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mechanism**

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Executive Summary

Internet trade and commerce involve electronic transactions between two or more parties of same or different jurisdiction where there is a need to establish trust.

The Whitepaper on “Ensuring legally significant trusted trans-boundary electronic interaction” (ECE/TRADE/C/CEFACT/2018/7)¹ provides examples where a certain degree of confidence is required to ensure legal significance. These include

- Electronic tendering procedures, and especially those cases when the contracting authority is a governmental body or a big company. These contracting authorities usually lay down a higher level of requirements for the verification of the validity of economic operators' trade documents.
- Certain trade and transport documents exchanged within cross-border trade procedures.
- Dispute resolution and settlement procedures including on-line dispute resolution. These procedures require an unequivocal identification and authentication of a plaintiff and defendant.
- Electronic insurance. There needs to be a mechanism for the reliable verification of an insurance certificate, etc.

“At its ninth session, in March 1979, UN/CEFACT’s predecessor, the Working Party on Facilitation of International Trade Procedures (WP.4), adopted Recommendation 14 relating to “Authentication of Trade Documents by Means Other than a Signature” (document TRADE/WP.4/INF.63, TD/B/FAL/INF.63)².

The aim of this recommendation is to encourage the use of electronic data transfer in international trade by recommending that Governments review national and international requirements for signatures on trade documents in order to eliminate the need for paper-based documents by meeting the requirement for manual signatures through authentication methods that can be electronically transmitted.”

In its subsequent Revision of Recommendation 14 (document ECE/TRADE/CEFACT 2014/6)³, “UN/CEFACT recommends that Governments and those engaged in international trade and movement of goods

- Actively consider the removal of the requirement for a signature (manual-ink or its electronic equivalent) from trade documents except where essential for the function of the document or the activity and refrain from requiring a signature in new rulings and practices

Further, UN/CEFACT, recognizing the importance of authentication methods in the electronic exchange of trade-related documents, recommends that governments and those engaged in international trade and movement of goods

- Consider the introduction of electronic methods to authenticate trade documents
- Create a legal or contractual framework that permits and gives equal status to such authentication methods⁴”

UN/CEFACT developed a white paper on this subject in 2017 (ECE/TRADE/C/CEFACT/2018/7). The purpose of this white paper was to help ensure the rights and legal interests of citizens and organizations while performing legally significant transactions in electronic form using the Internet and other open (Information and Communications

¹ Whitepaper published by UN/CEFACT on “Ensuring legally significant trusted trans-boundary electronic interaction” (ECE/TRADE/C/CEFACT/2018/7)

² Recommendation 14 on “Authentication of Trade Documents by means other than signature”

³ Revision of Recommendation 14: Authentication of Trade Documents (ECE/TRADE/CEFACT/2014/6)

⁴ *ibid*

Technology) systems with mass usage and, in particular, those that are trans-boundary.⁵ In order to achieve a higher degree of confidence in such electronic interaction, the paper explored establishing a Common Trust Infrastructure, a fundamental and easily scalable platform that includes the delivery of dedicated trusted ICT services.

This position paper, in its first chapters, provides an assessment of trends and driving forces in trusted trans-boundary electronic interaction, as well as an assessment of the legal and environmental impact of such interactions.

The volume and velocity of electronic trade and transactions has increased exponentially over the last couple of decades as a result of improved availability, connectivity and efficiency in Internet and transport services. Advanced technologies such as the Internet of Things (IoT) are ushering in a new era of efficiency with respect to the movement of goods across borders. Unlike physical commerce, the proliferation of trade through electronic transactions often results in transactions between parties who have no pre-existing relationship. This imposes additional risk should either party default on the fulfilment of their obligations. The result is often the need to go through several independent authorities such as Banks, Insurance Companies to protect oneself in the case of default, resulting in higher costs. Also, the need for enforceability in the absence of regulations around the legal recognition of cross-border transactions can result in the continued use of physical contracts and manual signatures. This results in an extremely large volume of paper which has a damaging effect on the environment and transaction cost and time.

There is increasing evidence that the absence of a framework to enable trusted trans-boundary electronic interactions results in higher trade costs, less economic inclusion and, therefore, lower global GDP (Gross Domestic Product) growth and unsustainable environmental impact. The recent UN/ESCAP (The Economic and Social Commission for Asia and the Pacific) treaty (open to all UN/ESCAP member states) illustrates one such example of cross-border paperless trade implementation and mutual recognition which has the estimated potential to yield export gains of USD 250bn annually. Even a partial implementation could lead to an export increase of USD 36bn annually, decrease the time required to export by 44 percent and reduce costs by up to 31 percent. It is also estimated that comprehensive implementation would have the potential to increase global GDP growth by 0.5%.⁶ Reduction in paper can help nations achieve sustainable development goals and contribute to climate change in a positive manner.

