

PASCN Discussion Paper No. 98-08

**APEC, Philippines  
and Telecommunications  
Mutual Recognition Agreements**

*Johnson M. Chua*



The *PASCN Discussion Paper Series* constitutes studies that are preliminary and subject to further revisions and review. They are being circulated in a limited number of copies only for purposes of soliciting comments and suggestions for further refinements.

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# **APEC, Philippines and Telecommunications MRA\***

**Johnson M. Chua**

## **Abstract**

In the quest for global integration, efforts to open markets are increasingly shifting from tariff to non-tariff measures. Given the successful efforts of the WTO to lower tariff barriers and the commitment of many countries to accelerate tariff reductions, an attempt to foster regional integration, the battleground of free trade advocates has shifted from tariff to non-tariff related matters. One aspect of this battle involves the often arbitrary and anti-trade use of standards and compliance requirements. In telecommunications, this involves the use of regulatory requirements related to testing and certification on telecommunications equipment.

Understanding this reality, the APEC Telecommunications Working Group reached an agreement to draft the framework for voluntary implementation of mutual recognition agreements (MRA) among economies. The focus is the development of MRAs on the framework and mechanism for testing and certification of telecommunications equipment. For the Philippines, the MRA framework can only have positive implications. Several issues, however, exist. Among them involve the choice of implementing agency, upgrading local testing capabilities, level of commitment and resource constraints.

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The views expressed herein do not necessarily represent the official views of the Philippine government in general, and/or the WTO/AFTA Advisory Commission in particular. This industry paper was prepared to provide some basic or background information; hence, in no way it is exhaustive. The intent is to offer the initial set of information for discussion and in the process, elicit the ideas that could be helpful in formulating the appropriate strategies in the development of this industry sector.

This paper was prepared under the "APEC Early Voluntary Sectoral Liberalization" project which was jointly funded by the WTO/AFTA Commission and the Philippine APEC Study Center Network (PASCN) in furtherance of the general objective of undertaking consensus building activities and other necessary measures to promote the Philippines as a competitive player in the global economy.

## **APEC, Philippines and Telecommunications MRA**

**Johnson M. Chua<sup>1</sup>**

At the Fourth APEC Economic Leaders Meeting in Subic, Philippines in November 1996, the trade ministers were instructed "to identify sectors where Early Voluntary Sectoral Liberalization (EVSL) would have a positive impact on trade, investment and economic growth in the individual APEC economies as well as in the region."

In 1997, the APEC trade ministers identified 15 sectors for EVSL. These included: environmental goods and services; fish and fish products; toys; forest products; gems and jewelry; chemicals; telecommunications MRA; energy sector; medical equipment and instruments; oilseeds and oilseed products; food sector; natural and synthetic rubber; fertilizers; automotive; and civil aircraft.

The EVSL of the 15 sectors were then endorsed by the leaders during the fifth meeting in Canada in November 1997. Leaders also instructed the trade ministers to finalize the EVSL program covering nine sectors by June 1998, with a view for implementation in 1999.

In telecommunications, the focus is the development of mutual recognition agreements (MRA), where a framework and mechanism for testing and certification of telecommunications equipment is being studied for adoption by APEC economies. Given that regulatory requirements related to testing and certification currently hamper the flow of trade in telecommunications equipment, the APEC Telecommunications Working Group reached an agreement to draft the framework for voluntary implementation of MRAs among economies. In the same way, the group also sought for the improvement of existing voluntary guidelines for APEC harmonization of technical regulations covering equipment certification.

### **Understanding MRAs**

MRAs are basically a mechanism to minimize the trade constraints arising from varied testing and certification requirements across nations. MRAs are negotiated on a sectoral basis, such as: telecommunications, medical devices, pharmaceuticals, chemicals, and processed foods. These allow countries to accept final test results produced by another country. In some case, quality assurances such as ISO certification may be required from the importing firm. Under MRAs, the entire testing and certification process may occur outside the importing country.

