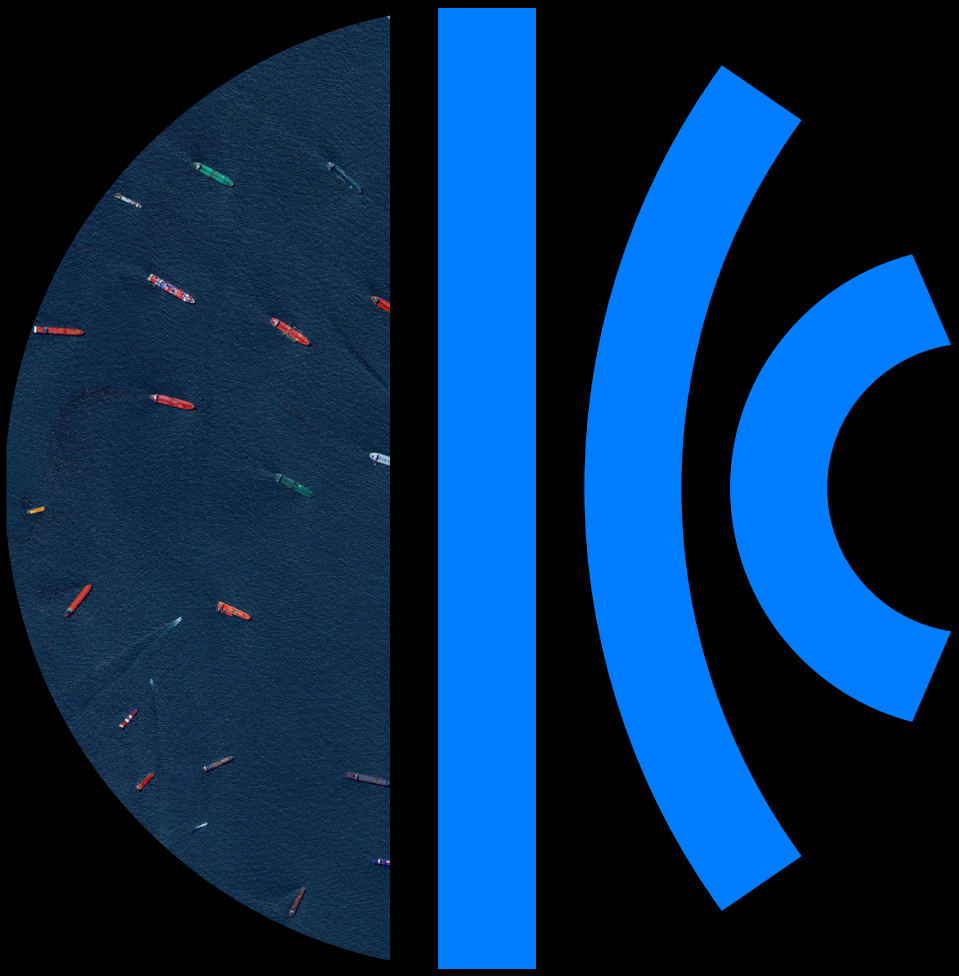
ICC Digital Standards Initiative

Key Trade Documents and Data Elements

Digital standards analysis and recommendations



March 2023

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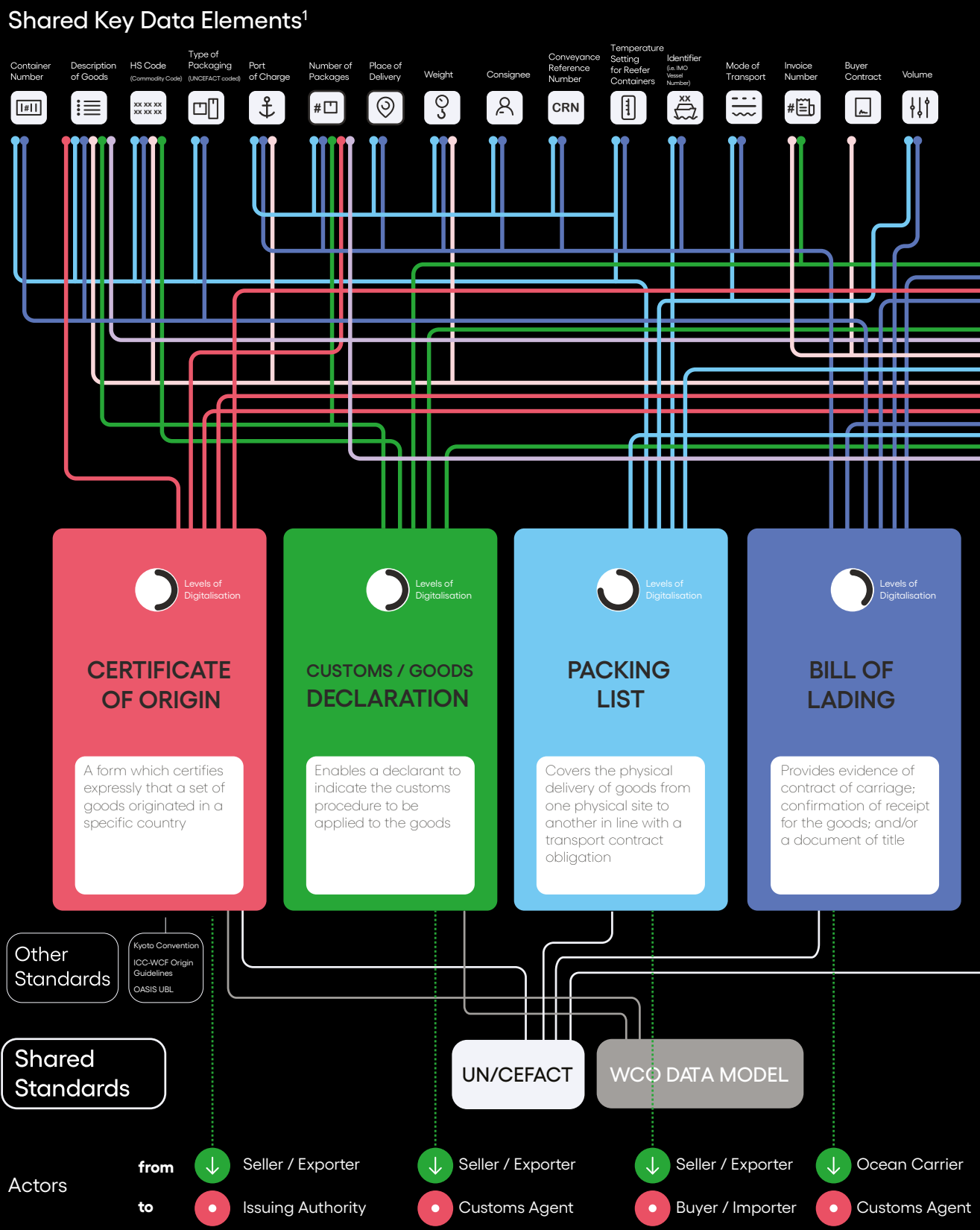
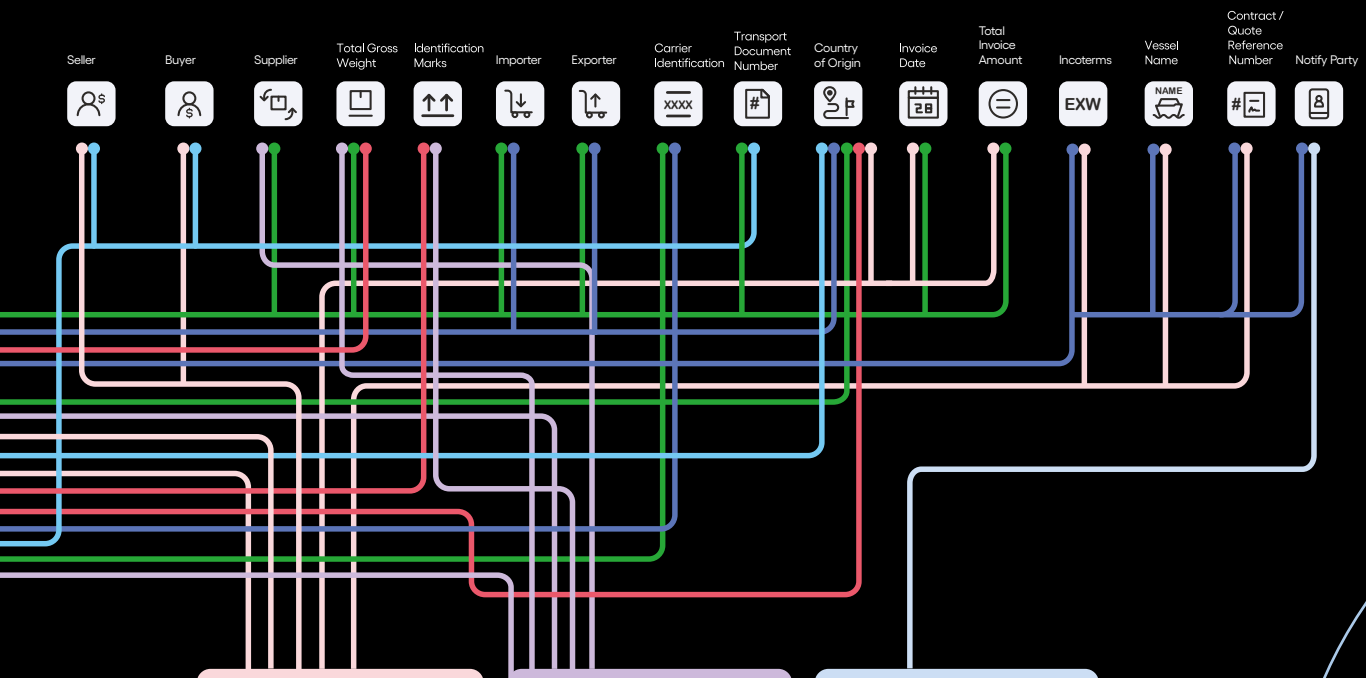
Entity Relationship Map



1. Note: these data elements are not the only ones appearing on a particular document, rather they are those that one or more documents have in common



Levels of Digitalisation

COMMERCIAL INVOICE

Consists of an itemised account of goods or services delivered, together with a demand for payment

ISO/ IEC 19845:2015
GS1 EDI
European Standard for invoicing
PEPPOL
ISO 20022
OFD Format based on XML

Seller / Exporter

Buyer / Importer

Levels of Digitalisation

WAREHOUSE RECEIPT

A document that acknowledges receipt of goods placed in a warehouse

Warehouse Keeper

Buyer / Importer
Seller / Exporter

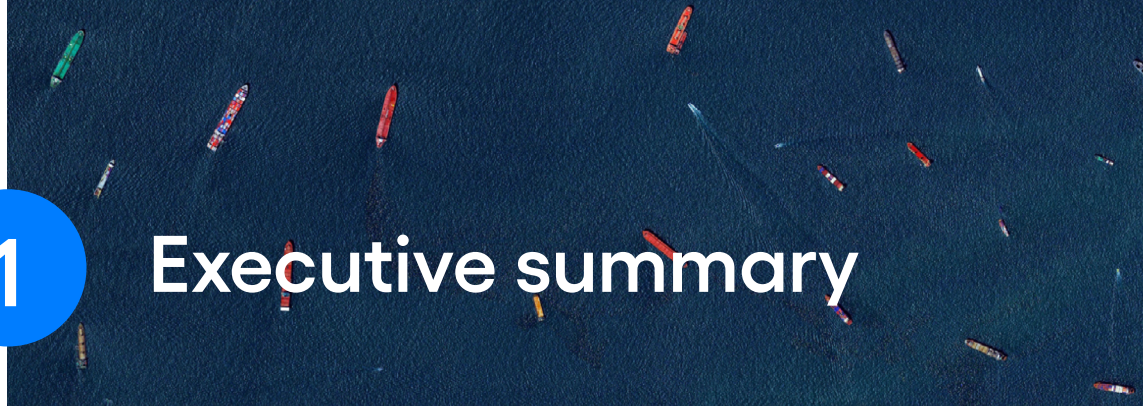
Levels of Digitalisation

INSURANCE CERTIFICATES

Serves as proof of a Cargo Insurance cover for a shipment of goods

Insurance Company

Buyer / Importer
Seller / Exporter



1 Executive summary

Digital trade, or the application of digital technologies to trade and supply chain processes, is an opportunity to drive efficiency, speed, and resilience for companies, industries and countries that rely on trade for growth. The pace of technological advancement, and the falling cost of computing power and storage, now make the benefits of digitally-enabled trade accessible to more parties than ever before.