The subsequent chapters of this position paper focus on priority areas where it is deemed that further action is necessary and would be effective in creating a trusted trans-boundary electronic interaction framework that enables the seamless conduct of global trade and addresses the legal, economic and environmental issues identified. The identified challenges include scalability, traceability, cost efficiency, complexity, technical know-how, existing legal infrastructures and finally measuring and benchmarking.

Governments and the private sector across the world have addressed a wide range of issues related to trans-boundary electronic interaction through numerous legal instruments, treaties and policy measures. Some of these operate at bilateral, multilateral and sub-regional levels like the ASEAN (The Association of South East Nations) initiative on paperless trade, the EEU (The Eurasian Economic Union) initiative of electronic interaction, the PAA (The Pan Asian e-Commerce alliance) initiative on cross border paperless trade, the EU eIDAS (The European Union Electronic Identification, Authentication and Trust Services) Regulation⁷ and the Korea-China initiative on mutual recognition, etc. While these enable regional interactions or domain specific applications, there is a need for a global

⁵ Whitepaper published by UN/CEFACT on “Ensuring legally significant trusted trans-boundary electronic interaction”

⁶ ADB Institute Working Paper Series – International Single Window Environment: Prospects and Challenges – No 744, June 2017

⁷ http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2014.257.01.0073.01.ENG

consensus. An overview of the international response to date (as part of the addendum to the second edition of Recommendation 14 ECE/TRADE/CEFACT/2014/6) highlights a number of gaps in the existing frameworks as well as the lack of a global strategy for facilitating seamless trade across geographies and domains.

The last part of this position paper; therefore, makes recommendations in priority areas. These recommendations are for consideration at the inter-governmental level by UN/CEFACT as it makes related decisions. The proposed recommendations include

- A new legal instrument, i.e. a framework convention on ensuring trusted trans boundary electronic interaction
- Closer cooperation with other organizations and projects

Launching a negotiation process for a framework convention on enabling seamless trade through trusted trans-boundary electronic interaction is recommended as an appropriate way of addressing the legal, economic and environmental issues in cross-border trade as they exist today. This will require the involvement and commitment of key stakeholders at various levels to ensure the development of long term solutions. Filling the gaps or augmenting the scope of existing legal instruments may not be sufficient, given the complexity of trans-boundary electronic interactions from a legal and technological viewpoint, including issues of cyber security and the constantly evolving landscape of privacy-protection regimes. This requires a holistic view and approach to develop international consensus around a framework that can be adopted by all stakeholders.

A framework convention is proposed as the most appropriate and effective normative approach for addressing these key challenges at a global level for various reasons. The advantage of a framework convention lies, first of all, in its flexibility because, instead of attempting to codify one regime that applies to all, it provides a menu of possible commitments which parties can select from based on their national needs and situations. A framework convention may, in addition, be used to foster broad consensus and the appropriate international and national response. What is more, a framework convention approach is in line with recent developments in international law, as it is adapted for addressing issues where subsidiarity is of specific concern, allowing, for example, national and local policy directions to be developed on the basis of best practices.

A framework convention approach also provides an overarching approach which allows stakeholders to evaluate the convergence of their existing legal instruments with the framework convention in order to understand gaps in implementation in order to move towards increased international standardization and uniformity in approaches.

UN/CEFACT recognizes the principle of technological neutrality and does not propose any specific technology as a basis for *developing a framework convention*. It is up to contracting parties and the governments to choose those technologies which will provide the necessary *degree of confidence* in an electronic interaction.

