Guidelines for Paperless Business Environment

in the APEC Region

May 2010

APEC Electronic Commerce Steering Group (ECSG)

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Acknowledgement

Summary

In 2009, important steps towards facilitating the use of e-documents have been made with the project 'Study on APEC Paperless Business Environment with the Focus on the Use and Archiving of e-Documents' (CTI 22/2009T). This project is co-funded by Ministry of Knowledge Economy (MKE) of Korea and Asia-Pacific Economic Cooperation (APEC), and executed by Asia Pacific Women's Information Network Center (APWINC) of Sookmyung Women's University in Korea.

With the main activities below, a set of collective data, overall agreement, and reference guidelines have been developed.

- Survey on APEC Paperless Business Environment
- Workshop on APEC Paperless Business Environment
- Guidelines on APEC Paperless Business Environment

13 out of 21 APEC member economies responded to the survey on promoting paperless business environments and are willing to elaborate further measures for facilitating the matter at hand. Especially during the workshop, organized by APWINC in December 2009 at Sookmyung Women's University, the delegates from twelve APEC member economies decided on conjoint efforts to reduce the use of paper documents and facilitate the employment and use of e-documents by reporting the current status of their economies, sharing best practices, and developing recommendations. Furthermore, development of the reference guidelines is expected to promote wider use of e-document in the APEC region.

According to the twelve economy reports, it is clear that private sector is still behind the methods of the public sector in most economies and that without coherent government regulations, it is hard to guarantee smooth application. In this regard, the guidelines suggest APEC member economies to:

- Establish a public system for general management and facilitation of e-document i.e. Korean CeDA (Certified e-Document Authority)
- Adopt new legislation to modify their domestic laws

- Build a framework at the APEC level to cover a various range of tasks, including harmonization of technical standards and capacity building.

Not only well-developed systems but also experts from member economies would be strongly needed to elaborate and control any kind of new cooperation to create sound paperless business environment in all APEC member economies. Only with participation and interest from all member economies, a collective approach would be realized.

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I. Introduction

1. Background

In the APEC Blueprint for Action on Electronic Commerce, APEC Ministers agreed to a Work Program of "identifying the economic costs that inhibit increased uptake of electronic commerce, including those imposed by regulatory and market environments" and of "exploring further economic and technical cooperation (ECOTECH activities) to facilitate the uptake, use and maximization of benefits of electronic commerce in APEC member economies." Also, APEC Ministers agreed that "member economies should endeavor to reduce or eliminate the requirement for paper documents". The project 'Study on APEC Paperless Business Environment with the Focus on the Use and Archiving of e-Documents' (CTI 22/2009T), in response to the above mentioned APEC Ministers' points, intends to undertake necessary research and develop a reference guideline to facilitate the reduction or elimination of paper documents with more use of e-Documents.

The 'Study on APEC Paperless Business Environment with the Focus on the Use and Archiving of e-Documents' (CTI 22/2009T) proposed by the Ministry of Knowledge Economy of Korea aims to contribute to the realization of the Bogor Goal and APEC ECOTECH agenda by providing the assessment on current paperless business environment of APEC economies and a guideline for APEC member economies to refer in improving their paperless business environment. A series of project activities such as research, workshop, and guidelines will focus on the measures to facilitate the use and archiving of e-documents instead of paper documents so that the culture of using electronic documents can be further disseminated in the APEC region.

To contribute to the realization of agenda set in the APEC Blueprint for Action on Electronic Commerce by the APEC Ministers, the project (CTI 22/2009T) intends to:

- Understand the current environment of APEC economies in paperless business;
- Identify the requirements and best practices of APEC member economies in the

use of e-documents to realize paperless business; and,

- Develop guidelines for APEC economies to refer to when taking necessary action for facilitating the use of e-documents to accelerate paperless business.

The guidelines will be developed as the final outcome of the project, and will be disseminated throughout APEC member economies and related APEC fora.

The project will be of particular interest to governments since its outcome will provide a reference for mature domestic policies as well as legal and regulatory environment in the context of enhancing paperless business. In addition, the project will supply valuable perspectives and inputs to the stakeholders/service providers of both public and private nature on the use of e-documents in APEC member economies.

2. Purpose of the Guideline

The 'Study on APEC Paperless Business Environment with the Focus on the Use and Archiving of e-Documents' (CTI 22/2009T) involves three major components, i.e., research, workshop and guidelines.

The guidelines will be drawn on the basis of findings extracted from research results and workshop outputs. A repetitive process of collaborative reviews and revisions of draft by APEC members and experts is to precede the formation of the final guideline.

13 out of 21 APEC member economies have responded to a survey on paperless business environment, providing some valuable and detailed information regarding their current status. Furthermore the delegates from 12 member economies who participated in the 'Workshop on APEC Paperless Business Environment' organized by Asia Pacific Women's Information Network Center (APWINC)[1] from

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[1] Asia Pacific Women's Information Network Center (APWINC) was established for promoting gender equality and empowerment for women through advancing women's potential and skills in the field of Information and Communication Technology (ICT) in 1996 at Sookmyung Women's University, Korea. APWINC has played a pioneer role for global informatization by conducting researches, education and

7~8 December 2009 at Sookmyung Women's University in Seoul, Korea took advantage of the platform to share best practices in both public and private sectors.

APEC member economies may turn to these guidelines to evaluate their current status, locate best approaches, and identify the requirements for improvement in relation to the use of e-documents for paperless business. With proper assessment of their status and needs, along correct identification of existing approaches to benchmark, APEC member economies will be able to form relevant programs that promote wider use of e-documents as a means to facilitate their paperless business environment. In short, the guidelines will be particularly useful and comprehensive reference for APEC member economies' respective government authorities when they seek to vitalize their domestic paperless business environment through enhanced use of e-documents. They are also expected to be of great assistance in the formation of collective action plans or tasks at the APEC level.

In line with the spirit of promoting the use of e-documents, the guidelines will be available in electronic forms and disseminated mostly by internet uploading.

