

Economic Commission for Europe

A Roadmap towards Paperless Trade



United Nations Regional Commissions

Background

Paper documents or electronic documents?

Information and Communications Technologies are transforming our world on a daily basis. In a fast-moving global economy, international trade, by adopting electronic technologies, could save billions of dollars every year. Switching from paper documents would increase security and transparency in supply chains and provide Governments and the private sector with higher revenues.

Electronic information is also easier to process and more reliable. It reduces costs and delays all along the supply chain. Since goods cannot travel faster than the information that controls them, speeding up the information exchange makes trading more competitive and efficient.

But despite the rapid developments in ICT, traders and administrations continue to use billions of documents in paper format every year. The costs involved, as well as the complexity of the documents and the procedures, are a major burden for Governments and business. And for small and medium-sized companies, these costs act as a major disincentive to engaging in international trade.

Challenges for developing countries

For developing countries, adopting electronic trading may be difficult. Not only are these countries separated from the developed world by the “digital divide”, but they also have few resources for introducing the necessary infrastructure requirements. They can benefit, nonetheless, through the greater efficiency that will be achieved in the private sector and government agencies, and the resulting lower logistics costs.

Role of Governments

Governments should take the lead role in setting up a healthy business environment for electronic trade. They themselves have much to gain from promoting paperless trade. However, traders have to bear the larger share of the costs. The costs and benefits should therefore be internalized to reward them for their efforts. For instance, as a reward for submitting electronic documents, Governments could grant traders preferential treatment.

Role of international organizations

All parties involved in international supply chains stand to gain considerably from converting to paperless trade. For this transition to be successful, and sustainable, Governments and international and regional organizations must provide a supportive political, regulatory and business-accommodating environment. Organizations such as the United Nations should take an active role. They can provide a neutral platform, help define targets, promote the use of global standards and best practice, and initiate and coordinate pathfinder projects. The United Nations Centre for Trade Facilitation and Electronic Business, (UN/CEFACT)³, for instance, has at the core of its strategy three fundamental elements:

- cross-sectoral analysis (which promotes interoperability, reuse and supply chain synchronicity)
- business process and information modeling (which captures user requirements, independent of any specific technology)
- mapping to new ICT technologies as they emerge²

¹ UN/CEFACT is hosted by the United Nations Economic Commission for Europe. For more information, see its website at www.unece.org

² For further information, contact uncefact@unece.org

Security and competitiveness

The complexity of the supply chains, the number of parties involved and the speed at which goods are exchanged have led to a dramatic increase in trade-information requirements. In today's world, paper documents no longer guarantee efficiency or security. After the 11 September terrorist attacks in the United States, Governments introduced stringent security measures, including:

- ACI (Advance Cargo Information)
- CSI (Container Security Initiative)
- C-TPAT (Customs-Trade Partnership Against Terrorism)

Each depends heavily on reliable, structured and advance information on the trade transaction. The electronic information provided is analyzed by automated risk assessment procedures.

Countries and companies increasingly see that by adopting paperless trade they can comply more fully with trade procedures, conduct more accurate risk analysis, and thus become more competitive.