Introduction

A. Background

1. Various International and regional institutions have been engaged in work on issues relating to trade in the digital economy with a focus on cross-border trade facilitation. Some of these efforts have supported the implementation of national and international single windows to fulfil import, export and transit-related regulatory requirements. Internationalization and interoperability are, therefore, the logical next steps as they will promote the creation of global supply chains and an information sharing economy which will ultimately enable greater economic inclusion.
2. With the progressive ratification of the WTO's Trade Facilitation agreement, several WTO (World Trade Organization) Member States are likely to move toward the broader use of electronic transactions in order to meet their multilateral treaty obligations. A significant example of this would be the implementation of ICT-based Single Windows for cross-border trade facilitation.
3. A paper by the Asian Development Bank Institute considering the impact of the WTO Trade Facilitation Agreement suggests that once the majority of WTO member states establish single windows, most of the necessary infrastructure for creating an International Single Window Environment (ISWE) will be present.⁸ It also emphasises that the full potential of an ISWE can be realised only through the integration of Government-Government, Business-Government, and Business-Business information. This integration of information into an interoperable environment would allow a flow of real-time data that could offer numerous possibilities to enhance the efficiency and visibility of international supply chains.
4. This paper also broadly includes under "trade facilitation"⁹ initiatives related to e-commerce, paperless trade, electronic single window and cross-border e-transaction and commercial law matters. It is interesting to note how existing definitions emphasise concepts that depend on the flow of information which can be enhanced through the digitalization of trade processes and how trade facilitation (and, therefore, improved information flows) has a positive correlation with economic growth.
 - a. WTO defines trade facilitation as
"the simplification and harmonization of international trade procedures, where trade procedures are the activities, practices and formalities involved in collecting, presenting, communicating and processing data and other information required for the movement of goods in international trade."
 - b. UN/CEFACT defines trade facilitation as
"the simplification, standardization, and harmonization of procedures and associated information flows required to move goods from seller to buyer and to make payments."
 - c. OECD (The Organisation for Economic Co-operation and Development) defines trade facilitation as
"the simplification and standardization of procedures and associated information flows required to move goods internationally from seller to buyer and to pass payments in the other direction."
5. In this context, there have been frameworks and recommendations developed which try to address the legal and operational framework required for facilitating trusted trans-boundary interactions. These include the:

⁸ ibid

⁹ ibid

- UN/CEFACT Recommendation 14 and subsequent addendums which lay out a recommended checklist for a legally enabling environment for the authentication of trade documents.
 - United Nations Model Law on Electronic Commerce 1996,
 - United Nations Model Law on Electronic Signatures 2000 and
 - United Nations Model Law on Electronic Transferable Records 2017
6. All of these are important frameworks that recognize the importance of harmonizing certain rules on the legal recognition of electronic records on a technologically neutral basis and using a functional equivalence approach.
 7. In particular, the United Nations Model Law on Electronic Transferable Records 2017, in Article 19, Chapter IV on Cross Border Recognition of Electronic Transferable Records seeks to eliminate obstacles to the cross-border recognition of an electronic transferable record arising from the fact that it was issued or used abroad. The Model Law also emphasizes that the need for an international regime to facilitate the cross-border use of electronically transferable records was already recognized at the outset of the work and reiterated throughout the deliberations on the Model Law. That need was also emphasized by the Commission at its forty-fifth session (A/67/17, para. 83).¹⁰
 8. While the above recommendations and model laws seek to establish the recognition and authenticity of documents based on their origin, validity, and evidence of non-tampering, in order to facilitate the transition to a digital trade facilitation environment, it is important to note that “Trust” between the parties to a transaction needs to be established and maintained in the context of trans-boundary interactions. That is the focus of this initiative and position paper on a framework agreement.

B. Work Undertaken

The work undertaken so far includes the UN/CEFACT initiative to develop a white paper on this subject including recommendations which was completed in 2017

C. Position Paper

9. This position paper is, therefore, prepared as a next step after the TTP (Trusted Trans-boundary Electronic Interaction/Mutual Recognition Project) white paper in order to present the need for a framework convention.
10. The position paper focusses on a list of priority areas for further action and reviews the international response in these areas. It further discusses the possibility of actions both legally binding and non-legally binding and the necessity and possible content of a new legally binding instrument.
11. The recommendations contained in this report are meant to inform members of UN/CEFACT and to motivate governments to form an intergovernmental negotiating group on a framework convention as a logical next step in efforts to facilitate trade through the cross-border exchange of electronic information by establishing a common trust framework/infrastructure.
12. The rest of this position paper discusses:
 - Important Trends and Driving Forces in Trans-boundary electronic interaction
 - Assessment Impact of Trans Boundary Electronic Interaction
 - Key Challenges
 - International Response
 - Key Recommendations

¹⁰ UNCITRAL Model Law on Electronic Transferable Records

13. This position paper is the result of work by the “Ensuring legally significant trusted trans-boundary electronic interaction” project working group.

Trends and Driving Forces in Trans-boundary Electronic Interaction

Electronic commerce is growing at an exponential pace with globally expanding access to and use of the Internet and related information and communication technologies. Growth of e-commerce and its adoption has had a direct correlation with economic growth and inclusion as it fosters and promotes seamless trade and transparency in governance while also reducing the cost of trade significantly.

