would work for all. “Since the beginning of the development of new IT solutions, we have gathered with private stakeholders monthly to discuss operational issues and promote the proper



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adjustments to the systems”, explained da Rocha Zambrano.

The Single Window is designed as a single system connecting the authorities in charge of taxes, licensing and surveillance. Keiper pointed out: “The idea is that instead of having your cargo arrive in Brazil, submitting documents and then waiting for release, you can request clearance while the plane is flying to Brazil so that the items due for inspection are already identified. Previously, 10% of our shipments were inspected. Can you imagine the disruption to the workshops? Now, with the new processes in place, the inspection rate is 0.4%.”

He emphasised: “Customs was not the problem. It was the regulation. With the implementation of a Single Window to manage imports, and other developments supported by Procomex, our lives are easier. It is a win-win for everyone.” It is estimated that annually, economic operators will save more than 25 billion United States dollars.

Consultative forum for AEOs

Procomex was also involved in the development of Brazil’s Authorized Economic Operator (AEO) programme. All AEOs are invited to participate in a consultative forum to discuss AEO requirements and benefits. Fabiano Diniz, manager of the AEO Programme, explained: “We have talks on a regular basis. Customs asks for the private sector’s opinions to make the Programme better.”

Much more to be done

The mapping of processes, which has been used to establish both the Single Window and the AEO Programme, was fundamental to expediting the movement of imported and exported goods in Brazil’s international trade. Although the Single

Window project has yet to be completed, Customs and businesses have already achieved concrete results, such as reducing release times by half and increasing Customs’ effectiveness in cargo selection.

Customs is working on finalising the Single Window, but there are more projects for which cooperation with business is needed. The partnership with the private sector is now solid, remarked Clecy Lionço: “There is a continuity in the Customs-Business partnership which demonstrates its solidity. It is not only Customs who collaborate on a regular basis with businesses, but also other public agencies that control foreign trade”. Customs broker Regina Terezin supports her view, adding: “it is a continuous conversation. We form a community with a lot of interactions.”

Ruy Jorge was keen to praise the efforts made by all sides, and suggested that this type of approach should be used by other Government agencies – not only those involved in foreign trade and economic activities. “We carry a vision as to how to make the country more competitive,” he said. “It stands above individual interests, it is about mobilising a force to be able to work together for the common good.”

His enthusiasm for the Customs-Procomex partnership and the Single Window is understandable. His company, GE-CELMA, has already seen a significant reduction in bureaucracy and substantial time savings in the clearance of exports. Jorge is expecting that the deployment of the Single Window to manage imports will deliver even more benefits.

More information

www.procomex.org.br

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Ruy Jorge,
former adviser to
the president of
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Dubai Customs gets underwater drone technology to enhance inspection

By Dubai Customs

In August 2020, Dubai Customs started deploying a Remotely Operated Vehicle (ROV), also called an underwater drone, to boost its marine inspection capabilities. The drone has already proved useful in tackling attempts by traffickers and criminals to bring contraband and prohibited goods into the United Arab Emirates.

The mini-submarine can travel at 15 kilometres per hour and is connected to a wire with a range of about 30 metres. Fitted with a 4K high-definition camera, it takes live video and clear photographs to enable Customs officers to complete a thorough inspection of vessels. Officers are on the look-out for contraband which can be hidden in the hulls of vessels, as well as for packages of drugs that can be attached to the bottom of boats.

Dubai Customs does not have its own diving team and, in the past, the Customs rummage team would normally search the cabins and the decks of a boat but not underneath the boat. It relies on the services of Dubai Police to do so. Now, the team can use the drone to check any part of a boat as far as 50 metres in the water and can scan a vessel in less than 15 minutes. Images are sent to an operations room where they are analysed. If


anything suspicious is identified from the images received from the ROV, Customs will still rely on the Police divers to carry out an inspection or the boat would have to be placed on the dry dock.

A two-strong unit has been set up to handle the drone, which is used in particular to inspect the undersides of wooden boats that come into Dubai Creek from neighbouring countries. Further sophistication is underway to make the tool also usable in more challenging underwater search operations of larger vessels including at the Port of Jebel Ali.

The equipment has its limitations. For example, visibility may vary according to weather conditions, the water depth and currents. Dubai Customs is currently working on upgrading the drone by mounting sensors that will allow one to see the depth of the drill, installing a sonar that will enhance underwater visibility, as well as stabilizers which would make it possible to navigate underwater if there are strong currents.

More information

External.Relations@dubaicustoms.ae



What impact is technology having on efforts to improve HS classification efficiency and accuracy?

By Randy Rotchin, Director of Business Development & Global Trade, Avalara

One of the main topics of discussion during the 2019 WCO Conference on the Future Direction of the Harmonized System (HS) was HS complexity. Concern was expressed about the difficulty of HS classification especially for small and medium-sized enterprises that are being granted the opportunity to participate in the global economy but don't necessarily possess the tools needed to do so.

The fact is that HS classification remains largely a manual process for most enterprises. A whopping 95% of respondents to a 2016 Thomson Reuters/KPMG survey reported having difficulty with HS classification. This difficulty manifests itself in unacceptable rates of classification error. For example, the Auditor General of Canada, in several reports to the country's parliament, has identified error rates of 20% and higher.

The WCO offers a plethora of important resources to assist classification, such as the Explanatory Notes and Opinions. For the average declarant, however, who may be challenged with classifying thousands, tens of thousands, or even millions of commodities in a timely manner, these resources may not be as helpful. The WCO tools are essentially repositories of information which are of limited use to the vast majority of individuals whose HS literacy and experience is either nominal or non-existent.

Traditionally, the antidote to a lack of knowledge was training. While there is no substitute for training, it takes time and money, and very few organizations devote nearly enough of either precious resource to such endeavours. The UK Customs Academy, which was created to provide Customs compliance training to British traders in advance of Brexit, devotes a total of 40 hours of instruction to cover such mission critical areas as “Customs Processes and Procedures”, “Calculating Import Duty”, “Customs Declarations” and “Export and Import Controls.” The WCO Academy offers five sector-specific courses on HS classification alone – totalling 58 hours.

A more realistic assessment of the number of hours needed to achieve HS classification competency was perhaps revealed in a 2020 poll of LinkedIn Customs Specialist Group members, 92% of whom answered “at least 100 hours.” Within this group of experts, more than a third indicated that more than 500 hours of HS training was necessary.

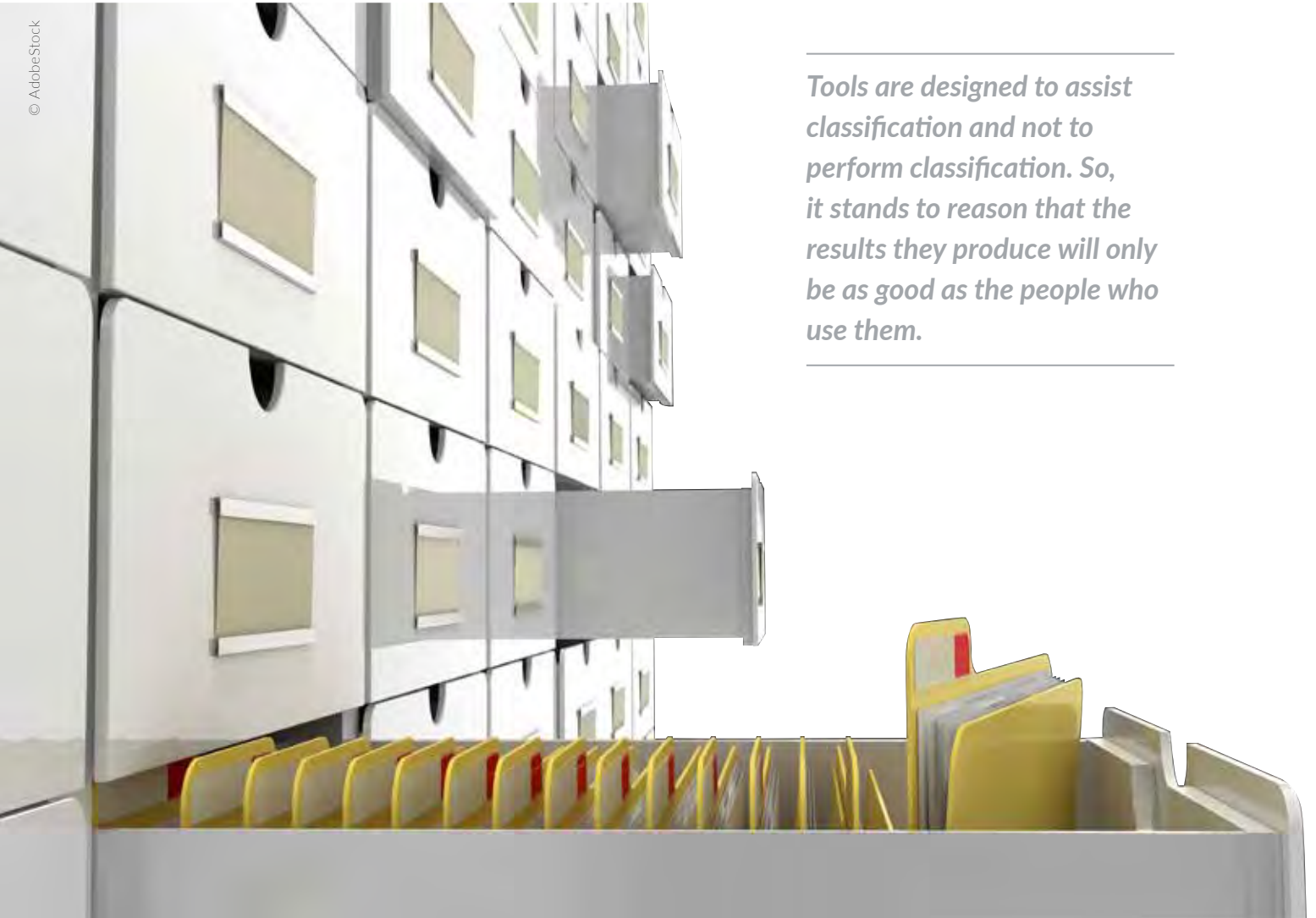
So, the question then becomes: if rich libraries of information and training do not offer practical solutions to the real problem of HS classification errors and efficiencies for the average trader, can technology help? In short, yes. However, the effectiveness will depend on what kind of technology is applied.

