Asia-Pacific Economic Cooperation

APEC Research Report on Paperless Trading Capacity Building and Intellectual Property Protection

APEC Electronic Commerce Steering group
APEC Electronic Commerce Business Alliance

September 2007

Prepared By
Prof. Zhan Fudong
Ph.D. Zhang Zhicheng
Prof. Wang Jian
Prof. Chen Jin

Contact:
APEC Electronic Commerce Business Alliance Secretariat
No.11, Ronghua Road, Economy Technology Development Area
Beijing, P.R.China 100176
Tel: (86) 10-6780 0190/1050 Fax: (86) 10-6780 0327
Email: info@apec-ecba.org
Website: www.apec-ecba.org

FOR THE ASIA-PACIFIC ECONOMIC COOPERATION
SECRETARIAT
35 Heng Mui Keng Terrace Singapore 119616
Tel: (65) 6775-6012 Fax: (65) 6775-6013
Email: info@apec.org
Website: www.apec.org

APEC#207-TC-01.3

Asia-Pacific
Economic Cooperation

APEC Project
on Paperless Trading Capacity Building and Intellectual Property Protection

APEC Electronic Commerce Steering Group

APEC Electronic Commerce Business Alliance

Beijing, P.R. of China
September 2007

Contents

List of Figures

List of Tables

List of Boxes

Abstract

Nowadays, the means of international trade has experienced so much change that a “Virtual Market” emerges. Paperless trading (PT), through “Virtual” information exchange in the Internet, has not only overhauled the traditional paper documentation system, but has also opened a totally new market space that is open-ended and multi-dimensional. Furthermore, PT has accelerated the global movement of such production factors as capital, commodity and technology and, in turn, quickened the pace of trade liberalization and facilitation.

Since its establishment in 1989, APEC has pursued the purpose of trade liberalization and facilitation in order to promote economic and trade cooperation and joint prosperity in Asia-Pacific region, and has done all it can to develop e-commerce and PT. Upon the approval of “Action Plan for APEC E-Commerce” at the Kuala Lumpur Conference in 1998, with a view to achieving the objective of “bringing trading cost down to 5% by 2006” set in “2001 Action Plan for Trade Facilitation”, the APEC member economies have made great strides and realized periodic achievements. However, due to the “Digital Gap” existing between the developing and developed members of the APEC, it is still considered a rather difficult task to fulfill the objectives of reducing the trading cost by another 5% by the year 2010 and of promoting PT in the developing member economies.

APEC is not, in fact, short of advanced experience and success cases in e-commerce and PT. Such examples include: Korea government’s strenuous efforts in stimulating the construction of PT environment and service system, Singapore’s PT know-how, and Hong Kong,China’s service platform for trade logistics. What APEC is really deficient is the awareness and mechanism for innovation, protection, application and optimal distribution of such Intellectual Property (IP) as PT related knowledge, criteria, know-how, products and services, which is emerging as the bottleneck for PT capacity building and overall upgrading in the APEC member economies.

In addition, in the course of PT capacity building and overall upgrading, there still exist a series of problems in the member economies, for example, unequal development in these economies, distribution of benefits from technology diffusion and licensing, expensive protection and application of IPs, and lack of adaptive policies and mechanism for technological aid. The foregoing problems are associated with a variety of factors such as government capacity in administrative and contractual enforcement, social ideology, participative mechanism, innovation and communication system, technological aid, and equity trading markets. To successfully stimulate trade facilitation and narrow down the “Digital Gap” between the developing and developed member economies, it is essential for APEC to carry out research on PT capacity building.

Against the above background, Alongside of the United States, Russia, Thailand, and Canada, China applied for the project of “APEC Paperless Trading Capacity Building and Intellectual Property Protection”, and won great attention and widespread support from the APEC member economies. Consequently, the APEC Ministerial Conference officially ratified the project in November 2006 and authorized the APEC E-Commerce Business Alliance to put it into practice.

The project is divided into two parts: “2007 APEC Symposium on PT Capacity Building and IP Protection”, and “APEC Project Research Report on Paperless Trading Capacity Building and Intellectual Property Protection (hereafter abbreviated as the Research Report)”.

The Research Report is designed to discover and raise the essential IP issues existing in promoting trade liberalization and upgrading PT capacity building, and the policy and development proposals on the optimal distribution of non-market factor resources such as IP protection so that PT capacity building of the member economies can be upgraded, trading cost brought down, trade opportunities increased, and APEC trade liberalization and facilitation accelerated.

In view of the above-mentioned, the Report analyzes the nature of capacities in PT and IP protection, summarizes the PT related IP capacity factors, and puts forward the 7S Model of PT and IP protection capacities on the basis of 7S organizational structure (abbreviated as 7S Model) designed by the Research Center of McKinsey & Company in the United States. Meanwhile, following the common values of consolidating IP protection and the implementation capacity of the APEC member economies, it also carries out the research on member governments, service organizations and enterprises in terms of PT and IP protection capacities and the contribution of each factor to PT development. In light of the research, it focuses on three key factors: strategy, standard and technology skill, describes their status quo and present problems, and raises the relevant policy and development proposals.

As PT capacity building and IP protection are totally two different fields of research, no literature has been discovered on the comprehensive research on them, which brings a lot of difficulties to the captioned research.

Despite the existing problems, the researchers made careful sorting, classification and analysis of the collected data, conducted the research through exchanges and cooperation among them, tried their best to achieve scientific and objective analyses on the achievements and problems of IP protection in the course of PT capacity building in the APEC member economies, and sought its effective development model.

From the perspective of strengthening APEC PT capacity building, it can be said that this project is at least the starting point for examining PT capacity building and IP protection. In addition to the model mentioned above, other models should also be discussed and encouraged in the relevant economic bodies of the APEC so as to create a sustainable development environment in favor of the innovation, protection and application of PT-related IPs, and to accelerate the upgrading of APEC PT capacity.

There is still a lot to do in the research of APEC PT capacity building and IP protection. This encompasses the following aspects: fulfilling the cooperation among government departments, private enterprises, service and academic organizations of the APEC member economies, establishing the evaluation system (criteria) for APEC PT and IP protection, working out the implementation plan, enhancing its enforcement, and improving the PT implementation capacity of the APEC economies on the basis of introducing a new-type of IP market system.

In accordance with the demand of construction and development, the Report also provides the

following policy and development proposals in relation to APEC PT and IP protection:

- Protecting IP in close cooperation with promoting trade facilitation (the key objective of the APEC);
- Taking into account the developmental levels of the APEC member economies in IP protection;
- Laying down adaptive policies on IP protection and accelerating the process of PT-related technological assistance;
- Improving coordination capacity in IP protection and stressing integrative effects;
- Dismantling the barriers to IP protection and speeding up the construction of public service network;
- Laying emphasis on the sustainable development of PT capacity building;
- Establishing IP resource-sharing platform and upgrading the level of sharing PT-related information and knowledge;
- Compiling a list of APEC PT product and service resources;
- Working out a development roadmap to realize the development objective of Paperless Trade IP protection capacity building.

Brief

As an important economic cooperation forum in Asia-Pacific region, APEC is designed to promote multilateral free trade and investment, and to stimulate regional economic growth. Since its founding, it has contributed a lot to the liberalization of trade and investment and to the enhancement of regional economic growth and joint prosperity in the region, and has become a significant link between the APEC member economies.

To quicken the pace of APEC trade liberalization, fully utilize electronic commerce and information technology, and promote PT in a big way, APEC leaders adopted the "APEC E-Commerce Action Plan" in the Kuala Lumpur Conference of Malaysia in 1998, worked out the APEC e-commerce promotion agenda, and set the goal of achieving full PT application: the developed economies by 2005, the developing economies by 2010, and the whole APEC by 2015.

In recent years, APEC members have made enormous efforts to develop PT and have given impetus to trade liberalization and facilitation, which has actually grown to be a significant task for APEC E-Commerce Steering Group (ECSG). In order to accelerate PT development, APEC agreed at the 13th Ministerial Meeting in October 2001 to set up the APEC E-Commerce Business Alliance, whose purpose is to enhance the e-commerce cooperation between governments and business enterprises, reduce the gap among the members in e-commerce application, and stimulate the materialization of goals set in 1998 for APEC PT development. As one of the initiators of the Alliance, China International E-Commerce Center currently serves as Chair of the Alliance, whose permanent secretariat is also located here in the Center.

For the purpose of creating a favorable environment for the innovation, protection and application of PT-related IPs, and raising the overall PT implementation ability for the APEC members, China proposed the project of "APEC PT Capacity Building and IP Protection", which received active response and support from the APEC members, and was officially approved at the Ministerial Meeting in November 2006.

The project is divided into two parts: "2007 APEC Symposium on PT Capacity Building and IP Protection", and "APEC Project Research Report on Paperless Trading Capacity Building and Intellectual Property Protection (hereafter abbreviated as the Research Report).

The Research Report is composed of four parts: Chapter I: An overview of APEC PT and IP protection; Chapter II: The current status and analysis of the development in APEC PT and IP protection; Chapter III: Policy and development proposals for APEC PT capacity building and IP protection; Chapter IV: Appendixes. Chapter I is subdivided into two sections, which respectively analyzes the fundamental concepts of PT and IP, and the research focus, methodology, and planning. Chapter II analyzes the APEC members in terms of PT development and IP protection, and the existing IP-related problems in the process of PT capacity building. Chapter III brings about policies and development proposals for PT capacity building and IP protection. Last ones for presents appendixes concerning APEC Paperless Trade IP service system, framework of APEC Paperless Trade IP Service System (Draft), and the

indexes for evaluating the role of IP protection on the promotion of PT application.

Due to the difficulties in collecting information and data, we have relied on the analysis of cases, details, and experience of specialists to account for the relationship between PT capacity building and IP protection.

In the course of writing this Report, we are given substantial support from the APEC member economies and people involved in PT. The Research Group would like to extend heartfelt thanks to the organizations and people that provided the support. Our special thanks should go to the APEC secretariat, APEC E-Commerce Steering Group, the Secretariat of APEC E-Commerce Business Alliance, the Office of China IP Strategy-Formulating Leading Group, China International E-Commerce Center, University of International Business and Economics, IBM (China), Beijing Cofortune Information Technology Co., Ltd, and the APEC members such as Australia, Thailand, Korea, and Hong Kong, China. We are also indebted to the following personalities: Professor Gong Zhankui, from the APEC Research Center of Nankai University; Chen Jijun Ph.D, from Quinhua University; Madam Li Nanping, senior project manager at the Government Affairs Department of IBM (China); Mr. Yang Hanhui, from the Treaty and Law Department of the Ministry of Commerce, PRC; Fellow Researcher Li Jinghua, from China Electronic Standardization Institute, Ministry of Information Industry, PRC; Mr. Xu Yong, General Manager of Beiing Youqiang Company; Mr. Wang Chunhe, General Manager of R & D Department, Beijing Xingchen Company; Madam Gao Shuang, Project Manager of Beijing Cofortune Information Technology Co. Ltd, for their valuable suggestions and proposals. We are also grateful to the following specialists and researchers involved in this project: Mr. Liu Junsheng, senior economist; Mr. Zhang Nianlu, senior economist; Mr. Zhang Zhicheng, Ph.D. Candidate in law; Professor Chen Jin; Professor Wang Jian; Mr. Gao Yanfei, Acting Secretary-General of APEC-ECBA; Mr. Zhan Fudong, senior engineer; Madam Wang Li, Deputy Secretary-General of APEC-ECBA; Lu Guangzhou, Shi Jianling, Ye Jianfeng, Shi Fei, Ge Wei, Fan Conghui, Yang Shuang, Xu Meng, Wu Jianhua, Dong Xiangyong and professors from the Business English Department, School of International Studies of University of International Business and Economics: Wang Guanfu, Ding Chongwen, Zhang Cuiping, Yang Lingli, Wang Yanxi, and Shi Xinsong.

Chapter I Overview

I.1 Introduction

I.1.1 Concept and Attributes of Paperless Trading

I.1.1.1 Basic Concept

International trade refers to a complicated process involving trade behavior and business procedures. Generally speaking, the chain of international trade ranges from ordering to transportation and to payment in the end. Take export for example, this process contains four stages: market and customer selection, negotiation for export transaction, contract conclusion and signature, and contract fulfillment which involves preparation of goods, license application, loading, clearance of goods, inspection, shipment, insurance, negotiation of payment, settlement of exchange, tax refunding, and claim. Owing to the complexity of international trade, low efficiency in trading procedures, especially that of paper documentation treatment, has turned out to be a serious barrier to trade development (see Figure 1).

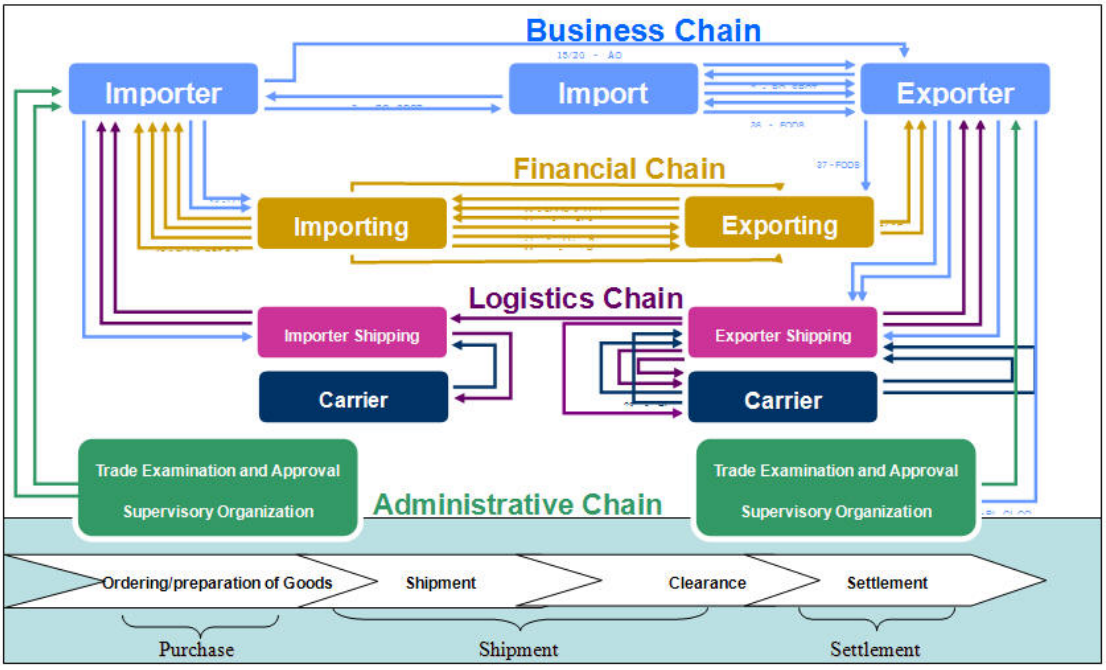


Figure 1 Chain of International Trade

In view of the above, partners of international trade attach great importance to the use of PT to improve the efficiency of trade performance and reduce the cost of trade.

(1) Definition to PT

Up till today, there is still no universally recognized definition to PT. Out of the necessity of PT research, the Research Report , based on the analysis and induction of the collected literature, defines it

as: “a significant instrument in the process of international trade that integrates the business behavior of trading partners with the accomplishment of government functions by way of information technology and standardized rules for the purpose of realizing the electronic data exchange (EDI) between the trade administration departments of the government, enterprises and value-adding service providers and thus stimulating trade development.

(2) Relationship between PT (E-trade) and E-Commerce

The concept of PT first emerged in the 1960s of the last century, mainly deriving from EDI. Due to the application of EDI technology which has accelerated the transition from the traditional paper documentation system to electronic documentation system in international trade, it has been vividly named as paperless trading (E-trade). After the mid- and late-1990s, e-commerce came into being as a result of the application and development of the Internet technology. As e-commerce not only cuts the application cost of PT, but also extends its application, PT has also been customarily regarded as the application of e-commerce in international trade.

Significant and valuable to the liberalization of trade, the improvement of economic conditions in the developing members, and the elimination of poverty, PT is directly associated with the reduction of trade cost and the increase of trade opportunities. Consequently, enhancing PT capacity building is sure to raise the overall benefits to all trading partners concerned. It is, therefore, at the APEC conferences that the members advocated repeatedly to upgrade the capacity and level of PT with a view to advancing trade liberalization. At the time when the Doha Round of the WTO is obstructed today , it has become a consensus for the majority of the APEC members to speed up trade liberalization within its limits. In turn, it requires the members to vigorously push forward PT capacity building so as to deepen trade liberalization, reduce trade cost, and increase trade opportunities.

It must be pointed out that PT differs substantially in nature from e-commerce though it may be seen as the application of e-commerce in international trade. In spite of the fact that PT has the characteristics of supply and demand under the market conditions, in essence, it represents the non-market environmental construction or cross-border e-commerce infrastructure construction for the acquisition of trade liberalization and facilitation. PT capacity building pertains more to public utility construction and government capacity building than to the distribution of market factors under market circumstances.

The discrepancies between them are further illustrated through the comparison and analysis in the following Table 1:

Table 1 Comparison between PT and E-Commerce

Comparison between PT and E-Commerce			
	E-Commerce	PT	Specifications
Non-market factors	□□	□□□□	PT concerns such non-market factors as legal environment, trade rules, standards and security, and procedural simplification and coordination.
Market factors	□□□□□	□□□	E-commerce gives more heed to trading

			behavior of partners, including market factors like price, turnover, time and customer.
Public service in the chain of international trade	□□□	□□□□□	PT pays more attention to the public services in trade chain such as customs entry, government administration, shipment and settlement.
Supply chain	□□□□	□□□	E-commerce shows more concern about purchase, production and sales.
Trade efficiency	□□□	□□□□□	PT stresses reducing the complexity of trade process, improving trade efficiency, increasing trade opportunities, and forcing trade cost down.
Profit maximization	□□□□□	□□□	E-commerce pays more attention to improving corporate core competitiveness, expanding market share, and increasing economic benefits.
Trade process	□□□□□	□□□□	E-commerce involves the digitalization of the whole process in international trade.
Contract fulfillment	□□	□□□□	PT mainly concerns the document digitalization from contract signature to transaction settlement.
Structured and unstructured information	□□□□□	□□□	E-commerce conveys information that may or may not be standardized.
Standardized information	□□□	□□□□	PT mainly transmits standardized document information.
Resource integration	□□	□□□□□	The effects of PT are primarily reflected in the resource integration and information sharing among trading partners.
Real-time operations	□□□□□	□□□	The coordinated operations in purchasing, production and marketing.
B2B/B2C/C2C	□□□□	□□	B2B/B2C/C2C are the focus of e-commerce application.
B2B/B2G/G2G	□□□	□□□□□	PT gives greater attention to the application of B2B/B2G/G2G.
Note: □ Indicates Intensity			

As a consequence, public policies and government participation are critical for PT capacity building. Only through the readjustment of government functions in the member countries, the completion of

infrastructure and the reform of public policies can PT be accomplished in real sense.

I.1.1.2 Features and Ecological Environment

The development of PT requires a favorable ecological environment, the relevant factors of which can be summarized as follows: technology cluster, business cluster, and intersecting cluster of technology and business, coupled with their corresponding components:

Factors = technology cluster + business cluster + intersecting cluster of technology and business
Technology cluster = computer application + Internet communication + Standardization
Business cluster = procedural simplification + law + rules
Intersecting cluster = security + confidentiality + authentication

Technology Cluster:
Computer application / Internet communication / Standardization
Business Cluster:
Domestic and foreign legal systems / Adaptive readjustment of procedures / Rules of international trade
Intersecting Cluster:
Important means of security consolidation: security administration, measures of confidentiality, and identity authentication.

Technology cluster, pertaining to the computer application of the participants in trade chain, is the prerequisite for PT development. Communication network is the infrastructure for the actualization of PT, mainly referring to the internal network of the participants concerned and public network. Standardization is the primary characteristic of PT application, e.g. codification of commodities, code names of enterprises, and the form of documentation.

Business cluster clearly indicates that PT application is not only a technological issue, but also related to such factors as the adaptive readjustment of PT procedures and the nurturing of legal environment.

Intersecting cluster elaborates the integration of technology and business in the process of PT development, pertaining to risk control in security, identity authentication, and relevant measures for security administration and confidentiality.

The above factors are embodied in the services provided in the ecological environment of PT, which are illustrated in the following Figure 2:

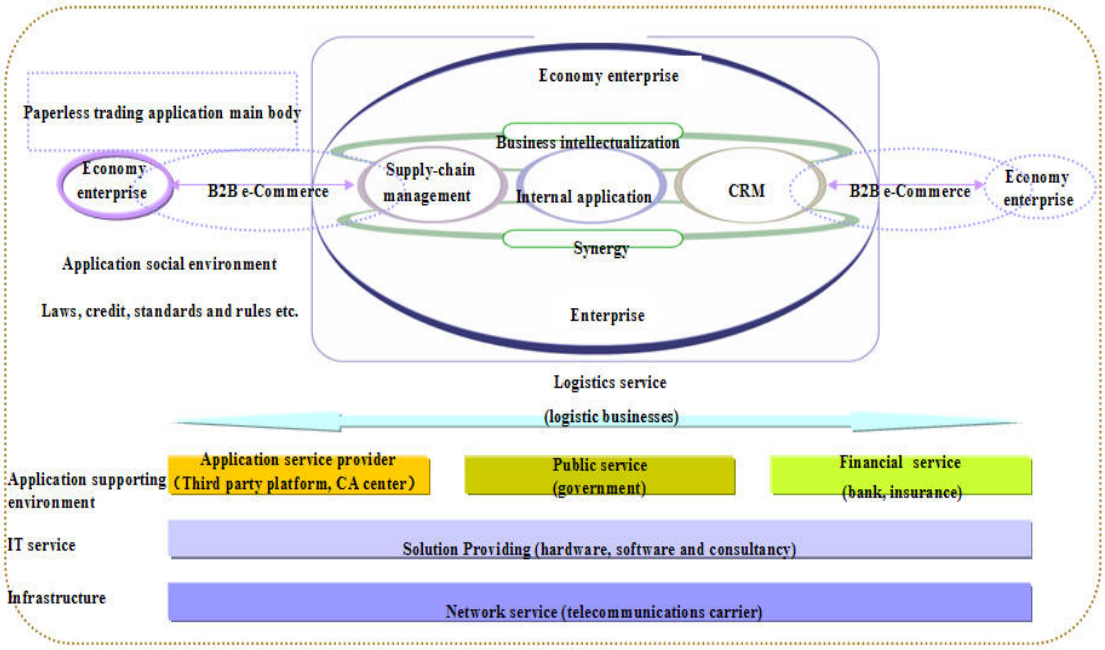


Figure 2 Ecological Environment of APEC Paperless Trading

Network service: mainly refers to the information infrastructure provided by telecommunication operating organizations.

IT service: primarily refers to the business information service available from solution providers, including hardware, software, and consultancy.

Supporting service for application environment: public service from the government agencies, including the services of licensing, commodity inspection, customs declaration in relation to international trade; financial service from banks and insurance organizations; and relevant services from application service providers, such as the signing and issuing of certificates by CA centers, identity examination and verification, EDI service provided by third-party platforms (e.g. traditional EDI centers).

Logistics service: service likes transportation, storage, portage, packaging, circulation processing, delivery, and information processing.

When participating in PT activities under virtual electronic circumstances, enterprises and other relevant parties are still required to abide by the corresponding laws, standards, trade rules, business customs, and to conclude transactions by way of credit capabilities (payment ability, payment willingness). Therefore, the market operating mechanism of PT ecological environment is composed of legal system, standard system, credit system, trade rules and so on.

I.1.2 Scope and Characteristics of IP

I.1.2.1 Scope

IP refers to the exclusive rights people acquire in conformity with law from the results of creative intellectual activities and from the symbols and prestige in business management activities. According to "the Treaty of Trade-Related Intellectual Property Rights", IP contains copy rights and relevant rights, trademarks, geographical marks, outer designs of industrial products, patents, integrated circuit diagram design (topological diagram), and undisclosed information. According to "The Treaty of Paris", industrial rights include patents, utility models, outer designs, trademarks, service marks, manufacturer names, sources of suppliers, names of origins, and the curbing of vicious competition. With the development of our epoch, IP has now been extended to the protection of new breeds of plants, hereditary resources, and folk arts.

I.1.2.2 Characteristics

In comparison with the traditional titles to property, IP possesses the following characteristics:

(1) Exclusiveness

The exclusiveness of IP is chiefly manifested in the following two aspects: First, property rights are exclusively owned by the obligee, who monopolizes this exclusive right under effective protection. Without legal authorization or permission from the obligee, others are not supposed to use his/her intellectual products; Second, for the same object, there does not allow the co-existence of two or more IPs with the same attributes. Of course, the two IPs with different attributes can exist in the same object. A case in point is that an invention normally has only one patent. It is unlikely to have two patents that protect one invention. However, a work may be protected both by the law concerning outer designs and by the law of copy rights and the law against unfair competition.

(2) Regional Limits

Regional limits refer to the strict limits to geographical regions for IP as an exclusive right. The relevant rights legally recognized and protected in a country or region are only effective in this particular country or region, but are not readily protected in other countries or regions. Yet, with the rapid progress achieved in IP bilateral and multilateral cooperation, it appears to have the tendency of becoming more and more international.

(3) Time Limits

For most IPs, especially those derived from innovation, they are protected merely for the period legally stipulated. Once they exceed the legally specified time limits, they automatically cease to be effective, and the IPs concerned naturally become the common wealth of the whole society. For example, the length of protection for a patent normally lasts 20 years while the protection for a copy right is 50 or 70 years after the death of the author.

The creation of IP mechanism aims to solicit innovations, ensure fair competition in the market,

promote knowledge dissemination through IP protection. With the continual development of economic globalization and the internationalization of IP mechanism, countries all over the world are accelerating the readjustment of IPs both at home and abroad in light of their own need for development, and endeavor to consolidate capacity building through technological assistance. In this way, not only the legitimate rights of IP obligees are better protected, the balance between the benefits of the obligee and those of the general public is also well maintained. It is now increasingly becoming a consensus among the member economiess to establish a development agenda, and by taping fully into IP mechanism, to reinforce technological assistance, stimulate the development of the developing world, and realize greater benefits for IP obligees.

I.1.2.3 Framework

IPs can be divided into two types: the first is copy rights and other relevant rights; the second is industrial rights, including the rights to patents, trademarks, business names, business secrets, and integrated circuit diagram designs.

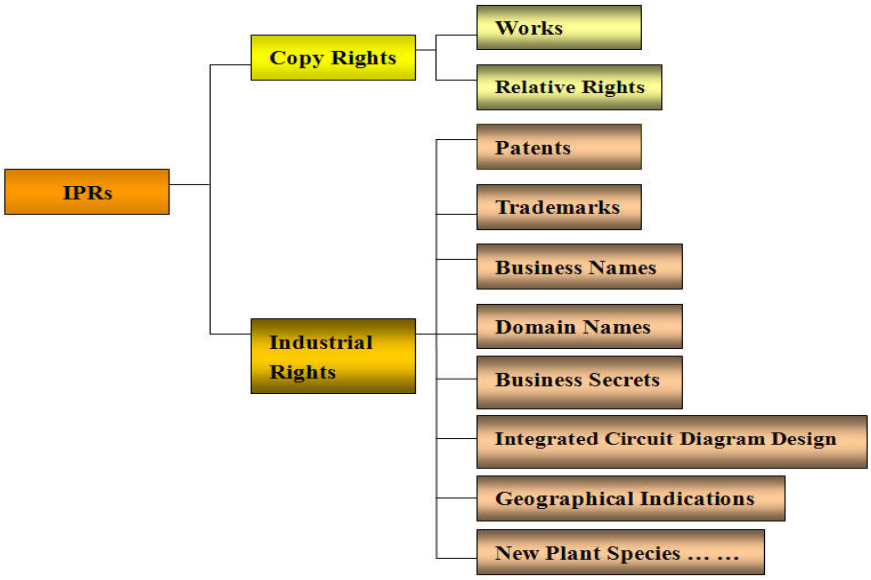


Figure 3 Graph of IP Framework

As IP mechanism involves the business process such as technology and business management and IP relates to trade within the scope of the WTO, IP mechanism imposes various impacts on trade capability. In the "Trade-Related Aspects of Intellectual Property Rights Treaty", the member economies hold unanimously that "some IP-related licensing activities or conditions hurting competition may bring about negative impacts on trade, and are likely to impede technology transfer and dissemination."(Item 1 of Article 40) Meanwhile, they also believe that there exist great discrepancies among them, thus the agreement arranges a transitional period for the least developed countries and further stipulates that "the developed member countries should encourage their enterprises and organizations to launch technology transfers to these LDCs so that they are able to lay a positive and effective technological foundation." Furthermore, the agreement also contains corresponding arrangements such as "mandatory licensing" for special areas. Take semi-conductor technology for example, the agreement mandates that "in case semi-conductor technology is used, it

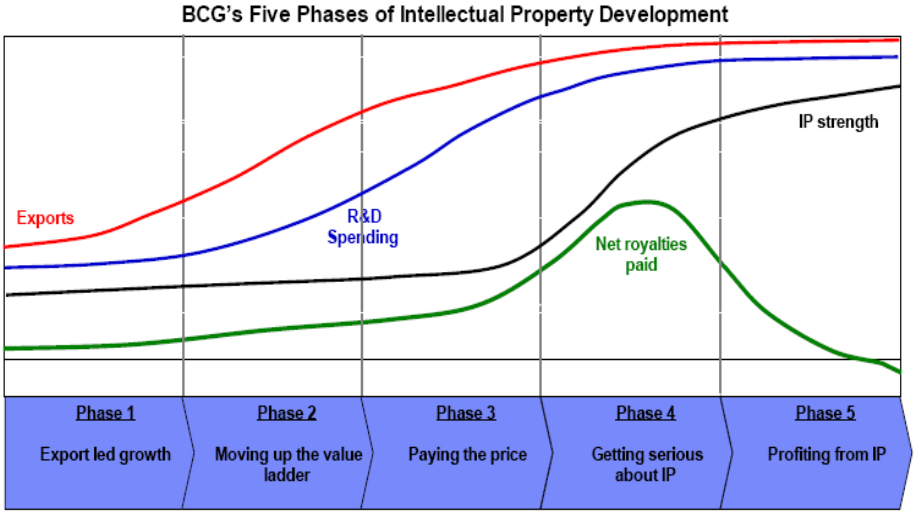
should be merely used for public and non-commercial purposes or used for anti-competition deeds defined by judicial and administrative procedures and thus be given remedies." (Item C, Article 31) The adaptive policies formulated at the conclusion of TRIPS agreement are currently playing a critical role in pushing trade liberalization and facilitation forward. IP mechanism, on the other hand, has also grown to be a new restrictive force in many aspects of trade facilitation and liberalization as world trade expands steadily and the demand for infrastructure construction increments all the time. It is imperative, therefore, for all the member economies to come to new consensus on significant issues and to establish more adaptive policies in more areas in order to address the concerns of the developing countries one the one hand, and protect the rights of the obligee and drive forward trade liberalization on the other hand. Consequently, it is a paramount issue deserving special attention from all the member nations to practice adaptive policies on IPs and give impetus to PT capacity building in strictly specified areas so as to promote trade development and better achieve the benefits of IP owners.

I.1.3 The Problem

PT has led to great changes in the means of international trade, which has not only reformed traditional paper documentation system, but has also opened a totally new and multi-dimensional market space. In light of the significant role PT plays in trade liberalization and facilitation, APEC has set the goal for stimulating PT development, creating a favorable environment for trade facilitation, and reducing trade transaction cost by another 5% by the year 2010.

According to the evaluations on the PT development in the member economies conducted by APEC E-Commerce Business Alliance, there appears to be an imbalance in their development, with most of the developing countries still remaining at the beginning states. PT capacity building is the major difference between them. As for the reasons, in addition to the influencing factors like socio-economic development, the following has also formed important factors influencing PT capacity building and overall progress in the APEC member economies: lack of awareness and mechanism in protecting, exploring, and optimally distributing such IPs as PT-related knowledge, standards, technology, products and services.

A study report by Boston Consulting Group (BCG) expounds the five phases of the relationship between international trade and IP development (see Figure 4):



Source: The Boston Consulting Group[1]

Figure 4 BCG's Five Phases of IP Development

Phase 1: Mainly exporting labor-intensive and primary goods. As this phase is characterized by low technology content in export products, the governments and enterprises of the member economies have merely embryonic knowledge about IP and IP royalties do not reflect much change.

Phase 2: Increasing investment in R & D for export product technology, and substantially expanding the export of products with high technology content, attaching importance to IP, and obvious change in IP royalties.

Phase 3: Making further efforts in raising investment in R & D for export product technology and extending the export of products with high technology content, and regarding IP as the competitiveness in the global market. As far as the IP obligees in the developed economies are concerned, they build up the defensive structure of their markets through IP, and acquire economic benefits from IPs simultaneously. As for the IP users in the developing economies, however, they not only pay high IP royalties to IP obligees, but also have to face the challenges of IP markets.

Phase 4: Investing heavily in independent innovations and IPs, exporting high value-adding products, and lifting IP to the development strategy for the member economies. As the users of most IPs, the developing member economies, learning from the payment of high IP royalties, now lay stress on the innovation, protection and application of their own IPs, thus reducing the payment of IP royalties, and gradually realizing the equilibrium between IP input and output.

Phase 5: Achieving a balanced development among R & D investment, export, and IP protection capacity. The developing economies have now materialized a substantial reduction in the payment of IP cost and royalties, and realized the balance of IP trade through the mutual benefits from IP activities.

The foregoing facts indicate clearly that technological progress contributes a lot to the development of

[1] Pryor Garnett :Innovation and Intellectual Property -Challenges and Opportunities for Companies , 3rd , Intellectual Property Summit Conference of Information Industry in China, Beijing, 2006.

international trade while sluggish technological movement increases IP royalties and trade cost. However, PT, as a major technological instrument in enhancing the development of international trade, will play a critical role in improving trade efficiency, cutting down trade cost, and stimulating trade growth.

From the perspective of technological improvement, PT and IP protection have an intimate relationship. For example, EDI itself belongs to a technological solution involving both software and hardware. Since such solutions themselves are selective and multi-technological rather than exclusive, the adopted hardware, software and transmission technologies are in the category of high-end products in international trade, and the use of these hardware and software pertains to numerous issues of IPS.

Based on the above analysis of IP development phases, most of the APEC developing economies are in the transition from Phase 3 to Phase 4. If they are able to swiftly tackle such problems as the benefit equilibrium in the dissemination and licensing of PT-related hardware and software technology, their technology will quickly come to an effective use. This is bound to heighten vigorously the upgrading of PT capacity. Of course, capacity improvement is a gradual process and still faces the following problems that require prompt solutions:

(1) In the process of PT execution, the restrictions due to certain laws and policies and the "patent jungle" resulting from the all-round protection of IPs impose serious restrictions on the application of PT know-how and the improvement of its capacity.
(2) In the developed economies, the budget for protecting IPs increases annually, which implies a higher cost for acquiring such IPs. For all APEC developing economies, the protection and application of IPs mean excessive costs that are actually beyond their means.
(3) The developing economies are confronting extra difficulties in new technological pursuit as the IP-based standards are gradually established or even enter into standardization in the course of development. Under the constraints of IP protection mechanism, not only a higher cost is required to reach corresponding technological standards, but IP protection also constitutes new technological constraints at the same time.
(4) For the developing economies, the laws recently formulated are primarily concentrated on the types of traditional IPs. Nevertheless, the current legality is unable to satisfy the needs of paperless trading for IP protection because the legal environment for IP protection required by PT has not yet come into shape.
(5) There is no shortage of advanced technology, experience and products of PT within the boundary of APEC, but a lack of awareness and mechanism in protecting, exploring and optimally distributing IPs. As a result, advanced technology and the best means of practice are not widely recognized, communicated, and protected, and PT capacity building is restricted to a certain extent.

In view of the above, it is absolutely urgent and essential to study and analyze the issue of IP protection in PT capacity building, to probe into the formulation of adaptive policies and development route in favor of IP innovation, protection and application, to achieve the optimal distribution of intellectual resources, and to jointly construct a new-type IP market.

I.2 Research Scope and Methodology

I.2.1 Objective

The Research Report endeavors to discover the important issues existing between IP protection and PT capacity building in the process of promoting trade facilitation and upgrading PT capacity building. It also puts forward the policy and development proposals for the optimal distribution of non-market factor resources such as IP protection in the implementation of APEC PT for the purpose of strengthening PT capacity building in the member economies, reducing trade cost, increasing trade opportunities, and quickening the pace of APEC trade liberalization.

I.2.2 Scope

The Report focuses on researching the policy impacts of IP protection on PT capacity upgrading, not on IP legal issues. Specifically, the fundamental framework of the research is the well-defined PT, IP capacity factors, and their cognate models on which the relevant issues of IP protection in PT capacity building are analyzed, the establishment of flexible IP protection mechanism and policies in the APEC economies is investigated, and the effective means for consolidating PT capacity building are explored. Based on the IP protection within the framework of present international treaties, it clearly states the significance of PT and the necessity of implementing adaptive IP policy on the public platform of PT, suggesting concrete policies, stimulating intellectual innovations, enhancing knowledge dissemination and technological assistance, nurturing a sustainable development environment for PT, reinforcing PT capacity building, and lifting trade liberalization to a higher level.

I.2.3 Methodology

The Report studies the issue of IP protection related to upgrading PT capacity in terms of definition, scope, interrelation, and proposal. As the carrier of capacity analysis is capacity factors and concept models, it also conducts the analysis on the nature of PT capacity and IP protection capacity, and proposes the following 7S model for PT and IP capacity protection with interactive and intersecting impacts on the basis of Organizational Structure 7S[2] (abbreviated as 7S Model) designed by the R & D Center of Mckinsey & Company[3] in the United States.

[2] Mickinsey 7S: Rreferring to the fact that in the course of development an enterprise must take into account all conditions, including structure, system, style, staff, skill, strategy, and shared values.

[3] Mickinsey & Company: One of the most famous strategic consulting firms in the world.

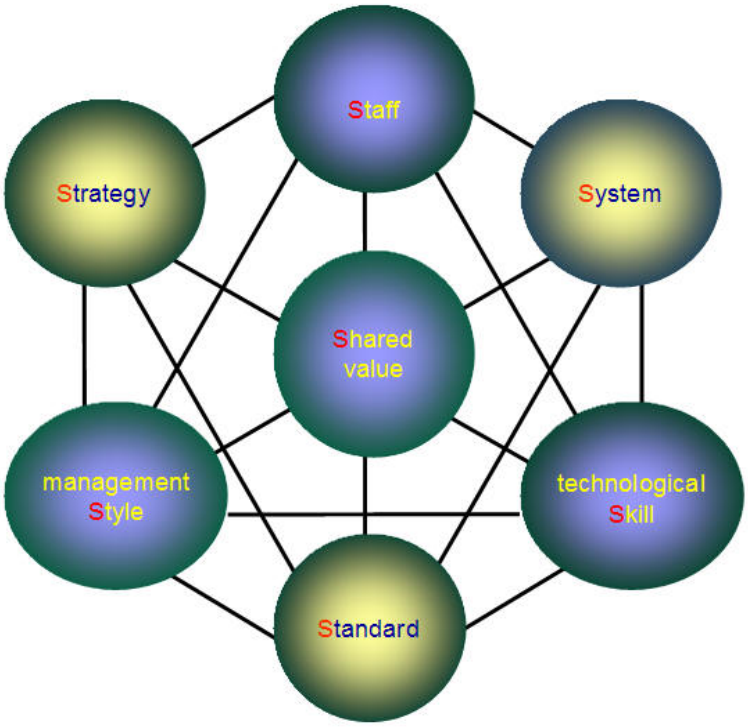


Figure 5 Model of PT and IP Protection Capacity

The above graph demonstrates that capacity model is composed of seven factors: strategy, system, standard, staff, management style, technological skill, and shared value. Of seven factors, strategy, system and standard belong to the macro nature in economic activities while staff, management style, technological skill and shared value are in micro nature in economic activities. It is through cross functioning and cross linking among these factors that present the shared values: reinforcing IP protection and improving the capacity of PT implementation in the APEC member economies.

The above capacity factors are explained as follows:

1S-Strategy: Referring to the means of achieving the goal of PT development and the instrument for protecting IP.

2S-System: Referring to the basic system construction of laws and rules for IP protection in the implementation of PT.

3S-Standard: Referring to the behavior norms and standards of IP protection in the course of PT implementation.

4S-Staff: Referring to the reserve, training, and education of professional personnel (human resources) for international trade and IP protection.

5S-Technological Skill: Referring to the related technology and infrastructure construction, and full use of the technology and infrastructure.

6S-Management Style: Referring to the management style of the governments and senior management of the APEC member economies or the operating style of business enterprises.

7S-Shared Value: Referring to the common values and beliefs shared among the PT participants: strengthening the awareness of IP protection, setting up flexible mechanism for IP protection, tapping into the advanced instruments of science and technology, upgrading the core competitiveness of the member economies, and realizing the sustainable development of PT and regional economy under the modern trading environment.

The 7S capacity factor system of PT and IP is illustrated in Figure 6 and Figure 7:

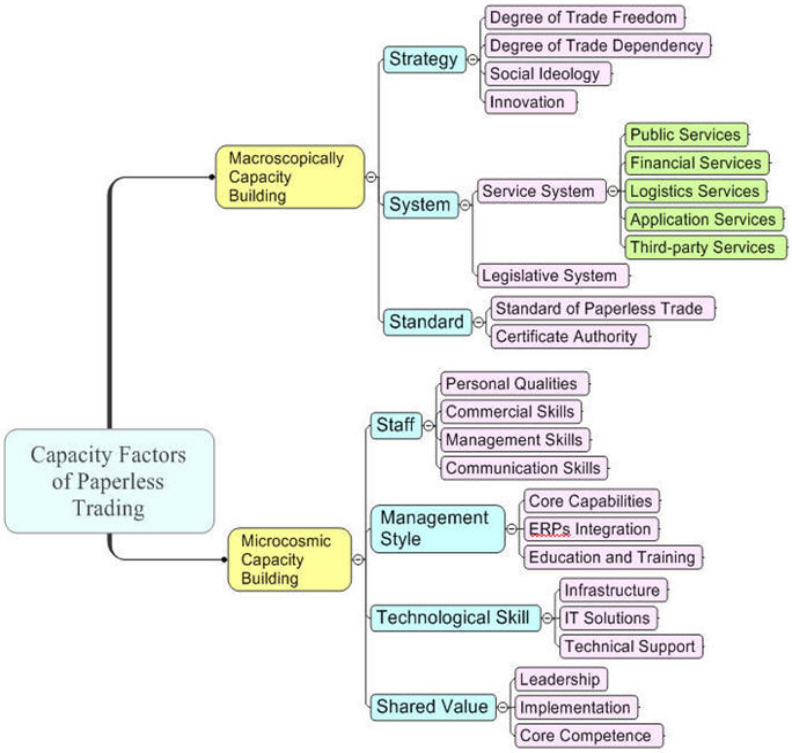


Figure 6 7S Capacity Factors of PT

Figure 7 Capacity Factors of IP Protection in PT Capacity Building

As the Research focuses on IP protection in PT capacity building, it is imperative to make policy readjustment in a few specific fields on the basis of IP protection so as to accelerate the process of PT development, and to amplify the overall economic benefits of the whole APEC. Therefore, we have surveyed the governments, service organizations and enterprises of the member economies on the capacity factors for PT and IP protection and on the contribution each factor makes to PT, the result of which is given as follows (shown in Figure 8 below):

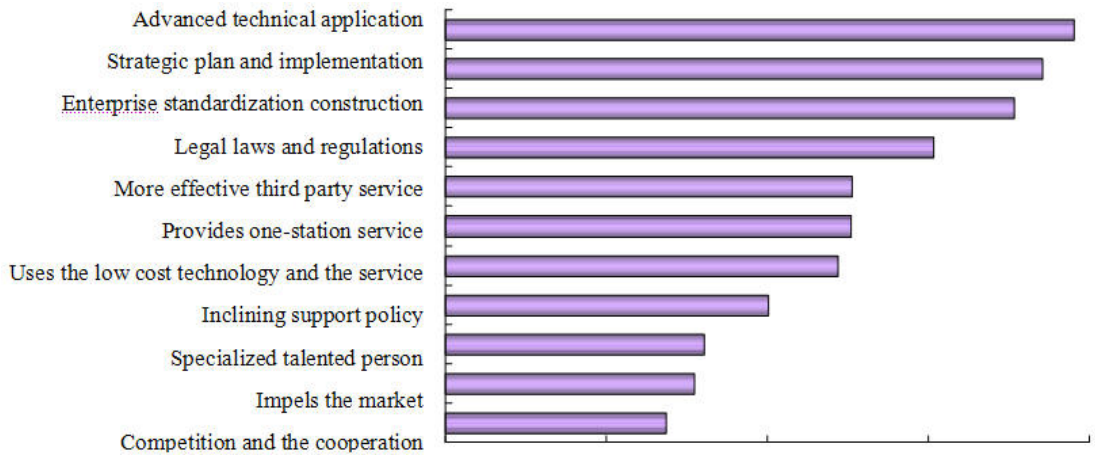


Figure 8 Ratio of Factor Contribution to PT[4]

[4] Note: 1) Data source: from the questionnaire respondents of the Report.