14. However, the growth of electronic commerce also has resulted in cybersecurity risks such as identity theft and fraud. The lack of a defined trust infrastructure also prevents governments and enterprises from going completely digital in cross-border trade. For example, in areas such as contracts and declarations where there is a legal need for a signature to provide validity but there is no bi-lateral or multi-lateral agreement to support the recognition by government authorities of electronic documents or signatures that are exchanged across borders (domestic legislation giving legal weight to electronic signatures does not, generally, apply to electronic signatures originating from outside of a national jurisdiction).
15. This has resulted in the continued use of paper-based information exchange (sometimes even in parallel to the electronic exchange of the same information) which is inefficient, time consuming, costly and environmentally unfriendly.

A. Economic Aspects

16. Global retail electronic commerce sales are expected to increase to USD 4.5trillion by 2021 which translates to a 3x increase over an eight-year timeframe.¹¹
17. Developing countries are increasingly participating in electronic commerce, resulting in trade that is truly cross-border. Electronic commerce is also enabling a huge wave of opportunity for small business owners who now have access to global markets for their locally designed products. Globalization has provided greater access and more opportunities for enterprises where, for instance, a company in Asia can now bid for a contract in Europe.
18. This growth has also directly resulted in increasing cyber-crime which has now moved to 2nd place amongst the most-reported types of economic crime. Losses from cyber-crime are expected to reach USD 2 trillion by 2019.¹²
19. The costs of paper trade are also significant. A recent UN/ESCAP report indicates that paper adds USD 75 – USD 125 to each commercial trade transaction¹³
20. The intangible benefits of implementing a system like the Electronic Single Window also significantly outweigh the costs because such initiatives result in improvement in the ease of doing business and, therefore, create inbound investment and jobs.
21. In conclusion, digital transformation and the ability to secure electronic trans-boundary interactions are imperative developments for enabling growth and economic inclusion.
22. To enable a secure digital transformation, there is a need to:
 - a. Unambiguously connect the identity of the parties to the contract (with no possibility of repudiation),

¹¹ Link from eCommerce Website Shopify - <https://www.shopify.com/enterprise/global-ecommerce-statistics>

¹² Forbes - <https://www.forbes.com/sites/stevemorgan/2016/01/17/cyber-crime-costs-projected-to-reach-2-trillion-by-2019>

¹³ UN/ESCAP Report – “Estimating the benefits of cross border trade” 2014

- b. Allow electronic interactions for multiple use cases as outlined in the Whitepaper (document ECE/TRADE/C/CEFACT/2018/7, paragraph II) and
- c. Enable a technical, organisational and legal framework by which electronic contracts are made binding upon all parties.

B. Trends

23. Overall, significant progress needs to be made in order to establish a sufficient degree of confidence in trans-boundary electronic interactions.
24. The United Nations Model Law on Electronic Commerce and The United Nations Model Law on Electronic Signatures have been important steps that give legal recognition to electronic records in a particular jurisdiction. At the same time, these instruments are not applicable to cross-border transactions, which are outside the purview of the Model Laws.
25. The Single Window system for digitizing and exchanging trade related data, particularly in the context of Import/Export and Customs, is a significant step in enabling the exchange and recognition of information across jurisdictions. The Pan Asia Alliance is a forum where Trust Service Providers and Single Window providers operating within Asia Pacific region have put in place mutual agreements for recognizing one another's transactions under an umbrella framework. However, this is a regional initiative between the service providers of participating countries, and lacks intergovernmental backing.
26. The recent United Nations/ESCAP agreement¹⁴ also presents an important step in the direction of legally recognizing cross-border electronic interactions through single windows and enabling the exchange of trade-related data and documents in electronic form. However the geographic scope is restricted to Asia and the Pacific. Several countries that are members of UN/ESCAP, have made tremendous progress in the implementation of more than 30 trade facilitation measures but this implementation varies widely from country to country. Economies such as Australia and the Republic of Korea have implementation levels of 85% whereas certain developing economies have implementation levels closer to 15%.¹⁵ Among these measures are implementation of legislation around electronic transactions, recognized trust service providers for enabling conduct of electronic transactions, and engagement of the country in trade-related, cross-border electronic data exchange.
27. In the European Union, eIDAS (Electronic Identification, Authentication and Trust Services) is an EU regulation that oversees electronic identification and trust services in the European Union's internal market. It regulates electronic signatures, electronic transactions, and involved bodies in order to provide a safe way for users to conduct business online where identification is important such as electronic funds transfer or transactions with public services. It provides both the signatory and recipient with a higher level of convenience and security. Instead of relying on traditional methods, such as mail, facsimile service, or appearing in person to submit paper-based documents, they may now perform business transactions electronically across borders¹⁶
28. There are also domain specific applications where, today, trans-boundary interactions happen in a secure manner. This includes sectors such as banking where inter-bank and cross-border remittance systems such as SWIFT (Society for Worldwide Interbank Financial Telecommunication) facilitate an electronic exchange of information that is already legally recognized