There are currently three basic types of technology that are used to power classification assistance tools: keyword search engines, expert systems and machine learning algorithms.

Keyword search tools

The most ubiquitous of the technologies used to power classification assistance tools use keyword search operators. You’ll find these tools in one form or another in Customs management systems, electronic single windows and trade information portals such as UNCTAD’s ASYCUDA, the World Bank-designed Vietnam Trade Information Portal and the ITC’s Market Access Map and Rules of Origin Facilitator, respectively.

Tools are designed to assist classification and not to perform classification. So, it stands to reason that the results they produce will only be as good as the people who use them.



Keyword search tools work by trying to match the words or phrases that users submit with those in the target document. Unfortunately, this process is deeply flawed and constitutes the automated tool's Achilles heel. If the user does not enter a word or phrase that is explicitly used in the nomenclature, the engine will offer no results. For example, everyday commercial goods descriptions such as "baby food" and "egg timer" (described in the HS as "homogenized composite food preparations" and "'apparatus for measuring, recording or otherwise indicating intervals of time'", respectively) yield no results. Keyword engines demand that the user be familiar with the Harmonized System's often impenetrable terminology to retrieve any results at all.

When a keyword match is found, these tools return long lists of mostly irrelevant and erroneous "potential" matches. Again, forcing the user to have some understanding of the process of classification and the content of the nomenclature in order to identify the most appropriate code from among the many "potentials" presented. Achieving accuracy is almost impossible when the appropriate code is one that associates to a residual heading/subheading (i.e. whereby the HS commodity description is "Other").

Some keyword engines have been enhanced with Boolean operators which are simple words (AND, OR, NOT or AND NOT) used as conjunctions to combine or exclude keywords in a search, and which presumably produce more relevant search results. Others have added synonyms to their engines to help bridge the profound gap between commercial and HS terminology. Nevertheless, there is no getting around the fact that keyword search engines are only capable of providing results if they find an exact or partial keyword match in the document or database they are searching.

A search for "computer" in the Barbados Government's Electronic Trade System¹ typifies the problem with keyword search engines. The tool found two potential matches, both of which are incorrect: 4821.10.00.900 ("Pricing tags, over printed labels, computer and copier labels") and 4821.90.00.900 ("Other pricing tags, over printed

labels, computer and copier labels"). To find the appropriate code for "computer", the declarant will have to know that such machines are described in the HS nomenclature as "automatic data processing machines".

Keyword engines can hardly be called classification assistance tools, as they have not been designed for the specific purpose of HS classification. They do not consider or apply the General Interpretive Rules (GIRs) or Legal Notes.

Expert systems

Expert systems are a branch of applied artificial intelligence (AI) which, in the context of this discussion, have been built specifically to address the particular challenges associated with HS classification. These challenges include:

- matching declarants' commonly used commercial goods descriptions to HS terminology;
- properly handling complex items such as parts and sets/kits;
- considering and applying HS General Interpretive Rules and Legal Notes; and
- recognizing and addressing underspecification and ambiguity.

The expert systems that have been designed and deployed as HS classification assistance tools (e.g. the United States Census Bureau Schedule B Search Engine², the Canada Tariff Finder³ and the Federal German Government's *Warenverzeichnis Online*⁴ search engine (Suchmaschine) look like simple keyword search engines, but that is where the similarity ends.

Unlike the keyword engines which search indiscriminately and require significant prior HS knowledge, these tools employ specific domain knowledge and rules of thumb and use reasoning tools to drive the commodity classification process intelligently and intuitively to a single code.

A search for a "corkscrew" in the European Commission's Combined Nomenclature Search

1 <http://asycuda.customs.gov.bb/portal/services/tariff/search.jsf>

2 <https://uscensus.prod.3ceonline.com/>

3 <https://www.tariffinder.ca/en/>

4 <https://www.destatis.de/DE/Methoden/Klassifikationen/Aussenhandel/warenverzeichnis-aussenhandel-db-reguvis.html>

Engine⁵ illustrates the attractive properties of an expert system-based classification assistance tool. The tool recognizes that the “corkscrew” is underspecified and asks if it is powered mechanically, electro-mechanically or otherwise. Depending on how this question is answered, either an HS code is delivered or one or more other multiple-choice questions are asked until a single HS code is reached. The process of classification has been automated to some degree yet is still completely within the control of the declarant. The tool makes inferences and assumptions and responds to user specified input, ultimately providing a recommendation that has been generated through the consideration and application of GIRs and HS Legal Notes.

Expert system-based classification assistance tools have successfully demonstrated the ability to make consistent and accurate recommendations and result in a faster learning curve for beginners. One national Customs authority reported that the deployment of its classification assistance tool resulted in improvements of declaratory data quality of 46%, classification accuracy of 22% and fiscal compliance of 29% over a two-year period.

Machine learning algorithms

The latest application of advanced technology in the Customs compliance sphere is machine learning (ML). In basic terms, ML is a form of artificial intelligence that makes predictions from data. The power of ML is that it uses algorithms and statistical models to learn and adapt without the need for explicit programming instructions. Machine learning is stochastic (i.e. it has a random probability distribution or pattern that may be analysed statistically but not predicted precisely), so the predictions generated by ML algorithms are, fundamentally, educated guesses.

ML’s critical success factor is the data used to train the system. For an ML algorithm to be reliable, the data must be sufficient, representative and reliably labelled.

“While the caustic observation ‘garbage-in, garbage-out’ has plagued analytics and decision-making for generations, it carries a special warning for machine learning,” warned Thomas Redman

in a 2018 Harvard Business Review article. “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.”

For the purpose of HS classification, “labelling” means mapping narrative commercial goods descriptions accurately to HS codes – a task that can be performed either manually (supervised) or automatically (unsupervised). Additionally, questions remain about whether or not it is even possible to build a reliable model that can be used universally across a broad set of declaratory data. This is because declarants describe their goods in infinitely diverse and idiosyncratic ways, and only ML models built upon very specific and controlled training data can be relied upon.

One example of a publicly available classification assistance tool that claims to use an ML algorithm is the Enjaz Customs Trade Portal’s “HS Code Classification using Artificial Intelligence⁶” tool. The Enjaz tool reads complex goods descriptions and returns a list of possible matches, along with “probability” factors, which are presumably designed to provide users some indication of trustworthiness.

A search for an “automotive engine mount, steel” in the Enjaz tool, for example, yields two incorrect suggestions (8708.99 and 8409.99 ... automotive engine mounts of steel are properly classified under 8302.30). More worrisome might be the fact that 8708.99 came with a probability of 95.76%.

Tools that leverage ML are undoubtedly more intelligent than the ones that rely on keyword operators; however, they possess many of the same shortcomings. They still demand that the user has a deep and thorough understanding of the rules that govern HS classification and a familiarity with the HS Nomenclature itself. More concerning than the keyword tools, however, is the fact that, because ML models are constantly re-learning, results may change over time.