However progress towards digital trade is slower than it could be, despite the progress thus far. It is also uneven, with small and medium-sized enterprises (SMEs) and the emerging markets relatively slower to adapt. Barriers to digital trade include the lack of an enabling policy environment, the proliferation of multiple digital trade practices and standards, as well as a lack of capacity and culture of data sharing. The ICC Digital Standards Initiative (DSI) was established to address these barriers.

This report contains the major findings and recommendations of the DSI's Key Trade Document and Data Elements (KTDDE) Working Group, which analysed seven key trade documents and their respective digital versions, seeking to define, map and align the data and data elements contained therein. The resulting data set, together with a horizontal analysis to identify repeated data elements across the key trade documents, provides guidance on how common data approaches and digital standards could facilitate data sharing and interoperability that would enable digital trade at scale. When taken together with the progress already achieved by both multilateral and private sector organisations to ensure alignment between commonly used digital standards, this shows the feasibility of digital trade without the creation of entirely new standards and taxonomies, but rather, by adapting and building on practices already in place.

While there are over 40 key trade documents that can be digitalised, according to a United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)/WTO study[1], and this exercise covered just seven, the outcome points to data sharing as a potential opportunity with the attendant benefits of efficiency, accuracy and verifiability. Alas, given that there are an estimated four billion pages of documents circulating in documentary trade, this is no small task.[2] The opportunity is significant. According to a report[3] from the Commonwealth Connectivity Agenda, the use of digital trade paperwork could increase trade within the 54 Commonwealth countries by US$1.2 trillion. This sum reflects efficiency gains and cost savings from a lighter paperwork load, as well as the trade boost that would result from greater access to trade finance.

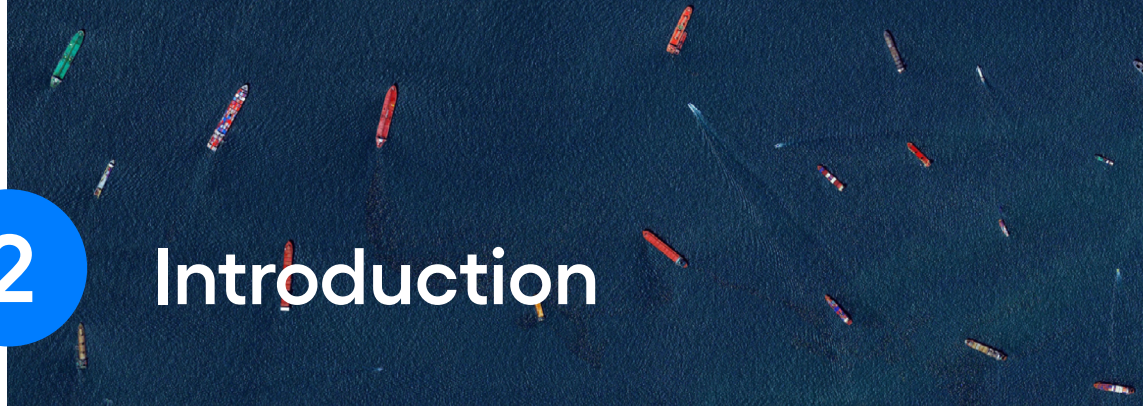
[1] World Trade Organisation and the UNESCAP countries, Cross Border Paperless Trade Toolkit https://www.wto.org/english/res_e/booksp_e/paperlesstrade2022_e.pdf

[2] Ibid.

[3] https://thecommonwealth.org/news/12-trillion-commonwealth-trade-boost-digitalising-paperwork-report-finds

The cross-cutting guidance is relevant to a wide range of trade actors, as well as interested observers who support the adoption of global, industry relevant standards as key catalysts on the road to digitalisation. This task could be accelerated by the adoption of four simple principles in support:

- **Make systems and platforms compatible by design:** Ensure that electronic data interchange systems are compatible with at least one major recognised standard, and preferably able to work with multiple standards
- **Align to best practice definitions of key data elements:** Issuing and acceptance organisations, and relevant regulators, should consider how best to align with best practice definitions in an effort to drive interoperability in practice
- **Use existing agreements to adapt to a changing environment:** Governments and regulators should leverage existing trade relationships to collaborate on new standards for emerging digital trade issues (e.g., smart contracts)
- **Pursue a "digital by default" strategy:** Issuing and acceptance organisations should default to a 100% digital issuing process, eliminating manually issued documents where possible and reducing the use of wet stamps and printing



2 Introduction

The DSI aims to digitalise global trade by promoting policy reform, and aligning and driving adoption of digital trade standards and practices for the benefit of business, governments and people everywhere.

DSI's Industry Advisory Board (IAB) brings together the key private and public sector bodies associated with the advancement of digital trade across all regions, sectors, and supply chain functions. Working under the oversight of DSI's, the IAB offers a neutral platform to align digital trade data, practices and standards and to coordinate adoption of these across international supply chains.

The IAB has created two working groups to progress this work: one focusing on Key Trade Documents and Data Elements (KTDDE) and the other looking at building a Trusted Technology Environment (TTE) respectively.

DSI's KTDDE workstream, which has produced this report, promotes the interoperability of the digital representations of trade documents and the definitions of key data elements within them.

With an estimated four billion pages circulating in documentary trade, this is no small task.[4] There are clear efficiency, speed and transparency benefits to digitalising the global trading system. BCG estimates that fully digitising trade operations using intelligent automation and future technology solutions could save global trade banks up to US$6 billion on a cost base of US$12-16 billion.[5]

On an individual document level, processing a paper Bill of Lading (BL) - a document issued by a carrier to acknowledge receipt of goods - costs three times as much as its digital equivalent.[6] With the integration of blockchain and other technologies related to trust and verification, these benefits will only be amplified.[7]

Digitised vs Digitalised

Digitisation involves converting data from an analogue to digital format (e.g. taking a paper report and converting it to a pdf).

Digitalisation, on the other hand, is about transforming entire processes to be digital. It is about using technology to change the way that business-as-usual is conducted.

[4] ICC (2018), Global Trade - Securing Future Growth
[5] ICC (2018), Global Trade - Securing Future Growth
[6] Hariesh Manaadiar (2020), The beginning of the end for the Paper Bill of Lading
[7] WTO & WEF (2022), Policy Approaches to Harness Trade Digitalisation

Data compatibility and interoperability among individual information systems owned by different stakeholders or networks thereof, is a prerequisite to the development and implementation of automated electronic data sharing and exchange. This meets the operational and regulatory requirements across trade and supply chains, and reduces the barriers of cost, operational risk and complexity which currently prevent digitalisation at scale.

For this project, a working group was formed of 44 members from user companies, associations and Standards Development Organisations (SDOs). The group has since completed an analysis of seven key trade documents, taken here to mean documents that are used widely across global supply chains on account of their being essential to trade or required by laws and regulations. These documents are: Certificates of Origin; Commercial Invoices; Warehouse Receipts; Packing Lists; Bills of Lading; Customs Declaration Forms; and Insurance Certificates.

These seven are among the trade documents identified in the "Cross-border Paperless Trade Toolkit" report co-published by the WTO, UNESCAP and UNCITRAL in 2022. They were chosen after consultation with members of the IAB and within the DSI network, as frequently used across supply chains globally. It was noted that some of these documents already have electronic or digital versions and are at different stages of the digitalisation process.

2.1. Unpacking the KTDDE's findings

The report's recommendations have implications for a number of key stakeholders:

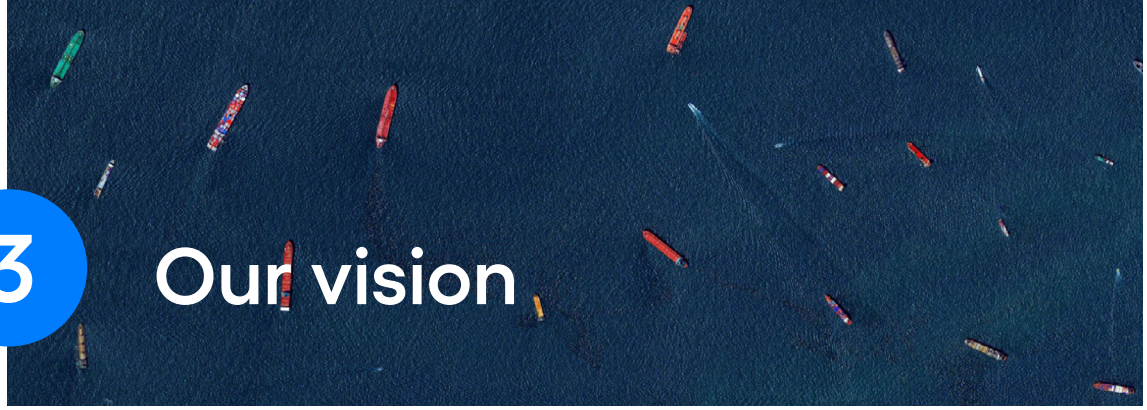
- **Standards Organisations:** Given the importance of cohesive and common data definitions, standards bodies should ensure that their deliverables include data definitions consistent with other SDOs, even if the syntax and format of their standards diverge. In addition, steps should be taken to fill standards gaps where they exist (for example, in insurance certificates). The publicly available ICC-WTO Standards Toolkit offers a glossary of relevant definitions.[8] The Management Group of the Memorandum of Understanding (MoU) on electronic business between International Electrotechnical Commision (IEC), International Organisation for Standardisation (ISO), (International Telecommunication Union) ITU, and United Nations Economic Commission for Europe (UN/ECE)[9] could also support the coordination of e-business standards between SDOs.

- **Industry and Private Sector:** Where possible industry actors – whether businesses operating along the supply chain, service providers or supply chain networks - should implement globally recognised standards . But this report also serves as a timely reminder that a comprehensive digital transformation requires that all major links in the value chain collaborate. Banks, shipping and transport companies, and corporates should maintain constant dialogue in identifying the best way to reach the goal of harmonising their approaches to digital trade.

