# Note

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

# Acknowledgements

This document was prepared under the leadership of Dr. Hanane Becha; with the guidance of Sue Probert, the erstwhile Vice Chair of Regulatory PDA Dr Tahseen Khan, UN/CEFACT Chair, Mr Amar More & Mr R Ananth – the Domain Co-ordinators of Cross Border Management Domain, Mr Akshat Mehta and with the support from the UNCEAFACT Secretariat within the United Nations Economic Commission for Europe (UNECE). UNECE hosts UN/CEFACT which develops standards and best practice for trade facilitation and electronic business. The experts of the UN/CEFACT transport and logistics domain provided substantive support to the development of this paper. The project leadership would like to thank the following experts who contributed in their private and professional capacity to make this paper possible:

Cleiton Alves dos Santos Joao Simoes, Victor Dolcemascolo, Todd Frazier, Joelle Friedmann, Bertrand Geoffray, Laurent Gonzalez, Jorn Heerulff, David Roff, Stellios Stratidakis, Michael Schroeder, Sue Probert, Gregory Munjal, Zissis Palaskas, and Anna Jerzewska

Sincerely, Charles H.W. Edwards and Amar More, Co-Authors

**The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT)**

**Simple, Transparent and Effective Processes for Global Commerce**

UN/CEFACT’s mission is to improve the ability of business, trade and administrative organizations, from developed, developing and transitional economies, to exchange products and relevant services effectively. Its principal focus is on facilitating national and international transactions, through the simplification and harmonization of processes, procedures and information flows, and so contribute to the growth of global commerce.

Participation in UN/CEFACT is open to experts from United Nations Member States, Intergovernmental Organizations and Non-Governmental Organizations recognised by the United Nations Economic and Social Council (ECOSOC). Through this participation of government and business representatives from around the world, UN/CEFACT has developed a range of trade facilitation and e-business standards, recommendations and tools that are approved within a broad intergovernmental process and implemented globally.

[www.unece.org/cefact](http://www.unece.org/cefact)

ECE/TRADE/C/CEFACT/2019/10

Table of Contents

[Note 1](#_Toc162944660)

[Acknowledgements 1](#_Toc162944661)

[1. Introduction 3](#_Toc162944662)

[2. Background 4](#_Toc162944673)

[3. What is a Digital Corridor 4](#_Toc162944674)

[3.1. Buy-Ship-Pay Reference Data Model 5](#_Toc162944675)

[4. Need for Cross-Border Multimodal Digital Corridors 6](#_Toc162944684)

[4.1. Buy-Ship-Pay Model 6](#_Toc162944685)

[5. How to go about implementing a Digital Corridor 7](#_Toc162944686)

[6. Benefits of a Digital Corridor 11](#_Toc162944687)

[7. Challenges 11](#_Toc162944688)

[7.1. Stakeholder Digitalization Challenges, Concerns and Costs 12](#_Toc162944689)

[8. Constraints and Strategies to Mitigate Constraints 13](#_Toc162944690)

[9. Industry and Government Initiatives 14](#_Toc162944691)

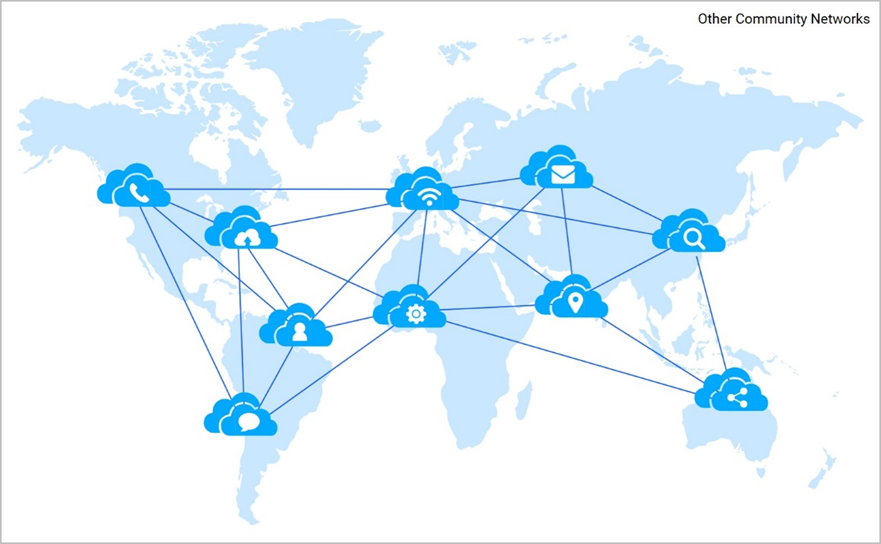
[10. Legal Framework – Recommendations 14](#_Toc162944692)