Some of the more popular MRAs have been forged between the European Union and the US. For examples, under MRAs with EU, a US firm would obtain product certification on an EU-wide basis, enabling it to market its products throughout the Union. Based on private-law contractual negotiations, subcontracting permits a notified body of the EU to delegate some of its testing responsibilities to a third country testing laboratory or quality assessment body. However, the notified body retains ultimate responsibility for the final decisions relating to EU certification.

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Because countries have different requirements when it comes to sensitive goods, the normal flow of trade in these goods often require testing and certification to be conducted on both the originating and importing country. For example, medicines or drugs manufactured in the European Union have to be tested on whether they conform to the standards of the United States before they are approved for shipment. Then, they are tested and certified again by the US Food and Drug Administration before they eventually are allowed to reach the market.

In telecommunications equipment, both terminal and radio equipment have to be tested on whether they conform to the standards of the importing country. Such testing and certification are normally administered on both the originating and importing country. Because countries have varying standards and frequency-related regulations, conformity assessment is important since it ensures that imported terminal equipment are up to standards, and radio equipment do not cause interference or harm consumers.

### **Benefits of MRAs**

Under MRAs, governments agree to recognize the results of each other's testing, inspections, or other procedures. Businesses on both sides end up saving money. For example, without an MRA, many US manufacturers selling in the European market first have their products tested in the United States to meet US standards and then have the products tested and certified for approval again by European authorities.

Under bilateral MRAs, each country agrees to accept product inspection, testing, or certification results performed by the other country. Therefore, the manufacturer can meet both US and EU standards, by undergoing one inspection, testing, or certification procedure by an approved local body.

Some of the benefits of MRAs are as follows:

- ◆ Speeds up the process of trade
- ◆ Increases market access
- ◆ Lowers costs and prices
- ◆ Avoids trade discrimination
- ◆ Reduces non-tariff barriers
- ◆ Increases the speed of technological diffusion and penetration
- ◆ Lessens the gap between technological leaders and followers
- ◆ Promotes standardization and globalization of telecommunications equipment and services
- ◆ Leads to the harmonization of regulations on trade in telecommunications equipment
- ◆ Increases competition in the telecommunications equipment industry
- ◆ Promotes the growth of small and medium-sized industry involved in manufacturing telecommunications equipment or any of its components

The cost savings from MRAs can be significant for the industry since redundant testing and certification is eliminated. For example, for products such as telecommunications and IT equipment, rapid technological advances effectively shortens the product's life cycle. Since an MRA allows products to move to the export

market more quickly, it bestows a major cost advantage on the suppliers and consumers of both signatory nations. In addition, since the importing firm pays for inspections and passes the cost to the consumer, an MRA could result in a direct cost reduction. For instance, a US computer company could spend \$1 million a year in inspection costs. Commerce Department estimates show that US companies could save more than \$100 million/year under the MRAs.

Government regulators also benefit from MRAs. The FDA performs inspections in European drug factories before allowing their pharmaceuticals into the United States. The manufacturer's plant also undergoes inspection by host government authorities. Each Good Manufacturing Processes (GMP) pharmaceutical plant inspection that the FDA performs costs around \$100,000, with about 150 inspections performed in the EU each year. Given that regulatory agencies in Europe perform equivalent inspections accepted by the FDA under the MRA, the FDA funds which were used for inspections in Europe can be put to better use.

Under the APEC framework, MRAs are expected to enhance the development of APEC members and provide increased access to IT and telecommunications technologies. MRAs covering telecommunications and electronics equipment combined with the Information Technology and Telecommunications Equipment Agreement are expected to reduce the time it takes for products to reach the marketplace and allow for quicker introduction of new products and services.