- **Issuing and Acceptance Organisations:** The cross-cutting recommendations of this report emphasise a "digital by default" strategy, from eliminating manually issued documents where possible to reducing the use of wet stamps, to be led by issuing and acceptance organisations. In practice, supply chains operate across multiple jurisdictions all of which are at different stages of digitalisation. This means that issuing and acceptance organisations should transition from paper to digital , and encourage adoption by requiring trade parties to "opt out" of digital, rather than having to "opt in".

[8] ICC & WTO (2022) Standards Toolkit for Cross-Border Paperless Trade

[9] https://www.itu.int/en/ITU-T/ebusiness/Pages/mou/default.aspx



3 Our vision

3.1. DSI's vision for digital trade

DSI works towards the ambitious aim of establishing a globally harmonised digitised (and beyond that digitalised) trade environment, addressing a divergence of legal and technical standards which threaten to undermine global flows of digital information. Launched just prior to global trade and supply chain disruptions during the COVID-19 crisis, DSI aims to speed up legislative reforms; harmonise standards; and promote greater trade interoperability.

These efforts are much needed. According to BCG, the end-to-end journey of a letter of credit involves more than 20 players and more than 100 pages across 10 to 20 documents, many duplicated and transmitted multiple times.[10] Cargo vessels can spend up to 70% of their port time at a berth, processing documents that may arrive before – or even after – the goods themselves.[11]

With this in mind, DSI seeks to realise its aims across four key activities:

- Encourage harmonisation of digital standards efforts across alliance groups, industry forums, standards orgs, companies and countries: These standards are needed to drive interoperability between various trade platforms and different components of the trade ecosystem.
- Advocate for the adoption of legislation which creates legal equivalence between paper and electronic documents. This should be in line with the Model Law of Electronic Transferable records (MLETR) of UNCITRAL to ensure legal interoperability across legal jurisdictions.
- Enable the trade standards landscape: Expand standards to share information concerning trade-related processes, and enhance access to these standards to accelerate the digitalisation of trade-related processes.

3.2. Assessing the current digital trade landscape

There are a number of ongoing efforts to both harmonise, create alignment and share data generated by trade processes and their related key trade documents already.

Several sectors, including the banking industry, the freight forwarding industry or the shipping industry, have been particularly active in these areas, with a number of initiatives to promote common industry-wide standards around the (electronic) Bill of Lading.

These provide good models for efforts that touch other parts of the supply chain, particularly those where supply chain partners include SMEs in the emerging markets.

Indeed, the creation of pathways for alignment and interoperation of supply chain data could be the key to address the long-standing challenge of trade finance faced by SMEs.

As many have noted the data generated from digital trade could lower the cost to accomplish a single trade finance transaction, thereby lowering the barriers to offering financing in smaller amounts typically needed by SMEs.[12] SMEs accounted for some 40% of rejected trade finance

[10] ICC (2018), Global Trade- Securing Future Growth

[11] WTO & WEF (2022), Policy Approaches to Harness Trade Digitalisation

applications to banks globally during the pandemic, producing a trade finance gap of US$1.7 trillion that stands in the way of job creation and growth in the emerging markets.[13]

The development of global standards– allowing for alignment of practices, data sharing, and transparency within supply chains– is a major challenge facing advocates for digital trade. This is not to say that a number of initiatives have not made progress that has been beneficial for the industry.

Indeed the emergence of digital trade and supply chain platforms dedicated to data sharing, industry networks that promote greater flows of finance within supply chains, and industry initiatives aimed at alignment of data and practices, shows that many believe that commonly used standards, practices, and data are the key to the future of digital trade.

3.3. Responding to these digitalisation challenges

Set against the current state of digital trade, this report makes a number of key contributions. From the perspective of educating those who participate in trade-related activity, it aims to clarify the purpose and functionalities of Key Trade Documents, as well as identifying the relevant standards that are associated with them.

One of the complexities of digital trade is the huge increase in the amount of data required to complete each stage of a supply chain transaction, and the amount of data that is passed between parties along the supply chain. The working group thus sought to identify key data elements used across documents and also to highlight examples of best practices, such as the use of internationally unique identifiers instead of proprietary solutions. Thus it points to the foundations for interoperability between these large datasets given the overlap in data elements between the various trade documents.

While the primary focus of the report is on relevant standards and key data elements, its recommendations also imply that standards and other agreements (e.g. trade agreements) can be leveraged to raise awareness of digitalisation across markets, sectors, and national and international trade landscapes.

[12] SWIFT (2021), Digitising Trade: The time is now

[13] Asian Development Bank (2022), Driving Inclusive Digitalisation in Trade and Trade Finance

4 Our findings and recommendations

4.1. Key findings from analysis

In thinking about the above challenges, the working group undertook a document-by-document analysis and in doing so sought to involve key parties – private, industry, and public – which have knowledge and experience in digitalisation of the respective documents. The analysis covered purpose and usage; legal frameworks; Key Standards; and present challenges to digitalisation. For those documents facing specific digitalisation challenges (for example diverse and divergent standards), the working group has made specific recommendations below.

For each of the seven key documents, the working group discovered that there could be a number of standards existing and used for the relevant document. Often there were no material differences between the various standards: they captured the same data, referred to the same flows, and even used the same data formats. In some cases, where variations did exist, these were rarely an obstacle to smooth trade flows, except where they also create ambiguous definitions of data elements.

In the case of commercial invoices for example, a variance in standards for entity identification, date time stamps, country codes and currency are coupled with differing Key Data Element (KDE) definitions, which has resulted in difficulties in customs authorities interpreting and processing invoices from abroad. In the interests of promoting the harmonisation of these definitions, the working group has created a glossary of KDEs included in this report
.

The document-by-document analysis also uncovered some gaps in standardisation, for instance in relation to Insurance Certificates, where a lack of globally accepted standards has resulted in the non-acceptance of some documents by trade stakeholders (e.g. banks). Even where standardisation is harmonised, there are some legal and regulatory gaps yet to be filled, such as in the case of Warehouse Receipts (WRs), where the UNIDROIT Model Law on Warehouse Receipts is currently being drafted to provide a cross-border legal framework for the document.

This document-by-document analysis was followed by a horizontal analysis that sought to understand the degree to which overlap in data and practices exists between the seven key trade documents.

Considering each of these key documents in a horizontal analysis revealed and confirmed several patterns, enabling a mapping of gaps in standards. This is presented visually in the infographic at the beginning of this report.

This process generated four broader, cross-cutting recommendations described below.

Whilst significant progress has been made in recent years in the development of international standards for these key documents, it is nevertheless the case that former interoperability challenges has created a lag in the uptake of digital trade documents. In some cases, commercial communities in selected countries are unaware of the opportunities that digital provides, and the means of digitalising documents. One of the key recommendations of this report responds to this need in particular, suggesting that issuing and acceptance organisations take a “digital by default” approach when it comes to working with these documents.

4.2. Implications of analysis and recommendations

The work has produced four cross-cutting recommendations and a further nine recommendations relating to specific documents.

4.3. Cross-cutting recommendations

(1) Ensure that platforms and systems are designed to be compatible with at least one of the major recognised standards, and preferably and preferably able to work with multiple standards

Rather than attempting to harmonise what are in many instances similar standards – i.e. request that all trade stakeholders move to one set of standards – it is more important that trade and customs platforms like electronic data interchange systems are able to translate syntax, meaning and formats across different standards.

For support on navigating different toolkits, trade parties should refer to the ICC WTO Standards Toolkit for Cross-Border Paperless Trade.

ICC WTO Standards Toolkit for cross-border paperless trade

The ICC WTO Standards Toolkit aims to equip every supply chain participants, both public and private, with some of the most notable and widely used standards to help enable a future of secure, trusted and seamless trade connectivity.

The toolkit provides a starting point to guide users in their adoption of existing standards, and gives an overview of interoperable digitalisation frameworks and standards-setting bodies.

(2) Issuing and acceptance organisations, and relevant regulators, should align to best practice definitions of Key Data Elements where they exist

The adoption of best practices will improve the interoperability between various implementations of different documents using different standards. This will facilitate the global growth of digitalisation across multiple industries.

(3) Issuing and acceptance organisations should pursue a "digital by default" strategy. Default to a 100% digital issuing process, eliminating manually issued documents where possible and reducing the use of wet stamps and printed documents

While regulation plays a key role in laying the foundations for digitalised trade, this will not occur in a widespread way without digital becoming the norm. These organisations should continue to accommodate for companies that are unable to digitalise, but should create a digital-oriented environment across their internal and external processes, trade-related or otherwise.

(4) Governments should leverage existing trade relationships to collaborate on new regulations for the issues that are likely to define the future of digital trade

As the World Economic Forum notes, "trade agreements can play a key role in fostering regulatory convergence and interoperability", building on existing agreements to remove a particular country's extra trade barriers or requirements that create additional pain points for shipping and logistics companies.[15]

4.4. Document specific recommendations

4.4.1. Warehouse Receipts:

Encourage the global adoption of the UNIDROIT Model Law on Warehouse Receipts once it is formally published

[14] ICC & WTO, Standards Toolkit for Cross-Border Paperless Trade, https://iccwbo.org/publication/standards-toolkit-for-cross-border-paperless-trade/#section--download

[15] WTO & WEF (2022), Policy Approaches to Harness Trade Digitalisation

The model law is set up to tackle the problem of an underdeveloped regulatory environment by giving national governments a framework to modernise Warehouse Receipts.

SDOs, especially the International Federation of Freight Forwarders Associations (FIATA), should promote usage of WR at a national level by advising governments on how to adapt global standards for national purposes

To adapt existing standards and frameworks to local regulatory environments (which Warehouse Receipts are subject to), SDOs can use their expertise to act as translators between the global and local level.

Increase familiarity of a country's commercial community with WRs, and incentivise the development of a private storage industry

Government intervention in agricultural industries has reduced incentives to develop a private storage industry in some countries, with a knock-on effect that commercial communities have little familiarity with Warehouse Receipts.

4.4.2. Certificate of Origin (CoO):

Continue to encourage the adoption of ICC guidance on digital procedures for issuing and attesting CoOs

ICC has already produced guidance on issuing and attesting CoOs, which should be leveraged to increase the spread of digitalisation, rather than developing any new guidance.[16]

SDOs should raise awareness through standards guidance and asking chambers of commerce to encourage members to digitalise

Chambers of commerce are in a unique position to support in raising the awareness of digital CoOs. Not only are they able to communicate with a large number of industry representatives through their membership, but they are also a common recipient of CoOs and can ask for these to be delivered digitally.

4.4.3. Commercial invoice:

SDOs should ensure standards are open; internationally recognised; and cost/benefit effective

Digital commercial invoices are hindered by divergent standards. Rather than trying to develop one universal standard, the emphasis should be placed on building translation capacity between standards designed in accordance with a set of principles and based on common data definitions.

Governments should build on existing regulations, such as the EU's mandated e-Invoicing for procurement, to encourage suppliers to digitalise

Currently, the EU mandates that digital Commercial Invoices are used by procurement agents, but this mandate does not extend to governments' suppliers and invoices are rarely delivered digitally in practice.[17]

4.4.4. Insurance Certificates:

SDOs should develop a document stating the standard requirement for insurance certificates, together with clear definitions of Key Data Elements (to be harmonised across other trade documents)

A lack of global standards for Insurance Certificates have led to some trade actors not accepting documents that are delivered in various formats, wasting both time and money.

