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ORGANIZATION OF AMERICAN STATES

Comisión Interamericana de Telecomunicaciones
Inter-American Telecommunication Commission

**IX MEETING OF PERMANENT CONSULTATIVE
COMMITTEE I: TELECOMMUNICATIONS**
September 12 to 15, 2006
Buenos Aires, Argentina

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FINAL REPORT

(Item on the Agenda: 5)

(Document submitted by the Drafting Group)

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FINAL REPORT

IX MEETING OF THE PERMANENT CONSULTATIVE COMMITTEE I (PCC.I)

The IX Meeting of the Permanent Consultative Committee I: Telecommunications was held in Buenos Aires, Argentina, September 12 to 15, 2006.

I. AGENDA¹

1. Approval of the agenda and calendar of activities.
2. Establishment of the Drafting Group for the final report.
3. Report and meeting of the Working Groups:
 - 3.1 Working Group on Technology (WGT).
 - 3.2 Working Group on Policy and Regulatory Considerations (WGPRC).
 - 3.3 Working Group on Network Operation and Service Provisioning (WGNOSP).
 - 3.4 Working Group on Development (WGD).
4. Agenda, venue and date for the X Meeting of PCC.I.
5. Approval of the Final Report.
6. Other business.

II. AUTHORITIES OF THE MEETING

Chair:	Mr. Lisandro Salas (Argentina)
Alternate Chair:	Mr. Sergio Scarabino (Argentina)
ViceChairs:	Mr. Eduardo Moreira (Brazil) Mr. Socrates Martinez de Moya (Dominican Republic)
Executive Secretary:	Mr. Clovis Baptista (OAS)
Drafting Group:	
Chair:	Mrs. Maria Florencia Forciniti (Argentina)
Members:	Mr. Santiago Reyes-Borda (Canada) Mrs. Marta Castellano (Colombia) Mr. Jonathan V. Siverling (United States of America)

¹ Document CCP.I-TEL/doc. 852/06

III. RESOLUTIONS

PCC.I/RES. 98 (IX-06)²

ITU-T RECOMMENDATION G.993.2 “VERY HIGH SPEED DIGITAL SUBSCRIBER LINE 2 TRANSCEIVERS (VDSL2)”

The IX Meeting of the Permanent Consultative Committee I: Telecommunications,

CONSIDERING:

- a) That there is a consensus that new forms of communication are fundamentally transforming the way in which people, communities, businesses and governments interact with each other;
- b) That Resolution PCC.I/RES.4 (I-02) identifies broadband as a priority issue for examination by PCC.I;
- c) That Resolution PCC.I/RES.21 (II-03) emphasizes the advantages of a prompt evolution towards a national broadband infrastructure in an environment of convergence, and
- d) That Resolution PCC.I/RES. 86 (VII-05) creates a Technical Notebook on Broadband Access Technologies,

RECOGNIZING:

- a) That the region’s economy can be strengthened and its communities transformed by fostering the development of broadband Internet access throughout the Americas;
- b) That today, the most advanced form of communications requires high bandwidth interconnection;
- c) That ITU.T Recommendation G.993.2, “Very High Speed Digital Subscriber Line Transceivers 2 (VDSL2)” defines an access technology that exploits the existing infrastructure of copper wires that were originally deployed for POTS services;
- d) That ITU-T Recommendation G.993.2, “Very High Speed Digital Subscriber Line Transceivers 2 (VDSL2)” allows operators to offer services such as high definition TV (HDTV), video-on-demand, videoconferencing, high speed Internet access and advanced voice services including VoIP, over a standard copper telephone cable;
- e) That the ITU-T Study Group 15 approved Recommendation G.993.2 in February 2006 under the "Alternative Approval Process" (AAP) and it is now in force,

² Document CCP.I-TEL/doc. 941/06

RESOLVES:

To endorse ITU.T Recommendation G.993.2, “Very High Speed Digital Subscriber Line Transceivers 2 (VDSL2)” with no deletions, additions or modifications, and

RECOMMENDS:

1. That the Rapporteur Group on Standards Coordination continues to monitor the transceivers for customer access work of ITU-T Study Group 15 and determines its applicability for the Americas as this work evolves, and
2. That the Rapporteur Group on Standards Coordination continues addressing the broadband access needs of the Americas and provides additional recommendations for endorsing standards that meet customer demands for ever higher bit rate data services, high-speed Internet access and other innovative services.