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training, as well as conferences in gender & ICT. It collaborates with international organizations, governmental organizations, and NGOs and one of its main projects is 'Initiative for APEC Women's Participation in the Digital Economy' supported by Korean Ministry of Knowledge Economy and endorsed by APEC ECSG..

II. Paperless Business Environment in the APEC Region

1. Assessment of the Current Paperless Business Environment in APEC Economies

A call for survey on each economy's paperless business environment has been circulated to the 21 APEC member economies, to which thirteen member economies (Australia, Chile, China, Indonesia, Korea, Malaysia, Mexico, Peru, Russia, Philippines, Chinese Taipei, Thailand, and Viet Nam) have responded.
Judging from the survey results, digital divide is clearly presented in the APEC region: distribution of computer ranges from 17.4% to 72% and penetration of internet varies between 11.30% and 77.1%.

IT policies are primarily in the hands of ministries that manage the issues of ICT or economy (e.g. Ministry of Knowledge Economy in Korea, Ministry of Industry and Information Technology in China). E-document is more likely to be used in the field of e-trade/customs or finance, as manifested by eight economies that engage it on a broad scale, than in the medical, legal, manufacturing services, which explains why ministries of economy deals with IT policies in many member economies.

Table 1. Ministries Handle IT Policy and Promote Paperless Environment

Economy	IT Policy	Promoting paperless/e-document
Australia	Australian Government Information Management Office	N/A
Chile	Ministry of Economy (Digital Strategy)	Ministry of Economy (Digital Strategy)
China	Ministry of Industry and Information Technology of the People's Republic of China	Ministry of Industry and Information Technology of the People's Republic of China

Indonesia	Ministry of Communication and Information Technology	MCI & Ministry of Empowerment for Government officials
Korea	Ministry of Knowledge Economy	Ministry of Public Administration and Security / Ministry of Knowledge Economy
Malaysia	Ministry of Science, Technology and Innovation	N/A
Mexico	Ministry of the Economy and the Ministry of Public Function	Ministry of the Economy and the Ministry of Public Function
Peru	National Office of Electronic Government and Information of Peru	National Office of Electronic Government and Information of Peru
Philippines	Department of Trade Industry	Department of Trade Industry
Chinese Taipei	Ministry of Economic Affair (MOEA)	MOEA Bureau of Foreign Trade
Thailand	Ministry of Information and Communication Technology	Thai Customs Department
Viet Nam	Ministry of Information and Communications	Ministry of Industry and Trade

At present, half of the economies use e-document in document exchange among ministries or issuance of document for public administration. The usage of e-document in public sectors is expected to be on a steady rise with increased technical cooperation. In private sectors, groupware system or Electronic Document Management Systems (EDMS) is employed in seven economies: Chile, China, Korea, Peru, Philippines, Chinese Taipei, and Viet Nam.

Many of the member economies' government possess a legal-structure to control and/or promote e-documents. Eight member economies have rules on electronic documents and five member economies regulate the effects of e-documents/records. Chile, Indonesia, Korea, Philippines and Viet Nam have installed policies to facilitate the use of e-documents.

As is shown in Table 2, Laws or Acts on Legal Effects for e-Document or e-Records, every member economy that has responded to the survey is governed by laws or acts on the legal effects of e-document or e-records.

Table 2. Laws or Acts on Legal Effects for e-Document or e-Records

Economy	Laws or acts	Economy	Laws or acts
Australia	Archives Act (1983) Evidence Act (1995) Electronic Transactions Act (1999)	Mexico	Related legal acts exist
Chile	Law No. 19,799 on electronic signatures and electronic records. (2004)	Peru	Law of Digital Signatures and Certificates. Law No. 27269. (2000)
China	E-signature Law (2005)	Philippines	E-Commerce relevant laws or acts exist
Indonesia	Information and Electronic Transaction Law (2008)	Chinese Taipei	Electronic Signature Act (2001) Regulations Governing Company Registration and Recognition, Regulations Governing the Application of Business Registration
Korea	Public Record Administration Law(2000) Electronic Transaction Framework Law(1999) Electronic Signature Law(1999) Electronic Government Law(2001)	Thailand	Electronic Transactions Act (2001)
Malaysia	Digital Signature Act (1997) E-Government Activities Act (2007)	Viet Nam	Law on Electronic Transactions(2005) Law on Information Technology(2006)

Many government regulations are concentrated on e-commerce or e-trade where the use of e-documents is most prominent. Ten member economies (Chile, China, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Thailand, and Viet Nam) have settled the legal requirements of validity for enforceability of paperless documents, the majority of which being related to custom issues (i.e. e-commerce, importer registration, and customs declaration process) or securing digital signature.

Most of the economies report the volume of their Business to Customer (B2C) market in 2008 to range from 14.558 million to 524.9 billion US dollars. The size of Public Key Infrastructure (PKI) market-based certificate is from 0.2 million to 30 million US dollars in the APEC region. Usage of digital signature is significantly below 50%, with only Korea reporting a rate of 42.7%.

Also more than half of the economies expect paperless documents to effectively replicate the relevant commercial functionality of international trade documents. However, vast differences in technical maturities and digital infrastructures exist

among the member economies. Security issues are also a matter of interest, as safer environment for the use of e-documents precedes any effective facilitation toward paperless environment in business areas.

Two - thirds of survey respondents have reported that they have archives of e-records in their economies. Eight member economies digitize the hard copies of documents and use them as e-documents at work. Six of them have national archives or organizations of similar nature. Indonesia disposes of hard copy documents after their digitalization.