5 <https://eurostat.prod.3ceonline.com>

6 <https://portal.apcd.gov.ae/hscodex-classification/?controller=home>

Suggested comparative matrix of classification assistance technologies

	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.
Examples	EU Combined Nomenclature Search Engine, Canada Tariff Finder, US Schedule B Search Engine.	ASYCUDA, World Bank Trade Information Toolkit, eTrade Hubs, ITC Global Trade Helpdesk.	Enjaz.

Conclusion

Classification assistance tools are already important features of modern Customs management systems, trade information portals and electronic single windows. The various technologies being offered in these systems are, indeed, so different that it hardly seems fair to compare them. Yet, for a Customs authority, the technology that is chosen will be consequential.

In order to be of real, practical value for the average trader, HS classification assistance tools have to be intuitive, reliable and available.

Of the three main technologies used to assist HS classification, expert systems best meet the often conflicting objectives of both trade facilitation and Customs compliance. Facilitation is achieved through a more satisfying user experience – users describe their goods in everyday commercial language; the tools are intelligent and user-friendly;

they always resolve to a single HS code; and they leave the ultimate control for classification in the hands of the user. Compliance is attained consistently and deterministically through the automatic consideration and application of complex rules and legal notes.

Still, tools of any kind, including but not limited to artificial intelligence-enabled tools, are just that – tools. They are designed to assist classification and not to perform classification. So, it stands to reason that the results they produce will only be as good as the people who use them. A chainsaw in one person's hand will result in the building of a beautiful log cabin and in another person's a tree landing on house.

More information

randy.rotchin@avalara.com

About the author

Randy Rotchin is Director of Business Development & Global Trade at Avalara, which recently acquired 3CE Technologies.

Digital Vetting: using multi-dimensional data and AI-driven selectivity models to enhance enforcement



By David Smason, VP of Business Development, Publican Trade Solutions

Harnessing the Data Revolution

Global digitalization is leading to an exponential increase in the volume and production of data, which, in turn, is matched by a growing demand for data from all parts of society. This phenomenon is known as the Data Revolution.

Within the global economic ecosystem, it seems that we are close to the peak. Infinite bytes of information swirl within a never-ending cyclone of inputs and outputs generated by billions of public and private entities.

For Customs administrations, the Data Revolution presents unprecedented challenges and opportunities. To capture the extraordinary value of this new reality, they need to harness next generation multi-dimensional data ecosystems for AI-driven fraud modelling. This will allow them to fully leverage the power of what is known as Digital Vetting. All these terms are explained below.

Selectivity paradox

Improving selectivity is a core tenet of enforcement capabilities, and as such should enjoy the same level of modernization and innovation as other components of Customs control procedures and processes. However, realistically speaking, selectivity is typically stuck in the Stone Age.

Let's break it down.

In an optimal scenario, predictive analytics uses mathematical modelling tools to understand the future, answering the question: "What is likely to happen?" However, the ability to generate predictions and detect fraud accurately depends on the quality and quantity of the data used. When there is insufficient high-quality data, the models become skewed.

The paradox in practical terms is as follows:

1. Predictive analytical models currently used to support selectivity are primarily created

from flat, one-dimensional data, which limit selectivity criteria to reference information about a single measurable event.

2. As a result, modelling is based primarily on partial data (domestic and historical transactional data).
3. This causes “data skew” which occurs when the analytical models are “static”: i.e. the baseline data change and adapt over time, but the models fail to take into account relevant changes in the data.

The outcome of skewed models for Customs administrations is always negative: either many false positives or minimal fraud detection.

It is important to note that non-domestic transactional and/or seizure data will sometimes be introduced through intra-governmental or private-sector data-sharing agreements; however, this is the exception rather than the rule and is generally not enough to tip the scales.

Examples

The following example shows an import transaction analysis using one-dimensional data.

Transaction: Consignment X is sent to importer Y by shipper Z with a value of \$m and a weight of N.

Assessment model: Are the value, weight and consignment consistent with historical transactions between the parties?

1. Do the parties have an established history of trading with each other?
2. Is the importer a company in good standing?

Adopting one-dimensional analytical techniques such as these severely limits the ability of Customs administrations to adapt selectivity rules for changing market, regulatory, trade or company conditions.

Negative impact

The results of survey activities conducted among dozens of Customs administrations by my company, Publican Trade Solutions, show that 94% of the participants reported significant limitations in their ability to achieve stable predictive analytical models for fraud detection. Meanwhile, 84% reported full reliance on static rule-based risk engines to drive decision-making, with these rules fed largely by one-time tips, specific regulatory changes or historical models.

On average, the surveyed administrations reported that physical inspection was conducted on 34% of all shipments, with only a 2.1% hit rate.

Static rules are proving ineffective at detecting dynamic fraud and are a leading cause of time-consuming inspection cycles and revenue leakage.

Predictive analysis with digital vetting (multi-dimensional data and AI modelling)

To remedy the situation, Customs should use dynamic data that leverage artificial intelligence to model every possible scenario. Such models are designed for a world where each transaction is different and cannot be assessed according to historical patterns. These scenarios consider existing models based on historical and domestic data, alongside rapidly constructed models based on up-to-date data which reflect real-time market, regulatory and trade conditions. In this sense, they are “multi-dimensional” and “predictive”.

The following example shows an import transaction analysis using multi-dimensional data.

Transaction: Consignment X is sent to importer Y by shipper Z with a value of \$m and a weight of N.

Assessment model:

1. Is the value consistent with historical transactions and real-market conditions?
2. Is the weight consistent with historical transactions and advertised manufacturer specifications?
3. Is the consignment consistent with the global business scope, advertised business line and advertised product pricing of the shipper?
4. Does the shipper have a global history of seizures or fraudulent behaviour?
5. Are there any beneficial ownership relationships between the parties?

Such a model leverages multiple inter-dependent data sets, which also consider data on real-time and current conditions.

This methodology is known as “Digital Vetting”, which reflects the fact that assessment models harness all the data available at any given time to vet shipments for fraud – a direct outcome of global digitalization.

Customs should use dynamic data that leverage artificial intelligence to model every possible scenario. Such models are designed for a world where each transaction is different and cannot be assessed according to historical patterns.

Private-sector technology for Digital Vetting

The fact remains that introducing multi-disciplinary, unstructured, varied and highly unstable data from diversified and dispersed sources within an analytical system is difficult. One solution is to use the technologies, platforms and services of private-sector organizations specializing in the construction and implementation of AI models to create deviation indicators and detect patterns indicative of fraud.

Such models are developed by retrieving global data from trade, economic, open and commercial datasets. Once the data are collected and analysed, computational modelling based on artificial intelligence is used to develop and apply globally relevant datasets in order to identify patterns. Data on trade operator relationships and structures, as well as item prices and valuations, are of special importance for Customs.

Because they change over time and location, the data need to be constantly analysed for variances, and fraud indicators need to be adjusted accordingly. Furthermore, scenarios must also be extrapolated from existing data on a continual basis with variances and patterns determined by dynamic inputs from myriad global and localized sources.

The analytical system which is then developed can also ingest data on domestic entities and historical transactions. Once these data are introduced into the AI model, the following elements can be created:

- **Baseline indicators:** definitive entity characteristics (company name, structure, location, business scope, commodity values, etc.).
- **Unique patterns:** definitive relationships between entities (trading patterns, overlapping ownership structures, manufacturing locations, etc.).
- **Exclusive fraud indicators:** definitive identifications of fraudulent behaviour of an entity (historical seizures, sanctioned commercial behaviour, legal judgments, etc.).

Models can be quickly trained to identify designated threat vectors, relevant only to specific countries or regions. This process covers restricted and prohibited items, as well tariff-specific selectivity parameters. National inputs regarding reference pricing and valuation models should also be integrated. For example, country-specific depreciation models for used vehicles, or highly specific commodities, are considered by the analytical models.

Real-world scenarios

The following example shows the assessment of a shipment of office furniture. Key analytical actions include:

- classification through image retrieval and matching
- adjacent tariff assessment
- market value analysis based on thousands of reference inputs from historical, commercial and open-web data
- real weight analysis from automatically retrieved manufacturer/distributor catalogues correlated with historical transactional data

For the assessment of consignments of used vehicles, it is important to be able to determine the model, value and true condition of the car. Key analytical actions include determining the correlation between the declared vehicle identification number (VIN) and the image of the car, the provided documentation, and the declared mileage. An analysis is also carried out digitally to assess any damage or anomalies, the pricing and valuation of the vehicle and the accuracy of the declared title status.

