Key Trade Documents and Data Elements

Digital standards analysis and recommendations—An integrated framework for digitalising the entire supply chain

In this report

Foreword

The report you have in your hands is the product of thousands of hours of work over 18 months by hundreds of experts, practitioners, and regulators active in supply chains and trade worldwide. It spotlights the ICC Digital Standards Initiative's (ICC DSI) founding mission of developing an integrated, inclusive vision for the achievement of a harmonised, interoperable digital trade ecosystem for a rapidly changing world.

This vision is built on working through the key trade documents that underpin every transaction across global supply chains, public or private, and ensures seamless data flow using core data elements as the connectors.

This work exemplifies the bridges that ICC DSI has built between standards development organisations, industry associations, international businesses, and the finance and service providers all along the supply chain. We have applied our ICC DSI principles throughout this process:

- **Adapt and apply:** Digitalisation primarily is not about developing new or "better" standards, but rather about highlighting the standards that largely already exist, and providing a guide to how the different trade documents (and the shared data that power these documents) work together across every industry and player;

- **Convene and collaborate:** The greatest value comes from collaboration between organisations with a substantive body of work in digital trade, whose individual efforts have not been leveraged by others, and vice versa;

- **Transparency and accessibility:** Every player—from the small business to the multinationals dealing with thousands of transactions daily—would benefit from a simpler, trusted standards baseline for every part of the supply chain, which could then become their on-ramp for getting started with (or scaling) the work of trade digitalisation.

As we now present to you the complete 36 document standards set, the vision has been realised. At the same time, our work is just beginning. For 21 of these documents, our work now turns toward driving adoption across industries globally and amplifying our efforts to share a holistic vision for creating trust in data and for digital trust at scale.

For the rest of the documents, we need to partner to reach the level of simplicity that can enable every company to leverage these documents digitally. In turn, this will enable companies to accelerate toward more efficient and cost-effective trade. As we do so, ICC DSI will be here as your partner to adjust, iterate, and continue to point the way to a more harmonised, interoperable future.

Lastly, let me personally thank every individual who has been a part of this process, formally leading work on behalf of institutions, or informally providing a sounding board or sympathetic ear. We need all your efforts. Thank you, and let's move on together.

Pamela Mar
Managing Director, ICC Digital Standards Initiative

Preface
Gerard Hartsink

The ICC DSI Industry Advisory Board (IAB) started its work in August 2021 with the ambitious aim of establishing a digitalised, harmonised global trade environment. International trade associations and businesses were invited to join the Board to support the ICC DSI programme which benefits all market participants of international supply chains.

The IAB formed a working group to analyse paper and electronic trade documents and data standards used for physical and financial international supply chains. This analysis made clear (1) that some trade processes are still paper-based because of legislative requirements, (2) that increased digitisation is possible for business-to-business (B2B) and business-to-government (B2G) processes, and (3) that all trade documents do have data elements in common, but they may not always be based on the same technical standard.

Today we recognise that no new data standards have to be developed in order to digitalise the trade processes covered by the documents in this report.

Data standards are the technology neutral data connectors of the end-to-end processes of market participant of the international supply chain. It has been made clear that market participants, exporters and importers and their service providers, such as banks and logistical firms, will need to decide which data standards they will support to leverage the technology and realise the benefits of digitalising business processes.

The core data standards of trade documents for the unique identification of businesses are also relevant for market participants, e.g. banks and corporate treasurers, for cross-border payments.

The Committee of Payments and Settlements of the Bank of International Settlements included this unique identification standard of businesses in its report "Harmonised data requirements for enhancing cross-border payments" (October 2023).

This ICC DSI report and its recommendations will contribute to raising awareness of available standards and what industry associations and market participants must do to realise the ICC DSI objectives.

I thank all my IAB colleagues, the experts of the working group and the management and staff of the ICC DSI programme for their contributions for delivering this report.

Gerard Hartsink
Founding Chair, ICC DSI Industry Advisory Board

Preface
Robert Beideman

Trade digitalisation unlocks significant potential for boosting efficiency and visibility across global supply chains and can meaningfully impact the sustainability of business processes. However, despite the promising technological landscape and potential for increased competitiveness, its adoption across physical supply chains has been slower than anticipated.

This report aims to accelerate trade digitalisation efforts around the world by analysing key trade documents and data elements across the entire global supply chain. ICC DSI convened the Key Trade Documents and Data Elements (KTDDE) Working Group to undertake this analysis.

Their findings revealed that less than 200 key data elements are utilised across vital trade documents, with many shared across multiple documents. Notably, the analysis confirmed the suitability of existing standards. Therefore, this report aims to raise awareness of these standards and encourage stakeholders to leverage existing standardisation investments worldwide.

In addition to the final report, a comprehensive trade document analysis and data glossary has been developed. This resource is accessible as an interactive web tool, serving both educational purposes and as a facilitator for applications geared towards advancing supply chain digitalisation.

This report marks a significant milestone in the global trade digitalisation journey and is pertinent to all entities engaged in the production, transportation, or sale of goods worldwide. It also holds value for the ICC Global Customs and Trade Facilitation Commission, alongside governments and regulatory bodies contemplating trade digitalisation legislation.

The publicly available interactive web tool will be regularly updated and global progress toward digitalisation of each key trade document will be tracked.

Thank you to the ICC DSI team, the IAB members, and all the global trade experts who generously contributed their time and expertise to the KTDDE Working Group.

This work matters.

Robert Beideman
Chair, ICC DSI KTDDE Working Group
Vice-Chair, ICC DSI Industry Advisory Board

Executive summary

The digitalisation of global trade and supply chains is a priority for both the public and private sector. For the former, digital trade promises more efficiency, less fraud, expanded trade flows, and opportunity to grow the role for small- and medium-sized enterprises both in their respective economies and internationally. For the private sector, digital trade responds to the need for supply chain efficiency, agility and resilience, coupled with the opportunity presented to drive business competitiveness and expansion by aggregating structured data and turning it into insights and services.

Despite its high prioritisation, there are no widely adopted models for digitalising supply chains: there are many individual initiatives and industry-wide initiatives. Yet, efforts to collectively drive change have not yielded the progress that should be possible, considering the rapidly-maturing and advanced technology landscape.

ICC DSI was founded to address some of these concerns, and the work of the KTDDE Working Group within the ICC DSI IAB has taken a structured approach to trade digitalisation by working through key trade documents and their associated core data elements. By promoting the digitalisation of all supply chain processes, which are represented by key trade documents, ICC DSI has created a framework to 1) digitalise all key trade processes along the supply chain, leveraging existing standards for data; 2) align, share and secure data elements as they move across the supply chain; and 3) pave the way for adoption of a "single source of truth" (data) in the supply chain by finance, sustainability or other sectors to address different service needs across the supply chain.

This final report incorporates the learnings from two prior KTDDE reports—published respectively in March 2023 and November 2023—and completes the KTDDE working group's analysis of all 36 documents in WTO-UNESCAP-UNCITRAL Cross-border Paperless Trade Toolkit. This report presents the individual document analysis for all 36 documents (see Appendix 1 as well as online version hosted on the Cross-Border Paperless Trade Database) and a full set of cross cutting insights and recommendations to support the global community's progress towards a globally interoperable harmonised trade ecosystem.

The recommendations point to meaningful opportunities to accelerate the progress of digitalisation in every country and sector, including:

For the public sector:

- Collaborate with other governments and intergovernmental organisations on regulatory processes and create uniform rules that do not prohibit information sharing across global supply chains

- Encourage and enable trade digitalisation by aligning legal systems with the UNCITRAL Model Law on Electronic Records (MLETR) and showing visible support for the digitalisation of trade documentation, including those used by government border processes

- Align national border processes with globally interoperable standards whenever possible

- Enable the adoption of global digital identity standards, such as the Legal Entity Identifier (LEI), Global Location Number (GLN) or Global Trade Item Number (GTIN), and where national digital identity standards already exist, establish mutual recognition or guarantees of interoperability with global digital identity standards

For the private sector

- Develop and adopt digital infrastructure into corporate operations

- Streamline data exchange through the use of global data standards

- Adopt a "digital first" strategy in building out new initiatives and business services, backed by globally interoperable standards as recommended herein

- Examine opportunities for financial institutions to digitalise trade finance processes that draw on data already existing within the supply chain, in order to drive efficiency and expand trade finance to those currently underserved

I   Introduction

a. Overview of the KTDDE Working Group

The KTDDE Working Group was formed by the ICC DSI IAB to develop a coherent, inclusive framework for digitalising global trade and supply chains, by working through a known set of key trade documents and the data elements used within them. By bringing together the contributions of standards developers, regulators, United Nations agencies and industry users across horizontal and vertical supply chains, this framework offers a pathway towards globally aligned, interoperable trade ecosystems, which is the common objective of all parties involved in this work.

The working group released the results of its first set of work covering seven key trade documents in March 2023 and a second set of 14 documents in November 2023. This report now includes the recommendations and analyses from those earlier reports (as well as 15 additional documents) and represents the full deliverables of the work on KTDDE. Of the original list of 39 documents in the Cross-Border Paperless Trade Toolkit released by WTO, UNCITRAL and UNESCAP, the group has seen fit to combine analyses of some documents, as they were seen as duplicative. Thus, this report substantially covers all the key trade documents in use across international supply chains today.