2. Current Status of APEC Member Economies in the Use of E-documents for Paperless Business

i. Chile

Chile began using e-documents around 2001. The rate of usage differs from field to field, with almost 90% of taxing processes being conducted electronically, while health sectors employ such means less than 10% of the time. Although e-documents are gaining more popularity, e-document policies are still in their infancy and require further development.

ii. China

The Customs Office of China has made every effort to promote the Integrated Clearance Project, establishing and capitalizing on a liaison and coordination mechanism for paperless port management. The accomplishment of the "E-Port" project in 1999, which is characterized by the application of online verifications of foreign exchange declaration documents, marked the realization of cross-departmental data exchange among different port authorities and online verifications of declarations.

iii. Indonesia

The custom office of Indonesia started the use of electronic data interchange (EDI) in the beginning of 1997 through the implementation of comprehensive EDI in Tanjung Priok Port and Soekarno-Hatta Airport. The EDI system usage also entered into retail supply chain services in the beginning of 1999. The Indonesia EDI system is based on international standard UN/EDIFACT - Electronic Data Interchange for Administration, Commerce and Transport. Currently the EDI system and its network have been progressively used for international and export import trading including inter-agency online verification.

iv. Korea

Korea is currently in a transition period shifting from a paper-based business environment to a paperless business environment, while maintaining dual means of record-keeping/document archiving. Paperless system is widely applied in public and private sectors that include trade and customs, civil affairs administration, finance, immigration, education, and manufacturing.

v. Malaysia

Malaysian government has established important strategic tools, and has improved its delivery systems to meet the demand of paperless business environment. Electronic trade facilitation initiatives are in effect through Malaysian National Single Window that handles electronic submissions of import or export permits, certificates and customs declarations.

vi. Philippines

The Philippines recognizes the high-growth potential of ICT and e-commerce. Use of e-documents or e-commerce got a jumpstart when the RA 8792, E-Commerce Act of 2000 (ECA), entitled "An Act Providing for the Recognition and Use of Electronic Commercial and Non-Commercial Transactions and Documents,

Penalties for Unlawful Use thereof and for Other Purposes", was legislated in June 14, 2000. The law gives legal recognition of electronic data messages, electronic documents, and electronic signatures and allows the establishment of contracts in electronic forms. It also promotes e-commerce in the Philippines, particularly in business-to-business and business-to-consumer transactions, for better facilitation and enhancement of business relations and consumers' choice to locate and purchase products online.

vii.   Mexico

The Ministry of the Economy works on the following action lines under its Digital Economy Program for the purpose of boosting the use of IT in Mexico: Develop a digital culture for consumers, promote outsourcing of IT services, and promote online transactions in different areas. The economy's National Development Plan 2007-2012, which includes the implementation of the Government Digital Agenda, also seeks to improve its digital regulations, management and processes.

viii.   Peru

Peru has relevant authorities under the government that support its modernization and decentralization, handling the administration of the Main Portal of the Peruvian government and leading the Committee on Development of Information Society - CODESI.

ix.   Russia

Russian Ministry of Economic Development has established a nine-year plan, entitled 'Electronic Russia', for 2001-2010 seeking to deliver more government services online. 'Electronic Russia' focuses on four key areas of: Regulatory environment and institutional framework, Internet infrastructure, e-Government, and e-Education. The main objective of 'Electronic Russia' is to increase the

efficiency of the economy and empower the government with ICT applications.

x.   Chinese Taipei

According to the survey, about 68% of the population use computers, and close to 46% of the population use the Internet in Chinese Taipei. Use of paperless systems is active both in public and private sectors and the economy plans to provide services through communication networks such as mobile commerce.

xi.   Thailand

The Thai Customs Department set up the Information Technology Master Plan for the Fiscal Years 2002-2005, seeking to deal with the economic and international trade expansions and to enhance the efficiency of Customs administration in accordance with the international standard. Following this plan, the Thai Customs Department implemented e-Customs system for both import and export in July 2008 and processes importer/exporter declarations electronically.

xii.   Viet Nam

Since 1997, paperless environment has improved a great deal due to the growing popularity of Internet. Viet Nam is making an effort to create and boost paperless business environment with a focus on more energetic and extensive e-commerce. While the government has also tried to improve the paperless environment in public sectors through numerous projects, implementations there have come at a slow pace and demands for domestic and international initiatives are still high.

III. Case Studies from the APEC Region

1. Use of e-document in both public and private sectors

To understand the current environment of APEC economies in paperless business and to identify their requirements, all APEC member economies were requested to submit their economy report. The report showed the use of e-document in both public and private sectors in each economy.

i. Chile

Chile has three cases of paperless system in public sectors. First is *Public Procurement System (Public Shopping Portal)* that allows providers to make their service offerings electronically, necessitating only the final step of the transaction (signing on the contract) to be on paper. Second is *Inland Revenue,* which concerns tax. Inland Revenue provides a statement proposal based on data previously recorded by the service and e-invoice service and replaces paper-based invoices for taxpayers and small businesses. Last is *Import and Export Permits,* which handles every export (fruits, wines, copper and others) and incoming goods by demanding either a certificate authorizing its departure from Chile (Departure Statement, DUS) or Reception Statement (DIN) issued as a form of e-document by Customs.

In private sectors, not only finance but also medical service areas operate on paperless environment. *Electronic transfer* is used to pay taxes, reveal goods and services. Also, private clinics have *implemented e-authentication for medical appointments* and their payment.

ii. China

The China Customs has established an application pattern of E-Customs, E-Port and E-General Administration. Among them, **E-port** seems to be the best case for use of e-documents as it has evolved into a unified cross-department, cross-region

and cross-sector information platform for both public and private sectors. First example is *G2G connections (Data Exchange Platform),* which has realized data exchange, sharing and conversion among 15 agencies under the State Council as well as with the Hong Kong Trade and Industry Department, Macao Economic Services. Second *is B2G connections (Transaction Processing Platform)*, which is an E-Port for import and export that processes trade and provides intermediary services. Third example is *B2B connections (Auxiliary Support Platform)* that concerns traders engaging in import, export or logistics and allows carriers and agent companies to exchange information through the VPN of China E-Port.

iii.   Indonesia

Indonesia is trying to improve paperless business environment in both private and public sectors. E-banking, E-Reservation, and E-Transaction for some commodities are examples of private sector's engagement in paperless system. Yet the public sector application of paperless system stands out with various activities. First example is Electronic Procurement, E-procurement, which allows prospective college students to submit their application forms to universities through an electronic enrolment system. Electronic Data Interchange (EDI) connects customs office with other agencies such as importers, exporters, banks and shipping companies in a single network. Another example is Indonesia National Single Window (INSW), which was launched in 2007 for integration of different agencies such as Customs, Ministry of Trade, Food and Drug Agency Fishery Quarantine, Plant and Animal Quarantine, Ministry of Health, Ministry of Industry, Nuclear Energy Regulatory Agency, Directorate General of Post and Telecommunication. The INSW is also ready for cross-border harmonization.