[11. Conclusions and Recommendations 16](#_Toc162944693)

# Introduction

This white paper is part of the UN/CEFACT’s Cross-Border Management Domain and focusses on improving the cross-border flow of all types of freight consignments by applying digital solutions. ***A Digital Corridor is an electronic platform that connects multiple trade eco-systems (e.g. air/ocean/land community systems or single window systems) to share the status of business activities and relevant cargo information.***

Movement of cargo through International (air/ocean/land) borders is delayed due to lengthy and complex regulatory clearances. In reality, several research projects have shown large amount of data reusability between origin and destination e.g. customs declarations, carrier manifests etc. If re-usability of data is established and information on cargo status is exchanged between origin and destination then it removes non-tariff barriers to trade between countries and their respective land/sea ports and airports.



Several countries, land/sea ports and airports are exploring the possibility of establishing such data and logistics corridors but do not find any standard guidance material on the same. The purpose of this project is to create guidance material on corridor set ups and further build on the existing data pipeline model to create Linkage and establish appropriate standards for exchange of information between ports and airports of two or more countries.

The projects will build on the existing Data pipeline model and BUY-SHIP-PAY model to create a white paper and guidance material for exchange of data through digital corridors.

The scope of the white paper includes:

* Study of the need of digital corridors for air/sea/land modes of transport with focus on regulatory authorities
* Study of reusability of information between origin and destination stakeholders
* Study of existing similar initiatives
* Study the potential of integrating with single windows
* Study of other factors that delay cargo processing at air/sea/land borders that could be addressed through the corridors
* Identify the common data elements
* Identify key steps in setting up the air/sea/land corridors
* Study the possible challenges in setting up of digital corridors
* Identify technologies that can facilitate creation of digital corridors

# Background

Existing UN/CEFACT supported research shows that freight transport ecosystem extends far beyond the cross-border movement of consignments. In addition to the complexity of the supply chains as suppliers change and markets evolve, the fundamental expectations of the sellers, buyers, consignors, and consignees are changing. A significant cause of this change is the application of e-commerce norms to all cargo consignments. The common foundation of these expectations is consistency. Consignors and especially consignees want the functions which move the consignments to be consistent so that they can better plan inventory levels, cash positions, and revenue streams.

In a study performed for a major airline, the findings which are applicable to all modes of freight transport, the following expectations were universally mentioned. In rank order of importance, they are:

* **Speed:** Usually, 48 to 72 hours’ time in transit end-to-end when air cargo is the chosen mode. A consistent repeatable speed of transit is expected.
* **Transparency**: Throughout the entire transportation cycle, real-time information visibility of to the status, condition, and location of the consignment.
* **Quality:** No claims or damage to each consignment which is delivered as promised.
* **Compliance:** There is a demand for environmental and economic commitment from the service provider which are becoming a key decision-making element.

Only when the above criteria are met does price factor into the decision-making process:

* **Price:** The price should be marketplace competitive with other service providers or gateways offering similar services or products. Transport company management must be aware of these new pricing dynamics.

These expectations challenge the capabilities and capacity of legacy, non-digital processes.

# What is a Digital Corridor

***A Digital Corridor is an electronic platform that connects multiple trade eco-systems (e.g. air/ocean/land community systems or single window systems) to share the status of business activities and relevant cargo information.***

The International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD) define digital trade as ‘all cross-border transactions that are either digitally ordered (i.e. cross-border e-commerce), digitally facilitated (platforms), or digitally delivered[[1]](#footnote-1). Cargo community systems and digital corridors provide a structure in which the processes and parties engaged in transactions associated with the cross-border movements of consignments can function. As the following diagram illustrates, there are numerous information flows; many of which are composed of the same information. Cargo community systems, as reviewed below, reduce, if not eliminate the repetitive data entry, which reduces errors, speeds up the movement of the consignments, and ensures, from a regulatory perspective that the security of the borders is maintained, and the applicable duties and taxes are collected in a transparent manner.

### Buy-Ship-Pay Reference Data Model

A diagram of a cross-border purchase

Description automatically generated

Cargo community systems are encrypted platforms which facilitate direct interface between all the public and private stakeholders involved in creating, managing, handling, transporting, overseeing the flow of goods. Wholesale changes to legacy systems are not required. Instead through a series of APIs and EDI messages, information can be entered into the consignment ledgers through the digital platform.