### **The Global Equipment Industry**

The information age has resulted in dramatic developments in the telecommunications industry. Today, the telecommunications sector is regarded as one of the most exciting and crucial sectors in the economy. Because telephones are considered no longer as a luxury but necessity, a significant amount of investments are being poured into the provision of telecommunications services. Riding behind this information and telecommunications revolution is the telecommunications equipment sector. The telecommunications equipment industry comprises manufacturers of equipment used in transmitting, switching and distribution of voice, data and video information. Such equipment is used in public and private telecommunications networks. A broader definition of the industry suggests that it include manufacturers of products used to create, broadcast and distribute television and radio signals.

The principal customers of the industry are telecommunications service providers such as local exchange carriers, cellular operators, and international gateway operators. Because of extensive deregulation in telecommunications services allowing customers to own terminal equipment and private networks, a strong market of residential and business customers has also been created.

The global equipment industry that services this market can be divided into three groups. The dominating group contains a small number of very large, vertically integrated, R&D-based companies. Although these companies make a wide range of products, their core business is public switching products. Alcatel, AT&T, Ericsson, NEC, Nortel and Siemens make up this group, which accounts for nearly 50 percent of total industry revenues.

The second group includes long-established firms that have a strong capability in telecommunications but not in public switching. Bosch, Digital Equipment, Fujitsu, Harris, IBM, Motorola, Nokia and Philips are in this group.

The third group is made up of specialty companies with narrow product lines derived from new technologies and applications. The world's 50 largest telecommunications equipment vendors account for about 93 % of total industry revenues, which stood at US \$139 in 1994.

The value of the 1994 telecommunications equipment market is estimated at US 149 billion, up from US\$ 100 billion in 1990. The industry serves a worldwide communications infrastructure with a cumulative investment value of US1.074 trillion. Revenues are currently growing at 8% per year. The market is being driven by particularly strong growth in mobile and data communications, as evidenced by the boom in wireless personal communications services (PCS) and the Internet.

Recognizing the important role that it plays, efforts to improve trade in telecommunications equipment and standards setting are being firmed up. MRAs are currently being negotiated in the NAFTA, APEC, and CITELE, as are bilateral MRAs with Korea and the EU. Japan has agreed to revise its existing MRA to include wireless products.

The US industry strongly favors MRAs as a means of coping with ever-shortening product-life cycles. The US telecommunications equipment industry employs about 216,000 workers (as of 1995). US Exports of telecommunications equipment amounted to \$15 billion in 1996. Shipments by the industry are expected to increase by about 8% in constant dollar value in 1997

### **The Information Technology Agreement**

Coupled with the IT Agreement (ITA), MRAs are expected to lead to the full liberalization of trade in IT and telecommunications equipment and services. The ITA calls for the total elimination of tariffs on a wide range of information and communication technology products by the year 2000 (with exceptions made on a limited range of products). The ITA will directly benefit industry and consumers in every member country, helping to sustain broad economic growth and creating jobs in almost every industry by accelerating technological development, lowering production costs, and increasing productivity.

The ITA will eliminate tariffs on computer hardware semiconductors and other electronic components, most semiconductor manufacturing equipment, analytical instruments, computer software, digital photocopiers, most telecommunications equipment, printed circuit boards and process controls.

At the Singapore Ministerial, 28 countries, representing almost 85 percent of total world trade in information technology products signed the ITA declaration. The agreement will eliminate tariffs on products valued at approximately \$500 billion per year in 1995 (global trade in IT products is expected to exceed \$1 trillion by the turn of the century).

## Existing MRAs

MRAs have been used in the past as a means to reconcile varying regulations between two countries or localities. Within EU and Australia, MRAs served as a tool to effectively monitor the quality of goods and services that flowed from country with EU or cities within Australia. In Europe, the European Agency for the Evaluation of Medicinal Products (EMA) implemented a fundamental change in the way medicines are approved throughout Europe. Since February 1995, the center has promoted the replacement of the multi-state and coordination procedures with two new procedures for the authorization for marketing of medicinal products: the centralized procedure and the mutual recognition of approved products. MRAs covering the flow of human resources have also been implemented for professionals such as engineers, lawyers and accountants.