2) Total sample size: 280; valid 271; invalid 9. The rating is derived from the weighted average of the score for each factor.

In accordance with the above survey results, the Research Report concentrates the research on the technological skill, standard, and strategy of PT capacity building (shown in Figure 9):

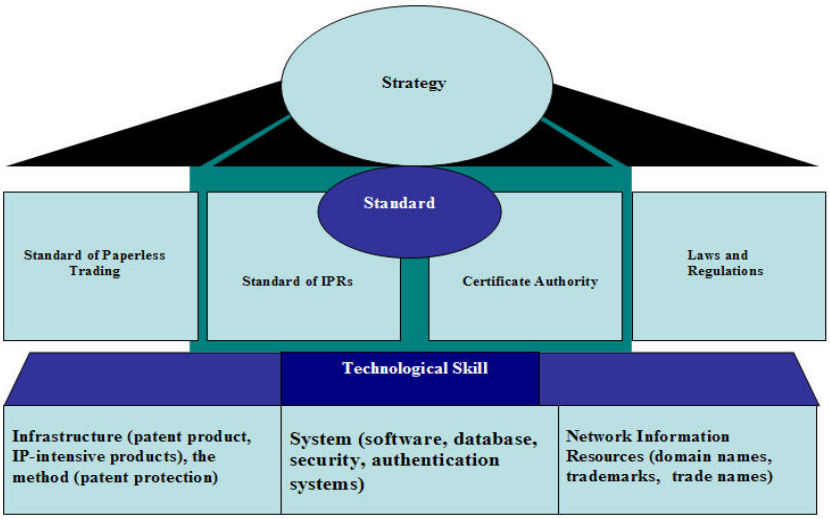


Figure 9 Focus of IP Protection in PT Capacity Building

As shown in the above graph, IP protection in PT capacity building, supported by complete infrastructure, reliable system environment, and Internet information resources, protected by the legality, institution and standardization, based on the protection of common benefits shared by the owner, provider, and user of IPs, aims to achieve the strategic goal of improving PT capacity, stimulating trade facilitation, and reducing trade cost.

I.2.4 Research Proposition and Planning

Capacity building is a subject drawing great attention and interest and relates directly to the APEC regional economic prosperity. Broadly speaking, capacity refers to the whole process of specifying needs, setting and achieving goals while the narrow sense of capacity refers to the ability to realize the set goal of an economic entity. Capacity building contains the whole process of achieving the above ability and goal by constructing infrastructure, laying down rules and regulations, accumulating physical resources, formulating supporting conditions, and elaborating shared will. APEC PT capacity building is designed to enable the APEC members to benefit from trade liberalization and facilitation, and to create a favorable macro environment for sustainable development in the Asia-Pacific region through perfecting application environment and improving the level of application.

In view of the above, the main proposition of the Report is as follows: The IP protection in PT capacity building is based on the strengthening of IP protection by the APEC economies and is designed to establish relatively flexible mechanism and policy, to consolidate the capability in innovating, managing, protecting and applying IPs in the course of reinforcing the PT capacity building of the APEC members so as to upgrade PT capacity building, promoting trade liberalization and facilitation. Therefore, the Report is organized according to the agenda illustrated in Figure 10.

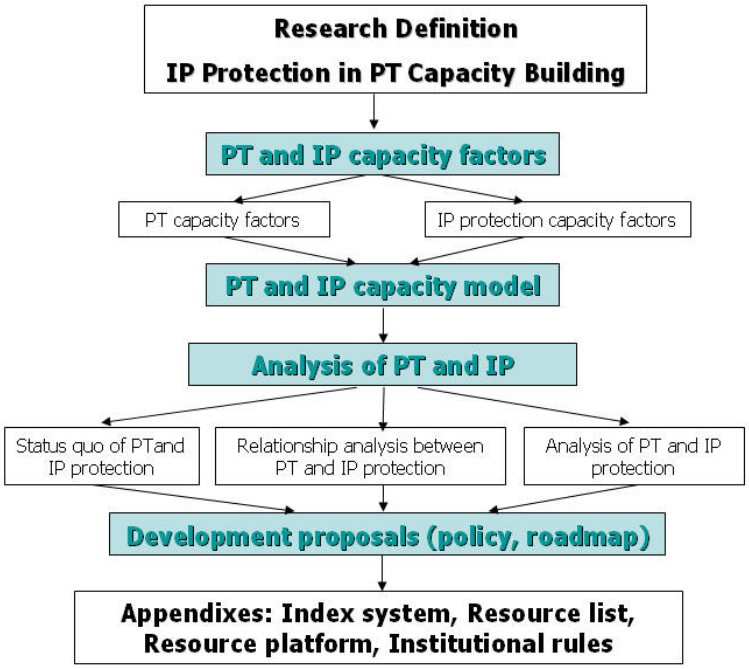


Figure 10 Flow chart of the Research

Chapter II Present Situation and Analysis

II.1 Present Situation of Paperless Trading and Intellectual Property Protection in APEC Member Economies

II.1.1 Development of Paperless Trading

II.1.1.1 Strategic Plan

In the process of promoting paperless trading, both enterprises and governments are active participants. However, governments play a more promoting role in developing paperless trading in the non-market areas such as environment-building and policy support. Paperless trading, the new means of trading, has developed along with technological advances and the process of trade globalization. But the real paperless trading cannot be realized only with the effort of enterprises for the following reasons:

1. Paperless trading needs a sound legal environment. Trade is not only an economic activity but a legal activity as well. It cannot be realized without the support of laws and regulations. Therefore, in order to ensure the normal practice of paperless trading, governments of APEC members must, from the strategic level, build a sound legal mechanism and system framework in light of the development of paperless trading.

2. Paperless trading relies on the support of public service facilities provided by the government. The realization of paperless trading depends on the interaction between the government and enterprises. Without the public platform provided by the government, it is impossible to achieve the real-sense paperless trading. So the public service capability of the government is quite important for the development of paperless trading.

3. Paperless trading calls for the common wish of all governments in APEC economies. For the trade among APEC member economiess, each government has its own needs and regulatory capability. Hence, whether or not to promote and in which direction to promote paperless trading depends on the wish or common wish of the governments in APEC member economies. Without a common action plan and a common construction procedure, it is hard to achieve complete paperless trading within APEC, thus weakening the meaning of trade facilitation via paperless trading.

Obviously, paperless trading has the traits of public goods. It can be said that promoting paperless trading is also a matter of strategic development for APEC while the government plays a quite important role in it.

Seen from the development history of paperless trading in APEC, each government of APEC economies made a very good effort at the initial stage, being active in making relevant laws and regulations, standardizing paperless trading and addressing the emerging problems. For instance, the

government of the Republic of Korea announced its *Mid-and-long-term Development Strategy for 2010 E-commerce*; Australian and Singaporean governments made quite preferential policy for paperless trading; and Malaysian government planned to pursue EDI in the early 1990s through legislation. The U.S., the leading country in the field of e-commerce, announced its national plan for building IT infrastructure in January of 1994. *The Outline for Global E-commerce* issued in January of 1997 marked officially the establishment of U.S. development policy and legal framework for e-commerce. *The Uniform E-trading Law*, passed by the National Conference of Commissioners of Uniform State Law (NCCUSL) in July of 1999, has already got approval and come into force in most U.S. states by now. *The Uniform Computer Information-trading Law*, passed by the NCCUSL on 29th of September in 2000, has been recommended to all the states. Moreover, the U.S. also promulgated *The Electronic-signature Law for International and Domestic Business*. In the past ten years, the U.S. has established a series of laws and documents one after another, having gradually formed its legal framework for the development of e-commerce and further improved the legal system for paperless trading. *The Basic Law for E-commerce* by the Republic of Korea in 1999 is typically a comprehensive law for e-commerce. *The E-commerce Promotion Law*, which came into being in 2005, involves paperless trading in many aspects. The perfection of the legal environment has enhanced the development of paperless trading and achieved many remarkable fruits. *The Electronic-signature Law* made by Chinese Taipei in 2001 clarifies the legal effect of e-documents. *The E-trading Regulations* by Hong Kong,China entitles electronic records and signature the same legal status as written ones, and it was improved in 2004 along with the establishment of relevant certification system.

Box 1 Paperless trading in the Republic of Korea Enters a New Phase

Box 1

Paperless trading in the Republic of Korea Enters a New Phase

Korean Trade Net (KTNET) was founded in 1991 according to the legislation of the Ministry of Industrial Resources of the Republic of Korea. This company was completely funded by Korean International Trade Association which was responsible for building and operating the national-level e-commerce platform with the aim to provide all-around e-trading services to Korean companies. In November of 1992, KTNET was appointed by the Customs of the Republic of Korea the internet service provider for the Customs, thus enjoying the operation rights exclusively. KTNET has developed customs-related automated systems for customs clearing, cargo management, export rebates, and so on. In 2004, KTNET supplied about 300 e-document services and earned an income of US$50 million. According to the newest statistics in 2007, the trading volume of KTNET averaged 12 million deals per month and the number of its clients climbed to 38,217.

KTNET now supplies the following services: electronic service for trading procedure (e.g. the trust of opening L/C, arrival notice, payment notice, letter of guarantee, approval application for purchasing raw materials—permit delivered to export producers from the corresponding bank on behalf of the government), cargo insurance application, customs declaration application, license application and so on); data-base service (supply of information about imports and exports and statistics about customs declaration of imports and exports); research and consultative service (e-commerce consultation and training service for B2B enterprises); and certification authorities (CA) service. Meanwhile, in order to promote further development of B2B, KTNET has also established comprehensive trade service websites like ECPlaza and cTradeworld.com. KTNET has provided various services for trading from

contract to shipping, from account settlement to back-up support.

KTNET now supplies the following services: electronic service for trading procedure (e.g. the trust of opening L/C, arrival notice, payment notice, letter of guarantee, approval application for purchasing raw materials—permit delivered to export producers from the corresponding bank on behalf of the government), cargo insurance application, customs declaration application, license application and so on); data-base service (supply of information about imports and exports and statistics about customs declaration of imports and exports); research and consultative service (e-commerce consultation and training service for B2B enterprises); and certification authorities (CA) service. Meanwhile, in order to promote further development of B2B, KTNET has also established comprehensive trade service websites like ECPlaza and cTradeworld.com. KTNET has provided various services for trading from contract to shipping, from account settlement to back-up support.

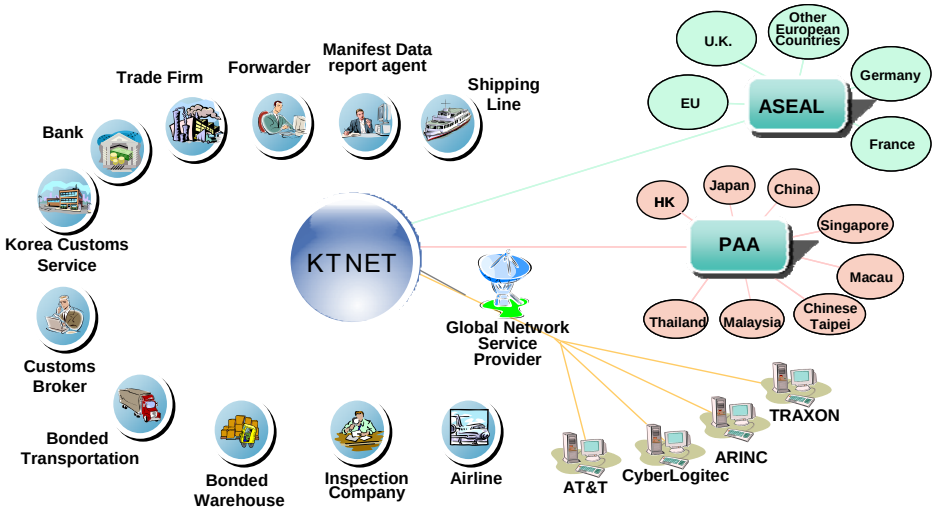


Figure 11 KTNET Electronic Service Trade Map

According to the figures provided by KSC, thankful to KTNET services, the import and export companies in the Republic of Korea have greatly shortened their time for trading, with the time for exporting reduced from more than one workday to 2 minutes, time for importing from more than two workdays to 2.5 hours, and time for tax reporting from 4 hours to 10 minutes.

Source: KCS, 2002

Figure 12 Changes in Length of Time for Importing and Exporting

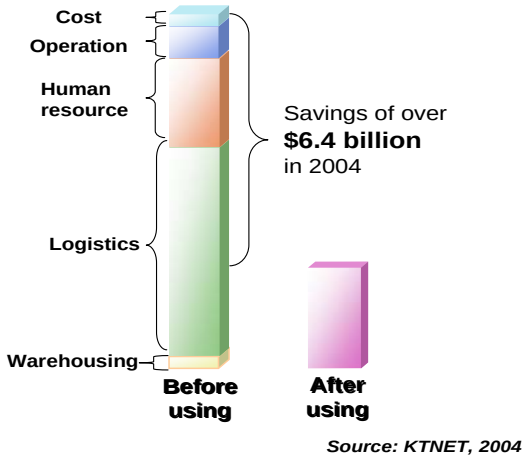


Figure 13 Cost Comparison before and after Shortening the Trading Procedure

KTNET signed the benchmark agreement with the Customs of the Republic of Korea in 1992. On the condition of sponsoring part of the cost for building and operating the Customs system, KTNET was allowed the monopoly over the EDI automated declaration system during 1992-2002, which should be open to competition after 2003. At present, KTNET is actively promoting paperless trading across borders and working for the exchange and cooperation among APEC economies in this area.

Chinese government has paid great attention to the legislation in the area of e-commerce as well. *The Contract Law*, which was promulgated in March 1999, stipulated the format of digital e-contracts and gave it equal status as written contracts. *The E- signature Law of the People's Republic of China,* passed on 28 August 2004, addressed problems mainly in four areas: affirming the legal power of e-contracts and e-signature; standardizing e-signature; clarifying the legal status and certificating procedure of certification authorities; and stipulating the safeguard measures for the security of e-signature. To meet the demands of the development of paperless trading, Chinese government made necessary amendments to the relevant laws such as *The Contract Law* and *The Customs Law.* The amendments cover many areas such as information network service, information network safety, information rights and e-trading etc.. A preliminary multi-layer and all-around legal system of information has been formed, which has provided a strong support for the healthy and orderly development of paperless trading. Laws and regulations about e-signature and e-seal and e-certification rules have also been made in other economies such as CHL; MEX; RP and RUS, which have played a basic and regulatory role in building the paperless trading environment. Meanwhile, at the strategic level, the governments of APEC economies have also advocated paperless trading in various international cooperative mechanisms, thus having formed a primary international practice and coordination mechanism in this regard. For example, the *APEC Blue Book on E-commerce Action* urges all economies in APEC to build a legal framework for e-commerce as soon as possible and speed up the pace of legislation. In recent years, all the governments in APEC have emphasized building relevant laws for paperless trading and have pushed forward the legislation in this area according to their own economic development and application of paperless trading. In addition, all governments have continuously increased their investment in the building of various platforms for promoting paperless trading. For instance, Singapore, as early as in 1986, announced its national plan for developing trade network and, in 1991, applied EDI completely to business conducting and reporting. Some developing

economies in APEC have also made great efforts in promoting paperless trading. Let's take Viet Nam as an example. Though in the primary stage, paperless trading has been practiced in the government, its service institutions and its enterprises, which has already produced remarkable results.

Box 2 Viet Nam Speeds up its Paperless Trade Process

In order to increase trading efficiency and build a sound convenient trading environment, Viet Nam has paid much attention to paperless trade development. According to the report in December 2005 by Viet Nam' *Economic Daily*, in promoting paperless trading and e-commerce, Viet Nam, did ten big things as follows:

1. The Congress passed *The E-commerce Law*;
2. The government formulated the overall 2006-2010 plan for e-commerce development in Viet Nam;
3. The governmental e-commerce website (www.ecvn.gov.vn) was open;
4. E-customs clearing had been adopted;
5. The wireless e-commerce service industry gained multi-level development;
6. Viet Nam hosted the International AFACT Conference (Asia-Pacific Area Conference on E-trading Strategy);
7. The entertainment website in Viet Nam began to earn profit;
8. The new-type enterprises built their own websites by means of e-commerce;
9. The E-commerce Bureau held the e-commerce website contest;
10. E-commerce was promoted gradually in the countryside.

Table 2 General enterprise classified by nature of business

Nature of Business	Machinery / Construction	Agriculture Forestry and Fisheries	Electronics And *ICT	Consumer industries	Handicrafts	Services	Others
% of surveyed enterprises	15.51%	6.93%	17.82%	19.14%	6.93%	48.51%	22.77%

(*ICT=Information Communication and Technology

*One enterprise can operate in two or three fields of business, therefore the gross percentage will be grater than 100%)

Table 3 Enterprise having websites classified by nature o business

Nature of Business	Machinery / Construction	Agriculture Forestry and Fisheries	Electronics And ICT	Consumer industries	Handicrafts	Services	Others
% of surveyed enterprises	7.39%	2.17%	16.09%	14.78%	11.30%	34.78%	42.17%

Figure 14 Enterprise having websites, classified by labor scale

At the Hanoi press conference on e-commerce performance in 2006, Viet Nam' Ministry of Trade pointed out: the survey on the running of 1,100 enterprises shows that 40% of the enterprises have already established their own webpage, 92 have already opened their webpage, 81% of them use ADSL service. At present, 17.7% of the total population in Viet Nam are using internet, over the world average, and Viet Nam is ranked the 4th place in ASEAN. The export of Viet Nam's hardware amounted to US$ 1 billion and the software to US$ 0.25 billion in 2006.

2006 was the development year of its new-type e-commerce, such as mobile trade, live broadcast of entertainment programs and on-line shopping. 2006 was also a year for the Viet Nam government to improve its laws and policies on e-trade and to enhance its personnel training. Its e-commerce has already entered the fast track of development.

Box 3 Russian Economy Uses Government E-procurement to Steer Paperless trading

BOX 3

Russian Economy Uses Government E-procurement to Steer Paperless trading

In order to improve the efficiency of government procurement, the government of The Russian Federation builds the government e-procurement network with the attempt to increase the speed of document transfer, information publicity and approval. This network is characteristic of openness, equality, efficiency, effectiveness and reliability. Because of the improvement in e-procurement capability, the procurement cost was reduced by 50% annually from 300 billion rubles to 110 billion rubles. So far, more than 8,550 suppliers are adopting e-procurement, which covers more than 50,000 kinds of merchandise. And the buyers are spreading from domestic to foreign ones.

Using government e-procurement not only promotes paperless trading in The Russian Federation, but also establishes the basis for exploring and developing a paperless trading model at the national level. Practice further proves that government e-procurement is an effective means of steering paperless trading.

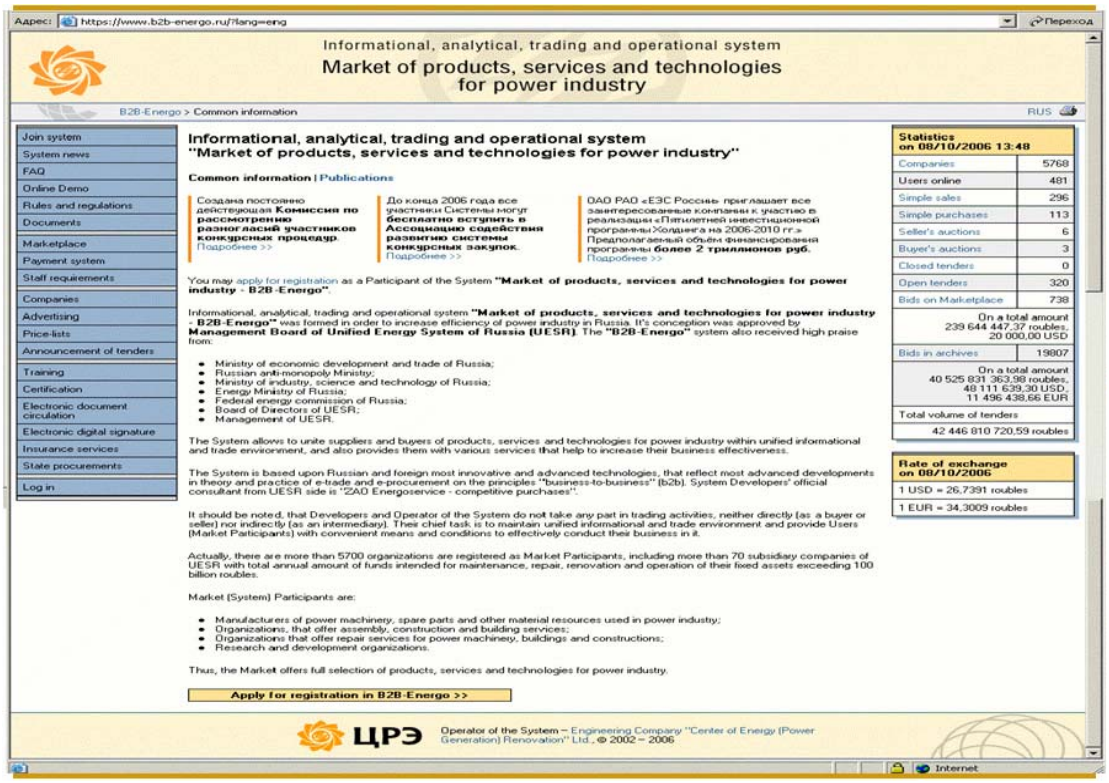


Figure 15 The E-procurement Website of the Russian Federation

II.1.1.2 Standardization Process

The change from paper document to electronic document is one of the attributes of paperless trading. Standardization plays an important role throughout this course.

The standardization process is closely related to technological progress and IP protection. As far as the

present situation is concerned, the standardization process is more like a course of competition initiated by market entities under market conditions. However, as for such an international practice as paperless trading, its standardization reveals the nature of public policy, requiring the participants on the trade chain to co-construct it. For example, United States Customs introduced AMS (Automated Manifest System) since 1986, involving participants like sea carrier, port institutions and service departments. The Canadian Customs began practicing Step 1 and Step 2 strategies based on CUSCAR (Customs Cargo Report). The Chile Customs applied e-declaration since 2002, being one of the earliest countries using it. The Chile Customs applied the system ISIDORE towards transport agencies, importers and exporters. This system used the newest open network technology, XML language instead of the traditional EDI document format. The customs of Australia and New Zealand both use UN/EDIFACT standard at present. Of course, the standardization process is also a course of coordination. For example, in order to assort in a wider range with carriers, customs and ports, VPA is adopting EDIFACT standard recommended by the UN. For the developed economies, EDIFACT standard has been widely used in international transportation, customs declaration and many other fields. But they are trying to shift gradually from EDIFACT standard to XML standard. Most developing countries have also done a lot in the standardization of paperless trading and they have begun the use of standardized e-messaging. EDI has not been used widely in the developing countries, so the cost of shifting from EDI standard to the open XML standard is lower, which is helpful for the developing economies to quicken their standardization process and to develop paperless trading.

Box 4 Standardization Accelerates the Paperless Process of Trade and Finance

BOX 4

Standardization Accelerates the Paperless Process of Trade and Finance

A. POSCO

As one of the biggest steel producers in the world, POSCO (Republic of Korea) receives, from its iron ore suppliers, many documents concerning payment notice, such as business invoice, bill of lading, weight introduction, test proof and so on. They are sent to POSCO in paper, and are input into POSCO office system by hand. POSCO tries to abolish paper document to enhance efficiency through this kind of input. Since each iron ore suppliers use different format, obviously a standard is necessary for all the participants on this supply chain to cooperate with each other.

In 2002, POSCO started to implement the Bolero ferrous link system, and had accomplished the comprehensive business document exchange with its main iron suppliers. Suppliers of POSCO send each of their e-document to Bolero XML, which then seamlessly integrates the documents to the ERP system. POSCO replaces the paper documents (business invoice, bill of lading, weight introduction, test proof and so on) from suppliers with ERP system, which can automatically input e-data, thus eliminating the requirement of inputting materials by hand. Now 85% of POSCO' iron ore import payment is made electronically.

B. Nippon Steel Corporation

Nippon Steel Corporation, one of the biggest steel producers in the world, receives, from its iron ore suppliers, many paper payment bills, such as business invoice, bill of lading, weight introduction, analysis report and so on. They have to be input into its inner office system by hand because Nippon

Steel wants to eliminate paper documents in order to improve efficiency.

Nippon Steel Corporation implemented the Bolero ferrous link system in 2002. It achieved the comprehensive business document exchange with its main iron suppliers. The suppliers of Nippon Steel Corporation send their e-documents to Bolero XML, which can seamlessly integrate the documents into the inner computer system. Nippon Steel Corporation have replaced the original paper documents from suppliers (business invoice, bill of lading, and weight introduction, test proof and so on) and automatically uploaded the e-data to their inner office system, thus eliminating the need of inputting materials by hand. Moreover, the payment-against-shipment bills for the coal suppliers have also been loaded to Bolero. Today, 70% of the iron ore import payment bills used of the Nippon Steel Corporation has been accepted and integrated to the inner office system through Bolero.

C. Import and Export of Consumer Electronics Industry

CASIO Calculator Company was the first in Japan to use the Bolero e-trade service based on export. At first, the focus was on export L/C issues, including the use of trade document numbering (e.g. B/L) of the unique Bolero mark registration system.

Before using Bolero e-trade service, Hong Kong-based NVOCC made out paper B/L and air-way bill and sent the original paper copies to CASIO headquarters in Tokyo. After receiving the bills (i.e. B/L and air-way bill), CASIO sent them together with other business documents to the negotiating bank. It took a long time for the bills to reach the importers of Republic of Korea, so finally the importers, with the letter of guarantee, requested to go to the bank to do customs clearance ahead of time.

Bolero's mark registration system improves the credibility and security of bill exchange through the Internet. Now CASIO can receive the B/L safely, along with it are great credibility, higher speed and reliability. Besides, the Tokyo-Mitsubishi Bank UFJ as a negotiating bank and the Exchange Bank of Republic of Korea as an opening bank can also receive these e-documents with digital security proof.

The e-trade service like Bolero reduces the time to clear customs by at least nine days, as that the Korean importers no longer have to clear customs and get the shipment with letter of guarantee.

D. SWIFT TSU

The business operation of SWIFT TSU started in April 2007. The Bolero-based Inter-bank SWIFT service makes it possible to visit a central database and to gain access to new feasible supply-chain services.

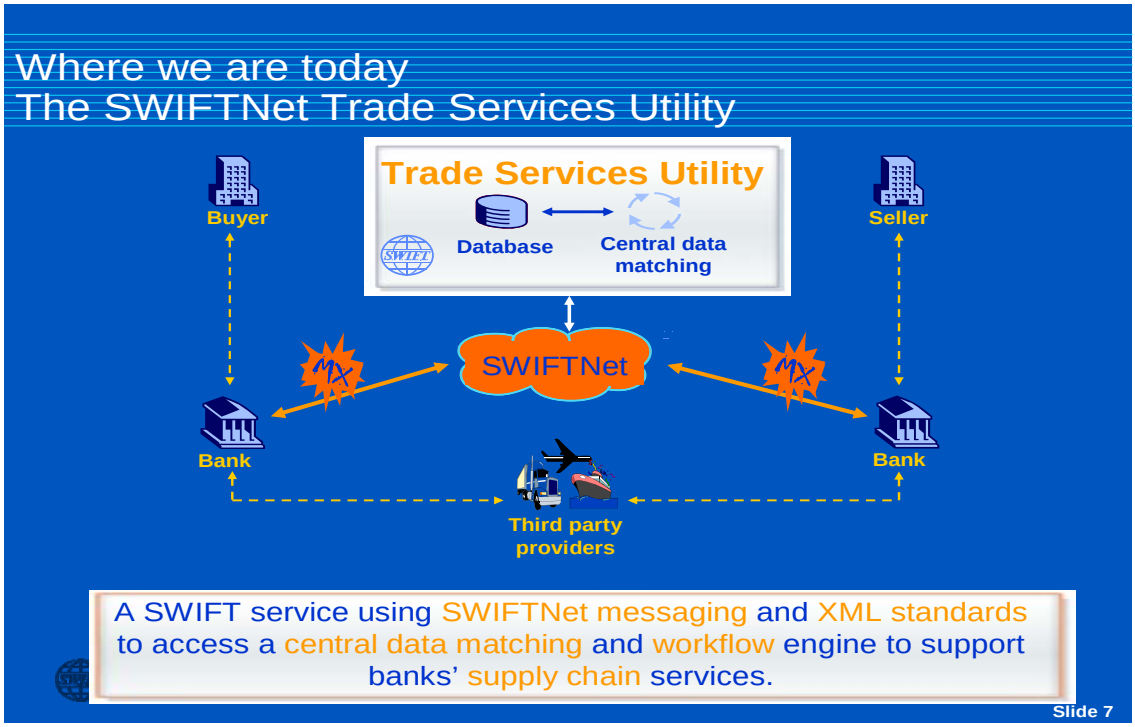


Figure 16 Sketch Map of SWIFTNet Data Exchange

II.1.1.3 Technological Basis

Technological progress is the footstone of paperless trading development, especially the development of network and information technology. Each APEC economy, to meet the realistic demand of paperless trading, has developed various technologies to guarantee the normal development of paperless trading, such as the security proof technology. Research shows there is an imbalance among economies in the development of technological capacity. For example, there is a big difference in applied technology regarding customs clearance. In the case of United States, 96% of its customs cargo declaration forms are dealt by EDI, 45% of which have achieved paperless customs clearance and 91.1% of its tariff is levied electronically (to collect tariff from traders through the ACH system)[5]. In order to effectively prevent textiles of other countries from affecting the United States domestic market, United States customs links with relevant departments of Singapore and China through Internet to exchange information about textile quota licensing by means of EDI. The Canadian Customs has also developed EDI customs declaration system which is linked to its automated customs declaration system (CCS), covering customs declaration, examination, clearance, passing, shipping, shipment data categorization, information collection, fund transfer, electronic payment of tariff and domestic tax and so on. Based on this, Canada also brought forward the "Customs 2000" plan, aiming to electronically finish trade negotiation, customs declaration, customs (entry and exit) examination, shipping and payment. At present, the EDI customs declaration accounts for 83% of the total in Canada.

EDI has been the main means of trading in some economies, the governments of which even impose limits and sanctions on those industries or enterprises that don't employ EDI. For example, in the economies like Australia; Singapore; United States and so on, EDI is required for customs declaration

[5] Source: United States Customs 2003/2004 Annual Report

and port loading and unloading, or else this kind of business will be deferred and high fees will be charged. All the responsibilities caused by the deference will remain the shipping agent's. Hong Kong ,China ,on the basis of e-government, establishes a digital supply chain service platform which is connected with the e-government platform. It provides enterprises a comprehensive service to increase the value of their supply chain.

Box 5 Hong Kong TradeLink Promotes Digital Trade and Facilitates the Transportation Network (DTTN) Development

BOX 5

Hong Kong TradeLink Promotes Digital Trade and Facilitates the Transportation Network (DTTN) Development

Hong Kong TradeLink Digital Trade Corporation Limited is a joint venture between the Government of the Hong Kong Special Administrative Region,China and other private enterprises. Its shareholders are big enterprises that directly or indirectly take part in HKC international trade.

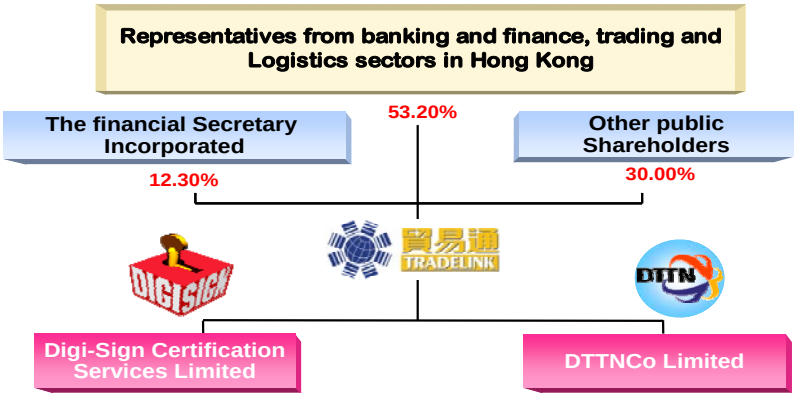


Figure 17 Company Structure of TradeLink

The goal of TradeLink is to maintain the competitiveness of Hong Kong,China by simplifying operations and applying information technology. It streamlines the company's business deals and thus improves efficiency. At the same time, errors and defers are reduced. It also helps both foreign buyers and local suppliers save administrative cost, improve shipment follow-up and manage inventory more strictly.

TradeLink provides the main services as follows: customs declaration, e-trade documents submission (e.g. application for Dutiable Commodities Permit, Electronic Cargo Manifest, Certificate of Production Area, Production Notice and so on), 24-hour-ahead shipment information forecast to the United States and Canadian customs, on-line customs declaration service for small-and-medium-sized enterprises and so on. What's more, for those small-and-medium-sized enterprises that cannot use e-service due to some reason, TradeLink has built service centers in Jiulong and Xinjie, Hong Kong, China, which can convert paper documents into electronic ones and send them directly to the government.

Among all these, Digital Trade Transportation Network (DTTN) is the public platform built by

TradeLink for B2B e-document exchange. DTTN has been run since October 2006, functioning as a support for the exchange of standardized documents like ebXM/edifact/self-defined documents.

Among all these, Digital Trade Transportation Network (DTTN) is the public platform built by TradeLink for B2B e-document exchange. DTTN has been run since October 2006, functioning as a support for the exchange of standardized documents like ebXM/edifact/self-defined documents.

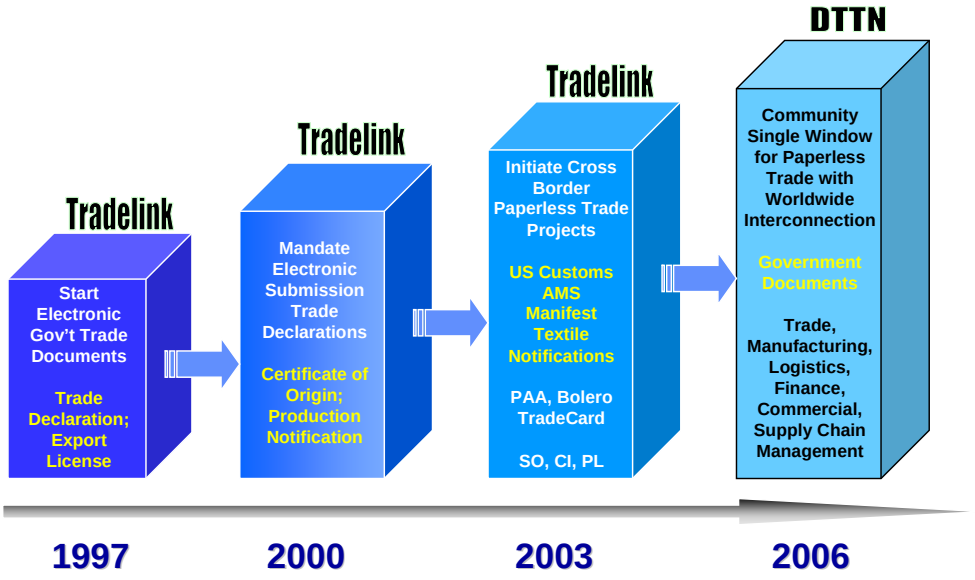


Figure 18 Evolution of DTTN

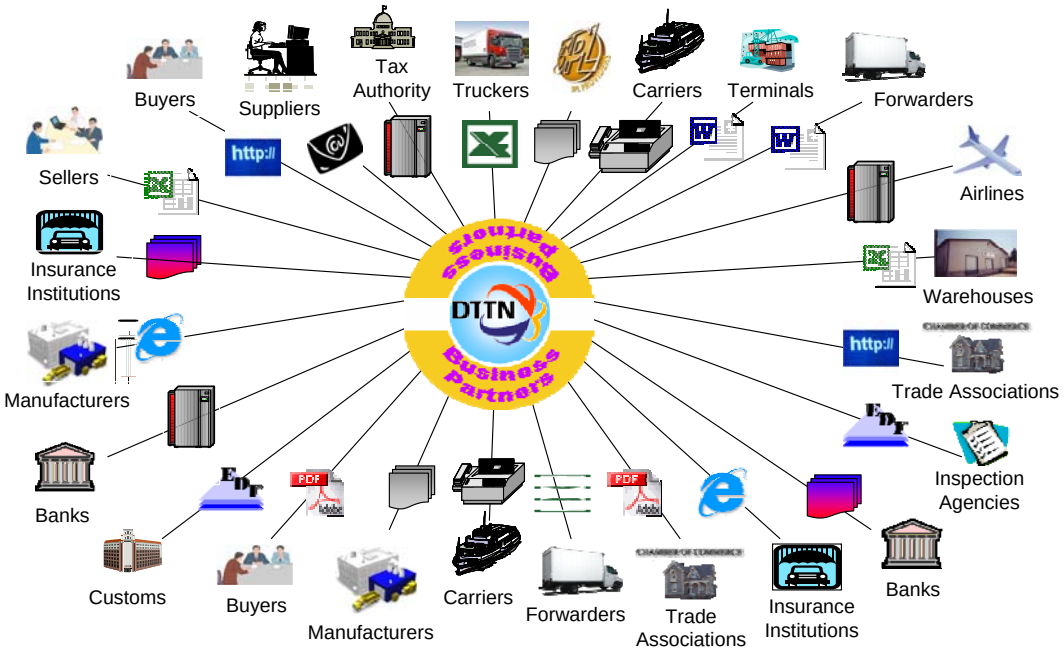


Figure 19 Formats and Objects of DTTN Document Exchange

At present, under strong promotion of the Hong Kong SAR government, 100% of customs declaration in Hong Kong,China has been electronic. Till the end of 2006, the market penetration rate of TradeLink was 95%, with 54,000 consumers and an annual turnover of HK$2.483 billion. All its documents have

the recognized permits for electronic certification service, have the e-signature and electronic encryption functions and could be transmitted safely on the Internet.

Box 6 China Strongly Promotes Paperless trade

BOX 6

China Strongly Promotes Paperless trade

As an authoritative, stable and safe third-party service provider for Chinese international e-commerce, China International Electronic Commerce Center (CIECC) built a data disaster recovery system.

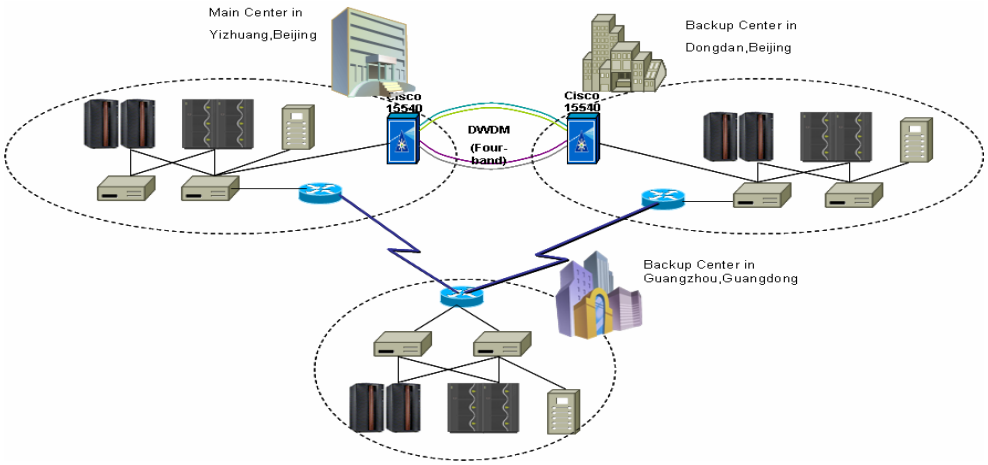


Figure 20 Sketch Map of CIECC Framework of Disaster Recovery System

As the national information platform and exchange platform for international trade, CIECC is the first in China to actualize disaster recovery through the following steps: to build the central monitoring center and a data recovery center in Beijing, which can switch part of the business or all the application system to the data recovery center in case of a temporarily insolvable breakdown in the main data center or a non-regional disaster; at the same time, to build a data recovery center in Guangzhou, which can recover the key business application system within a short time when a regional disaster happens in Beijing. CIECC also engages itself in providing disaster-recovery and business continuity service to the government and departments of finance, telecommunication, energy, transportation, manufacturing, trade, and logistics. For the time being, CIECC is expanding its third-party disaster recovery service internationally.

In addition, China E-Port with commercial banks in the area of online tax payment. Statistics shows that the online-paid tax in 2006 amounted to ¥110 billion, the estimated amount for 2007 is ¥200 billion. This makes trading more convenient and efficient and greatly facilitates paperless trading.