¹⁴ Framework Agreement on Facilitation of Cross Border Paperless Trade in Asia and the Pacific 2016

¹⁵ UN/ESCAP Studies in Trade and Investment 85, Trade Facilitation and Paperless Trade: State of Play and the Way Forward for Asia and the Pacific

¹⁶ http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0073.01.ENG

29. The trends described above show that there is tremendous progress being made towards paperless trade and enabling cross-border electronic transactions but these are either domain or geography specific and rely on mutual agreements between multiple countries which work without the guidance of an umbrella framework; thereby inherently placing limitations on scope and applicability.

C. Driving Forces

30. The growth in electronic commerce and, as a result, electronic transactions is a result of growing Internet penetration across the world and access to smart phones which provide ready Internet connectivity from anywhere, anytime. Internet penetration today stands at 51% of the global population with developed economies having reached a level of saturation and developing economies leading the growth rate by connecting more and more people.

31. This exponential growth will further enable people to conduct electronic trade seamlessly in the comfort of their home and will also force service providers to fulfil obligations in the most expeditious manner possible. This will, in turn, drive greater efficiency in shipping, logistics, and warehousing, and provide impetus to trade facilitation initiatives.

32. -Technologies such as blockchain hold further promise for easing cross-border trade by providing the ability to cut down costs by creating trusted and secure, real-time views of information across the supply chain without the need to have the validity of this information guaranteed by intermediaries.

33. After growing by around 4.7% in 2017, World merchandise trade volume is forecast to grow at 4.4% in 2018¹⁷ and this will result in a significant increase in the cross-border exchange of goods and cross-border transactions.

34. The WTO trade facilitation agreement, which entered into force on February 22, 2017, contains provisions for expediting the movement, release and clearance of goods, including goods in transit. It also sets out measures for effective cooperation between customs and other relevant authorities on trade facilitation and customs compliance issues as well as containing provisions for technical assistance and capacity building.

35. There are clear benefits to traders and economies from providing a single access point for procedures together with harmonized systems and procedures for facilitating trade. Recognizing this, the WTO, UN/CEFACT, UN/ESCAP and several other regional and international bodies have been instrumental in working closely with regional entities to drive the implementation of electronic single windows to facilitate trusted trans-boundary electronic interactions.

Assessment of Impact

36. The assessment of the impact of a trusted trans-boundary electronic interaction infrastructure is difficult given the lack of an adequate infrastructure to enable trust and, therefore, the transition to an environment which fosters paperless cross-border interaction which is legally significant (recognised).

37. The existing characteristics (historical, cultural, political, economic, technical, etc.) of different world regions results in different levels of trust in electronic interactions within these regions. This has resulted in different practices and procedures for recognizing such interactions without any standardization (where such recognition is even possible). The complexity arising out of this range of non-standardized approaches to legally significant data and information exchange results in huge costs for trade.

¹⁷ https://www.wto.org/english/news_e/pres18_e/pr820_e.htm

38. In addition, in many parts of the world, private enterprises have the option to agree, in a legally binding manner, to accept electronic transactions between one another. However, this option is, most often, not available to government agencies, who need a legislative foundation for legal recognition. As a result, even in some developed countries, traders are required to submit information electronically (which is then used by the computer systems of government agencies) and then are also required to either submit supporting paper documentation or to have the supporting paper documents available on their premises and available for auditing.
39. The evolution of legal systems around the globe based on different jurisprudence also results in different legal interpretations of electronic interactions and, therefore, different levels of confidence in electronic interactions.
40. This is compounded by the fact that there may be divergence between law and the current use of technology in cases where the law significantly predates modern technological, thus creating uncertainties in implementation and interpretation.
41. In the absence of harmonized trust services which take into account a unifying legal, technical and operational framework, a common man without a deep understanding of technology or law is exposing himself/herself to risks in electronic trade where (depending on the jurisdiction) the level of assurance or protection offered may be low.
42. The advantages of implementing cross-border harmonized trust services have been demonstrated by domain specific and regional implementations which have already created benefits in the form of increased efficiency, improved exports, growth and access to markets.
43. While important strides have been made, the lack of an adequate trust infrastructure significantly inhibits growth in global trade and economic inclusion both of which form part of the sustainable development goals of the United Nations. This highlights the need, in support of trade facilitation processes, for an integrated, common trust infrastructure that takes into account the cross-border recognition of identities and documents.
44. The inability to migrate to a paperless cross-border trade facilitation environment for a variety of use cases as outlined in the Whitepaper and including e-procurement, insurance and banking also has a negative impact on the environment as a consequence of the voluminous amount of paper that gets generated, stored and destroyed.
45. The environmental impact of paper is significant, which has led to changes in industry and behaviour at both business and personal levels. With the use of modern technology such as the printing press and the highly mechanized harvesting of wood, disposable paper became a relatively cheap commodity, which led to a high level of consumption and waste. The rise in global environmental issues such as air and water pollution, climate change, overflowing landfills and clearcutting have all lead to increased government regulations regarding waste and recycling.
46. Pulp and paper mills contribute to air, water and land pollution and discarded paper and paperboard make up roughly 26% of solid municipal waste in landfill sites. Pulp and paper generates the third largest amount of industrial air, water, and land emissions in Canada and the sixth largest in the United States.¹⁸
47. Paper waste, like other wastes, includes the additional hazard of toxic inks, dyes and polymers that could be potentially carcinogenic when incinerated, or when commingled with groundwater via traditional burial methods such as modern landfills. Paper recycling mitigates this impact, but not the environmental and economic impact of the energy consumed by manufacturing, transporting and burying and/or reprocessing paper products.