The digital corridor is established when a community platform or a single window system at a location gets connected with the community platform or a single window system at another location to exchange relevant data. In case of non-availability of community platforms at a certain location, direct interface with individual stakeholders can be established and details can be made available to the partner at the destination of the cross-border movement.

It allows the electronic exchange of information or sharing of e-documents to fulfil business and/or regulatory requirements amongst economic operators or government authorities.

* platform has a single point of data entry for the exchange of information between regulatory agencies and trading participants
* business activities are simpler, faster and more efficient with reduced risk of errors and data duplication
* seamless exchange of details allows to achieve greater efficiency and transparency in processes.

A digital freight corridor between the two countries is of high relevance in any trade. It enhances Consignment visibility and optimises the flow of cargo data from the point of origin to the destination and *vice versa*. The collaboratively established digital corridors facilitate the flow of information within the stakeholder chain and optimises cargo visibility across the stakeholder network. These digital data corridors can evolve from connecting one cargo network like airport/port community in one country to the airport/port community in the other country.

# Need for Cross-Border Multimodal Digital Corridors

A buyer of a product in Europe can order an item from a seller in Africa and have comfort that the right product will be delivered in the expected condition, at the right time to the right address. The work of UN/CEFACT in developing the Refence Data Models (RDM) illustrate the complexity of the transactions which integral to cross-border trade. The following diagram of the ‘Buy-Ship-Pay model displays the many processes and transactions associated with cross-border trade.

### Buy-Ship-Pay Model[[2]](#footnote-2)

A diagram of a shipping process

Description automatically generated

Thus, the management of cross-border exchange of goods is challenging. To comply with import, export and transit-related regulatory requirements, companies involved in international trade must regularly prepare and submit large volumes of information and documents to government authorities. The information and documentation often must be submitted to several different agencies, various regulatory authorities each with their own specific (manual or automated) systems and paper forms. The extensive requirements, together with their associated compliance costs, can constitute a serious burden to both governments and the business community. It is also a serious barrier to the development of international trade. There is a desire to address the following issues:

* Reduce and preferably eliminate extensive, usually duplicative paperwork which governs the export and clearance of consignments, and which can delay consignment processing. By reducing duplicative data and information entries, errors will be reduced leading to a reduction in the workload of border agencies and clearing agents that can contribute to delays in the flow of the consignments.
* Strengthen the visibility (transparency) of consignments at all stages of the supply chains. Improved visibility can serve two needs. One is to reduce the possibility of illegal products being introduced, which is a threat to the safety and security of the entire chain. And two, more timely information which supports better planning of staff and other resources that in turn reduces costs, speeds up processing, and attracts even more business to the locations that provide this level of service.
* Increase the potential of appropriate government agencies to collect the correct duties and taxes. Border agencies can more easily identify when the declared value of the consignment is less than the actual value of the product.
* Improve the compliance with export and import processes for customs agencies and traders to reduce uncoordinated delays at national borders.
* Eliminate consignment processing related to determining the real country of origin due to a lack of a verified Certificate of Origin.

The implementation of digital corridors aim to address all these issues.

# How to go about implementing a Digital Corridor

Now that the for a digital corridor is established. We need to deliberate upon how to set up a digital corridor. Whilst the clear guidelines for setting up a Digital Corridor, is a subject of another white paper itself, in this section; we examine how can the Cross Border Digital corridors be set up.

As defined earlier in the paper, the Digital corridors are electronic medium to share data securely and seamlessly between two or multiple entities. Following are the kinds of Digital Corridors:

* **Airport to Airport**: Digital corridor established to exchange air cargo information through community platforms deployed at two different airports
* **Port to Port**: Digital corridor to exchange sea freight information through community platforms deployed at two seaports
* **Regulatory Corridor**: Digital corridors established to exchange and verify details such as customs declaration submitted at the origin airport, export/ import licences of shipper/ consignee or licenses for specific products between the two customs systems or single window systems.

The aviation and maritime corridors focus on the basic Consignment information. The exchange of Consignment information allows operational partners to better plan their operations, assign staff and physical assets appropriately, and reduce ‘surprises’ of Consignments which require special handling that might delay other Consignments.

The regulatory corridor adds the border agencies to the exchange of information. The critical processes related to arrival alerts, selection of Consignments for additional inspection, and the efficient processing of all Consignments contributes to the increased velocity of Consignments through the supply chains.