iv.   Korea

Examples of public sector applications in Korea include the following:
Paperless Trade/ Customs allows electronic processing of customs clearance, tax

payment, various permits such as quarantine or phytosanitary permits via e-document repository. Internal users and external clients can store, search, review, and authenticate paperless documents with the electronic system. *Paperless Civil Affairs Administration* streamlines the submission of civil petitions via online portal and registers them as paperless documents in the respective government's information system. *Paperless Loan Application for SMEs* allows documents for loan application and approval process of small and medium sized enterprises to be submitted and managed electronically via authenticated electronic document repository system. *Paperless Immigration Services* handles immigration applications and petitions of, for instance, foreigners residing in Korea, electronically via online service portal. *Paperless Application for University Admission* is another example of paperless environment whereby prospective college students access and file admission applications online. In addition transcripts and certificates, which were available only as hard copies, are now scanned and authenticated at an authorized e-document repositories and can be directly submitted as original copies. *Electronic Supply Chain Management and Warehouse Management* connects internal electronic reporting and approval system with supply chain/ inventory management system to reduce paper-based communications between management and warehouse. Approved delivery orders are transmitted directly to the warehouse management department via online system, reducing communication costs and workload.

Korea's both public and private sectors are also trying to set the paperless business environment fully in operation. The best example of this is an paperless trade single window named *uTradeHub,* initiated by the cooperation of MKE (Ministry of Knowledge Economy), KITA (Korea International Trade Association), KTNET (Korea Trade Network) and many other related organizations and firms. The Korea Paperless Trade Office in KITA**,** established in 2005 is the secretariat and PMO (Project Management Office) of the National Electronic Trade Committee. It is actually working for the consolidation between public and private sectors as the

National e-Trade Committee delegated the office to organize and represent each stance from each party under the consensus for trade facilitation through electronic trading process. The system provides standardized online templates, facilitating the use of e-documents in storing, exchanging, and authenticating among parties involved. Traders are able to access services such as marketing, licensing, logistics, customs clearance, foreign exchange and payment through *uTradeHub*. Aside from that, Korea possesses models of effective electronic procurement (KONEPS) and customs (UNI-PASS) as well.

v. Malaysia

Malaysia has embarked on electronic trade facilitation initiatives to enhance the government delivery services to the public through Malaysian National Single Window, for electronic submission of import or export permit, certificate and Custom declarations.

MyTradelink or Malaysia's National Single Window for Trade Facilitation (NSW) is an electronic system that enables a secure, safe and efficient exchange of trade-related documents through a single point of entry to expedite the smooth flow of information of goods either for export, import or transit.

Five core services of NSW have been operationalised and are available through the MyTradelink online portal (http://www.mytradelink.gov.my) from 19 November 2009. These services are:

- Electronic Customs Declaration (e-Declare);
- Electronic Customs Duty Payment (e-Payment);
- Electronic Permit for Import & Export (e-Permit);
- Electronic Preferential Certificate of Origin (e-PCO); and
- Electronic Manifest System (e-Manifest)

The description of the NSW Services is:

i. *e-Declare*

- web-based application to facilitate preparation and submission of customs declarations via Internet.
- Available at all ports and entry points in Malaysia.

ii. *e-Payment*

- online duty payment service that enables preparation and submission of duty payment to Customs:
  - Electronic Funds Transfer; and
  - DutyNet (Web Based Customs Duty Payment).
- Available at all major ports.

iii. *e-Permit*

- web-based application that enables importers and exporters to apply for import/export permit from 30 Permit Issuing Agencies (PIA).

iv. *e-Preferential Certificate Of Origin (e-PCO)*

- web-based application that allows Exporters to apply for Preferential Certificate of Origin from the Ministry of International Trade and Industry and obtain approval online.

v. *e-Manifest (Sea Mode)*

- web-based application that allows the port users i.e. the Principal Shipping Agents (PSA) and Shipping Agents (SA) to submit vessel information and cargo report to Royal Malaysian Customs.

ASEAN Single Window (ASW) is an initiative to further facilitate trade among ASEAN members. It allows electronic operation and integration, using a set of standardized information parameters, procedures, formalities, and international best practices relevant to facilitate the clearance and release of cargoes. Two Malaysian organizations of Ministry of International Trade and Industry (MITI) and Royal Malaysian Customs Authority and Ministry of Trade and Customs Authority in Indonesia are parties involved in this effort. Approved Common Effective Preferential Tariff (CEPT) Form D and CEPT Form D Utilization Report are documents steering Malaysia's paperless business environment. *Dagang Net* exemplifies Malaysia's paperless business environment. It operates the national Electronic Data Interchange (EDI) system and provides other electronic trade-facilitation services. Dagang Net is a member of the Pan-Asian E-Commerce Alliance that promotes regional collaborations and provides IT Infrastructures for cross border declarations exchange using UN/EDIFACT standard.

vi.   Philippines

The Philippines recognizes the high-growth potential of ICT and e-commerce, and has promoted e-commerce by national law since 2000. Specifically, the Implementing Rules and Regulations for the Electronic Commerce Act was drawn up on 13 July 2000. After the passage of this law, the use of e-documents accelerated both in public and private sectors, particularly in the area of trade facilitation. Among the relevant initiatives, examples that stand out in public sectors include the following: *Electronic Filing and Payment System (eFPS), Short Messaging Services (SMS), Accredited Agent Banks (AABs)*, and etc.

Securities and Exchange Commission iReport is both an intranet-based compliance monitoring, enforcement and agency operating system and an internet-based reporting and response system.