¹⁸ https://www.epa.gov/sites/production/files/2016-11/documents/2014_smmfactsheet_508.pdf

48. While the environmental impacts of the pulp and paper industry are known and there is movement towards sustainable practices; regulation and its implementation have not been consistent globally because of a lack of awareness, resources and technical know-how – as well as, in some cases, the lack of a viable alternative to paper
49. The absence of an infrastructure which promotes trust in transboundary, legally-significant electronic interactions forces people to resort to traditional methods of exchanging data using paper which has damaging effects on the environment and does little to promote the United Nations sustainable goals on climate change.

Key Challenges

50. An analysis of trends and driving forces along with the results from various studies and implementations of paperless trade systems indicates that there are several challenges which need to be addressed in an efficient manner in order to promote trusted trans-boundary electronic interactions. These challenges do not appear to be adequately covered by current instruments and international legislation.
51. **The first challenge** is that different member states may be at different levels of economic development and some do not even have functioning national trusted infrastructures for paperless trade performance. Therefore, the readiness of such economies to move to a system to promote paperless cross-border trade needs to be assessed and a suitable integration framework determined. This will need to take into account technology, scalability, reliability and, ultimately, be able to deliver measurable cost savings as a result of investments in implementation.
52. Even an implementation such as the Single Window has a set of challenges which results in significant investments in technology and operations. Some of these include
 - Single Window Blueprints often require substantial changes to existing processes and workflows across all players in the trade/logistics process. As a result, Single Windows tend to have a high level of implementation complexity
 - Implementation requires reviewing and revising systems and procedures employed by all border management agencies, including customs, health, agriculture, quarantine, police, immigration and a host of other agencies who play a critical role in the processing and clearance of goods
53. **The second challenge** is that member states have their own customs regimes and laws governing issues which are relevant to their national situation and business needs which may not be in agreement with other member states. This can pose a challenge for interoperability and legal certainty. It is well understood that the efficiency of markets and trade depend on legal certainty and the establishment of a Common Trust Infrastructure has to result in businesses being able to predict and ascertain the meaning and impact of the applicable legal framework. As outlined in the Whitepaper, this will require granular and complex definitions for concepts and data standards around legal, organizational and technological issues. Finally, for legal recognition, an important aspect is ensuring traceability so that any relevant facts related to electronic interactions within a Common Trust Infrastructure are recorded and available for dispute resolution, if necessary.

International Response to Date to Challenges Identified

54. The second addendum to Recommendation 14, Authentication of Trade Documents – Repository of legally enabling environments captures significant progress that various countries have made towards the challenges identified earlier.
55. A closer analysis of the examples in this addendum helps us make the following general observations:
- The concept of trusted trans-boundary legally significant electronic interaction is still fairly new. While most countries have put in place national legislation recognizing electronic documents and signatures, the scope is domestic or regional or limited to highly integrated unions of states.
 - An examination of various recent international responses and instruments indicate that they are generic and are not legally binding from the perspective of cross-border trade. Awareness levels are generally low across multiple sectors and their regulators making cross-sectoral adoption challenging.
 - Most of the instruments described which address key issues have been either domain or geography specific. Moreover, there is no concrete action at an implementation level to facilitate paperless cross-border electronic trade.
 - There are certain cases which do not meet suitability tests (cost/benefit) for going electronic.
56. Notwithstanding the merit of better implementation of existing provisions, the main conclusions of the present analysis remain unchanged, and indicate that the relevant international response to date is not sufficient to cover the key challenges identified. Indeed, attempting to fill gaps in the scope and implementation of existing international policy responses with precise corrective measures may not be feasible nor sufficient to respond in a sustainable way to the identified challenges. The main gap seems to lie in the lack of an overarching integration strategy, which would bring together and use synergies between policies and legislation relevant to the creation of trusted trans-boundary electronic interactions which are legally significant.