It is important to note that the working group membership evolved over the course of our work—with members recruited based on their expertise on the trade documents and processes under examination in each phase of the work. A handful of organisations have been represented throughout the process—including UNECE-UN/CEFACT, the WCO, GS1 and ISO. Collectively, the KTDDE work has brought together expertise from close to 100 individuals covering global supply chains and representing diverse functions. A full list of the individuals and organisations who have served in the working group can be found in Appendix 2.

b. Purpose and scope of the report

This report presents the results of analysis of the complete set of documents, incorporating:

1. A **practical anatomy of each of the 36 key trade documents**, covering their purpose in supply chains, stakeholders involved, core data elements, and prevailing digital standards (or lack thereof). This individual document analysis (contained in Appendix 1) adds the last 15 documents to the already published 21 documents in the KTDDE process, all of which can also be found online in the searchable Cross-Border Paperless Trade (CBPT) Database.

2. A **concise overview of all 36 documents**, highlighting **where each document stands in the digitalisation journey**, as well as an outline of the remaining challenges and forward-looking recommendations. This content is intended to help practitioners enhance interoperability, streamline data practices, foster regulatory collaboration, and advocate for a digital-first approach in trade.

3. **Aggregated insights and cross-cutting recommendations, intended to support and accelerate the process of harmonisation and digitalisation** across all processes, documents and data they represent.

Integral to our analysis is the online Key Trade Data Glossary, housed within the Cross-Border Paperless Trade (CBPT) Database, a collaboration between UNESCAP and ICC DSI. This glossary plays a critical role in identifying the core functions and features of each document, as well as identifying shareable and interoperable data elements from the same documents. Its interactive nature allows for an extensive review of key trade data definitions and standards, offering stakeholders a detailed and nuanced understanding of the key data elements and their use within of the trade documents that leverage them.

It is important to note that the intent of the glossary is to conceptually highlight key data elements that are used between the documents, not to create a complete data dictionary that could be used to generate comprehensive electronic messages. The main reference used for developing this data glossary is the United Nations Trade Data Element Directory (UNTDED), also known as ISO 7372.

Other standards have been considered and cross-referenced against the UNTDED. However, the working group didn't identify any major differences that might create an obstacle to digitalisation. These other standards include the following:

- **UN/CEFACT controlled vocabulary**

- **Universal Business Language (UBL) from OASIS, also known as ISO/IEC 19845**

- **Swift Standards MT**

- **World Customs Organization (WCO) Data Model**

- **Global Supply Chain Finance Forum (GSCFF) Glossary**

II Aggregated analysis and recommendations

a. Pathways towards digitalisation

It is frequently said that 'only' 1% or 2% of global trade is digitalised. The KTDDE analysis shows that, across global supply chains and the key trade documents that power them, there is a fair amount of standardisation of electronic and digital versions of key trade documents. Additionally, some digital documentary processes are already seeing meaningfully adoption by industry. Collectively the group has found:

Of the 36 documents analysed,

- **21 already have standardised electronic versions.** While there are instances of multiple electronic versions of documents, these versions show a great deal of semantic and technical interoperability, meaning that multiple versions of documents should not preclude their alignment across systems, platforms and databases. For these documents, the message should be: Full speed ahead for adoption.

- **6 document have multiple standards** of electronic representation, where these standards do not exhibit signs of semantic or technical interoperability at either a document or data level. While workarounds might exist, the real need is for standards development organisations to partner to drive interoperability.

- **9 documents are in early stages of standards development,** meaning the bulk of the work on standardisation must still be done.

Of course, standardisation of electronic documentation is necessary for digitalisation of trade processes to occur, but it alone is not sufficient to drive action across industries and global supply chains. What else must occur?

Four foundational factors are needed to drive digitalisation and interoperability of data sharing along the international supply chain. They are:

1. **Standardisation of electronic documentation** (as noted above). This considers the development, relevance and applicability of digital standards. Typically, momentum in this area only develops after widespread recognition of the need for digitalisation and collaboration between stakeholders to ensure the fit and applicability of standards.

2. **Legislative and regulatory support:** Several trade documents have a regulatory or compliance function and/or must "pass" regulatory tests, whether at a border or elsewhere. In these cases, industry needs assurance that an electronic standard passes such regulatory tests; ideally and practically, regulators may partner with industry to drive the digitalisation of the process.

3. **Industry convergence and engagement:** Engagement of key users of the digitalised process is essential to educate and drive adoption of needed standards. This is particularly true for documents that do not have a regulatory component and where digitalisation is "voluntary". The individual business case for adoption must be made so that the entire trade community may benefit.

4. **Adoption at scale** where digitalisation takes place across national borders. In some cases, this may take place even before full legislative support or recognition.

The above factors should not be seen as a linear sequence of support and momentum-building events. In some cases, document processes may not require legislative or regulatory support, though it is often helpful for public sector officials to support these processes. Importantly, it is unlikely that digitalisation will occur at scale without widespread engagement of all relevant stakeholders. Industry associations and standards development organisations will continue to be key to these efforts.

Below are the various documents categorised.

Standardised	Standards exist, but without interoperability	Early-stage standardisation
1. Commercial Invoice 2. Bill of Lading 3. Sea Waybill 4. Ship's Delivery Order 5. Air Waybill 6. Sea Cargo Manifest 7. Air Cargo Manifest 8. Rail Consignment Note 9. Consignment Security Declaration 10. Non-preferential Certificates of Origin 11. Customs Declaration 12. CODEX Generic Model Official Certificate 13. Phytosanitary certificate 14. CITES permit/ certificate 15. ATA Carnet 16. TIR Carnet 17. Transit Accompanying Document 18. Administrative Documents used in the Excise Movement Control System 19. Payment Confirmation 20. Bill of Exchange 21. Promissory Note	1. Purchase Order 2. Shipper's Letter of Instruction 3. Packing List 4. Certificate of Inspection for Organic Products 5. Advanced Ruling Application 6. Letter of Credit	1. Road Consignment Note 2. Cargo Insurance Document 3. Warehouse Receipt 4. International Veterinary Certificate 5. Dangerous Goods Declaration 6. Customs Bond 7. Export/ Import License for agricultural products 8. Excise Guarantee 9. Preferential Certificates of Origin

Figure 1: Where does each Key Trade document stand?
Source: ICC DSI, Key Trade Documents and Data Elements, 2024

b. Cross-cutting recommendations

Taken collectively, the working group's analysis of 36 documents reveals a need for holistic, cross-sectoral approaches to digitalisation that consistently consider the needs and capabilities of all stakeholders. Overarching considerations include:

- A diversity of standards, while not materially obstructive to trade flows, may create confusion due to ambiguous data definitions. This is especially relevant to newcomers to trade and SMEs who may be less equipped to navigate the complexity or who may be uncertain about which standard to apply.

- Gaps in standardisation, particularly for documents like Insurance Certificates, impede universal acceptance and integration into digital systems. Such gaps create an opportunity for intermediaries who are engaged in arbitrage, which can raise costs across supply chains and, ultimately, for consumers and other downstream trading partners.

- There is a tangible progression toward digital-first approaches in many sectors, yet awareness and adoption vary greatly between communities and regions. With a more collective understanding of the progress made by different stakeholders combined with a more holistic view of the data handled by each party, supply chain stakeholders have a better chance of coordinated action towards digitalisation for the benefit of all.

In other words, there is good work on digitalisation across global supply chains but overall stakeholder coordination is lacking. A less siloed, and more community-driven approach would help to accelerate digitalisation. These insights point to strategic areas where collaborative efforts can yield significant improvements in the efficiency, security, and interoperability of global trade processes. These strategic areas include:

1. **Digital infrastructure:** Exporters, importers, financial institutions, and logistics service providers should actively participate in developing and using digital platforms or exchange protocols that are compatible with multiple major standards and are designed for intentional interoperability.

2. **Streamlining data exchange with global data standards:** All trade actors, including regulatory bodies, should adopt best practices for Key Data Elements as outlined in the Key Trade Data Glossary. This principled approach to leveraging standardisation can help to ensure the exchange of uniform data elements across documents and would benefit from leveraging standardised identifiers for subjects and objects, enhancing the accuracy and reliability of global trade data.

3. **Addressing digital identity challenges:** Promote the use of globally-unique, interoperable identifiers for legal entities, locations, functions and objects of trade,[1] aligning with standards like ISO 17442 and ISO/IEC 15459, as well as the ISO Technical Report ISO/TR 6039:2023, and collaborate with identity registrars to establish verifiability and trust.

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1   Examples of globally-unique, interoperable identifiers include the Legal Entity Identifier (LEI, ISO 17442) and its digital counterpart—the vLEI as well as Global Location Numbers (GLN) for identifying locations, Global Trade Item Numbers (GTIN) for trade items, Serial Shipping Container Codes (SSCC) for logistic units, and Global Individual Asset Identifiers (GIAI) for assets.

4. **Regulatory collaboration and uniform rules for digital information sharing:** Governments and regulatory bodies are encouraged to collaborate to identify and establish forward-thinking regulations that bolster digital trade. These regulations should focus on secure, verifiable transactions and interoperable frameworks for digital information sharing. These frameworks should facilitate easy authentication processes and include mechanisms for tracking the status of goods across various checkpoints. Such an approach would create a seamless interface between different regulatory environments,[2] fostering a more cohesive global digital trade ecosystem and would lower barriers to entry for all market participants.