Major projects underway in Asia and the Pacific

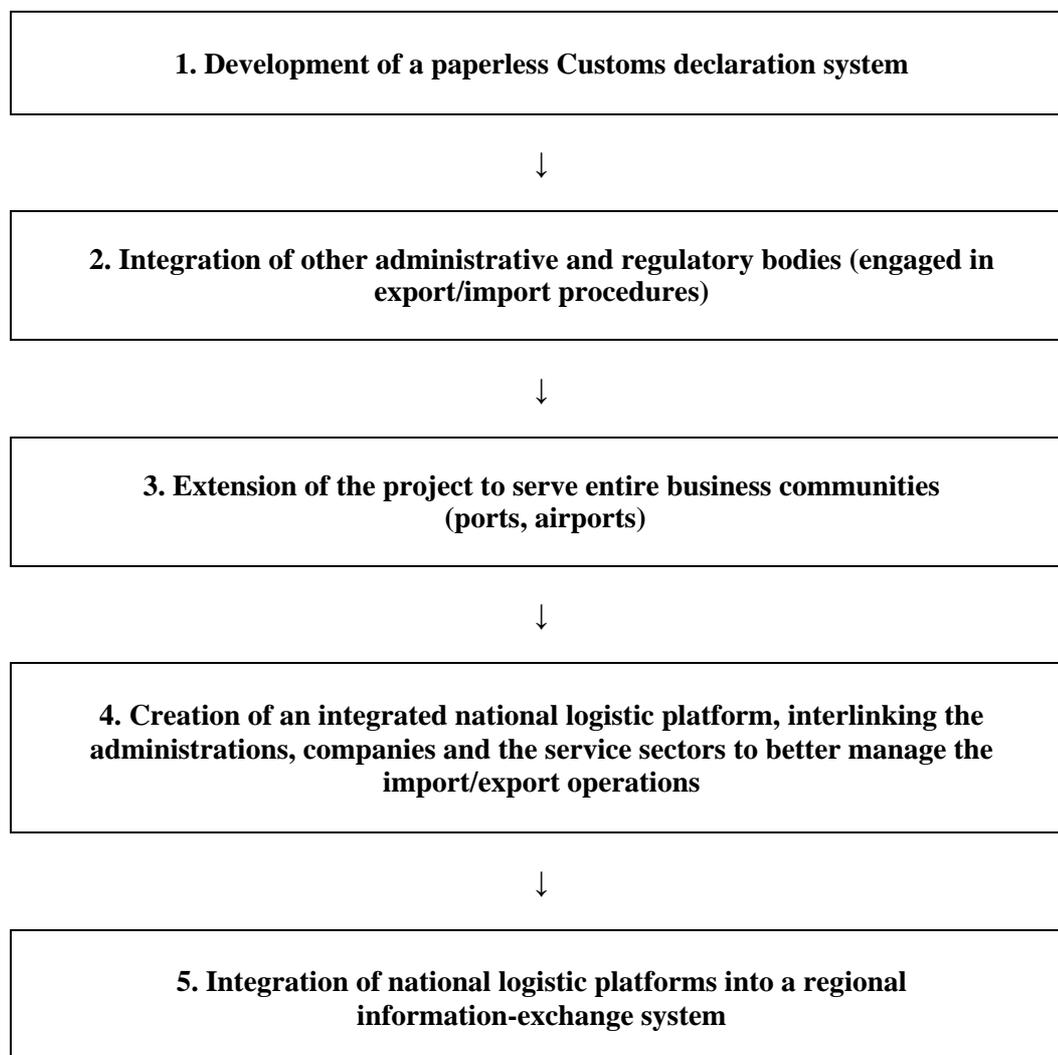
Large-scale paperless-trading projects are already under way in the Asia-Pacific region in particular. They are being led by Governments and regional and cross-regional initiatives, such as the European Union, Asia Pacific Economic Cooperation (APEC), Asia-Europe-Meeting (ASEM), the Asia Europe Alliance for eCommerce (ASEAL) and the Association of Southeast Asian Nations (ASEAN).

Introduction

International Forum on paperless trade

In June 2005, the United Nations Economic Commission for Europe (UNECE) held its third international Forum³. The Forum, which was held under the auspices of UN/CEFACT, was entitled, “Paperless Trade in International Supply Chains: Enhancing Efficiency and Security”. Participants studied the extent to which paperless trade was being conducted in countries throughout the world. The objective was to find a consensus among all the parties on what needs to be done to make paperless trade a worldwide reality. Participants reviewed a draft “roadmap towards paperless trade”. The roadmap, which is presented in this publication, takes into account the results of the discussion at the Forum. It sets out the key issues and makes recommendations and policy-oriented suggestions on what Governments and business need to do to move towards paper-free trading. It is based on a common understanding of what is required for implementing paperless trade, and, at the same time, allows for different transition paths.

Road towards paperless trade



³ The 2005 Executive Forum “Paperless Trade in International Supply Chains: Enhancing Efficiency and Security” Presentations are available at: <http://www.unece.org/forums/forum05/presentations/presentations.htm>.