Allow integration or reuse of data in existing logistics digital platforms so that the common data elements are not repeatedly entered

Current systems are inefficient, requiring the re-entry of shipment information as opposed to being auto-populated or reusing data already available from other documents.

This is also a key step to achieving 'clean data' sets, which are essential for the automatic processing of data. It is important that master data information is correctly formatted and 'clean' before engaging in transactional data interchange.

[16] ICC, Electronic Certificate of Origin (eCO) - Best Practices

[17] European Commission (2022), European legislation on eInvoicing

5 Next steps

5.1. Key next steps and timeline

This document aims to catalyse a conversation regarding global trade, not conclude it. We welcome feedback from industry, the public sector, supply chain participants, and knowledgeable observers on how to improve data and standards alignment in support of trade digitalisation worldwide.

6 Detailed report and analysis

6.1. Methodology

6.1.1. Principles

The analysis and recommendations have been conducted in conjunction with DSI's five underlying principles, which aim to promote fairness, efficiency and transparency in global trade.

- **Re-use rather than recreate:** DSI advocates for the adoption of existing standards when viable, rather than creating new standards. In each of the seven documents analysed, with the exception of the Insurance Certificates, global standards already exist than can be adopted by trade parties.
- **Engage standard-setting bodies:** In order to leverage the expertise and knowledge of trusted standard-setting bodies, the working group contains representatives from all of the major global SDOs and trade associations, many of whom have taken the lead on both the Key Trade Document and horizontal analysis. A comprehensive list of working group members can be found in an appendix to this report.
- **Consider all approaches:** Both the document-by-document and horizontal analysis considered a wide range of global standards without focusing unduly on one sector, region or SDO.
- **Accessible to all:** It is important to establish standards that are truly accessible to carriers, exporters, importers, banks and customs agencies. Encouraging a "digital by default" response means also having non-digital options for those who need it, and recognising that moving to digital is a journey rather than an absolute shift.
- **Enhance capacity:** This report's recommendations are sufficiently broad to ensure that the appropriate capabilities within relevant industries are being leveraged to overcome challenges of digitalisation.

6.1.2. Methodology

Phase One of the working group's activities was conducted against a series of business objectives outlined in the Terms of Reference of the group's foundation. In the first instance, the group mapped and identified key documents; stakeholders and SDOs that might prove relevant in discussions of trade digitalisation. In adherence to DSI principles outlined above, the key SDOs identified were ISO, UNECE-UN/CEFACT, GLEIF, WCO, GS1, DCSA, BIMCO, FIATA and SWIFT. Key documents were selected by the Industry Advisory Board based on their essential nature to trade or requirement by laws and regulations.

The working group appointed focal points for each document according to diversity and expertise, who worked with interested parties to analyse their respective document. These sub-teams provided updates and discussed approaches and findings every two weeks during working group meetings. Once these documents had been considered individually, a horizontal analysis revealed patterns across the data, which formed the basis of cross-cutting recommendations.

The horizontal analysis also proved useful in identifying key data elements, those that appeared across multiple documents. These attributes were extracted and grouped by similar meaning (e.g. brand description and product description), before being organised into 12 categories: amount; banking; consignment; document; date; duty/tax; goods; location; measure; party; transport; and terms.

With this data representation, the working group was able to map any conflicts in definitions that arose, and has recommended best practice on those data types.

7 Key document analysis

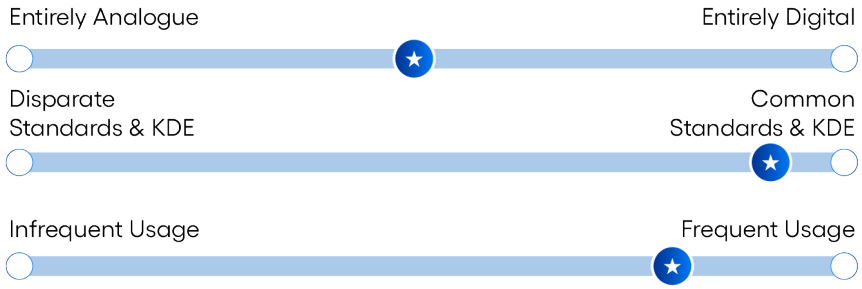
The following section includes the analysis of the key documents, which have been edited for consistency, tone and clarity. The analysis – including the sliding scales which provide an approximate visual representation of our findings – is based on the experience of the contributors to the report as well as wide secondary research.

7.1. Warehouse Receipts

Summary	
Purpose	A Warehouse Receipt (WR) is a document most commonly issued by a Warehouse keeper, acknowledging the receipt of goods placed in a Warehouse. It can also be used as a tool for financing and commodity trading, and can in certain cases also be used as collateral.
Sender	The creator or sender of the document is most commonly the Warehouse Keeper or Owner of the Warehouse in which the goods are stored, but in certain cases a contractual party such as a forwarder or transporter could also become a creator of the document.
Receiver	The receiver of the WR is the Buyer or Seller who has requested the goods be deposited in the warehouse.
Legal Framework	The specific legal framework of the WR is determined by the national laws applicable in each country. The FIATA Warehouse Receipt (FWR) is used in freight forwarders' warehousing operations, and is a standard document mainly used at national/territorial level. It too is subject to individual countries' laws, but there are also provisions regarding the activity of warehouse keepers in countries where forwarders use standard trading conditions.
Usage	It is difficult to estimate the number of WRs in circulation, however it is very widely used in the commodity and agriculture markets. There have been millions of copies of the FWR, used in freight forwarders' warehousing operations, issued.

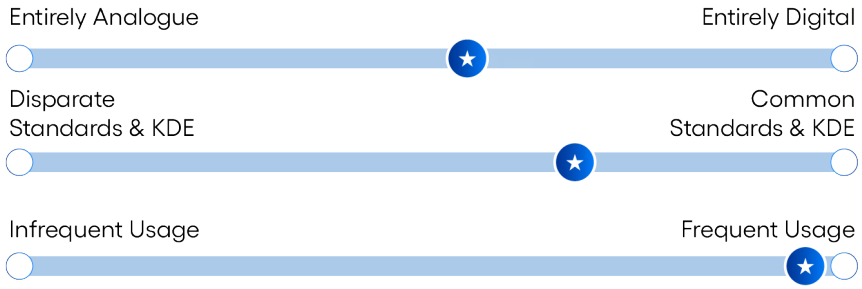
Key Standards	A FWR is used by Forwarders around the world and is a globally accepted document. It is adapted by each member country and is therefore issued as per the Standard Trading Conditions in each country.
Major Differences between Standards	There are no major differences in standards, as the documents are issued in accordance with regulations or laws applicable in each country.
Platforms	Currently this document is being issued in a paper format, but individual organisations may also issue the same document in electronic format.
Key Data Elements & Definitions	• Party: Supplier of the Goods; Depositor of the Goods; Warehouse Keeper; Warehouse Operator • Transport: Means of Transport • Documents: Insurance • Goods Identification Marks; Number and Kinds of Packages: Description of Goods; Condition that the Goods were Received in • Measure: Gross Weight of the Goods • Date: Date and Signature of the Issuance of the Document
Adoption	Once digitalisation of the document is complete, greater awareness amongst trade actors of the digital WR can be achieved through either direct issuance from a treasury management system (TMS), software providers, or through a common platform. Marketability to financial companies would also prove important, since the WR is often used in commodity futures.
Document-Specific Challenges	The use of WR is limited in many developing countries because of institutional and structural shortcomings, among which the most prevalent are the following: lack of incentives for the development of a private storage industry owing to government intervention in agricultural markets ; lack of an appropriate legal, regulatory, and institutional environment to support a system of WR; and familiarity of the country's commercial, including its banking, community with warehousing receipts. • Under-developed legal & regulatory environment • Raising awareness of digitalisation
Document Specific Solutions	• Encourage the global adoption of the UNIDROIT Model Law on Warehouse Receipts once it is formally published • SDOs, especially FIATA, should promote usage of WR at a national level by advising governments on how to adapt global standards for national purposes • Increase familiarity of a country's commercial community with WRs, and incentivise the development of a private storage industry

7.2. Certificate of Origin

Summary	
Purpose	A form which certifies expressly that a set of goods originated in a specific country. They are used in trade policy measures which are not related to the granting of tariff preferences. Note, the working group has specifically considered Non-Preferential CoOs, those that relate to rules of origin that are not linked to Free Trade Agreements. Non-Preferential CoOs are also used as part of a Letter of Credit or Call for Tender. Can also be used in the administration of the importer as proof of origin.
Sender	Varies between business-to-business (B2B) and business-to-government (B2G), but usually an exporter or authorised representative (e.g. freight forwarder).
Receiver	Varies between B2B and B2G, but usually an issuing authority (e.g. chamber of commerce or customers).
Legal Framework	The main framework is provided by the WTO Agreement on Rules of Origin, and revised Kyoto Convention on Simplification and Harmonisation of Customs Procedures, but there are many laws that can influence the CoO. Sometimes there is no legislation involved, as when the importer is asking for the document as a part of internal origin procedures of the company.
Usage	More than 15 million documents a year, but there are no exact numbers available.
Major differences between Standards	The layout of CoO's is mostly standardised, and there are no major differences between the definitions of different key data elements.
Platforms	Electronic CoOs are supported by the development of National Single Window services.

Key Data Elements & Definitions	• Document: CoO Certificate Number; Additional Numbers (LC Number etc.) • Party: Exporter - Consigner (applicant); importer- consignee – to order (facultative); Certifying body (details of the issuing organisation including place and the date of issuance and authorisation) • Location: Origin of the Goods (UN/LOCODE) • Transport: Particulars of transport details (facultative) • Goods: Marks and numbers; Number and Kind of Package; Description of the Goods • Measure: Gross weight- quantity • Other Information A CoO is connected to a shipment, therefore information about the exporter and description of the goods has to be the same as that used in other documents. In other words the CoO is following other elements of the shipment, and as such there is no discussion for example about the definition of an exporter or applicant.
Adoption	Challenges in raising awareness of digitalisation and proportion of digital certificates of origin addressed in challenges and recommendations.
Other Information	
Document-Specific Challenges	Framing the problem: DSI's work suggests that most CoOs have the same lay-out, and in those countries where there are some additional boxes on the CoO this is not creating a blocking issue. There is also no blocker when it comes to thinking about key definitions (of exporter or applicant for example), since the CoO follows the other elements of the shipment. So the question becomes around how to digitise. A challenge is that other parties require the CoO and establish sometimes their own requirements. For example, in the Netherlands, 500,000 CoOs are issued annually and 30,000 of them are going through an extra step with the Ministry of Foreign Affairs. • Lack of digitalisation • Raising awareness of digitalisation • National governments sometimes establish their own requirements
Document Specific Solutions	• Continue to encourage the adoption of ICC guidance on digital procedures for issuing and attesting CoOs • SDOs should raise awareness through standards guidance and asking chambers of commerce to encourage members to digitise

7.3. Commercial Invoice

Summary	
Purpose	A commercial document which consists of an itemised account of goods or services delivered, together with a demand for payment.
Sender	Sellers of goods and services.
Receiver	Buyer of goods and services.
Legal Framework	The legal framework is determined by the national laws applicable in each country.
Usage	SWIFT conducted a study of cross-border payments with credit confirmations in the months of September and October 2020. The amount of cross-border payments on the SWIFT network for these two months was approximately 42 million. This of course includes B2B, business-to-consumer (B2C) and consumer-to-consumer (C2C) payments and excludes any payments that occur outside the SWIFT network. But it gives a starting point to understand the large volume of commercial invoices that are processed annually around the world.
Key Standards	There are a large amount of standards, some of which are conflicting. UN/CEFACT Cross Industry Invoice; ISO/IEC 19845:2015; GS1 EDI; European standard for eInvoicing (semantic model); PEPPOL (a set of technical specifications); ISO 20022 (metadata model); OFD format based on XML (data exchange format), a China-specific fixed format.
Major Differences between Standards	There is a variance in standards for entity identification, date time stamps, country codes and currency etc., together with differing KDE definitions.