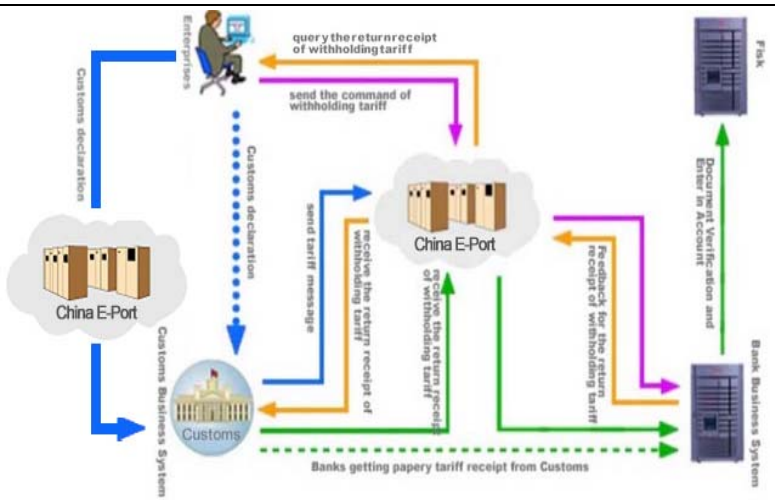


Figure 21 The payment flow chart of China E-Port

Box 7 the Perspective of the Leading ASP in Chinese Taipei by Trade-Van

BOX 7

Facilitating Paperless Trading and Customs Clearnce from the Perspective of the Leading ASP in Chinese Taipei

About Trade-Van –-- established in 1990 as a 'customs clearance automation' task force under Ministry of Finance of Chinese Taipei

- Obiective: set up EDI network for customs clearance automation system
- Achievement: completed air cargo clearance system in 1992 and sea cargo clearance system in 1994

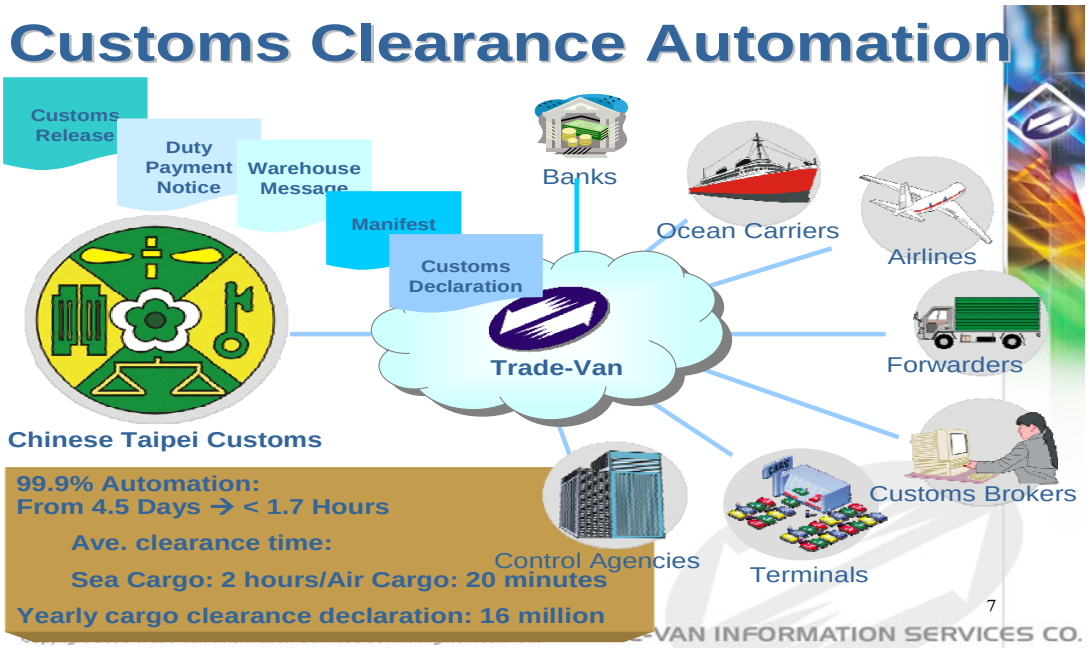


Figure 22 Framework of the Customs Clearance Automation by Trade-Van

Project Goals

- Providing traders with an integrated service platform where traders can enjoy benefits as follows:
  - (a) Facing only one service window;
  - (b) Entering data once for the entire trading process;
  - (c) Tracking the application status.
- Simplify certifying/licensing and trade documentation procedure and reduce the number of product in need of application for import/export permit
  - (a) In Sept. 2003, commodities items 3,089/10,214 (30.24%) requires permits.
  - (b) In Dec. 2004, 1,469/3,089 (47.6%) items have been simplified/eliminated.
- Raise the data-entry accuracy rate and the percentage of C1 cases (green light passing, without paper submission or goods inspection)

IPR Protection in ASP

- Internal audited process flow to control IPR
- Incentives to encourage IPR application
  - Award, bonus
  - Leadership in the project of self-developed product

- Prudent use of self-government under the private law and freedom of contract
  - In licensing, distribution arrangement
  - Partnership, strategic alliance
  - Cross border services

According to the survey on APEC e-port manifest (TPT 02/2001T) in 2001, the application of paperless trading to international transportation in each APEC economy is shown in the table below:

Table 4 Coverage, Collaboration and Problems

Economies	Coverage, Collaboration and Problems
CDA	At present, Canada lacks an integrated platform which enables each port to share information in a "paperless" and efficient environment. This creates certain problems for Canadian ports to improve its trading procedure.
USA	United States Customs has adopted the Automated Manifest System (AMS) since 1986, the participants of which include carriers, the customs, port administration , related service institutions (e.g. liner agent) and so on.
PE	Many practices in the Peruvian ports not only give the trade chain some unnecessary intervention, but also increase the probability of error making. For example, the liner agent needs to submit import declaration forms to the third-party institution in order to avoid conflicts between the customs and the importer; in addition, the customs declaration office or the importer must obtain the certificate of value from the third-party valuation supervisor before loading goods. Compared with the sound communication infrastructure and information technology service in Lima-the capital city, and other big cities of Peru, the situation in other parts of Peru is quite poor, making it impossible for the complete application of some information processing systems (e.g. the customs system) based on reliable and efficient communication to each part of the country. So it is still necessary to use paper documents. The IMS (Information Management System) installed in some ports of Peru cannot receive the 24-hour non-stop system support service provided by 24X7. If the system goes wrong on Friday evening, the ports have to wait till next Monday morning for the technician to examine and fix the problem. This must affect the normal operation of the ports.
CHL	Carriers can send the electronic manifest directly to the Chilean Customs through the ISIDORA system. The Customs will transmit the electronic manifest to the e-system of the port administration in Valparaiso after examination and verification. The port administration examines the electronic manifest through this e-system. Meanwhile, the logistics and trade website (www.vlt.com) set up in Valparaiso port also provides information about commodities and vessels to exporters and importers, liner agents, the Customs and so on. It also provides information about the state of goods and timely inquiry. It can be said that the informationization level in Valparaiso is quite high.
RUS	Though The Russian Federation has made some achievements in the field of paperless trading, it still faces great challenges in different aspects: to build a sound information technology infrastructure, to set up a legal and standardized environment appropriate

	for the development of e-commerce, and to strengthen the credit system building within the financial sector.
PRC	It can be said that China has achieved great progress in the e-port building in recent years, but there are still many problems to be solved. For example, each main port has its own independent EDI center. Though each center supports the UN/EDIFACT documentation format, the risk is that they just work individually under local control. Hence, a special coordinating institution is needed for the development of different EDI centers. Besides, due to internet security concerns, the online EFTS (electronic funds transfer system) is not yet widely used in the shipping industry. Therefore, to build up a paperless trading environment in international transportation, it is necessary to build up the people's confidence in trading with e-money.
HKC	Hong Kong,China is a free port. The vessels passing by only need to submit their manifest to the Customs for the purpose of statistics use, but not to other departments. On 17 July 2004, Hong Kong,China completely applied e-manifest for air and railway cargo. The electronic and paper submission used for sea and inland waterway transport had been made completely electronic by 2005. Besides, the electronic land transport manifest is under preparation. In order to gain support from businesses, promulgate relevant laws, and take e-measures quickly, the HKC government is widely soliciting opinions from relevant industries on the design and operation mode to carry out the "Plan to Forecast Road Cargo Information". The reason for the low level of electronicalization in waterway manifest is partly because participants need time to change the old procedure which has been used for many years, though the new e-system will highly improve efficiency. With the uniform planning of the Hong Kong, China government, the DTTN project under construction is an e-platform to help connect the system of businesses with that of related clients, enhance information flow and improve the operating efficiency. This makes it possible to link all parties on the trade chain (buyer/importer; seller/exporter; dispatcher—including the third-party provider of logistics service; carrier—including sea, inland waterway, road, railway, air and even express agents; ports; government and related institutions; banks and other financial institutions; insurance companies and inspection and quarantine institutions) with standardized electronic information and to achieve information-sharing.
RP	The diversity of format will restrict the wide use of electronic manifest. Besides, when many regular steamships load and unload goods at the same time, electronic manifest cannot be generated by the system. At the Manila port, for cost or other reasons, many steamship agents cannot submit electronic manifest.
MAS	In 1993, the Port Klang launched the PKCS (Port Klang Community System), which was an information service system based on the EDI technology. PKCS has been successfully connected with the Customs information system, SMK (Sistem Maklumat Kastam) and EDI Malaysia's Dagang Net. It electronically connects sea carriers, shipping agents, the customs, port authorities, warehouse managers and banks together.
SIN	At present, there are over 350 application systems in Singapore, dealing with port administration, planning and operation. The main systems include PORTENT being in

	charge of the external communication and exchange of electronic data, CITOS (Computer Integrated Terminal Operation System), CICOS (Computer Integrated Conventional Operation System) , CIMOS (Computer Integrated Marine Operation System) and etc.
AUS	At present, each port in Australia lacks an automated administration system through which the port authorities, the customs, inspection and quarantine departments, container port terminal and other related institutions can share information with each other. As there isn't a uniform system to collect the carriers' information and there isn't a special agency to coordinate and communicate related parties, the electronicalization level is still very slow in each port of Australia, though every party is willing to build up such a system.

Notes: Coverage--- measured mainly according to the application level of electronic means provided by each port mentioned above. Collaboration level--- measured mainly according to the degree of information sharing among ports, the customs, commodity inspection department and others provided by each port mentioned above.

II.1.2 General Situation of IP Protection in APEC

II.1.2.1 General situation

At present, most economies pay great attention to the building of a legal framework for intellectual property rights (IP) Protection. They not only promulgate regulations on the acquisition, maintaining and protection of IP, but also make it the base on which the nation is built up.

Box 8 Japan Put forward the Strategy: "Building the Country on IP"

BOX 8
Japan Put forward the Strategy: "Building the Country on IP"

The Japanese government pays great attention to IP protection. It put forward the slogan "building the country on IP" in 2002 and then made it the national strategy and put it into practice just within one year.

In order to carry forward the strategy, the strategic focus of Japan has been on the reform of its approval system, IP protection system, judicial system and the crack-down on foreign infringement. Its key point is to promote the strategic use of IP, to actively take part in the international standardization process and to improve the IP application environment. Regarding the IP protection personnel, the first thing is to train IP protection specialists; the second is to enhance the national consciousness of IP protection, such as to unify related terms concerning IP protection, strengthen the study on IP protection and carry out cross-disciplinary research.

In recent years, the application for protecting national industrial property rights has showed a stable and uprising trend (shown in the figures below), the strategy of "building the country on IP" has

achieved a primary success.

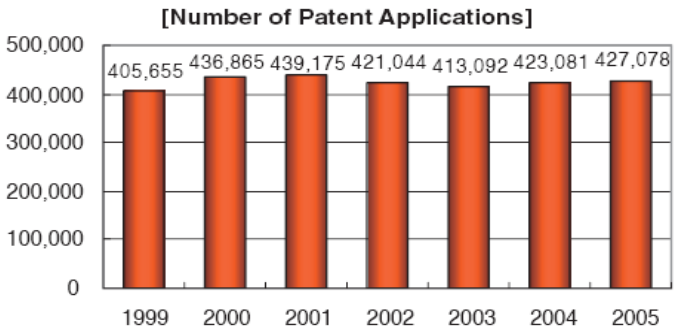


Figure 23 Patent Application in Japan

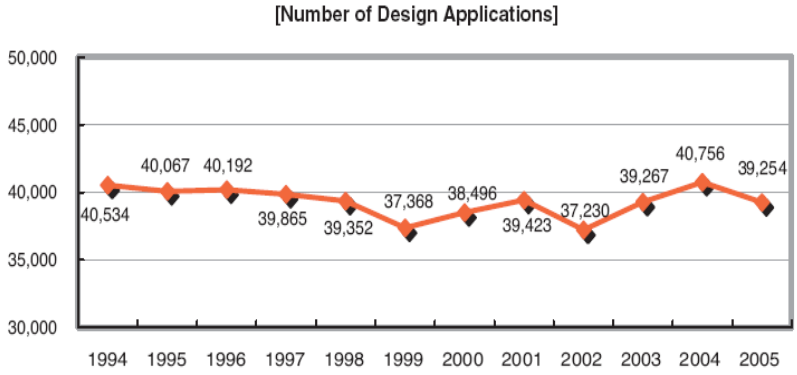


Figure 24 Desing Application in Japan

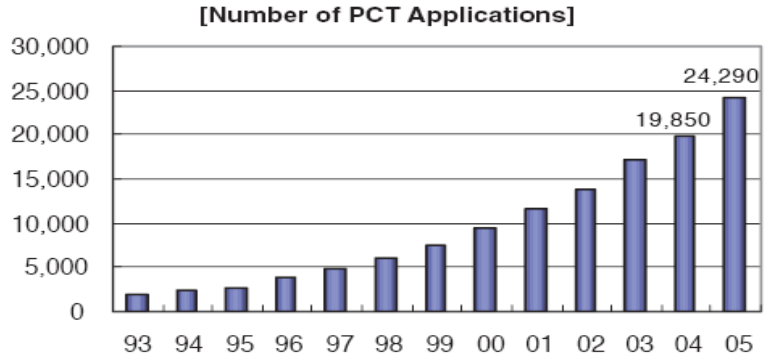


Figure 25 PCT（Patent Cooperation Treaty）Application in Japan

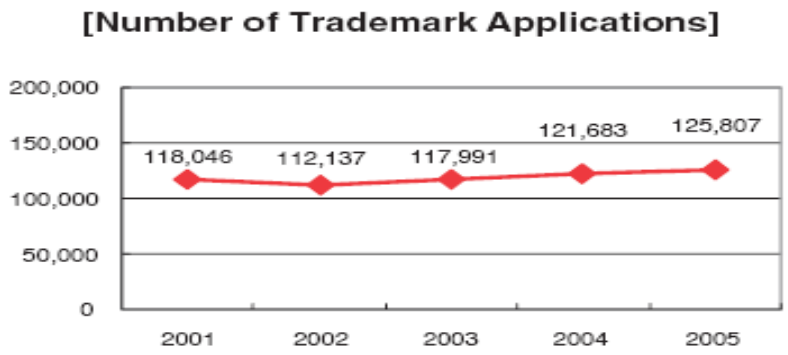


Figure 26 Trademark Application in Japan

IP laws usually have 3 characteristics as below:

(1) Localization. This means that the IP specified according to the laws of one country or region can be only protected in this country or region. However, if one country or region joins international copyright protection conventions concerned, such as *the Berne Convention* and *Universal Copyright Convention*, its copyright can be protected too in other member economies according to the stipulations in these conventions.

(2) Independence. This means the IP in different economies is independent of each other. Take the industrial property right for example, for the patent granted to the same invention in different economies, the reason for invalidity and the loss of rights and even the period of validity are decided by each economy individually. As to the copyright protection, however, a work, according to *the Berne Convention*, can have its copyright in different member economies at the same time, but the protection coverage and the stipulations on infringement and legal remedy are different from one economy to another. *The Berne Convention* has a specific stipulation on the independence of copyrights.

(3) Diversity. Due to differences in political system, economic structure, science and research development level, and cultural background in different economies, there is diversity too in their legislation and execution of IP laws.

Since 1883, a series of international and regional conventions have been already signed to protect IP internationally, such as *the Paris Convention*, *the Patent Cooperation Treaty* (PCT), *the European Patent Convention* (for the protection of industrial property), *the Berne Convention* and *Universal Copyright Convention*. However, in view of the above characteristics of IP laws, the goal to establish a completely uniform international or regional IPP protection system has not been achieved yet in spite of the demand for it in international trade. And it will not be achieved in the near future either. At present, the most important international convention in this regard is TRIPS (Trade-Related Iintellectual Property Rights), which was signed upon the end of the multilateral Uruguay Round of GATT and came into force on 1 January 1995 when WTO was born. TRIPS should be implemented by WTO hereafter.

II.1.2.2 APEC economies assume the international responsibility of IP protection

Most APEC economies assume the international responsibility of IP protection. They have joined, one after another, many international conventions to build their paperless trading capacity on the fulfillment of international responsibility and IP protection. For example, since 1980 when China first acceded to *the Convention on Establishing World Intellectual Property Organization*, it has joined successively the *Paris Convention*, *Madrid Agreement for International Registration of Trademarks*, *Berne Convention*, *Universal Copyright Convention*, *Convention for the Protection of Phonogram Producers against Unauthorized Duplication*, *International Patent Cooperation Treaty*, *Nice Agreement Concerning the International Classification of Goods and Services*, *Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure*, *Locarno Agreement for Establishing an International Classification of Industrial Designs*, *Strasbourg Agreement Concerning the International Patent Classification, International Convention for the Protection of New Varieties of Plants* and WTO'S *Agreement on Trade-Related Intellectual Property Rights* (TRIPS). Republic of Korea has joined the following international conventions: the *World Intellectual Property Organization Convention* (1967), *Paris Convention for the Protection of Industrial Property* (1980), *Patent Cooperation Treaty* (1984), *Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure* (1988), *Agreement on Trade-Related Intellectual Property Rights* (TRIPS) (1995), *Berne Convention for the Protection of Literary and Artistic Works* (1996); *Universal Copyright Convention* (1987) and so on. The developed economies, such as Japan and US, are also members of many important international IP conventions including TRIPS.

II.1.2.3 The legal framework for IP protection in APEC economies

Each APEC economy has gradually built up its own IP protection system. Technologies concerning paperless trading capacity building are strictly protected by law.

Seen from legislation, the legal system in each economy is basically complete. For example, the IP protection in Canada covers 7 aspects: patent, copyright, trademark, business secrets, industrial design, integrated circuit topography and plant breeder's rights, with the corresponding laws as follows: *The Patent Act, The Copyright Act, The Trademark Act, The Industrial Design Act, The Integrated Circuit Topography Act, The Plant Breeder's Rights Act, The Criminal Code* and *The competition Act*. In addition, many provincial laws, regulations, and rules also involve IP protection. Chinese present legal system in this regard mainly comprises three parts: laws, administrative regulations and departmental rules. Besides, IP protection is also touched upon by some of Chinese civil laws, criminal laws, foreign trade laws and judicial interpretations issued by the Supreme People's Court or the Supreme People's Procurator. In the process of entering WTO, in order to fulfill its commitments to WTO, the Chinese government made necessary amendments to its laws and regulations concerning IP protection as required by WTO TRIPS. The amended laws and regulations provide a wider protection scope, strengthen protection to proprietors and place more emphasis on judicial reviews, thus having improved Chinese legal system in terms of IP protection and ensured its conformity to TRIPS. After its accession to the WTO, China has continued its effort in making new IP laws and regulations. For example, the *Interpretations by the Supreme People's Court and the Supreme People's Procurator on*

Several Issues concerning the Application of Laws to Handling Criminal Cases of IP Infringement went into effect on 22 December 2004; the *Regulations for the Collective Administration of Copyrights* came into force on 1 Mar 2005, and the *Regulations on the Protection of Information Network Transmission Rights* is under discussion for the time being. It is believed that, with the promulgation of these new laws and regulations, Chinese legal system regarding IP will be further improved and Chinese legislation in this regard will gain continuous development. In one word, China has already established a relatively sound legal system of IP protection.

Box 9 China Makes Every Effort in Carrying out its Action Plan of IP Protection

BOX 9

China Makes Every Effort in Carrying out its Action Plan of IP Protection

In order to enhance IP protection, China established a Leadership Group for the Making of National IP Strategy with Wu Yi, the Vice-premier of P.R. of China, as the head. A series of measures have been taken:

Figure 27 China High-level Forum on IP Protection on April 24, 2007

(1) Strengthen the building of IP protection system and perfect the IP protection environment. Since the late 1970s, China has issued successively *the Trademark Act*, *the Patent Act*, *the Copyright Act*, *the Anti-unfair-trade Act*, *Regulations on the Protection of Computer Software* and *Regulations on the Protection of the Right of Information Network Transmission* and so on. In addition, China has also actively joined a series of international conventions. It only took China less than 30 years to have fulfilled the tasks on which some developed economies spent almost one hundred years.

(2) Carry out dedicated actions to protect the proprietors of IP. In recent years, the Chinese government has carried out dedicated actions nationwide to crack down infringement and has achieved sound effect, such as the 7 special campaigns launched in 2006: the “Sunshine Action”,” Blue Sky

Exhibition Action", "Mountain Eagle No.2 Action" , "The Hundred-day Anti-piracy Action" and etc. During these dedicated actions, 836 cases were registered in the police administration; 988 suspects were arrested with the authorization of the procuratorial authorities; 6441 cases were wound up and given verdict by the court; 17243 IP cases were accepted, investigated and handled by the Patent Bureau, the Customs and industry and commerce administration institutions; a total value of ¥1 billion was seized in these cases. All these actions powerfully attacked unlawful practices and effectively protect the proprietors' rights.

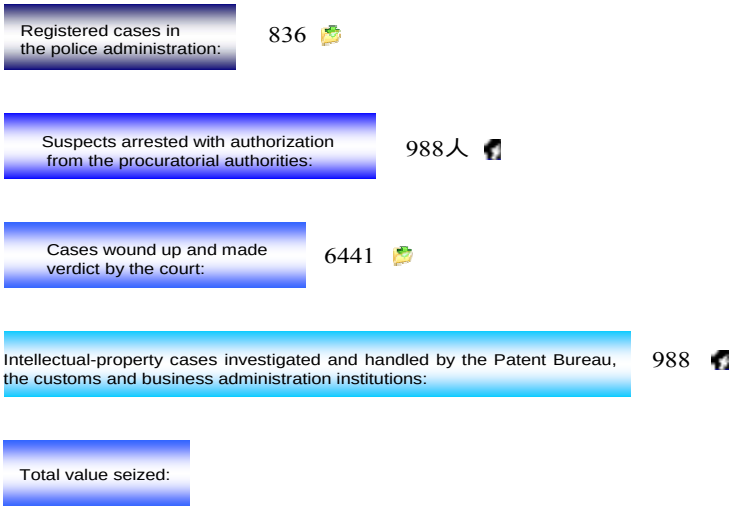


Figure 28 China's Achievements in IP Protection

(3) Strengthen publicity and education and cultivate a sound atmosphere for IP protection. Since 2004, on each 26 April—the 'World IP Day', the National IP Bureau and relevant institutions will hold the "IP Protection Publicity Week". In 2005, the Information Office of the State Council released the White Paper: *The New Progress of IP Protection in China*. From 2006, the National Working Group of Intellectual Property Protection (shortened as SOIPP) publishes its annual action each year. A series of publicity and law-popularizing education activities have been organized by relevant institutions, such as the 'Intellectual Property Protection Workshop for Leaders from the Key Enterprises', 'Hundreds of IP Protection Personnel Project' and etc. For the sake of public scrutiny, the Chinese government, in more than 50 big and medium cities, has established report and complaint centers, opened the hotline "12312" and internet windows for telephone or online complaints, thus forming a fast, convenient and effective IP protection network. When infringement happens, the proprietor can complain, report and consult conveniently. Most of the complaints have been dealt with appropriately.

It took China 15 years for the number of patent applications (including inventions, practical new models and exterior designs) to reach from zero to 1 million, 4 years from 1 million to 2 million, and 2 years from 2 million to 3 million. It was in these 15 years when China made great progress in IP protection. Only through IP protection can inventors be ensured a good prospect and be motivated to invent more.

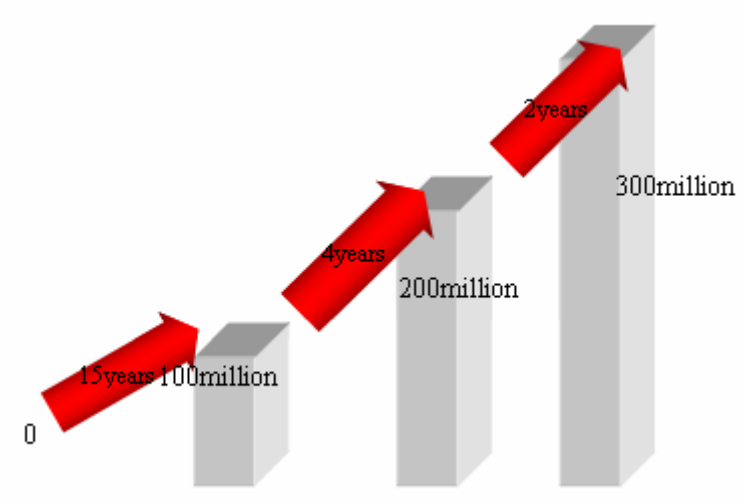


Figure 29 The Rising Number of Patent Applications in China

At present, there is still a long way for the IP protection to go in China. Therefore, the Chinese government will, with a more determined mind and more effective measures, further strengthen the IP protection. On 2 April 2007, the government published "Action Plan for IP Protection in 2007 , China", including 276 measures in 10 areas. The main tasks are listed below:

(1) Continue to perfect the legal framework of IP;
(2) Continue to enforce the crack-down on infringement;
(3) Facilitate the use of authentic software in enterprises;
(4) Guide and support enterprises to protect IP;
(5) Strengthen the building of IP protection platform;
(6) Publish the national IP strategy.

Box 10 Republic of Korea Emphasizes Building a Sound IP Environment

Box 10

Republic of Korea Emphasizes Building a Sound IP Environment

To timely and efficiently protect IP, the government of Republic of Korea pays great attention to constructing a sound IP environment. For example, in 2004, the State Council took the lead to set up the Policy Coordination Committee for IP Protection, with its director being the committee head. The committee has governmental and nongovernmental members: the governmental members include: at the ministerial level, the vice ministers from the Ministry of Justice, the Ministry of Foreign Affairs and Trade, the Ministry of Culture and Tourism, the Ministry of Commerce, Industry and Energy, the Ministry of Information and Communication and the Ministry of Budget and Planning; at the level of departments, the directors from the Korea Customs Service, the Police Administration, the Patent Administration and the Korea Food and Drug Administration; and last the director of National Policy Propaganda Department. The nongovernmental members include experts from each of the above fields (10 from each field). The comprehensive policy made by this committee during the 1st annual meeting held in May 2004 has three focuses: to establish a permanent system for infringement investigation and penalization, to make advanced laws and rules concerned, and to guide and build new-style social culture. At the same time, the meeting decided to set up a Joint IP Infringement Investigation Center, which is directly subordinate to the committee.

Korea Patent Administration in charge of the execution of industrial property policy and relevant laws on behalf of the government, according to the *Unfair Competition Prevention and Business Secret Protection Law*, investigates unfair competition behaviors including embezzling others' trademarks, directs and supervises the behaviors of local autonomous groups in preventing and correcting unfair competition. In order to enforce the execution of IP protection, this office set up an International Patent Research and Training Center, specialized in training professional patent personnel for the Patent Office and other government departments and delivering publicity materials to the public to raise the public's awareness of IP protection. Furthermore, Korea Patent Administration also publicizes extensively through mass media like TV and news.

With the rapid development of Internet and E-commerce in Republic of Korea, Korea Patent Administration set up IP Protection Center in 2003 and revised again the related laws to regulate domain name embezzlement and other embezzling behaviors through Internet. At the same time, the Patent Administration also actively promotes relevant legislations in new IP fields and further enlarges the scope of IP protection. All of these show that IP protection has achieved remarkable results in Republic of Korea.

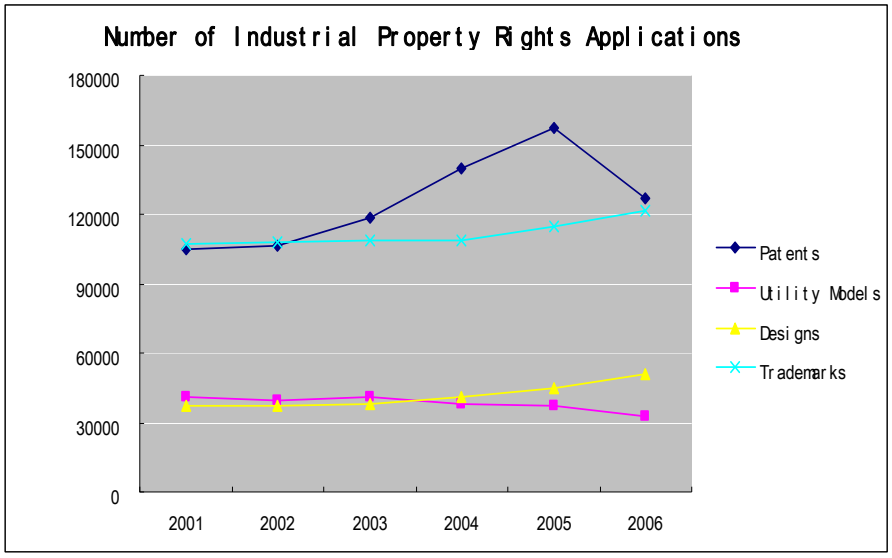


Figure 30 Application of Industrial Property Rights in Republic of Korea

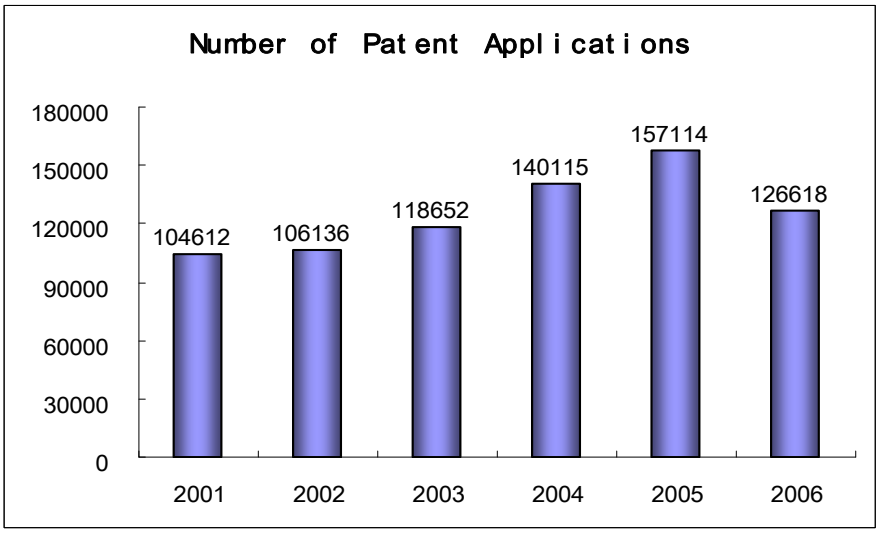


Figure 31 Patent Application in Republic of Korea

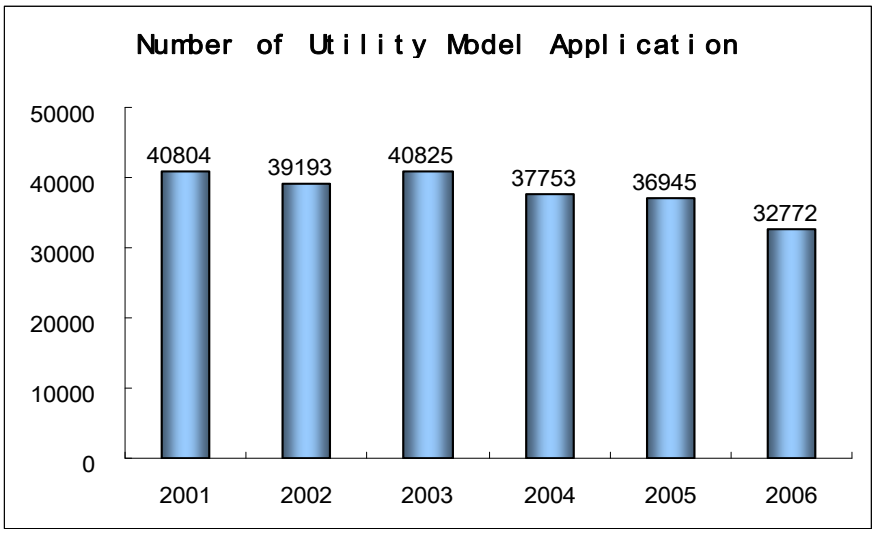


Figure 32 Application of Practical Models in Republic of Korea

In order to encourage intellectual invention and to protect the technology patente of the enterprises of Republic of Korea, the Korean government has formulated a series of policies and measures and established a perfect supportive system:

1. Before the small-and-medium-sized enterprises develop or introduce new technologies, the experts from the government, in order to avoid losses caused by repeated investment, will examine the IP of related technologies and help the enterprises to decide their research and development direction;
2. The government provides on-line patent information service for free;
3. The government reduces the patent application and examination fees;
4. The government sponsors patent application overseas.

The laws that protect IP in Republic of Korea include: *Patent Law, Utility Model Law, Design Law, Trademark Law, Copyright Law, Computer Program Protection Law, Integrated Circuit Design Law, Unfair Competition Prevention and Business Secret Protection Law, Seed Industry Law* and *Customs Law*. In order to protect business secrets and to strengthen the blow on illegal infringement, the Korean government enacted *Unfair Competition Prevention and Business Secret Protection Law* in 1998. And this law was amended in January 1999, which authorizes the Patent Office and local autonomous groups to investigate illegal unfair competition. In 2001, the law was amended again, stipulating that damaging famous trademarks' reputation without justification is unfair competition. Furthermore, the amended law prohibits any inappropriate use of trademarks by agents or representatives without the permission of the proprietors, and prohibits the use of flags and emblems of the contracting countries of trademark treaties. In response to the demand of the rapid development of Internet and E-commerce in Republic of Korea, the Patent Office amended the above law in 2003 again to regulate domain-name embezzlement and other sorts of Internet infringement. In 2001, the Trade Commission of the Ministry of Industry and Resources formulated *Unfair Trade Investigation and Industrial Harm-recovery Law*, authorizing the Trade Commission to independently deal with IP infringement in imports and exports. In order to comply with the requirement of industrial development and follow the international tendency, the government of Republic of Korea has made great effort in building new IP laws and expanding the scope of IP protection.

United States laws provide strict protection for patents, trademarks, copyrights and integrated circuits and etc. What's worth mentioning is that, for the 1st time, the USA government included business methods into its patent protection scope, thus bringing paperless trading-related innovations into IP protection. This has exerted a great influence on the paperless trading capacity development.

The IP protection in Singapore covers patents, trademarks, registered designs, copyrights, integrated circuits, geographic marks, plant breeds, business secrets and etc. Ever since 1995, the Singaporean government has successively enacted its *Patent Law, Trademark Law, Design Registration Law, Copyright Act, Integrated Circuit Design Protection Law, Geographic Mark Protection Law* and *Plant Breed Protection Law* and so on. The above laws form the legal framework of IP protection, revealing that IP protection is fulfilled through laws in Singapore. On 1st January 2005, the amended *Copyright Law* took effect. One of the main amendments is "One that uses copyright-infringed software would be accused of being criminal". If someone intends to infringe copyrights, that is, illegally copy large amount of pirated software, including downloading pirated films or songs from the Internet, or gaining business profits via pirated goods, he/she would be on a charge of criminal. Offenders will face a six-month imprisonment or, at most, a fine of 20,000 Singaporean dollars, or a combination of the two. Seeing "using pirated goods" as illegal reflects the determination of the authorities to curb piracy and the wish to attack pirating behaviors from the root.

The IP protection laws in Japan are composed of the following entity laws: *Patent Law, Utility Model Law, Design Law, Trademark Law, Copyright Law, Unfair Competition Prevention Law, Commercial Law, Semiconductor Integrated Circuit Flow Design Law, Seed and Seedling Law* and *Customs Law*.

The Russian Federation, from 1992 to 2003, has passed a series of IP laws, statutes, regulations and rules. The *Patent Law*, which was issued on 7 February 2003, supplements new criteria for adjusting various relationships, such as the relationship between the property rights of state-invested industrial projects and the property rights of the projects supplying the state orders according to the state contracts. The property rights of the latter projects belong to the state. And the subscriber, i.e. the state, has the right to apply for the patent during the designated period of time, and its invention, model and industrial sample can be protected by laws. If the subscriber does not apply during the designated period of time, the patent can belong to the executor of the projects.

With regard to IP law enforcement, the IP protection of APEC economies is being strengthened continuously. For example, the IP protection in China has two parallel channels: administrative and legal. The proprietor can sue to the court when infringement occurs, or appeal to IP authorities. Using administrative methods to protect IP is a significant characteristic of Chinese IP law enforcement. According to the *Patent Law*, the authorities concerned in the State Council or local governments can set up patent administration offices. In order to effectively implement the *Copyright Law*, the Chinese government set up the National Copyright Administration, and copyright administration offices have been set up too in all its provinces, autonomous regions, municipalities and other big cities. According to the *Trademark Law*, the principle is to have trademarks registered in the central government but administered by local governments. The industry and commerce administrations at different levels, from the central government, to provinces, municipalities, prefectures, and to counties, all have their trademark administration offices. Furthermore, in June of 1995, the General Administration of China

Customs set up a Frontier IP Protection Office. Each Customs all over the country also designated their departments and main contacts responsible for IP protection in their local place. So the proprietors can protect their IP either through legal or administrative channels. They can appeal to the administrative office when their IP is infringed, and the administrative office will exercise its power of investigation. The administrative office can seal up and detain the infringed goods and use such remedies by issuing a ban or imposing a fine on the infringement. Due to its fast speed and low cost, administrative procedure is popular with IP proprietors. The USA administrative IP protection system comprises the following players: the United States Patent and Trademark Office, the United States Copyright Office, the Office of the United States Trade Representatives, the United States Trade Commission and the Customs. From the effect of law enforcement, the USA can be ranked as the best economy in terms of IP protection. For example, the pirated video and computer software only account for 5% of all goods in these two fields. Piracy in USA is the lowest in the world. This is a result of its forceful and effective implementation of laws. USA criminal penalty for serious infringement of copyrights through legislation can generate a quite deterrent effect on stopping the spread of pirating behaviors, especially the piracy of computer programs. The heavy penalty for IP infringement in USA represents the world trend of IP legislation nowadays. Singapore also fights piracy aggressively in terms of law enforcement. The *Copyright Law*, which was amended in 2004, treats piracy as criminal behavior. According to its articles, first offenders should pay a fine of 20,000 Singaporean dollars or be imprisoned for half a year, and grave offenders will be fined 50,000 Singaporean dollars or be imprisoned for three years. The law clearly defines individual pirating behavior and states that downloading songs and films illegally is criminal.

In Republic of Korea, the trademark and patent law enforcement is conducted by the court. The court has two channels to protect registered trademarks and patent: civil sanctions and criminal sanctions. The Customs has some administrative enforcement right such as confiscating goods, and the IP Office has the administrative right to investigate goods with fake trademark and patent, but does not have the administrative law-enforcement right. In order to ensure the authority and efficiency of administrative investigation, the Industrial Property Right Office of Republic of Korea set up a Counter-fake Office in 1987. The administrative procedures and administrative remedy clauses added to the UCP & TSP ACT ensure the efficient functioning of the Counter-fake Office. For example, if the Industrial Property Right Office thinks it necessary to investigate unfair competition, it has the right to send public servants to the enterprises' business operation area or production area to check relevant documents, publicity materials or products in order to collect a certain number of goods as test samples. In Republic of Korea, one duty of procurators and the police is to jointly investigate fakers and sellers of fake products to maintain social and trading order. Procurators focus on fighting lawbreakers. In 1993, the Supreme Procuratorate of Republic of Korea set up the IP Infringement Joint Investigation Center, which, coupled with 21 main prefecture procuratorates, has formed a regional joint investigation team—the special institution of the procuratorate to protect IP. The duty of the procurators who are appointed to work in this institution is to investigate criminal cases of IP infringement. Among all the counter-fake activities, this institution makes outstanding performance each year.

Box 11 Singapore: Cracking down on Piracy and Protecting IP

Box 11

Singapore: Cracking down on Piracy and Protecting IP

According to the statistics in the "Global Piracy Rate Investigation Report" released in May 2006 by the Commercial Software Union, which is devoted to protecting IP and cracking down on piracy worldwide, piracy, in general, was worsened in the Asian-Pacific region in 2005, but the piracy rate in Singapore was reduced to 40%, enabling Singapore to be ranked one of the 20 lowest-piracy-rate countries in the world for the first time.

For a long time, Singapore has made tireless efforts in law building and enforcement, education and commerce. It has successively improved IP protection environment, cracked down on piracy and thus achieved good results. The following table lists the number of pirated products and trademarks investigated by the Singaporean government from 2000 to 2006, with the total value involved.

Table 5 Counter-IP-infringement Achievements in Singapore

Year	Copyright Raids	Trademark Raids	Total Raids	Total Value Seized
2000	308	146	454	S$16,310,436.28
2001	308	183	491	S$15,553,324.95
2002	284	207	491	S$9,415,266.00
2003	266	160	426	S$33,185,092.00
2004	126	190	316	S$12,665,969.00
2005	61	168	229	S$19,774,083.00
2006	57	144	201	S$9,952,296.00

Source: IPOS

Law Building

The Singaporean government has made great progress in law building with law amendments to crack down on piracy from the root. The amended *Copyright Law*, which came into effect on 1 January 2005, says "using pirated software is criminal". If anyone deliberately infringes the copyright, that is, illegally copies large amounts of pirated software or gains profits by using pirated goods, he/she would be charged criminal. The penalty is six-month imprisonment or a 20,000 Singaporean dollars fine at the most, or a combination of the two. At present, except for successive crack-down on the sale of pirated goods, the Singaporean government lists 'using pirating goods' as illegal to curb the occurring of piracy.

Law Enforcement

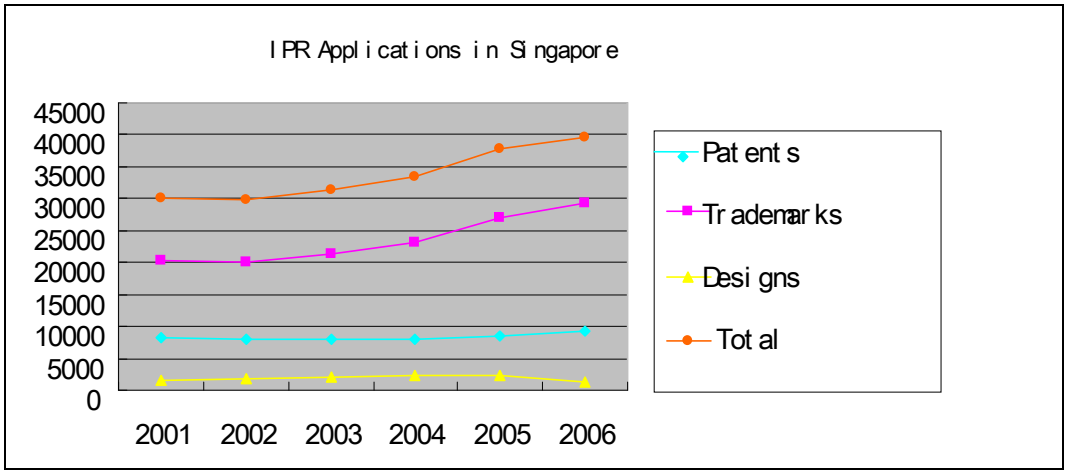
The Singaporean government enforces laws strictly. A series of activities against using, downloading and distributing pirated software have greatly shocked individuals and organizations that have infringed IP.

In September 2005, the Singaporean police took one action, suddenly investigating the office of an interior design consulting firm and collecting the pirated software used by the firm. This was the first

sudden attack at pirated software launched by the police after the newly-amended *Copyright Law* came into effect.

Right Guidance

The Singaporean government, besides legal measures, also guides the public to respect IP and use authentic software. For instance, before the amended *Copyright Law* came into force on 1 January 2005, in order to help businesses adapt to the new copyright protection environment, the Singaporean IP Office motivated 10 important software suppliers to collectively lower the price of most-welcomed software, thus enabling customers to have access to authentic software at a lower price and then to keep away from pirated products. Furthermore, for the purpose of improving the capability of protecting, developing and administering IP, the Ministry of Law of Singapore set up the IP College in January 2003 to train specialists in IP protection.



Source: IPOS

Figure 33 Number of Industrial Property Rights Applications In Singapore

2.1.2.5 Technical Aid Mechanism

Within the APEC area, a technical aid mechanism concerning the protection of intellectual property rights under TRIPS has not been completely established yet, which restricts the improvement of IP protection capacity. However, technical aid still gained some progress. For example, "The Partners for Progress Mechanism" was put forward at the 1994 APEC ministerial meeting held in Japan and was officially adopted at the 1995 APEC ministerial meeting. In the specific implementation plan presented by Japan, international cooperation in IPs is regarded as the primary objective. According to the plan, Japan has offered to member economies like Malaysia and Chinese Taipei training courses about the application of computer technology patents and TRIPS agreements. In 1987, Japan Patent Office and WIPO co-developed the "Funds-in-Trust Arrangement". The funding for this arrangment is donated by the Japanese government to WIPO, which is mainly used to enhance the awareness of IP protection in the Asian Pacific economies and to help these economies to establish their IP protection policies. Since Japan contributed the first installment of 10 million Japanese Yen donation, successive governments have been continuously increasing their capital investment. Up to now, the annual amount donated by the Japanese government for this program has reached approximately 200 million Yen. Due to AIPPI's

important influence in pushing forward the implementation of "Paris Convention", since Japan entered into the organization, it has been actively cooperating with AIPPI. In 1956, it set up AIPPI-JAPAN, and assisted AIPPI in convening two international conferences in Japan. In addition, Japan enthusiastically conducts dalogues and exchanges in IP protection with the concerning countries.

Box 12 Implications of the "Doha Declaration on TRIPS and Public Health"

BOX 12

Implications of the "Doha Declaration on TRIPS and Public Health"

To address the increasingly severe public health crisis in developing countries, "Doha Declaration on TRIPS and Public Health" was published at the WTO's fourth ministerial conference held in Doha in November 2001. According to the Declaration, WTO initiated negotiations in public health problems and scheduled that an agreement should be reached by 31 December 2002 on the implementation of the Compulsary Patent Licensing System for Medecal Products and the resolution of public health crises in developing member economies.

On 30 August 2003, through 20 months of tough negotiations, WTO General Council finally broke the deadlock and the member governments unanimously passed the final draft of the Implementation of the Compulsary Patent Licensing System for Medical products, which will make it easier for the poorer countries with low or no medicine production capacity to import cheaper and unregistered medicines produced under the Compulsary Licensing System (Internationally, production without patent authorization is called "unregistered production", and the prices of these products are lower than the similar products under patent protection).

The "Doha Declaration on TRIPS and Public Health" reaffirmed the right of the WTO members to implement measures like compulsary licensing and parrallel importing, and therefore politically and legally enhanced the capability of the developing countries to obtain medical products. With the support of the "Declaration", it is necessary for the developing countries to make full use of the TRIPS flexibility to promote public health. The flexibility includes:

(1) The contracting parties have the right to implement "Compulsory Licencing" and to determine the grounds for the implementation of "Compulsory Licensing";

(2) The contracting parties have the right to determine which situation constitutes a country's emergency situation or other extreme emergency situations. For example, the public health crisis caused by AIDs or Malaria constitutes such an "emergency situation";

(3) The contracting parties have the right to establish their own policy of "Exhaustion Doctrine", on the precondition that they abide by the MFN and National Treatment provisions;

(4) The developed countries should urge and encourage their enterprises to transfer technology to the least developed countries. The time for the least developed countries to provide patent protection for medical products can be postponed to the year of 2016. The birth of "Doha Declaration" is a great event occuring in the field of international intellectual property rights.

When speaking of the significance of the "Agreement", Supachai Panitchpakdi, former WTO Director-General, pointed out that this is a historical agreement, which will enable the poor countries to fully use the flexibility within the TRIPS agreement and to deal with the severe epidemic diseases

afflicting these countries.

"Doha Declaration on TRIPS and Public Health" provides a perfect paradigm for the promotion of the development of APEC paperless trading. In view of this, on the basis of the principles of the IP protection, APEC can adopt a flexible policy in conducting technical support, taking into account the paperless trading development situations in these economies. For instance, during a transitional period, the developing economies can utilize the developed economies' technical standards and business methods of paperless trading free of charge, or the developed economies promise to ecourage their own enterprises or organizations to export and transfer technology to the developing economies and to determine price differences according to the economic development situations of the different economies. After the transitional period, all the economies will negotiate with the owners of the intellectual property rights to decide on the amount of patent royalty and the way to collect the royalty.