In telecommunications equipment, the most significant MRA to date occurred between the US and EU. Last June 20, 1997, the United States and the European Union signed a mutual recognition agreement (MRA) that will serve to facilitate nearly \$20 billion in cross-Atlantic trade in telecommunications and information technology. Concluded as a result of high level public-private sector cooperation in both the United and Europe, the MRA is expected to reduce the time it takes for new products to reach the market. It is also expected to lower costs to consumers, while continuing to ensure the safety of users and the integrity of the international telecommunications network. About \$1 billion annually is expected to be saved by the industry in both EU and US.

Small and medium-sized enterprises that will be able to turn to local testing facilities for the examination and certification of products for export are also expected to benefit from the agreement. In the same way, this will also simplify the testing requirements for wireless and telecommunications products, which currently vary from country to country within the European Union.

Other recent MRAs include the Mutual Recognition of Information and Telecommunication Certification Tests agreement between Korea and Canada that was signed last January 1996. The core of this MRA is recognition of test results issued by inspection institutes in respective countries for overall certification policies relevant to information and telecommunications including model approvals of electric communication equipment, electromagnetic interference (EMI) quantification and model certification of radio communications equipment. At the beginning stage, both countries will exempt products with attached test results issued by inspection institutes designated as official inspection institutes per item of respective countries from qualification test in the appropriate country.

Both countries also signed technical cooperation agreements such as:

- ◆ LMDS (Local Multipoint Distribution System)
- ◆ Internet Telephone
- ◆ Modem For Radio Data Terminals
- ◆ CD-Rom Software For Education
- ◆ Video On Demand Servers
- ◆ Network Equipment



- ◆ Softwares For Corporate Management And Administration

### **MRAs and the Philippines**

In the Philippines, MRAs may be new. But the existing system in handling trade in telecommunications equipment is not far from the MRA framework. The equipment sector in the country can be classified into two: terminal and radio. Terminal equipment comprise the products are used in the provision essentially of fixed or wired services. Radio equipment comprise the products that are used in the provision of fixed or wireless telecommunications or broadcast services which are frequency-related or which utilize specific frequencies.

The sector can also be examined using the three major equipment classification that are used in trade: switching equipment (telephone exchange), transmission equipment (fiber optic cables, microwave equipment, satellites, base stations), and customer premises equipment (telephone sets, cellular phones, facsimile machines).

There is no local telecommunications equipment manufacturing industry in the country. All local carriers import their telecommunications equipment. For example, PLDT and PILTEL may use Siemens and Motorola. Globe Telecom, a local cellular operator, is supplied by Nokia. The equipment needs of PT&T are provided by Korean firms, Lucky Goldstar.

Although, local cable or wire manufacturers are present in the country such as Phelps Dodge, local carriers argue that the company cannot meet its demands, in terms of quantity, quality and cost. Because these firms use the old technology in manufacturing wires and cable, per unit cost are high and quality are often not up to the specifications of carriers, thus they cannot effectively compete with foreign equipment suppliers. The closest that the country comes to participating in the industry is through assembly. Local companies such as Uniden is involved in the assembly of telephone sets for both fixed and cordless terminals. There have also been talks on the establishment of a manufacturing plant for batteries of cellular phones.

Among the foreign equipment suppliers in the country are:

- ◆ Alcatel
- ◆ Ericsson
- ◆ Fujitsu
- ◆ Lucent Technologies
- ◆ Motorola
- ◆ NEC
- ◆ Nokia
- ◆ Nortel
- ◆ Siemens

The present system that is being applied in the country when it comes to importing telecommunications equipment function like an MRA. Local carriers are required to submit type approval certificates to the National Telecommunications Commission before they are allowed to import the product. This means that local carriers have to show proof that the equipment they are importing conforms to local

standards. They also have to test the equipment for compatibility with their network (carriers have to make sure that the integrity of their network is not compromised by the equipment).