Bureau of Customs' *e2m-Customs Project* is one of the mission-critical and high-impact ICT projects of the national government. It seeks to streamline BOC's

core processes (imports and exports) and improve trade facilitation between the Bureau and its stakeholders that include other government agencies, through development and integration of various systems, allowing Internet-enabled and later SMS-enabled, thus less face-to-face, transactions, all towards the realization of the National and ASEAN Single Windows. The e-Customs system or the electronic component of the integrated e2m-Customs automated process is an Internet-based technology that allows Customs officers and traders to handle most of their transactions - from Customs declarations to cargo manifests and transit documents - via the Internet.

vii. Mexico

Mexico focuses on public sector in paperless business environment, and shows the legal framework for the use of electronic means in commercial activities; Federal Civil Code, Federal Code of Civil Procedures, Federal Consumer Protection Law, and Commercial Code. Following the dispositions established on the Commercial Code, the Ministry of Economy has created the *Mexican Official Standard (NOM-151-SCFI-2002)* in 2002, which establishes the requirements to be considered in the conservation of data messages content that enter in contracts, agreements or commitments arising rights and obligations.

The implementation of the NOM-151 is important to give certainty to electronic transactions, and fosters the use of electronic signature and digital certificates that increase benefits for traders in time and costs of their commercial transactions. The NOM-151 also governs the operation of Certification Service Providers (CSP) in the generation of digital certificates subject to the requirements of the dispositions established on Commercial Code.

viii. Peru

Peru manifests a variety of e-document cases in both public and private sectors such as E-customs Declaration, E-Payment of Taxes, E-banking, E-flight ticket etc.

However, Peru places most emphasis on future plans for paperless environment. There are two interesting projects in progress for implementation in 2010: the "International Trade Single Window" and the "New Customs Clearance Process". Up until now one of the most representative efforts that implement electronic documents and electronic services has been the Tax and Customs Administration of Peru, a recognized technical leader in Peru.

ix.   Russia

The Russian Ministry of Economic Development made a strategic development plan called "Electronic Russia" in early 2001. The plan, which will continue to the year 2010, has the following main objectives:

- To increase the efficiency of the economy,

- To improve management in the public sector, and

- To enhance self-government by applying information and communication technologies.

In 2006, the Electronic Russia was amended to ensure coordination among administrative reform activities with a focus on improved public service deliveries. The Russian government has implemented Federal Portal of Public Services providing various services for citizens, businesses, and public authorities. Also, the government has plans for future development focusing on e-services and better public transparency.

x.   Chinese Taipei

Chinese Taipei has several cases of paperless systems in public sector: *E-Government Portal* (government's online services have now stabilized at around 2,400 items), *Government Inline Procurement*, *On-line Company Name's Reservation Application System*, *On-line Company Reservation Information System*, and *Trade Facilitation Plan*. Among them, *Trade Facilitation Plan* is a particularly interesting case for paperless system, launched in 2003 as an effort to respond to

worldwide trends in trade facilitation and simplification of trading procedures. The plan plays a vital role in providing trade-related businesses with an integrated environment of trade management, customs clearance, licensing and inspection; moreover, it showcases Chinese Taipei as one of the most facile economies in global trading. Businesses are no longer limited by time, locations and level of digitalization and overall customs clearance time is substantially shortened, while related costs in inventory and logistics are reduced as well.

To realize the objectives of the "Trade Facilitation Plan", Chinese Taipei established Facile Trade Net (FT-Net), which integrates 16 government agencies/authorities to build an on-line application system, in 2005. Businesses can now submit electronic applications for import/export permits, certificates of origin, requirements for inspection and quarantine-related documents. This FT-Net has sped up not only application procedures but also customs clearance operations, and represents a big step toward realizing the goal of "paperless trade."

In terms of private cases in paperless system, e-documents and e-record systems are typically used in e-trade/custom as well as in the fields of manufacturing and finance.

xi. Thailand

Thai Customs Department has fully implemented e-Customs system for import and export since July 2008 enabling electronic processing of importer/exporter declarations. The objectives of automation systems for expedition of Customs clearance are as follows:

- To reduce the number of steps involved and/or to terminate the use of unnecessary trade documents.
- To speed up the clearance of goods by electronic means 24 hours a day and 7 days a week.

These objectives guided Thai Customs department's effort to redesign the system on the basis of Web Technology during 2005-2007. The effort has shifted its

focus from EDI to an open system that would enable electronic exchange of information by applying ebXML (electronic business using eXtensible Mark up Language) as a standard message, paving the way for paperless trading. In 2007, the Thai Customs department launched ebXML– based initiatives, such as e-Export, e-Import and e-Manifest through Single Window that are electronically shared by several stakeholders including importer/exporters/customs broker, banks, air/sea carriers, sea port, airport and licensing agencies.

xii.   Viet Nam

Electronic certificate of origin system (eCoSys) is a case of public sector in Viet Nam that constitutes an important document for export and import. ECoSys is one of the first online public services, and involves three phases of implementation:

- Phase 1: Establish systems for every Export and Import Department to manage, store and process preferential C/O data under the management of Ministry of Industry and Trade at its integrate data centre.

- Phase 2: Electronic certificate of origin will be issued in a narrow scope to the large-sized and prestigious enterprises with large and stable turnover.

- Phase 3: Electronic certificate of origin will be issued in broad scope. All electronic CO form will be issued to every enterprise nation-wide.

Viet Nam has seen many achievements in the last decade in its paperless business environment, and is working to facilitate wider use of e-documents.