In general, the economies within APEC have taken strict measures to protect IPs and are making progress, but are still troubled by a high infringement rate. This phenomenon not only reflects the gap between the member economies in the execution power, but to a greater extent shows the different economic and social development situations of the economies. Therefore, ignoring the development gap between the economies and putting undue emphasis on IP protection can not safeguard the interests of the poperty owners. Instead, a practicable way to maximize the interests of the property owners is to elevate the development level of the economies through a flexible policy. Meanwhile, it is also necessary and feasible to enhance the IP protection capacity building of the economies.

II.2 Relationship between paperless trading capacity building and IP protection

II.2.1 Basic Relationship

United Nations Center for Trade Facilitation and Electronic Business (UN/CEFACT) pointed out in the "Paperless Trading Road Map" that international trade can derive enormous benefits from incorporating paperless trading into its supply chains. Paperless trading will increase security and transparency, and will provide higher revenues both for Governments and for the private sector. However, not all governments can afford the infrastructure or other conditions that paperless trading requires. According to the "Road Map", digital divide is a main reason behind the differences in paperless trading capacity building between the developing countries and the developed countries.

Our study interpretes paperless trading as the application of e-commerce in the field of international trade. However, according to the "Model Law on Electronic Commerce" adopted by the United Nations Commission for International Trade Law (UNCITRAL), e-commerce takes the form of data message which refers to the information generated, sent, received or stored by electronic, optical or similar means including, but not limited to, electronic data interchange (EDI), electronic mail, telegram, telex or telecopy. It also includes the commercial activities conducted in the form of papeless data exchange and storage. We can say that e-commerce is a business form that realizes the flow of information, capital and goods essential for the traditional commerce in an electronic and digital way.

Of course, paperless flow of goods is mainly applied to some special products, such as movie, music, software and other technical information. WTO defines e-commerce more precisely as: “the production, distribution, marketing, sale, or delivery of goods and services by electronic means.
The above definitions show that technology innovation is the basic driving force behind the paperless trading capacity building. Therefore, the IP protection regime which is closely related to technology innovation is bound to have a close relationship with paperless trading capacity building.

Facts show that a lot of problems concerning intellectual property rights arise during the construction of paperless trading capacity, in the aspects of hardware, software, technical standard, experience, methodology and so on. We can say that without information technology which is closely connected with IP protection and without the support of IT infrastructure, there will no paperless trading. As to the technology facilities required by paperless trading, please refer to the following table (Table 6).

Table 6 Correlation between paperless trading and IT infrastructure

Categories	**Contents**	**Main Property Owners**
Hardware equipment	network, computer, communications equipment	SUN, IBM, HP, CISCO in the US; Business Communication Manager (BCM) in Canada
Software equipment	operating system, database, application software, middleware software, etc.	Microsoft, Oracle, IBM, BEA in the US
Technology standard	Security Authentication Standard, Data Communication Standard, etc.	Some large-sized companies mostly in the US
Management method	paperless trading platform operation and management experience	Tradenet in Singapore KNET in Korea TradeVan in Chinese Taipei TRADEGATE in Australia

As in most cases you need to pay money to acquire the technology and other useful information under IP protection, a country’s payment ability in purchasing information technology will inevitably influence the process of its digitization including paperless trading.

Specifically speaking, from a technology perspective, to establish a technology platform required by paperless trading, a country needs to have the following requisites: first, basic information technology including web technology and communcations technology; second, auxiliary information technology including cryptography technology, electronic signature technology, and electronic contract technology, etc.; third, identification system for products and business services; fourth, software and database. Under the framework of both WTO and WIPO, the above mentioned basic information technology, auxiliary information technology, identification system of products and services, standardization system and database are closely related to IP protection regime. For example, the basic IT like web technology and the auxiliary IT are both under the protection of patent laws in the individual economies, while trademark, domain name and corporate image are safeguarded by the trademark law or competition law of the economies. Software is protected by the copyright law. In some economies, database is also under the protection of a certain specific law. In terms of telecommunications technology, the process of standardization tends to involve many patent and other IP problems. Some

experts believe that IP problems in relation to e-commerce include: electronic commerce systems, search engines, or other web tools; software, including HTML code; webpage design; website content such as written material, photographs; databases; names, logos, product names or domain names. From the angle of e-commerce such an important aspect of paperless trading, some experts summarized the contents concerned with electronic commerce and intellectual property rights and worked out a table as follows (Figure 33):

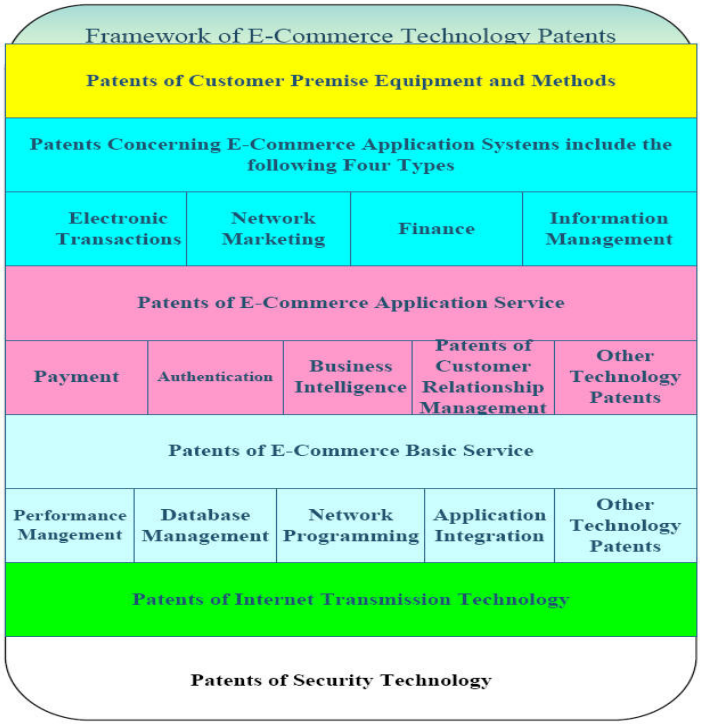


Figure 34 Framework of E-commerce Technology Patents

If we look at it from the whole process of paperless trading, we can use the following table (Figure 34) to show the basic relationship between paperless trading and intellectual property rights:

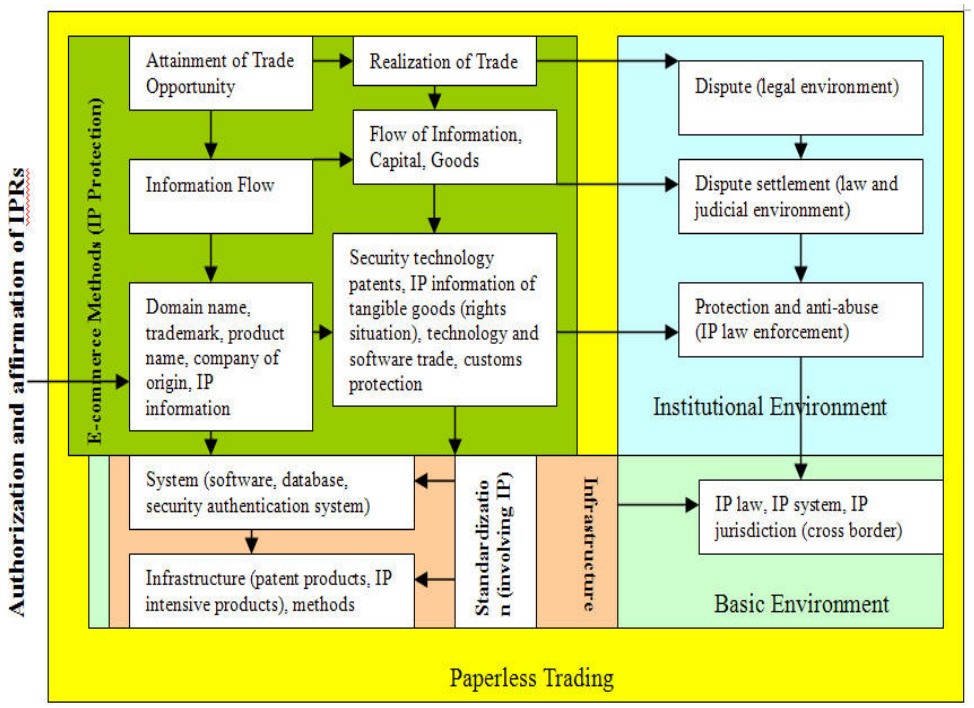


Figure 35 Relationship between paperless trading and IPs

Therefore, we can say, in order to push forward the paperless trading construction supported by informationization technology, every economy needs to put a high premium on the IP system as well as the IP protection, management and leasing (including international trade).

II.2.2 Correlation

The above analysis is about the basic relationship between paperless trading and intellectual property rights. To further analyze the correlation between the implementation of paperless trading and the IP protection from the perspective of "capacity", we will, on the basis of the 7S Model put forward in this report concerning the paperless trading capacity building and IP protection, conduct further in-depth analysis of the correlationship between paperless trading, IP protection and capacity building, from the strategy, technology, and standard perspectives and the "stage theory".

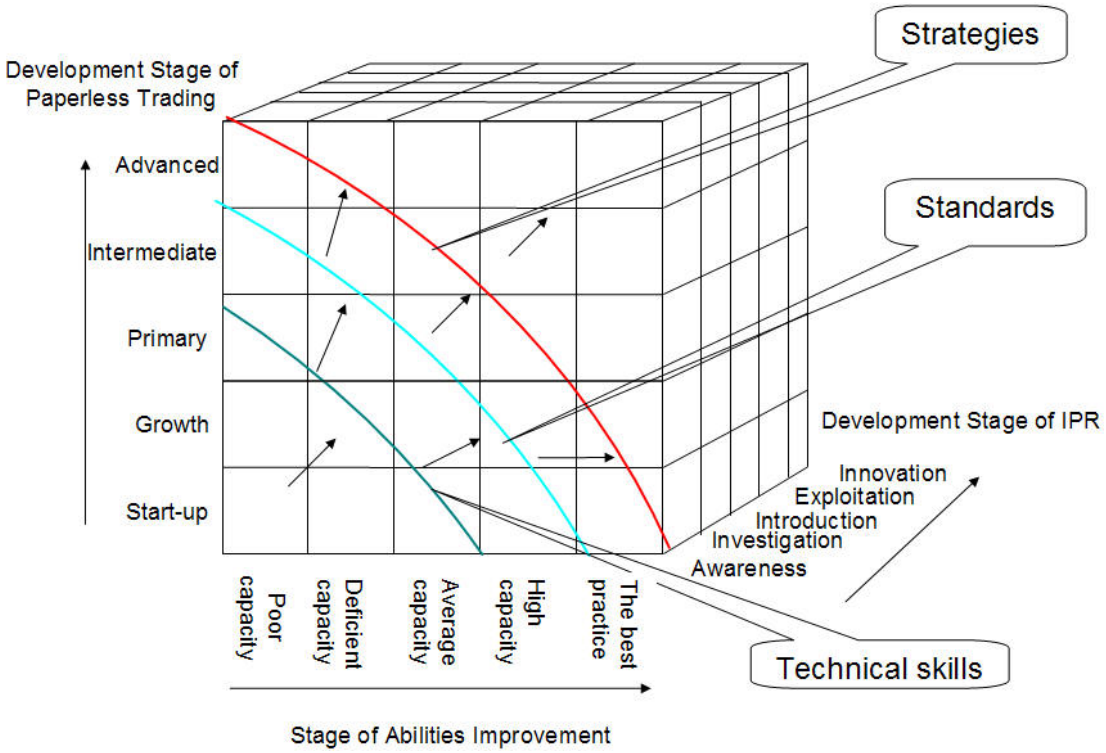


Figure 36 Correlationship between PT capacity building and IP protection

The above table depicts the correlations between paperless trading, IP protection and capacity building from a "stage theory". The stages are shown in the above three-dimensional coordinate, including the development stages of paperless trading (startup, growth, primary, intermediate, advanced), the development stages of IP protection (awareness, research, introduction, exploitation, innovation) and the capacity building stages (poor capacity, deficient capacity, average capacity, high capacity, the best practice).

To have a more objective understanding of the above correlations, viewing from the contribution rates of strategy, technology and standard (vaious factors including policies, laws and regulations, and standards) to capapcity building at different stages, we have worked out the following table showing the contribution rate of IP protection to capacity building in the course of paperless trading development, and we will give an analysis to the features at the different development stages.

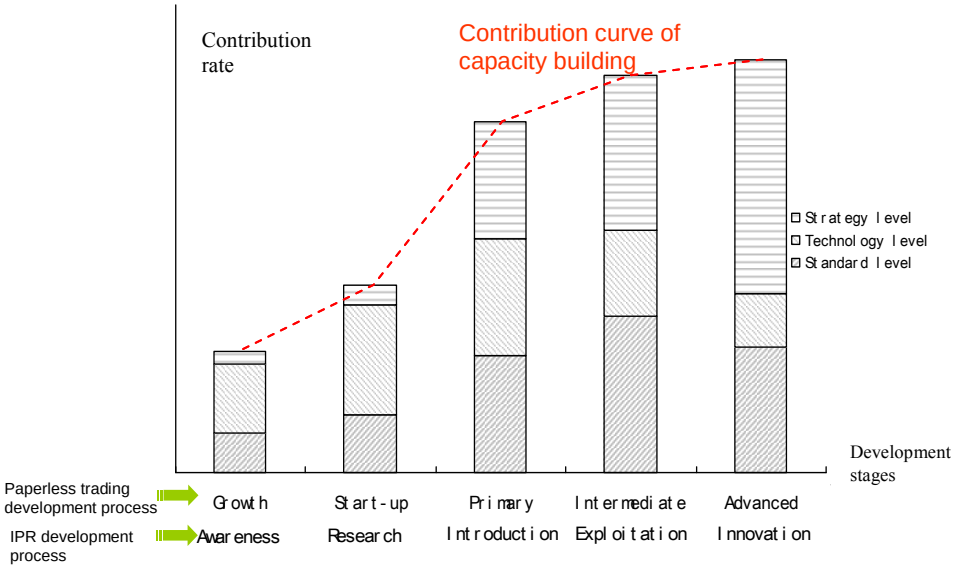


Figure 37 Influence of IP protection on paperless trading capacity building at different stages

Based on the stages specified in the "APEC Paperless trading Review Report", and through discussions, experts maintain that the roles of IP protection-related standard, technology and strategy in raising the paperless trading capacity are different at different stages.

At the startup stage, technology-specific factors have an obviously higher contribution rate to paperless trading capacity.

At the growth stage, technology-specific factors still hold a relatively high rate of contribution to the capacity of paperless trading, but at the same time stardard-related factors are playing a gradually greater role.

At the primary stage, the contribution of the factors concerning all the three aspects to the enhancement of the capacity reachs a state of equilibrium, all the factors playing more or less the same role.

At the intermediate stage, the contribution rate of technology factors begin to decline, standard-specific factors play the the biggest role, and the strategic factors' contribution is increasing very rapidly.

At the advanced stage, the contribution of technology-specific factors already comes to a relatively low rate, and the main factors that influence the elevating of paperless trading capacity are those factors at the strategy level in the economies.

Generally speaking, the influence of IP protection-related factors on the paperless trading capacity building has become more and more obvious with the improvement of the economies' paperless trading capacity. The following is an analysis to the features of the development stages from the three perspectives of strategy, technology and standard.

II.2.2.1 Strategy perspective

The policy environment of the IP protection in the course of the economies' paperless trading capacity construction mainly refers to the humanistic environment in a broad sense for the implementation of paperless trading within the economies, as well as people's IP protection awareness, government support and policy assistance; that is, the government's effort in pushing forward paperless trading and its emphasis on the protection of the relative intellectual property rights and products.

On analysis, the strategy-specific IP protection situations during the paperless trading capacity construction of different economies are as follows:

Table 7 Strategy-specific IP protection capacity features in the economies' paperless trading capacity building

Capacity building stages	**PT Development stages**	**IP protection development stages**	**Descriptions of capacity features**
The best practice	The advanced stage	The innovation stage	A development strategy and an implementation plan have been worked out in paperless trading (electronic trade), and a favorable policy and legal environment has been created for the implementation of the strategy. Governments provide strong support. IP protection has been listed as the economies' trade development strategy, and the implementation plan of IP development has been formulated. Study is conducted on the establishment of a balance system between private IPs and public social interests. Capital is invested for the IP innovation, research and development. The economies enjoy the right of voice in the international affairs of IP protection. A complete system of IP innovation, application and protection has been established.
High capacity	The intermediate stage	Exploitation stage	Government provides directions and support; there is a comparatively greater degree of

			trade liberalization (the average tariff below 5%); government works out a relatively comprehensive paperless trading development plan and gives support concerning the organization, coordination and capital, creating a basic policy and legal environment for the implementation of the strategy. IP protection development strategy is under preparation and the IP development implementation plan is being devised. Budget is worked out for the IP innovation and R&D. The member economies partcipate in the internatiolal affairs of IP protection and make plans to establish a system of IP innovation, application and protection.
Average capacity	The primary stage	Introduction stage	The economies have an average degree of trade liberalization, with the average tarrif being reduced to 6%-8% and an intermediate level of non-tarrif restrictions. To promote the development of paperless trading in the economies, government works out the basic paperless trading development plan and creates a basic policy and low environment for the implementation of the strategy, and meanwhile steps up the research and study on the IP macro strategy and countermeasures. When holding activities in macro technology policy-making, science and technology planning, and micro corporate technology innovation, government

			examines IP situations in different specialized technology areas within and outside the economies; tries to get to know and grasp the trend of IPs, determine the technology route for the great-leap-forward development and identify its own advantegeous areas in techonology.
Deficient capacity	The growth stage	Research stage	There is a relatively low degree of trade liberalization in the economies, with the average tariff being lowered to 9%-12% and relatively more non-tariff restrictions. Government is working on the formulation of the IP development plan and the concerning policies, and conducts researches on IP macro-strategy and countermeasures. When holding activities in macro technology policy-making, science and technology planning, and micro corporate technology innovation, government examines IP situations in different specialized technology areas within and outside the economies, and tries to get to know and grasp the trend of IPs, determine the technology route for the leap-forward development and identify its own advantegeous areas in techonology.
Poor capacity	The start-up stage	Awareness stage	There is a low degree of trade liberalization in the economies, with the average tariff being lowered to over 12% and a lot of non-tariff restrictions. The government has not yet worked out any paperless trading development plan or related

			policies and measures. Study is focused on the basic concepts concerning IP protection and the latest IP development trends.

II.2.2.2 Standard perspective

Standard is a broad concept, including the aspects of policies, laws and regulations, and information exchange. From the technology standard, paperless trading technology standards and the means of their realization change with each passing day, while whether the standards can be effectively put into practice or the commercial data and documents be effectively transmitted mainly depends upon the harmonization of the standards. During the process of technology application, popularization, epecially the process of integration, transmission and transaction, the problem of IP protection is unavoidable. After analysis, the standard-specific capacity features of the economies in the paperless technology environment are presented as follows:

Table 8 Standard-specific IP protection capacity features in the economies' paperless trading capacity building

Capacity building stages	**PT development stages**	**IP protection development stages**	**Descriptions of capacity features**
The best practice	The advanced stage	The innovation stage	The legislation system is complete, and there are basically no legal barriers. In the economies, a comprehensive paperles trade standardization system has been set up and the relevant standards are extensively used. There exists a sound paperless trading documentation and messaging standard system. Emphasis is placed on the IP technology standard problem and the formulation of technology standardized IP protection strategy. An open source standardized application environment is estabished; the formulation of standards is combined with technology innovation. Meanwhile,

			a standardized registration and maintenance service system is established for paperless trading .
High capacity	The intermediate stage	Exploitation stage	A legislation stystem for paperless trading has been basically completed (such as electronic transaction law, electronic signature law, and privacy protection law) and is being implemented. There only exist some minor legal barriers in paperless trading. A basically complete paperless trading standardization system has been establsihed in the economies and the relevant standards are applied in some fields. A relatively favorable policy and legal environment has been established, too. The IP technology standard problem is emphasized and research is conducted for the formulation of technology standardized IP protection strategy. Meanwhile, the use of open source standards is encouraged; plans are made for the establishment of a standardized regristration and maintenance service system.
Average capacity	The primary stage	Introduction stage	The economies established a relatively complete system of laws and regulations for paperless trading including electronic signature law and electronic transaction law. And now there comes the enforcement stage. There exist some legal barriers in the implementation of paperless trading. The economies have formulated a relatively complete paperless trading standardization system and the relevant standards are put into use. Researches are conducted on the

			problem of technology standard. Open source standards are introduced.
Deficient capacity	The growth stage	Research stage	The legal regualtion system in the economies is not complete yet; only the electronic signature law and the relevant rules are established and there are relatively more law barriers in the implementation of paperless trading. The standards of paperless trading in the economies are applied in some fields. Reseaches are conducted concerning the technology standard problem in IP. The development of open source standardization is tracked.
Poor capacity	The start-up stage	Awareness stage	The laws and regulations in the economies are under formulation, and there are a lot of law barriers in the implementation of paperless trading. Paperless trading standardization in the economies is only applied in a few fields. It is recognized that the appearance of technology standards in IP protection is an inevitable result of the development of “New economy” era.

II.2.2.3 Technology perspective

The technology environment of paperless trading involves hardware technology and paperless trading-related software management technology environment. The key is to provide customers a safe, highly efficient, reliable and mutual-trust service environment. For instance, “CA Authorization Service System” plays a crucial role. We can say, technological progress is the foundation for the paperless trading capacity building, while technology innovation, protection and utilization will inevitably involve a lot of problems connected with IP protection (detailed features as per the following table).

Table 9 Technology-specific IP protection capacity features in the economies' paperless trading capacity building

Capacity building stages	PT development stages	IP protection development stages	Descriptions of capacity features
The best practice	The advanced stage	The innovation stage	The economies have established a cross-border CA authorization service system. Databases are integrated and shared. A strategy of IP technology patent innovation, application and protection has been established. An IP technology innovation evaluation system has come into being and a pool of IP resources like patents is built up. In addition, a sound IP transmission service system is constructed. Money is invested in IP innovation and R&D. The economies have a voice in the international IP technology area and try to form an extensive patent alliance based on Patent Cross License Agreement.
High capacity	The intermediate stage	Exploitation stage	The economies have established a nationwide CA authorization service system and exploited the usable resource databases. IP innovation strategy is being planned and an IP technology innovation system is formulated. IP resources begin to be integrated; an IP transmission service system is under planning. Investment has been put in IP innovation, research and development. Meanwhile, the economies participate in the work in the international IP technology field.
Average capacity	The primary stage	Introduction stage	The economies have established a CA authorization service system covering multi-industries and regions in the trade chain. IP technology innovation strategy is

			under design; an IP technology evaluation and innovation system is under preparation; integration of IP resources is started. The economies are studying on an IP communication service system framework, planning the budget for IP innovation, and R&D, and at the same time actively participating in the work in the international IP technology field.
Deficient capacity	The growth stage	Research stage	The paperless trading standards of the economies are applied in certain areas, and a CA authorization service system is established for some industries and regions. Study the IP technology strategic model in other economies, emphasize on the quantity and quality of technology patents application, publicize IP knowledge, crack down piracy, work out competition policy regulations and anti-abuse behaviors in IP and encourage technology innovation in the economies.
Poor capacity	The start-up stage	Awareness stage	A paperless trading CA authorization service system is under construction. The economies try to acquire and publicize IP protection knowledge and keep track of the development trends of IP technology innovation, transmission and protection.

II.2.3 Effect of IP protection on paperless trading capacity building

II.2.3.1 Effect on the construction of infrastructure

Under the framework of TRIPs, IT products have been protected by IP regime. As mentioned above, paperless trading heavily depends on the construction of an information network. Without the building of information network technology facilities, there will be no paperless trading. However, products, technology and operating environment required for the information network construction will involve the protection, transfer and transmission of IPs. Generally speaking, only under the permission of IP owners in certain technology can an economy carry out the construction of the network system required for paperless trading, unless regional special exceptions concerning IPs like patents and trademarks are

considered. In that case, the technology users are subject to the restrictions of IP protection.

II.2.3.2 Influence from the technology perspective

The realization of paperless trading, on the one hand, relies on the network environment, and meanwhile, at the technology level, will need the basic factors like the corresponding software, standard, protocol, and security. All these factors, under the present international IP legal system framework, have close relations with IPs (property) and IP protection. Competition concerning IP standards influences the construction and development of paperless trading hardware system. Paperless trading itself carries the internationalization feature and tends to call for more long-term multinational joint investment.

Therefore, generally, under the framework of IP protection system, if one type of technology is adopted and a standard is worked out, then the technology providers will gain continuous returns, which in turn will strengthen the innovative ability of these providers and therefore enable them to reinforce their position in the market. Based on this reason, during the basic network construction in the economies, providers of technology and products tend to take different forms of monopolistic alliance to promote their own technology. This leads to the following results.

First, whether to adopt a technology or not is always disputable, which makes it difficult for the economies in OECD to adopt the right advanced technology at the right time. Second, as a final result of the competition, the advanced technology may not win out, which will influence the construction and development of paperless trading capacity technologically. For example, in 3G mobile communications technology, Japan adopts a completely different standard from other APEC member economies, which makes the routine mobile communications network interconnection impossible.

In another example, in the adoption of wireless network communications technology, China and the USA have divisive opinions concerning the problem of technology standard, which makes China Xijie Telecommuncations Corporation with technology advantages hard to industrialize its technology and standard. Furthermore, IP protection can also influence the localization of technologies. For example, if the IP licensing provisions of a certain software are not open, then a paperless trading basic telecommunications system that has adopted that software will be difficult to adjust quickly according to the local technology conditions, personnel ability and specific requirements, and have to obtain once again the permission of the IP owners. Even, sometimes, adjustments can only be made after charges are paid for the second time, which will undoubtedly affect the enhancement of paperless trading capacity.

II.2.3.3 Influence from the technology perspective

As mentioned above, trade facilitation and liberalization is the common goal and common understanding of the APEC economies. Trade facilitation and liberalization as well as the degree of their realization are of positive significance for the economic and social development of an economy.

Therefore, APEC economies enthusiastically seek trade facilitation and paperless trading is one important measure of trade facilitation. Based on the previously mentioned reasons, in the process of paperless trading realization, all the economies need to show concern over the issue of IPs and IP protection. If the IP problem can not be properly dealt with, which turns IPs into a sort of a barrier or difficulty in paperless trading construction, the process of trade facilitation in these economies will be affected, thus impairing the economic development of the economies. In the end, the economies will have divisive political wills concerning IP protection, especially the IP legal protection that can help to promote paperless trading.

1. Excessive protection of IPs will prevent the improvement of paperless trading capacity

Paperless trading is about the application of e-commerce in the international trade area, and it is the means and method of utilizing technology progress, pushing forward the transformation of a paper documentation system into an electronic documentation system. It can be pointed out that IP protection plays an important role in paperless trading technology innovation and transmission and in the improvement of trade efficiency and the lowering of transaction costs. In this regard, that APEC economies create a favorable IP protection environment will help with the innovation, protection, transmission and utilization of IPs (property), safeguard the rights and interests of the IP owners so as to further lift the paperless trading capacity.

However, if IP problems are not properly addressed, IPs, to some extent, will pose a barrier or difficulty to the paperless trading construction. For instance, according to the survey statistics of this report, in China there are altogether 260,000 enterprises which have international export and import operation rights, and the annual input of these import and export corporations for paperless trading includes:

1) Electronic application service charges: 1,500 yuan-3,000 yuan per year (including online customs declaration, quota deal, etc.)
2) Hardware: an average of 1,000 yuan per year (3,000 yuan per PC, with 3 years as a calculation cycle)
3) Software: an average of 200 yuan per year (including operating system, and word processing software, at the price of 1000 per set, with five years as a calculation cycle)
4) Network access: an average of 1,200 yuan per year

The above paperless trading operating costs all have something to do with IP (property) problem. On casual calculation, the IP fees relating to paperless trading capacity building amount to hundreds of millions of RMB yuan per year. Hence, to create a low cost paperless trading realization route, if emphasis is merely placed on IP protection instead of development and if there is no effective IP (property) transmission channel or transaction platform, IP resources will not be properly allocated, which will add to the costs in the application of paperless trading technology in the developing economies and handicap the improvement of paperless trading capacity in the economies.

As a result, the process of trade facilitation in the economies will be influenced, thus affecting the economic development in the economies. In the end, these economies may hold divisive political wills in IP protection, especially IP legal protection that can push forward the process of paperless trading. In order to enable the IP regime to play the role of promoting development, protection and innovation, and

to address the issues like development and public interests, the international community has made positive attempts and has gradually formulated a flexible policy in IP protection under the various frameworks of international IP protection.

For example, WTO once approved a document of Compulsary Patent Licensing System for Medical products as a permanent amendment to the decisions of TRIPs, so as to help the developing countries and the least developed countries to address the public health issue. According to the document, when the developing countries and the least developed countries are faced with a public health crisis arising from AIDs, malaria, tuberculosis and other epidemic diseases, they can implement the compulsary patent licensing policy domestically without the permission of the patent owners, and produce, use or sell the patented medical products to cure the above mentioned diseases or import them from other countries that apply such a compulsary patent licensing system.

This can not only greatly reduce the market price of the relevant patent medical products but also help to control and ease the public health crisis more quickly and effectively. The adoption of this amendment decision is a major breakthrough out of the relevant restrictions of TRIPs and reflects the will of the developing countries to prevent excessive IP protention from blocking the social and economic development. However, there exist two opposite attitudes between the developed and the developing economies concerning the e-commerce IP protection. In regard to this fact, more elaboration will be made in this report. Therefore, in view of the IP protection during the paperless trading capacity construction, it is essential to work out a flexible IP protection policy and a preferential policy favorable for the improvement of paperless trading capicity in the developing economies, and to leave the developing economies enough room for improvement in capacity.

2. Enhancing IP protection can promote paperless trading related IP trade

IP protection has an effect on the trade of IP-sensitive products and intermediate products relating to paperless trading technologies and services. IP-sensitive products mainly refer to the products in which intellectual property rights are especially important and whose technology can be easily imitated, while intermediate products are used to produce other products and services. Paperless trading technology and service products are mainly application technologies and products, with distinctive features of IP-sensitive products and intermediate products.

Maskas and Panabate evaluated the effect of IPs on international trade flow by using the amended Helpman-Krugman monopolistic competition model and found that strict IP protection provided by the developing countries has a positive effect on the import of intermediate products. The intermediate products exported by the developed countries to the developing countries are under strict IP protection and therefore enjoy the “market competition effect”. In that case, the importing countries will be less able to copy the imported intermediate products due to the strict IP protection; the exporters will gain a “market expansion effect” . Less money will be spent by the exporters to prevent and crack down copied products because of the strict IP protection and the exporters obtain an “transaction cost dimishing effect”. Therefore, that the developing countries strictly implement IP protection can promote the export of the developed countries. Similarly, IP protection in the developing economies also provides a market effect for the exporters in the developed countries.

The above analysis shows that, on the one hand, a sound IP protection system can promote the development of IP trade and, on ther other hand, mere emphasis on protection rather than on development reality will lead to divisive political wills of the economies in IP protection. Therefore, the basic principles in addressing the IP protection issue in the course of paperless trading capacity construction is to push forward paperless trading and trade facilitation, stimulate the economic development of the economies, the developing economies in particular, further strengthen their awareness of IP protection, improve their defending ability and realize a win-win situation.

II.2.4 Effect of paperless trading capacity building on IP protection

II.2.4.1 The accelerated realization of paperless trading will promote the flow of IPs and speed up technology transfer and the construction of trade capacity

In the APEC economies, the distribution of intellectual property is unbalanced. Generally speaking, intellectual properties are large in quantity and high in quality in the developed economies compared with those in the developing economies. To realize common development of the member economies, IP flow is inevitable. That is to say, we should not merely regard IPs as a tool of realizing paperless trading capacity building, but at the same time consider IPs as special products. Such a special type of products can bring about added value through the enhancement of paperless trading capacity so as to be beneficial to the IP owners. Realization of higher IP value will surely promote the technological progress and trading capacity, which in turn will support the construction of paperless trading capacity.

II.2.4.2 The process of paperless trading capacity building is the process of motivating IP creation and flow

During the process of paperless trading capacity building, all the economies need to invest a large amount of R&D funds to conduct technology research required by paperless trading. Meanwhile, to realize truly free flow paperless trading calls for research and development in technology standards, network protocols, etc. to generate a large demand for technologies, which will undoubtely stimulate the creation and flow of intellectual property rights.

II.2.4.3 Paperless trading will more easily lead to the loss of intellectual property, posing a new challenge in law-enforcement ability to the member economies.

As large quantities of intellectual properties themselves are becoming electronic, products like movies, music and works exist as an electronic form on the internet. With no technology barrier and almost zero cost of reproduction, these products tend to become the victims of paperless trading or electronic commerce. Consumers and conterfeiters tend to obtain the above products directly free of charge through the means of network technology, which greatly damages the interests of the producers and also influences the ability of further innovation.

According to some experts, as network transactions lack security and reliability and can not guaranttee the effectiveness of a licensing agreement, movie and music owners who enjoy the copyright protection are usually unwilling to present their products on the internet in case they are copied free of charge. In addition, the two parties in the paperless trading have more opportunities to get access to each other's intellectual properties like business secret, which, if there is no relevant legal protection, might lead to the loss of mutual trust between the contracting parties, and in the end will slow down the process of paperless trading capacity building. Especially, in the internet environment and with products in the electronic form, more input in capital, specialized personnel and corresponding software and hardware conditions will be needed for the protection of the relative IPs.

Therefore, even if the authorities of the APEC economies have the political will to strictly safeguard IPs, the economies, the developing economies in particular, usually lack the necessary capability and means of law enforcement. They are still faced with the problem of IP protection under the paperless trading condition. In this case, all the economies need to cooperate closely with each other on the one hand to lift the law enforcement ability of the economies through technological aid. On the other hand, the IPs can be carefully protected through cooperation in law enforcement.

In short, paperless trading capacity building and IP protection influence each other and are a complex process. IP protection has a significant impact on the construction of APEC paperless trading capacity. The process of paperless trading capacity building will also facilitate the creation and flow of IPs and push forward the transformation of IP protection.

II.3 Main problems and the analysis of IP protection during paperless trading capacity building

II.3.1 Main problems

II.3.1.1 Existing IP problems during the paperless trading capacity building in the developed economies

According to the study of APEC paperless trading assessment team, the paperless trading level of an economy mainly depends on the following main factors: policy and legal environment; degree of trade liberalization; standardization environment; security authentication environment; degree of government support. According to the report of the assessment team, the specific content includes the following. The first is policy environment. A complete paperless trading legal regulation system has been established (including electronic signature law and electronic transaction law), and through long-term practice there no longer exist law barriers in the implementation of paperless trading. There is a high degree of trade liberalization in the economies, with average tariff lowered to almost zero and there are very few tariff restrictions. The governments work out development plans for paperless trading, create a favorable policy and legal environment and provide strong support in organization, coordination and capital investment.

Second, technology environment. A complete paperless trading standardization system is formulated and the relevant standards are widely applied. A cross-border CA authentication service system is established. Third, application level. The application of paperless trading covers different areas like customs clearance, government management, transport and payment. Paperless trading resources are integrated among the participants of the trade chain and cross border paperless trading is applied in some fields. More than 5% of the trade documents are transmitted electronically. Fourth, effectiveness of application. The effectiveness of the application model is remarkable. There is an overall reduction of trade costs and expenses within the economies. The operating time is apparently shortened and the trade procedures are simplified and optimized in the economies.

As this study has gained wide acceptance from the APEC members, measuring the IP problems existing in the paperless trading capacity construction of the member economies should be acceptable. That is to say, paperless capacity building should be reflected in the above four aspects. Therefore, the criterion for measuring the influence of IP system on paperless trading capacity building is whether a country's IP protection is conducive to the realization of the above objectives or in no conflict with the above objectives. If it helps the above goals to be reached, IP regime then plays a positive role in the economies' paperless trading capacity construction; otherwise a negtive role.

However, as IP protection and the connected policies have a close relationship with a country's technology capacity, trade capacity and market model, studying and analyzing paperless trading capacity construction should also take into account the impact from the development and evolution of IP regime in the economies' paperless trading capacity building within the framework of IP regime, and on that basis put forward the directions for homonious development of IP regime and paperless trading capacity building. Based on this consideration, we need to measure IP's influence on paperless trading capacity building by using the capacity criteria of IP creation, management, protection and application.

Following this clue, according to the capacity model and the relevant factors raised in this report, as well as the criteria put forward in "APEC Paperless trading Evaluation Report" (2005), the strategic factor of "policy and legal environment" is the basic application environment that paperless trading depends on, including e-commerce laws and regulations such as electronic signature law, electronic transaction law, authentication system, secure network transaction and so on.

Whether IP laws and regulations under the electronic (digitization) environment are sound and complete and well executed is also an important policy basis for measuring a member economy's paperless trading capacity building. With no relevant legal system to guaranttee IP protection or policy regulations concerning the required hardware, software and products with an electronic form in the internet and their relevant information in paperless trading capacity building, paperless trading capacity building will be affected. It is on the basis of this reason that, in the working plan of e-commerce trade area made by WTO, the planned scope of legislation includes the issue of "IP protection".

From the perspective of technological environment, there exists a close relationship between the degree of paperless trading standardization construction and IP protection. In the process of paperless trading, EDI is the main tool in cross-border multilateral trade and used by the economies to simplify the

documentation procedures in international trade. While from the angle of computer technology, EDI itself is a set of technology solutions with both software and hardware combined. Because the technology solutions are not unique but optional with mulit-technologies co-existing, to realize EDI within and between the economies will require standardized interfaces and orders to realize interconnection.

In the standardization process, the employment of hardware technology, software and transmission technology, etc. involves the IP protection issue. Meanwhile, viewing from the point of lowering down the risk of paperless trading, the member economies greatly value all kinds of information security technologies in paperless trading. Information security is an important aspect of paperless trading capacity building. The exploitation, utilization, and standardization of the relevant technologies is closely tied to the IP protection. According to the views within the circle, generally speaking, without IP protection, there will be no more security technologies to be developed.

But meanwhile, if interests balance problems relating to technology proliferation and licensing can not be solved, security technology will be hard to be effectively applied. Therefore, during the use of relevant technologies and the standardization of the security technology, the allocation of interests between IP owners and the users of the standards is the pressing problem to be solved by IP regime. Of course, more importantly, if an economy has no ability to create the main technologies and equipment required by paperless trading or to produce the required IPs so as to form the specific technologies conducive to the development of paperless trading capacity, that means it lags behind in establishing a paperless trading platform or means more financial and human resources need to be input.

According to the above two-dimensional criterion, we now measure the developed economies in APEC. With the USA as an example, the developed member economies within APEC have a more complete IP protection regime, and are more competent in IP creation, protection, management and application, which in general promotes the building of internal paperless trading (e-commerce). However, at the same time, in the developed economies' IP sytem there exist numerous factors constraining the building of paperless trading capacity, which slows down the process of paperless trading.

The developed economies usually have a more complete IP system, providing enough system guarantee for the paperless trading capacity construction. In fact, because of its leading position in technology, IBM in the USA is the first company which claims to be an e-commerce manufacturer based on paperless trading. Within APEC, the USA is the first country to provide legislation for e-commerce. On 23 July 1998, the USA Court of Appeals for the Federal Circuit (CAFC) gave a ruling to the case brought by State Street Bank against Signature Group, confirming that the business model software for guiding e-commerce was legal and effective.

This is the first time for CAFC to rule whether software concerning e-commerce model can be patented, which exploits a new field in patent protection for e-commerce solutions. From then on, e-commerce patents in the USA increase year by year; several patents have been applied for secure online payment, digital authentication, and client pricing. Up to now, e-commerce patents are still connected with IPs that have a direct relationship with paperless trading capacity building.

In addition, the USA has a complete law system to protect the hardware, software, products presented in digital form on the internet required in paperless trading building, and some related information like the product packaging, origin, trademark, appearance design, technology solutions and internet domain names of the products or services. It also provides complete law protection for the IPs of computer network technology hardware and software systems. The American patent law and copyright law can protect computer software, forming a situation in which software patents and copyrights combine to protect software IPs.

In the US, there are specific integrated circuit protection law for protecting the IPs of integrated circuit, the heart of a computer system. Again in Australia, amendment has been made recently about the IP law, which officially put IP problems in Australian paperless trading system on the legal agenda. An effective electronic government system will be established so as to speed up the process of online IP application. It gives Australian R&D subjects like various enterprises, research organs and universities a speedier network platform, so as to promote intelligence sharing for full protection of IPs in Australia. Meanwhile, it has built up a more detailed e-commerce IP system.

Generally speaking, the developed economies represented by the USA adopt comprehensive protective policies toward IPs and has formed a complete protective law system. In the building of paperless trading capacity, all the IP-related problems are regulated under the legal system. Especially in "common law" economies like the Australia and US, the court has the right of legislation and can make out new laws and regulations whenever new IP problems arise in the course of paperless trading construction, and their response to any legal problems in paperless trading are more timely.

However, like the developing economies, when the developed economies push forward the paperless trading, there also exist numerous problems in IP protection. These problems mainly include:

1) **Loose protection standards and comprehensive protection have led to "patent thickets", which makes technology application closely related to paperless trading capacity construction run into difficulties.** For example, in the report of "Promoting Innovation: the Proper Balance of Competition and Patent Law and Policy" announced by United States Federal Trade Commission on 28 October 2003, it was pointed out that there are "too many patents" in USA, most typically in the areas of computer hardware, software and digital communications. These areas are covered with a huge number of patents. A computer software package tends to include millions of orders, and according to the present patent authorization criteria in the US it might mean that this software can gain thousands of patents.

One expert pointed out at a hearing that, in the transistor area, there are such a large number of patents that a new product designed and manufactured by one single company may violate hundreds, if not thousands, of patents. Some experts believe, as it is too easy to obtain a patent in technology in USA, there are an increasingly large number of patent applicants. With more and more patents applied, the patent authrization quality inevitably decrease. Due to these two problems, the indispensible computer technology progress and development in the field of paperless trading meet with great difficulties.

Experts in this field once commented: "The greatest risk I am faced with is the uncertainty of market.

Theoretically, I can reduce the risk to the minimum by fully understanding the products of the competitors and of our own as well as the demand of our customers. But I found that I really cannot understand the patent landscape and I am sitting with a nuclear bomb on top of my products that could go off at any point." Because of the excess and abuse of patents in the computer field, some people give up the idea of developing and manufacturing new products, which stymies normal competition and technology application in this field and thus hampers the construction of paperless trading capacity.

2) **Trading partners can not stand the high cost of IP protection and application.** The gap between the developed and the developing economies within APEC in IP protection capacity, to some extent, is closely connected with the social payment ability. For example, in terms of administration, the USA budget input to the USA Patent and Trademark Office (USPTO) has increased from US$800 million in the fiscal 1999 to US$1.7 billion in 2006, more than doubling within 8 years. Japan's budget in 2004 reached 146 billion Yen, a 26%- 30% increase compared with that the year before. The budget for USA and Japanese patent office is mainly patent royalty. The increase of budget means the increase of cost in obtaing patents.

Generally speaking, in USA, it takes about $10,000 to $20,000 in average to gain a patent, a huge amount to an APEC developing economy. If litigation arises concerning patents or other IPs in USA, the expenses are much higher, which the enterprises, especially the small and medium-sized enterprises, in the developing economies can not afford. Therefore, as a matter of fact, in terms of IP protection required by paperless trading, although the developed economies tend to have complete law system and judicial system, because of the high threshold, they can not help their trading partners, especially the trade enterprises in the developing economies, have enough capacity to protect their IPs.

3) **IP protection in some special areas influences the development of paperless trading capacity.** Here it mainly refers to the two-sidedness of IP protection concerning e-business methods and so on. In USA, IP protection for business methods on the one hand promotes the innovation of trade forms, but on the other hand means business competition is based on technology capacity, which impacts the equality of competition and the overall environment.

Before State Street Bank brought a case against Signature Group on 23rd July 1998, the US Court of Customs and Patent Appeals (CCPA) once ruled the case "In re Johnston" in 1974 and approved a patent for an automatic recording device that has a lot to do with "methods". In the case of "In re Johnston", the US Court of Appeals for the Federal Circuit (CAFC) refused to approve any patent right for a pure method or solution, but, in this case, Judge Newman did not agree to the ruling. She thought that business method should be given patent protection. After the dispute over the patent authorization of business methods was settled, there is an increasing number of applications for patents. See the following table:

Table 10 Patents of business methods Application in United States

Patents of business methods (Category No. 705)	1996	1997	1998	1999	2000	2001	2002
Number of patents applied for	584	927	1,340	2,821	7,800	8,700	5,000
Number of patents approved	144	206	420	585	899	433	492

Problems arising from business method patents are obvious. Although business methods are based on technology, they themselves are technologies, and their novelty, creativity and practicability can not be judged by traditional patent examination methods. Patent organizations in the economies including the US Patent and Trademark Office (USPTO) have not enough personnel and material accumulation. Nor do they have uniform standards in patent examination to measure ordinary technological personnel in this field. As a result, a lot of patent applications cannot be approved and the competition in business method is in uncertainty.