For common goods such as household appliances which are highly prone to fraud and require resource intensive inspections, key digital analytical actions include:

- assessing the scope of the shipper and importer and the goods in which they trade
- analysing the structure and history of the companies involved
- checking for relevant past infractions at the global level
- analysing beneficial ownership structures

Digitally Vetted Transaction 1: Shipment of new office furniture

Multi-Dimensional Assessment of : Commodity Characterization, Classification, Reference Pricing, and Weight

OUTCOME: PASSED



KEY ANALYTICAL ACTIONS

Image Attribution: from Model # + Keyword (Chair)

Classification Attribution: from AI image matching for upholstered chair

Market Value Analysis: Based on 754.9K Reference Inputs from historical, commercial, and open-web data modeled for range

Real Weight Analysis: From automatically retrieved manufacturer/distributor catalogues correlated with historical transactional data



Digitally Vetted Transaction 2: Shipment of a used vehicle

Multi-Dimensional Assessment of: Valuation Statistics, Title and Damage Status

OUTCOME: HIGH-RISK



DETECTED: SALVAGE, CHASSIS DAMAGE, AIRBAG DEPLOYMENT

KEY ANALYTICAL ACTIONS

Image Attribution: from Model # + Keyword (Model + VIN)

VIN Correlation: Letter and Number Recognition from Image of original VIN on engine block

Mileage Correlation: Number recognition from documentation + image of mileage at point of sale and correlation with date-of-sale & ownership history + valuation models

Damage Assessment: Recognition of key damage characteristics which render vehicle unroadworthy

Title Status: Correlation of declared title status with true status of vehicle based on damage models and detail anomalies



Digitally Vetted Transaction 3: Shipment of household appliances

Multi-Dimensional Assessment for Profiling of Chinese Shipper (multi-tiered corporation)

OUTCOME: HIGH-RISK



DETECTED: COUNTERFEITING AND IP INFRINGEMENT OF SAME APPLIANCE MODELS DECLARED IN CURRENT TRANSACTION

KEY ANALYTICAL ACTIONS

Business & Product Scope: Typical Commodities, Valuations & Prices, Descriptions, and Images assessed for regulatory and statistical correlation with current transaction

Capital & Company Structure: Assessed for abnormal capital holdings, events, structures

Beneficial Ownership Structure: Assessed for problematic domestic and international ownership stakes (Tier 1,2,3)

Infraction History: Assessed for domestic and international customs infractions or legal indictments relevant to customs enforcement



Cooperating to build data ecosystems

Analytical tools leveraging multi-dimensional data are fast becoming an integral and irreplaceable component of the Customs data ecosystem. As more global and local data come into play, AI models can be sharpened, and the scenarios developed will become deeper and more accurate.

As the Data Revolution continues to unfold, Customs administrations can solve many challenges by using appropriate technology. Valuing and inspecting cross-border ecommerce shipments can be facilitated, the release of critical goods accelerated, audit structures designed to

be more flexible, origin attribution verified, and AEO application and monitoring made easy.

Bearing all that in mind, there is fertile ground for public/private-sector cooperation. By mutually leveraging their respective capabilities and capital in operational, regulatory, and technological realms, the public and private sectors can create a reliable and high-performing data ecosystem.

More information

david.smason@publican.global

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Expansion of rail freight transportation must go hand in hand with deployment of rail scanner systems

By Kevin Davies, Global Director of Ports and Borders for Smiths Detection



Rail freight transport is expected to grow, alongside the projected growth in global trade, more than threefold to US\$27 trillion in 2030.¹ Two growth factors for rail freight transport's growth are China's ambitious Belt and Road Initiative (BRI) - or Silk Road Economic Belt - which includes transport corridors through landlocked Central Asia along the historical trade routes of the Western Regions, and the European Commission's plans to boost international rail which were announced in 2021.²

Already we see remarkable rail-freight traffic growth on the Silk Road Economic Belt, with more trains and new destinations across Eurasian routes. This is partly a result of the pandemic and an increase in cross-border e-commerce. China-Europe freight trains became vital along the Belt and Road territories when COVID-19 disrupted global air and sea cargo lines.³

In February 2021, 1,048 China-Europe trains were dispatched, which translates as a 144% year-on-year (YOY) increase. The trains carried 100,000 TEUs (twenty-foot equivalent units), up 159% YOY.⁴ Alataw Pass, a major rail port in northwest China's Xinjiang Uygur Autonomous Region, for instance, launched cross-border e-commerce in January 2020. Today, it is China's busiest rail port. Guo San, director of the railway

station's operation and management office, said: "Now we have about 14 freight trains passing through the port every day, with over 110,000 parcels delivered daily on average", their most enthusiastic online shoppers coming from France, Germany and the UK.⁵

The missing piece: security

With increasing rail connectivity across continents, ambitious government infrastructure projects, and freight volume increasing, where does security fit into the increased movement of goods? How do we ensure that our rail freight network supports safe trade?

Congestion (a recent issue in rail freight transport),⁶ organized crime and trafficking are risks which could hinder rail freight network expansion and the increased use of rail transport. This is not to say that rail transport's risks make it less secure than other forms of transport - like air or road - which are subject to threats of their own.

On the contrary, the organized nature of railways has the potential to make rail transport more secure, with the proper security solutions in place. For instance, railways often have standardized, uniform transit schedules and do not share their tracks with members of the public in the way that roads do. They also are not hindered by traffic and

1 https://www.pwc.com/gx/en/transportation-logistics/tl2030/infrastructure/pdf/tl2030_v2_transport-infrastructure.pdf

2 https://ec.europa.eu/commission/commissioners/2019-2024/timmermans/announcements/opening-remarks-press-conference-package-efficient-and-green-mobility-and-social-and-labour-aspects_en

3 <https://www.dhlexpress.be/en/dhl-news/on-the-right-track-china-europe-rails-explosive-growth>

4 <https://www.globaltimes.cn/page/202103/1217717.shtml>

5 <https://www.globaltimes.cn/page/202102/1215687.shtml>

6 <https://www.bloomberg.com/news/articles/2021-05-27/shipping-container-rates-top-10-000-from-asia-to-europe>

(except in extreme circumstances) weather. With the appropriate solutions established, such regular schedules can make it easier to anticipate risks and secure trade along railways and in freight.

Recent tech advancements

In rail transport, high-energy X-ray systems are most often used to screen rail freight and detect threats or anomalies. In recent years, advances in such systems' X-ray source and linear accelerators (known as "linacs", the component subsystems that deliver the X-ray beam) have enabled scanning at much higher speeds while improving image quality and the volume of data that can be captured.

This increased data availability translates into better user interface (UI) tools that, for instance, can enable users to pick out anomalies in 2D images more easily as well as creating a more seamless user experience. These performance improvements allow Customs authorities to screen cargo at much higher speeds without compromising data acquisition. Because of the increased speed of these improved systems, it may now be possible to place high-energy screening systems – previously destined for low-traffic areas of the rail freight journey such as port entries – at areas with higher traffic further up (or down) the track, giving port authorities greater flexibility in how and where they screen. Intelligent automatic detection applications that use artificial intelligence (AI) and machine learning (ML) can also make analysis of data faster and more reliable.

Key challenges in screening

A key challenge is that train scanners need to be customized for each unique rail environment – and there are many. This necessitates experienced teams on the ground with a strong collaborative spirit ready to study each environment and develop appropriate solutions.

For data, like image analysis, to be shared between authorities efficiently, centralized information sharing systems must be in place, such as Data Management Systems (DMS) which have already been deployed at traditional ports and borders. A DMS consists of a powerful and flexible server that stores and manages the data of inspected cargo and associated data relevant to that stream of commerce. It pools and distributes the dataset information according to local (rule-based) customs requirements and enables

centralized image analysis for each connected scanning system via a remote pool of operators, or duplication at the point of inspection for local decision-making. It operates on a highly secured and dedicated IP network, allowing data from all scanning systems to be accessed safely anywhere over a locally provided ICT backbone.

Cybersecurity can also be achieved by deploying edge computing built on the latest containerized modular architecture (as opposed to the monolithic architecture previously used). This modular architecture provides system owners with greater flexibility when it is necessary to debug or change their requirements and functionality, making long-term maintenance easier and less risky.

Final considerations

Ultimately, when deploying security systems for rail freight transportation, customs administrations should take care to consider several elements:

- **The nature of the cargo:** the volume, bulk, and density of the cargo in the stream of commerce transiting the line determines the power needed by the screening system. For example, typical containerized cargo requires 9 MeV linac-based systems to ensure inspection capability. A 6 MeV dual-energy system may suffice if the cargo is less dense.
- **Location of the screening system:** authorities should consider the traffic of the location as well as the radiological protection requirements prescribed by international or local guidelines (compliance with "ICRP 103" – the recommendations of the International Commission on Radiological Protection – should always be required as a minimum).
- **Human resourcing in relation to the rail network:** consideration of the volume of human resources that are both needed and available across the rail transportation system can assist in determining the degree of technological augmentation and automation. AI and ML can support streamlining processes and help reduce human error – identifying which areas of the rail system require the most support is crucial.
- **Centralized image processing facility capabilities:** images and associated metadata can be transmitted off-site to a central facility and stored and analysed there in real time independently of the local site.