Platforms	There are a large number of eInvoicing platforms, with some of the major players including E-Fatura (Turkey); Factura Electronica (Peru); SimplerInvoicing (the Netherlands); CHORUS-factures (France) and Tradeshift (globally). There are a number of platforms using the Universal Business Language (UBL) format specifically. Beginning with the 2005 adoption of UBL for all public sector invoicing in Denmark (known as OIOUBL), UBL has become the foundation for a number of successful European public procurement frameworks, including EHF (Norway), Svefaktura (Sweden), ePrior (European Commission DIGIT), the National Health Service (UK), SimplerInvoicing (the Netherlands) and PEPPOL, the pan-European public procurement platform. The PEPPOL community (OpenPEPPOL) serves government agencies and their suppliers from Austria, Denmark, France, Ireland, Italy, Norway, Poland, and Sweden through a network of over 100 Access Points all exchanging UBL conformant documents. Currently, there are OpenPeppol members in 41 countries in total. (32 countries in Europe plus Australia, Canada, China, India, Japan, Mexico, New Zealand, Singapore and USA). OpenPeppol has Certified Access Points in 29 European countries plus Australia, Canada, China, New Zealand, Singapore and USA, with Peppol Authorities placed in 17 countries. The European eInvoice Service Providers Association (EESPA) also recommends UBL for their Model Interoperability Agreement.
Key Data Elements & Definitions	• Document: Invoice Number; Documents Remitted, Contract Number, Buyer Contract, Sales Order Number, Customer Order Number • Party: Entity Type (Seller, Buyer, End Customer, Applicant of the Letter of Credit); Entity (Text- name, address, telephone, fax number, VAT reference); Bill to (entity type), Seller's signatory • Location: Country of Origin • Goods: H.S. Number; Product • Measure: Quantity; Unit of Measurement, Moisture • Date: Date Type (invoice date, B/L date, payment due date); • Transport: Loading Port; Discharge Port; Vessel Name • Terms: Incoterm; Payment Term; Payment Method • Banking: Bank details • Amount: Unit Price; Tax Amount; Exchange Rate, Credit Amount, Total Amount Such a variety of standards and platforms has meant that there is a lack of language codes for entity names and addresses, and a difficulty in translating invoice content into requirements for payment orders.
Adoption	Adoption of digital commercial invoices is at different states around the world. The EU mandates the implementation of eInvoicing in public procurement. Given that mandates issued by governmental bodies clearly have a huge impact on the level of adoption, some governments might also think about following suit.

Other Information	
Document-Specifc Challenges	Framing the problem: These documents largely depend on analogue processes. They must be printed and possibly stamped according to some jurisdictions, carried as legally valid original paper documents, and often endorsed by a state consulate. There is also a large amount of conflicting standards, a 'lack of language codes for entity names and addresses', and difficulty translating invoice content into requirements for payment orders. There is currently an international initiative led by the Financial Stability Board (FSB) to enhance cross-border payments. In particular, this initiative addresses the lack of by a global unique identifier for payment originators and beneficiaries (legal entities) in cross-border payments [18]. Finally there are issues with the takeup of invoicing. The EU mandates the implementation of eInvoicing for public procurement, based on a receiving capability of invoices presented in the European Standard in each member state. But the suppliers are not mandated to send invoices in a structured and electronic format- so contracting authorities can manage electronic invoicing, but often don't due to a low takeup. • Mandated analogue processes • Differing standards & KDE definitions • Poor take-up of e-invoicing
Document Specific Solutions	• SDOs should ensure standards are open; internationally recognised; and cost/benefit effective • Governments should build on existing regulations, such as the EU's mandated e-Invoicing for procurement, to encourage suppliers to digitalise

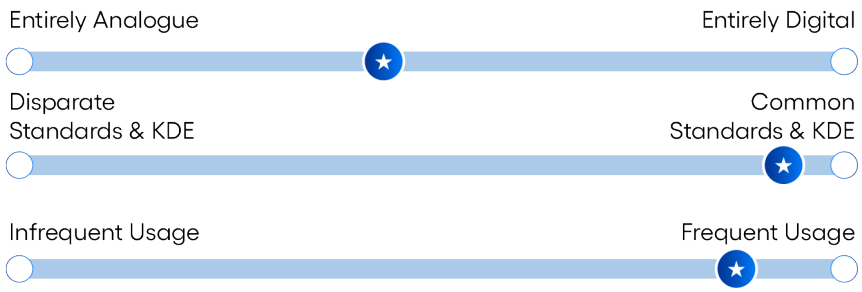
[1] Financial Stability Board's Recommendation: Options to Improve Adoption of The LEI, in Particular for Use in Cross-border Payments (Jul 2022)

7.4. Packing List

Summary	
Purpose	A document which covers the physical delivery of goods from one physical site to another in line with a transport contract obligation.
Sender	Seller of goods and services.
Receiver	Buyer of goods and services.
Legal Framework	The B2B document in its primary usage is not subject to private and/or public laws.
Usage	There are no exact numbers available.
Key Standards	UNCEFACT Buy-Ship-Pay (BSP) is the Global Supply Chain Reference Data Model used by key industry stakeholders.
Major Differences between Standards	Other standards have not yet been identified at global level.
Platforms	Any platform could be used as this is a B2B data exchange.
Key Data Elements & Definitions	• Document: Invoice Number; Seller Reference; Buyer Reference; Transport Contract Number • Party: Original Consignor (Seller); Final Consignee (Buyer); Transport Service Provider • Location: Port of Loading; Port of Discharge; Place of Delivery (UN/LOCODE) • Goods: Number of Packages; Type of Packaging (UNCEFACT coded) and Shipping Marks; HS Code (Commodity Code); Description of Goods; UNDG Number (Dangerous Goods); Proper Shipping/ Technical Name (Dangerous Goods); Packaging Requirements (Dangerous Goods)

	• Measure: Temperature Setting for Reefer Containers' Number of Packages; Type of Packaging (UNCEFACT coded) and shipping marks; volume (cube); weight • Transport: Conveyance Reference Number (i.e. Voyage/ Flight/ Trip number); Mode of Transport (Air, Road, Rail or Sea) Coded value UNCEFACT; Identifier (i.e. IMO Vessel Number or Vehicle VIN) • Terms: Incoterms • Consignment: Consignment, including consignment item, based (giving the details of a consignment item from the point of view of the goods transported); Package based (giving the details of a consignment from the point of view of the package used for the transportation i.e. the logistics units within which the goods are transported); Container Number • Instructions: Delivery Instructions; Packaging Instructions All semantic data elements quoted above have definitions aligned to the UN/CEFACT BSP Reference Data Model Definitions.
Adoption	Covered in Cross-Cutting Recommendations.
Document-Specific Challenges	No Document Specific Challenges.
Document Specific Solutions	Covered in Cross-Cutting Recommendations.

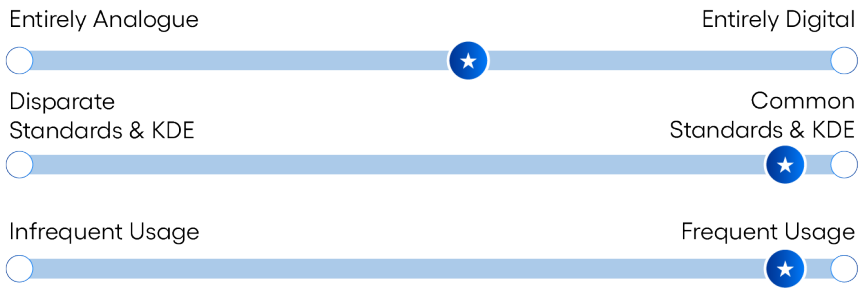
7.5. Bill of Lading

Summary	
Purpose	A document to provide evidence of contract of carriage; confirmation of receipt for the goods; and/or a document of title.
Sender	An ocean carrier issues the final Bill of Lading, but the drafting process involves a freight forwarder or shipper too.

Receiver	Presented to the nominated agent or office at destination in return for the goods.
Legal Framework	There are some countries which have national legislation on bills of lading or multimodal transport.
Usage	Containerised Ocean Freight is estimated at 50 million per annum.
Key Standards	Key industry stakeholders have collaborated on and mapped their standards to the UN/CEFACT MMT Reference Data Model, such as BIMCO; DCSA; and FIATA.
Major Differences between Standards	The minor difference between the Bill of Lading standards is purely around the business use cases. For containerised freight movements the appropriate standard is DCSA; for Bulk Shipping BIMCO; and when Freight Forwarders act as a multimodal transport operator, FIATA eFBL.
Platforms	For the electronic exchange of Bills of Lading in containerised ocean shipping, the platform provider must be approved by the International Group of Protection & Indemnity (IGP&I). As of September 2022, there are seven approved platforms for the exchange of electronic Bills of Lading.
Key Data Elements & Definitions	• Document: Carrier Booking Reference Number; Freight Forwarders Reference Number; Shippers Reference Number; Bill of Lading Number; Contract/ Quote Reference Number • Party: Shipper; Consigness; Notify Party; Carrier Party (using either SCAC or SMFG code) • Location: Place of Receipt; Port of Loading; Port of Discharge; Place of Delivery; Place of Payment (UN/LOCODE) • Goods: Number of Packages; Type of Packaging (CEFACT Coded); HS Code (Commodity Code); Description of Goods; Product identifier (i.e. product code or SKU); IMDG (Dangerous Goods); Danger Level (Dangerous Goods); Proper Shipping/ Technical Name (Dangerous Goods) • Measure: Temperature Setting for Reefer Containers; Temperature Units (i.e. CEL) coded from UNCEFACT; Total Number of Containers; Volume; Weight • Date: Estimated Time of Departure (ETD); Actual Time of Departure (ATD); Estimated Time of Arrival (ETA); Actual Time of Arrival (ATA); Estimated and Actual Dates for place of receipt and delivery (if not port). Note: These above data attributes are separated into Pre Leg, Main Leg and On Carriage which contains the above data attributes along with the Means of Transport information below • Transport: Conveyance Reference Number (i.e. Voyage Number); Mode of Transport (Air, Road and Sea) Coded Value UNCEFACT; Vessel Name; Identifier (I.e. IMO Vessel Number) • Terms: Incoterms

	• Consignment: Container Number; Container Size/ Type (ISO Coded); Full or Empty Indicator Each stakeholder group has its clear business case, and whilst there are some very minor differences in use of business domain language, their mappings to UN/CEFACT MMT Reference Data Model easily allow interoperability through a common semantic anchoring.
Adoption	A lack of interoperability has in the past hindered development and growth in the uptake of electronic Bills of Lading, so adoption is currently very limited. However through the contributions made by the various stakeholder groups there is now clear alignment between them using international standards.
Other Information	
Document-Specific Challenges	Framing the problem: Part of the reluctance to adopt eBLs stems from uncertainty around their legal validity. Only a very small number of jurisdictions give electronic trade documents the same standing as their paper counterparts, which means commercial eBL solutions have had to get around this using contract law – whereby all parties essentially agree that the eBL is equivalent to a paper BL. • Uncertain legal landscape
Document Specific Solutions	Relevant actions covered in cross-cutting recommendations.