5. **Digital-first strategy and ecosystem-wide engagement:** In advocating a digital-first orientation, it is crucial to consider the varying maturity levels across markets, especially focusing on the integration needs of smaller businesses. Stakeholders should actively support initiatives that promote trusted, scalable decentralised data exchange, pivotal for transitioning to a data-centric trade ecosystem. Such initiatives should be backed by high-level sponsorship and a community dedicated to digital advocacy, and include efforts to enhance web vocabularies while ensuring global interoperability and efficient digital exchanges.

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2   Governments are a key stakeholder in international trade, developing policies and regulations of various natures—economic, safety, security, financial, trade law, and more. UN entities serve as forums for states to harmonise policies and regulations across these diverse subjects so that traders of all scales benefit from a more seamless experience through appropriately globalised regulatory frameworks. In addition to states, the UN General Assembly and UN specialised agencies engage organisations such as the International Chamber of Commerce, the institutional representative of more than 45 million companies in over 170 countries, for business input and expertise.

c. Overview of individual documents' standardisation, digitalisation and adoption

This section presents the individual analyses of 36 documents analysed, with a focus on their relative levels of standardisation, digitalisation and adoption.

We present the documents according to the [Buy-Ship-Pay Model from UN/CEFACT](#):

A—Commercial Processes   BUY
Purchase Order
Commercial Invoice

B—Transport Processes
Shipper's Letter of Instructions
Packing List
Bill of Lading
Sea Waybill
Ship's Delivery Order
Air Waybill
Sea Cargo Manifest
Air Cargo Manifest
Rail Consignment (CIM) Note
Road Consignment (CMR) Note
Cargo Insurance Document
Warehouse Receipt
Dangerous Goods Declaration
Consignment Security Declaration

C—Border and Regulatory Processes   SHIP
Export/import licence for agricultural products
Non-preferential Certificate of Origin
Preferential Certificate of Origin
Customs Declaration
CODEX Generic Model Official Certificate
Phytosanitary certificate
International Veterinary Certificate
CITES permit/certificate
Certificate of Inspection for Organic Products
Customs Bond
ATA Carnet
TIR Carnet
Transit Accompanying Document
Advance Ruling Application
Excise Guarantee
Administrative Documents used in the Excise Movement Control System

D—Financial Processes   PAY
Letter of Credit
Payment Confirmation
Bill of Exchange
Promissory Note

Figure 2: Key trade documents in the context of the Buy-Ship-Pay Model
Source: ICC DSI, Key Trade Documents and Data Elements, 2024

A—Commercial processes

1. Purchase Order

The Purchase Order is at an intermediate stage of digitalisation, with significant use of electronic formats but varying adoption rates and standards.

With nearly 200,000 companies worldwide utilising GS1 EANCOM and XML standards, there is notable adoption of digital formats. However, the adoption rate is likely below 50%. A variety of standards, including UN/CEFACT, UBL Format, GS1 EDI, and ANSI X.12 850, are used, indicating a shift towards digitalisation but also highlighting the lack of a unified approach. The EU directive and specific national requirements (like in Italy) demonstrate legal recognition of electronic purchase orders, but these vary regionally.

The presence of different technical representations (XML, EDIFACT) underscores the need for semantic interoperability to ensure consistent data understanding and processing.

Going forward, recommendations include:

- **Promote semantic interoperability:** Encourage the adoption of interoperable web vocabularies and data standards that ensure consistent interpretation and processing of purchase order data across different systems and regions.

- **Progress technical representations:** Work towards harmonising the various technical formats (XML, EDIFACT), leveraging interoperable data models and a common description of the process to simplify implementation.

- **Enhance knowledge dissemination:** Increase efforts in educating and training businesses on the benefits and practices of digital ordering (especially SMEs).

- **Leverage master data alignment:** Utilise platforms like GS1 GDSN to ensure accurate and effective procurement processes, enhancing the efficacy of digital purchase orders.

2. Commercial Invoice

The Commercial Invoice is in the intermediate to advanced stage of digitalisation, marked by the widespread adoption of e-Invoicing platforms and digital standards globally. Platforms like E-Futura, Factura Electronica, and Tradeshift, coupled with extensive cross-border payments on the SWIFT network, showcase significant digital usage. While various standards such as UN/CEFACT and ISO/IEC 19845:2015 (UBL) are in use, it's essential to recognise that differences in standards often lie in syntax (EDIFACT, XML, X.12, CII, etc.) and not in semantics. The semantics of ISO/IEC 19845 (UBL) are largely identical or compatible with those of UN/CEFACT, highlighting semantic interoperability. Therefore, the presence of multiple standards does not necessarily impede digitalisation, provided they maintain and continue to strengthen semantic interoperability into the future.

Market fragmentation, primarily due to the disparate deployment of the same standards across different networks and countries, remains a significant challenge in the digitalisation of the Commercial Invoice. Legal frameworks for e-invoicing vary internationally, influencing the adoption and implementation of these standards. National mandates for e-invoicing are driven by tax regulatory compliance and may require different invoice exchange models (like post-audit, clearance, and real-time reporting), which influences the methods, formats, and pace of adoption. Going forward, recommendations include:

- **Alignment of standards:** Foster collaborative efforts among governments, solution providers and Standards development organisations to support the rollout of e-invoicing mandates with an emphasis on interoperability frameworks of policies, open standards, and prescriptive guidelines to reduce market fragmentation.

- **Enhance government regulations:** Encourage governments, especially outside the EU, to mandate e-invoicing and broaden the mandate to include issuing invoices in a structured, electronic format, in addition to strengthening receiving capabilities. The mandates need to be focused more on embedding compliance as part of everyday economic activity with an emphasis on improving business performance and, therefore, encouraging participation in the digital economy.

- **Addressing digital identity challenges:** Promote the use of globally-unique, interoperable identifiers for legal entities, locations, functions and objects of trade, aligning with standards like ISO 17442[3] and ISO/IEC 15459[4] and collaborate with identity registrars to establish verifiability and trust.

B—Transport processes

3. Shipper's Letter of Instruction

The Shipper's Letter of Instruction (SLI) or Export Cargo Shipping Instruction , is at an intermediate stage of digitalisation. Its usage is common in practice, but it lacks a universally-mandated standard or format especially through email in various formats (PDF, DOC, plain text). This leads to varying levels of digital adoption. The existence of standards like FIATA's "FIATA Forwarders Instructions" (FFI) and plans for digital alignment with the [UN/CEFACT Multi-Modal Transport Reference Data Model (MMT-RDM)](#) indicate movement towards digitalisation. The lack of legal requirements for the issuance of SLIs suggests that its adoption and format are driven more by commercial needs rather than regulatory compliance.

Going forward, recommendations include:

- **Develop and promote industry-wide standards:** Work towards establishing a universal digital standard for SLIs, potentially aligned with international frameworks like UN/CEFACT MMT-RDM.

- **Enhance education and awareness:** Increase educational efforts to inform shippers about the benefits of using digital SLIs, focusing on reduced paperwork, quicker processing, and improved accuracy.

- **Leverage specialised platforms:** Encourage the use and awareness of specialised digital platforms in industries like Grain and Coffee trading, which have successful adoption rates, to serve as models for other sectors.

- **Facilitate easier transition to digital formats:** Simplify the transition process for shippers moving from traditional to digital formats, potentially through the development of user-friendly templates or conversion tools.

4. Packing List

The Packing List is at an intermediate stage of digitalisation, primarily used in business-to-business (B2B) transactions with varied levels of digital adoption. The absence of specific usage numbers and the indication that any platform can be used for B2B data exchange suggest a flexible but undefined level of digital adoption. The lack of private or public legal requirements for the B2B document indicates its usage is more driven by industry needs rather than regulatory compliance. The use of detailed and standardised data elements aligned to the [UN/CEFACT Buy-Ship-Pay Reference Data Model (BSP-RDM)](#) shows an advanced understanding of the document's requirements in a digital format.

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3   The G20 roadmap for enhancing cross-border payments recommends establishing unique identifiers for entities involved in cross-border payments. Current progress reporting and links to related FSB publications are available here: https://www.fsb.org/2023/10/g20-roadmap-for-enhancing-cross-border-payments-consolidated-progress-report-for-2023/

4   ISO/IEC 15459 is a series of international standards that specify unique identifiers for items in supply chains. These identifiers are designed to ensure global uniqueness and interoperability and support efficient supply chain management. These standards cover various aspects of identification, enhancing traceability, efficiency, and interoperability.

Going forward, recommendations include:

- **Promote global standards adoption:** Encourage broader industry adoption of standardised data models like UN/CEFACT BSP-RDM to enhance consistency and interoperability in B2B transactions, as well as the use of ISO15459 for identification of trade items contained within packing lists.

- **Develop specific digital platforms:** Although any platform can be used, developing specific digital platforms or tools tailored to the Packing List could streamline processes and improve efficiency.

- **Increase data transparency:** Facilitate the sharing of best practices and increase transparency about the usage and benefits of digital Packing Lists, particularly for SMEs.

- **Integration with other supply chain documents:** Work towards seamless integration of the Packing List with other key supply chain documents to enhance the overall efficiency of logistics and transport processes.