A key challenge is that train scanners need to be customized for each unique rail environment – and there are many. This necessitates experienced teams on the ground with a strong collaborative spirit ready to study each environment and develop appropriate solutions.

If we have learned anything from the deployment of such screening systems in the past, it is the importance of being flexible enough to account for the local concept of operations (CONOPS – a document that describes the characteristics of a proposed system from a user’s perspective) and to build in redundancy, particularly for data storage and retrieval. As the total cost of ownership (TCO) increasingly drives procurement decisions, it is also essential to ensure the commitment of the original equipment manufacturer (OEM) to improved software functionality and to upgrade options over time.

In the near and long term, we can expect to see a significant increase in international and regional rail freight. It is not a matter of when, but how infrastructure can be developed and technology implemented for better and more efficient security. This will play a vital role in the successful expansion of rail freight transportation and the growth of resilient supply chains.

More information

www.smithsdetection.com

About the Author

Kevin Davies is the Global Director of Ports & Borders at Smiths Detection. He leads the deployment and execution of strategy, business development, and customer success for the Ports & Borders market with Smiths Detection. He also helps the introduction of new capabilities and solutions in line with Smiths Detection’s goal to provide security, peace of mind and freedom of movement upon which the world depends.



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Hong Kong Customs and DHL Express
Hong Kong employees performing
physical inspections of shipments
suspected of containing IPR
infringing goods

Tackling Customs Compliance in DHL Express

by Sandra Fischer, Asha Menon, Marcelo Godoy Rigobello, Gordon Wright, Global and EU Customs & Regulatory Affairs, DHL Express

E-commerce continues to grow, as well as the number of parcels moving across borders. The challenges to ensure the regulatory compliance of such transactions have been addressed many times in the pages of this magazine. In this article, we would like to provide an overview of DHL Express' approach to ensuring compliance in its network, and propose areas of future cooperation with Customs authorities to tackle non-compliance.

Traditional compliance approach

DHL Express is fully committed to ensuring its clients comply with existing regulations. At the global level, a Customs Compliance Team is working to enable sustainable business growth by providing a compliant and efficient cross-border trade experience to the company's customers through collaboration with regulatory authorities.

Customs compliance is a core element of the company's culture and value proposition to its customers, together with its ethical working remit. For many years, DHL Express has implemented proactive checks in its processes to avoid non-compliant shipments entering its delivery chain. These include:

- Screening of air freight shipments prior to departure of airplanes to ensure they do not pose security-related risks (e.g. X-ray inspections).
- Physical examinations, for example to proactively identify non-declared dangerous goods.
- Screening of consignor and consignee information using data analytics tools to deny services to those infringing regulations in the past.

A new programme

In addition to these proactive checks and to strengthen them, DHL Express is launching the *Global Customs Compliance Programme*, with the goal of further improving shipment integrity and commercial invoice data quality provided by shippers.

Four risks are targeted here:

- **Intellectual Property Rights (IPR) infringement.**
- **Undervaluation.**
- **Misdeclaration of information related to the goods.**
- **Misdeclaration of information related to the shipper and receiver.**

The key theme running through the four risk areas above is data quality. DHL Express proactively continues to engage with its customers to educate and raise awareness of the importance of providing complete and accurate data, and of the fact that non-compliance has serious and tangible consequences.

In addition to educating its customers, DHL Express is also stepping up employee training and enhancing its internal risk management mitigation processes and tools in order to reduce the probability of non-compliant shipments entering the network. The initiatives include:

- Enhancing new account opening measures to avoid on-boarding known offenders.
- Piloting data analytics and machine learning tools to proactively identify and intercept potential non-compliant shipments at origin and departure countries.
- Enhancing shipment booking systems to guide shippers on how to provide complete and accurate goods descriptions.

Exchanging information to protect IPR

One additional area of work where much can be done is related to the exchange of information with public authorities. Such a mechanism exists between DHL Express Hong Kong and Hong Kong

Customs. Both entities work closely, especially on targeting IPR infringing goods, based on a joint Memorandum of Understanding which has been in place since 2015¹. During 2020 and 2021, DHL Express Hong Kong physically intercepted over 28,000 outbound shipments to identify suspected IPR infringing goods, in recognition of which it was presented by the Customs Authority with a WCO Certificate of Merit in 2020. In October 2021, Hong Kong Customs also sent a Letter of Appreciation, praising DHL Express Hong Kong for its anti-smuggling efforts during the third quarter of 2021.

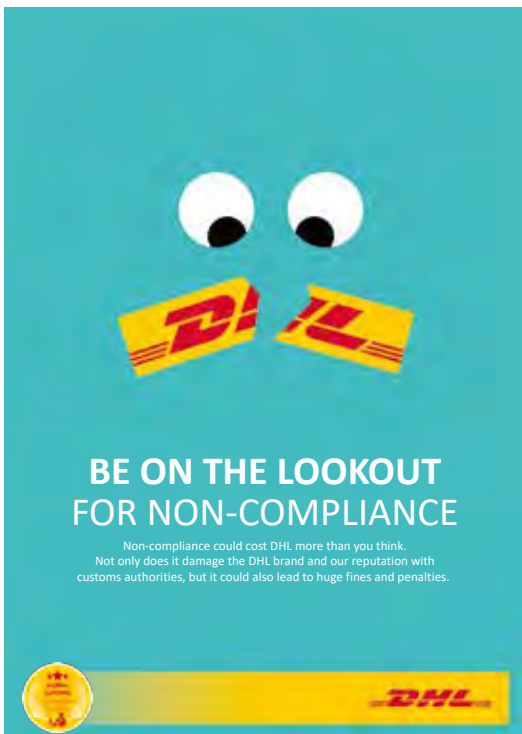
In the IPR area, Customs authorities, together with IPR Holders, could develop and maintain at the national level a central list of IPR infringers. It could be accessible to banks, e-retailers, transport providers and other stakeholders in the supply chain to allow them to deny services to anyone on the list. DHL Express would also use such a list to identify shipments to be inspected and to provide intelligence to Customs authorities, where legally permitted.

Exchanging information to fight undervaluation

Another area where exchange of information between Customs and express couriers could yield results is related to undervaluation in the area of e-commerce. Customs authorities should share intelligence, where legally permitted, on shippers, commodities and trade-lanes which are to be subject to monitoring and scrutiny.

This is especially crucial in countries where all commercial import shipments – regardless of the value – must be declared with a formal Customs declaration. Since the 1 July 2021 Customs declarations are required for all consignment regardless of the value in the European Union. There has been an increase, in some European Union Member States, in the number of requests from Customs for additional documentation when undervaluation is suspected. In order to play its part in combating undervaluation DHL has developed a “Risk Management Profiling Tool” to enable it to detect suspicious shipments that may be undervalued. When shipments are flagged by the Tool, DHL requests further information from its customers before dispatching their shipments. This is done when the shipments are still in the

¹ See article published in the February 2020 edition of the magazine: <https://mag.wcoomd.org/magazine/wco-news-91-february-2020/customs-partners-with-express-carriers-in-hong-kong/>



country of departure. In essence, the new procedure moves the mitigation measures up the supply chain and complement the analysis of the value of the goods done by the Customs administration.

DHL Express would be interested in discussing piloting this tool with Customs administrations.

Conclusion

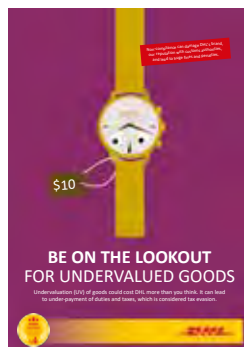
Express operators cannot act as enforcement agencies, but can support them in fighting non-compliant behaviour. One of the prerequisites is that information has to be shared.

DHL Express is committed to fulfilling its legal obligations efficiently and even to going beyond them. This includes:

- Cooperating and providing accurate and timely electronic shipment data.
- Intercepting and handing over physical shipments flagged by Customs authorities.
- Acting against non-compliant shippers flagged by Customs authorities.
- Providing additional support and information on major investigations by Customs authorities (e.g. details on shippers/consignees, where legally permitted).
- Proactively cooperating with Customs authorities.
- Undertaking shipment checks at departure, on both physical goods and shipment data quality.
- Leveraging data analytics/machine learning to proactively identify non-compliance.
- Stopping suspected shipments in the network.
- Closing down accounts of non-compliant shippers and preventing them from re-opening new accounts.