In some cases, the NTC can type approve an equipment by conducting its own test, when possible, or it can accept test results and certification provided by the equipment supplier. In the latter case, a "type acceptance" rather than type approval scheme is in effect, since conformity assessment (testing and certification) done in another country is recognized by the Philippines. Because the country's frequency table follow closely that of the US, products that pass US standards could potentially be accepted into the country. In the former case, the NTC can test the equipment whenever it has the capabilities to do so. As it is, the NTC currently has limited testing capabilities (they have narrow-band and analog radio frequency testing capabilities).

The NTC defines type approvals as follows: "it is a process by which equipment are evaluated for compatibility with the public telecommunications network to ensure that a certificate of type approval will be granted only to equipment which when connected will not result in harm, or will ensure adequate safety, to the said network." In the case of terminal equipment, it must be proven that its connection to a public telecommunications network facility does not result in any of the following:

- Irreversible damage to the network operators equipment;
- Introduction of electrical hazards to telephone company personnel and to the public;
- Malfunctioning of telecommunications company billing equipment;
- Noise or cross-talk in facilities either due to longitudinal imbalance or excessive signal power;

Or if the operation of the terminal equipment when connected to the network is characterized by:

- Incorrect dial pulsing or DTMF signaling
- Marginal hookswitch supervision
- Excessive "High and Dry" false answer;
- Absence of voice band transmission data for required call process signals; and
- Inability to answer incoming calls.

In the case of radio equipment, type approval requires that the equipment meet national standards or minimum requirement set by the NTC. Radio equipment should not cause electromagnetic interference and meets certain threshold levels in terms of power output, frequency stability, modulation distortion, hum and noise level, and emissions among others.

Because the country does not have a local manufacturing industry, an MRA may be argued to be a beneficial step. Given the present situation where type-approval/type-acceptance is possible, the likely impact of an MRA when it comes to reducing the time it takes to import telecommunications equipment may be small. But it can have significant effects on carriers who have to conduct (due diligence) tests on

equipment that they are importing. Because, they no longer have to conduct their own tests under the MRA, significant resources can be freed and re-channeled to better use. PLDT has invested millions in setting up its own testing laboratory. The industry and the consumers would also benefit because an MRA would force the government to improve its present regulatory structure especially those related to standards testing and conformity assessment.

Given the mandate of the WTO to eliminate all tariffs on IT and telecommunications equipment, there is no rationale for government to protect a local equipment manufacturing industry that may not even materialize.

Among the impact of MRAs for the Philippines are as follows:

- ◆ MRAs would lead regulators to come up with better guidelines in handling the trade in telecommunications equipment
- ◆ It would strengthen moves towards standardization and interoperability of networks. It would commit government to strengthen its standardization and harmonization efforts.
- ◆ It promotes the globalization of telecommunications services (it promotes the provision of global personal communications services)
- ◆ It aids in the provision of Universal Access
- ◆ It frees local carriers from some of the constraints in importing telecommunications equipment
- ◆ It lessens the cost of importation for the carriers
- ◆ It eliminates redundant testing
- ◆ It leads to lower prices
- ◆ Allows the carriers more options or the ability to come up with the right product mix
- ◆ Allows the country to lessen the technological gap

MRAs are specifically important in the context of the worldwide effort to develop the Global Information Infrastructure (GII) where global standards are a requirement. Incompatible standards and regulations not only stymie the intended benefits of lower tariffs, it also hampers the globalization effort.

MRAs could lower import costs of carriers. Given the strength of the local telecommunications industry, equipment imports have continued on a rising trend. Indicative imports show that the country imported more than \$1.6 billion in 1996. This was 30% higher than its 1995 level. On a four-year scale, the average growth in telecommunications import was about 39%.