5. Bill of Lading

The Bill of Lading (House Bill of Lading and Master Bill of Lading) is at an intermediate stage of digitalisation. While the standards and data elements have converged with key industry stakeholders (BIMCO, DCSA, FIATA) aligning their standards with the UN/CEFACT MMT-RDM, its adoption at scale is still limited due to interoperability issues and an uncertain legal landscape, as well as resistance to change and established business practices.

Going forward, recommendations include:

- **Promote legal recognition:** Advocate for broader legal recognition of electronic BLs in more jurisdictions to enhance their commercial viability.

- **Enhance interoperability:** Work towards improving interoperability across different platform providers using international data standards.

- **Increase stakeholder collaboration:** Encourage ongoing collaboration among BIMCO, DCSA, SWIFT, FIATA, and other stakeholders to standardise and promote the use of electronic BLs and encourage mutual integration of their data elements.

- **Educate industry players:** Raise awareness about the benefits of electronic BLs and the progress made in terms of standards and platform alignment, leveraging resources provided by the FIT Alliance.

6. Sea Waybill

The Sea Waybill has seen substantial growth in usage, with 60% of containerised Bills of Lading now being Sea Waybills. Standards from BIMCO, DCSA, and FIATA have been mapped to UN/CEFACT MMT-RDM. Growing trust among trade partners and freight forwarders has increased adoption, except in countries with legislative restrictions.

Going forward, recommendations include:

- **Promote digital adoption in restricted countries:** Work towards legislative changes in countries like Brazil.

- **Increase awareness and trust:** Continue building trust among stakeholders to further encourage digital adoption.

7. Ship's Delivery Order

The Ship's Delivery Order is predominantly digital, with widespread electronic transmission via email in PDF format. Estimated 45 million delivery orders are issued annually.

Going forward, recommendations include:

- **Standardise digital formats:** Promote the use of standard digital formats like COREOR to enhance efficiency.

- **Streamline processes:** Simplify digital processes and encourage wider use of efficient electronic data interchange systems.

8. Air Waybill

The Air Waybill is in an advanced stage of digitalisation. This is evidenced by the high adoption rate of electronic Air Waybills (e-AWBs) and the ongoing transition to the IATA ONE Record standard. The legal framework, established by the United Nations' International Civil Aviation Organization (ICAO) through its Convention for the Unification of Certain Rules for International Carriage by Air (Montreal Convention of 1999) supports the use of e-AWBs. Industry implementation is usually determined by IATA resolutions and initiatives like its IATA ONE Record initiative and the use of IATA Cargo-XML messaging further demonstrate a commitment to digital standardisation. The processing of e-AWBs through Cargo Community Systems (CCS) and the integration of e-AWBs in the UN/CEFACT Multi-Modal Transport Reference Data Model (MMT-RDM) show advanced platform usage.

Going forward, recommendations include:

- **Promote ONE record adoption:** Continue to advocate for the adoption of the ONE Record standard, aiming for full implementation by 2026. This should include education and support for stakeholders transitioning from older formats and include guarantee on integrity and ethics as per IATA Digitalisation Leadership Charter.

- **Enhance interoperability:** Work towards further integration of the AWB data model with other transport and logistics systems, ensuring seamless data exchange across the supply chain.

- **Global standardisation:** Encourage harmonisation of standards for both international and domestic air transport, including alignment with postal freight regulations under the Universal Postal Union (UPU) where applicable.

- **Encourage collaboration with stakeholders** and promote inclusive governance in line with IATA Digitalisation Leadership Charter.

9. Sea Cargo Manifest

The Sea Cargo Manifest is largely digitalised, with most major ports transmitting and accepting documents electronically. UN/EDIFACT formats CUSCAR and CUSDEC are primary digital standards used in various data exchange platforms integrated with ERP software.

Going forward, recommendations include:

- **Further standardisation:** Encourage adoption of unified digital standards globally.

- **Enhance platform interoperability:** Develop platforms that are more user-friendly and compatible across stakeholders.

10. Air Cargo Manifest

The Air Cargo Manifest is at an advanced stage of digitalisation. This is evidenced by the adoption of various electronic data interchange (EDI) systems and the move towards data-centric standards like the IATA ONE Record. The manifest's importance in compliance with international trade laws, customs regulations, and safety and security measures underscores its critical role in air transport. The move towards standardisation, as guided by IATA and ICAO regulations, further supports its digitalisation progress.

However, variations in cargo specifics and customs rules across countries suggest that the journey towards complete digital harmonisation is ongoing.

Going forward, recommendations include:

- **Enhance global standardisation:** Focus on harmonising cargo descriptions and customs-related data across different nations to ensure consistency in the application of the WCO Data Model.

- **Promote the ONE record initiative:** Encourage wider adoption of IATA's ONE Record initiative to create a more unified and efficient system for data sharing in air transport.

- **Facilitate API integration:** Advance the use of APIs for data exchange between airlines and their partners, aiming for industry-wide API standards.

- **Address regions with less advanced infrastructure:** Develop strategies to support regions lagging in digital infrastructure, possibly through targeted training and resource allocation.

11. Rail Consignment (CIM) Note

The Rail Consignment Note is in at an intermediate stage of digitalisation, with the CIM UR providing legal basis for electronic notes but limited adoption in international rail transport. The note consists of multiple printouts for various stakeholders, indicating a complexity that might hinder digital adoption. The latest edition of the CIM Consignment Note Manual recommends both paper and electronic notes.

Going forward, recommendations include:

- **Promote electronic adoption:** Encourage the exclusive use of electronic notes in international rail transport especially national customs authorities, building on existing digitalisation trends.

- **Streamline standards:** Develop and promote more streamlined and unified digital standards across OTIF (Intergovernmental Organisation for International Carriage by Rail) Member States.

- **Educational initiatives:** Increase awareness and training for stakeholders about the benefits and use of electronic consignment notes. Facilitate closer involvement and exchanges between national customs authorities to improve customs authorities' readiness to support electronic data exchange between countries.

12. Road Consignment (CMR) Note

The Road Consignment Note is gradually moving towards digitalisation, with the e-CMR protocol and increasing adoption of digital formats. The UNECE Geneva 1956 CMR convention and the 2008 e-CMR Protocol addition provide a solid regulatory foundation for the e-CMR so that the digital document has the same value as the paper equivalent in business relationships between the commercial partners. UN/CEFACT developed a business requirements specification, core component e-CMR message structure and XML message standard. Increase in digital adoption can be expected through harmonised regulations for data sharing with government authorities and by a standardised digital recording of consignment handovers.

Going forward, recommendations include:

- **Harmonise regulations:** Work towards harmonising regulations for sharing transport information with authorities, particularly with the EU eFTI regulation coming into effect by the end of 2026.

- **Standardise digital processes:** Focus on standardising digital recording of consignment handovers and proof of delivery, enhancing the e-CMR's efficiency and adoption between supply partners.

- **Enhance platform integration:** Encourage the use of digital platforms that facilitate B2B and B2G data exchange, ensuring interoperability with existing systems.

- **Reflect business reality:** Respect the specificities of the different supply chain actors and their practical realities, and develop inclusive digital processes that facilitate rather than hinder trade.

13. Cargo Insurance Document

Cargo Insurance Documents are at an early stage of digitalisation. They are primarily issued in PDF or paper format, with limited structured data exchange and a scarcity of specialised platforms. They adhere to international practices and are referenced by ICC UCP and INCOTERMS, although there is no specific international convention governing their content. Historical EDI standards (IFTMCA) introduced in the 1990s have seen limited use. The 2022 introduction of a data standard by CIDA suggests a move towards modernisation.

Going forward, recommendations include:

- **Develop specialised platforms:** Encourage the creation and use of platforms specifically designed for cargo insurance data, such as TradeWaltz in Japan.

- **Promote structured data standards:** Advocate for the broader adoption of the CIDA data standard to facilitate structured data exchange.

- **Integrate with other trade documents:** As digitalisation of related documents like commercial invoices and bills of lading progresses, align cargo insurance documents to ensure compatibility and ease of use.

- **Educate stakeholders:** Increase awareness among shippers, consignees, and insurers about the benefits of digital cargo insurance documents.

14. Warehouse Receipt

Warehouse Receipts are in the early stages of digitalisation, with potential for future development. They are widely used in the commodity and agriculture markets, but it is challenging to estimate the exact number of WRs in circulation. Governed by national laws, with the FIATA Warehouse Receipt (FWR) being a standard document at the national/territorial level. The FWR is globally accepted and adapted by each member country based on Standard Trading Conditions. Current issuance is mainly paper based, though some electronic formats exist.

Going forward, recommendations include:

- **Promote legal and regulatory development:** Advocate for the development of legal frameworks supporting digital WRs, especially in developing countries.

- **Encourage electronic issuance:** Support initiatives for electronic issuance of WRs, either directly from Transportation Management Systems (TMS) or through common platforms.

- **Raise awareness and marketability:** Increase awareness among trade actors and financial companies about the benefits of digital WRs, particularly for use in commodity futures.