DHL Express calls on Customs administrations to consider providing benefits to express carriers with a good compliance record. Such benefits could include:

- Reduced physical inspections and documentary at destination in recognition of proactive anti-illicit trade measures.
- Streamlined border controls, with reduced requests for the same data at destination.
- Recognition of companies' internal risk assessment of the compliance of a shipment.
- Expansion of AEO programmes to include express operators and tangible benefits to be provided to AEOs.



Examples of internal posters aimed at raising employee awareness of the four risk areas

In addition, it is important that Customs authorities ensure the same level playing field for all logistics service providers, to avoid non-compliant shippers simply switching their illicit trade activities from one provider to another.

DHL Express welcomes any ideas aimed at strengthening cooperation with Customs authorities and other industry players in tackling illicit trade, and we invite you to use the email address below to contact us.

More information
EXPCustoms@dhl.com

Blockchain document transfer: understanding the technology and its uses

by Vjeran Ortynski, Chief Business Development Officer, and Janez Kranjc, PhD, Chief Technology Officer, blockchain solution architect, CargoX

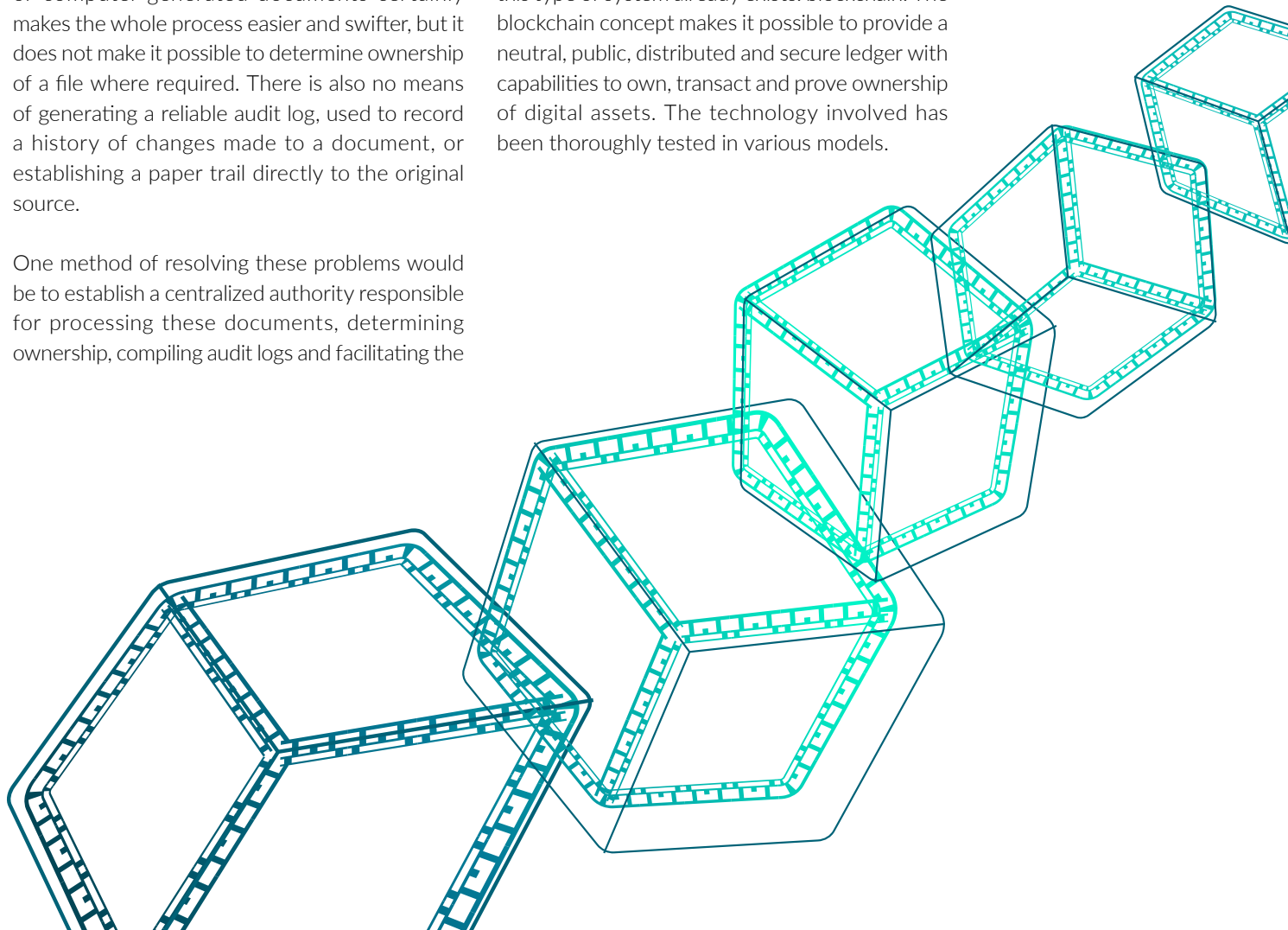
According to research, a single container shipment can generate up to 200 communications, and the administrative cost of processing the accompanying documentation is estimated to be 1520% of the overall cost of transporting the goods. It is therefore essential to find easier, more efficient ways of transferring data and documents, and verifying and archiving documentation. Cutting file and data transfer times down to just a few seconds brings great benefits in reducing congestion at ports and minimizing storage and demurrage costs.

Allowing economic operators to submit scanned or computer-generated documents certainly makes the whole process easier and swifter, but it does not make it possible to determine ownership of a file where required. There is also no means of generating a reliable audit log, used to record a history of changes made to a document, or establishing a paper trail directly to the original source.

One method of resolving these problems would be to establish a centralized authority responsible for processing these documents, determining ownership, compiling audit logs and facilitating the

exchange of files. This role could, for example, be assigned to a neutral service provider that can be trusted to preserve the integrity of documents, transfer ownership properly and securely, and provide equity of service to all parties involved.

However, such a scenario is not always feasible, and a centralized entity would be an easy target for hackers seeking to infiltrate the system with the intention of abusing or disabling it. The alternative would be to build a decentralized system capable of ensuring an authoritative and uninterrupted global document delivery service. Fortunately, the technology needed to provide this type of system already exists: blockchain. The blockchain concept makes it possible to provide a neutral, public, distributed and secure ledger with capabilities to own, transact and prove ownership of digital assets. The technology involved has been thoroughly tested in various models.