**Phases in establishing a Digital Corridor**

Digital Corridors can be rolled out in different phases. The easiest place to start will be to exchange the Consignment status information between two entities such as Origin and Destination ports or airports. This can usually be achieved by exchange of industry standard EDI messages between these parties or APIs developed between the community systems at these airports or ports. This phase doesn’t necessitate any regulatory changes. However, it illuminates the entire cross border supply chain as the participants of the community systems at both ends now get extended cross border visibility.

**Digital Corridor Establishment Process**

The second phase focuses on Consignment information being collected and shared among the operational parties. This phase ensures that critical and appropriate information is available to all the parties along the route of each Consignment. By reducing data entry delays and errors, the velocity of the flow of the Consignments is increased. The increased velocity is important on many levels. Businesses can improve their financial position by reducing the order-to-cash cycle. This improves their resiliency and sustainability, especially in the face of internal and external disruptions. On a state level, increased transaction, especially international, are reflected in labour growth, wage improvements, and critical revenues which can support related programs. A state which supports and demonstrates high velocity Consignment transactions at its border becomes a more attractive destination for foreign direct investment which in turn leads to new or expanded business formations with all of its attendant benefits.

The third phase involves the addition of border agencies to the mix of linked parties. By accessing applicable Consignment status information and trade documents, border agencies can better police their borders, identify Consignments which require additional inspection, and rapidly clear Consignments which comply with all the applicable rules and regulations. This phase is more transformational in nature and might involve changes in laws if the data from the Digital Corridor is accepted for regulatory clearances.

Implementing a digital corridor(s) requires a collaborative and coordinated effort of all parties involved. As previously described, the success (benefits) associated with a cargo community system and a digital corridor is maximized when all parties are participants and are exchanging all appropriate data and information.

As previously noted, the implementation process is best achieved through a combination of an active top-down mandate and a collaborative bottom-up set of tasks. Regardless of whether the implementation occurs within a public agency or a private enterprise, issues will arise which require a collaborate effort to address, discuss, analyse, develop an acceptable solution.

The **methodology** of implementing a digital corridor is:

1. *Identifying the scope of Digital Corridors (Phase 1, Phase 2 or Phase 3)*
2. *Signing a Memorandum of Understanding between the anchor stakeholders like the ports or airports or customs agencies.*
3. *Educating the participating stakeholders on the concept of Digital corridors*
4. *Identifying a technology partner to deliver the Digital Corridor*
5. *Identifying pilot members from a cross section of stakeholders viz. small, large, medium forwarders or airlines or shipping lines or trucking companies or chambers of commerce etc.*
6. *Training the stakeholders on the usage of the technology (portal, mobile app etc.)*
7. *Executing pilot transactions*
8. *Fine tuning the technology solution based on pilot transactions*
9. *Identifying a target date for industry-wide (port/airport/country wide) roll out*
10. *Providing online training tools for the stakeholders*
11. *Launching the digital corridor*

Whist the scope of each digital corridor will be identified bi-laterally or multi-laterally, here are the documents and statuses that can potentially be exchanged through the digital corridors:

From Origin to Destination:

* Invoice, Packing List, Shippers Letter of Instructions and Air Waybill
* IE (Importer/ Exporter) Registration
* Consignment announced for the airport by submitting Advance Consignment Information (ASI)
* Shippers Declarations and Dangerous Goods Declarations
* Certificate of Origin (CoO)
* Freight on Hand status – The consignment is on hand on this date at this location pending “ready for carriage” determination
* Customs declaration and Customs Clearance (export permission)
* Receive from Shipper Status - The status is updated when consignment is physically received from the shipper or the shipper’s agent. This indicates that the Consignment is considered by the carrier as ready for carriage on the specified date at the specified location
* Consignment Manifestation Status - The consignment has been manifested for a specified Flight/Voyage on a scheduled date for transport between the two locations
* Consignment Departed Status - The status is updated when consignment has physically departed from a location on the scheduled date on a Flight/Voyage for transportation to the arrival location

From the destination to origin

* Arrival Status – The status is updated on arrival of a consignment in a scheduled Flight/Voyage at this location
* Consignment Received from Flight/Voyage/Ship Status – The status indicates that the consignment is physically received from a specific Flight/Voyage or surface transport of the given airline
* Consignment Notified to Consignee Status – The status indicates the consignee or the consignee’s agent has been notified about the arrival of Consignment. The details such as date of arrival and the location of Consignment is shared
* Document Delivered Status– The status is updated when the arrival documentation is physically delivered to the consignee or the consignee’s agent
* Customs clearance status - The consignment indicates that the Consignment has been cleared by the Customs authorities
* Consignment delivered Status – The status is update when a consignment is delivered to the consignee or consignee’s agent
* Proof of Delivery

**Potential Technologies involved in setting up Digital Corridors**

Digital corridors involve connecting two airport or port communities or customs administrations. The basic level data exchange can happen with APIs or UNCEFACT/IATA/SMDG etc EDI messages. As we saw other technologies like i-share have also been used in implementing the digital corridors. Attempts have been made to implement Digital Corridors using Microsoft’s corda blockchain infrastructure.