Meanwhile, the traditional IP evaluation criteria can not guaranttee the quality of the business method patent examination and thus a lot of problems come out. The results of patent examination are directly linked to business competition. Especially, when business models are under the protection of patents, if quality cannot be ensured, enterprises engaged in domestic and international trade can not determine whether their own business models are legal or not. This poses a great risk to them, influences the initiative of the enterprises to conduct electronic business across borders and, at the same time, adds potential burden to the enterprises employing paperless electronic business methods.

The US Patent and Trademark Office admits that there exist two problems in terms of software patents and business method patents. One is that there are no definite standardized statutes concerning business model patent authorization. The other problem is that due to the difficulty in obtaining the existing technologies it takes too long to approve patents. There might appear more and more failure examples. In order to solve this problem, the US passed “Business Method Patent Improvement Act of 2001”, and agreed that any third party can resist the approved business method patent for its obviousness and lack of novelty.

II.3.1.2 Paperless trading IP problems in the developing economies

The main influence of IP system on the paperless trading capacity building in the developing countries include:

1) **The construction of rule of law can hardly adapt to the demand of paperless trading for IP protection.** Take Chile as an example. In terms of legal documents, Chile’s IP regime can be called as sound and complete, but there exist big problems concerning the IP protection system in the field of paperless trading. First, the laws made are mainly focused on the traditional types of IPs. However, Chile’s IP legislations do not specify IP protection system required by paperless trading. The bottom network platform, a basic e-commerce platform including CA, payment gateway and customer service center, and the e-commerce application system at these three levels are all not mentioned. In the patent law, economic models, business plans, discoveries, scientific theories, mathematic methods, surgical operations, cure methods, animal and plant species are all not within the protection scope of patents and utility models. Second, there are various functional departments involved in Chile’s IP law system. Such diversified management led to “system vaccum” in IP application, regulation, protection, and dispute settlement. Too many decrees from different departments has resulted in the phenomenon that the requirement for speedy IP management in the paperless trading situation cannot be met by the dilatory work style of government administrative departments. Although the government tries to

increase transparency and openness in the application and approval of IPs, the present situation is not optimistic. The legislation system cited from the international advanced legislation precedent cannot be applied domestically because there are no relevant matching institutional organs. Such kind of problems not only led to Chile's backwardness in participating paperless trading, but also, in the following development process, enlarged the gap between Chile and the developed economies in IP protection system, and left Chile in a disadvantegeous position in international trade. China also has some similar problems, such as diversified IP admistrative departments and diversified legislation, with the result that IP policies in paperless trading may be in conflict with each other and not well regulated. Generally speaking, at present, the laws and regulations the developing countries are implementing mainly follow the interntional, especiall developed economies', IP system. It's hard for them to establish a competitive IP legal system that can help promote the international competitiveness of China and Chinese enterprises. This is the biggest shortcoming developing economies have in the construction of legal system.

2) **New-type IPs to some extent restrain the paperless trading capacity building in the developing countries.** For example, in terms of e-commerce in the financial area, some large-scale multinational banks applied for a lot of e-business patents including financial product patents, with the number increasing annually. These patents not only involve Electronic Currency System, Sales Force Structures & Strategies, but also concern the integration of comprehensive customer banking service systems, account-opening systems and methods, and "online banking" related methods and systems. Strategic application of business method patents in the developing economies greatly hinders the innovation of financial products. The financial competition has developed into a technology-based competition, and a competition based on the number and scope of IPs. The traditional financial and business competition is not on the basis of technology, in which the small, medium and large-sized enterprises enjoy an equal position, equal opportunities. This helps to cultivate healthy market competition. However, the appearance of business method patents and the like, to some extent, breaks the equal competition mechanism in the financial field. Many big enterprises which are advantageous in capital and scale gained a more powerful dominant position. If business method patents are under strict protection the developing economies, with a small number of big companies more likely to control the essential e-business methods because of business method patents and the like, IPs in paperless trading payment and settlement will be constrained in these economies. It takes a lot of time and money including extra IP royalty to pass through layer on layer the barriers. This will influence the political will of IP protection and the paperless trading capacity building in the developing economies.

3) **Extra expenses for purchasing IPs affect the paperless trading capacity building in the developing, especially the least developed, economies.** The most important thing reflected in IP protection is that intellectual property brings about income. That is to say, earnings are produced through the sale of IP-intensive products or IPs (technology transfer) themselves. When there is no IP protection, as technology transmission is not subject to IP policy adjustments, technologically backward economies usually can gain the needed technologies at lower prices (plus R&D expenditures to be paid for the technology application). In the course of paperless trading capacity building, large quantities of products needed for the basic information network construction tend to be IP-intensice products and meanwhile rely on IP trasfer for use of the technologies. Therefore the developing economies, with the absence of corresponding IP resources, have to buy IPs from outside to meet their

own requirements and thus shoulder added heavy burden.

4) **IP protection imposes technology restrictions on the paperless trading capacity building in the developing economies.** As paperless trading capacity building is a transnational system project, a relatively uniform technological platform is needed. In that case, the developing economies need to reach the corresponding technology standards when their technology capacity is not strong enough. Lacking the similar technologies and technological personnel, they have great difficulties in reaching the standardized technology platform. Under the restrictions of IP protection system, to meet the relevant technology standards will call for more royalty payment and R&D expenditures, but still localized technologies adapted to specific conditions are hard to grasp. For example, as software is protected by patents or copyrights in all the member economies, if a developing economy imports a certain kind of software, without the permission of the owners, the users usually can not adjust or improve the software according to their specific situations unless the software is open. Thus, the construction of paperless trading platform is subject to the restrictions of copyright protection in an economy, meeting with great realistic difficulties.

In addition, nowadays, IPs will unavoidably enter into various standards. After the IP-implied standards become the basic technology platform for paperless trading, the developing economies are faced with all kinds of restrictions in the course of developing a platform suited to their own situations, and therefore can not truly realize the flexibility and adaptability of the uniform paperless trading platform. Adopting standardized technologies on the one hand requires royalty payment; on the other hand it cannot realize flexibility, which makes it impossibe to esablish a uniform, simple and speedy paperless trading platform. The efforts of lowering down trade cost and realizing trade facilitation will be greatly harmed.

II.3.2 Analysis on Major Problems

Some experts believe that the major IP obstacles of realizing paperless trading in Asia-Pacific lie in infrastructure and tech-neck, trade barriers in acquiring necessary tech-service, classified use and level fall of the Internet, the services provided by e-government and their availability in different countries, distinctness of human resources and prerequisite skills, and uneven development of digital economy, etc. They also hold that the connectivity of networks at different countries, network construction and price index of local economic areas, together with the balance between the degree of know-how protection and sharing are also obstacles to paperless trading. However, taking into consideration the diversification of APEC members and differences in their technological capability, government capacity of providing services, the openness of APEC economy and the members' willingness of participating the new economy, we find the following are the main IP obstacles affecting APEC paperless trading capacity building.

II.3.2.1 Strategy Perspective

1. Government Capacity (Administration and Contract Execution of law)

Technological changes have altered the constitution (coining right and obligation), development and execution of law, together with the related political institutions, calling for an ever-improved government capacity. Many of the APEC member states have started seeking changes: governments intervene more closed in paperless trading in an effort to accelerate paperless trading development. On the other hand, each member economy begins searching for changes in the judicial field, in order to establish a judicial mechanism fast enough to adapt to the paperless trading development, and solve the judiciary problems in paperless trading due to the prolixity and red-tapism of the existed judicial mechanism. For example, recently Singapore has initiated a new digital substitution for dispute solving mechanism, which allows the court of first instance to hold intermediation and adjudgement solving e-commerce disputes over the Internet. And in Chile, along with an increasing global acknowledgement of paperless trading, the government took measures encouraging e-government construction. This e-government predigests the examining and approving procedure of IPs, trying to put an end to corrupt dealings while promoting IP strategy and enhancing capacity building for paperless trading.

However, so far there seems to be much difference among the majority of the developing member economies in governing paperless trading, may it be system capacity or institutional willingness. Take Indonesia and Philippine for example, these governments committed to opening their e-commerce market to other members by entering an E-commerce Strategic Alliance; whereas a severe e-commerce monopoly exists in these countries, which lead to ineffective administration of e-commerce and insufficient judicial capacity of paperless trading disputes.

In developed economies such as the United States, there remain also issues of government incapacity. Under the federal dualism political structure, different states follow a diversified legislation and administrative management in paperless trading; meanwhile, the co-existence of the federal level and each state's administrative and judicial systems lead to a tanglesome identifying process, which severely contradicts the required speed and transparency in e-trading process, the IP application or its relevant protection. Issues of weak government capacity stemmed from dualism political structure also exist in economies such as Australia and Canada.

2. Social Consciousness

Although the legislation and its execution in IP protection in most economies have been making progress at an extraordinary speed, the relevant national awareness failed to grow accordingly. Take the example of China. Historically, China enjoys a long history and centuries-old culture, yet there has not been a system generated for the protection of IPs. Innovations and inventions were either handed down within a family in form of "secret prescription", or gone with the time or simply made known to the public. Pitifully there was no competitive system generated to promote creation and invention. This background naturally leads to a long-lasting state of national unawareness of IP protection. Thus once this protection is realized in government legislation, a process of understanding and learning is necessary for the ideological transformation of citizens, which takes a considerable long time.

Moreover, substantial changes in global industry structure and trade structure as a result of

unprecedented high-tech development make it necessary for people to learn more. The breakthrough in productivity brings up series of changes from ideological pattern to social life, which breaches the old convention. This also brings a new topic for IP protection. The idea of new forms of IP protection to new field and new product in the high-tech industry has been accepted by an increasing number of countries. Nevertheless, the pirate software and movies and products like these are continuously spread in the Internet, which dilutes the sense of guilty using pirate and tortuous products citizens in many countries can experience. The repressed ethical standard towards this issue actually serves as a more serious obstacle for the governments to fight against torts. Each economy should be more aware of the importance of IP protection of new technology, new invention and new product in the new tech revolution, making sure that the domestic legislation progress keeps pace with the global legislation of IP protection and consistent with the international guidelines, actively and visionarily forward-looking and avoiding any lag concept in protecting new objects and new forms prompted along with the science and tech advancement in the world.

3. Participation Mechanism

A corresponding participation mechanism is needed if each APEC economy wants, on an equal footing, to address the IP protection issues in paperless trading capacity building. Within APEC, every government of member economies has so far been positive in developing paperless trading and e-commerce, and taking measures to reduce cost of trade and to enhance facilitation of trade through paperless trading. However, it is obvious that the features of digitalization and border crossing make it integrant in paperless trading that we need appropriate technology and coordinating mechanism. Without relevant technology, paperless trading is impossible; without a coordinating mechanism, trade digitalization could never truly go beyond the border. Thus the establishment of a participation mechanism, settling IP issues such as tech-aid, basic platform construction and the openness standard etc, is the sine qua non of upgrading APEC paperless trading capacity. Currently, agreements related to IP in APEC region is often built on IP protection. Take Singapore-Australia Free Trade Agreement for example. The basis of this agreement is a more minute protection towards IPs. IP protection is the basis of trade. Nevertheless, when building paperless trading capacity, there lacks a participation mechanism which promotes APEC members working together to realize IP transaction and technical aids with a win-win outcome under the precondition of IP protection. As a result of such an absence, the APEC economies, more often than not, fail to see the importance of paperless trading capacity building, which allows the issues of IP protection wrongly delay the process of building. It is not realistic to promote the building of paperless trading capacity by demanding all APEC economies with different technological power and at various stages of economic development to pay for the IP unconditionally within a framework of market economy. The existing pattern of IP protection leaves little room for APEC to improve paperless trading capacity building. Hence the capacity building promotion depends much on the setting-up of a corresponding participation mechanism which should give due consideration to the disparity of technological capacity and the limit of economy strength of different members.

4. Innovativeness

The technological innovativeness is different in each APEC economy. Protecting IP means an expenditure on technology, which will often lead to a trade imbalance as a result of investment in paperless trading infrastructure. In other words, some economies will benefit a lot in the course of

paperless trading capacity building, while it costs some others a fortune. Meanwhile, the imbalance of innovation will lead to an imbalance of prices of capacity building related products and technology, which also result in the members' different interest appeal and political will in that process. Take basic software for example, the price for MS-Windows XP in the United States is $199 for both a professional version and a family version; and in China, retail price of a Chinese profession version is RMB1998 and a family one RMB1498. However, the GDP per capita of the US is twenty times that of China. Furthermore, there is a notable difference in the innovativeness among members, which makes an extremely uneven distribution of intellectual properties in the Asia-Pacific region, which exert an impact on the member capacity of constructing paperless technological facilities. For instance, IPs generated by American enterprises have already outweighed their tangible property in value, counting for 60% of the overall assets[6]. IBM, advanced in information technology, harvested $1.5 billion out of foreign patent license in 2001[7]. A lion's share of profit for such companies took advantage of efforts from the developing countries in upgrading their network infrastructure. Another example is that the first six countries with patents in information technology field are: Japan (43.67%), America (22.16%), Korea (10.76%), Germany (5.79%), Netherlands (4.79%) and France (3.22%)[8]. If the use of these technologies has been proportionately distributed in the IT application, making, selling and using these IT in China to realize trade digitalization requires proportionate payment for patent royalty to those countries. The IT enterprises' competitiveness ranking released by Davos World Economic Forum of Switzerland in 2006 is topped by the United States, followed by Singapore with Japan ranked the 16th, and China the 50th[9].

In addition, the accessibility to IP protected tech and software required in paperless trading varies in economies due to individual difference in the degree of protection and tech innovativeness, which will further affect the capacity in trade digitalization efforts. This can be concluded with an analysis of related economies and their patents concerning e-commerce. (see Table 11)

Table 11 E-commerce methods and Infrasturucture products and the number of partent statistics in Economics

	United States				**China**			
	2003	**2004**	**2005**	**2006**	**2003**	**2004**	**2005**	**2006**
H04B	8,128	9,350	9,074	9,256	3,382	4,114	6,077	4,442
H04J	3,123	3,018	2,803	3,413	1,303	1,451	1,843	1,348
H04L	12,034	13,518	14,820	14,037	3,779	5,593	9,170	7,018
H04M	4,468	5,329	5,044	4,916	1,993	2,453	3,670	2,607
H04N	10,255	11,607	13,214	13,081	3,125	4,182	7,256	5,675
G03G	2,311	2,531	3,048	3,138	505	798	1,095	1,045
G06C	47	19	20	19	5	6	17	8
G06E	98	116	68	43	4	3	16	8

[6] From "How Big Foreign Enterprises Realized Patent Value in China?" by Yurui ZHANG in *China IP Paper*, June 22nd, 2004.
[7] From Page 9 of *Property Management Wisdom* by Jiangbin LIU and Junying Huang, Huatai Cultural Enterprise (Chinese Taipei), 2004.
[8] From "*Analysis on Patent Tendency in Information Technology, 2006*" by E-IP Centre of Ministry of Information Industry.
[9] Quoted from "*China Vigorously Improves Technological Development Capacity*" by Weiyou JIU of World Daily (Japan), Feb 27th, 2007.

G06F	34,961	37,321	41,347	35,566	6,647	8,882	13,731	9,415
G06G	674	626	521	409	53	68	92	52
G06J	15	10	8	6	3	1	2	2
G06K	5,094	5,522	6,470	6,708	1,334	1,665	2,709	1,909
G06N	397	391	357	271	47	67	101	60
G06Q	982	1,312	1,519	5,647	256	297	575	1,447
G06T	3,692	3,742	3,945	3,398	923	1,207	1,847	1,208
G09C	417	415	375	352	167	214	282	213
Source	**WPI**				**WPI**			

Table 11 (cont.)

	Australia				**Indonesia**			
	2003	**2004**	**2005**	**2006**	**2003**	**2004**	**2005**	**2006**
H04B	3,577	2,585	521	99	0	46	53	76
H04J	1,298	794	151	33	0	14	9	10
H04L	5,493	3,917	1,044	169	0	51	86	128
H04M	1,934	1,378	290	54	0	7	16	25
H04N	2,884	2,069	373	86	0	22	41	46
G03G	151	117	32	6	0	0	0	5
G06C	10	10	3	0	0	0	4	1
G06E	31	21	2	0	0	0	0	0
G06F	10,773	7,171	1,816	390	0	51	71	70
G06G	201	119	21	2	0	1	0	0
G06J	3	4	2	0	0	0	0	0
G06K	1,841	1,306	332	85	0	7	11	15
G06N	170	115	18	4	0	1	1	0
G06Q	458	752	334	116	0	0	0	0
G06T	982	811	214	48	0	0	3	5
G09C	160	141	30	10	0	0	0	1
Source	**WPI**				**Indonesian Website**			

Table 11(cont.)

	Chile			
	2003	**2004**	**2005**	**2006**
H04B	11	13	19	32
H04J	2	2	8	11
H04L	19	11	56	51
H04M	11	10	7	5
H04N	6	5	5	20
G03G	1	0	0	1
G06C	1	0	1	0

G06E	0	0	0	0
G06F	34	36	78	83
G06G	0	1	0	1
G06J	0	0	0	0
G06K	5	7	6	9
G06N	0	0	0	0
G06Q	0	0	0	0
G06T	2	4	3	10
G09C	0	0	0	1
Source	**Chile Website**			

Note: Searched in China Patent Search Consulting Center. Categorized according to IPC within the major technologies and product types in e-commerce. Numbers in the table are the patent application volume from 2003 to 2006. Limited by time for the project, a data stat between the domestic and foreign application volume among different economies has not been done. But the difference of these numbers can partially support the point presented above.

As above tables shows a notable gap in the number of patents for infrastructure products and solutions to e-commerce or facility building among the economies. In this situation, each economy will have to rely on imbalanced technology or intellectual-property-intensive trade to realize the PT capacity building.

5. Information Communication Mechanism

On the one hand, the economies of APEC are unaware of the particularity of this IP issue in paperless trading capacity building, taking it as a common IP issue. Thus they have no intention of solving IP problems arisen in PT capacity building, and could not bring out an integral policy to the issue. On the other hand, the traditional IP coordination measures are challenged for being insufficient to build an intellectual-property coordination mechanism seasoned with PT. For example, ASEAN members have accelerated their IP legislation building process against a background of increased awareness of taking IP as relevant trade criteria in the international trade. These members have different technology-load capacity, legislation system, political structure and distinctive development of economy and trade, which makes it difficult for ASEAN to build an IP judicial system according to the model of the integration of IP legislation in EU. At present, ASEAN tries to perfect its existed IP judicial system, and tends to be more open to attract related telecommunication traders into its domestic e-commerce market. However, limited by the imperfection of its existed laws and weak judicial capacity, the government is still behindhand in constructing laws and regulations related to e-commerce[10]. So far, ASEAN members have to perfect its existed law systems, especially that in the e-commerce field.

As for process industry in member economies, with limited resources for labor-intensive process enterprises, and a lack of open and transparent information exchange and transformation mechanism, they don't have the ability to protect their IP for the order from their consumers. As a result, what these factories produced under a legal contract may be leaked to the fake trade chains and the infringement is passively generated, resulting in trade frictions that severely restricted the further development. In respect that process industry plays a crucial role to the developing economies, such drawbacks will bring about considerable losses. To facilitate communication within or between economy governments,

[10] See, Anil Samtani and Tan Lay Hong, Electronic Commerce: Emergence and Growth, Challenges and Opportunities, Regional Workshop for Countries of Asia and the Pacific on the WIPO Internet Treaties and Electronic Commerce, Manila, October 22 to 24, 2001.

each needs to develop information exchanging mechanism, such as an early-warning mechanism, public inquiry service, etc. This could on the one hand avoid the violation of property rights, and on the other support a healthy growth of process enterprises. Consequently, the advantage of international trade can be materialized in a win-win synergy of both the developing and the developed economies.

6. Economic Development

There is a strong correlation between the capacity of paperless trading and IP protection. But this does not mean that the development of paperless trading is positively related to IP protection. Generally speaking, except a few special cases[11], the capacity level of paperless trading represents the development level of a country's economy and society. The classical research on IP revealed that the protection of IP is closely related to the economic development. In general, the higher GDP per capita is, the better IP protection. When the GDP per capita is below US$8,000, the positive effect on the overall goals of social development is not evident. Thus within APEC area, a different level of IP protection system accords with the economic developing rules, is beneficial for an economy as a whole and consequently is beneficial for the paperless trading capacity building. A consensus over that among all the APEC members is necessary.

II.3.2.2 Standardization Perspective

Standardization is one of the bases of paperless trading. E-commerce, as an important basis for paperless trading, is at uneven stages in the process of economic development in APEC area because of the differences in technological innovativeness and infrastructure among member economies. The characteristics of business model innovation, in particular, result in an imbalance of interest in paperless trading between the developed and developing economies. The innovation and actualization of business model *brings further difficulties to developing economies trying to catch up or innovate in technology, as a result of the standard or the standard-to-be in IP through the development***.** E-commerce is network-based. A unique effect of network is that "more clients will bring more marginal value for each client, with a lower unit cost of the enterprise; and once the size of clients is large enough the speed of client expansion is accelerated, which is called positive feedback". Due to an increased investment (including equipments, software, training, accumulated resources, etc.) and prolonged time hanging on with one network, a client is less likely shift to another network, namely "locking in". Information industry is general regarded as the field where website effect or locking-in effect is the most obvious,. Telephone and Internet illustrate such features. To generate website effect, lock clients and capture larger market requires not only building a big-size website, but also realizing connection, communication and intra-operation among website equipments, which need standardization as the bridge. With the technological model nowadays, introducing new technology and actualizing network means that the process of standardization should be closely connected to IPs. Meanwhile, since the standardized patent technology will bring in extra income, enterprises are all vigorously penetrating their own IP into standards so as to take in the royalty[12] while expanding market. Thus the existed networks and business models created huge cost obstacles to the future innovation. Developing economies usually recur to the established business models to develop e-commerce and paperless trading, but the cost incurred erodes their economic interest and

[11] For example, in small countries with only one economic model, outsourcing could be used to realize a high degree of paperless trade.
[12] From "*Standard, IP and Business Model Innovation*" by Xuetong XUE, China Electronic Technology Standardization Research Center.

self-determination as well. Practically they lack political will for paperless trading, or they reinvest heavily in R & D to innovate their own system.

So far, there are numerous IP problems concerning standardization in paperless trading, which cannot be solved now.

On the one hand, some of the IP holders do not cooperate with standard organizations, which created an IP dilemma for the formation and promotion of standards. Case are that some IP holders violate their information disclosure obligations and deliberately disguise the patent information in order to set up excessive license terms and seek unreasonable license fee. Some others violate the disclosure obligation and indecently make their tinpot technology part of the standard. Yet others deliberately avoid participation in the standardization process whereas they incite other participants to bring their own technology into the standard. There are those who strategically withdraw from the course of standard formation in order to avoid disclosure obligation and/or other IP license conditions.

On the other hand, lack of clear and appropriate IP policies for most standard organizations leads to blindness in the formation and promotion of standards. For instance, most standard setting organizations have not clearly regulate the disclosure obligations towards those unpublished patent application information and unauthorized public patent information, which actually facilitate the birth of submarine patents prepared by IP holders participating the standard setting process. Once the patent owners seek unreasonable license fee and/or ask for excessive licensing terms, there is no sanction to be exercised within the existing framework of the IP policy. Moreover, there are many industry standards covering patents of third-party IP holders who have not taken part in the standard setting. No IP policies of any standard organization have a binding power to them. Once the patent holder refuses to license or asks for excessive license fee, the promotion of standards will be delayed[13]. Despite the efforts of individual economy's government and some international organizations, so far standardization related IP issues are hard nuts to be cracked in a short while.

What's more, there exist many de facto standards and private standards, which make it difficult for actualizing network communication, technology adaptation and security maintenance. If we use open-standard software, it is relatively easier to tone up its security. Users can modify the source code to their own specific needs. If they are using private standard software, it is tough or even impossible to tone up its security. Vista is a case in point: without authentication from Microsoft, no third party is capable of mending Vista's core, which means unable to satisfy users with a higher security requirement. Besides, because some private standards, which are already de facto standards, have not been published, other companies can hardly develop compatible products. Although after a long time, a compatible product might be developed, new problems will arise with newly updated versions from the private standard holders. Thus there is no 100% compatibility, or a long-term compatibility. The existence of both the de facto standards and private standards lays potential obstacles for actualizing network communication, technology adaptation and security maintenance.

[13] From "*Report on Intellectual Property Right through TBT Standardization*" by Zhicheng ZHANG and Yanliang WEI.

II.3.2.3 Technology Perspective

1. Technological aid

Technological aid is one of the key issues of establishing cross-border trading platforms within the scope of APEC and strengthening government capacity. Advanced economies within APEC possess almost all the technologies and related IP as well as relative experiences. It is quite likely to improve paperless trading capabilities through technological aid and IP transfer. Meanwhile, in order to boost paperless trading, the problems caused by technological imbalance between different economies could be mainly solved through technological aid. As paperless trading is a cross-border trading means, the platforms on which paperless trading is conducted, should be those based on the unified technological level, with both adjustability and flexibility. IP transfer is the only way to achieve unified technological level. Traditionally, IP transfer is independent behavior of trading entities in market economy. As is discussed previously, however, the improvement of paperless trading capacity building depends on the construction of public platforms and the adjustment of public policies, which could not be achieved solely by market economic behaviors. Therefore, paperless trading realized with appropriate government intervention and promotion of technological aid can reduce the overall trade costs of trading entities, which is generally of interest to all economies. Therefore, it is of considerable significance to promote a government-led transfer of paperless trading related IP at relatively low price.

2. Trading platform

Huge difference of technological supply capacity exists among APEC members. The United States leads the world in the aspect of terminal market of e-commerce, Internet, other infrastructure of telecommunication, the openness of Internet as well as the freedom and openness brought by The United E-commerce Act. Therefore there is no doubt that the United States has established high-end trading platforms in paperless trading area. Its high standard of technology entry guarantees a steady and healthy growth of paperless trading within its border and enables paperless trading and e-commerce to be conducted at a high level trading platform, which further drives a low-cost but highly efficient development of both domestic and international trade. Laggard infrastructure of telecommunication, however, is common among the major ASEAN members. Without necessary IP, they have to incur excessive user charges prior to any business. Therefore, in the Asia-Pacific region, a key issue is how to construct an e-commerce trading platform in view of the different technology and infrastructure levels, political systems and the degree of economic openness among different members, from which all the economies could benefit. This is crucial in the process of economic reform and economic integration among all the economies in the Asia-Pacific region as a whole.

The construction of terminal trading platform is of top priority in the process of paperless trading capacity building. But the trouble lie in that various problems of infrastructure development exist due to the different technological capacity and economic levels of different economies to construct terminal trading platforms.

First, imbalance of development. In advanced and emerging economies, the construction of trading platforms can grow at an enormous speed with increasingly improved functions, free from technological and other barriers. For instance, “Information Highway”, pushed by the United States, aims at establishing a national high-speed information network integrated the scientific research, trade,

office activities, daily life, entertainment and manufacturing. Similar projects are Japan's "Mandara Project", Singapore's "National Information Infrastructure Plan", Korea's "Cooperation Information Highway Project", etc. However, other developing or poorer economies are unable to carry out similar projects, making a bleak future for APEC areas in term of the complete realization of paperless trading.

Second, platform segmentation by uneven technological capabilities. The infrastructure construction of all economies is a key issue of realizing paperless trading in APEC. But what should not be ignored is that the advanced economies such as the United States own almost all the IPs concerning platform construction. The size of information highway is so huge that it leads in many aspects, Internet terminal data, relative software system, the degree of Internet openness, the transmission speed of cable, to name just a few. On the contrary, other APEC economies lack relative technology and IPs, and simply could not possibly support the platform construction on a competing basis of technology. For instance, the information highway project carried out by Japan concentrates on cables for information network, while neglecting related software system and general instruments. The emphasis of Korean infrastructure construction is also hardware and facilities centered by cables. The phenomenon is common in Argentina, Chile and Singapore despite their different economic levels. Technological gap among economies leads to serious technological discrepancy of trading platforms, which translates to technological barriers to paperless trading in the area.

3. Jurisdiction

Under the framework of current international agreements, the protection of IP is geographical as IP are regional rights, granted by a country or authority in accordance with national laws. However, because of the cross-border feature of the Internet-based paperless trading, many steps in a transaction are dispersedly completed by different economies. Since IP has not been internationalized yet, paperless trading repeatedly leads to sovereignty conflicts, among which the most obvious ones are disputes over the grant standard, procedure of patent granting and the jurisdiction of IP. With regard to the grant standard of IP, as pioneering is the prerequisite feature of granting these rights, the technologies published on-line affect the granting of IP authorities in each economy. Traditionally, the granting standard adopted by countries with laggard technologies is usually not quite high. "Minor patent" like the Utility Model Patent in China, for example, stimulates the innovation and technological transfer of small and medium sized enterprises, and also encourages competition. But in the Internet era, the fact that the products and technologies protected by foreign patent laws could be trade via the platform of paperless trading compresses the survival opportunities for IP such as "minor patent". Therefore, small and medium sized enterprises in developing economies face a great deal of difficulties in competition, while the competitive edge of big or technology-leading companies keeps strengthening. As far as jurisdiction concerned, the cross-border feature of paperless trading generates conflicts about the jurisdiction of IP cases of different economies and thus has shaken the confidence of trade parties on the predictability and certainty of trade. A case in point, the United States adopts "long-arm jurisdiction"[14] against infringement case on web. Since its establishment half a century ago, it has developed to a great variety of coverage. Nowadays, the "long-arm jurisdiction" has an expansion tendency. With the coming of the Internet era, the American Hall of Justice extended the "long-arm jurisdiction" to Internet cases. From the perspective of other economies, the "long-arm jurisdiction", in

[14] "Long-arm jurisdiction" is a very important concept in American civil law. The concept of territorial boundaries formed early and long-lasting restrictions on the exercise of judicial power over parties outside the territorial confines of the jurisdiction. That principle developed over the years into the requirement that a party outside of a state must have "minimum contacts" with the jurisdiction for a tribunal in that forum to be entitled to exercise judicial power over the foreign party.

effect, features cross-border jurisdiction. That is why other economies have been holding negative view against it. Supposing all economies adopt similar jurisdiction, the possible result is the inundation of jurisdiction conflicts in international civil and commercial cases that all the jurisdictions in the world enjoy jurisdiction over Internet infringement cases. It goes against not only the jurisdictional sovereignty of the concerned countries but also the legal rights of each party.[15]

II.4 Conclusion

The studies and analysis above indicate the significance of IP protection towards paperless trading capacity building. Generally speaking, without sufficient IP protection, no more paperless trading technologies would be developed or applied, which would no doubt hinder the improvement of paperless trading capacities. Meanwhile, to build paperless trading capacity, APEC economies are confronted with various problems: the imbalance of development between different economies, the allocation of interests over technology diffusion and licensing, expensive costs of IP protection and application, inflexible technology aid policy and mechanism, etc. All these problems relate to government capacity (administrative/contract execution of law), social awareness, participation mechanism, innovation, communication channels, technological aid, property trade market and other aspects.

In order to realize trade facilitation in APEC and bridge the digital "gap" between advanced and developing economies, we should create favorable environment for sustainable paperless trading capacity building by conducting specific research and establishing flexible policies, by exploring effective models for paperless trading capacity building from the perspective of sustainable development, by devising corresponding measures, by establishing supporting systems, and by strengthening the driving effects of IP to paperless trading capacity building.

[15] "Hong Jie: The Exploration of Jurisdiction over Internet Torts", *Contemporary Law*, Volume 8, 2002.

Chapter III Policies and Proposals

III.1 the Policy

III.1.1 Holistic policy proposals

1. The protection of IP should take account of the development level of each economy. Paperless trading capacity is closely related to IP protection. Generally speaking, with few exceptions[16], paperless trading capacity represents the economic and social development level of an economy. Classic studies of IP found that IP protection is closely related to the economic development level and the higher the GDP per capita, the stronger protection of IP. Therefore, among APEC members, different degrees of IP accord with economic development rules, beneficial to the achievement of the overall development goal of an economy, and thus beneficial to paperless trading capacity building. With regard to this point, a consensus should be reached among APEC members.

Based on the above points, developing economies should be allowed to gradually build paperless trading capacity and improve IP protection in mechanism and capacity. In this process, one feasible choice is to increase the awareness of IP protection, to improve the IP system, to drive innovation, to enhance the capacity of executing law, while under the framework of WTO and WIPO and on the basis of principal international agreement, to allow member economies to expand the scope of IP protection from selective protection at their own pace considering their economic development as well as the improvement of law execution. For instance, with regard to the object of e-commerce in patent, developing economies with insufficient competition and less innovative business models should be allowed not to protect much so as to prevent competition form too depending on technological environment and enable all the market parties of developing economies to compete on a relatively low threshold. Another alternative, as to IP application concerning an economy's fundamental Internet development; we should use patent technology to produce the semiconductor for public platform construction, by adopting the principle of TRIPS and compulsive license measure.

2. IP protection should be integrated with the core goal of APEC---trade facilitation. The truth of international trade is that trade is closely related to the protection of IP. And it is smooth international trade that maximizes the interests of IP holders. Therefore, trade facilitation and freedom is to the interests of all the IP holders. So is the infrastructure construction to improve paperless trading and thus to drive trade facilitation. But if only the protection of IP over some technology or goods hinders the development of paperless trading and weakens the capabilities and willingness of economies to participate in paperless trading, the consequences would be that the interests of IP holders could not be properly realized. For instance, without basic IP information system of trade objects, the IP holders can only confirm whether his rights have been infringed by one-sided and self-collected information rather than exact, all-sided, real-time information. In order to establish such information system, the property owners' IP could be used; therefore it necessary for these owners to release their property to the government of economies that undertake the establishment of information systems. In APEC, trade

[16] For example, countries with small area or single economic model can realize high level of paperless trading through outsourcing.

facilitation and freedom is the common goal and common belief of APEC member economies. Trade facilitation, trade freedom and the degree of realization have favorable effects on the economic and social development of the economies. As APEC member economies actively pursue trade facilitation, paperless trading is an important measure towards trade facilitation.

Therefore, in the process of realizing paperless trading, all the economies should pay attention to such issues as IP flow and IP protection. If IP issues could not be handled appropriately, IP, to some extent, will become the impediment to paperless trading capacity building, thus will slow down the process of trade facilitation of all economies and harm the interests of IP owners, and finally block the economic development of all the economies.

3. IP protection should be achieved with higher coordinating abilities and better integrating effects. As IP system has become an important international mechanism, to achieve flexibility of IP protection mechanism and to bring IP a bigger role in building paperless trading capacity requires the coordination between APEC member economies. In particular, there are considerable losses[17] to property holders in current IP trade. Through flexibly adjustment of IP protection policies, the overall interests of all trade parties should be emphasized in paperless trading.

III.1.2 Policy suggestion concerned environment development

1. Overcome hindrance to IP protection and quicken the building of public service system. Paperless trading depends on public service system. From the internal perspective of an economy, public service system consists of basic telecommunication network, e-commerce platform, e-government system as well as the connection of the three platform window and unification of the platform standard. For the long-term development of APEC paperless trading, the public service systems of APEC member economies should be connected and come to a basically common standard. But presently, APEC member economies have different degree of platform constructions and have not connected one another yet, which hinders enterprises to conduct trade in paperless manner. In the process of building public service platforms, IP protection has significant meanings. To inject innovative technologies into the building of public service systems always demands to use many properties of their owners. However, as the public service system enjoying great value of public interests, if totally allocated by the market, it will block the whole process of building service systems. Therefore, the intervention and participation of governments of member countries is urgently needed. Governments should also take effective measures and overcome the hindrance in constructing basic telecommunication network, in e-commerce platforms and in e-government system. Especially in the process of standardization, specific policies should be devised to solve the related IP issues and quicken the construction of public service system.

2. Expand the sharing room for information and knowledge in paperless trading area and establish resources sharing database. IP protection has close relationship with paperless trading capacity building. One thing should be pointed out that such close relationship is not in the traditional

[17] "In recent years, because of patent infringement, piracy , secrete copying, the economic losses related to intellectual property of the United States in international trade culminates to $6.1billion per year. "
Han Liyu, etc. The IP Protection of the United States in Foreign Trade, Beijing, Intellectual Property Press, 2006

sense and under the circumstance of market economy it is necessary for government to intervene in complicated relationships to a great degree. The reason is that paperless trading capacity building, as one of the strategies of APEC, is generally perceived to be beneficial to the trade growth of member economies and those between them and thus beneficial to the realization of the overall goal of social economical development in all the member economies. The IP issues concerned the strengthening of paperless trading capabilities could not be dealt simply by the supply-demand relationships but by appropriate intervention of member governments through measures like property owner's rights restriction, government procurement, technological aid, etc. and concentrating on paperless trading capacity building because paperless trading capacity building itself is a basic international course with great significance to all including the IP holders. But if the protection of IP hinders such course, it is against the interests of IP holders and also the development of all economies. One thing certainly needs to be cleared up that all the measures above should be adopted only for the realization of that goal. After reaching such agreement, all the member economies of APEC should establish resource database closely related with paperless trading capacity building, employ the IP resources to achieve this goal and realize paperless trading at relatively low costs. Meanwhile, the basic rights of IP holders in the resource sharing database should be guaranteed that these intellectual properties are used for other purposes at no costs or low costs. In this aspect, APEC could, referring to the measure of sharing software, realize paperless trading by decrease the hindrance of IP protection to paperless trading capacity building in all economies, developing economies in particular, in order to push forward the social economic development of all economies and enhance the IP protection in developing economies.[18]

3. Coordinate the improvement of the paperless trading and the protection of IP. The mechanism of IP protection is one of key mechanical tools for promoting innovation, enhancing fair market competition, and economic transformation. But, obviously, IP protection conforms to the overall level of social economical development of an economy. Improving paperless trading capabilities, on the one hand, could promote social economical development of all the economies and thus make a solid foundation for IP protection; on the other hand, with paperless trading capacity building, all the economies could gradually adjust IP related policies to flexibility and in turn enhance the IP protection. IP trade, enforcement, license, rights restriction and other policies for paperless trading capacity building should be adjusted in accordance with the development level of paperless trading. Such flexible IP policies can speed up the process of paperless trading. Meanwhile, paperless trading capacity building can in turn promote the development of all economies and finally upgrade IP protection.

III.1.3 Policy suggestions for application

1. Strengthen technology aid. The concept of paperless trading was put forth in the wings of IT development. According to "Assessment Report on Paperless trading APEC Economies 2005", most economies, particularly some developing ones, are at an incompetent level in terms of infrastructure and application. Therefore, it is strongly suggested to launch pertinent technology

[18] In an FOSS environment, the degree to which a software tool can be used and improved is limited only by the knowledge, learning and innovative energy of its users, and not by restrictive licenses, prices or the power of other countries and corporations. See: Software: Policy and Development Implications Geneva, 22-24 September 2004 Item 3 of the provisional agenda FREE AND OPEN SOURCE SOFTWARE: POLICY AND DEVELOPMENT IMPLICATIONS Background paper by the UNCTAD secretariat. TD/B/COM.3/EM.21/2

aid inside APEC to increase trade facility between developing economies and the developed ones, which is in turn favorable to the whole organization's prosperity and welfare. At the same time, as one of the developed countries' obligations clearly defined in TRIPS Agreement, technology support is necessary to be employed in the framework of APEC in purpose of realizing APEC demonstration value. To employ a technology support may evolve the following aspects:

1) Object of technology aid. According to definition of paperless trading and current analysis to the status quo, we believe that the weak point of paperless trading capacity development is e-commerce, especially that related to paperless trading.
2) Contents of technology aid. Different economies may apply for different levels of technology aid in accordance with their own capabilities. One of the principles of acquiring technology aid is to realize the minimum level of paperless trading and to effectively practice paperless trading between different economies of APEC.
3) Supervision of technology aid. The aided economy should try every means, including government policies, Human Resources and physical resources, to cooperate for effective application of the aid instead of abusing it.
4) Means of technology aid. The means can be discussed and decided according to the needed extent, economic level and aid contents of the economy. It is suggested to adopt diversified means such as volunteer donations, low-price aid and financing lease.

2. Increase government participation under relative standards. Appropriate measures should be adopted to safeguard the voice of the developing economies upon technology standards establishment of paperless trading platform building. Every economy is greatly encouraged to build up technology standards system and to participate in global standardization activities. The international standards system currently has 13,000 ISO standards and 4,800 IEC standards, but few of them are taken lead to draft out by developing counties. While continuing their respect and adoption of the international standard system, every economy is expected to organize more experts to take part in the framing work of international standard system in order to pave the way of developing economies entering international market. If their voice upon framing international standards cannot be guaranteed and the standards are left completely to technology ability and relevant enterprises, the capacity building of the developing economies will be seriously constrained. Therefore, the current standard framing system needs to be changed to involve every market player in standards framing and to boost paperless trading platform building of developing economies.

3. Build product and service resource catalogue of APEC paperless trading. The principle of building product and service resource catalogue is closely related to paperless capacity building. The basic rights of IP owners in the resource pools should be strictly safeguarded and kept far from volunteer or low-price uses for other purposes. Regarding the above point, APEC may take into consideration the option of open source software, which is to clean out the obstructions brought by IP protection to all economies, particularly the developing ones, on paperless capacity building easier realization of paperless trading, economic and social development of all economies as well as gradual improvement of IP protection level of developing economies[19]. The tenet of APEC paperless trading IP

[19] In an FOSS environment, the degree to which a software tool can be used and improved is limited only by the knowledge, learning and innovative energy of its users, and not by restrictive licenses, prices or the power of other countries and corporations. See: TRADE AND DEVELOPMENT BOARD Commission on Enterprise, Business Facilitation and Development Expert Meeting on Free and Open Source Software: Policy and Development Implications Geneva, 22-24 September 2004 Item 3 of the provisional agenda FREE AND OPEN SOURCE SOFTWARE: POLICY AND DEVELOPMENT IMPLICATIONS

service system is to boost communication and cooperation of all APEC members in the fields of paperless trading, make full use of their resources gained in the process of paperless trading capacity building, exert integral influences of regional alliances, realize knowledge resources exchange and share between developed and developing economies under presupposition of reasonable protection of the IP, put forward APEC paperless capacity building, and finally impulse the integral paperless trading course in Asia-Pacific region. The objective of APEC paperless trading IP service system is to set up paperless trading resource communication and share platform and to supply paperless trading knowledge resources issuance and enquiry including policy, rules, criterion and applicable technology to APEC member economies and related trading symbol and equal service, all of which are meant to keep paperless trading knowledge resources flowing at lower prices between APEC member economies under IP protection, form a free channel for communication and share of paperless trading knowledge resource, advance paperless capacity building of APEC member economies, and finally expedite APEC free trade and facilitation.

4. Set up IP information trading center. Except for set-up of knowledge resource catalogue platform, it is suggested to build an application-aimed information center. The new IP market based on trading equality model is aimed to facilitate developing needs of APEC member economies, reasonable purchase and use of property owners' knowledge, and at the same time help them acquire more financial benefits within APEC spectrum.

5. Build APEC paperless trading IP protection and spread system framework. It is suggested to build APEC IP Protection Supervision and Coordination Organization in order to settle increasing disputes on IP protection and help economies advance paperless trading capacity.

The organization is suggested to included the following:

- ✧ Title: APEC IP Protection and PT Capacity Building Center
- ✧ Function: to coordinate and improve IP protection, PT capacity building.

6. Clarify flexible policies of IP protection for paperless trading capacity platform construction. Relative suggestions include: firstly, clarify relevant IP on resource catalogues, specially included patent technology and patent products. When applied to paperless trading platform building, measures such as compulsive admission and right restriction could be used to expedite paperless trading construction. Secondly, it is suggested to build IP fund for paperless trading capacity building, which can be used to purchase related IP of all member economies. Thirdly, it is suggested to set up a preferential price system for the governments to purchase IP aimed at paperless trading capacity building. For the IP that has been listed in resource catalogues, amortization and preferential prices could be adopted to satisfy needs of developing economies in the process of paperless trading capacity building. Fourthly, it is suggested to set up an inter-governmental standard organization for paperless trading platform building and put forth relative IP policies. This suggestion is quite clear in terms of covered scope, meaning this suggestion is confined to the IP aimed at paperless trading platform construction. At the same time, the suggestion is only useful for governmental behavior or the third party entrusted by governments in paperless trading service issues, instead of pure market behavior.