Transition to paperless trade:

Key characteristics, and steps required for implementation⁴

A. *Benefits*⁵

By switching from paper to electronic solutions, international trade can save billions of dollars in its supply chains. For example, according to data provided by IATA: 30 USD paper processing cost per airway bill; 35 mio airway bills p.a.; which equals 1 Billion USD cost p.a.⁶ The shift will also increase security and transparency, and provide higher revenues for Governments and the private sector.

1. For Governments, it can increase development and security, as well as revenues from international trade. It increases the security of trade operations by providing electronic data, which are more structured, more reliable and easier to use in automated risk analysis. Administrative costs are lower and less revenue is lost through fraud and non-compliance. Paperless trade allows Governments to reduce delays and costs at the border, and increase their services for trade. It is the driver in the modernization of administrations and promotes the adoption of eBusiness in the national economy.

2. For the private sector, it can increase the efficiency of supply chains and provide new value-added services. It eliminates the operational costs related to processing paper, increases the transparency of the supply chain and the exchange of information between the trading partners, improves trade and finance processes and helps build new collaborative modes among companies. It enforces the use of common standards and helps integrate supply-chain processes. It reduces the need for repeated data entry and reduces errors and delays. It allows companies to develop new, value-added services such as automated tracking and tracing systems, monitoring of document processing, and security. The national economy can increasingly compete on the level of services provided, not only on costs.

3. For developing and transition economies, it can provide specific benefits. These include: simplified and cheaper trade procedures, greater transparency, higher compliance and higher governmental revenues. For instance, current estimates suggest that savings from paperless trade are highest for smaller shipments and for perishable goods⁷, both of which are of specific interest to developing and transition economies. Automation will significantly reduce the scope for discretionary subjective decisions and hence for corruption. Some landlocked countries and other transition and developing countries will profit from the development of electronic corridors, where traders can send information required in a chain of border crossings well in advance for better and timely analysis by the authorities.

B. *Costs*

Strategies for paperless trade should take into account not only the costs of such a transition but also how the costs are to be shared among the parties in the supply chain. The major costs of the implementation are likely to be borne by traders. These costs are likely to be higher, though not prohibitive, in transition and developing economies.

4. Companies will only adopt it if they see a clear net benefit. Companies must identify the benefits to ensure that these outweigh the initial investment costs and fees for participating in paperless

⁴ This list has been compiled on the basis of the expertise and experience accumulated from numerous policy discussions and capacity-building activities of the regional commissions of the United Nations, UN/CEFACT and various other organizations within and outside the United Nations system.

⁵ An overview of the potential saving to business and Governments can be found in the APEC study on paperless trade, "Paperless trade: Benefits to APEC", 2001, pp.18-20. Recent figures and estimations, provided by the speakers at the 2005 Executive Forum "Paperless Trade in International Supply Chains: Enhancing Efficiency and Security", can be consulted at: <http://www.unece.org/forums/forum05/presentations/presentations.htm>.

⁶ The 2005 Executive Forum "Paperless Trade in International Supply Chains: Enhancing Efficiency and Security" provided an opportunity to discuss the costs of paper-based trade to both government and the private sector.

⁷ "Paperless trade: Benefits to APEC",.... p.19

trade.⁸ For small companies, for instance, paper is cheap and efficient. Given the low volume of their operations, there might be no net advantages to moving away from paper. If, however, Governments do see a net benefit, they could support small business by rewarding those who submit documents in electronic format, since it also helps to increase the efficiency of government processes. Companies and government organizations pioneering in paperless trade can play an important role in encouraging SMEs to use e-documents.

5. It has characteristics of a public good; and its introduction is likely to imply external costs and benefits. Traders constitute the supply side for electronic documents, as they are the source of most of the documents used in international trade. As a result, they have to bear a large share of the implementation costs. These costs include the initial implementation costs, maintenance and promotional activities. On the other hand, we see numerous benefits accruing to the administrations and business partners who receive the electronic documents. These benefits can include fast information exchange, efficient data entry and processing, and increased security and compliance. But as long as the companies issuing the documents cannot partake of the benefits, it is unlikely that they will be keen to make the investment. Market mechanisms alone, therefore, may not be enough to see paperless trade being conducted on a global scale. The key stakeholders and beneficiaries must be prepared to contribute to initiating, sustaining and managing the transition.