Essentially any technology that supports verifiable credentials, data encryptions, immutability (such as blockchain) are suitable for implementing the digital corridors.

# Benefits of a Digital Corridor

The primary benefits associated with an electronic structure that leverages single windows and combines cargo community systems and digital corridors include the following[[3]](#footnote-3):

**For Trade**

* Reduction in the time and cost of complying with cross border regulatory processes.
* Simplification of regulatory procedures.
* Reduction in (or elimination of) paperwork and the need to travel to the various PGAs.
* Increased predictability and transparency.
* Automation of regulatory processes in line with other business processes.
* Electronic payment facilities.
* Online, real-time monitoring of consignment status.

**For government**

* Reduction in cost.
* Enhanced efficiency of regulatory processes.
* Elimination of duplicated processes between agencies.
* Higher compliance levels with government regulations.
* Enhanced traceability and statistics.
* More accurate and often increased revenue yield for customs.
* Improved government services (and the perception thereof).
* Greater economic competitiveness.
* Increased transparency.
* Improvement in world rankings for business competitiveness and efficiency (e.g., World Bank Trading Across Borders and Logistics Performance Index).
* Compliance with WTO TFA commitments.

Achieving these benefits contributes to an expansion of cross-border trade which in turn benefits the world’s population.

# Challenges

Digitalization is not free. There are financial, operational, and human resources costs. The scale of the costs will vary according to the scale of the conversion and the difficulty of changing from a non- or semi-digital operation. While the impetus of the digitalization project must come from senior management, the actual implementation is best achieved through a bottom-up process. The following table identifies stakeholder challenges and costs for public agencies and private enterprises.

### Stakeholder Digitalization Challenges, Concerns and Costs

|  |  |  |
| --- | --- | --- |
| Challenge and Cost | Public Agencies | Private Stakeholders |
| Protect Intellectual Property | Protection of user information and data is very important. | Significant consideration – loss of information control can adversely affect revenue and profits. |
| Protect Consignment Information | Access to consignment information for border control purposes and collection of duties and taxes. Limit access to appropriate agencies. | Protect consignment information from competitors and other members of the supply chain who do not need access. |
| Protect Consignment Security | Minimize / eliminate alterations to original consignment. | Protect consignments from theft and/or introduction of illegal substances. |
| Data sharing | Protection of user information and data is very important. | Balance protection of commercially sensitive information with improvement of consignment flows which accelerate collection of revenues and cost reduction. |
| Perceived benefits and incentives | Trade-off between higher costs and more accurate collections of duties and taxes. | Trade-off between higher costs and more reliable movement of cross-border consignments and levied duties and taxes. |
| Required Investment | Costs to replace existing legacy systems with new computer systems versus create digital ‘Apps’ to link legacy system to digital platform.  Acquisition of new system and training.  Cost-benefit analysis, budgeting process and negotiation of final amounts. | Costs to replace existing legacy systems with new computer systems versus create ‘Apps” to link legacy system to digital platform.  Acquisition of new system and training.  Identify revenue enhancement / cost reduction to justify funding. |
| Compatibility with existing systems | Decide whether to create new system or to employ digital ‘Apps’ which link legacy system to new digital platform.  Level of support will be determined by new system vs. digital apps decision. | Decide whether to create new system or to employ digital ‘Apps’ which link legacy system to new digital platform.  Level of support will be determined by new system vs. digital apps decision. |
| Compatibility with organisation structure | Ensure that all changes are compatible with existing legislation.  Any changes to governing legislation, rules and procedures can delay implementation. | Form implementation team which brings together all key departments to ensure transition is comprehensive. |

Identifying and quantifying each challenge and determining the appropriate actions to address each challenge should occur at the beginning of the project. The project team should be prepared to quickly alter their approach when new challenges and opportunities emerge. It is during a mid-course correction that senior leadership can ensure that the overall goals are still in focus.