Background paper by the UNCTAD secretariat. TD/B/COM.3/EM.21/2

7. Consummate IP product, technology and measure system. Developing economies should adopt active and dialectic attitudes toward IP issues. They should be clearly aware of the unfavorable aspects of this issue, but at the same time should not be frightened away. Only by developing science and technology of themselves, can distance be shortened. Although IP system is to some extent unfavorable to developing economies, they should be actively involved rather than inactively resist it. Because of unfavorable position of developing economies regarding science and technology, only by offering protection for IP outside the economy, can advanced technology of the developed economies be acquired; even if the most advanced technology is unavailable, they would not be far behind in terms of some of the technologies, thus indraught is necessary. Except for introduction of advanced science and technology, developing economies should also improve their own science and technology to shorten the distance or even to catch up with the developed ones. While digesting and absorbing the introduced technology from the developed economies, they should also organize effective economic development and increase effective science and technology input. At the same time, they should take every chance to participant actively in the dialogues, take part in every global discussion related to IP legislation, actively support the reasonable suits of IP protection and fight economic hegemony which are against IP rules and finally consummate IP system worldwide. Further consummate of the IP system is, on one hand, beneficial to the continuous improvement of science and technology, on the other, favorable to the formation of common criterion and international rules based on which the economies would treat each other equally and respectfully.

Therefore, developing economies are expected to learn and improve their own relative systems through every channel supplied by APEC and try to shorted the distance with the developed economies as soon as possible.

8. Setting up effective e-commerce IP forum in economies. According to different divisions of paperless trading capacity building from economies with different needs, communication and intercourse should be strengthened by means of IP forum in the following aspects:

- ✧ Collect different needs about paperless trading-related IP from different economies;
- ✧ Setup different sub-forum and interim economies;
- ✧ Define the forum's theme.

The development of paperless trading is not only related to improvement of economies' international trade, but also influences directly the social resources involved and series of comprehensive problems such as economies' policy, law, information technology development and infrastructure construction. From the very beginning till the end, this paper tries to follow the line of IP protection issues in the process of paperless trading capacity building; to make it more easily understood, IP protection issues of market participants in the transfer from traditional trade activities to paperless trading activities.

III.2 Development Suggestions

III.2.1 Synchronous development of IP protection and paperless trading capacity building

1. Based on continuous technology aid and policies, it is suggested to push forward paperless trading construction-related technology spread and creation to realize balanced development of relative technologies in economies. In order to guarantee balanced development of paperless trading building, it is necessary to guarantee continuous improvement of every countries' R&D capacity in relative technologies. Therefore, based on technology aid policy, it is suggested to push forward technology pervasion in order to advance economic development in developing economies, sustain capacity of paperless trading platform and alleviate financial burden of the developing economies. At the same time, IP polices should be adjusted in due courses in order that relative IP practices be less limited in some specific spectrum. This in turn will definitely push relative technology toward more flexible innovation and localization.

2. Overcome IP obstacles and expedite construction of public service system. Paperless trading must rest upon public service system. From inner an economy, a public service system includes the network communication foundation, the e-commerce platform, the e-government system and the intra-communication of these three platforms or windows. But from the perspective of long-run development of APEC paperless trading, every economy should agree basically on a standard system for their public service systems and realize intra-communication. Seen from the status quo, the enterprises have immense difficulties on the way of realizing paperless trading as APEC member economies have different paces of paperless trading platform building and are far from inter-communication with each other. IP protection, in the process of the public service system construction, has significant influences. To include technology innovation in public service system building usually needs application of a number of patent owners' IP, while as standing for public values and benefits, the public service platform would impede the whole service system building if left to market allocation. Therefore, in the process of public service system, member governments should coordinate, involve and adopt effective measures to overcome the IP obstacles during network communication foundation construction, E-commerce platform and E-government system. In particular, clear-cut policies are needed in realization of standardization to settle IP issues and expedite public service system building.

3. Strengthen external coordination and improve IP policy coordination capacity related to paperless trading capacity building. It should be stressed that paperless trading integrated results IP system has already become an important international system and thus APEC member economies need to be fully coordinated to realize flexible protection of IP and push forward paperless trading building. In particular, regarding the current lost caused to the patent owners in today's IP trade[20], it seems extremely important to stress the integral benefits to market participants brought by paperless trading and appropriate compensation in the adjustment of IP protection policies relative to the paperless trading construction.

[20] In recent years, the economic lost (on customs only) that U.S. encountered due to patent infringement, piracy and secret copying in the field of IP has exceeded USD6.1 billion. Han Liyu, etc: *IP Protection in U.S. International Trade.* Beijing: Publishing House of IP, 2006.

4. **Plot out paperless trading capacity building and realize balanced development of capacity building and IP protection.** IP protection system is one of the most important systemic tools of encouraging innovation, fair competition and economic transformation. What is obvious, however, is the conformity of IP protection level and the overall economic and social development level of every economy. Paperless trading building can push forward social and economic development of economies in order to pave a solid foundation for IP protection. The member economies, on the other hand, should adjust or strengthen in due course relative protection measures of IP. Therefore, APEC member economies should adjust IP trade, practice, permission and right policies relative to and aimed at paperless trading capacity building according to development level of their paperless trading building, through which the paperless trading building is expected to expedite, economic and social development of every member economy is advanced and upgrade of IP protection ability is finally realized.

III.2.2 Attach importance to sustainable development of paperless trading capacity building

1. Introduction of upgrade chain to push forward sustainable development of paperless trading capacity building. To strengthen IP protection in paperless trading practice means to create favorable environment for sustainable upgrade of paperless trading capacity. Its core lies in how to establish dynamically upgrading value chain and to guarantee sustainable upgrade of paperless trading capacity. However, the upgrade of the capacity is a process of dynamic and gradual improvement of trade development, technology innovation, IP creativity etc, and also a process of transformation from initial capable state to targeted capable state. So it is suggested to introduce a set of capacity upgrade chain proceeding in: capacity evaluated, capacity programmed, capacity practiced, capacity sustained, capacity supervised and capacity improved. The benign and healthy grow of paperless capacity building should be boosted by the gradual process of "evaluation — practice — improve — re-evaluation".

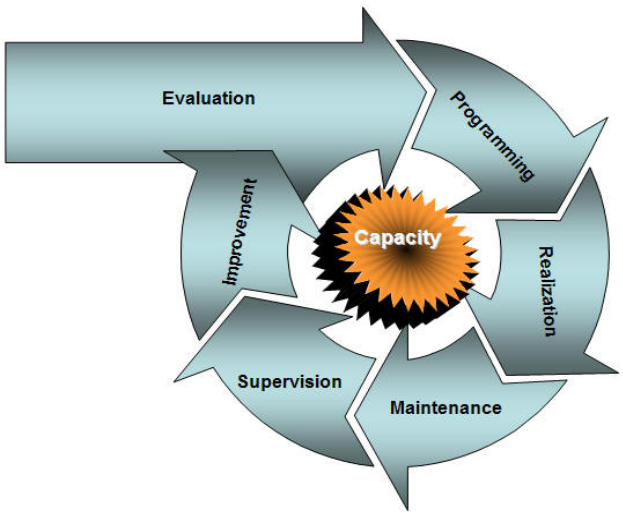


Figure 38 Upgrade chain of sustainable paperless trading capacity development

Capacity assessment: to conduct comprehensive evaluation towards an economy's sustainable development of paperless trading capacity, explore problems in the process of capacity upgrade and work out solutions.

Capacity programming: to work out overall programs and routes of capacity upgrade against the member economies' drawbacks in sustainable development of paperless trading capacity.

Capacity practicing: to practice the capabilities from view of reactive, technology and systemic adaptability and integral ability of strategy and technology.

Capacity maintenance: to maintain member economies' sustainable development of paperless trading through providing paperless trading knowledge service and setting up flexible knowledge spread system, etc.

Capacity supervision: to set up APEC paperless trading capacity building service organization, communication system and to find out existing problems in capacity weakening.

Capacity improvement: to pertinently improve member economies' strategy, technology and integration abilities as well as guarantee healthy development of paperless trading through forms of forum and corresponding expert consulting network.

The introduction of the above Capacity upgrade chain (Figure 37), conducted through optimal practices, will be definitely beneficial to the sustained improvement of paperless trading capacity building.

2. **Transformation from "Blueprint" to paperless trading capacity building practice.** APEC leaders passed "APEC Blueprint for Actions on Electronic Commerce" ("Blueprint" for short) in 1998. The "blueprint" was initiated when paperless trading was still at the beginning level. As a strategic work from starting line to optimal practice, "Blueprint" pointed out the direction for governments, enterprises and service organizations in member economies to approach, familiarize themselves with, and gradually grasp paperless trading. However, as paperless trading capacity building and IP innovation goes ahead rapidly, new problems such as how to upgrade adaptability to external environmental change on strategic, systemic and organizational levels, and how to guarantee sustainable development of paperless trading capacity under circumstances of fierce competition in international trade.

Based on the above statements, it is highly suggested that the original mindset be altered swiftly and that the "Blueprint" as well as functional programming transformed to capacity building programming and practicing.

3. **Set up a long-term evaluation system for APEC paperless trading capacity and IP protection.** Aimed at developing process of paperless trading and IP, problems such as how to define the developing direction, how to integrate resources of capacity building and how to choose reasonable input direction are standing out as commonly concerned problems. No doubt that scientific and reasonable evaluation upon paperless capacity building and IP protection situation will be a booster for paperless trading capacity building.

In 2005, the evaluations of APEC upon economies paperless trading development and the evaluation

index it put forth had undoubtedly significant influences on mastering paperless trading development levels. However, this index put more emphasis on application and was lack of factors regarding paperless trading sustainability. Therefore, it is very necessary for APEC to build a long-term assessment standard and system with its core relying on upgrade of paperless trading sustainability. And the standard and system is favorable for dynamic and timely evaluation upon capacity building status, and for finding out problems and adjusting input direction in time.

4. Set up "development route" and push forward sustained paperless trading capacity building.

The traditional pyramid approach of developing pattern which supplies growing ground for isolated island-like uni-window service, not only impedes cross-border practice of paperless trading, but also goes against paperless trading capacity building. We think the reason lies in deficiency of top-level design and programming of paperless trading sustainability construction, so the member economies have to introduce top-level design of capacity programming as soon as possible, expedite innovative developing route of paperless trading and IP protection, and push forward paperless trading capacity building and IP protection. Figure 38 is a comparison between traditional paperless trading construction route and that led by top-level capacity design.

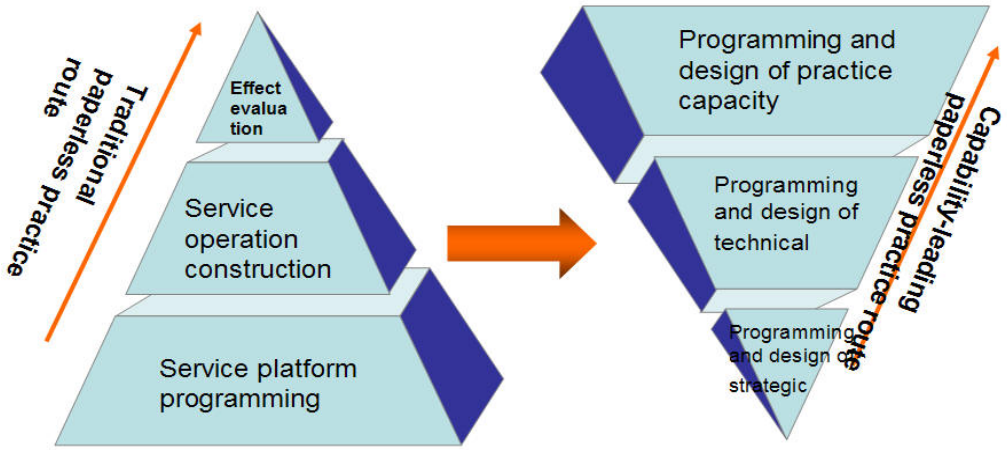


Figure 39 Comparison between traditional paperless construction route and capacity-led building route

To sum up, we believe that paperless trading construction of economies have entered a new phase within which the main task is paperless sustainability building of economies and by realizing this task, contributions are expected to be made for APEC regional trade liberalization, facilitation and regional economic prosperity.

III.2.3 To Build Paperless Trade Intellectual Property Service System

III.2.3.1 APEC Paperless Trade Intellectual Property (PTRIP) Service System

To fulfill the strategy of stimulating PT capacity building through IP protection, promoting the sharing of PT intellectual resources among the APEC member economies, and accelerating PT development in the developing economies, the Report, on the basis of the value system for

dynamic upgrading of PT capacity proposed in the previous parts, advocates “the APEC PT Intellectual Property Service System” within the boundary of the APEC for the purpose of achieving the goal of sustainable development for APEC PT capacity building.

APEC Paperless Trade IP service system provides six services: registration service, resource pool service, evaluation service, trading service, consulting and training service.

The service objects of the service platform are APEC economies’ governments, institutions, enterprises and various ISPs. Through logging onto the platform, they can enjoy six major services provided, and finish registration, searching, evaluation, trading, consulting, etc. on the platform.

In order to conduct PT Intellectual Property services, we suggest constructing the framework of APEC Paperless Trade IP service system in light of the agreement on protection and exchange of IP knowledge resources related to paperless trading, as the institutional safeguard for the APEC Paperless Trade Intellectual Property Service System. Within the framework, Agreement on Proetection and Exchange of IP Knowledge Resources Related to Paperless Trading is to help the APEC member economies to upgrade PT capacity building by reinforcing the protection and exchange of IP resources, and to enhance the cooperative framework agreement signed for the purpose of stimulating trade liberalization and facilitation. The next layer of the framework is PTRIP Service Committee Charter, PTRIP Service Platform Operational Regulations and other standardized regulations, which aim to regulate PTRIP service system from institutional perspective at the macro level, and to ensure the orderly performance of PTRIP Service Platform serving as the carrier of service system. The last layer includes PTRIP Service Platform trading detailed rules, platform service agreement, resource pool management rules, which makes institutional elaboration of platform services from the micro level.

To achieve APEC PTRIP, we initiatives that "Agreement on Protection and Exchange of IP Knowledge Resources Related to Paperless Trading" is a highlights, to construct of the APEC PTRIP, as "APEC PTRIP" system safeguards.

III.2.3.2 Agreement on Protection and Exchange of IP Knowledge Resources Related to Paperless Trading

In order to promote the liberalization and facilitation of trading, recognizing the necessity of promoting the building of paperless trading among economies, and considering that promoting the protection and communication of Papeless Trade IP, we believe that the promotion of paperless trading construction through effective flow of Paperless Trade IP can make very effective contribution to the development of trading and communication among APEC members. To promote the systematic reform of APEC, the agreement is put forward in the scope of APEC to promote the protection and exchange of IP knowledge resources related to paperless trading:

1. Tenet of cooperation

Using the protection and communication of IP resources to promote the construction of APEC economies’ paperless trading capacity, and promote the liberalization and facilitation of APEC trading.

2. Cooperation principle

Voluntary participation: APEC economies voluntarily participate in the protection and exchange of IP knowledge resources related to paperless trading, and enjoy equal status and rights in the framework of cooperation.

Open and Equal: Keep the equality and openness in the protection and exchange of IP knowledge resources related to paperless trading. Keep anti-exclusion and anti-discrimination. Enhance exchange and promote joint development.

Mutual compensation: Bring the comparative advantages of different economies, the enthusiasm, and creativity of the cooperation to their full extent. Enhance the convergence and mutual compensation of the advantages in the protection and exchange of IP knowledge resources related to paperless trading.

Mutual beneficial and win-win principle: Various economies actively improve the cooperative environment, expand the cooperative contents, carry out cooperative measures, promote the construction of paperless trading, accelerate the liberalization and facilitation of APEC trading, and achieve mutual benefits and win-win.

3. The fields of cooperation

Various economies develop cooperation in promoting the protection and exchange of IP knowledge resources related to paperless trading, facilitating ordered and feasible flow of relevant IP resources in the scope of APEC to realize the exchange of resources.

4. The methods of cooperation

To guarantee effective cooperation, various parties agree to establish a system of protection and exchange of IP knowledge resources related to paperless trading. To achieve the tenet of this agreement, various economies protect the relevant IP resources under the framework set up in international conventions, and strive to facilitate the effective communication of relevant IP resources. The following cooperative methods can be used.

a) Fund system

Establishing funds for PTRIP resources to purchase and promote IP resources relevant to the construction of paperless trading capacity, and use it as the foundation to construct resource platform, which various economies can use in certain sphere.

b) Negotiation System

Holding forum and conferences among economies periodically or non-periodically, to negotiate issues on PTRIP, verify flexible system relevant to the protection and communication of IP resources, and take it into effect in the scope of APEC.

c) Compulsory license of particular patents

For specific patents relevant to the building of paperless trading capacity, they will be compulsorily licensed in the scope of APEC, as long as they are used for non-commercial public benefits, do not interfere with the third party's legal rights, do not conflict with the normal usage of the patent, and do not harm the benefit of the patent owner.

5. Cooperative negotiation system

To guarantee the effective cooperation, various economies agree to establish cooperative negotiation system.

a) Establishing dialogue system among different economies' governments, investigating

issues on promoting the construction of paperless trading capacity through the protection and communication of IP resources, and promoting cooperation through negotiations.

b) Establishing coherent executive system. APEC-ECBA will take charge of the execution of cooperative projects and relevant issues.

6. This agreement is signed on xxxx year xx month xx day, xx copies, one for each signatory party

7. Signatures of the parties concerned

III.2.4 Roadmap for Development and Rules for Implementation

In general, within the economies of APEC, the levels and ability of IP protection are not identical. IP has an omnifarious and complicated influence on the paperless trading ability. At the same time, we find that it goes against the overall improvement of the paperless trading ability to merely emphasize paperless trading or IP protection. Therefore, what should be highlighted is to implement a flexible policy of IP protection through effective measures and ways on the basis of protecting the interests of the owner of IP. Promote the rapid improvement of the paperless trading capacity in a relative short time, thus pushing forward trade facilitation and liberalization, motivating economic development and growth, and making a more effective and thorough use of IP within APEC, which in turn guarantees the balance of the interests of the owner and user of IP.

The development roadmap shall involve six phases: preparation, aid start-up, capacity improvement, all-round development, innovative development and target realization. The development roadmap makes clear the action plan for each phase, and integrates the elements of ability “improvement chain” through it. Figure 39 and Table 12 illustrate the roadmap for the sustainable development of paperless trading capacity, its characteristics and implementation rules.

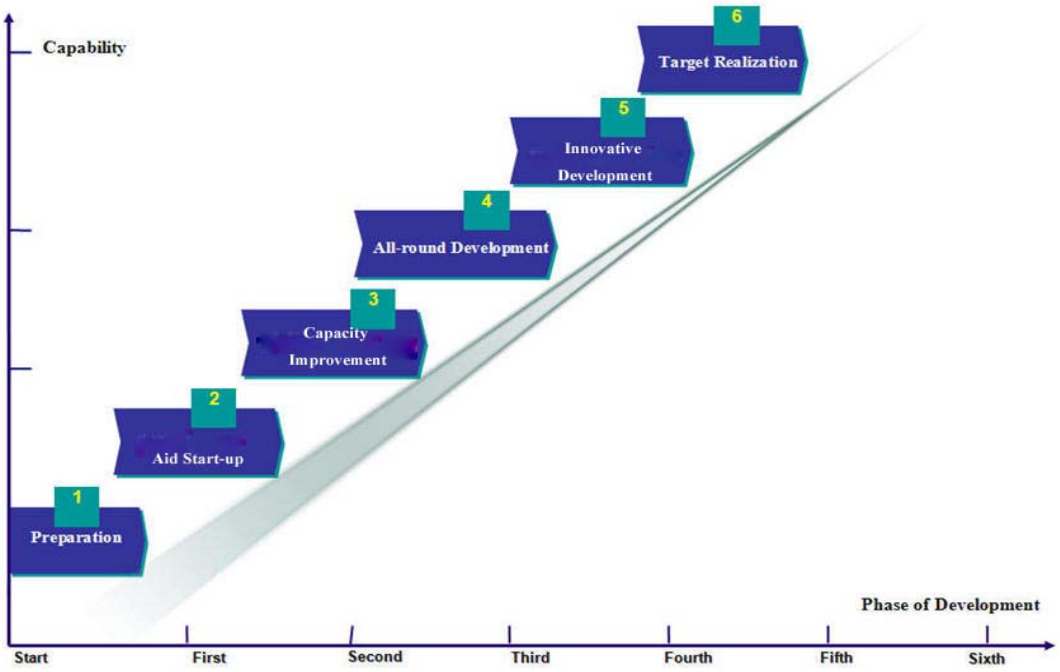


Figure 40 Sustainable Development Roadmap of the Paperless trading Ability

Table 12 Major Characteristics of Each Phase and Implementation Rules for Specific Actions

Phase of PT Ability Improvement	Key Characteristics	Activities in Support of the Transition
Preparation Phase	Strategy	1. Determine the targets of trade facilitation and effectiveness;
		2. Recognizing the significance of IP issues in relation to PT capacity building;
		3. Formulate the capacity building plans for paperless trading and IP;
		4. Clarify the common understanding on resolving IP issues related to the capacity building of paperless trading;
		5. Define the special framework of IP issues in the capacity building of paperless trading;
		6. Determine flexible IP policy guidelines related to and employed in PT capacity building;
		7. Establish a long-term effect evaluation mechanism for the capacity building of paperless trading;
		8. Give play to private organizations, including trade associations, and establish information sharing mechanism;

		9. Organize a high-level awareness training on the role of IP protection in the safety, development and profits of paperless trading for administrative departments and policy formulators;
		10. Top leaders of private sector should try their best to support the solving of problems on IP arising from the implementation of paperless trading;
		11. Proposing the construction of adaptive policy, communication and trading mechanism for IP protection closely related to PT capacity building;
		12. Analyze and determine the concrete external costs and benefits in the transition to new mechanism;
		13. Establish the standard for the index of paperless trading and the ability of IP protection;
		14. Make clear the weight of the index;
		15. Clarify and continuously improve the IP resources related to the capacity building of paperless trading;
	Standard	16. Make clear aid mechanism and its basic principles;
		17. Analyze the key elements in the capacity building of paperless trading;
		18. Analyze the elements related to IP protection in the capacity building of paperless trading;
		19. Establishing the relevant evaluation criteria, and working out efficient means and instruments of evaluation;
		20. Define the key elements in paperless trading and IP protection;
	Technology	21. Determine effective evaluation methods and tools;
Aid Start-up Phase	Strategy	22. Determine flexible policy guidelines of IP related to paperless trading ability and used in the capacity building of paperless trading;
		23. Help the government and private organizations build the confidence and trust for new mechanism through policies, standards and best practice experience;
		24. Clearly divide the responsibilities of risk carriers and maintain its transparency;

		25. Pay attention to the differences of the preparation and willingness for the computerization among different departments and different industries;
		26. Each economic entity shall establish a national policy framework on IP related to promoting paperless trading, which prescribes targets and implementation strategies;
		27. Private sectors should clearly show their needs and willingness to the authority of the economic entity in a cooperative way;
		28. Support and fulfill such international agreements as TRIPS Agreement and the 1994 Columbia Ministerial Declaration on Trade Effectiveness, and strengthen the participation of developing economies in international e-business;
		29. Cooperate in the study of the cooperatively in the legal systems for IP related to paperless trading;
		30. Defining assistance objective, principle, scope and execution measures, and creating an assistance mechanism;
	Standard	31. Developed economies should strengthen the awareness of the importance of IP in trade facilitation and e-business and its benefits, as well as the awareness of the use of outstanding practice;
		32. Strengthen the capacity building in developing economies with the help of relative international organizations. Enhance the cooperation and experience exchange with other international organizations;
		33. Establish related technological and other standards;
		34. Propose the notion of setting up a standardized information resource sharing platform;
		35. Make clear the standard charge for IP related to paperless trading ability and used in the capacity building of paperless trading;
	Technology	36. Analyze the specific risks and costs of the implementation of IP related to paperless trading;
		37. Provide risk compensation to early implementers;

		38. Make sure to cooperate in the set up of the technological research catalog related to the capacity building of paperless trading;
		39. Confirm and push forward the successful guiding projects in private sector;
		40. Creating relevant IP resource pool, and promoting information sharing;
		41. Set up a resource platform on IP related to paperless trading;
		42. Draft a technology list on the protection of the technological measures for IP protection;
		43. Adjust resource catalog;
Capacity Improvement Phase	Strategy	44. Adjust the adaptability of the strategies through the effect evaluation of the exploratory projects;
		45. Stimulating the execution of adaptive policies for PT-related IP protection;
		46. Initiating the implementation and continuous improvement of assistance mechanism;
		47. Start the regional integration process, including system coordination, capacity building, experience exchange and target adjustment;
		48. Coordinate different government departments in various economies, reduce the overlap of administrative functions, and form a perfect and unified administration and coordination mechanism for IP in the economies closely related to paperless trading;
		49. Provide aid programs to governments in developing economies, and improve the execution ability of IP;
		50. A long-term positioning is essential to strategic decisions;
		51. Encourage and support the developing economies to develop and use low-cost technologies, software and other tools, in order to support the capacity building of paperless trading;
		52. Encourage developed economies to transfer to developing economies such IP as technologies related to the capacity building of paperless trading;

		53. Establish a guide for the database of IP related to paperless trading;
		54. Adapt the targets and implementation strategies to specific needs;
		55. Provide continuous education and training programs;
		56. Must be cleared the fees for capacity-building of intellectual property fees relatively with Paperless Trading ;
		57. Studying and determining the urgent needs for APEC PT capacity building, and expediting the execution of guide projects;
		58. Starting training programs, and conducting the research and formulation of relevant laws and regulations;
		59. Investigating the creation of PT-related IP development funds;
		60. Giving full play to APEC PT-related IP service platform;
		61. Improving evaluation mechanism, and carrying out the preliminary evaluation of capacity building;
		62. Identify relevant technical and other standards;
		63. Set up the framework to solve the problems in connecting relevant standards of APEC and international standards for paperless trading, and reduce costs and risks;
		64. Build a standardized information resource sharing platform;
		65. Support and implement related regional and transnational agreements and standardize them;
		66. The governments of the economies and trade participants cooperate in the development of a single portal system on paperless trading, and bring the patents and software formed during the development process into the resource catalog, which should meet the legal demands and conform to commercial processing procedures;
	Standard	67. Establish common technological standard system, and use new technology to improve security and efficiency;

		68. Drafting intellectual property protection of technical measures lists;
		69. Popularize simple low-cost projects by means of limited costs in some of the developing economies;
		70. Set up a unified database on IP related to the capacity building of paperless trading;
		71. Determine exploratory projects to reduce market risks;
		72. Create a demonstrative ability center as a “brooder” for implementation;
		73. Make use of innovative logistics technologies and standardized interfaces; take advantage of new technologies to guarantee safety and improve efficiency;
		74. Cooperate in developing technologies used for IP protection, and bring them into the resource catalog;
		75. Set up special funds;
		76. Established the information platform of the IPs relatively with paperless trading;
	Technology	77. Establish a CA certification system and an information certification system of electronic transaction platform unified by APEC on the basis of IP under the new mechanism;
All-round Development Phase	Strategy	78. Establish IP legal and regulation environment for PT capacity building, for example, IP protection for relevant e-commerce, trademarks, domain names, and jurisdiction;
		79. Encouraging the increase of investment in the member economies, and stimulating PT-related IP creation;
		80. Further reducing the cost of PT capacity building, and expanding the scope of application;
		81. Realize the digitalized confirmation of IPs;
		82. Greater emphasis on the improvement of the ability to use;
		83. Give play to forums and expert consultation networks, and make pointed improvement to the ability of paperless trading and IP in members;

		84. Realize the full upgrading of capacity for participating in the development and cooperation of PT-related technology by the developing economies;
		85. Improve the legal system for IP related to the capacity building of paperless trading;
		86. Cooperate with other national and regional organizations;
		87. Further improve the communication mechanism;
		88. Give continuous education and training programs;
	Standard	89. Enhancing the cooperation in PT capacity building and IP creation, and giving impetus to the establishment of harmonized PT know-how and public service criteria;
		90. Established resources platform resources on paperless trading, and maintaining the standards formation mechanism;
		91. Release and centralize standards;
	Technology	92. Popularize simple low-cost projects by means of limited costs in some of the developing economies;
		93. Conducting IP education and training, and reinforcing the awareness and capacity of IP protection;
		94. Realize the information sharing of IP related to trade;
		95. Realize the paperless trading of IP (patents, trademarks, and copyrights);
		96. Provide continuous education and training programs;
Innovative Development Phase	Strategy	97. Establish an APEC service organization for the capacity building of paperless trading, set up a communication mechanism, and continuously give education and training programs;
		98. Steadily improving the relevant legal framework, and pushing forward PT capacity building;
		99. Perfecting IP market, and invariably bringing down the cost of implementing PT;
		100. Facilitate the charging of IP related to paperless trading and used in paperless trading building;

		101. Decrease by 25% to 50% the overall price of IP related to paperless trading and used in the capacity building of paperless trading;
		102. Form and improve the legal framework to create a legal and regulatory environment suitable for IP in the capacity building of paperless trading;
		103. Encouraging all member economies, especially the developing economies, to actively join the PT-related technological innovations and cooperation;
		104. Solve the problem of weakening ability of developing economies participating in the technology development and cooperation related to paperless trading;
		105. Establish a precaution mechanism and system for the capacity building, set up a basic platform for each country to participate in paperless trading, and form a standard modification mechanism;
		106. Constructing PT platform with harmonized standards and mutual exchange and intersection in the APEC member economies;
	Standard	107. Study the co-operability of the standards;
	Technology	108. Set up a trailing system for the improvement of the paperless trading and IP protection;
Target Realization Phase		109. Realizing the main objectives set in the APEC E-Commerce Action Plan, vigorously promoting trade facilitation;
		110. Greatly improving PT capacity building in the APEC member economies through application of IPs;
		111. Completely relized IPs law which is relatively paperless trading capacity-building;
	Strategy	112. Deepening international exchange and cooperation;
	Standard	113. Cut trade costs through the implementation of the strategies;
		114. Join the cooperation in other regional organizations;
		115. Realized APEC Paperless Trading Related Intellectual Property Service Platform (PTRIP);

		116. Carrying out a comprehensive evaluation of PT capacity building and IP protection, and actively promoting the related institutional readjustment and construction;
		117. Realize the co-operation of each standard;
	Technology	118. Realize the authorization, authorization verification and unhindered application of the patents and other IP related to paperless trading and used in the capacity building of paperless trading;
		119. Form an APEC paperless trading resource service platform, and set up a knowledge transaction service system;
		120. Form an APEC paperless trade resource service platform, and establish a new knowledge trading service system.

To sum up, within APEC, the establishment of an effective innovation, application and protection mechanism for IP (property) is favorable for the appropriate allocation of relative knowledge resources and knowledge sharing of paperless trading. At the same time, it will contribute to the continuous improvement of the capacity building of paperless trading for economies within APEC, through the establishment of an ability evaluation system, the realization of capacity building planning and ability plans, and the supervision and improvement in this process. Create a favorable development environment for the target to reduce the trade transaction costs by 5% in 2010, and realize the target in 2015 in an all-round way.

Appendix

Appendix A Instructions on "APEC Paperless Trade Intellectual Property Service System"

1. A Brief Introduction on APEC Paperless Trade Intellectual Property Service System

In order to realize the strategic plan of building paperless trading capacity through protecting intellectual property (IP) rights, to promote the flow and communion of paperless trading related intellectual property, and to accelerate the development of paperless trading in developing economies, it is hereby proposed to establish the APEC Paperless Trade Intellectual Property Service System inside APEC. The proposal is based on the paperless trading capacity upgrading value system, and it strives to realize the sustainable development of APEC paperless trading capacity building.

The tenets of APEC Paperless Trade IP Service System are: comprehensively promoting the communication and corporation of each APEC member economies in the field of paperless trading, making the best use of various resources of the APEC member economies in the process of building paperless trading capacity, exerting the integrative influence of regional cooperative organization, realizing the communion and exchange of PTRIP among developed and developing economies (with protecting intellectual property as the premises), promoting the building of APEC paperless trading capacity, and accelerating the integrative development of paperless trading at the Asia-Pacific area.

The aims of the APEC Paperless Trade IP Service System are: providing services for the APEC member economies to release and search Paperless Trade IP policy statutes, standardized regulations, practical technologies, and other relevant issues. It also provides trade matching services on paperless trading intellectual products, and integrates the intellectual property (IP) registered and issued on the platform to form an APEC Paperless Trade IP pool, whose APEC Paperless Trade IP, under the protection of IP, will be available to the APEC member economies on a negotiated most favorable license policy, to form a smooth channel for the exchange of Paperless Trade IP, to promote the building of paperless trading capacity among APEC member economies, and to accelerate APEC trade liberalization and facilitation.

2. The framework of APEC Paperless Trade IP Service System

2.1 The framework of the APEC Paperless Trade IP Service System

APEC Paperless Trade IP Service System is mainly constituted by the service platform. It consists of software, hardware, network supporting environment, security guarantee, as well as the construction of standardized and managing norms. The service system can provide six services: registration service, resource pool service, evaluation service, trading service, consulting and training service. See in the following figure.

Figure 41 the Framework of APEC Paperless Trade IP Service System

Taking the APEC Paperless Trade IP service into effect requires the cooperation of various resources. First, the practice of the service platform itself should be stable and flexible. Second, corresponding laws and regulations are needed to guarantee the validity of all the activities both on and off the platform. The platform's and the users' security need to be protected. Third, corresponding regulations and management norms are needed to regulate the service system. Finally, to achieve a favorable social environment for its development, support from all circles in the society, especially from the economies' governments are highly needed.

Figure 42 Framework of APEC Paperless Trade IP Service System

- The Objects of the Service System

The major objects of the service system are governments, institutions, and enterprises of the APEC economies.

- the Service System

APEC Paperless Trade IP service system is mainly constituted by the APEC Paperless Trade IP service platform. The six major services it offers are carried out on the platform.

Technically, the platform offers a common interface for each APEC economy. The government of

each economy can log on the platform through this interface and finish corresponding operations on the platform.

In practice, the platform will have a series of platform operational regulations to regulate it. Any economy who wants to join in the platform needs to abide by the regulations.

- Social environment

The social environment here refers to the support for the platform from all circles in the society, including: support of governments, support of enterprises, and support of society, etc. The operation of the platform cannot be independent of the APEC economies' support. The platform will set up an interface for each economy, which mainly serves to facilitate the economies' united management. It is recommended that each economy's government elects one representative to manage the registration and release of its own member enterprises.

- Legal environment

No matter what issue has to be regulated by a proper legal environment, which is the guarantee for healthy operation of the platform.

- Standardized regulations and management norms

They are used to regulate the standardized regulations and management norms of government affair information resources content system.

- Safety guarantee

Follow the standardized regulations established by the government on information safety guarantee.

2.2 Service Platform For the Knowledge Resource System

2.3 The section mainly introduces the six major services provided on the Service Platform for the knowledge resource system.

The service objects of the service platform are APEC economies' governments, institutions, enterprises and various ISPs. Through logging onto the platform, they can enjoy six major services provided, and finish registration, searching, evaluation, trading, consulting, etc. on the platform.

APEC PTRIP service platform can be divided into four levels: from the bottom to the top, they are data level, operating system, service system, and interface level.

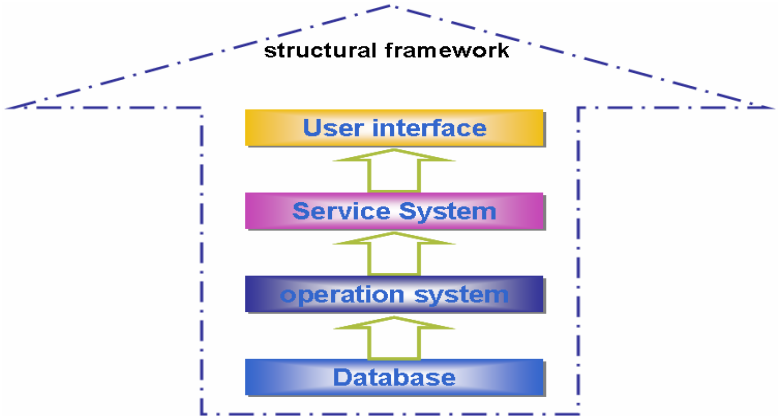


Figure 43 The levels in the Service Platform for the knowledge resource system.

The data level: is the data base for the system, which provides support for the whole platform. The

data level has different types of data bases, which respectively stores different types of data information, for example, expert information data base, laws and regulations data base, intellectual product data base, etc.

Operating system: that is the operating system we usually use.

Service system: The service system is mainly composed of three subsystems: registration subsystem, membership service subsystem, and knowledge data base subsystem. Their functions are: registration subsystem provides registration function for members; member service subsystem provides evaluation service, trading service, consulting service, and training service. Knowledge data base subsystem provides searching service. Members can log on the knowledge data base subsystem to search for specific resources based on different purposes.

Interface level: To describe it informally, interface is the page layout a platform member and visitor see. On this level, apart from user interface, various interfaces are established, for example, for various economies' government, enterprises and ISPs to conduct data exchange and system connection, which will facilitate the expansion of the platform.

The framework of Knowledge Resources System is shown in the following figure.

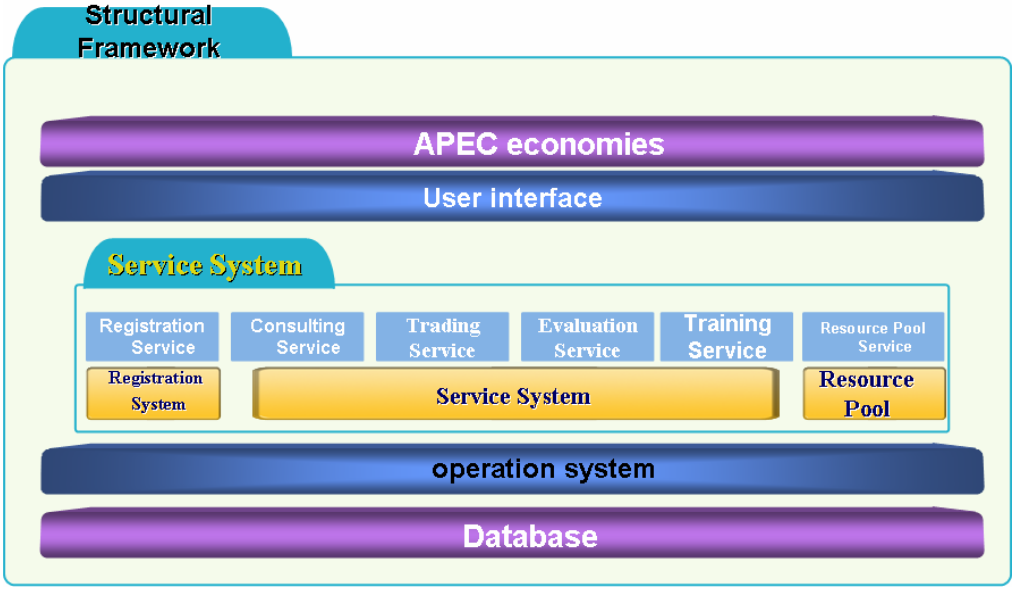


Figure 44 The framework of Knowledge Resources System

2.3 Introduction on the six services provided by the Service Platform for the knowledge Resources System

The Service Platform for the knowledge Resources System provides six services: registration service, resource pool service, evaluation service, trading service, consulting service, and training service.

A. Registration service

It provides platform registration service for all members. Registered members can enjoy more favorable treatment on the platform. It is recommended to set up a registration service group, to manage all the membership information on the platform, to negotiate various relationships, and to solve diverse conflicts.

Based on the requirement of registered members, they can apply for different types of membership.

There are mainly two types: a) ordinary member; b) agent member.
Ordinary members: can be ordinary enterprises, governmental institutions, and schools. Their identities are independent, and they can enjoy the corresponding services provided by the platform (for example, making a deal on the platform) once they register and submit membership fees.
Agent members: agent members are relatively special. They are like the third party agent. Their jobs are not to trade with the other party, but to be an agent to provide support for both trading parties. They are supposed to check the qualification of ordinary members, and to check the information issued by ordinary members. Only those who have passed the checking can register as formal members. Also, the information they release has to pass the checking before being released on line. The platform has higher requirement on the identity check of agent members. Apart from paying for membership fees, they have to submit certain amount of deposit, to guarantee the security of their agent membership.
Agent service includes patent searching, patent application, patent and non-patent technology permission and transferring, consultation, acting as an agent and other issues relevant to patents in the scope of APEC. International trade mark agent service includes conducting trade mark searching, registration, renewal, transferring, alternation, certificate reissuing, and other issues relevant to trade marks in the scope of APEC. International copyright agent service includes searching paperless trading relevant copyrights, protecting registration, and filing in the Customs, etc. in the scope of APEC.

B. Resource pool service

Resource pool is the congregation of PTRIP. It is comprised of the IP registered by the members of the platform, and the PTRIP collected by the APEC IP management committee, and they are categorized into resources pools relevant to different technological criteria based on classification of various IP in the resource pool. The owners of IP in each technological criterion resource pool can reach an agreement. Inside each resource pool, information resource owners can make horizontal resource permission, or to unify license condition to make horizontal or vertical permission to the third party.
The IP owners who enter certain technological “resource pool” can use all the patents in the pool to conduct research or business activities. They do not need to ask for separate license for each patent. In the pool, the license fees among owners of IP can be negotiated by the owners together, or they do not even need to pay license fee to each other. The license fee to the third party outside of the pool can be determined by IP owners. For registered members inside the APEC economies, favorable policies are performed and there will be IP license issued at a lower-than-market price.
The resource pool mainly provides two services:

a.To provide connecting pool services and resource pool management services for relevant resources. The information promulgator can propose to the APEC IP Management Committee to apply for the connection of pools relevant to certain technical criterion, or the APEC IP Management Committee can directly propose to connect pools relevant to certain technical criterion. The relevant agreements on connecting resource pools can be negotiated by IP owners. The management of resource pools will be determined by both the APEC IP Management Committee and the IP owners. The APEC IP Management Committee takes charge of the management.

b. Various resources are provided to the members for searching service. In this module, resources of the platform can be divided into the following categories:

- Laws and Regulation Information Resource
- IP Information Resource
- Standardized Regulations Information Resource
- Expert Information Resource

Any visitors of the platform, including registered members and ordinary browsers can search for relevant references here. Apart from searching for public information, registered members can issue their own IP, including but not limited to IP products (see appendix figure 6 for details).

C. Evaluation service

The evaluation service mainly evaluates the promoting function of the APEC economies' IP protection on paperless trading. Unlike other services, the objects of the evaluation service are mainly the governmental institutions of the 21APEC economies. Each economy can evaluate itself based on the index in the Evaluation Reference Index System, as well as on its own situations. Through this, they can understand the strengths and weaknesses of their abilities to protect IP in their economies' paperless trading, and they can diagnose the elements that need to be improved (see appendix figure 3 for the Evaluation Reference Index System).

D. Trading Service

Trading service offers matching services for registered members that provides trading information on paperless trading intellectual products, and it provides platforms for trading negotiation, consulting and payment. Members can reach an agreement through the platform, and they can make deals on the platform. The price of dealings follows equality and self-willingness principle, and the two parties can reach an agreement through negotiations.

The trading products provided by the platform are tradable IP products in the field of paperless trading. The service platform provides trading services on IP in the scope of APEC, including trading on patent products, trade marks trading, copyright trading and trading of other IP.

Patent trading: includes patent authorization, patent transference, and other services on patent trading in the scope of APEC.

Trade mark trading: includes trade mark authorization, trade mark transference, and other services on trade mark trading in the scope of APEC.

Copyright trading: includes copyright authorization, copyright transference, and other services relevant to copyright trading in the scope of APEC.

E. Consulting service

Consulting service is a special service offered to registered members. Members can put forward questions on the platform, and the questions will be directly transmitted to relevant experts, who will give detailed answers to various questions. To the members, this is a very efficient and effective way to get information.

Apart from answering questions on paperless trading and IP, APEC PTRIP service platform will provide information of international conventions on IP protection. When there are disputes on IP, experts can provide legal consulting service, to help the two parties to find appropriate approaches

to solving the disputes.

F. Training service

Training service refers to training services provided to APEC economies' government, institutions and enterprises on paperless trading. Apart from the fixed introduction on training information module, members can issue individual training information and other relevant information within their scope of authorization. The information mainly includes four parts: training information, training material, case database, and research projects on paperless trading.

Training information: mainly provides information on various paperless trading relevant training programs that have been, is or to be organized by various economies, including information on the organizer, time, place, and theme, etc.

Training material: mainly provides various materials relevant to paperless trading, including training materials for the training programs organized by various economies, and research achievement on paperless trading, etc.

Case database: mainly provides successful and failed cases occurred in the process of paperless trading in different economies.

Paperless trading research projects: provides information on research projects on paperless trading organized by various economies. The team of the research project can issue information to recruit relevant experts. Experts in other economies can inquire and get to know the latest information on paperless trading research, and they can be admitted to involve in certain research project if the project team agrees. See the following figure.