Table 3. Economies' Cases of APEC Paperless Business Environment

	Public Sector	**Private Sector**
Chile	· Public Procurement System · Inland Revenue · Import and Export Permits	· Finance: Electronic transfer · Medical Service: implemented e-authentication for medical appointments
China	· E-port: G2G connections (Data Exchange Platform), B2G connections (Transaction Processing Platform), B2B connections (Auxiliary Support Platform)	

Indonesia	· Electronic Procurement · Electronic Data Interchange(EDI) · Indonesia National Single · Window(INSW)	· E-banking, E-Reservation, and E-Transaction
Korea	· Paperless Trade/ Customs · Paperless Civil Affairs Administration · Paperless Loan Application for SMEs · Paperless Immigration services · Paperless application for University Admission · Electronic Supply Chain Management and Warehouse Management.	· U-Trade Hub: online templates, facilitating the use of e-documents in storing, exchanging, and authenticating
Malaysia	· Malaysian National Single Window · Dagang Net : electronic trade-facilitation services	

Philippines	· Electronic Filing and Payment System (eFPS),
	  Short Messaging Services (SMS), Accredited
	  Agent Banks (AABs)
	· e2m-Customs Project
		· Securities and Exchange Commission iReport

Mexico	· Mexican Official Standard (NOM-151-SCFI-2002)	
Peru	· E-customs Declaration, E-Payment of Taxes, E-banking, E-flight ticket	
Chinese Taipei	· E-Government Portal · Government Inline Procurement · On-line company name's reservation application system · On-line company reservation Information System · Trade facilitation Plan (Nest case)	
Thailand	· e-Customs system	
Viet Nam	· ECoSys: Export and Import Department to manage, Electronic certificate	

2. Sharing Best Practices in Paperless Business Environment

2-1. Korea ON-line E-Procurement System (KONEPS)[2]

Public Procurement Service (PPS) is the central procuring agency of the Korean government which was created in 1949 as a provider of supply-related services for government departments and agencies. It has the legal authority to procure and supply goods and services on behalf of central government entities and make contracts for public construction projects valued over certain financial thresholds. It also provides its procurement services to local government entities and state-owned enterprises upon their request.

With an agenda to enhance the efficiency and transparency of its procurement activities, PPS invested intensive efforts to establish an electronic system for its entire procurement process. The Korea ON-line E-Procurement System (KONEPS) emerged in 2002 as a result of several years' of such endeavors.

Data exchange links exist between KONEPS and over 100 external systems of other public institutions, banking institutions, surety companies, credit rating agencies and etc., securing electronic processing of procurement tasks from supplier registration to payment. The links enable KONEPS (www.g2b.go.kr) to electronically obtain any information necessary for its procurement procedures.

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[2]. Written based on and referred to the KONEPS presentation by Ms. Kyungsuk Cho from Public Procurement Service (PPS) of Korea at the 'Workshop on APEC Paperless Business Environment' in December 2009, Seoul

Box 1. Conceptual diagram of KONEPS's data exchange links

KONEPS comprises over 10 sub-systems, including electronic tendering system, document exchange system and other support systems for catalogue and supplier performance management. It presents several distinctive characteristics owing to its extensive architecture:

Firstly, KONEPS is a single window to public procurement for both public organizations and suppliers. It publishes tender information from all public institutions, and bidders can search and access any public tender notice that includes detailed specifications and evaluation criteria. It also centrally manages the bidder information, allowing bidders to participate in all public biddings with a one-time registration via KONEPS.

Secondly, KONEPS provides an end-to-end e-Procurement service where all procurement processes are conducted on-line, from user registration, tender notice, awarding, and contracting as well as payment.

Thirdly, due to the data exchange links with external systems, KONEPS can provide a one-stop service for both suppliers and public entities. Using the data

exchange linkage with the G4C system of the Ministry of Public Administration and Security (MOPAS), KONEPS has eliminated the need for submission of paper documents such as business registration certificates and tax payment certificates. Also the links with industry associations enable KONEPS to automatically collect information on bidders for qualification assessment, rendering paper submissions obsolete. KONEPS has digitalized 166 document forms for electronic processing, covering bid, contract, inspection and payment request. Most of the documents previously handed in person or by mail are now submitted via the internet.

Currently about 40,000 public organizations and 170,000 private companies are utilizing KONEPS. On a daily basis, an average of 238,000 people visits its website and an average of 200,000 document exchanges happen. As of 2008, KONEPS is one of the world's largest cyber markets with an annual transaction volume of 63 billion US$.

The implementation of e-Procurement through KONEPS has greatly enhanced efficiency and transparency as itemized by the following:

1. Reform of related laws and regulations
2. Real-time disclosure of information on the progress of bidding and contracting
3. Reduction of direct personal contacts between procurement officials and bidders
4. Reduction of paperwork
5. Systematic publication, management and sharing of information
6. Integrated management of resources

A study in 2009 reported that direct and indirect cost savings achieved by KONEPS are estimated to be 8.05 billion US$ per year. In terms of productivity, while 1,058 employees of PPS handled 190,000 contracts in 1997, the number increased drastically after the establishment of KONEPS in 2002, even though staff size remained basically static. In 2007, 913 PPS employees handled 810,000 contracts, signifying a five-fold increase in productivity from 1997. The number of bid participants has risen threefold in the same period.

There are a number of factors that contributed to the successful implementation of KONEPS. First of all, the Korean government had a strong will to reform its public service by using IT. Owing to the formation of a special committee for e-Government and cross-governmental coordination, PPS was able to overcome many obstacles such as the resistance posed by other departments that were still hesitant to use the technology KONEPS provides. Secondly, the world-class internet infrastructure of Korea helped to reduce difficulties in promoting the use of KONEPS. Thirdly, PPS improved the procurement process prior to the system development through BPR/ISP and adopted new technologies such as digital signature and PKI. Fourthly, during and after the implementation of KONEPS, PPS continuously held workshops and training sessions to help the public and private sector users familiarize themselves with e-Procurement.

Due to its outstanding features, KONEPS has received global recognition as one of the best practices in e-Procurement. In 2003, PPS won the first Public Service Award from the UN. In 2006, PPS also received the Global IT Excellence Award from the World Information Technology and Services Alliance.

2-2. UNI-PASS[3]

Established by Korea Customs Service, the Korea Customs UNI-PASS Information Association (CUPIA) is a leading promotion association specializing in customs information technology sector, with an objective to implement efficient and effective computerized customs administration system for foreign customs.