# Constraints and Strategies to Mitigate Constraints

The following issues reflect concerns about data control, access, and protection in a digital corridor:

* **Stakeholders are not connected through a community network**: Digital corridors connect two community networks to share information. When the stakeholders at one of the locations are not connected through a community network then it may hinder the establishment of a digital corridor.
* **Data security concerns of stakeholders**: storing data and important files on external service providers always opens risks. There are instances where a digital front end is backed up by paper-based operation.
* **Downtime**: cloud computing system are internet based, service outages are always a possibility and can occur for any reason.
* **Vulnerability to Attack**: every component is online, which exposes to potential cyber-attack vulnerabilities. Numerous government agencies have limited data security protocols and thus revert to the use of paper based systems.
* **Limited Control and Flexibility**: Customers retain control of their applications, data, and services, but may not have the same level of control over their backend infrastructure.

When implementing a digital corridor, these concerns must be clearly addressed.

There are several strategies which can be employed to address each of these concerns. The process of addressing the concerns should be conducted through candid, collaborative dialogue with each stakeholder.

* Enforcing Global Data Protection Rule (GDPR) controls the vulnerability of data hosted in the cloud. data security is optimally ensured with an effective user access management system in place.
* Multi-region hosting with automated handover to ensure business continuity can minimize the impact of downtime of cloud platforms. The exposure can be further reduced by considering dedicated network connection with the cloud service provider. Understanding that tier 1 cloud providers generally guarantee ‘uptimes’ of over 99% can reduce the concern about the digital conversion of paper-based systems.
* Making security a core value of all IT operations can help reduce vulnerabilities to cyberattacks. Additionally, regularly reviewing security policies and procedures, proactively classifying information, and applying strict access controls. Reviewing security compliance on a set schedule should be part of the system operation.
* Understanding each parties’ responsibilities, including the cloud vendor in the shared responsibility model can reduce the chance of omission or error and increase functional flexibility.

An overarching strategy is to implement a dynamic risk management structure. The process of identifying, assessing, creating a plan (both proactive and reactive), and implementing the corrective plan has maximum benefit when everyone in the organization is actively engaged. There are many models and templates for risk management programs. Selecting the appropriate one depends on the characteristics of the organization and form of activity.

# Industry and Government Initiatives

The following initiatives have the same goals as for the cross-border digital corridors

* the governments e.g. India-BeNeLux corridor,
* Industry Associations e.g. International Port Community Systems Association’s (IPSCA) Network of Trusted Networks;
* private initiatives such as Mumbai Airport – Amsterdam Airport digital corridor and

IATA’s initiative of One Record.

# Legal Framework – Recommendations

The unencumbered flow of digitized information is the key to implementing digital corridors. Addressing the issues surrounding these flows requires the careful adoption of policies and rules to protect the data and information.

In many cases the exchange of consignment information is based on legacy non-digital systems[[4]](#footnote-4). A modern digital trade ecosystem fit for the 21**st** century requires national laws to recognise all trade documents in digital form, and legal systems to be aligned to enable digital transformation to move seamlessly across borders and between stakeholders – buyers, sellers, financiers, insurers, consignors, logistics and customs[[5]](#footnote-5). While some countries allow data to flow easily beyond their borders with the appropriate legal protections, many more nations have enacted barriers to such data transfers. The barriers have made international data transfers more expensive, time-consuming and in some instances illegal.[[6]](#footnote-6) This latter environment, known as “data localization”, mandates local data-residency requirements that confine data within a country’s borders.[[7]](#footnote-7) Such policies are rapidly spreading globally. They are measurably reducing trade, slowing productivity, and increasing prices for affected industries and consumers.

As part of encouraging regional and global trade, policymakers should put the concept of “digital interoperability” at the center of their global digital economic strategy. At the most fundamental level, interoperability is the ability for firms to transfer and utilize data and other information across applications, systems, services, and jurisdictions.[[8]](#footnote-8) This goal acknowledges that countries have differing legal, political, and social values and systems and there is no one law for any specific data-related issue.[[9]](#footnote-9) Countries can then enact laws to address data privacy, cybersecurity and other issues which provides a similar level of protection or similarly addresses a shared objective, even if their specific legal and regulatory frameworks differ.[[10]](#footnote-10)

The regulation of e-trade should be based on contract and financial laws pertaining to electronic documentation and signatures, e-payments, consumer protection, intellectual property, cybersecurity, personal privacy, and data protection.[[11]](#footnote-11) A proactive, supportive regulatory framework is necessary for vibrant digital markets, and the subsequent expansion of digital trade.[[12]](#footnote-12)

The following are some recommendations regarding policy in areas such as data flows, global digital trade, and data governance:

**Global data governance**: Policymakers should provide multiple mechanisms to transfer propriety data, encourage firms to improve consumer trust through greater transparency about how they manage data, support the development of global data-related standards, and provide more assistance to developing countries to help grow the digital economy policy.