ANNEX TO RESOLUTION PCC.I/RES. 98 (IX-06)

STANDARDS COORDINATION DOCUMENT FOR ITU-T RECOMMENDATION G.993.2 “VERY HIGH SPEED DIGITAL SUBSCRIBER LINE 2 TRANSCEIVERS (VDSL2)”

1. EXECUTIVE SUMMARY

The Working Group on Standards Coordination (WGSC) has addressed broadband access technologies as part of its studies of standards for Next Generation Networks (NGN), Services, Signaling, and Operations as they relate to the service access needs of the Americas. Part of this activity has included monitoring the work of the ITU-T. ITU-T Study Group 15 (Optical and other Transport Network Infrastructures) has been designated as the Lead ITU-T Study Group for Access Network Transport and on Optical technology. In this capacity, Study Group 15 approved, in June 2004, Recommendation G.993.1 called Very High Speed Data Subscriber Line Transceivers. VDSL is a Data Subscriber Line technology that allows the transmission of asymmetric and symmetric aggregate data rates up to tens of Mbps on twisted pairs. Recommendation G.993.1 was developed to cover the functional requirements for the transport of ATM (Asynchronous Transfer Mode) and PTM (Packet Transfer Mode) but having the capability of supporting future applications. Later on, Study Group 15 developed an enhancement to VDSL, G.993.2 (VDSL2) that promises to deliver 100 Mbps symmetrical traffic on short copper loops. The greater bandwidth of VDSL2 gives telecommunications operators the ability to offer advanced services such as multiple streams of interactive standard and high-definition TV over IP over the existing copper plant.

At the Eighth Meeting of PCC.I (Santo Domingo; May 2006), it was reported that SG 15 had approved Recommendation G.993.2 in February 2006 under the "Alternative Approval Process" (AAP). Therefore, this Standards Coordination Document (SCD) now presents ITU-T Rec. G.993.2 to PCC.I for its endorsement for the region of the Americas.

2. BACKGROUND

ITU-T Recommendation G.993.2 VDSL2 called “Very high speed Digital Subscriber Line Transceivers 2” (approved on February 2006) is an enhancement of VDSL1. VDSL2 gives telecom operators the possibility of offering Triple Play services such Voice, Internet and Video including High Definition Television (HDTV) and interactive gaming at a bi-directional net data rate up to 200 Mbit/s (i.e. up to 100 Mbit/s both up and downstream) on twisted pairs. Recommendation G.993.2 also designates frequency bands for the transmission of upstream and downstream signals, so that symmetric and asymmetric services can be provided using the same group of wire pairs.

During the development of VDSL1, several modulation techniques were proposed by different VDSL equipment vendors, however, ITU-T agreed in specifying DMT (Discrete MultiTone)³ modulation in VDSL2 Recommendation G.993, being the major motivator for this choice, a goal of greater interoperability and compatibility with existing Asynchronous DSL (ADSL) installations. At present, there are very few and limited carrier deployments in Europe and North America using DMT-based VDSL2. However, Korea and Japan that chose QUAM (Quadrature Amplitude Modulation) for their VDSL implementations are well advanced in their vast deployments.

³ DMT divides the available carrier band into 247 4-Khz channels, monitoring them and searching for the best quality channels for transmission and reception. Each channel bandwidth is partitioned by the modulator into a set of parallel sub-channels, being a sub-carrier, the center frequency of each of these sub-channels.

2.1. Advantages of VDSL2 in comparison with VDSL1 and ADSL

VDSL2 uses the existing copper-wire infrastructure and it can be deployed from central offices, from fibre-fed cabinets located near the customer premises, or within buildings. Its bandwidth can be up to 30 MHz (a fibre-like bandwidth) of the copper wire spectrum, while the Plain Old Telephone System (POTS) uses approximately the lowest 4 kHz and ADSL uses approximately 2 MHz of it.

As mentioned in the previous section, VDSL2 can transmit asymmetric and symmetric (Full-Duplex) aggregate data rates up to 200 Mbit/s on twisted pairs and although the transmission deteriorates quickly from a theoretical maximum at the source of 250 Mbit/s to 100 Mbit/s at 500 meters and 50 Mbit/s at 1 km, it does it at a much slower rate after this. Its performance is still better than VDSL1. Starting at 1.6 km, its performance equals the one of ADSL2+.