**Table 1. Imports of Telecommunications and Sound Recording Equipment (FOB US\$ Dollars).**

Year	Value
1991	336,698,612
1992	434,384,723
1993	594,295,504
1994	871,211,008
1995	1,258,840,102
1996	1,635,233,801

Source: Foreign Trade Statistics, NSO.

**Table 2. Telecommunications Equipment Imports by Product (in million pesos).**

Product	1994	1995	1996
Switching Apparatus	1,780.3	275.4	532.2
Cellphone	614.7	794.1	381.2
Telephone Sets	109.6	46.4	151.7
Modem	6.4	36.5	72.0
Fax Machines	5.8	9.7	7.4
PABX	45.8	13.7	3.3
Others	1,025.6	1,857.5	776.5
Total	3,588.1	3,033.3	1,924.4

Source: Foreign Trade Statistics, NSO.

### **The EVSL Proposal**

The EVSL is based on the APEC principle of voluntarism. In this, each economy is free to determine the sectoral initiatives that it will participate on and its level of participation. Under the EVSL Telecommunications MRA proposal, APEC economies are tasked to decide on whether it will participate or not. Specifically, the APEC Telecommunications Ministers have proposed two phases for participation in the arrangement: Mutual Recognition of Test Results (Phase I) and Mutual Recognition of Equipment Certifications (Phase II).

Economies that will participate in this two Phase strategy are encouraged to initiate mutual recognition activities by July 1, 1999. The decision on whether an APEC country will participate and abide by this deadline has been set on April 1999. Economies that choose not to participate has the option of joining at a later date.

MRAs require participating economies to have the infrastructure for conformity assessment of equipment. Economies that lack this infrastructure will not be able to provide the reciprocity needed for it to obtain the full benefit of the MRA. The EVSL Telecommunications MRA initiative in APEC is expected to complement the World Trade Organization (WTO) Agreement on Technical Barriers to Trade (TBT).

## **Philippine Agenda**

The country will definitely benefit from the APEC Telecommunications MRA Framework. The fact that the country does not have an equipment industry or a testing laboratory strengthens the argument for the country to sign on the MRA. Under a multilateral framework, trade in telecommunications equipment is expected to become simpler. Given the requirement that the country could sign on using any of the MRA models, it retains the flexibility to choose whichever conforms to its needs.

However, in deciding the path to follow, several issues need to be addressed:

- Some carriers have invested heavily on their testing laboratories
- A transition or learning period may be needed
- Legislation or policy changes may be required
- Technology transfer must also involve knowledge transfer
- Testing facilities may be needed to ensure reciprocity of the agreement
- Interoperability and interconnectivity of the networks at reasonable cost must be ensured
- Regulators must have the capabilities to ensure that testing laboratory in other countries perform their conformity assessment correctly
- Suppliers may decide or may be required to set up manufacturing activities in the country which may require testing and certification
- In an increasingly information-or knowledge-based society, the production and use of IT and telecommunications may require conformity assessment, testing and certification skills and mechanism to be in present in the country. Testing laboratories could benefit closely linked industries such as semiconductors and electronics
- Regulation covering the telecommunications industry should also be examined as this affects the viability of the industry
- Bureaucratic constraints such as customs rules and procedures must also be studied
- MRAs could perpetuate the trade and technological dominance of countries with large manufacturing interests

Although, the benefits may seem obvious, regulators and industry players may need time to familiarize themselves with MRAs. Similarly, new policies and legislation may be needed to effect the MRA. There is also a strong concern on the need to draw up a "Philippine" standard. In the same way, inferior products that are sold in the country because of their low cost should also be monitored and deemed illegal.

There are also some factors that serve to caution against the MRA. First, this may perpetuate the dominance of countries with large manufacturing industries. Second, the industry would eventually converge in such a way that only a certain set of standards would prevail, implying that MRAs may not be really needed. Lastly, the market would eventually drive industry players to produce products that are not only interoperable and that meet the standards of importing countries which may end up eliminating the need to subject them to another round of testing.