Recommendation

57. This position paper along with other background work undertaken and an analysis of existing agreements indicate that while significant progress has been made towards trade facilitation most implementations have not reached a stage of facilitating seamless cross-border paperless trade.
58. Trends and driving forces point to a future where electronic transactions are going to significantly, and quickly increase and this necessitates urgent attention to the establishment of a common trust infrastructure to enable more participants across geographies and jurisdictions to participate in the benefits from growth in global trade while ensuring that security issues are addressed and helping to mitigate the adverse effects that physical, paper-based transactions have on the environment.
59. As described earlier, the priority areas for further action include the integration of cross-border paperless trade and its legal facilitation through a common trust infrastructure as part of a global cross-border electronic trade facilitation agreement. This could include
- Identification of use cases where the need for a “high degree of confidence” is mandatory or essential
 - A definition of what constitutes an electronic transaction that has a high, medium or low degree of confidence.
 - Clearly identifying the elements requiring cross-border data transactions in existing paperless-trading processes and systems such as customs automation or electronic single window
 - Study of existing legal frameworks and cooperation agreements in place to promote cross-border electronic interaction
 - Taking into account existing work, arriving at a legal, technical and operational umbrella framework to guide domain and country specific legislation and implementation
60. The following sections propose some options for further action that have emerged from the evaluation. They are presented in the form of recommendations to provide a basis for decision-making at the intergovernmental level meeting of UN/CEFACT. Three major types of possible action are distinguished
- a) Development of a new international legal instrument, i.e. a framework convention on trusted trans-boundary, legally significant electronic interaction based upon the research and activities outlined in the previous paragraph.
 - b) Further development of existing instruments
 - c) Closer cooperation with other organizations and projects

Framework Convention

61. An analysis of the trends, impacts and international responses to existing instruments and their implementation indicates: the need for a global consensus and the inability, so far, of current instruments to meet the needs created by the growth in e-commerce.
62. In reflecting on potential solutions for bringing about improvements that facilitate cross-border paperless trade, the following need to be taken into consideration.
- The existing characteristics (historical, cultural, political, economic, technical, etc.) of different world regions which may result in different *levels of trust* within these regions concerning electronic interactions.
 - Different jurisdictions have differing legal instruments for the implementation and of trust services and may also have different legal interpretations of related events. At a more granular level, regulators in different industries and jurisdictions have imposed specific, different requirements for establishing trust. For example, banking regulators may have different rules as compared to Customs or a Single Window operator.

- Several countries have existing bi-lateral or multi-lateral mutual cooperation agreements for cross-border recognition of electronic documents and identities.
63. Given this context, the biggest gap seems to lie in the lack of an overarching integration framework, which would bring together the various actors and identify existing synergies between policies and legislation relevant to trans-boundary legally-significant electronic interactions and build upon them.
64. Therefore, an ideal approach is one which allows flexibility and scalability in implementation, as it needs to take into account the different degrees of cross-sectoral integration that are already in place. Consequently, the normative approach that seems to be best suited to addressing the selected key issues is a framework convention. The framework approach has become a successful tool in international law, as it is appropriate for addressing broad, cross-sectoral issues. The advantage of a framework convention lies especially in its flexibility: it is open to adjustments and supplementary protocols based on experience, evolving technologies and the voluntary adherence of governments.
65. Rather than attempting to codify an inter-sectoral regime once and for all, it allows for the progressive specification of commitments among those parties ready and able to move ahead.
66. Moreover, one of the main strengths of such a process is to facilitate the development of a broad consensus around the relevant facts and the appropriate international response.
67. The proposed framework convention would aim at
- Defining the concept of trusted trans-boundary, legally-significant electronic interactions
 - Establishing a set of objectives, principles and procedures for the facilitation of cross-border paperless trade
 - Promoting the creation of a Common Trust Infrastructure¹⁹ which
 - Provides users with a set of trusted ICT services
 - Is driven by established legal regimes through Trust Service Providers
 - Favoring the coordination of activities as well as the exchange of best practices and the access of all parties to up-to-date information
 - Promoting mechanisms (e.g. financial and technical assistance) that facilitate the implementation of the instrument across the region
 - Setting and establishing a framework and procedures for coordinated action by member states
 - Promoting the implementation of a range of organisational and technical measures designed to facilitate trusted trans-boundary, legally-significant electronic interaction
 - Setting the basic regulatory framework for an integrated approach
 - Promoting education, information and communication on the economic benefits of cross-border paperless trade
 - Making recommendations for parties to support national and international research efforts on issues needing clarification and where there is no commercial interest in undertaking such research