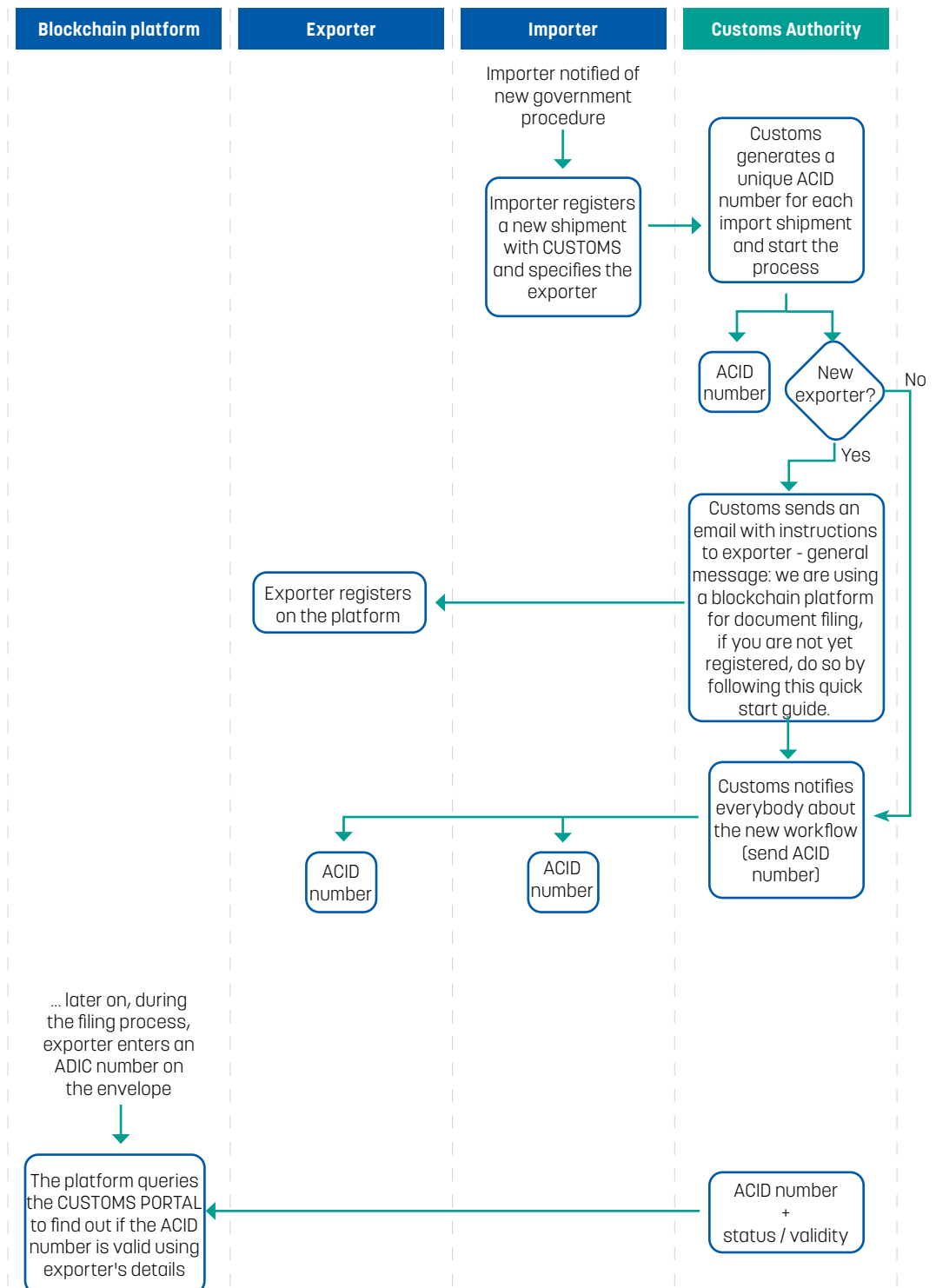
Existing model

Blockchain can help digitize the shipping industry, where ownership, traceability and security are paramount. A current model used by a Customs administration to receive and process advance cargo information declarations (ACID) is as follows:

1. A company selling goods to be imported into country X (the exporter) registers on a platform offering blockchain document transfer (BDT) solutions. Creating an account is quick and free of charge, and, in the process, the exporter is assigned a blockchain key that he will subsequently use for signing documents and transferring them to their recipients. The company is then requested to transfer a "validation" fee (USD 15) from its bank account. The fee payment process enables the system to verify the company's name and address. The second step of the verification process is performed by a highly reputable company that provides commercial data on more than 75,000 companies worldwide. At the end of the process, the exporter receives an ID number that he can use to log into the platform without needing to register again.

2. In country X, the importer is required to register on the Customs management system (e.g. a single window platform) and to report information about any upcoming shipments, for example the HS codes of the goods being shipped and the exporter's details (VAT number, tax number, platform ID number).

Document transfer protocol on our blockchain platform: Issuing an ACID number



3. The Customs management system calls up the platform providing the blockchain document transfer service to verify whether the declared exporter is registered. An initial analysis is performed to determine whether there is a risk of non-compliance. If the shipment is not flagged, the exporter's data are extracted and an ACID number is issued.

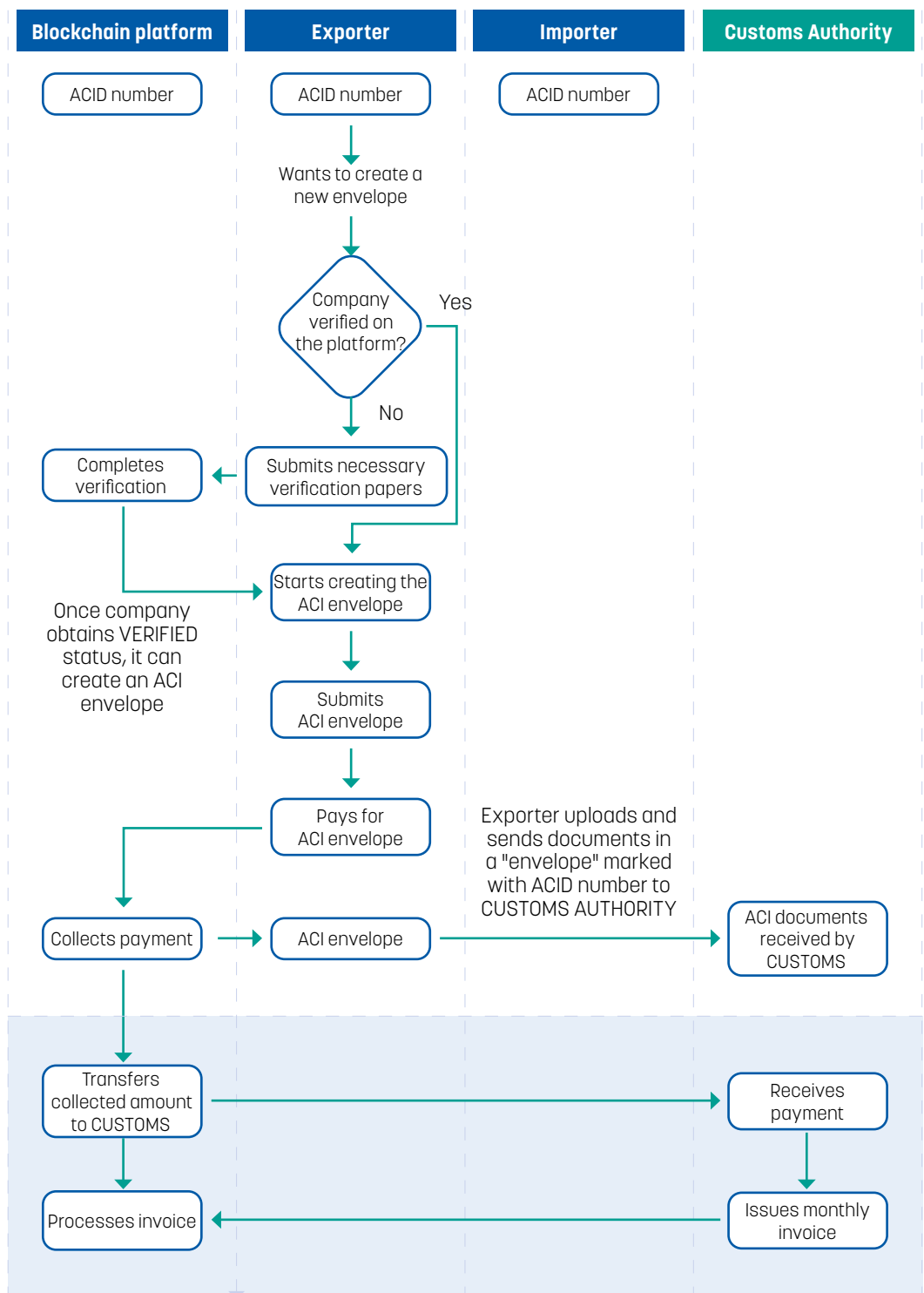
4. The ACID number is then forwarded to both the importer and exporter via registered email and on the blockchain platform.

5. The exporter then logs into the blockchain platform to upload the documents required for clearance – a copy of the bill of lading, invoice (in unstructured PDF and structured XLS format), packing list, certificate of origin and any other documents which might be required by border regulatory agencies. Once uploaded, the documents are securely encrypted and stored in a global distributed storage system where they are assigned a blockchain token. The exporter is provided with a digital ACI envelope bearing the assigned ACID number in which to enclose the documents. He then sends the envelope to the Customs management system of the country of import by signing and

transferring it. This final step can be carried out before the loading of the cargo onto the vessel or during its transportation.

6. Once the ACI envelope has been transferred to the Customs management system, the importer is notified and requested to co-sign the documents received. At this point, the clearance of the shipment can begin.

Document transfer protocol on our blockchain platform: ACI envelope processing



Some blockchain platforms even allow delegation of certain tasks: for example, exporters can delegate the task of creating and sending envelopes to third parties (such as a freight forwarder or Customs broker). The fees for transferring documents are fixed and are much more economical than those for traditional paper document courier services.

About blockchain

At the heart of many blockchain document transfer (BDT) platforms lies the public, neutral blockchain technology known as Ethereum. A blockchain is essentially a database that is distributed between a network of thousands of independent computers around the world, called nodes. It has a number of properties that make it uniquely suited to our purposes:

- Data on the blockchain cannot be deleted or tampered with. Once something has been written to the blockchain, it is there to stay.
- Data may be added to the blockchain only if all the nodes in the network agree to such a transaction.
- All data on the blockchain is publicly accessible – anyone can view and verify any piece of data and its history, including when it was published or modified (unless it is encrypted, in which case only its owners can view it).
- Anyone wishing to add data to the blockchain must sign the data digitally using the blockchain key. In this way, they can easily prove that it was published by them and not by someone else.