CUPIA embodies the advancement of ICT and promotion of UNI-PASS system as well as the development of customs modernization and computerization for foreign customs; it seeks to establish and provide the latest Korea Customs technological advances and international recommendations in close collaboration

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[3] Written based on and referred to the UNI-PASS website and the presentation by Mr. Daniel Moon from Korea Customs UNI-PASS Information Association (CUPIA) at the 'Workshop on APEC Paperless Business Environment' in December 2009, Seoul..

with customs, governmental organizations, companies, groups, etc.

UNI-PASS is a highly flexible, compatible and advanced information technology that provides a quality customs system. It is a brand name of Korea Customs Service's information system that supports all customs procedures (clearance, cargo, collection, and etc.). It began as a simple statistic system in 1974, but has expanded to become a ubiquitous clearance system in 2008 with special features of High Flexibility, Compatibility, and Advanced Information Technology.

  UNI-PASS can be divided into many components such as single window, clearance management system, cargo management system, information management system and administration system, each with the following features.

- Single window: provides a one-stop service for declarers during the cargo arrival and clearance stage

- Import cargo: provides a cargo information management for all cargo movement from arrival at the port to release

- Import clearance: provides a paperless clearance declaration for declarers during all clearance stages

- Export cargo & clearance: provides simplified procedures to increase competitiveness of local company

- Post audit: provides individual audit and company audit functions for customs officer after the declaration

- Risk management: provides an information analysis service for cargo selectivity, clearance selectivity, audit selectivity and etc.

- Advanced passenger information system (APIS): provides a high risk passenger selection service for airport passenger

  UNI-PASS has improved customs administration, maximizing productivity and increasing efficiency in clearance and trade with its user-friendly and practical services. Furthermore, it has proven to be highly effective in terms of time and cost due to its streamlined internet logistics. Ultimately, UNI-PASS serves to improve national and corporate competitiveness.
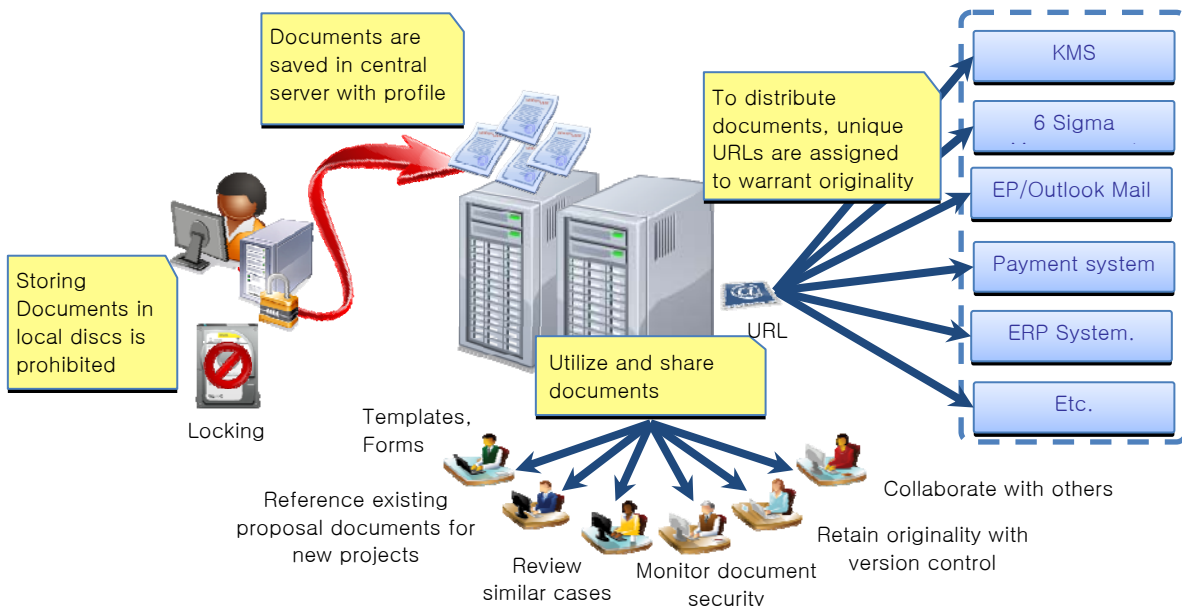
Table 4. Benefits of UNI-PASS

Improve satisfaction	Maximize productivity	Raise efficiency
• Increase revenue • Raise transparency and anti-corruption (clean customs) • One-stop service • Improve work environment and seek convenience	• Create e-Customs flexible to e-Biz & e-Trade • Build a foundation for inter-agency information sharing structure and international trade gateway	• Enhance trade competitiveness by reducing clearance work time • Create synergy by reusing national clearance information • Enhance corporate & national competitiveness

2-3. SmartECM[4]

Document management focuses on improving the way employees work, which involves finding and solving existing problems for paperless work environment. In that sense, a company can make a work environment where the entire documents in workflow can be created and used in digital form and documents are managed for lifecycle. Combining paperless environment and document management renovation, all electronic documents are stored and managed in the central server and paper-printouts for distribution and utilization purposes are prohibited. It can improve business with easy access to documents, readily available identification of information worthy of sharing, and advanced monitoring of documents security.

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[4] Written based on and referred to the presentation by Mr. Won Tae Kim from POSDATA Company LTD, Korea at the 'Workshop on APEC Paperless Business Environment' in December 2009, Seoul.

Box 2. Practical Example of Introducing Document Management Renovation

POSDATA suggests renovating the way of document management with the use of POSDATA's SmartECM Solution for time and cost saving and risk minimization. SmartECM is a comprehensive solution that advances the way work is carried out in the u-paperless and knowledge-based work environment. It removes waste and redundancy, thus enables efficient use of documents. It does so by identifying the lifecycle of documents in phases of creation, preservation, utilization and disposal.

SmartECM centralizes documents, turning what have been saved on individual PCs into company assets and promotes better document utilization for work sharing and collaborating. In addition, SmartECM offers inventory management and monitoring of documents that help beef up the security of documents.

Also it offers a solution for efficient implementation of document management and promotes a systematic change of how work is done using BPM. The solution is composed of master plan consulting, work design, transition management consulting and software package implementation and customization.