Closer Cooperation between Organizations and Projects

¹⁹ Whitepaper published by UN/CEFACT on “Ensuring legally significant trusted trans-boundary electronic interaction”

68. A lot of progress has been made by existing organizations towards facilitating the use of electronic interaction for cross-border trade. This includes UNCITRAL instruments, the framework agreement on facilitation of cross-border paperless trade in Asia and the Pacific that was adopted by UN/ESCAP as a resolution (E/ESCAP/RES/72/4), efforts by the Eurasian Economic Union, the Pan Asian e-Commerce Alliance and by governments having bi-lateral or multi-lateral agreements on the acceptance of electronic documents. There is a need for closer cooperation with these existing organizations to understand the progress that has been made and how some of the gaps, for recognizing cross-border electronic interaction, can best be addressed.
69. There is a need to work with UNCITRAL (The United Nations Commission on International Trade Law) to understand why existing clauses in UNCITRAL instruments do not seem to have been widely implemented and in cases where they have been implemented in relevant legislation, why they do not seem to have had an impact on enabling trusted trans-boundary electronic interaction. The scope of the proposed framework convention can be defined taking into account and referencing efforts that have already been undertaken by UNCITRAL to facilitate the use of electronic communications in international trade. A short summary of UNCITRAL instruments in this area can be found below.
- a. The UNCITRAL Convention on use of Electronic Communications in International Contracts (2005) “aims at facilitating the use of electronic communications in international trade by assuring that contracts concluded and other communications exchanged electronically are as valid and enforceable as their traditional paper-based equivalents”²⁰
 - b. The Electronic Communications Convention builds upon the UNCITRAL Model Law on Electronic Commerce (1996) and the UNCITRAL Model Law on Electronic Signatures (2001). These instruments are widely considered standard legislative texts setting forth the three fundamental principles of electronic commerce legislation, which the Convention incorporates, namely non-discrimination, technological neutrality, and functional equivalence.
 - c. The UNCITRAL Model Law on Electronic Signatures (2001)²¹, which has been relatively widely implemented, also has a section (Section IV G of the Introduction) on “Non-discrimination of foreign electronic signatures” which states that
 - a. “83. The Model Law establishes as a basic principle that the place of origin, in and of itself, should in no way be a factor determining whether and to what extent foreign certificates or electronic signatures should be recognized as capable of being legally effective in an enacting State (see A/CN.9/484, para. 53). Determination of whether, or the extent to which, a certificate or an electronic signature is capable of being legally effective should not depend on the place where the certificate or the electronic signature was issued (see A/CN.9/483, para. 27) but on its technical reliability. That basic principle is elaborated upon in article 12 (see below, paras. 152-160).”
 - d. The UNCITRAL Model Law on Electronic Transferable Records (2017)²² also emphasizes the need for non-discrimination of foreign electronic transferable records as stated in Article 19 below

“Article 19. Non-discrimination of foreign electronic transferable records

²⁰ http://www.uncitral.org/uncitral/en/uncitral_texts/electronic_commerce/2005Convention.html

²¹ <http://www.uncitral.org/pdf/english/texts/electcom/ml-elecsig-e.pdf>

²² http://www.uncitral.org/pdf/english/texts/electcom/MLETR_ebook.pdf

- 1. An electronic transferable record shall not be denied legal effect, validity or enforceability on the sole ground that it was issued or used abroad.*
- 2. Nothing in this Law affects the application to electronic transferable records of rules of private international law governing a transferable document or instrument.”*

Annex I - Acronyms

- ASEAN
The Association of South East Nations
- EEU
The Eurasian Economic Union
- eIDAS
Electronic Identification, Authentication and Trust Services
- GDP
Gross Domestic Product
- ICT
Information and Communication Technology
- OECD
The Organisation for Economic Co-operation and Development
- PAA
The Pan Asian e-Commerce Alliance
- SWIFT
The Society for Worldwide Interbank Financial Telecommunication
- TTP
Trusted Trans-boundary Electronic Interaction/Mutual Recognition Project
- UN/CEFACT
The United Nations Centre for Trade Facilitation and Electronic Business
- UN/ESCAP
The Economic and Social Commission for Asia and the Pacific
- UNCITRAL
The United Nations Commission on International Trade Law
- WTO
The World Trade Organization