15. Dangerous Goods Declaration

Dangerous Goods Declaration (DGD) is moving towards digital adaptation, particularly in air transport, as seen in initiatives like IATA e-DGD. However, the current diversity of dangerous goods forms across different modes of transport adds to the complexity of the transition. Current guidelines for carriage of dangerous goods by road, rail and inland waterways allow electronic data exchange, but don't clearly define a digital equivalence to paper documentation. This gap in clear multimodal documentation guidelines leads to duplications and inefficiencies in multimodal transport. Aligning with models like the UN Recommendations on the Transport of Dangerous Goods: Model Regulations and ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air (TIs) could simplify processes, as well as improve safety and security information sharing across the supply chain. Increased digitalisation by regulatory authorities, conformance to emerging standards, and initiatives like the European Commission's implementation of eFTI, using the UN/CEFACT MMT-RDM, are essential for broader digital adoption. This approach, combined with emerging standards like verifiable credentials, can enhance DGD's digital transition into the future.

Going forward, recommendations include:

- **Promote multimodal documentation integration:** Advocate for the inclusion of a multimodal solution for DGD in standards like IATA's Dangerous Goods Regulations, to reduce documentation duplication and enable seamless multimodal transport.

- **Enhance regulatory digitalisation:** Support regulatory authorities in their digital transformation efforts, particularly in adopting platforms like Cargo Community Systems (CCS) for efficient DGD sharing.

- **Align with global standards:** Recognise the existing alignment between the *UN Model Regulations* and ICAO TIs and build upon it by working towards aligning additional DGD standards with them to streamline processes and ensure safety and security-critical information is consistently shared across all transport modes.

- **Advance digital initiatives:** Encourage the adoption of emerging standards and technologies, like verifiable credentials, to further digitalise DGD processes and improve interoperability.

- **Educational and collaborative efforts:** Intensify training and awareness campaigns for stakeholders on the importance and benefits of digital DGD, and foster industry-wide collaboration to establish and adopt these digital standards in a multimodal environment.

16. Consignment Security Declaration

The Consignment Security Declaration (CSD), developed by ICAO, plays a vital role in ensuring air cargo and mail security throughout the supply chain. It serves as a tool for verifying the regulatory requirement that cargo has undergone appropriate security controls and been issued with a security status. The declaration, detailed in the ICAO Aviation Security Manual, can be electronic or hard copy, and States implement it through national regulations.

Recent efforts have seen IATA develop the electronic CSD (eCSD) to standardise cargo information internationally, aligning with ICAO guidance and EU regulations. Collaboration between ICAO and UNECE has further integrated the CSD into the MMT RDM, enhancing interoperability between digital standards.

Going forward, recommendations include:

- **Government engagement:** Governments should be informed about the importance of fully digitising supply chain processes, including CSD, and take clear actions to encourage this transformation.

- **Global standards and collaboration:** Industry stakeholders should collaborate based on alignment with global standards, including IATA's eCSD and UN/CEFACT's MMT RDM to meet the diverse needs of all parties.

- **Platform development and utilisation:** Encourage the development and implementation of advanced data exchange platforms, like CCS, for efficient and secure sharing of CSDs.

- **Stakeholder education and alignment:** Increase awareness among all supply chain actors about the benefits and processes of digital CSDs.

C—Border and regulatory processes

17. Export/import licence for agricultural products

The export/import license for agricultural products is in the early stages of digitalisation. Its multiple roles in regulatory compliance, market access, and trade monitoring suggest significant potential for digital efficiency gains. However, the absence of standardised digital protocols and diverse national legal frameworks illustrate the early phase of digitalisation in this space.

Going forward, recommendations include:

- **Harmonisation of legal frameworks:** Globally, different countries have varied legal frameworks governing export/import licenses. A key step towards digitalisation is to take steps toward harmonisation of these legal frameworks. This includes aligning the legal requirements for issuing, using, and verifying these licenses across different jurisdictions.

- **Development of universal standards:** Establishing universal standards for the format, content, and security features of digital export/import licenses—including establishing identity verification mechanisms- is crucial. These standards should be developed in collaboration with international organisations like the World Trade Organization (WTO) and the Food and Agriculture Organization (FAO) to ensure global applicability and recognition.

- **Integration with existing digital systems:** Digital export/import licenses should be integrated with existing digital trade platforms and systems. This includes connecting them with customs management systems, electronic single windows, and other trade facilitation platforms to streamline processes and enhance efficiency.

- **Stakeholder engagement and capacity building:** Engaging all relevant stakeholders, including governments, exporters, importers, and regulatory bodies, is essential. This involves raising awareness about the benefits of digital licenses and building the capacity of these stakeholders to use and manage digital systems effectively.

18. Non-preferential Certificate of Origin

Non-preferential Certificates of Origin (CoO) are at an intermediate stage of digitalisation. While the layout is mostly standardised, the transition to digital formats is ongoing, with varying degrees of adoption across different countries. Challenges include raising awareness of digitalisation and varying requirements set by national governments.

Going forward, recommendations include:

- **Promote digital adoption:** Encourage the adoption of digital procedures for issuing and attesting CoOs, in line with ICC guidance.

- **Standardise data elements:** Work towards further standardising key data elements and definitions globally to ensure interoperability.

- **Increase awareness:** Standards development organisations and chambers of commerce should actively promote awareness about digital CoOs and their benefits.

- **Facilitate government cooperation:** Engage with national governments to streamline and harmonise their additional requirements for CoOs.

19. Preferential Certificate of Origin

The digitalisation of Preferential Certificates of Origin (PCoO) faces challenges due to the complex legal framework of Free Trade Agreements (FTAs), differing standards, and the trend towards self-certification. There are around 400 FTAs globally, each with its own specificities.

Going forward, recommendations include:

- **Legal framework:** Address the challenge of amending old FTA texts to accommodate digital documents, possibly streamlining the process.

- **Standardisation:** Work towards harmonising PCoO standards across various FTAs to simplify digitalisation efforts.

20. Customs Declaration

Customs/Goods Declarations are highly digitalised, with most declarations submitted electronically. The standardisation of data elements and processes is well established under the framework of the [WCO Data Model](). The WCO Data Model is platform agnostic, allowing customs administrations flexibility in data exchange protocols.

Going forward, recommendations include:

- **Further enhance data exchange protocols:** While the WCO Data Model provides a solid foundation, continue to refine and enhance data exchange protocols for even greater efficiency and accuracy in automated customs systems.

- **Promote global standardisation:** Encourage countries that are lagging in digital adoption to align with the WCO Data Model and implement electronic Customs/Goods Declaration systems.

- **Educate stakeholders:** Increase awareness and training among various actors (declarants, exporters, importers) in the use of digital customs declaration systems.

- **Integrate with other digital trade systems:** Work towards seamless integration of customs declaration systems with other digital trade platforms for a more cohesive global trade ecosystem and enabling the reuse of trade documents/data such as commercial invoice, packing list or bill of lading to build up Customs data requirements.

21. CODEX Generic Model Official Certificate

Food products certificates are a legal requirement in international food trade for the attestation of food safety and fair-trade practices. So far, there is limited use of certificates that are electronically issued and exchanged. While a rough estimate of the number of documents issued globally is not specified, food products certificates are used in both electronic and paper formats, guided by the CODEX Guidelines for design, production, issuance, and use of generic official certificates and aligned with the UN/CEFACT Electronic SPS Certificate (eCert) and WCO Data Model. The reference data model of the CODEX Generic Model Official Certificate is a technical tool to assist competent authorities or certifying bodies in implementing paperless exchanges of food products certificates.

Going forward, recommendations include:

- **Enhance paperless certificate exchange support:** Develop and promote data exchange concepts that can support the digital exchanges and verification of food products certificates in a single window environment.

- **Advocate for digital adoption:** Encourage the use of paperless food products certificates by educating stakeholders about their benefits in terms of security, reliability, and compliance.

- **Use of codification:** Assess possibilities for harmonisation of requirements through codification.

- **International cooperation:** Collaborate between SPS international organisations, IPPC, and WOAH to promote the harmonisation of standards and practices for paperless exchange of food products certificates in a single window environment.

22. Phytosanitary certificate

The use of ePhyto electronic phytosanitary certificates for international trade in products of plant and forest origin, propagation material and seeds is a legal requirement under the International Plant Protection Convention (IPPC) to ensure that exported products meet plant health and food safety requirements. It is expected that in 2024 countries will continue to join the electronic exchange, seeking 100% paperless phytosanitary certification.

Going forward, recommendations include:

- **Improve processing systems:** Enhance the efficiency of commercial and health management through better data reception and processing systems.

- **Refine messaging systems:** Improve the messaging systems for the exchange of certificates to optimise management and usability. Explore all the practical applications of the electronic certificate and implement use procedures to solve problems that currently arise with the use of paper, such as in Transit and Re-export, among others.

- **Collaborative alignment of data models:** WCO and IPPC should collaboratively address interoperability through their respective data models to facilitate the effective use of electronic phytosanitary certificates globally.

- **Capacity development:** Invest in training and resources for authorities to effectively manage digital certificates.

- **Enhance feedback systems:** Implement feedback mechanisms to evaluate usage, collect user demands, and facilitate ongoing enhancements of the electronic tool.

23. International Veterinary Certificate

The use of veterinary certificates for international trade in live animals, hatching eggs, products of animal origin, and more has become a legal requirement to ensure that animal health requirements are fulfilled by those exporting these commodities. The International Veterinary Certificates reference data modelling process (with a focus on the available model certificates for different terrestrial commodities) is expected to begin in 2024. Regarding health certificates for live aquatic animals and products of aquatic animal origin, work on reference data models is also scheduled for 2024.