Smart contracts

In all systems that store and process data, the actual data are usually just a small part of a much bigger picture. Just as important are the rules that dictate how they should be structured, who has the permission to store them and where, under what conditions, etc.

On the blockchain, a collection of such rules is called a smart contract. This is stored as just another piece of data on the blockchain, and can be thought of as a computer program that has its own memory and runs on the distributed system of nodes that underpins the blockchain network.

Like everything else on the blockchain, smart contracts are transparent and open to public scrutiny. Instead of a situation where users are expected simply to trust that a central authority's processes are fair, valid and secure, the rules encoded in a smart contract can be vetted and verified by anyone. In smart contracts, we now have the basic tools to build a decentralized system for facilitating shipping and trade that combines the benefits of digital and paper documents.

The right tool for the job

Many blockchain-based systems have been developed and are widely used. They mostly differ by:

- The number of nodes: this determines transaction capacity, as well as ensuring that the distributed network meets the highest security standards.
- The type of consensus algorithm used: these are methods that nodes use to achieve data consistency. There are many such methods, the most well-known being proof-of-work and proof-of-stake.
- Their connectivity permission: public and private blockchains. The distinction lies in whether the design of the network is open for anyone to participate (permissionless) or limited only to designated participants (permissioned). Private blockchains are available only to selected participants (and, in some ways, they resemble a closed server system), while public blockchains allow for open access and thus broader, more efficient decentralization.
- The smart contracts used.

The blockchain best suited for the model outlined at the beginning of this article needed to tick several boxes: it needed to support smart contracts that could be written in a programming language, have a sufficient number of nodes to maintain the security of the network and ensure that the transaction fees remained low. We concluded that the Ethereum blockchain would be best suited for the project, as it also supports what are known as "Layer-2 scaling solutions" that remove the burden of high fees and provide high transaction capacity, as well as creating a roadmap for future optimizations.



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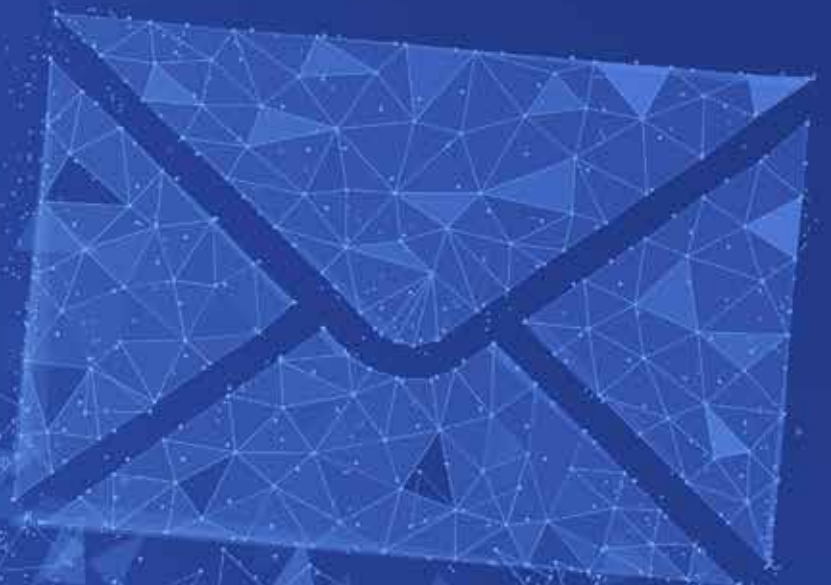
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when they send their
confidential documents

via the CargoX Platform.



Blockchain Document Transfer



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About the documents on the blockchain

Our main goal is to make it possible for companies to transfer documents easily and securely, while ensuring the transparency of such transfers, as well as guaranteeing business confidentiality. As far as we are aware, such transparency does not exist in any other system, at least not one that is both decentralized and independent.

The document transfer process must meet the following requirements:

- Content: we must be able to prove that the content of the documents has not been altered in any way.
- Ownership: we must be able to prove that the documents were sent by the sender and not by someone else impersonating them.
- Audit log: we must be able to produce an indisputable log of each document's journey.

All data shared on the blockchain we described earlier are publicly readable and accessible to everyone, but the content of the documents themselves is not. Rather than publish the content of a document on the blockchain, we calculate its hash and publish it instead. A hash is a mathematical function that converts an input value (i.e. a document) into another compressed value. It is a short string of characters that acts as a digital fingerprint of a document. Calculating the hash of a document is relatively simple, but reconstructing the document from the hash, or constructing a fake document that has the same hash as another document, is practically impossible. Putting the hash of a document on the blockchain proves that the document exists and is genuine without exposing its actual content to the public.

To prove that the documents were provided by the right person, we use a digital signature that is known only to that person and no one else, not even the creators of the platform. When someone publishes data on the blockchain, they sign it with their digital signature. Anyone can verify that the owner of the digital signature published the documents in question, but only the owner can actually sign documents in his or her name. It is the mathematical equivalent of a wax seal – easy to verify, but difficult to forge.

A document's journey from the sender to the recipient is also recorded on the blockchain in the form of an audit log. All this creates the foundations for a system that enables secure and verifiable transfers of documents.

Whereas nowadays the system is being used to transfer documents, in other words digital files resembling paper documents, in the near future these will be replaced by digital data records. In the model described above, Customs currently require exporters to provide invoices in both PDF and XLS (Excel) format. The next step is to obtain structured data in XML or similar format.

Scalability

The most prominent challenge of public blockchain technologies is that their processing capacity is limited, which can cause fluctuations in the volume of transactions they can execute. Generally speaking, they can only process a given number of transactions per second.

But this can be resolved by using multiple compatible public blockchains ("sidechains" and "rollups") and load balancing, the process of distributing network traffic across multiple servers in order to avoid network congestion. This also enables interoperability with other chains in such a way that tokens can be transferred from one chain to another via a bridge contract.

Why there's no need to reinvent the wheel

In theory, anyone with a modicum of knowledge could hash, sign and transfer documents all on their own, using tools freely available on the Internet. However, in practice, this all leaves too much room for error while also requiring a lot of work. Leveraging the blockchain to secure document transactions requires experience. The tool to be developed for this purpose must be easy to use: transferring documents should be no more difficult than sending an email.

Another important aspect is being able to verify the identity of the parties who sign the documents. A robust and exhaustive identity check must be in place to ensure that the companies on the platform really are who they say they are.

Last but not least, blockchain platforms should be improved on an ongoing basis through user feedback. Processes should be regularly reviewed and improved to provide a better user experience.

More information

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CONNECTING TECHNOLOGY *with* TRADE

Webb Fontaine's technology is now more important than ever.

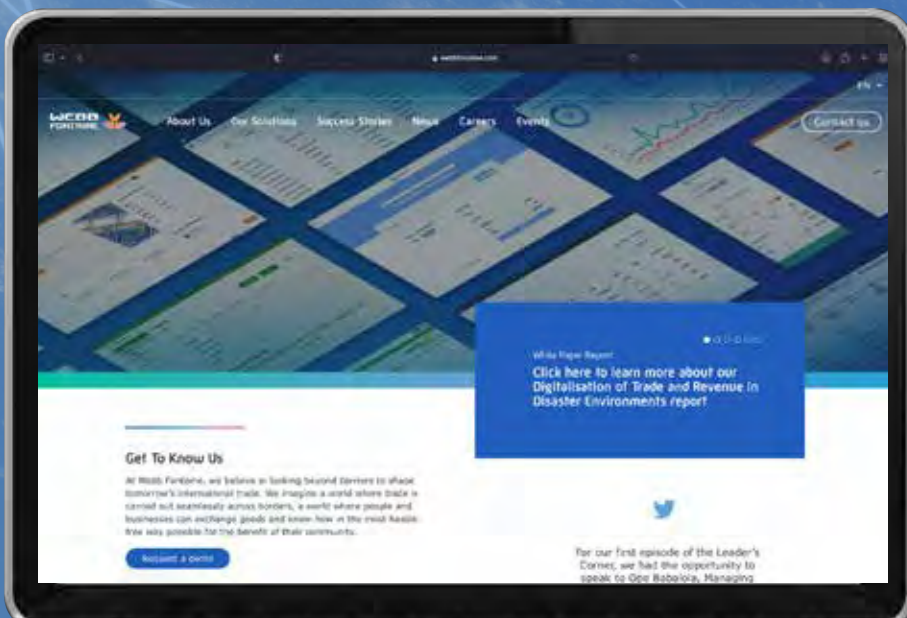
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