6. It presents specific challenges for developing and transition economies. Developing countries and countries in economic transition, often lacking adequate telecommunications infrastructure, have a lesser capacity for implementation. However, successful examples – particularly in Africa - have shown that these obstacles need not prevent such countries from implementing paperless trade⁹.

7. Its implementation carries technology and market risks. Paperless trade projects require the integration of cross-sector business requirements and the integration of different eBusiness technologies such as UN/EDIFACT, UNeDocs, Business modeling, UN/CEFACT Core Components, ebXML, RosettaNet and emerging technologies. While some of these standards are mature and stable, others are based on the latest eBusiness technologies, which are constantly evolving. Project managers should be user oriented, have expertise in ICT and a good understanding of eBusiness standards. For a project to be successful, the partners should have relevant project and technology expertise. The project must take into account the specific needs of a country and adapt the approach and solution accordingly. Project managers and stakeholders will need to accept and manage intermediate setbacks as natural components of complex and strategic projects.

C. Policy and strategic considerations

The transition to paperless trade is a long-term process that requires dynamic management and the strong involvement of all stakeholders. Its key features, as identified on the basis of experience accumulated so far, can be summarized as set out in the following paragraphs:

8. Elimination of paper in the international supply chain is achievable; but the transition needs to be managed¹⁰. The use of electronic trade documents is still usually confined to a specific geographical or functional context such as an automated customs declaration system or a national logistics platform. Therefore, in order for information to be accessible throughout the entire supply chain, information exchanges need to operate simultaneously on a dual, electronic and paper, system. The dual system is likely to be the prevailing one for several decades¹¹. UN/CEFACT has now adopted the United

⁸ As noted by EUROPRO, “For the business community to engage with authorities, it has to receive incentives”. Andrew Grainger, SITPRO, United Kingdom; A Paperless Trade and Customs Environment in Europe: Turning Vision into Reality (June 2004), p.9.

⁹ For a background paper on developing countries’ perspective on paperless trade, particularly in Africa, see Emmanuel Laryea, “E-Commerce in Trade: Some Solutions to the Particular Problems Facing Africa in the Digitisation of Trade Documentation”, 16th BILETA Annual Conference, April 9th - 10th, 2001, University of Edinburgh, Scotland, <http://www.bileta.ac.uk/pages/Conference%20Papers.aspx>

¹⁰ Asia Pacific Economic Cooperation (APEC) Secretariat, "Sub-committee on Customs Procedures: Technical Assistance Program to Reduce the Requirements for Paper Documents Needed for Customs Administrations.", 2003, http://www.sccp.org/sccplibrary/meetings/Aug2003/4_1anx_03.htm, p.6.

¹¹ For instance, the APEC Paperless Trade initiative does not prevent economies from adopting a dual system - allowing the submission of trade-related documentation in electronic and paper-based form. It recognizes that this

Nations electronic trade documents project (UNeDocs) as a new, global standard for digital trade documents. UNeDocs provides a migration path from a paper-based to a paperless system.

9. Governments should take a leading role in initiating the transition. Paperless trade has many implications for Governments - in security, development, competitiveness, revenue, technology and international cooperation¹². To ensure an appropriate legal and regulatory environment, high-level commitment is needed. Domestic legislation may need to be revised in such areas as signatures in electronic transactions, admissibility of electronic transactions as evidence in court, use of non-negotiable documents, and recognition of digital certifications. Electronic documents are processed by various regulatory bodies such as Customs, and sanitary and phytosanitary agencies. Therefore, the implementation activities in the administrations concerned need to be well coordinated.

10. Successful implementation projects for paperless trade grow rapidly in scope and volume. Successful projects tend to grow rapidly. The growth is mainly in the numbers of transactions, subscribers, services offered, and business sectors and administrations involved. In the later stages of the project, the international aspects become more important. These include regional and international cooperation, and the harmonization of procedures and exchange of trade information. To anticipate the subsequent rapid expansion of the project, the organizational design (stakeholders, infrastructure and standards) needs to be scaleable. International standards allow for this scaleability.