7.6. Customs/Goods Declaration

Summary	
Purpose	A document to enable a declarant to indicate the customs procedure to be applied to the goods.
Sender	A variety of actors, such as the declarant, exporter, importer, owner of the consignee, carrier etc.
Receiver	Customs administration.

Legal Framework	The legal basis for Customs/Goods Declarations is governed by the Revised Kyoto Convention on the Simplification and Harmonisation of Customs Procedures/ General Annex Standard 3.6, 3.7, 3.8, 3.11. Also relevant is the World Customs Organisation (WCO) Recommendation on the use of the WCO Data Model (DM).
Usage	According to the WCO Annual Report 2021/2022, there were 485.5 million Customs/Goods Declarations import declarations (of which 94.9% were digital) and 506.4 million export declarations (of which 95.5% were digital).
Key Standards	Standards are defined by the WCO Data Model, which also contains definitions for KDEs referring to the UN Trade Elements Directory (ISO-7372).
Major Differences between Standards	There are no other major global standards.
Platforms	WCO Data Model is a platform agnostic standard. Customs administrations may determine appropriate data exchange protocols for their automated customs systems.
Key Data Elements & Definitions	• Document: Document Reference Number; Conveyance reference number; Transport Document Number; Invoice Number; UCR: Trader Reference; Previous Document Number • Party: Office of Declaration; Submitter; Office of Declaration; Agent/ Exporter/ Importer; Carrier identification' Supplier' Warehouse • Location: Location of Goods; Transport Document Issue Place; Country of Origin • Goods: Total Number of Items; Delivery Destination; Office of Exit; Country of Exportation; Item Level Information; Description of Goods; Commodity Classification; Number of Packages; type of Packages Identification • Measure: Total gross weight; total number of packages • Date: Transport Document issue Date; Date of Arrival at place of Discharge; Invoice Data • Transport: Type of means of transport at arrival; identification of means of transport crossing the border; type of means of transport crossing the border; Type of means of transport at departure' Transport Equipment Loaded Status; Shipping Marks • Terms: Terms of Payment Code • Amount: Total Invoice amount; Customs Value; Statistical Value • Consignment: Equipment Identification Number; Seal • Duty/ Tax: Duty/ Tax/ Fee Type (Header Level); Duty/ Tax Payment Method/ Duty/tax/fee assessed; Charges; Valuation Method; Duty/ tax/fee type; Type of Duty regime; Duty/tax/fee assessed; Tariff quantity/ supplementary quantity

Adoption	Both the status of global adoption of the WCO DM and the adoption of the electronic Custom/ Goods Declaration appear in the WCO Data Model
Other Information	
Document-Specific Challenges	No Specific Challenges Identified.
Document Specific Solutions	Relevant actions covered in cross-cutting recommendations.

7.7. Insurance Certificates

Summary	
Purpose	The Insurance Certificate serves as proof of a cargo insurance cover for a shipment of goods.
Sender	Insurance companies or authorised broker.
Receiver	Dependent on the Incoterms agreed upon by trade parties (e.g. CIF dictates that the seller is responsible for the insurance).
Legal Framework	There is no evidence to confirm that the document is subject to public or private laws, or even local regulations.
Usage	The exact number is not known, but many.
Key Standards	A lack of globally accepted standards may result in the non-acceptance of some stakeholders of the document (e.g banks).

Major Differences between Standards	As above, no globally accepted standards.
Platforms	Insurance Certificates are issued by insurance companies through pre-printed certificates, in-house digital platforms or through third party providers (e.g., Oceanwide, Merimen). At present, the electronic certificate issuance technology may also be integrated with other digital platforms and issued electronically.
Key Data Elements & Definitions	• Document: Certificate/master policy number/reference number • Party: Insured Name; Name of Issuing Insurance Company; Claims survey/ settling agent at the port of destination; party to notify immediately • Terms: Main Insurance Terms and Conditions • Amount: Insurance Cover amount; currency of the insurance cover; insurance premium
Adoption	At present, insurance certificates are mostly electronic while some remain unavailable electronically and still in traditional pre-printed paper.
Other Information	
Document-Specific Challenges	Framing the problem: Lack of standards or standard definitions for Key Data Elements is a problem. Though mostly electronic, the system also requires re-entry of shipment information as opposed to being just auto-populated or reusing data already available from other documents. • No common standards or definitions • No auto-population or data reuse
Document Specific Solution	• SDOs should develop a document stating the standard requirements for insurance certificates, together with clear definitions of KDEs (to be harmonised across other KTDs) • Allow integration or reuse of data in existing logistics digital platforms so that the common data elements are not repeatedly entered

8 Glossary of key trade data elements

8.1. Methodology

The horizontal analysis consisted of identifying the data elements used across the key trade documents. For each data category, key data elements were identified based on their usage across several documents. The data elements were marked as belonging to one of the following categories: Amount, Banking, Consignment, Document, Date, Duty/Tax, Goods, Location, Measure, Party, Transport, Terms. The standards in which these elements are defined were consulted, and recommendations on which standard to use and best practices issued where appropriate.

8.2. Data analysis results

A total of 269 data elements were identified across the seven key documents. The resulting data set, together with a horizontal analysis to identify repeated data elements across the key trade documents, provides guidance on how common data approaches and digital standards could facilitate data sharing and interoperability that would enable digital trade at scale. When taken together with the progress already achieved by both multilateral and private sector organisations to ensure alignment between commonly used digital standards, this shows the feasibility of digital trade without the creation of entirely new standards and taxonomies, but rather, by adapting and building on practices already in place.

8.3. Recommendations and best practice standards

Many standards have been developed over the years to enable the representation of trade documents in electronic format and the interchange of documents between commercial operators and governmental agencies. **Best practice: Adopt a standard that is recognised internationally and has a proven implementation experience from many parties.**

The following organisations issue standards that have been identified as meeting these criteria.

8.3.1. United Nations Centre for Trade Facilitation and Electronic Business (UNECE-UN/CEFACT)

Source	https://unece.org/trade/uncefact/standards
Who	The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) is a subsidiary intergovernmental body of the United Nations Economic Commission for Europe (UNECE), which serves as a focal point within the United Nations Economic and Social Council for trade facilitation recommendations and electronic business standards.
What	UNECE-UN/CEFACT offers a portfolio of standards addressing the needs of electronic data interchange between independent computerised information systems. It covers all major trade documents required by private and public organisations.
Why	The UN/CEFACT set of standards is widely recognised and used for national and international trade transactions in many sectors. The UN/CEFACT standards make provision for many options to meet diverse requirements, which are harmonised across industry sectors and transport modes. Therefore, some industries have developed standard subsets of the general UN/CEFACT standards to narrow down these options and thus provide guidance meeting their specific needs.
Data	UN/CEFACT publishes and maintains a Reference Data Model as a subset of the UN Core Components Library (UNCCL) in the context of a specific sector of activity. UNCCL is a library of business semantics. The United Nations Trade Data Element Directory (UNTDED)-ISO 7372 is a directory comprising a set of data elements intended to facilitate an open interchange of data in international trade. UN/CEFACT is in the process of submitting its BSP RDM to ISO as the future ISO 20197-1; 20197-2; and 20197-3.

8.3.2. OASIS Open

Source	https://docs.oasis-open.org/ubl/UBL-2.3.html
Who	OASIS Open is a non-profit standard body. It offers projects — including opensource projects — a path to standardisation and de jure approval for reference in international policy and procurement.

Who	People join OASIS to advance projects for cybersecurity, blockchain, IoT, emergency management, cloud computing, legal data exchange, and much more. The technologies vary, but DSI's mission stays the same: to advance the fair, transparent development of open-source software and standards through the power of global collaboration and community.
What	UBL, defines a library of standard XML business documents supporting the digitalisation of the commercial and logistical processes for domestic and international supply chains such as procurement, purchasing, transport, logistics, intermodal freight management, and other supply chain management functions.
Why	OASIS UBL has been recognised as an ISO/IEC standard (ISO/IEC 19845:2015). It has become the foundation for several successful public procurement frameworks, including PEPPOL, the pan-European public procurement platform.
Data	OASIS UBL includes several semantic considerations. The UBL data model design follows the principles of the UN/CEFACT Core Components Technical Specification.

8.3.3. GS1: Electronic Data Interchange (EDI)

Source	https://www.gs1.org/standards/edi
Who	GS1 is a not-for-profit, international organisation developing and maintaining standards for identification, automatic data capture and data sharing. The goal is to provide a global language of business. Through a network of local organisations in 115 countries, GS1 enjoys a membership of more than two million companies.
What	GS1 Electronic Data Interchange (EDI) provides global standards for electronic business messaging that allow automation of business transactions commonly occurring across the entire supply chain. It covers master data alignment, order, delivery, financial settlement, as well as transport and warehouse management. The main business partners in scope are retailers, manufacturers, material suppliers, healthcare operators and logistic service providers. The GS1 EDI standards are available in EDIFACT format, fully compliant with UN/EDIFACT and in XML format. The GS1 EDI standards specify the use of globally unique GS1 identifiers for parties, locations, trade items, logistic units, documents, and assets.

Why	The GS1 EDI standards are used worldwide by close to 200,000 companies from various sectors including consumer goods manufacturers and retailers, healthcare, transport & logistics. More than 40 trade documents are routinely implemented, the most popular being purchase order, invoice, despatch advice, receiving advice, inventory report and product data alignment.
Data	GS1 provides an EDI Semantic Data Model, with a dictionary based on business language definitions of shareable data, and syntax neutral models of the most relevant transactions. The GS1 semantics are largely compatible with the UN/CEFACT Core Components.

8.3.4. The World Customs Organisation (WCO)

Source	https://www.wcoomd.org/DataModel
Who	The World Customs Organisation (WCO) is an independent intergovernmental body whose mission is to enhance the effectiveness and efficiency of customs administrations. Today, the WCO represents 184 customs administrations across the globe that collectively process approximately 98% of world trade. As the global centre of customs expertise, the WCO is the only international organisation with competence in customs matters and can rightly call itself the voice of the international customs community.
What	The WCO Data Model has been the data foundation for global trade interoperability for over two decades. It was developed to provide a universal language for cross-border data exchange enabling the implementation of Single Window systems and fuelling data analytics. It is a compilation of clearly structured, harmonised, standardised, and reusable sets of data definitions and electronic messages designed to meet the operational and legal requirements of customs and other cross-border regulatory agencies (CBRAs) responsible for border management.
Why	Customs are an integral part of any international trade transactions. The WCO Data Model is widely adopted and sometimes mandated by customs organisations around the globe.
Data	The WCO Data Model is mapped to the United Nations Trade Data Elements Directory (UN/TDED) and leverages standards established by international organisations such as the United Nations Centre for Trade Facilitation and Electronic Business (UNECE-UN/CEFACT) and the International Organisation of Standards (ISO) to ensure global interoperability.