Going forward, recommendations include:

- **Enhance paperless certificate exchange support:** Develop and promote data exchange concepts that can support the digital exchanges and verification of animal health certificates in a single window environment.

- **Standardisation:** Commence work as planned in 2024 to standardise data modelling for veterinary certificates and aquatic health certificates.

- **Standardise data elements:** Align the animal health certificate models with the WCO Data Model to facilitate interoperability.

- **Capacity building:** Ensure that authorities are well-equipped with the necessary knowledge and resources to effectively manage digital certificates.

24. CITES Permit/Certificate

The CITES Permits or Certificates process has made significant progress towards digitalisation with the introduction of the CITES electronic Permit system. The CITES electronic Permit system covers various functions such as application, issuance, border control, and statistics generation. The electronic CITES permit/certificate data model, which enables B2G and G2B data exchanges, is based on UN/CEFACT Buy-Ship-Pay Reference Data Model (Version 22A) and WCO Data Model version 3.11.

Going forward, recommendations include:

- **Interoperability:** Ensure that the ePermitting systems are interoperable nationally (like National Single Windows) and internationally (like other ePermitting system) to facilitate seamless data exchange.

- **Capacity building:** Invest in capacity-building and resources within Management Authorities to effectively implement and manage ePermitting systems.

- **Collaboration:** Foster greater collaboration among CITES Management Authorities and Customs or border control authorities to streamline processes.

25. Certificate of Inspection for Organic Products

The CIO is mandatory for certifying organic products, ensuring compliance with specific organic standards of importing and exporting countries. The CIO is transitioning towards digitalisation, with both paper and digital forms currently in use. Various countries are utilising digital platforms such as TRACES in the EU and Tracenet in India for issuing these certificates, indicating a move towards standardisation and digital adoption. However, each is linked to specific organic standards of various countries, including the US NOP, EU Regulation, JAS, India NSOP, Canadian Organic Standards, and China's National Organic Standard.

Going forward, recommendations include:

- **Promote harmonisation of standards:** Advocate for global harmonisation of organic standards, aligning with organisations like IFOAM to facilitate easier adoption of digital CIOs.

- **Enhance digital platforms:** Encourage the development and use of digital platforms for issuing and verifying CIOs, which will make the process more efficient and accessible.

- **Educate stakeholders:** Raise awareness among exporters, importers, and certification agencies about the benefits of digital CIOs.

- **Facilitate international cooperation:** Work with international bodies and national authorities to streamline and harmonise the CIO process across different jurisdictions.

26. Customs Bond

Customs Bonds primarily cover the financial obligation of the payment of import duties, taxes, and other obligations set out under Customs regulations. Customs Bonds are at an early stage of digitalisation. They are subject to diverse regulations worldwide and lack a universal template, with each country's customs authority typically providing bond language. No standardised document for Customs Bonds exists in the surety market, except for the ATA Carnet (see next section) for temporary import and export tax exemptions. The digital adoption of Customs Bonds relies on the development of a comprehensive digital repository of bond wordings and standardisation of requirements.

Going forward, recommendations include:

- **Develop a digital repository:** Establish a comprehensive digital repository for bond wordings to facilitate accurate documentation issuance across jurisdictions.

- **Promote standardisation:** Advocate for the standardisation of Customs Bond requirements across jurisdictions to enhance consistency in digital adoption.

- **Support digital initiatives:** Encourage and support initiatives like the e-ATA Carnet Project to further the digitalisation of Customs Bonds.

- **Educate stakeholders:** Increase awareness among declarants, importers, and insurers about the benefits and processes of digital Customs Bonds.

27. ATA Carnet

The ATA Carnet is in an advanced stage of digitalisation. Its system infrastructure facilitates efficient management of temporary duty-free and tax-free importation of goods. The system includes a centralised database, system interfaces, user interfaces, and integrated national systems. Governed by the ICC ATA Carnet System and linked with national systems, the ATA Carnet is a trade facilitation tool whose digital adoption depends on the support of WCO/TAXUD and national customs of affiliated countries.

Going forward, recommendations include:

- **Strengthen international cooperation:** Enhance collaboration with WCO/TAXUD and national customs authorities to promote the digital ATA Carnet system.

- **Expand digital infrastructure:** Continue developing and deploying system proxies globally to increase connection speed and reliability.

- **Promote system adoption and integration:** Encourage countries to integrate their national issuing and claims systems with the ATA Carnet Core for streamlined processing.

- **Educate stakeholders:** Raise awareness among users (businesses and representatives) and customs officials about the benefits and functionalities of the digital ATA Carnet system.

- **Enhance user accessibility:** Ensure the ATA Carnet App and Customs Portal are user-friendly and accessible, facilitating easy border crossings and efficient management of carnets.

28. TIR Carnet

The TIR Carnet, under the TIR Convention, 1975, is in a moderately advanced stage of digitalisation. It operates under a well-established international system, allowing goods to travel across borders with minimal customs interference.

The TIR procedure includes various interconnecting systems, such as the issuance and distribution system, the TIR transport system, and the return and repository system. The primary challenge lies in the extensive legal, technical, and regulatory environment associated with the TIR system. Ongoing efforts to promote the ratification of the TIR Convention and introduce the TIR system globally are crucial.

Going forward, recommendations include:

- **Global promotion and expansion:** Continue efforts to encourage more countries to adopt the TIR system, particularly in regions like Asia, Africa, Latin America, and the Middle East.

- **Enhance ICT integration:** Further integrate information and communication technology to improve the efficiency of the TIR procedure. Encourage the use of systems like the IRU TIR Electronic Pre-Declaration System (TIR-EPD) for advance data submission.

- **Develop eTIR system:** Progress the eTIR project to ensure the secure exchange of data between national customs systems, thereby digitising the entire TIR process.

- **Facilitate international cooperation:** Strengthen collaboration among UNECE, TIR secretariat, and international bodies to promote a unified approach towards the TIR system's digitalisation.

- **Focus on training and education:** Provide training and resources to customs officials and transport operators for a better understanding and utilisation of the TIR system's digital aspects.

29. Transit Accompanying Document

The Transit Accompanying Document (TAD) in Union Transit (UT) and Common Transit—a mandatory document for goods in transit within the EU and in Common Transit countries, typically accompanied by a guarantee letter—is at a high stage of digitalisation. It is predominantly managed electronically through the New Computerised Transit System (NCTS), which is a sophisticated system for handling transit procedures across the EU and Common Transit countries. Paper-based declarations are only allowed during system fallbacks or for private travellers with goods exceeding duty-free allowances.

Going forward, recommendations include:

- **Enhance NCTS capabilities:** Further improve the NCTS platform to handle more complex transit scenarios and integrate with other digital customs systems.

- **Standardise data elements:** Ensure consistency in the data elements required across EU and Common Transit countries to streamline the process.

- **Educate users:** Conduct training sessions for customs brokers and other stakeholders on the efficient use of the NCTS system and the electronic generation of TADs.

- **Expand digital adoption in non-EU countries:** Encourage the adoption of similar digital systems in non-EU Common Transit countries for a seamless transit process.

- **Integrate with TIR:** Explore integration possibilities with the Transports Internationaux Routiers (TIR) system, where applicable, to create a more unified approach to international transit. While the TAD and TIR Carnet serve different regions and purposes, they can be interoperable in scenarios where a transit operation begins or ends in a TIR member country and passes through the EU. In such cases, a TIR Carnet can be used for the international part of the journey, and a TAD for the portion within the EU/Common Transit area.

30. Advance Ruling Application

Advance Ruling Applications are in a transitioning stage towards digitalisation, with several WCO members implementing digital solutions. The application's main purpose is to provide an assessment of classification, origin, or customs value before an import or export transaction. While the exact number of documents issued globally is not specified, the usage of both electronic and paper formats is indicated. The WCO developed Technical Guidelines on Advance Rulings, which outline necessary information for classification, origin, and/or valuation and which specify detailed data elements required for the application, indicating a structured approach to the information. The adoption rate varies, with some WCO members having implemented online application systems.

Going forward, recommendations include:

- **Promote online application systems:** Advocate for the adoption of online application systems across more WCO member countries to streamline the process.

- **Standardise data elements globally:** Work towards global standardisation of data elements and application formats to ensure consistency and ease of use.

- **Educate stakeholders:** Increase awareness among importers, exporters, and producers about the benefits of digital Advance Ruling Applications.

- **Integrate with other digital trade platforms:** Ensure the application process is integrated with other digital trade platforms for efficient data sharing and processing.

31. Excise Guarantee

The Excise Guarantee, essential for securing payment of duties on excisable goods, is in the early stages of digitalisation. Typically issued by exporters/importers to government agencies, and often involving financial institutions, these guarantees are legally mandated in many countries. However, the journey towards digital adoption is at a preliminary phase, lacking unified digital

standards and requiring harmonisation across jurisdictions.

Going forward, recommendations include:

- **Standardisation and harmonisation:** Develop and promote a common digital standard or template for Excise Guarantees that is harmonised across different countries and regions.

- **Regulatory support and legislation:** Engage with government and regulatory bodies to ensure that digital Excise Guarantees are legally recognised and enforceable.

- **Integration with existing systems:** Ensure that the process of issuing and managing Excise Guarantees is integrated with existing digital trade and customs platforms. This includes compatibility with National Single Window systems and other digital customs management tools.

- **Enhanced security measures:** Implement robust security protocols to ensure the authenticity and integrity of digital Excise Guarantees.