11. Facilitation and simplification of trade procedures and documents should take place before automation¹³. Complex trade procedures and documents should not be automated. On the regional level, the complexity of documentation requirements still represents a large obstacle to the introduction of paperless trade¹⁴. Aside from the question of technology, introducing paperless trade also means reviewing the business processes and promoting change management.

12. Paperless systems should not only be based on international standards, but should also reflect and take into account regional specificities.¹⁵ To help avoid incompatibility arising among different national systems, regional organizations can play a practical role.¹⁶ Several regional organizations currently assist their member States in coordinating and facilitating the introduction of paperless trade (UN regional commissions, EU, APEC and ASEM, for example). They each stress the importance of using global trade standards.

Implications and policy recommendations

The table on the following pages presents a wide range of suggested activities to support the transition from paper. These suggestions are based on:

- Contributions received by the United Nations Economic Commission for Europe at its capacity-building workshops on trade facilitation and e-business in different regions of the world
- Policy documents on various regional paperless-trade initiatives
- Presentations and interactive discussions at the UNECE Executive Forum “Paperless Trade in International Supply Chains: Enhancing Efficiency and Security” held in June 2005

capacity could be important where smaller enterprises in developing economies have limited access to the Internet and that economies may seek to retain certain paper-based trade documents for a limited number of strategic items. “Paperless trade: Benefits to APEC”, 2001, p.6.

¹² Andrew Grainger, SITPRO, United Kingdom; “A Paperless Trade and Customs Environment in Europe: Turning Vision into Reality”(June 2004), p.10.

¹³ “The Basic Guideline for Paperless Trade in ASEM”, 2005, 2, drafted by the Republic of Korea, based on the results of its successful pilot project, insists on the need for standards in electronic documents and draws attention to the work being done by UN/CEFACT.

¹⁴ “Paperless trade: Benefits to APEC”, 2001, p.5.

¹⁵ “The Basic Guideline for Paperless Trade in ASEM” emphasizes the importance of global and regional linkage in the technological infrastructure of Paperless Trade.

¹⁶ “The Establishment and Operation of an Electronic Single Window: Case Study of Guatemala”, Report by the UNCTAD secretariat, 2005, UNCTAD/SDTE/TLB/MISC/2004/5.

Key Characteristics of Paperless Trade and Activities in Support of the Transition

Key characteristics	Activities in support of the transition
<p>1.</p> <p>For Governments, it is an important instrument to increase security, development and revenues from international trade.</p>	<ul style="list-style-type: none"> ▪ Provide high-level awareness-raising events for administrations and policy makers on the contribution of paperless trade to security, development and revenue collection ▪ Consider making the submission of electronic documents mandatory ▪ Analyse and measure the impact of investments in paperless trade on the national economy¹⁷ ▪ Use new technologies to meet both security and efficiency targets ▪ Enhance good governance of the implementation by establishing shared ownership of the project by private and public stakeholders ▪ Involve other governmental agencies, as well as Customs, in the implementation ▪ Government and trade should collaborate to develop “Single Window” systems that address both regulatory-requirements and business processes
<p>2.</p> <p>For the private sector, it can greatly increase efficiency of supply chains and provide new value-added services.</p>	<ul style="list-style-type: none"> ▪ Involve the private sector, including trade associations, in the implementation strategies ▪ The private sector should define its needs clearly and strongly to Governments in a coordinated manner ▪ Top-level management of the private sector needs to fully support implementation ▪ Maintain transparency and a clear division of responsibility among all stakeholders (private and public) ▪ Identify and promote successful pilot projects by the private sector¹⁸ ▪ Create public-private enterprises, such as community service providers ▪ Support the development of SMEs that can provide value-added services ▪ Services for the private sector should be “designed by the trade for the trade”

¹⁷ WSIS Thematic meeting, January 2005.

¹⁸ “The Basic Guideline for Paperless Trade in ASEM”, 2005, 2.