**Digital free trade**: Policymakers should support rules that protect data flows, prohibit data localization, and only allow narrow exceptions to these provisions for e-commerce negotiations at the World Trade Organization (WTO). Policymakers should also create new tools to enact retaliatory measures against countries and businesses that enact or employ data localization and other digital protectionist rules. Trade negotiators should develop transparency and good regulatory practices provisions to ensure opaque regulatory rulemaking can’t be used to enact barriers to data flows and digital trade.[[13]](#footnote-13)

Some more specific recommendations for consideration by policymakers include:

* Focus on the fundamental concept of “interoperability” between different regulatory systems.
* Pursue new cooperative digital economy agreements and mechanisms, such as those negotiated by Australia, Chile, New Zealand, and Singapore.
* Employ the Asia-Pacific Economic Cooperation (APEC) Cross-Border Privacy Rules (CBPR) a global model for data governance by opening it up to non-APEC members.
* Support efforts by like-minded, value-sharing countries working together to develop a “Geneva Convention for Data” that establishes common principles, processes, and safeguards to govern government access data.
* Develop a targeted strategy to support the adoption of financial oversight frameworks that focus on regulatory access to data rather than the location of data storage.
* Improve existing, and build new, mechanisms to improve cross-border requests for data related to law enforcement investigations, such as CLOUD (Clarifying Lawful Overseas Use of Data) Act agreements and updated mutual legal assistance treaties (MLATs) to provide timely assistance.[[14]](#footnote-14)

# Conclusions and Recommendations

The need for digitizing cross-border process which facilitate global trade reflects the volume and complexity of consignment flows. Sellers, buyers, consignors, and consignees expect the continuous visibility of their consignments and the consistent and transparent application of border and commercial procedures. Whether the consignment moves by air, marine, rail, or road haulage, these fundamental expectations are constant. As initially proposed in the United Nations’ Recommendation 33, and developed in research by UN/CEFACT, digital solutions are recognized as essential to the efficient flow of global trade.

Industry initiatives including Cargo iQ, ONE Record and the IPCSA Trusted Networks program are emblematic of the commitment to digitize elements. Projects such as the joint United States-Mexico clearance system and the Mumbai-Amsterdam digital corridor linking two airport cargo communities and the commitment of Canada to digitize supply chains are examples of governments’ commitment to the digitization of cross-border trade facilitation.

The technical implementation challenges and legal issues which must be addressed. They should not be considered insurmountable barriers. Acknowledging their existence, quantifying them, and thoughtfully and purposefully addressing each issue will result in an environment where non-tariff barriers are reduced if not eliminated and overall trade costs which can reduce global trade flows are reduced.

Based on this research, the project team proposes the following series of recommendations for regulators to consider and incorporate as they adopt digital systems and processes to facilitate cross-border trade flows which focuses on consignment status and data.

* **Cargo Community Systems**

Cargo community systems are the key foundational element for implementing digital corridors. These systems bring together all the partners involved in cross-border trade. The ability to employ APIs and EDI messaging reduces the costs of joining. The assembly of consignment information in blockchain based ledgers ensures unaltered entries. The encryption of digital platforms is a critical characteristic that protects valuable commercial and government information and data from external hackers. Mandating the implementation of these platforms should be a part of the trade policy of each nation.

* **Digital Corridors**

While a single isolated cargo community system provides a wide range of benefits to the members, linking cargo community systems via digital corridors magnifies those benefits. Sharing consignment information input at origin and employed at destination is superior to re-entering the same information at subsequent steps. Realizing the full potential of a digital corridor will require close collaboration between the customs and other border agencies of two countries and implementing laws based on the Clarifying Lawful Overseas Use of Data Act structure.

* **Address Risks**

Addressing the many risks associated with cross-border trade facilitation requires a genuine commitment to collaboration among all stakeholders. Implementing well established process to identify, quantify, assess, and develop and implement risk management actions is the optimal way to minimize risks throughout the full span of supply chains. The beginning of this process is to acknowledge the challenges which are faced by public agencies and private enterprises. A thoughtful assessment of those challenges will provide the foundation for creating and implementing successful solutions.

* **Establish data-focused legal framework**

The free flow of information in digital format must be embraced in order achieve the full benefits of digitization of trade and the operation of digital corridors. Strategies such as GDPR, multi-host structures, and very high levels of encryption as part of the commitment to data security exist and should be employed in drafting policies and formulating appropriate procedures. This legal framework must incorporate policies based on the Clarifying Lawful Overseas Use of Data Act structure.