8.3.5. International Organisation for Standardisation (ISO)

Source	https://www.iso20022.org/
Who	International Organisation for Standardisation (ISO) is an independent, non-governmental international organisation with a membership of 167 national standards bodies. Through its members, it brings together experts to share knowledge and develop voluntary, consensus-based, market relevant International Standards that support innovation and provide solutions to global challenges.
What	ISO 20022 is a multi-part international standard prepared by ISO Technical Committee 68 Financial Services. ISO 20022 describes a common platform for the development of messages using: • A modelling methodology to capture in a syntax-independent way financial business areas, business transactions and associated message flows • A central dictionary of business items used in financial communications • A set of XML and ASN.1 design rules to convert the message models into XML or ASN.1 schemas, whenever the use of the ISO 20022 XML or ASN.1-based syntax is preferred
Why	ISO 20022 is targeted at these standards initiatives that are generally driven by communities of users looking for more cost-effective communications to support specific financial business processes with a particular view of facilitating interoperability with other existing protocols.
Data	The ISO 20022 Data Dictionary contains Business Concepts, Message Concepts and Data Types. All these items are reusable and are called Dictionary Items. The Data Dictionary as a whole is under release control.

8.3.6. Global Legal Entity Identifier Foundation (GLEIF)

Source	https://www.gleif.org/en
Who	Established by the Financial Stability Board in June 2014, the Global Legal Entity Identifier Foundation (GLEIF) is tasked to support the implementation and use of the Legal Entity Identifier (LEI). The foundation is backed and overseen by the Regulatory Oversight Committee, representing public authorities from around the globe that have come together to jointly drive forward transparency within the global financial markets. GLEIF is a supra-national not-for-profit organisation headquartered in Basel, Switzerland.
What	The Legal Entity Identifier (LEI) is a 20-character, alpha-numeric code based on the ISO 17442 standard developed by the International Organisation for Standardisation (ISO).
Why	The publicly available LEI data pool is a unique key to standardised information on legal entities globally. By the end of Q4 2022, there were over 2.19 million active LEIs globally, 234 regulations mandating use of the LEI in 21 jurisdictions globally.
Data	Daily reporting of LEI and legal entity reference data is conducted by the LEI issuing organisations using the Common Data File (CDF) formats. Level 1 Data defines the information on 'who is who'. Level 2 Data defines information on 'who owns whom'.

8.3.7. Digital Container Shipping Association (DCSA)

Source	http://dcsa.org
Who	A non-profit, independent organisation established in 2019 by several of the largest container shipping companies, the mission of the Digital Container Shipping Association (DCSA) is to shape the digital future of container shipping. Together with its member carriers and other stakeholders such as cargo owners, terminals and governments, DCSA creates vendor-neutral, technology-agnostic, standards for IT and non-competitive business practices.
What	Amongst other standards, like for tracking and tracing cargo and vessel schedules, DCSA maintains a standard for the electronic Bill of Lading for container shipping.
Why	To move containerised transport forward in terms of customer experience, efficiency, collaboration, innovation and respect for the environment, by working towards the widespread adoption of digital standards.
Data	All of the standards created by DCSA are open source and free of charge for all stakeholders to build and innovate upon. They are available at http://dcsa.org

8.3.8. International Federation of Freight Forwarders Associations (FIATA)

Source	https://fiata.org/
Who	A non-governmental, membership-based organisation representing freight forwarders in some 150 countries.
What	Amongst other documents, the International Federation of Freight Forwarders Associations (FIATA)maintains a standard for the warehouse receipt document, https://fiata.org/resources/,as well as a standard for the electronic House Bill of Lading https://fiata.org/digital-bill-of-lading/
Why	To facilitate the exchange of data between freight-forwarders and their stakeholders, through the platform of their choice, by promoting the usage of digital standards.
Data	FIATA's data standards are open source and free of charge for all stakeholders. They are available at: https://github.com/FIATA

8.3.9. Baltic and International Maritime Council (BIMCO)

Source	https://www.bimco.org/
Who	Baltic and International Maritime Council (BIMCO) is the world's largest international shipping association, with over 2,000 members in more than 130 countries, representing over 60% of the world's tonnage. Its global membership includes shipowners, operators, managers, brokers and agents. BIMCO is a non-profit organisation.
What	BIMCO has been producing paper standards for more than a century. It now maintains a standard for the electronic Bill of Lading for wet and dry bulk shipping, https://www.bimco.org/ebl.
Why	To help promote and support digital transformation and harmonised open standards across all sectors of the shipping industry through cooperation and collaboration.
Data	BIMCO's data standard for bulk shipping bills of lading is an open standard freely available to developers.

8.4. Data elements

The analysis of the data elements did not reveal any major conflicts in definitions. While not identical across the various standards, these definitions are sufficiently interoperable for the differences to not cause problems of interpretation.

Rather than creating a new glossary of terms that could possibly become a new standard, the working group decided to issue recommendations on best practice for those key data elements used across multiple trade documents.

The general principles of the best practice are based on a commitment to using globally recognised standards and globally recognised identifiers for relevant objects and subjects.

8.4.1. Country code

Requirement	Many, if not all, trade documents include the coding of countries.
Recommendation	The recommendation is to use ISO 3166 to define internationally recognised codes of letters and/or numbers that can be used to refer to countries and their subdivisions. ISO 3166 does not define the names of countries – this information comes from United Nations sources.
Rationale	Using codes saves time and avoids errors as instead of using a country's name (which will change depending on the language being used), we can use a combination of letters and/or numbers that are understood all over the world.
Source	https://www.iso.org/iso-3166-country-codes.html

8.4.2. Currency code

Requirement	Many, if not all, trade documents include the coding of currencies.
Recommendation	The recommendation is to use ISO 4217, which specifies the structure for a three-letter alphabetic code and an equivalent three-digit numeric code for the representation of currencies.
Rationale	ISO 4217:2015 is intended for use in any application of trade, commerce, and banking, where currencies and – where appropriate -funds are required to be described. It is designed to be equally suitable for manual users and for those employing automated systems.
Source	https://www.iso.org/iso-4217-currency-codes.html

8.4.3. Date and time

Requirement	All trade documents include a representation of date and time.
Recommendation	The recommendation is to use ISO 8601 to help remove doubts that can result from the various day–date conventions, cultures and time zones that impact a global operation. It gives a way of presenting dates and times that is clearly defined and understandable to both people and machines.
Rationale	When dates are represented with numbers, they can be interpreted in different ways. For example, 01/05/12 could mean January 5, 2012, or May 1, 2012. On an individual level this uncertainty can be very frustrating; in a business context it can be very expensive.
Source	https://www.iso.org/iso-8601-date-and-time-format.html

8.4.4. Party

Requirement	There is a requirement to identify uniquely and unambiguously the main legal entity and supply chain roles referred to in trade documents.
Recommendation	The recommendation is to use globally unique and unambiguous identifiers for the identification of the sender, receiver, and other parties relevant to the electronic interchange of a trade document. • The Legal Entity Identifier (LEI) is applicable to legal entities, which include, but are not limited to, unique parties that are legally or financially responsible for the performance of financial transactions or have the legal right in their jurisdiction to enter independently into legal contracts, regardless of whether they are incorporated or constituted in some other way (e.g. trust, partnership, contractual). It includes governmental organisations, supranationals and individuals when acting in a business capacity, but excludes natural persons. The LEI is managed by GLEIF and information on assigned LEIs is publicly and freely available. • The Business Identifier Code (BIC) is used for addressing messages, routing business transactions and identifying business parties within the financial services industry. SWIFT in its role of ISO registration authority issues BICs. The BIC is used in financial transactions, client and counterparty databases, compliance documents and many others, although not all BICs are connected to the SWIFT network used by banks and other institutions for financial messaging.

	• The Trade Identification Number (TIN) is a globally unique identification number that can be used for retrieving underlying information relating to an economic operator involved in cross-border supply chain, to enable customs administrations to perform the appropriate actions, particularly in the context of mutual recognition arrangements/agreements of authorised economic operators. • The GS1 Global Location Number (GLN) is widely used in multiple business processes to identify parties such as a corporation, subsidiary, or government body and functions, such as organisational subdivisions or departments. • Government agency trader identifiers will also be important.
Rationale	All trade documents require the identification of parties. Using the plain name of the party or codes that are only meaningful to the sender and receiver of a document is inefficient and prone to errors. Parties are identifiable by a number of globally unique identifiers for all sorts of business processes and it would be impractical to suggest that all forms of electronic data interchange migrate to sole use of LEI. A way forward is to encourage the mapping of identifiers like the mapping between BIC and LEI, see https://www.gleif.org/en/lei-data/lei-mapping.
Source	LEI: https://www.gleif.org/en/about-lei/introducing-the-legal-entity-identifier-lei BIC: https://www.swift.com/standards/data-standards/bic-business-identifier-code TIN: https://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/tools/trader-identification-number.aspx GLN: https://www.gs1.org/standards/id-keys/gln, also recognised by ISO/IEC 6523

8.4.5. Location

Requirement	There is a requirement to identify uniquely and unambiguously the locations referred to in trade documents.
Recommendation	The recommendation is to use globally unique identifiers for the identification of physical or digital locations relevant to the electronic interchange of a trade document.

	• The GS1 Global Location Number (GLN) can be used to identify physical or digital locations. A physical location is a tangible place that may be represented by an address, coordinates, or other means. A digital location is an electronic (non-physical) address that is used for communication between computer systems. The GS1 GLN and EDI standards are used worldwide by close to 200,000 companies from various sectors including consumer goods manufacturers and retailers, healthcare, transport & logistics. • The United Nations Code for Trade and Transport Locations is commonly more known as "UN/LOCODE". Although managed and maintained by the UNECE, it is the product of a wide collaboration in the framework of the joint trade facilitation effort undertaken within the United Nations. Currently, UN/LOCODE includes over 103,034 locations in 249 countries and territories. It is used by most major shipping companies, by freight forwarders and in the manufacturing industry around the world.
Rationale	All trade documents require the identification of locations. Using only the postal address or using proprietary coding solutions in electronic documents is inefficient and prone to errors.
Source	GLN: https://www.gs1.org/standards/id-keys/gln, also recognised by ISO/IEC 6523 UN/LOCODE: https://unece.org/trade/uncefact/unlocode

8.4.6. Product

Requirement	All trade documents refer to the products that are the object of the transactions.
Recommendation	The recommendation is to use globally unique identifiers for products that are traded. ISO/IEC 15459-4 specifies a unique string of characters for the identification of individual products and product packages. The standard makes provision for different coding schemes managed by recognised issuing agencies, including GS1. The GS1 Global Trade Item Number (GTIN) is used to identify any item (product or service) upon which there is a need to retrieve predefined information and that may be priced, or ordered, or invoiced at any point in any supply chain. This definition covers raw materials, consumer packaged goods, healthcare items and items for general distribution. The GS1 GTIN is used and applied by millions of companies around the world. A free and publicly available service enables to verify the product's identity.