<p>3. For developing and transition economies, it can provide specific benefits.</p>	<ul style="list-style-type: none"> ▪ Organize exchanges of experience and best practices among transition and developing economies using the UN/CEFACT platform ▪ Enhance awareness about the importance and the benefits of trade facilitation and e-commerce and the use of best practices in developing countries ▪ Simplify trade documents, reduce the number of required documents where possible and apply standards ▪ Develop entrepreneurship through e-competence building and the transfer of knowledge¹⁹ ▪ Encourage the adoption of UNeDocs and UN/EDIFACT ▪ Use paperless-trade projects as a tool for regional development ▪ Use paperless trade to reduce bureaucracy, introduce transparency and combat corruption
<p>4. Companies will only adopt it if they see a clear net benefit.</p>	<ul style="list-style-type: none"> ▪ Focus implementation on areas where trade can achieve net benefits and where the market demand is ▪ Compensate early implementers for the risks they take ▪ Consider that the reduction in delays, errors and risks is the major benefit of implementing paperless trade for companies ▪ Reduce access costs for paperless trade ▪ Create incentives, such as reduced fees, reduced clearance times, facilitated and simplified procedures or preferred trader status, to provide clear benefits ▪ Consider making submission of electronic documents mandatory ▪ Adapt supply chain of SMEs to fit into the global supply chain ▪ Use policies, standards and best practices to build managers' confidence and trust in paperless trade

¹⁹ WSIS Thematic meeting, January 2005.

<p>5.</p> <p>It has characteristics of a public good; and its introduction is likely to imply external costs and benefits.</p>	<ul style="list-style-type: none"> ▪ Analyse and quantify the specific external costs and benefits of the transition to a paperless system ▪ Analyse and quantify the specific external costs and benefits of the transition to a paperless system ▪ Involve all actors in the supply chain when analysing the bottlenecks ▪ Take measures to internalize these effects, such as: <ul style="list-style-type: none"> - Rewarding traders for electronic submission of documents through preferred processing - Supporting and funding the setting up of paperless trade projects - Providing specific measures to encourage participation of SMEs ▪ Promote a better understanding of the costs and benefits
<p>6.</p> <p>It presents specific challenges for developing and transition economies.</p>	<ul style="list-style-type: none"> ▪ Adapt targets and implementation strategies to the specific needs of economies ▪ Promote and implement international agreements, such as the 1994 Columbus Ministerial Declaration on Trade Efficiency, aimed at enhancing the participation of developing economies in international e-commerce ▪ Use international standards, such as the revised Kyoto Convention and the World Customs Organization's Harmonized Data Set to reduce costs and risks of implementation and enhance integration of national economies in world trade ▪ Include a timeline in implementation projects and monitor this carefully ▪ Develop flexible solutions for using paper and electronic documents, such as UNeDocs²⁰, that allow for a paced accession to paperless trade ▪ Develop physical infrastructure, network, information and skills in developing and transition economies ▪ Address psychological and social needs of moving from a paper-based to a paperless environment

²⁰ See website: www.unece.org/etrades/unedocs

<p style="text-align: center;">7.</p> <p>Its implementation carries technology and market risks.</p>	<ul style="list-style-type: none"> ▪ Provide a preliminary assessment of specific risks and costs of implementing paperless trade ▪ Recognize the new challenges of paperless trade for data security, privacy and confidentiality. Data integrity and audit trails are essential ▪ Use integrators and provide training to reduce technology risks ▪ Identify pathfinder projects to reduce market risks ▪ Reduce “bring-to-market” time of projects in order to reduce market risks ▪ Establish sustained government leadership to reduce market risks ▪ Focus on the functionality (usability) of the solution and not the technology
<p style="text-align: center;">8.</p> <p>Elimination of paper in the international supply chain is achievable, but the transition needs to be managed.</p>	<ul style="list-style-type: none"> ▪ Synchronize and manage the transition period so it is inclusive and can be accomplished within well-defined time limits • Take into account different levels of e-readiness in different sectors/industries ▪ Define implementation strategies that permit use of both paper and electronic documents and consider incremental approaches ▪ Encourage interoperability between the major supply economies and the consumer countries, in particular least developed or emerging economies ▪ Adjust change management according to the impact on the existing cultures, processes and power structures ▪ Include continuous education and training as a core component in the implementation strategies ▪ Apply standards that integrate paper and electronic document concepts, such as UNeDocs, and foresee fallback options for paper documents ▪ Use pathfinder projects to assist in the early adoption of paperless strategies ▪ Analyse business processes to determine the documents that need to be automated ▪ Integrate payment systems in a holistic approach and encourage the Central banks and bank trade services to be a part of international paperless supply chains