- **Awareness and training:** Conduct awareness campaigns and training programmes for stakeholders, including businesses, customs officials, and financial institutions, to encourage the adoption of digital processes and educate them about the benefits and functionalities of digital Excise Guarantees.

32. Administrative documents used in the Excise Movement Control System (ECMS)

The Administrative Documents in the Excise Movement Control System (EMCS) within the EU, including the Electronic Accompanying Document (eAD) and Simplified Accompanying Document (SAD), are at an advanced stage of digitalisation. These legally required documents, integral for tracking and controlling the movement of excise goods, especially under duty suspension, are primarily issued by suppliers or warehouse keepers to government and logistic entities. The EMCS exemplifies a highly digitalised system, enabling electronic

processing, real-time tracking, and efficient excise goods management. Its next level of success will hinge on its integration with business software and the continuous adaptation of its digital functionalities to meet evolving industry needs.

Going forward, recommendations include:

- **Development of APIs:** Develop Application Programming Interfaces (APIs) for integrating the EMCS system with various business software platforms used in the excise goods industry. This will enable automated data exchange and reduce manual processing.

- **Global scaling through regional customisation and pilot programmes:** Adapt and pilot the EMCS model in other regions, tailoring it to meet specific local legal and regulatory requirements where necessary while maintaining its core interoperable functionalities.

D—Financial processes

33. Letter of Credit

The Letter of Credit (LC) is at an intermediate stage of digitalisation. While there have been significant strides in digital transmission, the process still depends heavily on paper-based document checking. As a dominant instrument in international trade finance, the industry is focusing on achieving complete end-to-end digitalisation, especially in digital presentation . The ICC's eUCP rules and Swift's Category 7—Documentary Credits standards provide a solid foundation for digital transactions, but the reliance on paper in the 'document checking stage' shows a gap in full digital adoption. The varied legal requirements across jurisdictions, discrepancy between digital transmission and paper-based verification and the reliance on traditional party identification methods in LC transactions are examples of challenges to full digitalisation of the process.

Going forward, recommendations include:

- **Standardisation of digital exchange:** Promote the adoption of common digital standards, possibly through API integration, to streamline the LC process. Focus on common data formats and authentication protocols using global standard for party identification to enhance trust, security, and efficiency in LC transactions.

- **Regulatory adaptation:** Advocate for regulatory changes that recognise electronic signatures and digital documents in LC transactions to reduce reliance on paper processes.

- **Educate and enhance stakeholder engagement:** Inform and actively encourage all stakeholders, including banks and corporations, about the benefits of a fully digital LC process. The ICC Banking Commission Commercialisation Working Group is at the forefront of this transition, elevating eUCP awareness through resources like the eUCP directory, educational issue briefs and other supporting materials to promote existing rules that support the further digitalisation of the LC process. Additionally, foster collaboration between corporates, carriers, and electronic Bill of Lading (eBL) providers to grow electronic presentation of eBLs while continue to advocate for the adoption of electronic presentations in situations where LCs do not mandate an eBL, as this is already a feasible and advantageous option in the current landscape.

34. Payment Confirmation

Payment Confirmation is at an advanced stage of digitalisation, especially within the framework of the Swift network and the adoption of ISO 20022 as the main standard for financial messaging and the transition from traditional Swift MT messages to MX formats. The availability of various methods for obtaining payment confirmations, including the Swift GPI Tracker, Swift interfaces, and API calls, indicates a robust digital infrastructure. Despite advanced digitalisation of the infrastructure, there are challenges in safeguarding against fraud, such as authorised push payment fraud,

and addressing identity issues in cross-border payments.

Going forward, recommendations include:

- **Enhance security features:** Develop and implement more robust security measures to protect against fraud in payment confirmations.

- **Address identity challenges:** Collaborate with regulators and financial institutions to adopt global standards for identity verification in cross-border payments, potentially through a universal identifier system.

- **Promote ISO 20022 adoption:** Encourage broader adoption of ISO 20022 standards across the financial industry to streamline and secure payment processes.

- **Advance real-time tracking:** Continue to develop and refine real-time tracking systems, like the Swift GPI Tracker, to enhance transparency and efficiency in the payment confirmation process.

35. Bill of Exchange (B/E) and

36. Promissory Note (PN)

Both PNs and B/Es are at an intermediate stage of digitalisation. The primary obstacles to digital adoption have been legal rather than technical. The alignment with the UNCITRAL Model Law in Electronic Transferable Records (MLETR) is anticipated to accelerate the digital adoption of PNs and B/Es. The recent legal amendments, particularly the Electronic Trade Documents Act (ETDA), significantly bolster the move towards electronic formats for these financial instruments. The ITFA Digital Negotiable Instruments (DNI) Initiative's development of an ePU standard aims to fully digitise both B/Es and PNs. A multitude of global platforms deal with PN and B/E type instruments, indicating readiness for digital adoption.

Going forward, recommendations include:

- **Promote legal amendments:** Increase awareness among stakeholders about the implications of the ETDA and similar laws, encouraging the shift toward digital formats.

- **Standardise and harmonise digital formats:** Encourage the adoption of the ePU standard globally for PNs and B/Es, ensuring consistency across platforms and jurisdictions.

- **Enhance platform compatibility and integration:** Develop and upgrade platforms to align with the ePU standard and new legal frameworks, enhancing interoperability and efficiency in handling these documents.

III Understanding the KTDDE through a stakeholder lens

Various stakeholders need to understand the relevant implications of the KTDDE work to their own work. Presentation of the implications 'by stakeholder' is crucial for effective adoption and implementation of digital trade. Below is a detailed summary of how the KTDDE recommendations impact different groups across the global ecosystem of trade, including the specific actions each stakeholder group should consider undertaking into the future.

- **Exporters and importers (sellers and buyers):** As the trade landscape continues to digitalise, commit to implementing globally recognised standards and participate in supply chain digitalisation. Use the Key Trade Data Glossary for data element alignment, leverage standardised identifiers for seamless identification of counterparties and adopt digital trade documents where possible to streamline international transactions.

- **Freight forwarders and logistics service providers:** As momentum gathers behind digital advancements and adoption campaigns like electronic Bills of Lading, adopt paperless processes to enhance efficiency, and use technology to increase their value-added services to the supply chain.

- **Customs and cross-border regulatory authorities:** As roles continue to evolve in enforcing compliance and facilitation of the smooth movement of goods in a digital trade environment, align national and international customs and regulatory processes with international standards like the WCO Data Model to support seamless cross-border trade and collaborate with industry stakeholders.

- **Financial institutions:** As the shift from physical to digital trade documents accelerates, financial institutions should actively work alongside industry bodies like the ICC, BAFT, and ITFA to promote the legal alignment with the UNCITRAL Model Law on Electronic Transferable Records (MLETR). Embracing a digital-first approach in product development, these institutions should explore and leverage the benefits of various digital solutions. These include ITFA's Digital Negotiable Instruments (DNI) Initiative (ePU standard for electronic Payment Undertaking); the ICC Uniform Customs and Practice for Documentary Credits (eUCP), Uniform Rules for Collections (eURC) and Uniform Rules for Digital Trade Transactions (URDTT); and the Digital Ledger Payment Commitment (DLPC) from BAFT. Further support the adoption of the LEI (Legal Entity Identifier) for unambiguous legal entity identification and efficient and inclusive cross-border payments as recommended by the Financial Stability Board[5] and by the World Trade Board.[6]

- **Insurance companies:** As transport documents transition from paper to digital, develop and standardise digital insurance certificates globally to bridge the digital gap between shipping, trade finance and risk mitigation.

- **Standards development organisations:** As vital enablers in creating and maintaining the standards that underpin digital trade, focus on aligning data definitions and cross-referencing common standards for global interoperability.

- **Technology solution providers:** As key innovation drivers to support the digital transformation of trade, develop and offer interoperable tools built on the foundation of standardised semantics and verifiability.

- **Governments and policy makers:** Besides creating, adapting and aligning policies conducive to digital trade, work to facilitate industry's ability to deliver reusable data for government processes. Support initiatives for scalable, decentralised data exchange to evolve towards data-centric systems. Use standards that render collected data in ways that are fully searchable and machine-readable, prioritise the usage of non-proprietary, open-license standards developed and maintained by voluntary consensus-based standards development organisations.

The KTDDE work presents a unique opportunity for all stakeholders across the global commerce landscape to come together and collaborate on the future of digital trade. By understanding their specific roles and actions, each group can effectively contribute to and benefit from the digital transformation of trade processes. Collaborative efforts in adopting these recommendations will lead to a more integrated, efficient, and transparent global trade ecosystem. Stakeholder collaboration will also help us all to move faster into a future that benefits from removal of trade friction and lowering of barriers to entry.

a. How to use the document analysis and Key Trade Data Glossary

Please consider the following 6 points when using the document analysis section of this report (see Appendix 1) and the Key Trade Data Glossary:

i. **Understanding document requirements:** Use the document analysis in Appendix 1 to gain a comprehensive understanding of each key trade document's requirements, including syntax, content, and compliance aspects.

ii. **Identifying Key Data Elements:** Use the Key Trade Data Glossary to recognise and understand the essential data elements in various trade documents, noting the opportunities to leverage uniform data definitions.

iii. **Ensuring consistency and compliance:** Apply insights you gain from both the Document Analysis and the Key Trade Data Glossary to ensure/maintain consistency across documentation, crucial for meeting regulatory standards and ensuring smooth cross-border transactions.

iv. **Facilitating digital transformation:** Employ these tools as a roadmap for digitising trade documents, identifying the data that should be digitalised and a roadmap to maintaining data integrity in digital formats.

v. **Enhancing interoperability:** Utilise the standardised data elements from the glossary to improve interoperability across and between different systems and stakeholders in global trade ecosystems.

vi. **Training and education:** Leverage the document analysis and glossary for organisational training, ensuring team members are well-informed about the latest trade documentation standards and practices.

b. Case studies: Standardised data in action— a spotlight on identifiers

This section of the report presents case studies that highlight the transformative impact of using standardised data elements, especially globally recognised, interoperable identifiers across multiple systems and actors in the ecosystem of global commerce.