* **Incorporate UN/CEFACT Reference Data Models**

This body of research provides the best foundation on which to devise and construct policies and procedures to facilitate cross-border trade. The Reference Data Models clearly identify consignment information which is common and un-changed through a supply chain. These models also identify the parties and the types of transactions which are essential elements of supply chain operations. Reusing consignment information is the best way to reduce errors, improve efficiencies, and ensure that illegal activities are quickly identified and stopped. By applying this information, the policies and procedures can be quickly, and more importantly, uniformly established across the world.

The evolution of global trade is challenging the capacity of legacy, non-digitized system to cope. Building on U.N. Recommendation 33’s focus on a single window system which is dedicated to simplifying the entry and employment of consignment information is the deployment of digital corridors to connect cargo community systems that create digital nodes and links to facilitate the collection and distribution of consignment information and the status of each consignment.

1. International Monetary Fund. (2018). Towards a Handbook on Measuring Digital Trade. *Thirty-First Meeting of the IMF Committee on Balance of Payments Statistics*. Washington (DC): IMF. [↑](#footnote-ref-1)
2. “Buy-Ship-Pay Reference Data Model”, UN/CEFACT Bureau, 13 August 2019, Figure 2, Page 8 [↑](#footnote-ref-2)
3. UN Conference on Trade and Development (19 December 2023), Roadmap for Building and Trade Single Window, <https://unctad.org/system/files/official-document/dtlasycuda2023d2_en.pdf> [↑](#footnote-ref-3)
4. Nguyen, H. (2022). *Trade digitization on a global scale: How far are we?* WCO News. <https://mag.wcoomd.org/magazine/wco-news-97-issue-1-2022/trade-digitization/> [↑](#footnote-ref-4)
5. ICC. (2021). G7 Creating A Modern Digital Trade Ecosystem. Cutting The Cost And Complexity Of Trade. Reforming laws and harmonising legal frameworks. <https://www.iccgermany.de/wp-content/uploads/2021/10/Creating-a-Modern-Digital-Trade-Ecosystem-G7.pdf> [↑](#footnote-ref-5)
6. Cory, N. and Dascoli, L. (2021). How Barriers to Cross-Border Data Flows Are Spreading Globally, What They Cost, and How to Address Them. Information Technology and Innovation Foundation | ITIF. <https://itif.org/publications/2021/07/19/how-barriers-cross-border-data-flows-are-spreading-globally-what-they-cost/> [↑](#footnote-ref-6)
7. Cory, N. (2017). “Cross-Border Data Flows: Where Are the Barriers, and What Do They Cost?” Information Technology and Innovation Foundation | ITIF. <https://itif.org/publications/2017/05/01/cross-border-data-flows-where-are-barriers-and-what-do-they-cost/> [↑](#footnote-ref-7)
8. Gasser, U. (2015). Interoperability in the digital ecosystem. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2639210> [↑](#footnote-ref-8)
9. Cory, N. and Dascoli, L. (2021). [↑](#footnote-ref-9)
10. Cory, N. and Dascoli, L. (2021). How Barriers to Cross-Border Data Flows Are Spreading Globally, What They Cost, and How to Address Them. Information Technology and Innovation Foundation | ITIF. <https://itif.org/publications/2021/07/19/how-barriers-cross-border-data-flows-are-spreading-globally-what-they-cost/> [↑](#footnote-ref-10)
11. Jaller, L. D., Gaillard, S., & Molinuevo, M. (2020). The regulation of digital trade : Key policies and international trends. World Bank Group (WBG). [↑](#footnote-ref-11)
12. Ibid. [↑](#footnote-ref-12)
13. Cory, N. and Dascoli, L. (2021). How Barriers to Cross-Border Data Flows Are Spreading Globally, What They Cost, and How to Address Them. Information Technology and Innovation Foundation | ITIF. <https://itif.org/publications/2021/07/19/how-barriers-cross-border-data-flows-are-spreading-globally-what-they-cost/> [↑](#footnote-ref-13)
14. # Office of the Attorney General, 6 July 2022, Clarifying Lawful Overseas Use of Data Act, <https://www.federalregister.gov/documents/2022/07/06/2022-14320/office-of-the-attorney-general-clarifying-lawful-overseas-use-of-data-act-attorney-general#:~:text=1213%E2%80%9325%20(2018)%2C,governing%20access%20by%20the%20foreign>

    [↑](#footnote-ref-14)