Benefits of using SmartECM are;

- maximize work efficiency

- maximize document utilization

- secure work continuity & expediency

- induce voluntary participation

IV. Challenges to Facilitate Paperless Business Environment

As proven from the experiences and cases of the use of paperless in APEC member economies, 'paperless' greatly contributes to both public and private sectors. Besides being a motivation behind an economy's environmental and economic development, the use of electronic documents drives the transformation of global economy as well. To accomplish substantial progress in business market and public administration, some conditions must be met and those are the challenges that we have to meet.

Technical challenges:

Changing the attitude of culture of paper should be considered an important pillar for successful process automation.[5] 'Paperless', which is an application of ICT, strongly needs technical infrastructure. However, the wide level of ICT technology in each member economy varies the range of using electronic documents. According to the survey[6] result, the percentage of using computer and internet affects the extent of paperless environment in each economy. Furthermore, there is digital divide between developed and developing economies. In this sense, progress should be made in physical infrastructure, network, information, and skills in developing economies so that psychological and social needs of moving from a paper-based to a paperless environment are addressed.[7]

Systemic challenges:

This is directly related to governance. To take an action for paperless environment, not only ICT infrastructure but also systemic and policy infrastructure such as legal system, policy, raising awareness of the public is strongly needed. According to the best practices introduced in this report, it is clear

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[5] ProcessMaker, November 25, 2009
[6] As a part of the project 'Survey on APEC Paperless Business' was circulated to the 21 APEC member economies in November 2009.
[7] A Road map towards Paperless Trade, United Nations Economic Commission for Europe, 2006

that government leadership is the first step in securing relevant policies or regulations. Other activities will then follow at the national level, reducing or eliminating systematic challenges. As any national change takes time, these activities need to happen simultaneously.

Financial challenges:

Renovation of document usages from 'paper-based' to 'electronic' is possible with technical infrastructure as well as human resource. Not only creating a new system but also adapting an existing system of other economies makes sense in terms of cost. Maintenance of electronic document systems requires technical and managerial expertise. All of the necessary processes are viable with cost and time saving in mind.

Custom challenges:

Despite the ease of use and efficiency of paperless documents, the actual utilization is hindered significantly by the conversion of paper-based documentations, for example, a belief that paper-based documents are free from the risks of forgery and falsification. However, there are also risks of forgery related to the use of paper-based documents, including the well-known cases of transcript forgery and alteration.

Efforts to change the traditional belief that paper-based documents are safer than the paperless documents are needed.

As the construction of paperless business environment can be burdensome and taxing, it seems reasonable to expect the developed economies to support the developing economies. Besides the obvious financial assistance, there are needs for relevant expertise, trainings and etc as well.

To meet these challenges, it is strongly recommended[8] that APEC initiate special projects for disseminating paperless business environment to its member

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[8] Recommendations were derived from the 'Workshop on APEC Paperless Business Environment' on December 8, 2009.

economies, which call for active participation of theme with experience and expertise in paperless environment.

V. Suggestions

In many developing economies, the discussions on the paperless business environment remain at the initial stage of its implementation. Customs and trading traditionally used fax machines and EDIs in an effort to expedite exchange of documents and communications in a long distance. Procurement also was one of the key public sectors the government led paperless business environment implementation as a method of infrastructure development.

Nowadays, PBE should be understood beyond the conventional use at the public sector. Legal frameworks and systems conducive to encouraging participation of the private sector should be put in place in order to promote the business competitiveness and enhance the quality of life.

For this purpose, it is important to combine the PBE implementation with the discussion of IT convergence. In today's globalized world, ICT is leading the way to contribute to increase the productivity and efficiency. ICT application in various fields including the automobile, ship building, construction, transportation and healthcare currently removes manual works and replaces them with electronic paper-based working environment.

Establishment of back-up systems for electronic documents, such as 'Certified e-Document Authority (CeDA)' in Korea, will be the first step to increase the security and credibility of PBE.

Also, APEC member economies are encouraged to adopt new legislation or modification to their domestic laws toward:
- unified legal standard for commercial and personal e-transactions in private and public sector,
- legal recognition of electronic communications,

  A. UNCITRAL Electronic Communications Convention and UNCITRAL e-Commerce Model Law,

  B. as long as party autonomy principle coexists

- clear and definite standard for time and place of dispatch and receipt of electronic communications,
- equivalent treatment of automated message system or electronic agent,
- making available contract terms to other parties on internet,
- legal approval of electronic signature or other certification methods for securing safe and confidential e-commerce environment,
- building public or certified e-document authority to facilitate circulation of e-documents and emergence of related market.

Furthermore, if possible, APEC member economies should prepare to accept the UNCITRAL Electronic Communications Convention to respond to the increase in international e-commerce in the future.

To change traditional belief and establish a special system or law for paperless business environment, there should be an action from APEC and its member economies. The current status of paperless business environment in APEC member economies and their challenges necessitates more active cooperation among them. In particular, APEC is well advised to draw up an initiative for its member economies to promote paperless business environment in the developing economies.

The 'Workshop on APEC Paperless Business Environment', which was held in Seoul from 7~8 December 2009, was a great platform for information sharing and discussions. Twelve member economies[9] participated in the Workshop. Participants and speakers/moderators drew recommendations for paperless business environment in the APEC region. A consensus was built around the establishment of a framework that governs, at the APEC level, such activities as making laws and regulations, establishing global standards, and reducing the digital divide among member economies through capacity-building programs and other efforts. It was also agreed that the regional specificities of the APEC member economies must be reflected and

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[9] Chile, China, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Russia, Chinese Taipei, Thailand, and Viet Nam

taken into account in the formation of this framework.[10]

Upon formal agreement of APEC member economies, efforts to draw a solid framework need to be put on a full swing. APEC initiatives are also necessary to promote harmonization of global standard on paperless business, to encourage provisions of single national windows, and to reduce the digital gap between its member economies. The creation of a healthy global paperless business environment requires unceasing interest and cooperation of developed economies and their experts.

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[10] A Road map towards Paperless Trade, United Nations Economic Commission for Europe, 2006