Global Trade Item Numbers to enable efficient Customs declarations

The Global Trade Item Number (GTIN) is a globally-unique, interoperable and internationally-recognised identifier for trade items. Used by manufacturers and retailers globally, GTINs enable the efficient identification and tracking of trade items across global supply chains.

From 1 Jan 2022, China Customs has required GTIN (barcodes) as a mandatory field for the import of 6 types of products including infant food, wheaten food, biscuit, beer, imported wines & liquors and cosmetics, to facilitate declaration process. This enables Customs authorities to directly utilise the GTIN data provided by traders, streamlining the identification and processing of goods at the border. By leveraging GTIN, China Customs has achieved a more coherent and efficient approach to customs operations, significantly reducing manual data entry, enhancing the accuracy of information, and expediting clearance processes.

Key outcomes	Challenges overcome
Faster Customs processes and reduced operational costs	Reuse of business data in government systems and processes
Improved goods traceability for compliance and trust	Standardised approach for goods identification from origin to destination, simplifying compliance
Better data quality for informed customs decisionmaking	Stakeholder education and collaborative implementation

Legal Entity Identifiers to facilitate cross-border trust, efficiency and transparency

The Legal Entity Identifier (LEI) is a unique, global identifier for legal entities participating in financial transactions. Each LEI contains information about an entity's ownership structure and thus answers the questions of 'who is who' and 'who owns whom'.

Its use is increasingly seen as a critical component in enhancing transparency and efficiency in the global financial ecosystem—more than 200 financial regulators worldwide have now mandated the LEI across legal entities engaging in capital markets. The system is now expanding beyond regulated use and re-focusing on helping organisations use the LEI to bring greater trust, efficiencies, and transparency to trade of all kinds.

For example, GLEIF has initiated a proof-of-concept (POC) to demonstrate how embedding the sender's LEI within an eSeal—an electronic signature associated with a legal entity—on an e-invoice can bring significant international gains in both interoperability and counterparty trust. The POC enables the authenticity of both the e-invoice document (via the eSeal) and the sending organisation (via their LEI, embedded in the eSeal credential), to be confirmed simultaneously, together with the exact time of the document's sealing.

In the absence of international uniformity in eSeal format or requirements for the recipient of a sealed document to verify the authenticity of the sender's identity beyond national borders, the POC has supported a Japanese consortium programme which aims to develop entity-level trust services that are mutually recognisable by Japanese and European organisations.

Appendix 1—
Key documents analysis

For a comprehensive analysis of the 36 key documents, please download the "KTDDE Key Documents Analysis" from the ICC DSI website: https://www.dsi.iccwbo.org/.

Appendix 2— Acknowledgements

ICC DSI extends its heartfelt thanks to the myriad individuals and organisations whose collective wisdom and diverse perspectives have significantly enriched the KTDDE report.

We are particularly grateful to Robert Beideman, Chair of the KTDDE Working Group, for his visionary guidance, and Henri Barthel, Project Manager, for his unwavering dedication in uniting a broad spectrum of stakeholders.

Our sincere appreciation also goes to the members of the ICC DSI Industry Advisory Board, whose timely feedback and robust support have been instrumental in shaping the report's trajectory.

The content herein represents an aggregation of insights from a wide range of perspectives, including those from public and private sectors, standards development organisations, and end-users across global supply chains. This collaborative effort reflects an evolving, multifaceted perspective rather than any single entity's official stance.

We acknowledge the following sectors and entities for their unique and vital contributions:

- **Intergovernmental agencies:** CITES Secretariat, International Civil Aviation Organization (ICAO), IPPC, the Commonwealth Secretariat, United Nations Economic Commission for Europe (UNECE) with United Nations Centre for Trade Facilitation and Electronic Business (UNECE—UN/CEFACT), Universal Postal Union (UPU), World Customs Organization (WCO), World Bank

- **Cross-border regulatory agencies:** Ministry of Agriculture, Nature & Food Quality (Netherlands), UK Customs

- **Standards development organisations:** Global Legal Entity Identifier Foundation (GLEIF), GS1, International Organization for Standardization (ISO), OASIS

- **Industry and private sector:** BIMCO, DANGOTE, DB CARGO, Digital Container Shipping Association (DCSA), International Federation of Freight Forwarders Associations (FIATA), FINASTRA, Grain and Feed Trade Association (GAFTA), HSBC, International Air Transport Association (IATA), International Credit Insurance & Surety Association (ICISA), INDITEX, International Trade and Forfaiting Association (ITFA), International Union of Marine Insurance (IUMI), LXN Digital, Medipol University, RIO TINTO, Santander, Shipping & Freight Resources, Sucafina, Society for Worldwide Interbank Financial Telecommunication (Swift), Swiss Re, Tokio Marine, T3i Partner, Transmute Industries, Vale

Special recognition is due to the leads of the 36 key trade documents. Their dedication and meticulous efforts to steer the sub-groups have significantly contributed to the report's comprehensiveness.

Document name	Lead / Organisation
Purchase Order	Piergiorgio Licciardello / GS1
Commercial Invoice	Clare Rowley / GLEIF
Shipper's Letter of Instruction	Tej Contractor / FIATA
Packing List	Sue Probert / UNECE—UN/CEFACT
Bill of Lading	Glen Manners / FINASTRA
Sea Waybill	Tej Contractor / FIATA
Ship's Delivery Order	Hariesh Manaadiar / Shipping & Freight Resource
Air Waybill	Henk Mulder / IATA
Sea Cargo Manifest	Hariesh Manaadiar / Shipping & Freight Resource
Air Cargo Manifest	Henk Mulder / IATA
Rail Consignment (CIM) Note	Yekaterina Ryabushko/ DB Cargo
Road Consignment (CMR) Note	Ian Watt / NeXTRADE
Cargo Insurance Document	Grace Mogul/ Swiss Re and Tom Shinya / Tokio Marine
Warehouse Receipt	Tej Contractor / FIATA
Dangerous Goods Declaration	Cortney Robinson / ICAO
Consignment Security Declaration	Cortney Robinson / ICAO
Consignment Security Declaration	Cortney Robinson / ICAO
Export/Import Licence for Agricultural Products	GAFTA
Non-preferential Certificate of Origin	Martin van der Weide / ICC
Preferential Certificate of Origin	Martin van der Weide / ICC
Customs Declaration	Tejo Kusuma / WCO

CODEX Generic Model Official Certificate	Erik Bosker / Ministry of Agriculture, Nature & Food Quality of the Netherlands
Phytosanitary certificate	Erik Bosker/ Ministry of Agriculture, Nature & Food Quality of the Netherlands
International Veterinary Certificate	Erik Bosker/ Ministry of Agriculture, Nature & Food Quality of the Netherlands
CITES Permit/Certificate	Salehin Khan/ CITES
Certificate of Inspection for Organic Products	Parshant Mittal / N/A
Customs Bond	Nils Hoppenworth / ICISA
ATA Carnet	Yuan Chai / ICC
TIR Carnet	Yan Zhang / UNECE
Transit Accompanying Document	Yurdagül Meral / Medipol University
Advance Ruling Application	Tejo Kusuma / WCO
Excise Guarantee and Administrative Documents used in the Excise Movement Control System (ECMS)	Salamat Ali / The Commonwealth Secretariat, with inputs from UK Customs
Letter of Credit	Bhupendra Jagdev / HSBC
Payment Confirmation	Clare Rowley / GLEIF
Bill of Exchange and Promissory Note	Daniel Cotti / T3i Partners

ICC DSI remains dedicated to fostering collaboration and growing capacity in digital trade. The collective wisdom of all contributors, including those unmentioned but equally valued, is pivotal to our mission. We extend our deepest gratitude to each individual and organisation involved, recognising that their contributions are at the heart of this significant endeavour.

ICC

The International Chamber of Commerce (ICC) is the institutional representative of more than 45 million companies in over 170 countries. ICC's core mission is to make business work for everyone, every day, everywhere. Through a unique mix of advocacy, solutions and standard setting, we promote international trade, responsible business conduct and a global approach to regulation, in addition to providing market-leading dispute resolution services. Our members include many of the world's leading companies, SMEs, business associations and local chambers of commerce.

ICC Digital Standards Initiative

The ICC Digital Standards Initiative (DSI) aims to accelerate the development of a globally harmonised, digitised trade environment, as a key enabler of dynamic, sustainable, inclusive growth. We engage the public sector to progress regulatory and institutional reform, and mobilise the private sector on adoption, implementation and capacity building.