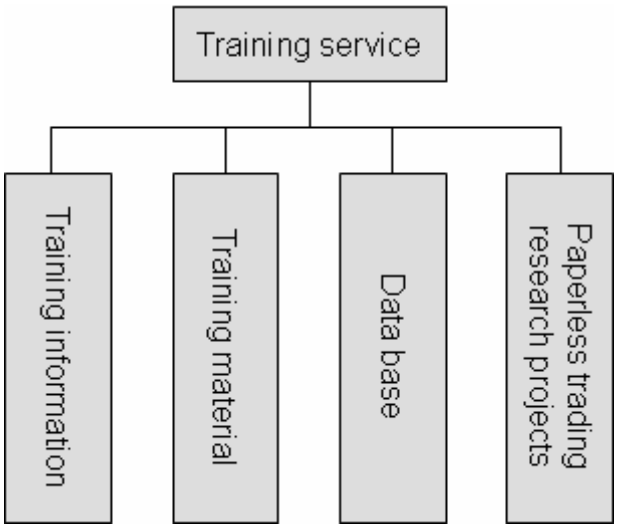


Figure 45 Paperless trading training and research resources

3. The classification of APEC PTRIP.

APEC PTRIP refers to various IP involved in the process of paperless trading. It is a scientific system formed through classifying the nature of PTRIP, based on analyzing the demands of involved parties in paperless trading. APEC PTRIP constitutes four parts: laws and regulations information resources, IP information resources, standardized regulation information resources, and expert information resources. See the following figure for the general framework of the APEC PTRIP classification.

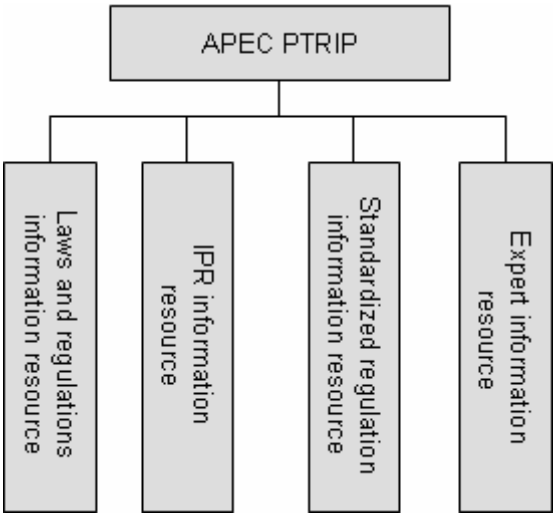


Figure 46 Framework of the general classification for the APEC PTRIP

3.1. Laws and Regulations Information Resources

Paperless trading Laws and Regulations Information Resources refer to the congregation of all the laws and regulations directly or indirectly relevant to paperless trading and IP. The relevant laws and regulations mainly concern about the construction of policy environment in the economies. They offer relevant laws, regulations and policies concerning with ecommerce and paperless trading, which are set up and issued by relevant international groups and economies. They may include electronic signature law, electronic trading law, verification system, internet trading security and relevant arbitration systems, etc., which will provide references for developing economies on their way to establishing internal policy environment. IP laws and regulations include international conventions relevant to IP (e.g., "The World Intellectual Property Rights Organization Conventions", "Paris Conventions on Protecting Industrial Property Rights", "Madrid Agreement on International Trade Marks Registration" etc.), and other IP laws and regulations made in various economies. See the following figure for details.

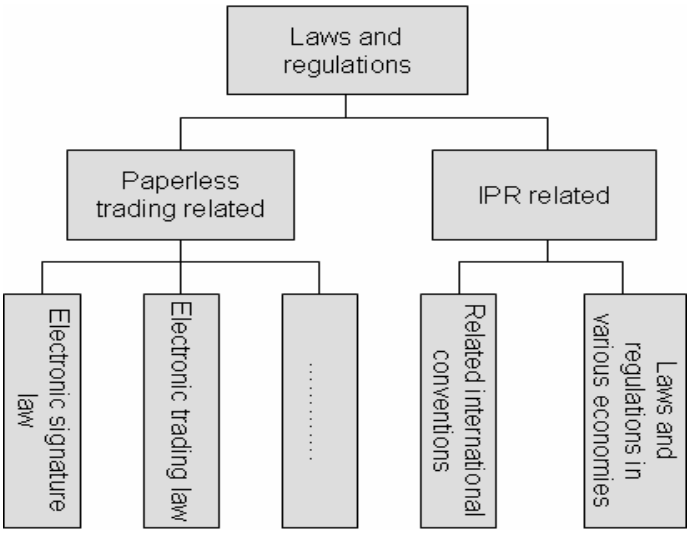


Figure 47 Laws and Regulations Information Resources classification

3.2. IP information resources

Paperless trading IP information resources refer to various IP and non-IP resources needed to promote the paperless trading capacity. Based on the definition of "Paris Conventions on Protecting Industrial Property Rights" and "Nepal Conventions on Protecting Literature and Artwork", as well as their relevance to IP and paperless trading, the IP on paperless trading are divided into two categories: industrial property rights and copyrights. Industrial property rights can be divided into business secrets, patents, practical new models, external designs, trade marks and domain names. The patent part includes patents on business methodologies, patent on information fields, and other relevant patents. The protection of computer programs is included in the part on copyright. See the following figure for details.

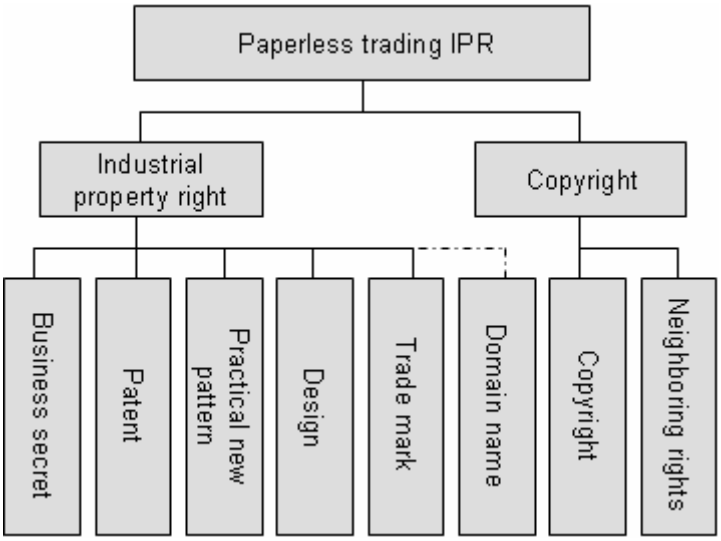


Figure 48 IP information resources classification

According to the correlation inside IP, the IP owners, with the permission of APEC IP Management Committee can negotiate and form resource pools on different technical standards, which can facilitate IP searching, IP license application, and IP purchase.

3.3. Standardized Regulations information resources

Paperless trading standardized regulation information resources refer to various standardized regulations relevant to paperless trading and other influential standardized regulations issued by international standardization organization and other economies. To make classification from the perspectives of realizing paperless trading activities, the standardized regulations are divided into four categories: basic technical standards, business standards, supporting system standards and management standards. Each category can be extended and further divided into subcategories.

Basic technical standards include basic, constructive and general standards in paperless trading.

Business standards mainly refer to various business and practical standards relevant to paperless trading, including standards on semantic units, information entity, information flow and business procedures in paperless trading.

Supporting system standards: mainly refer to various standards set up by supportive system to realize paperless trading, including standards on online payment, credit service, goods fluctuation technique, and information security, etc.

Management standards mainly include standards used to regulate various involved parties in paperless trading on their behavior, quality, statistics, evaluation and function testing, etc. See the following figure for details.

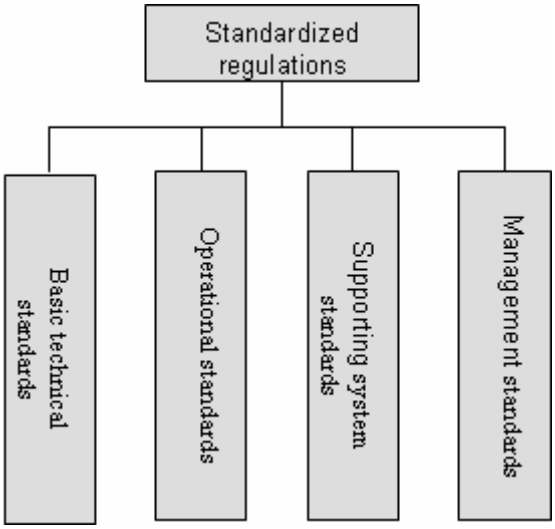


Figure 49 Standardized regulations information resource classification

Standardized regulations include regulations relevant to paperless trading made by major international standardized organizations and institutions, as well as those made by ecommerce and ISPs. For example, the standards relevant to paperless trading, like the XML of W3C, the ebXML cooperatively made by UN/CEFACT and OASIS, the Biztalk of Microsoft, and the Rosttanet of Rosttanet.

3.4 Expert information resources

The experts in the Expert Information Resources are those experts and scholars in the field of paperless trading who have obtained rich knowledge and experience. This part provides individual information together with introduction or full texts of their relevant publications. Individual information includes name, gender, nationality, contact information, together with their research specialization and major research achievements, etc.

4. APEC Paperless Trade IP content system

APEC Paperless Trade IP contents record data systems of PTRIP, which refer to the sequential order of PTRIP organized by certain regulations. The IP content system is based on the classification of PTRIP, and is the corresponding resource contents of PTRIP. All the contents are congregated to form the content system of APEC PTRIP content system. Resource contents are mainly used to search for information on PTRIP. By inputting key information, relevant resource information can be found in the form of contents.

APEC paperless trading IP content system framework is shown in the following diagram:

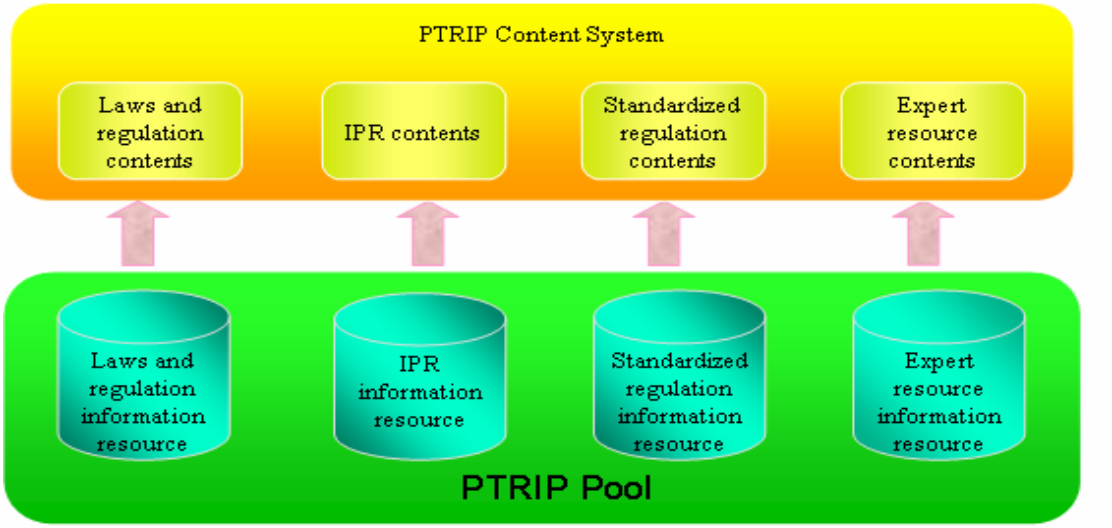


Figure 50 APEC-Paperless Trade IP Content System Framework

To give paperless trading patent and standardized regulation information resources in some economies' IP information resources as an example, the contents of APEC paperless trading patent and standardized regulation information resources are presented as following.

APEC paperless trading patent resource contents classify patent resources in terms of different economies. On the platform, members can search for patent information by putting in patent number, patent name, patent application country, patent key words, etc. The following table only lists the basic information of patent. Detailed information can be obtained from further links.

Table 13 Partially Patent lists of knowledge resources directory of Paperless Trade

No.	Patent Name
America	
20070089170	Computer system and security method therefor
20070089165	Method and System for Network Security Control
20070089163	System and method for controlling security of a remote network power device
20070088660	Digital security for distributing media content to a local area network
20070088658	Method and system for providing accounting for electronic trading
20070088655	Method for the electronic processing of share transactions
20070088614	Electronic information item selection for trade and traded item control delivery system
20070086590	Method and apparatus for establishing a security association
20070086469	Method for preventing illegal use of service information registered and system using the same
20070086397	System and method for remote monitoring in a wireless network
20070083765	Secure communications equipment for processing data packets according to the send mechanism
20070083465	Method and system using bill payment reminders
20070083464	Secure electronic payment system and methods

20070078760	Authentication by owner to shared payment instruments
20070078751	System and method for providing secure financial transactions for open network commerce
20070073629	Payment system and clearinghouse of internet transactions
20070073629	Payment system and clearinghouse of internet transactions
20070067238	System and method for transferring information between financial accounts
20070063022	Settlement system using electronic money and recording medium for electronic money information
20070063017	System and method for securely making payments and deposits
20070063015	Payment transaction system and method
20070063015	Payment transaction system and method
Canada	
2550852	Integrated global tracking and virtual inventory system
2529186	Electronic security system for monitoring and recording activity and data relating to cargo
2524073	Automated electronic payment system
2503740	Electronic payment system for financial institutions and companies to receive online payments
2489800	Systems and methods for providing business intelligence based on shipping information
2481338	Payment terminal device for payment data exchange
2477297	System and method for web-based processing of customs information
2476190	Systems and methods for use in electronic processing of foreign origin and export shipments and/or passengers and baggage at security check points
2471895	Distributed-user shipping system
2464185	Integrated payment system and method
2448766	Inspection and audit process for shipped goods utilizing online global pricing system
2422182	Methods for automated access to shipping services
2414651	Integrated import/export system
2408996	System and method for facilitating payment over the internet or like communication media
2406125	Method and system for facilitating shipping
2364304	Settlement processing method and settlement processing system
2361514	Internet package shipping systems and methods
2314159	Universal bill of materials creation for on-line ordering of merchandise
2314159	Universal bill of materials creation for on-line ordering of merchandise
2310744	Enhanced matching apparatus and method for post-trade processing and settlement of securities transactions

2303652	Combination shipping label/invoice form
2289955	Secure payment and trade management system
2263777	Systems and methods of paying for commercial transactions
2218617	Method and system for preparing an electronic record for shipping a parcel
2218612	Electronic-monetary system
China	
200510095873	Customs barrier payment processing unit and method by using mobile communication terminal and GPS
200510060365	A method for implementing call based payment by means of Internet information platform
200510032770	Order form goods providing system and method
200410051726	Automatic write off import customs declaration system and method
200610032659	Robot capable of automatically recognizing face and vehicle license plate
200510115831	Compatible universal payment system and method
200510104920	New type electronic payment system and its realization method
200510100752	On-line safety payment system
200510093835	Method for carrying out voice payment via wireless terminal
200510091443	Payment system
200510069006	A payment method for purchasing goods on Internet
200510063132	Interactive processing method and system for intelligent network system and payment system
200510050535	A mobile payment system based on distributed cipher key and encryption method
200510028351	Electronic labeling system for business payment
200510000374	Electronic account book generation system and method
200480020025	Customs seal for freight container door
200410052738	Blue tooth wireless audio output device for digital broadcasting receiver and method thereof
200410051725	System of manufacturing custom record entering material structure detailed list and its method
200410051154	System and method for preventing dead production control bill
200410039397	Automatic identification passing system for entrance quarantine declaration cards
200410030481	Logistics control information system and method
Australia	
2007100092	Social network based web portal application with online SMS tools and application connectivity for mobile messaging and payment
2005280100	Method and system for automated payment authorization and settlement

2005275633	Authentication and payment system and method using mobile communication terminal
2005275058	Method and system for conducting contactless payment card transactions
2005275051	Contactless payment card reader with a frusto-conical operating volume
2005275050	Reference equipment for testing contactless payment devices
2005274950	Method and system using a bitmap for passing contactless payment card transaction variables in standardized data formats
2005274949	Payment card signal characterization methods and circuits
2005259948	Payment processing method and system
2005255398	Transaction accounting payment and classification system and approach
2005227112	Method and system for processing electronic payment transactions
2004250692	Electronic security system for monitoring and recording activity and data relating to cargo
2004250692	Electronic security system for monitoring and recording activity and data relating to cargo
2003291775	System for safe cargo handling on board vessels offshore
2003287245	Systems and methods for producing documentary credit and conforming shipping documents
2003238902	Systems and methods for providing business intelligence based on shipping information
2002235696	Digital declaration, method for creating a digital declaration, and a software product for carrying out this method
HongKong,China	
1093949	A mobile cargo container scanning crane
1092576	Electronic security system for monitoring and recording activity and data relating to cargo
1090901	A method and system for transferring cargo
1086663	Radiation scanning of cargo conveyances at seaports and the like
1080055	Method and device for adapting a cargo container to directly interface with an aircraft cargo bay
1074510	Cargo tracking system
1072228	System for loading and unloading unit loads into a cargo hold in particular of an aircraft and intermediate transport device or corresponding transport unit
1058557	Method and system for interfacing with a shipping service
1054088	Shipping and transportation optimization system and method
1020709	Freight container, system, and method for shipping freight
Japan	
2006 - 318452	Information terminal

2006 - 285824	Electronic commerce system
2006 - 277046	Electronic commerce system, Electronic commerce processing method ,and program
2006 - 268867	System and method for secure transaction management apparatus and electronic right protection
2006 - 268302	Settlement method and settlement system
2006 - 268302	Settlement method and settlement system
2006 - 260316	Sentence format conversion device, program and method
2006 - 260293	Method for holding secret information, information protection system, access authority management device and program
2006 - 244459	Payment deposit transfer system
2006 - 244459	Electronic transaction system, electronic transaction server, and electronic transaction management program
2006 - 244459	Payment deposit transfer system
2006 - 244324	Electronic commerce system
2006 - 244203	Electronic commerce system
2006 - 235694	Password code authentication system
2006 - 221592	Electronic book with electronic commerce function and advertisement effect measurement method using computer network
2006 - 217615	Computer-readable record medium having recorded thereon intelligent customer serving system, intelligent customer serving method, and intelligent customer serving program
2006 - 209804	Secure transaction management device, and system and method for electronic right protection
2006 - 209803	Secure transaction management device, and system and method for electronic right protection
2006 - 202031	Two-dimensional barcode and method for decoding it
2006 - 195837	Electronic commerce mediation system and electronic commerce system
2006 - 190005	Priority determination device, service process allocation device, control method, and program
2006 - 011993	System and method for mediating settlement of electronic commerce
2005 - 327050	Electronic commerce system, settlement server, and program
2005 - 258934	Import declaration controller, and importation order system
2005 - 115784	Settlement method and device
2005 - 115435	Settlement processing device, system, and method, and its program
2005 - 085203	Settlement service device and method, computer program, and program recording medium
2005 - 070725	Label for campaign, program for reading same label, and campaign holding method

2005 - 011435	Device and method for recording barcode
2004 - 355459	History trace label, its issuing method and history trace system
2004 - 192437	Settlement service method, settlement system, computer program and program storage medium regarding electronic commerce
2004 - 178083	Customs declaration permission information utilizing system
2004 - 171245	Electronic settlement system
2004 - 133852	Customs clearance detail book making system
2004 - 110487	Electronic settlement authentication system
2004 - 086527	Custom clearing itemized statement creating system
2003 - 085420	Device and method for preparing invoice, recording medium, program, terminal and invoice preparation system
2002 - 334181	Customs clearance declaration system
2002 - 236748	Method and system for inspecting dispensation
2001 - 357310	Network taxation processing method for contents transaction and recording medium
Korea	
1020050100906	System for offering intellectual type total publication logistics service in real-time based on wired/wireless network based information system
1020050077665	Method for exchanging/offering document circulated in trade among heterogeneous systems
1020050022693	System for automatically recognizing and monitoring freight shipping by using freight position information from rfid and rf transceiver
1020060073099	Apparatus and a method for processing payment by using a portable terminal in the electronic commerce system through a tv, concerned in enhancing the reliability of the payment
1020060072854	Purchase/settlement system using small sum purchase card for ec based on contract among purchase manager, card company and vendor, and method thereof
1020060069749	Booting method for a mobile information terminal, especially for minimizing using of hard resetting that causes every personal information and programs to be lost
1020060042146	System and method for managing documents related to trade business including import/export
1020050117320	Cooperative information sharing/unifying method and system for correctly/quickly generating port-logistics information using network
1020050005727	System and method for integrated settlement using single account through network
1020050003885	Method for credit card settlement with ars using mobile phone or telephone on ec and computer system for the same
1020050003885	Method for credit card settlement with ars using mobile phone or telephone on ec and computer system for the same

1020050000489	System and method for managing packaging or shipping process of products
1020040104281	System and method for supporting ec service between customer and service provider through internet
1020020035658	Booking intermediate service system provided by internet
1020020008493	Internet trade service system, and method therefor

Note: 1. Data resource: USPTO, OPIC, SIPO, IPAustralia, Hong Kong SARG IPD, JPO, KIPIS

2. Because the patent numbers on each economies' official websites are shown differently, the numbers in the table follow the original patent numbers used on each economies' official websites.

APEC paperless trading Standardized Regulation information resource contents are formed by classifying standards into corresponding categories according to the classification of paperless trading standardized regulation information resources. Here, some standards of basic technical standards and supporting system standards are presented as examples, to list the standard information resources contents. Members can search for relevant standards according to the types or key words of standards. The basic information of classifications and names of the standards are presented here. Detailed information can be obtained in further links.

Table 14 APEC paperless trading standardized regulations information resource content

Basic Technologic Standards	OS	Specification for Linux API
		Extended requirements for Linux
		Specification for Linux UI
		Specification for Linux desktop system
		Specification for Linux sever system
	DB	Specification for relational DBMS
	Office Suite	Specification for Office document format
		Specification for UI Office Suite
		Specification for API Of Office Suite
	Middleware	Specification for J2FF application sever
	Hardware	Hardware Procurement guideline
Sustainment System Standards	Security Suite	Specification for certification product
		Specification for certification interface

Data resource: The 2nd International Conference on IT Standard, Mutual Operation and IP, China

Appendix B the framework of APEC Paperless Trading Intellectual Property Service System (Draft)

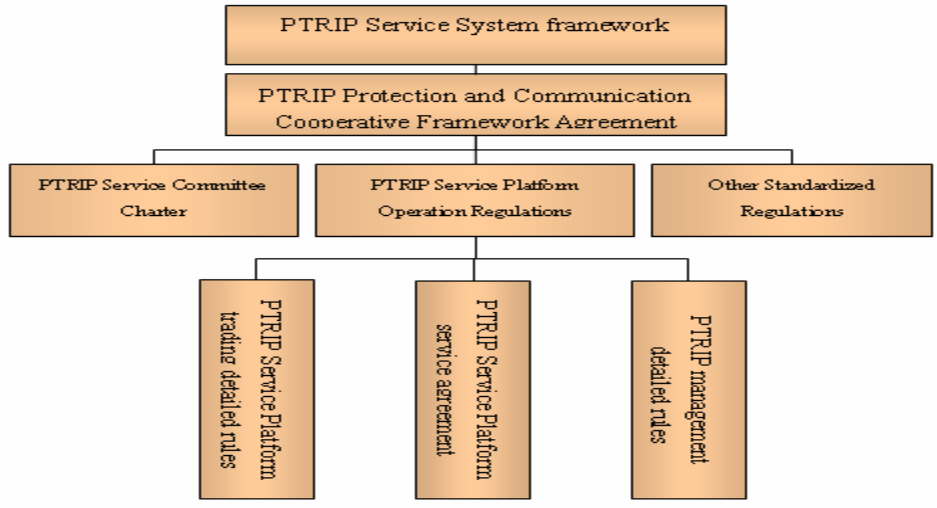


Figure 51 Institutional Arrangements for the Knowledge Resources Service

Agreement on the Protection and Exchange of Konwledge Resoureces Service (Draft)

In order to promote the liberalization and facilitation of trading, recognizing the necessity of promoting the building of paperless trading among economies, and considering that economies will benefit from promoting the protection and communication of PTRIP, we believe that the promotion of paperless trading construction through effective flow of PTRIP can make very effective contribution to the development of trading and communication among APEC members. To promote the systematic reform of APEC, the agreement is put forward in the scope of APEC to promote the protection and exchange of IP Knowledge resources related to paperless trading:

ARTICLE 1 Tenet of Cooperation

Using the protection and communication of IP resources to promote the construction of APEC economies' paperless trading capacity, and promote the liberalization and facilitation of APEC trading.

ARTICLE 2 Cooperation Principles

Voluntary participation: APEC economies voluntarily participate in the protection and communication of PTRIP, and enjoy equal status and rights in the framework of cooperation.
Open and Equal: Keep the equality and openness in the protection and communication of PTRIP. Keep anti-exclusion and anti-discrimination. Enhance communication and promote joint development.
Mutual compensation: Bring the comparative advantages of different economies, the enthusiasm, and creativity of the cooperation to their full extent. Enhance the convergence and mutual compensation of the advantages in the protection and communication of PTRIP.
Mutual beneficial and win-win principle: Various economies actively improve the cooperative environment, expand the cooperative contents, carry out cooperative measures, promote the

construction of paperless trading, accelerate the liberalization and facilitation of APEC trading, and achieve mutual benefits and win-win.

ARTICLE 3 The Fields of Cooperation

Various economies develop cooperation in promoting the protection and communication of PTRIP, facilitating ordered and feasible flow of relevant IP resources in the scope of APEC to realize the communion of resources.

ARTICLE 4 The Methods of Cooperation

To guarantee effective cooperation, various parties agree to establish a system of PTRIP protection and communication. To achieve the tenet of this agreement, various economies protect the relevant IP resources under the framework set up in international conventions, and strive to facilitate the effective communication of relevant IP resources. The following cooperative methods can be used.

a) Fund system

Establishing funds for PTRIP resources to purchase and promote IP resources relevant to the construction of paperless trading capacity, and use it as the foundation to construct resource platform, which various economies can use in certain sphere.

b) Negotiation System

Holding forum and conferences among economies periodically or non-periodically, to negotiate issues on PTRIP, verify flexible system relevant to the protection and communication of IP resources, and take it into effect in the scope of APEC.

c) Compulsory license of particular patents

For specific patents relevant to the building of paperless trading capacity, they will be compulsorily licensed in the scope of APEC, as long as they are used for non-commercial public benefits, do not interfere with the third party's legal rights, do not conflict with the normal usage of the patent, and do not harm the benefit of the patent owner.

ARTICLE 5 Cooperation Negotiation System

To guarantee the effective cooperation, various economies agree to establish cooperative negotiation system.

a) Establishing dialogue system among different economies' governments, investigating issues on promoting the construction of paperless trading capacity through the protection and communication of IP resources, and promoting cooperation through negotiations.

b) Establishing coherent executive system. APEC-ECBA will take charge of the execution of cooperative projects and relevant issues.

APEC-ECBA PTRIP Service Committee Charters (Draft)

I. Purpose

APEC-ECBA PTRIP Service Committee(the "Committee") shall be a promotion organization to build APEC paperless trading capacity. It operates under the cooperation agreement framework on the protection and communication of PTRIP. The Committee works under the direct leadership of APEC-ECBA, following the aims of APEC-ECSG.

II. Responsibilities and Duties

The Committee shall:

1. Investigate and provide suggestions and consultation for the governments, enterprises, service institutions of APEC economies on information resource services relevant to the construction of paperless trading capacity.
2. Hold conference periodically to negotiate the communication among APEC economies on PTRIP. On the premises of obtaining agreement from various members, draft flexible policies on protection and operation of PTRIP.
3. Establish and manage the platform of APEC-ECBA PTRIP service platform, as the vehicle for the operation of PTRIP service system.
4. Help to establish branch service institutions for APEC-ECBA PTRIP, as the contact point and platform service objects of various APEC-ECBA economies.
5. Cooperate with work in relevant departments, and promote liberalization and facilitation of trading together.
6. Carry out various tasks relevant to the items in this agreement as entrusted by APEC-ECSG and ECBA.

III. Structure and Operations

The Committee shall be composed of all the commissioners.It will have one director, several deputy directors, one secretary general, and several deputy secretary generals.

The director, deputy directors, secretary general, and deputy secretary generals will be recommended and elected by the plenary meeting in the Committee. They will be authorized by APEC-ECSG, and appointed by APEC-ECBA, and it is of three year term. The election method will be determined by the Committee.

The Committee carries out its work under the collective leader of its director and deputy directors. The director will be responsible to the plenary meeting of the Committee, and will report to it.

The secretary general takes charge of the routine work of the Committee. The deputy secretary generals assist the work of the secretary general. The duties of the secretary general will be determined by the service committee's working session. The meetings of secretary generals will be participated by the secretary general and the deputy secretary generals.

The Committee shall set up the secretariat as the institution for routine work. The leader of the secretariat will be nominated by the secretary general meeting, and will be ratified by the service committee working session. The secretary general meeting is composed of the secretary general and the deputy secretary-generals.

IV. Meetings

The Committee will hold a plenary meeting each year. The director has the authority to propose a temporary plenary meeting according to the work demand.

To apply for the membership of APEC-ECBA PTRIP Service Committee, one has to turn in a written-form application to the service committee, which will be determined by the service committee conference.

Members who have joined the service committee have the obligation to support the work of the service committee, and carry out various decisions made in the service committee's plenary meeting and working sessions.

To amend the Charter of the APEC-ECBA PTRIP Service Committee, more than half of the votes in the service committee's plenary meeting have to be favorable.

The rights of final explanation for this charter belong to the APEC-ECBA PTRIP Service Committee.

APEC-ECBA PTRIP Service Committee

APEC Service Platform for the Knowledge Resources System
Rules and Regulations(Draft)

Chapter One
General Principles

Article 1 The rules are constituted on the basis of APEC PTRIP Service Platform, under the framwork of APEC PTRIP service system, aiming at building up the paperless trading capacity by the protection of intellectual property within all APEC economic entities, greatly promoting the communications and cooperations among those entities on the scope of paperless trading, facilitating the sharing of intellectual resources on paperless trading, better serving the building of paperless trading capacity and accelerating the process of APEC trade liberalization and accessibility.

Chapter Two
Definitions

Article 2 "APEC-ECBA PTRIP Service Committee" is a service organization established under APEC-ECBA.

Article 3 “APEC-ECBA PTRIP Service Branch” is the direct clients of APEC PTRIP Service Platform. It works as the agent for its endusers.

Chapter Three
Service Scope

Article 4 The service scope of APEC Service Platform for the knowledge resources system includes the governments of APEC members, the governmental service organizations and the enterprises of those economic entities.

Chapter Four
Services

Article 5 To all APEC-ECBA Paperless Trade IP Service Branches, The Service Platform provides registration service. Those APEC-ECBA PTRIP Service Branches become the users of the Platform after registration.

Article 6 The Service Platform provides the service for the trade of intellectual resources including patents, trade marks, copy rights and other kinds of intellectual resources. Deals are to be made by “APEC-ECBA PTRIP Service Branches who act as the agent for the endusers.

Patent deal services include the authorization, the transfer of patents and the other relating services within the bounds of APEC.

Trade mark deal services include the authorization, the transfer of trade marks and the other relating services within the bounds of APEC.

Copy right deal services include the authorization, the transfer of copy rights and the other relating services within the bounds of APEC.

The Service Platform shall match with those supply and demand information issued by APEC-ECBA PTRIP Service Branches in order to expedite the deal making.

Article 7 The Service Platform provides the clients with consulting services concerning the information of the international pacts on intellectual property right protection. In case of disputes on intellectual rights arising, consulting services on relevant laws can be available, making it an easy access to reasonable resolutions on those disputes.

Article 8 The Service Platform provides the assessing services to APEC paperless trading capacity and the intellectual property right protection.

Article 9 The Service Platform provides training services, which includes the enquiries of the training information, liaison with the training providers, the arrangement of the training curriculum and the

organization of the programs.

Article 10 The Service Platform provides resources pool services which integrate the intellectual information published on the platform into resources pool. With favorable rates and terms, those information could flow between clients.

Chapter Five
Platform User's Rights and Obligations

Article 11 APEC-ECBA PTRIP Service Branches shall be the registered users.

Article 12 The Service Platform users can enjoy all the services provided.

Article 13 The Service Platform users shall guarantee the maintenance of this platform and shall be committed to accepting and abiding by all the relevant regulations.

Article 14 The Service Platform users shall guarantee the intellectual resources deal not to:

Violate the APEC communiques,
Violate the international pacts on intellectual property rights entered by various entities,
Be involved in the secrets of various entities,
Violate the relevant codes and regulations,
Violate the relevant rules of this platform.

Chapter Six
The Service Platform's Rights and Obligations

Article 15 The Service Platform has the right to inspect the authenticity of the information supplied by users. It is highly prohibited that a deal be made with the help of untrue information or the other cheating behavior, or a bid be offered based on the infringement of intellectual property rights or the priority still enjoyed by others, and the violation of APEC communiques and the international pacts and the other rules and regulations.

Article 16 The Service Platform shall timely publish the information with a due efforts to guarantee the authenticity.

Article 17 The Service Platform shall establish effective systems to safeguard the deal making, including deal making principle, security system, information publication and inspection system, authentification of deal makers, privacy protection system, commercial secrets protection system, deal recording backup system, emergency mechanism, compensation mechanism, false information reporting and handling mechanism. The documents on those systems shall be presented to APEC-ECBA for records.

Article 18 The Service Platform shall adopt necessary technologies and management to stabilize the operation, and shall provide necessary, reliable, flawless and good deal making environment and

services, and maintain the obedience of disciplines.

Article 19 The Service Platform shall lay special emphasis on the security of deals, shall take measures to ensure the security of deal and make a full backup for all the deal data.

Article 20 The Service Platform shall inform the users any opportunities for deal, and shall keep them noted the content of the deal without any reservation. And keep it private and confidential accordingly.

Article 21 The Service Platform shall not hold back any facts relevant to the deal or impose any influence on decision making for important issues; shall not technically or by any other means try to hinder the relevant parties' efforts to examine the creditability of information, to enquire into intellectual resources data and their options to choose the intellectual resources providers or receivers; shall not force the relevant parties into deal by coercing, cheating, colluding and other illegal means; shall not use or allow other parties to use counterparties' client list, deal record and other commercial data without permission.

Chapter Seven
Appendix

Article 22 The right of interpreting this rule goes to the serviceplatform.
Article 23 The rule shall take effect from its publication.

Service Platform for the Knowledge Resouces System

APEC Agreement on Protection and Exchange of IP Knowledge Resources Reated to Paperless Trading (Draft)

Article 1 This agreement are entered between Service Platform for the knowledge service system (the Serive Platform) and its user, the Service Platform shall provide services to the user in accordance with this agreement.

Article 2 The Service Platform has right to make amendment to this agreement. And shall publish the relevant information on its web site immediately after the amendment.

Article 3 The Service Platform web site shall use its own system platform to serve its users on internet, including registering, deal making, consulting, training, and resources pool and so on.

Article 4 Users' rights and obligations adhere to the stipulations in Chapter Four of The Service Platform Rules and Regulations.

Article 5 The Service Platform's rights and obligations adhere to the stipulations in Chapter Five of The Service Platform Rules and Regulations.

Article 6 The Service Platform shall provide the deal service in accordance with the Service Platform

Deal Making Detailed Rules.

Article 7 The Service Platform shall provide the resources pool service in accordance with The Service Platform Resources Pool Management Detailed Rules.

Article 8 The scope and interpretation of this agreement, and the disputes relevant to this agreement shall be ruled by international arbitration organizations.

APEC Service Platform for the knowledge Resource System
Deal Making Detailed Rules (Draft)

Chapter One
Definitions

Article 1 PTRIP means those intellectual property rights relevant to the paperless trading capacity building, which includes patents, trade marks, copy rights and other intellectual property rights admitted by international pacts entered by all the economic entities.

Article 2 Member means APEC-ECBA PTRIP Service Branch who has registered on the platform and can issue paperless trade intellectual property rights demand and supply information and acts as agent to make paperless trade intellectual property rights deal.

Article 3 Deal means, through the match of the platform, the transfer or authorization of paperless trade intellectual property rights, or the investment on stocks or entering into a joint venture by paperless trading intellectual property rights, or cooperatively developing paperless trade intellectual property rights.

Chapter Two
Member Registration

Article 4 APEC-ECBA PTRIP Service Branch shall register as the member of this platform and work as agent for the end users.

Chapter Three
Activation

Article 5 The end users who want to issue demand or supply information on intellectual property rights shall file an application for activation to the platform through a member branch. The application includes the following documents:
5.1 Those who want to issue supply informations:
5.1.1 Name of the intellectual property right;
5.1.2 Technical parameters;
5.1.3 Function;
5.1.4 User’s book;

5.1.5 Supporting evidence on the intellectual property right, such as Patent Certificate;
5.1.6 Other documents the platform required.
5.2 .Those who want to issue demand information:
5.2.1 Description of the wanted technique;
5.2.2 General description of the application of the technique;
5.2.3 Other supporting materials required by this platform.

6. The member shall guarantee that the subject which he wants to trade on the platform does not:
6.1 Violate the APEC communiques,
6.2 Violate the international pacts on intellectual property right entered by various entities,
6.3 Involve the secrets of various entities,
6.4 Have a title in dispute,
6.5 Have a limited or disputed disposal right
6.6 Have other things the platform thinks improper for trading.

7. The platform shall inspect the presented documents within × days. Those in compliance with requirements shall be granted to activate. Those which fail to meet requirement will be asked for more supporting documents.

8. The information being allowed to activate shall be published by the platform by the following means:
8.1 Publishing on the platform's web site.
8.2 Irregularly publishing on relevant media;
8.3 Publishing by the other proper means.

Chapter Four
Trading

Article 9 Members with an intention to trade the published information shall record his intention on the platform.

Article 10 After the recording, members can negotiate directly with the information provider's member. The platform will trace the status of the deal, checking the development of the deal regularly or irregularly.

Article 11 Members shall have direct discussions on the terms and conditions of the deal. If they reach an agreement, they can sign the contract by themselves.

Article 12 The platform suggest the contract shall include the following terms and conditions:
12.1 The details of two counterparties
12.2 The Subject
12.3 Belonging of the Title of the intellectual property right;
12.4 Price, terms of payment and expiration date;
12.5 Compensation when breaching the contract;

12.6 Settlement of the disputes
12.7 The date of signature;
12.8 Other terms and conditions reached by themselves.

Article 13 If the members in discussion need any professional services, they could inquire the platform. The platform shall introduce professional service organization to the members. Members shall directly contact the organization. The platform will not be involved in or undertake any responsibilities.

Article 14 Members who have reached an agreement on terms and conditions could apply to the platform for witness the signing of the contract. After verifying the member's identification and authenticate the intention to the deal, the platform will issue a certificate to testify the witness. The witnessed contract shall have 3 originals with the same content. Each contracting party has one original. One original copy is kept by the platform in the archives.

Article 15 The following activities are prohibited:
15.1 To reach an agreement by providing false information or other cheating activities.
15.2 To offer the subject which is in violation of the other people's intellectual property rights or priority.
15.3 To violate APEC communiques, international pacts and other laws and regulations.

Chapter Five
The Settlement of Disputes

Article 16 Disputes relevant to deals would be resolved through negotiation. If no resolution made, the disputes shall be settled by international arbitration or by filing a lawsuit.

Chapter Six
Appendix

Article 17 The right of interpreting this rule goes to the platform.
Article 18 The rule shall take effect from its publication.

APEC Service Platform for the Knowledge Resources System Resources Pool Management Detailed Rules (Draft)

Article 1 APEC PTRIP Service Platform Resources Pool is one of the services provided by APEC Service Platform for the knowledge resources system.

Article 2 APEC PTRIP Service Platform Resources Pool Management Principles:
2.1 Tolerance: The strategy adopted by resources pool managers is openness and tolerance. All potential intellectual resources holders are encouraged to put their resources in this pool.
2.2 Honesty: APEC PTRIP Service Platform require all its members to honor what they have promised and put their resources in the pool for collective management.

2.3 Voluntary: APEC PTRIP Service Platform encourage but not force its members to put their resources into pool.
2.4 Nonexclusiveness: Members can get the authorizations through at least two means: on the platform or discussing directly with intellectual property holders.

Article 3 Resources which would be put into the pool:
3.1 Resources which would be put into the pool should better be independent, objective and open.
3.2 APEC Service Platform for the knowledge resource system will inspect the resources submitted by members.
3.3 APEC Service Platform for the knowledge resource system will verify the patent certificates.
3.4 Every resource item shall apply separately. After the start of assessment process, the assessing and putting into the resources pool shall take 6 months to complete.

Article 4 APEC PTRIP Service Platform Resources Pool is in charge of the authorization of the patent. Users can also talk with the property holder directly for the authorization.

Article 5 APEC Service Platform for the knowledge resource system is responsible for running the Resources Pool and assuming the following obligations:
5.1 Appointing independent professional assessors, helping them to coordinate with members.
5.2 Preparing and amending the admitting documents.
5.3 Supporting members to negotiate the patent authorization, execute the authorization and manage the patent.
5.4 With the permit from members, collecting, reporting and imbursing the patent fee and patent transferring fee.
5.5 Advising members the market feedback to the resources pool.
5.6 Giving as much as possible help to the execution and protection of the patent and other intellectual resources in the pool.

Article 6 The right of interpreting this rule goes to the platform.

Article 7 The rule shall take effect from its publication.

Service Platform for the knowledge resource system

Appendix C an Explanation of "Assessment Reference Index System of APEC IP Protection's Promotional Effects to Paperless trading"

"Assessment reference index system of APEC IP protection's promotional effects to paperless trading" refers to two parts: paperless trading and IP protection. Since the assessment reference index system of paperless trading has been elaborated in "The investigation report on the development of APEC paperless trading", which was issued jointly by China International Electronic Commerce Center and APEC E-Commerce Business Alliance in September 2005, no further illustration will be made here. This part will mainly give an explanation to the promotional effects of IP protection, as an assessment of intangible assets, to trade enterprises, and to the development of paperless trading among the whole APEC economies.

"Servicization of trade" has become a prevailing trend. The tangible and intangible capital such as substantial property rights, intellectual property rights and etc. all belong to the fixed assets of enterprises, and IP assets have become the important part of assets of enterprises including trade enterprises, while the assessment of intangible assets taking IP as important content hasn't been attached importance to as it was supposed to be. When assessing their enterprise assets, a large number of trade enterprises didn't take IP like patent right and trademark right into consideration. Even though assessments of IP were undertaken by some trade enterprises, they are always under-evaluated, which are far below the real value of their IP. It can not completely reveal the assets of trade enterprises, and can even cause the drain of enterprise assets. This certainly has relations with the inadequacy of research in the theory and method of IP assessment, IP assessment system and assessment efforts. While insufficient understanding of the value of IP, and the ignorance of IP's role as an important economical resource in society are also crucial reasons. Therefore, enhancing people's understanding of the value of IP and reinforcing research of the assessment of trade enterprises' IP have very urgent and far-reaching meanings. This part will make a tentative discussion of the problems in trade enterprises' IP assessment.

The so called assessment means to define the currency value of some assets by taking appropriate procedures and standards. Trade enterprise assets assessment means to evaluate the fair market value of enterprise assets in a particular assessment benchmark day, according to their purposes, such as change of property right, asset protection, transformation of shareholding system and liquidation. Different assessment methods can be undertaken based on different assessment purposes. In the process of paperless trading in trade enterprise, the assessment of IP belongs to the category of enterprise assets assessment. It is used to fix the current value of IP and the value through future effects. IP value puts emphasize on future benefits. With the IP value been more and more aware by trade enterprises, profitability of IP has become the way of pursuing maximized profits by means of all the resources. Therefore, it is very important to understand all the rights relevant to IP and the ways of manipulation in IP assessment. The IP assessment of trade enterprises should be based on the most potential use, rather than the real way of using by trade enterprises in assessment.

The assessment of enterprise IP has the following characteristics:

1. Timeliness. IP is featured with timeliness. When IP protection period expires or when the right fails because of some other reasons, its value may reduce from "valuable" to "valueless", the latter

means its assessment value is “zero”. In 1995, in China’s southwestern area, the bidding floor of a trademark was evaluated as RMB 100 million in auction market. But when the auction ended, the buyer was informed that the application for registration of the trademark had been refused. If the state of its right operation of IP in different periods is not taken into consideration, the assessment value of a period can hardly comply with reality. That is to say, in different periods, the assessment values of IP are different. The IP value of trade enterprise assessed in a particular period can only reveal the value on assessment benchmark day.

2. Pertinence. Assets assessment is well directed or on purpose. Trade enterprise IP assessment is not an exception. It is carried out for a particular purpose, and is closely related to property right trade terms, such as investment conditions, transfer conditions and admission requirements. It provides intermediary services for changes of property right in the market, such as joint operation among trade enterprises, transformation of shareholding system, merger and acquisition, listing and purchasing, technology trade and transfer of IP, gives a fair market price for assessed IP, and facilitates the realization of purposes of capital operation activities in trade enterprises.

3. Assessableness. Trade enterprise IP assessment means in a particular property right trade condition, that is based on the operation state of trade enterprise IP in trade enterprise, assessors, by means of some scientific methods and logic analysis, make reasonable conclusions of the value of IP of trade enterprise in a particular time, according to IP’s characteristics and assessment purposes. It is featured with assessableness.

4. Referentiality and consultability. Trade enterprise IP assessment has no legal effect, rather, it only provide references to all parties of IP trade among trade enterprises. The closing cost is decided through consultation among all parties in trade. Trade enterprise IP assessment reveals the characteristic of referentiality ans consultability.