Rationale	All trade documents require a reference to the goods being traded. Textual descriptions or proprietary coding solutions is inefficient and prone to errors in electronic documents.
Source	ISO/IEC 15459-4: https://www.iso.org/standard/54782.html GTIN: https://www.gs1.org/standards/id-keys/gtin

8.4.7. Logistic unit

Requirement	References to the logistic units is required in some trade documents.
Recommendation	The recommendation is to use globally unique identifiers for logistic units. ISO/IEC 15459-1 specifies a unique string of characters for the identification of individual transport units. The standard makes provision for different coding schemes managed by recognised issuing agencies, including GS1. The GS1 Serial Shipping Container Code (SSCC) can be used by companies to identify a logistic unit, which can be any combination of trade items packaged together for storage and/ or transport purposes; for example, a case, pallet or parcel.
Rationale	Proprietary coding solutions are inefficient and prone to errors in electronic documents.
Source	ISO/IEC 15459-1: https://www.iso.org/standard/54779.html SSCC: https://www.gs1.org/standards/id-keys/sscc

8.4.8. Consignment

Requirement	UN/CEFACT defines a consignment as a separately identifiable collection of goods items (available to be) transported from one consignor to one consignee via one or more modes of transport as specified in one single transport document. References to consignments are required in many trade documents.
Recommendation	The recommendation is to use globally unique identifiers for consignments. ISO/IEC 15459-6 specifies a unique string of characters for the identification of groupings of products, product packages, transport units and items. The standard makes provision for different coding schemes managed by recognised issuing agencies, including GS1.

	Three solutions are recommended: 1. The Global Shipment Identification Number (GSIN) is a number assigned by a seller and shipper of goods to identify a shipment comprised of one or more logistic units that are intended to be delivered together. 2. The Global Identification Number for Consignment (GINC) can be used by transporters and freight forwarders to identify a consignment comprised of one or more logistic units that are intended to be transported together. 3. Unique Consignment Reference (UCR) standardised by the World Customs Organisation.
Rationale	Proprietary coding solutions are inefficient and prone to errors in electronic documents.
Source	ISO/IEC 15459-6: https://www.iso.org/standard/54786.html GSIN: https://www.gs1.org/standards/id-keys/gsin GINC: https://www.gs1.org/standards/id-keys/ginc UCR: https://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/tools/ucr.aspx

8.4.9. Container

Requirement	The identification of containers being transported is a requirement in several trade documents.
Recommendation	The recommendation is to use ISO 6346, Freight containers — Coding, identification and marking. This document provides a system for the identification and presentation of information about freight containers. The identification system is intended for general application, for example in documentation, control, and communications (including automatic data processing systems), as well as for display on the containers themselves.
Rationale	ISO 6346 is recognised internationally for the identification of containers.
Source	https://www.iso.org/standard/83558.html

8.4.10. Commodity code

Requirement	The classification of goods is required by customs organisations for the calculation of customs tariffs. Other goods classification systems may be used by trading partners.
Recommendation	The Harmonised System (HS) nomenclature maintained by the WCO, is used worldwide for the uniform classification of goods traded internationally and has been accepted by all contracting parties to the Harmonised System Convention. The United Nations Standard Products and Services Code (UNSPSC), managed by GS1 US for the UN Development Programme (UNDP), is an open, global, multi-sector standard for efficient, accurate classification of products and services. The Global Product Classification (GPC) classifies products by grouping them into categories based on their essential properties as well as their relationships to other products.
Rationale	The Harmonised System is a legal requirement in several trade documents. Commercial classifications of products can be used additionally to facilitate trade transactions.
Source	HS: https://www.wcoomd.org/en/faq/harmonized_system_faq.aspx UNSPSC: https://www.unspsc.org/ GPC: https://www.gs1.org/standards/gpc

8.4.11. Terms

Requirement	Many trade documents need to refer to the commercial terms of the trade transactions.
Recommendation	The recommendation is to use Incoterms in relevant trade documents.
Rationale	The Incoterms or International Commercial Terms are a series of pre-defined commercial terms published by the International Chamber of Commerce (ICC) relating to international commercial law. Incoterms define the responsibilities of exporters and importers in the arrangement of shipments and the transfer of liability involved at various stages of the transaction.
Source	https://iccwbo.org/resources-for-business/incoterms-rules/incoterms-2020/

8.5. Annex: Categorised data elements usage by document

CoO = Certificate of Origin, INV = Commercial Invoice, WR = Warehouse Receipt, PL = Packing List, BL = Bill of Lading, CD = Customs Declaration, IC = Insurance Certificate

	CoO	INV	WR	PL	BL	CD	IC
Amounts							
Customs Value						X	
Statistical Value						X	
Total Invoice Amount		X				X	
Declared Value					X		
Freight and Charges					X		
Prepaid Amount					X		
Collect Amount					X		
Currency							X
Insurance Cover Amount							X
Insurance Premium							X
Credit Amount		X					
Exchange Rate		X					
Tax Amount		X					
Banking							
Bank Details		X					
Consignment/Container/ Equipment							
Container Number				X	X		
Container Size/Type (ISO Coded)					X		
Full or Empty Indicator					X		
Equipment Identification number					X	X	
Seal					X	X	
Details of a Consignment - Goods Transported View				X			
Details of a Consignment - Package View				X			
Documents							
Bill of Lading Number					X		
Carrier Booking Reference Number					X		
Contract/Quote Reference Number		X			X		

	CoO	INV	WR	PL	BL	CD	IC
Freight Forwarders Reference Number					X		
Shippers Reference Number					X		
Conveyance Reference Number						X	
Document Reference Number						X	
Invoice Number		X		X		X	
Previous Document Number						X	
Trader Reference						X	
Transport Document Number				X	X	X	
Unique Consignment Reference (UCR)						X	
Letter of Credit No	X						
Certificate/Master Policy Number/ Reference Number							X
Buyer Contract		X		X			
Customer Order No		X					
Sales Order No		X					
Seller Reference				X			
Insurance			X				
CoO Certificate number	X						
Date & time							
Actual Time Arrival (ATA)					X	X	
Actual Time Departure (ATD)					X		
Estimated Time Arrival (ETA)					X		
Estimated Time Departure (ETD)					X		
Estimated and Actual Dates for Place of Receipt and Delivery					X		
Invoice Date		X				X	
Document Issue Date	X	X	X	X	X	X	X
Bill of Lading Date: [Date Which Vessel Finish Loading]		X					
Shipped on Board Date					X		
Received for Shipment Date					X		
Payment Due Date		X					
Date and Signature of the Issuance of the Document			X				
Duties/tax							
Duty Tax Fee (Item level)						X	

	CoO	INV	WR	PL	BL	CD	IC
Duty/Tax Payment Method, Coded						X	
Duty/Tax/Fee Assessed						X	
Duty/Tax/Fee Type						X	
Tariff Quantity/Supplementary Quantity						X	
Type of Duty Regime, Coded						X	
Goods							
Description of Goods	X	X	X	X	X	X	
Product Identifier	X		X		X	X	
No of Packages	X		X	X	X	X	
Harmonised System (HS) Commodity Code		X		X	X		
Type of Packaging				X	X		
Dangerous Goods Packaging Requirements				X			
United Nations Dangerous Goods (UNDG) Number				X			
The International Maritime Dangerous Goods (IMDG) Code					X		
Proper Shipping / Technical Name				X	X		
Danger Level					X		
Location							
Place of Delivery				X	X		
Place of Payment					X		
Place of Receipt					X		
Place of Delivery					X		
Onward routing location					X		
Port of Discharge		X		X	X		
Port of Loading		X					
Country of Exportation, Coded						X	
Country of Origin, Coded	X	X			X	X	
Delivery Destination						X	
Empty Container Pick-up Location					X		
Location of Goods, Coded						X	
Office of Exit, Coded						X	
Transport Document Issue Place						X	
Measure							

	CoO	INV	WR	PL	BL	CD	IC
Temperature Setting for Reefer Containers				X	X		
Reefer Humidity					X		
Reefer Ventilation					X		
Temperature Units (i.e. CEL) Coded from UNCEFACT					X		
Volume				X	X		
Weight		X		X	X		
Total Number of Containers (or Equipment)					X		
Container Tare Weight					X		
Total Gross Weight	X		X		X	X	
Total Number of Packages						X	
Moisture Content According to Certificate of Analysis		X					
Party							
Transport Document Issuer					X		
Freight Payer					X		
Consignee				X	X		
Notify Party					X		X
Shipper Forwarding Agent					X		
Consignee Forwarding Agent					X		
Shipper					X		
Carrier Identification					X	X	
Exporter, Coded					X	X	
Importer, Coded					X	X	
Office of Declaration, Coded						X	
Supplier, Coded			X			X	
Warehouse, Coded						X	
Certifying Body (Details of the Issuing Organisation, Including Place and the Date of Issuance and Authorisation).	X						
Claims Survey/Settling Agent at the Port of Destination							X
Insured Name							X
Name of Issuing Insurance Company (Stamp & Signature)							X

	CoO	INV	WR	PL	BL	CD	IC
Bill To		X					
Seller		X		X			
Buyer		X		X			
End Customer		X					
Applicant of the Letter of Credit		X					
Transport Services Provider				X			
Depositor of the Goods			X				
Warehouse Keeper			X				
Warehouse Operator			X				
Transport							
Conveyance Reference Number (i.e., Voyage Number)				X	X		
Identifier (i.e., IMO Vessel Number)				X	X		
Mode of Transport (Air, Road, and Sea) Coded Value				X	X		
Vessel Name		X			X		
Identification of Means of Transport Crossing the Border						X	
Transport Equipment Loaded Status						X	
Type of Means of Transport at Arrival						X	
Type of Means of Transport at Departure						X	
Type of Means of Transport Crossing the Border						X	
Particulars of Transport Details	X						
Means of Transport			X				
Terms							
Incoterms		X			X		
Terms and Conditions					X		
Carrier Clauses					X		
Terms of Payment Code						X	
Main Insurance Terms and Conditions							X
Payment Method According to the Contract		X					
Payment Term Agreed in the Contract		X					

9 Appendix A: Working Group Members

Associations/ Standards Bodies	User Companies
BIMCO	Anglo American
DCSA	BHP
FIATA	CMA CGM
GLEIF	DANGOTE
GS1	ExxonMobil
ICC	FINASTRA
ICISA	HSBC
IUMI	INDITEX
ISO	Rio Tinto
SWIFT	Swiss Reinsurance
UNECE- UN/CEFACT	VALE
WCO	

The International Chamber of Commerce (ICC) is the institutional representative of more than 45 million companies in over 130 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.

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

DSI is a collaboration between Enterprise Singapore, the Asian Development Bank and ICC, and works closely with the World Trade Organization and the World Customs Organization. Together, these five institutions form the Governance Board for the DSI.

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Beyond its work with ICC, BCG continues to actively support the trade finance community with thought leadership, including recent and a pipeline of future publications covering topics such as the digital, regulation, geopolitics, and increasingly importantly sustainability in trade.

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ICC
Digital
Standards
Initiative