In the final analysis, MRAs will be good for the country because it will encourage the government to examine its present policies and regulation covering the telecommunications equipment sector. It will also force it to come up with more specific plans and a vision for the industry. From an industry perspective, this will add more transparency to trade process. It will also reduce cost, simplify the selection process and foster greater organization. From a consumer point of view, its effect on the speed of technological diffusion, the creation and conformity to standards, the provision of quality services, and the provision of Universal Access adds up to increase consumer welfare. Given the zero tariff environment mandated in the ITA and the fact that the Philippines does not have a local manufacturing industry to nurture all the more strengthens the arguments favoring our participation in the MRA process.

## **PHILIPPINE ACTION PLAN**

- Accept the MODEL MRA Framework
- Allow for a transition period (two years)
- Examine existing rules and regulations covering the industry/implement needed policy changes
- Promote the exchange of information regarding legislative, regulatory, and administrative procedures across APEC
- Define the "Philippine" standards in telecommunications equipment
- Strengthen standards setting and monitoring capabilities
- Ensure transparency of the MRA Framework
- Study the possibility of establishing a local manufacturing or component industry
- Decide on issues relating to the need to establish a testing laboratory in the country to meet reciprocity requirements, to support closely linked industry such as semiconductors and electronics, and the possibility of having local manufacturing activity in the country in the future.
- Study the possibility of having a joint public and private sector funded testing laboratory/or of pooling various testing laboratories of telecommunications carriers
- Strengthen government monitoring and promotion of the telecommunications equipment sector
- Devote adequate resources and manpower to improve administrative and regulatory supervision of trade in telecommunications equipment
- Promote the training of local personnel to improve standards setting, testing and conformity assessment skills under the APEC MRA framework
- Coordinate DoTC and NTC efforts on matter relating to new wireless technologies such GMPCS and UMTS
- Coordinate the MRA with IT 21 and the PII initiative

## **APEC Guidelines for Regional Harmonisation of Equipment Certification**

The aim is to ensure that technical standards and procedures for terminal equipment facilities trade and investment flows. The objective is to develop a set of harmonized procedures for the certification of telecommunications equipment and recognition of technical test data. This is to enable equipment to be provided at lower prices for end-users and at the same time, to improve market access for suppliers to APEC economies.

APEC economies are encouraged to adopt the following procedure:

1. Administrative procedures governing the processing of applications for the certification of customer equipment should:
  - Be non-discriminatory and transparent
  - Be undertaken in a manner which is functionally independent from network operations; and
  - Be harmonized across the APEC region
2. Customer equipment standards should be limited to those necessary to:
  - Prevent harm to a public network, network operator personnel, or users or consumers;
  - Maintain network performance and the quality of network services
  - Prevent electromagnetic interference
  - Ensure compatibility with other users of the spectrum
3. The development of technical standards should be as open as possible to all interested parties.
4. Technical standards, wherever possible, should conform to international standards.
5. Customer equipment standards including the interface between customer equipment and a public network should be publicly available.
6. The requirements for mandatory certification of customer equipment should be restricted to equipment which is connected directly to the public network interface or which may cause harm or interference to the network, users of the network, or to other users of the radio spectrum.
7. Certification procedures should
  - Be streamlined so as to minimize administrative obstacles and costs to equipment suppliers
  - Provide a transparent and reasonable short period for approval or issue of certification
  - Prevent favoritism or inconsistent treatment to various suppliers
  - Be supported by appeal and review processes which are appropriate to the Member Economy's policies and regulations
8. Certification should be on the basis of type, rather than item by item, wherever possible.
9. APEC Member Economies should accord mutual acceptance of test data from other members provided that the testing is performed in accordance with the accepting economy's standards and technical requirements