<p>8. (contd...)</p>	<ul style="list-style-type: none"> ▪ Promote the adoption of a trusted legal framework to support international paperless trade ▪ Promote appropriate language as the official language for the cross-border exchange of information ▪ Encourage Governments to accept electronic certificates of origin and other documents that require official approval ▪ Use the electronic signature for electronic documents only when necessary, in particular for security reasons
<p>9.</p> <p>Governments should take a lead role in initiating the transition.</p>	<ul style="list-style-type: none"> ▪ Establish a national policy framework for paperless trade, which defines targets and implementation strategies and allocates resources²¹ ▪ Consider using a legislative framework, in particular in the tax field and administrative changes as catalysts for change. Create the appropriate legal and regulatory environment for paperless trade, e.g. electronic signature law, secure transactions laws, admissibility of electronic transactions as evidence in courts, recognition of certification authorities for electronic signatures. ▪ Encourage the development and availability of low-cost software tools for use of electronic signatures or other security technologies ▪ Coordinate between different governmental bodies to avoid duplication ▪ Contribute to the initial funding of implementation projects and/or set up public-private partnerships as implementing agencies ▪ Initiate pathfinder projects that make use of approved or emerging international standards ▪ Create incentives for the private sector (as described above in point 4) ▪ Create a healthy business environment to better align ICT and business processes and implement best business practices²² ▪ Use relevant international organizations to help build capacity specifically in developing and emerging economies ▪ Initiate and launch pilot programmes and pilot testing to start paperless trade between countries within international economic unions, such as APEC, ASEM, EU

²¹ While providing a general framework for introducing paperless trade, regional and interregional organizations, such as APEC and ASEM, encourage their member States to draw up individual action plans for implementation.

²² WSIS Thematic meeting, January 2005.

<p>10.</p> <p>Successful implementation projects grow rapidly in scope and volume.</p>	<ul style="list-style-type: none"> ▪ Define business models and organizational structures that can adapt and grow to support the needs of both large and small companies ▪ Start with simple low-cost projects with limited costs ▪ Apply a long-term orientation when making strategic decisions ▪ Integrate regional and international standards from the beginning ▪ Identify the Governments and key stakeholders that should be involved in subsequent phases ▪ Use knowledge codification methods for the transfer and the reusability of supply-chain processes. Use the International Supply Chain reference Model to help understand business processes ▪ Ensure that service providers of electronic documents act as neutral, trusted parties
<p>11.</p> <p>Facilitation and simplification of trade procedures and documents should take place before automation.</p>	<ul style="list-style-type: none"> ▪ Analyse processes for simplification and harmonization where possible ▪ Promote and implement relevant regional and international recommendations and agreements that simplify and standardize trade, such as the Revised Kyoto Convention or UN/CEFACT recommendations on trade facilitation ▪ Design business models and innovation support systems²³
<p>12.</p> <p>Paperless systems should not only be based on international standards, but should also reflect and take into account regional specificities.</p>	<ul style="list-style-type: none"> ▪ Use relevant regional organizations to initiate a regional process for capacity building, exchange of experience and definition of targets ▪ Governments should coordinate information requirements at the international level to make the supply chain efficient ▪ Provide sustained regional involvement in the development of international standards ▪ Develop harmonized standardized data, based on the UN/CEFACT framework, as a prerequisite for a Single Window paperless environment ▪ Create regional competence centres as incubators for implementation ▪ Integrate ICT standards in national and multilateral trade policies²⁴

²³ Idem.

<p>12. (contd...)</p>	<ul style="list-style-type: none">▪ Use innovative logistic technologies and standardized interfaces▪ Explore cross-border synergies in the implementation of paperless trade▪ Support the development of common XML documents schemas
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