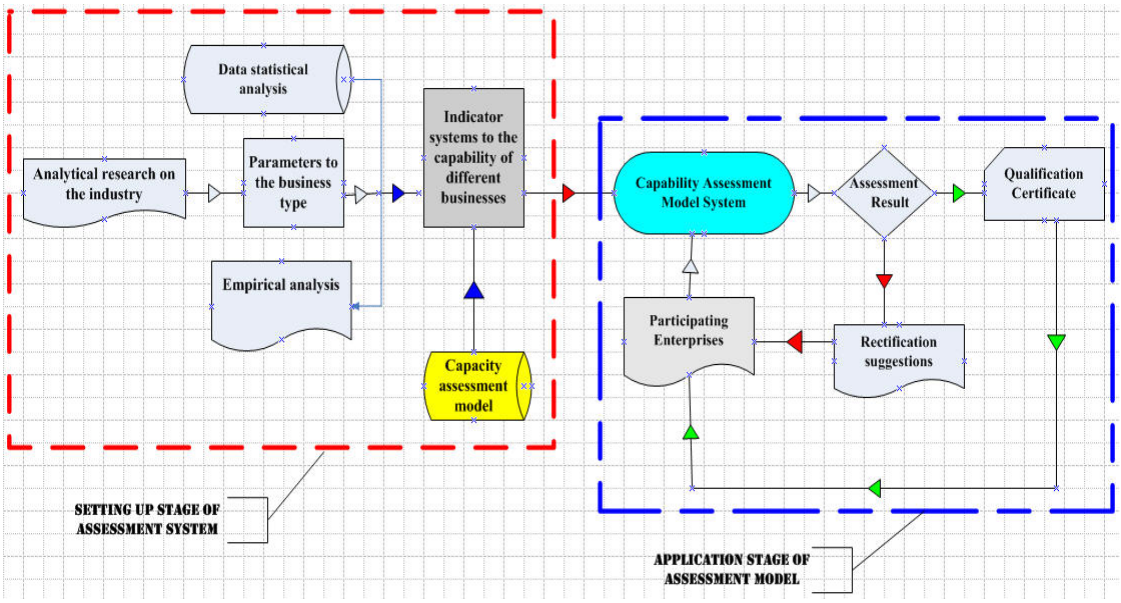


Figure 52 Schematic drawing on “Assessment reference index system of APEC IP protection’s promotional effects to paperless trading”

Based on the above mentioned characteristics and facts, this report proposes "Assessment reference index system of APEC IP protection's promotional effects to paperless trading" (as shown in Frigure 51)

From the angle of IP protection, through the assessment of IP in the process of promoting paperless trading in trade enterprises, people can clearly notice the value of IP and thus increase their awareness of IP protection. Meanwhile, protection through legal means is one of the important ways of protecting enterprise's IP. But in legal protection of IP, a key and intractable question is the limit of compensation for infringement is hard to define in practice, no matter the profits owned by infringer because of infringement in the period of infringement, the profits lost by the infringed party in the period of being infringed, or the certificate fee as claim of compensation in normal events. But because of the differences in positions and interests of parties involved, agreements can hardly be reached on the amount of claim, which brings about difficulties in legal practice. The problem of low infringement compensation is common in practice. Therefore, the assessment conducted by property trade and assessment organization as the third party on economic losses created by infringement enables to provide a comparatively objective and reasonable standard of reference for legal protection of trade enterprise IP, and is favorable for settling trade enterprise IP disputes and reinforcing IP protection in trade activities.

"Assessment reference index system of APEC IP protection's promotional effects to paperless trading" is part of "service platform of IP protection in establishing paperless trading capability", is the platform of organizing high-level basic and applied research, assembling and fostering forces and undertaking high-level communication, and is also the operational mechanism of implementing the policy of "openness, mobility, combination and competition".

This mechanism should take the overall development strategy of service platform as the target and open to international competition, so as to carry out basic research, applied basic research (including pre-competition hi-tech research) and other basic works for the purpose of enhancing scientific and technological reserve and primitive innovative capabilities. It should also accumulate basic scientific data, materials and information to provide shared services and provide scientific foundation for macro policy-making. Detailed indexes and parameters are shown in Table 15:

Table 15 Referential indexes and parameters of IP intangible assets assessment

Replacement cost	IP intangible capital cost contains all the expenses of developing or acquiring materialized labor and living labor in holding period for carrying out paperless trading	**Conclusion** These eight indexes are the indexes used in most cases in IP intangible assets assessment. Their use is determined by
Earnings	Earnings are future trade profits directly brought by IP intangible assets through prediction and analysis. The earnings for choice are financial index such as total profits, net profit and net cash flow, in which net cash flow is the index usually employed in international practice	

Opportunity cost	Opportunity cost is the profit lost supported by IP because of possible shutout in case of IP intangible assets transfer, investment and selling, or the profit reduced or expenses increased because of the trade rivals caused by themselves. All these constitute opportunity cost of IP intangible transfer, and should be compensated by IP intangible assets buyers. Opportunity cost= net reduced profit by transferred intangible assets+ net increased expense by re-development of intangible assets	assessment purposes and situations of assessment target, rather than the subjective and random choice of appraisers. For example: three possible circumstances may happen in an assessment of technological intangible assets: (1) In the assessment for the purpose of taking technological achievements as capital contributions for equity shares, the capitalized value of this technology should be determined. The indexes used are earnings, discount rate and economic life, and etc. (2) In the assessment for the purpose of technological achievements trade, that is, to assess transfer charge and
Lowest charge	Lowest charge, sometimes called "initial fee", is the "guaranteed" charge set by the situation of transfer charge in real manufacture and sale of seller and buyer, and is pre-deducted when determining the proportion charge. The lowest charge of IP intangible assets transfer is determined by two factors: IP intangible assets replacement cost and opportunity cost. i.e. Intangible lowest charge=net value of replacement cost*transfer cost absorption rate+ opportunity cost of transferred intangible assets, in this formula, transfer cost absorption rate= designing capability of using intangible assets by buyer/ total designing capability of using intangible assets*100%	
Allocation rate of technology	Allocation rate of technology is an assessing method based on the principle of sharing trade profits, which is widely used in the assessment of technological intangible assets like patent, patent technology, scientific research achievements and computer software. There are "theories of four aspects" and "theories of three aspects" in accordance with profit sharing principle followed by technology evaluation in international technology trade. "Theories of four aspects" believes the contributing factors of profits can be classified into capital, labor, technology and management; "Theories of three aspects" means factors of capital, technology and operation. In addition, because the profit of the introducing party in technology trade is hard to determine and business secrets should be kept, it is difficult to get the accurate amount of earnings. Sales revenue allocation rate in replace of profit allocation rate is usually adopted as allocation rate of technology to solve the problem.	

Economic life	The economic life of IP intangible assets refers to the period of time from introduction to overall extension of the intangible assets. The assessment of the economic life of IP intangible assets should be assessed directly in accordance with the time of bringing additional profits, and should be determined by the following principles: (1) according to the fixed number of years set by design plan, that is to determine on the basis of the estimated length of usage when designing, while take other relevant factors into consideration, such as technology secret assessment; (2) to determine according to time limit set by contract or agreement, such as patent permission assessment; (3) to determine according to laws and regulations, such as patent right and copyright. These rules are stipulated in relevant laws; (4) to determine according to domestic and international practice, for example, in domestic and international practice, the economic life of IP intangible assets such as trademark right, reputation, name of manufacture is unlimited; (5) to determine comprehensively according to relevant analytical research. Appraises make conclusions from experience through analysis of the performance, features and development in home and abroad of the assessed IP intangible assets.	licensing fee of capitalized technological achievements, the indexes used are earnings, lowest charge, allocation rate of technology, replacement cost, opportunity cost, and etc. (3) In the assessment for the purpose of clarifying property rights, the indexes used are replacement cost and damage rate. Therefore, the use of assessment indexes can be comprehended only by analysis on concrete cases.
Discount rate	Discount rate is the most sensitive index in assessing IP intangible assets by income approach, since a tiny change of discount rate can bring about dramatic difference in assessment of capital	
Damage rate	There is only intangible damage in IP intangible assets. It has no relation with the existence of intangible assets and real use, which is decided only by scientific and technological advances and change of environment. IP intangible damage consists of functional damage and economic damage.	

Appendix D Model Illustration

The creation of model is based on the capability factors of classifying and analyzing paperless trading and IP protection of the there entities engaged in economical activities:

☆ Managers, supervisors and arbiters of economic activities (especially refers to governments, departments and organizations of management, supervision and arbitration of economy members);

☆ Service providers of economic activities (service providers who can provide all kinds of services relevant to trade activities, including platform of public service, financial service, logistics service, technology applied service and independent third party platform, etc.);

☆ Entities of economic activities (especially refers to enterprises and organizations and etc. engaged in trade activities)

(1) Factor illustration of establishing paperless trading capability

Paperless trading assessment factors for service providers of economic activities:

—Service factor Public service: services revolve IP, permission, inspection and customs in the field of international trade; Financial service: bank and insurance company services; Logistics service: services for logistics enterprises; Applied service: relevant services provided by applied service providers, such as certificate issuing and ID authentication and etc. of CA center; exchange service of digital data provided by the third party platform.

—Market factor openness degree of market and degree of dependence on international trade.

—Industry factor access mechanism. There are differences of market access mechanism under different systems; situation of competition and cooperation within and outside the industry.

Paperless trading capability assessment factors for managers, supervisors and arbiters of economic activities:

—Political, economic and social factors There are differences and discrepancies in the power of APEC members, their political appeals, economic conditions and social development

—Legal factor The differences in the formulation and implementation of laws, regulations and standards of APEC members provide opportunity of bridging and balancing digital gaps in the family of APEC.

—Technological factor Infrastructures: Network service (operators of telecommunications); IT service: solutions (hardware, software and consultation, etc.)

Paperless trading capability assessment factor for entities (enterprises) of economic activities:

—Enterprise human resource factor Personal abilities: Ability of adaptation and self-development; ability of interpersonal communication: reliable, able to communicate, influential, individual difference, interpersonal network; ability of business and management: problem analysis and solving strategy, business acumen, controlling ability, ability of planning and implementing, strategic thoughts, etc.

— Capability establishing factor within enterprise: Enterprise core competitiveness; enterprise human resource, enterprise management capability; establishment of corporate image; enterprise resource reserve; customer resource reserve, capital reserve and supply chain reserve; enterprise future development plan

— Capability factor of Enterprise resource integration: The standard of judging whether an

enterprise is mature and sustainable or not is whether it can integrate the numerous favorable, unfavorable or comparatively unfavorable resources for its own use to realize the maximization of profits, rather than the ability in some aspect.

"There entities" in the establishment of paperless trading capability can be embodied as: (shown in Frigure 52)

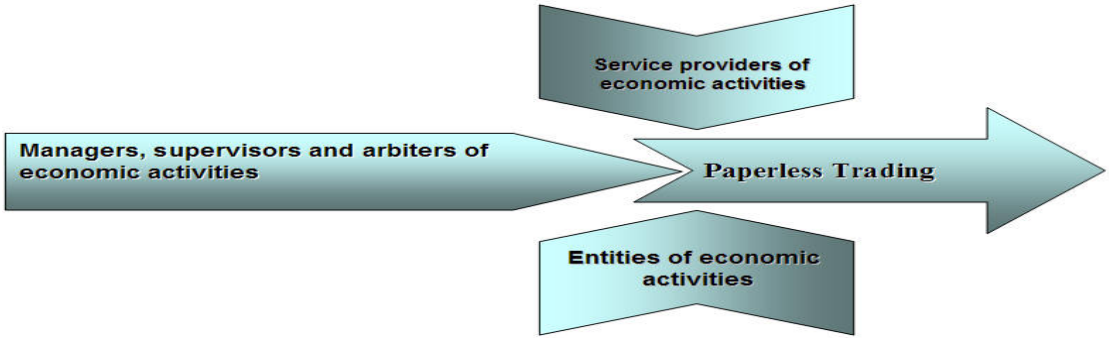


Figure 53 "Three entities" in PT

(2) Illustration of IP protection capability factors

IP protection capability assessment factors for managers, supervisors and arbiters of economic activities

—Degree of political stability;

—State confidence degree;

—Economic rules of market;

—Effective judicial system;

—Whether judicial or political systems are in favor of IP or not;

—Effective administrative managing and implementing capabilities;

—Cost of transferring, protecting and spreading IP management, social and administrative cost;

—Situation of judicial practice and corruption and efforts of anti-corruption.

IP protection capability assessment factors of service providers of economic activities:

—Internal conditions. Cultural difference, legal system, industry competition, enterprise core competitiveness;

—External conditions. Basic facts of domestic and foreign trade, will of the state caused by national interests, such as political choice, settlement mechanism of interests disputes, transformation of laws and regulations in the globe, etc.

—IP problems. Registration system, convenience degree of acquiring IP, and protection level, etc.

IP protection capability assessment factors for entities of economic activities:

—Quantity of IP;

—Quality of IP;

—Distribution of IP;

—Publicity of IP information;

—Implementing capability of contract;

—Infringement;

—Trademark protection.

Positional relation of "three entities" in the establishment of IP protection capability relevant with trade (Shown in Figure 53)

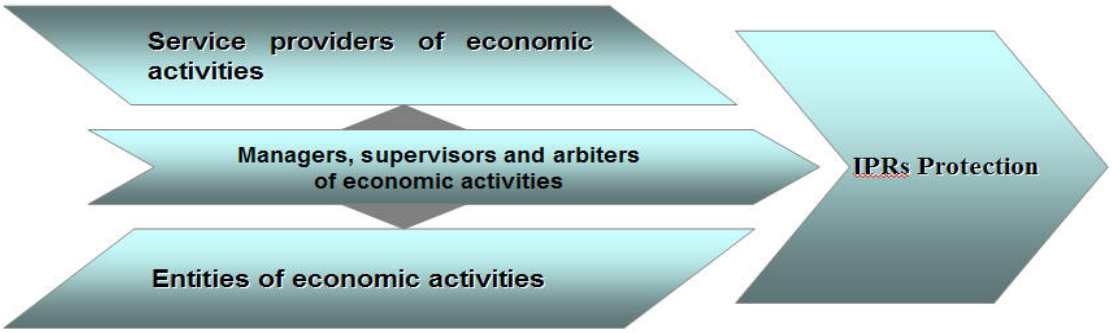


Figure 54 "Three entities" of IP protection in the establishment of PT

Table 16 Corresponding relation between PTs and IPs

<table>
<tr><th colspan="3"></th><th colspan="2">PTs</th><th colspan="2">IPs protection</th></tr>
<tr><td rowspan="11">Establishment of macro capability</td><td rowspan="4">Strategy</td><td colspan="2">Trade liberation degree</td><td colspan="2" rowspan="2">Political environment</td></tr>
<tr><td colspan="2">Trade dependence degree</td></tr>
<tr><td colspan="2">Social ideology</td><td colspan="2">State confidence degree</td></tr>
<tr><td colspan="2">Innovation</td><td colspan="2">Situation of corruption and anti-corruption</td></tr>
<tr><td rowspan="7">System</td><td rowspan="5">Service system</td><td>Public service</td><td colspan="2" rowspan="2">Economic rules of market</td></tr>
<tr><td>Financial service</td></tr>
<tr><td>Logistics service</td><td colspan="2" rowspan="2">Administrative management</td></tr>
<tr><td>Applied service</td></tr>
<tr><td>Third party platform</td><td colspan="2">Administrative capability and cost</td></tr>
<tr><td colspan="2">Legal system</td><td colspan="2">Cost of managing, protecting and spreading IP</td></tr>
<tr><td rowspan="4"></td><td rowspan="4">Paperless trading standard</td><td rowspan="2">Judicial environment</td><td>Legal system</td></tr>
<tr><td>Patent policy orientation</td></tr>
<tr><td rowspan="2">Substantial property</td><td>Convenience degree of registering property</td></tr>
<tr><td>Protection level</td></tr>
</table>

	Standard	CA certification	IP	Infringement
				Trademark protection
				Registration system
Establishment of micro capability	Personnel	Personal ability	Personal ability	
		Business ability		
		Management ability	Professional ability of protecting IP	
		Communication ability		
	Management style	Enterprise core capability	Implementing force of contract	
		Enterprise resource integration capability	Cultural difference	
		Education and training	Education and training	
	Technology	Infrastructure	Quantity of product	
		IT service	Quality of product	
			Proportional structure	
		Technological guarantee	Means of publicity	
			Technological innovation	
	Common values	Leading force		
		Implementing force		
		Core competitiveness		

Appendix E Questionnaires

APEC Project on Paperless Trading Capacity Building and Intellectual Property Protection Questionnaire (For Services Provides)

Declaration

Thank you very much for filling out this questionnaire. The questionnaire was designed to collect information concerning paperless trading and intellectual property rights protection for the services provides in economies of APEC. Data collected in this questionnaire will be for research only and will not be revealed to the public. Thanks for your help.

Chapter J THE BASIC INFORMATION OF THE INVESTIGATED ENTERPRISE AND INDIVIDUAL

1. The basic information of your enterprise or yourself

NATURE	○ Service agencies supported by the government ○ the non-profit service agencies of third party ○ the profitable service agencies of third party ○ the pillaring department of the large multinational company ○ other_____
SCALE (number of the employees)	○below 20 ○21-50 ○51-100 ○over 100
THE PROPORTION OF THE TECHNOLOGY PERSONNEL TO THE NUMBER OF ALL EMPLOYEES	○over 80% ○70-80% ○60-70% ○50-60% ○below 50%
YOUR POSITION	○ Researcher ○ R&D management personnel ○ Corporate management personnel

2. The stage of technology level of your enterprise

○ lower, needs to introduce the international advanced technology

○ medium, but partially introducing the international advanced technology

○ higher, using the international advanced technology, but unwilling to R&D independently

○ highest, using the international advanced technology and having R&D team responsible for tapping the advanced technology

Chapter JJ THE BASIC SITUATION OF INTELLECTUAL PROPERTY RIGHTS PROTECTION OF THE SERVICE PROVIDERS

3. How many of the following types about the property rights do you know?【multiple choice】

○ patent ○trading mark ○ production

○ geological marks ○ new variety of packaging ○registration names of enterprise

○ packaging and decoration of products ○ commercial secrets
○ computer software ○ IC layout
○ internet domain name ○ biological inventions

4. How do you think about the necessity and significance to strength the intellectual property rights protection in the walk of service industry?【multiple choice】

○ meeting the international demand so as to improve communication and competition
○ improving the strength and reputation of the company
○ meeting the need of technology entering into the economy market
○ effectively evaluating and simulating the R&D staffs
○ promoting the transformation and industrialization of the technology products
○ protecting the technology secrets and developing rights
○ promoting the technological innovation so as to meet the need of developing sophisticated technology
○ other reasons [please write down] _____

5. Does your company have the specialized agency to protect the intellectual property rights?

○ Yes ○ No

If not, does your company have appointed staff specializing in the intellectual property rights protection?

○ Yes ○ No

6. Have ever your company run into the disputes regarding to the intellectual property rights protection?

○ Yes ○ No

If yes, it is which one of the followings

○ new products ○ patent ○ results ○ copyright ○others_____

The situation of disputes solving is ?

○ hard to solve ○ arbitration ○ through suing ○ through consultation

7. Have your company or local district ever promulgated the regulations regarding to the intellectual property rights protection other than nationwide ones ?

○ No

○Yes ○ local district topic: _____
○ in enterprise topic: _____

8. What problems do you think existing in the area of the intellectual property rights protection in the service industry?【multiple choice】

○ no specialized administrative agency of the intellectual property rights protection
○ paying high attention to the results, rather than patents and
○ paying high attention to the papers, but the applicants of patent and
○ the stimulation system of patent and
○ related laws and regulations in the intellectual property rights is imperfect
○ the executive ability of cases about the intellectual property rights
○ the related market regulation of the intellectual property rights is imperfect
○ serious loss of intellectual property
○ others [please specify]_____

9. After yours corporation completed a technical achievement or the invention, wants to use it's obtain the corresponding income, yes or not? _____ The ways? 【multiple choice】

○ No. As the enterprise resources, remains and uses it by oneself.
○ Yes. As commodity dissemination, the way is_____

Ps: please fill the numbers（1、2、3、……）into the blank

10. The ratio of transformation of scientific fruits and patents of your company is_____‰

What are the underpinnings reasons influencing the transformation of the scientific fruit? 【multiple choice】

○ the appraisal the scientific fruit of is not reliable
○ the long cycle of transformation
○ the market of projects is small
○ the shortage of the fund
○ the property rights of the scientific fruit is ambiguous
○ the weakness of the intellectual property rights protection
○ the scientific fruits are immature
○ the service provided by intermediary is irregular
○ the regulations is not put into practice
○ the specialized talents knowing market and operation well are rare
○ other [please specify]

11. Whether had any patents about the technical products or others on the fields of paperless trading in services industry?
○No ○Yes, the name is _____

12. What difficulties do you think in making the protection of the intellectual property rights a success? 【multiple choice】

○ the coverage is large and difficult in technology and administration
○ the keeping secrets of technology and fruits are difficult

○ the highly mobility of the R&D personnel and the difficulty to administrate them
○ the founding and maintaining of the market regulations are hard
○ the arbitraging, accountability and implementing are hard
○ dividing and recovering the loss
○ other [please specify]

Ps: please fill the numbers（1、2、3、……）into the blank

13. When your company promotes your products, which way do you take to inform your customer? 【multiple choice】

1) advertisement 2) demonstration meeting
3) drop in sale promotion 4) network marketing
5) exhibition 6)others_____

14. In this process whether are there correlative materials to provide?
○Yes ○ No
If no, which way can be taken to obtain these materials?
1) buy 2) bestow with some qualification
3) bestow with the product 4) others_____

15. When your company provides products, whether have you considered the protection and guard of the copyright?
○Yes ○No
The way you take to implement is _____

Chapter JJJ THE BASIC SITUATION IN THE INTERNATIONAL TRADE

16. Have you're ever provided any service to the international trade company?
○Yes ○No
If yes, what kinds of the service it is? _____

17. This kind of service main application in below domain
1) custom 2) trading license 3)certificate of original to apply
4) inspection and quarantine 5) the agency of transportation 6) logistic company
7) the bank settlement 8) others_____

18. How well the requirements of the customs can be satisfied?
○ cannot satisfy ○ basically satisfy
○ definitely satisfy ○ not only satisfies, moreover provides the attachment service

19. Do you know the paperless tradings?

○ knew (please to 16th produces your answer)
○ not to know (please jump 16th has continued to ask volume)

20. Regarding to the ability of constructing paperless trading, how much do you think following factors can contribute to the ability of constructing paperless trading?

Please below the factor sequence number separately will fill in:

1 - unimportant_____; 2 - not too important_____;
3 - generally important_____; 4 - quietly important_____;
5 - count for much_____.

1) specialized talented person 2) enterprise standardization construction
3) advanced technical application 4) best practice knowledge sharing
5) uses the low cost technology and the service 6) provides one-station service
7) inclining support policy 8) legal laws and regulations
9) competition and the cooperation 10) impels the market
11) more effective third party service 12) strategic plan and implementation
13) others_____

21. Regarding to the implementing ability of the construction of the paperless, which technology can make it a reality?

_____

Chapter IV PLEASE WRITES DOWN THE PROPOSALS AND SUGGESTIONS OF STRENGTHENING INTELLECTUAL PROPERTY RIGHTS PROTECTION IN THE SERVICE INDUSTRY.

22. What are your suggestions and plans to strengthening intellectual property rights protection?

○ setting up specialized agencies to protect intellectual property rights
○ appointing specialized person to take charge in the intellectual property rights protection
○ implementing the regulations to protect intellectual property rights
○ innovating the scientific plans 、managing scientific fruits and appraisal system
○ rewarding and punishing properly, setting effective intellectual property rights protection and stimulating system
○ others_____

23. Do you think it is necessary to sign the agreement of responsibility related to intellectual property rights protection with the departing staffs or people studying or retraining or researching in your company?

○Yes ○No

24. Do you think it is necessary to found an intermediary agency of intellectual property rights in service industry in order to supply a regular delegate service of intellectual property rights?

○Yes ○No

25. Please write down the specified suggestions and proposals to strengthen the intellectual

property rights protection in the service industry regarding to the international service trade.

_____
_____
_____
_____
_____
_____
_____

~Thanks for your cooperation~

Questionnaire

On APEC Paperless Trading and Intellectual Property Protection

(For Enterprises)

Declaration

Thank you very much for filling out this questionnaire. The questionnaire was designed to collect enterprises' information concerning paperless trading and intellectual property rights protection in scope of APEC. Data collected in this questionnaire will be for research only and will not be revealed to the public. Thanks for your help.

Basic Information

1、Basic Information

Enterprise Name:_____ Economy：_____

Name of Form Filler：_____ Position：_____

Telephone：_____ Fax：_____

Email：_____ Address：_____

2、 Nature of the enterprise:

1）state-owned 2）public institution 3）private enterprise

4）wholly foreign-owned　　5）joint venture　　6）others_____

3、 Scale of the enterprise：

1）less than 50 employees　　2）50～200 employee

3）201～1,000 employee　　4）More than 1,000 employees

4、 In terms of trade chain, the enterprise belongs to the field of:

1）Production　　2）Logistics

3）Customs　　4）Intermediary Service for Finance or International Trade

5）Consulting　Service　　6）E-trade Technology Provider

7）Others _____

Part One

In terms of paperless trading implementation capacity, what do you think about the contribution level of the following factors?

Point description:

1—Very unimportant；2—Quite unimportant；3—Half-half；4—Quite important； 5—Very important

1 Training of Professionals

1）1　　2）2　　3）3　　4）4　　5）5

2 Enterprise Standardization Building

1）1　　2）2　　3）3　　4）4　　5）5

3 Application of Advanced Technology

1）1　　2）2　　3）3　　4）4　　5）5

4 Knowledge Share of Best Practices

1）1　　2）2　　3）3　　4）4　　5）5

5 Application of low - cost technologies and services

1）1　　2）2　　3）3　　4）4　　5）5

6 Provide one-stop service

1）1　　2）2　　3）3　　4）4　　5）5

7 Lopsided Support Policies

1）1　　2）2　　3）3　　4）4　　5）5

8 Law and Regulations

1）1　　2）2　　3）3　　4）4　　5）5

9 Competition and Cooperation

1）1　　2）2　　3）3　　4）4　　5）5

10 Market Drive

1）1　　2）2　　3）3　　4）4　　5）5

11 Effective Third-party Service

1）1　　2）2　　3）3　　4）4　　5）5

12 Strategic Planning and Implementation

1）1　　2）2　　3）3　　4）4　　5）5

13 Others 1

1）1　　2）2　　3）3　　4）4　　5）5

14 Others 2

1）1　　2）2　　3）3　　4）4　　5）5

15 Others 3

1）1　　2）2　　3）3　　4）4　　5）5

Part Two

During the process of utilizing patent technologies or business methods to implement paperless trading， whether you have met any barriers shown as below:

Ⅰ Human Resource Factors：

1. Enterprise lacks paperless-trading-related technologies, patent awareness and development talents.

1）Strongly Disagree　2）Disagree　　3）Are Uncertain　　4）Agree　　5　　）

Strongly Agree

2. Enterprise hasn't ever organized or participated in any training of paperless trading and intellectual property protection.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

Ⅱ Enterprise Capacity Factors:

1. Top managers are not familiar with paperless trading and the challenges it brings.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

2. Enterprise is not familiar with the competitive advantages of paperless trading and neither knows how it will help to make profit.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

3. In order to incorporate paperless trading into the enterprise's strategic decision making, reengineering and restructure of enterprise management mechanism is needed. However, currently the enterprise hasn't the ability to conduct large-scale management reengineering, therefore, paperless trading cannot be undertaken.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

4. Intellectual property hasn't been emphasized in the corporate culture of the enterprise, and intellectual property strategy hasn't been achieved.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

5. The cost of the investment, operation and maintenance of paperless trading solution is comparatively high, so enterprise has to invest much time, capital and human resource.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

6. Under the circumstance that the enterprise's resources, such as human resources and technologies, are very limited, the implementation of paperless trading will make the enterprise's management process and business process more complicated.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

Ⅲ Technical Factors:

1. If enterprise wants to achieve profit maximization through the application of paperless trading, the management information system of the enterprise must be integrated with other relevant systems. However, the current management information system hasn't scalability.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

2. Paperless trading requires security authentication process and relevant technologies. However, current network cannot provide enterprises safe environment to conduct paperless trading. Under current situation, it will be risky for both trade sides to undertake paperless trading.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

3. The main factor hindering enterprise's implementation of paperless trading is the lack of relevant paperless trading technologies.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

4. Patent technologies introduced or gained cannot meet the requirements of the enterprise's demand. In other words, there is a divide between the technologies introduced and actual application.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

Ⅳ Environment Factors:

1. The environment to implement paperless trading is not perfect enough, so paperless trading technologies cannot be utilized and spread through the whole trade chain.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

2. There isn't recognized business mode to show enterprises how to implement paperless trading. Therefore, with the lack of business mode, enterprises cannot evaluate their ROI (Return on Investment).

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5)

Strongly Agree

3. Relevant law and regulations haven't been established. Enterprises can hardly undertake and conduct large-scale paperless trading without the establishment of legal system in every level, such as economy level and world level.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5 ）

Strongly Agree

Ⅴ Industry Factors:

1.The competition between enterprises within the same industry hinders the spread and access to patent technologies or business methods.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5 ）

Strongly Agree

2. The level of enterprise's emphasis on paperless trading and intellectual property depends on the features and characteristics of the industry.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5 ）

Strongly Agree

3. There aren't relevant industry associations working on the spread, exchange and communication of paperless-trading-related intellectual property.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5 ）

Strongly Agree

Ⅵ Market Factors:

1. Because of the lack of information exchange channels, enterprises are not familiar with market situation, so even if the enterprises have the ability to development new technologies, they don't know what kind of technologies they should invest in.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5 ）

Strongly Agree

2. Enterprise has some technologies or patents, but it is hard to spread or promote them, because of the lack of information communication channels.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5 ）

Strongly Agree

3. When some technologies or patents are needed for the implementation of paperless trading, enterprise cannot find the source of those technologies, or even the information channels.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5）Strongly Agree

4. There is less demand for paperless trading in international market or domestic market, so relevant technologies developed by enterprises cannot be fully used.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5）Strongly Agree

Ⅶ Service Factors:

1. Paperless trading hasn't been fully supported by government or third-party service provider, so it is hard to utilize technologies related to paperless trading or to make full use of them.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5）Strongly Agree

Ⅷ Other 1_____

Ⅸ Other 2_____

Ⅹ Other 3_____

Part Three

Please answer the following questions base on the true status of your enterprise：

1. My enterprise has independent intellectual property management department or independent responsible person.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5）Strongly Agree

2. My enterprise will hold regular training on intellectual property knowledge.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5）Strongly Agree

3. Intellectual property protection is of great importance to enterprise's operation and development.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5） Strongly Agree

4. My enterprise has already utilized paperless trading technologies to conduct international trade.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5） Strongly Agree

5. My enterprise has developed some intellectual property, and we are willing to license them to other enterprises.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5） Strongly Agree

6. My enterprise is willing to purchase the use right of other enterprises' intellectual property.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5） Strongly Agree

7．My enterprise does make some economic benefits from licensing the paperless-trading-related intellectual property.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5） Strongly Agree

❑ Economic benefit gained is about_____(US dollar)

8． My enterprise has special funds for the development, operation and protection of intellectual property.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5） Strongly Agree

❑ Annual special fund is about_____(US dollar)

9． How many technologies and business methods for paperless trading have been developed by your enterprise, including patent technologies and business methods?

1）0 2）Less than 10 3）10-20 4）20-30 5）30-40

6）40-50 7）50-60 8）60-70 9）70-80 10）80-100

11）More than 100

10. How many technologies and business methods for paperless trading have been introduced or purchased by your enterprise？

1）0　　2）Less than 10　　3）10-20　　4）20-30　　5）30-40

6）40-50　　7）50-60　　8）60-70　　9）70-80　　10）80-100

11）More than 100

11. How many intellectual properties, including technologies，business methods and copyrights，for paperless trading in your enterprise have been licensed to other enterprises? （please calculate based on times）

1）0　　2）Less than 10　　3）10-20　　4）20-30　　5）30-40

6）40-50　　7）50-60　　8）60-70　　9）70-80　　10）80-100

11）More than 100

12. How much licensing fee of your intellectual properties has been gained, including the licensing of patent technologies，business methods and copyrights? （please calculate by US dollar）

_____(US dollar)

13. My enterprise have found and abided by some technical standards or management standards related to paperless trading.

1）Strongly Disagree　2）Disagree　　3）Are Uncertain　　4）Agree　　5）Strongly Agree

14. My enterprise will exchange technical ideas with competitors and will sold intellectual property to / purchase from competitors.

1）Strongly Disagree　2）Disagree　　3）Are Uncertain　　4）Agree　　5）Strongly Agree

15. In terms of paperless trading implementation capacity, my enterprise can meet the average level of market.

1）Strongly Disagree 2）Disagree 3）Are Uncertain 4）Agree 5） Strongly Agree

16、Additional Comments：_____

_____

_____

Part Four

Does your enterprise have any strategic plan or development guideline in the aspects of paperless trading implementation, paperless trading capacity building and relevant intellectual property protection and operation?

_____

_____

_____

_____

_____

_____

_____

Part Five

If an APEC intellectual property（paperless trading related）information exchange channel or platform will be established，what kind of demands or suggestions will your enterprise have?

❑ Classify all the paperless-trading-related intellectual property in APEC region by industry or uses to form an information database of intellectual resources.

❑ Establish information exchange platform of paperless-trading-related intellectual property in APEC region, including patent technologies and business methods.

❑ Information platform provides the functionality of inquiring the information of specific technologies and business methods.

❑ Information platform provides the functionality of intellectual property transaction.

❑ Information platform provides the functionality of communication or negotiation between trade parties.

❑ Others 1 _____

❑ Others 2 _____

❑ Others 3 _____

Part Six

If your enterprise has some paperless-trading-related intellectual property and willing to share the list of them, we will be glad to collect the precious information.

Thank you very much for your participation and supportting!

Questionnaire on APEC Paperless Trading and Intellectual Property Rights Protection

（For Economies）

Declaration: Thank you very much for filling out this questionnaire. The questionnaire was designed to collect information concerning paperless trading and intellectual property rights protection in economies of APEC. Data collected in this questionnaire will be for research only and will not be revealed to the public. Thanks for your help.

Ⅰ Basic information

Name of economy_____ Date_____

Name of Form filler_____ Position_____

Tel_____ Fax _____

Email_____ Add_____

II Development situation of paperless trading in the economy

1. How many international business enterprises exist in your economy?

   1) 5,000 - 10,000　　2) 10,000 - 50,000

   3) 50,000—100,000　　4) 100,000 - 300,000

   5) More than 300,000

2. How many international business enterprises are using paperless trading means?

   1) 0 - 2,000　　2) 2,000 - 5,000

   3) 5,000 - 10,000　　4) 10,000 - 50,000

   5) 50,000—100,000　　6) 100,000 - 300,000

   7) More than 300,000

3. Which enterprises do you think are in the lead in paperless trading application area?
   (Please list 3)

   1) _____
   2) _____
   3) _____

4. Are there any laws or policy related to paperless trading in your economy? (such as Electronic Transaction Act, Electronic Signature Act)

   1) Yes

   2) No

   If any, please write down their names_____
   _____

5. Are there any governmental instrumentalities administrating paperless trading in your economy?

   1) Yes

2) No

If any, please write down their names_____

6. Are there any non-governmental organizations administrating paperless trading in your economy?

1) Yes

2) No

If any, please write down their names:_____

7. Are there any technical standard or applied standard on paperless trading in your economy?

1) Yes

2) No

If any, please enumerate 5 representative standards.

1) _____
2) _____
3) _____
4) _____
5) _____

8. Are there any paperless trading training systems in your economy?

1) Yes 2) No

If any, the forms are :

1) Related specialty set up in educational system.
2) Related training by government provides financially fund
3) Related training organized by governmental instrumentality.
4) Related training organized by the non-governmental organizations
5) Others_____

III The situation of intellectual property rights protection in the economy

9. International conventions on protecting intellectual property rights to which your economy acceded are:

1) Paris Convention on the Protection of Industrial Property

2) Patent Cooperation Treaty (PCT)

3) International Patent classification Agreement

4) Patent Law Treaty(PLT)

5) Agreement On Trade-related Aspects of Intellectual Property Right(TRIPS)

6) Universal Copyright Convention

7) WIPO Copyright Treaty(WCT)

8) Others_____

10. Are there any governmental instrumentalities administrating intellectual property rights in your economy?
    1) Yes
    2) No

    If any, please write down their names:_____

11. Are there any non-governmental organizations related to protecting intellectual property rights in your economy?
    1) Yes
    2) No

    If any, please write down their names:_____

Ⅳ The assumption and advices on protecting intellectual property rights and upgrading ability to construct paperless trading

12. Regarding to the ability to construct paperless trading, how important do you think of the following factors? Please make choice of them in accordance with the degree of contribution for the ability to construct paperless trading respectively.

ⅰ.The training of the professionals

1) extremely important 2) somewhat important

3) neutral 4) somewhat unimportant

5) extremely unimportant

ⅱ.The enterprise's building capability

1) extremely important 2) somewhat important

3) neutral 4) somewhat unimportant

5) extremely unimportant

iii.The R&D and application of the technology and standards

1) extremely important 2) somewhat important

3) neutral 4) somewhat unimportant

5) extremely unimportant

iv.The construction of the social legal environment

1) extremely important 2) somewhat important

3) neutral 4) somewhat unimportant

5) extremely unimportant

v.The competition and cooperation in the industry

1) extremely important 2) somewhat important

3) neutral 4) somewhat unimportant

5) extremely unimportant

vi.The pushing of the market supply and demand

1) extremely important 2) somewhat important

3) neutral 4) somewhat unimportant

5) extremely unimportant

vii. The support of service providers

1) extremely important 2) somewhat important

3) neutral 4) somewhat unimportant

5) extremely unimportant

viii. Others_____

13. What difficulties do you encounter in promoting paperless trading?
    1) imperfect legal system
    2) lack of paperless trading technology
    3) Disunity on technical standards or applied standards
    4) Difficulties for governmental instrumentalities or non-governmental organizations to harmonize paperless trading issues
    5) Difficulties for enterprises to accept paperless trading
    6) lack of professionals
    7) Others_____

14. How important do you think to establish a resources sharing system for paperless trading and a service platform among economies?

    1) extremely important 2) somewhat important

    3) neutral 4) somewhat unimportant

    5) extremely unimportant

15. What mode of resources sharing system for paperless trading do you think should be established?
    1) A unified resources sharing system for paperless trading established by APEC
    2) A resources sharing system for paperless trading established by economies
    3) A resources sharing system for paperless trading established by third-party providers
    4) Others_____

16. Your advices on protecting intellectual property rights and upgrading ability to construct paperless trading will be highly appreciated.

    _____

    _____

    _____

_____
_____
_____
_____.

Thanks for your participation and supportting!

In order to share resource in APEC, and diffuse the good patent, the way of commerce and the advanced technology method, we design this form to collect information. Please fill in the forms with the resource that you want to share with other APEC economies.

Table 1: Form of Patent Information Related to Paperless Trading

Type	Patent No	Patent Title

Table 2: Form of the Way of Commerce Related to Paperless Trading

NO	The Way of Commerce	PS

Table 3: Form of Technology Method Related to Paperless Trading

NO	Technology Method	Application Field

Table 4: Experts Information Form

Name	Specialized Field	E-mail	Publications

References

[1] **The Single Window Initiatives in Hong Kong 2007**, Kelvin Ko

[2] **e-Trade and logistics: Korea's u-Trade Hub case 2007**, James Yoon

[3] Jeffrey, L.Bradach (1996). **Organizational Alignment: The 7-S Model.** Boston: Harvard Business.

[4] Zaltman, G, Duncan, R. and Holbek, J., 1973. **Innovations and Organizations**, wiley New York.

[5] Peter Mckierman, 1996. **Historical Evolution of Strategic Management**, Publishing Company, Dartmouth.

[6] George Stalk Wtalk，Philip Evans，and Lawrence E．Shulman, **Competing on Capabilities：the**

New Rules of Corporate Strategy, Harvard Business Review，March-April 1992，p57-69．

[7] C.K. Prahalad and Gary Hamel, **The Core Competence of the Corporation**，Harvard Business Review，May- June 1990．

[8] Gordon V.Smith Russell L.Parr, **Valuation of Intellectual Property and Intangible Assets**, John Wiley&Sons, p124.

[9] E-commerce Application in Enterprises, **Vietnam E-commerce Report 2004**, Ministry of Trade E-commerce Department, Hanoi Spring 2005

[10] United States Patent and Trademark Office: **Performance and Accountability Report**, Fiscal Year 2006

[11] **WIPO: Patent Report 2006**, 2006.10

[12] **Paperless trading in International Supply Chains:Enhancing Efficiency and Security,** Palais des Nations, Geneva20-21 June 2005A Roadmap towards Paperless trading

[13] WTO: G/TBT/W/251, 25 May 2005, **Intellectual Property Right (IP)**, Issues in Standardarization Communication from the People's Republic of China Committee on Technical Barriers to Trade

[14] Lien Verbauwhede, Consultant, SMEs Division, **WIPO Intellectual Property and E-commerce: How to Take Care of Your Business' Website**

[15] **Policy and Development Implications Background paper by the UNCTAD secretariat.** TD/B/COM.3/EM.21/2

[16] Author: Tom Robertson, Speaker: Davis Wang:《**From the information technology industry, the development brought by the legal system to manage the challenges of IP**》, International Symposium on the Protection of Intellectual Property for the 21st Century, Beijing, Oct 28-30,1998

[17] **The importance of intellectual property rights for e-commerce is linked to the increased volume of e-commerce transactions of intangible products.** Internet Governance

[18] Fiona Phillips: **Australia's Digital Agenda Reform 1996-2006**. Australia-China Intellectual Property Seminar, 29-30th May 2006

[19] In re Johnston, 502 F.2d 765, (C.C.P.A.1974), rev'd on other grounds 425 U.S.219, 189 U.S.P.Q.257(1976)

[20] Edward M. Weisz, Roger S. Thompson: Business Method and Software Patents in the United States. Zheng Shengli：《**Intellectual Property comment from Peking University**》, August 2004

[21] Trade and Development Board, Commission on Enterprise, **Business Facilitation and Development Expert Meeting on Free and Open Source Software: Policy and Development Implications Geneva**, 22–24 September 2004 Item 3 of the provisional agenda, Free and Open Source Software:Policy and Development Implications, Background paper by the UNCTAD secretariat. TD/B/COM.3/EM.21/2

[22] Anil Samtani and Tan Lay Hong, **Electronic Commerce: Emergence and Growth, Challenges and Opportunities, Regional Workshop for Countries of Asia and the Pacific on the WIPO Internet Treaties and Electronic Commerce**, Manila, October 22 to 24, 2001

[23] The Third Executive Forum on Trade Facilitation: **Paperless trading in International Supply Chains: Enhancing Efficiency and Security**, Palais des Nations, Geneva, 20-21 June 2005
[24] Trade and Development Board, Commission on Enterprise, **Business Facilitation and Development Expert Meeting on Free and Open Source Software: Policy and Development Implications Geneva**, 22–24 September 2004 Item 3 of the provisional agenda**, Free and Open Source Software: Policy and Development Implications**, Background paper by the UNCTAD secretariat. TD/B/COM.3/EM.21/2

Related Website:

http://www.wto.org
http://www.wipo.int/
http://www.kipo.go.kr/
http://www.rupto.ru/
http://www.uspto.gov/
http://www.jpo.go.jp/
http://www.ipos.gov.sg/
http://www.ec.com.cn/
http://www.mckinsey.com/
http://www.bolero.net/
http://www.saic.gov.cn/
http://www.mofcom.gov.cn
http://www.sipo.gov.cn
http://www.apec.org
http://www.apec-ecba.org/
http://www.paa.net/
http://www.nipso.cn/
http://www.wipo.int/
http://www.uspto.gov/
http://www.cccct.com/
http://www.bcg.com/

Prepared by:
Prof. Zhan Fudong
PH.D. Zhang Zhicheng,
Prof. Wang Jian
Prof. Chen Jin

CONTACT:

FOR THE SECRETARIAT OF APEC ELECTRONIC COMMERCE BUSINESS ALLIANCE
Add: No.11, Ronghua Road, Economy Technology Development Area, Beijing
P.R.China 100176
Tel: (86) 10-6780 0190/1050 Fax: (86) 10-6780 0327
Email: info@apec-ecba.org
Website: www.apec-ecba.org

FOR THE ASIA-PACIFIC ECONOMIC COOPERATIONSECRETARIAT
Add: 35 Heng Mui Keng Terrace Singapore 119616
Tel: (65) 6775-6012 Fax: (65) 6775-6013
Email: info@apec.org
Website: www.apec.org

APEC#207-TC-01.3