VDSL2 does not have the limitation of VDSL1 regarding its constraint to transmit within short loops. It has an ADSL-like long reach (LR) performance, which translates into the transmission at speeds of 1 to 4 Mbps (downstream) over distances of 4 to 5 km. As this distance shortens, the speed increases gradually up to a symmetric 100 Mbit/s. One important application of a VDSL2 system is its operation as an Ethernet LAN, where a 10 Mbit/s can be guaranteed over loops of 2 km.

The VDSL2 specification of eight profiles allows the support of a great variety of implementations and scenarios and also helps equipment vendors by giving them the possibility of implementing according to specific service requirements.

2.2. VDSL2 Reference Models

This Recommendation defines VDSL2 as an access technology and specifies Very High Speed DSL Transceivers. G.993.2 describes VDSL2 transceivers by defining a layered reference model with a distinction of a user plane protocol reference model and a management plane reference model.

Recommendation G.993.2 also defines three separate application models:

- 1) Data service only.
- 2) Data service with underlying POTS service.
- 3) Data service with underlying ISDN service.

2.3. Operation and Management/Maintenance (OAM)

The Recommendation also includes OAM functionality that takes care of faults and performance of the transceivers.

The VDSL2 transceiver units (VTUs) are identified at each side of the network as follows:

- VTU-O: VTU at the Optical Network Unit (ONU) (or at the central office, cabinet, etc., i.e. at the operator end of the loop)
- VTU-R: VTU at the remote site (i.e. user end of the loop)

The peer OAM entities at the VTU-O and VTU-R exchange management information using OAM-dedicated communication channels arranged over the transmission entities.

2.4. Definition of profiles

Eight profiles are specified in order to allow transceivers, which support a subset of a wide range of settings based in different parameters, to be still compliant with the Recommendation.

In order for VDSL2 transceivers to be G.993.2 compliant, they should comply with at least one profile (they also have to be compliant with at least one annex (A, B or C) specifying spectral characteristics) specified in the Recommendation. Compliance with more than one profile is allowed

2.5. Support of Upstream Band Zero (US0)

VDSL2 supports an optional extension of the US0 to 276 kHz and provides performance improvements to US0 taking into account spectrum requirements of different carriers worldwide.

2.6. Support of Frequency Division Duplexing (FDD)

VDSL2 transceivers use FDD to separate upstream and downstream transmissions that means that upstream and downstream passbands cannot overlap.

2.7. Band plan below 12 MHz

VDSL2 specifies a 5-band plan for frequencies below 12 MHz as it is shown in Fig 7-1/G.993.2 reproduced here for convenience:

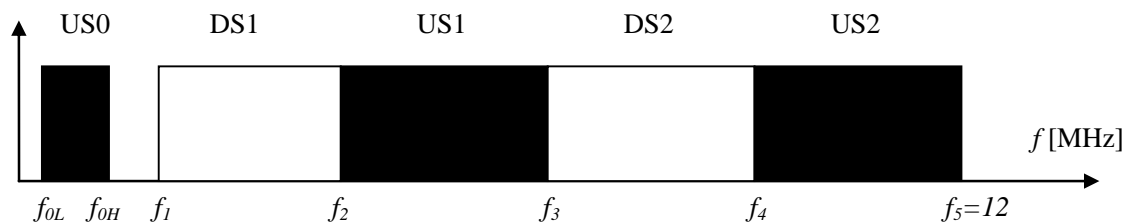


Figure 7-1/G.993.2 – Band plan in the frequency range up to 12 MHz

Where the band between f_{0L} and f_{0H} is called US0, which if used should be only for upstream transmission. The other bands are called first downstream band, DS1; first upstream band, US1; second downstream band, DS2 and second upstream band, US2. Annexes A, B and C specify the values of f_{0L} , f_{0H} , f_1 , f_2 , f_3 and f_4 for the regions of North America, Europe and Japan respectively.

2.8. Band plan above 12 MHz

Bands above 12 MHz are specified by additional band separating frequencies and the number of these depends on the number of bands defined between 12 MHz and 30 MHz. VDSL2 specifies at least one additional downstream or upstream band. The values of band separating frequencies between 12 and 30 MHz are also specified in Annexes A, B and C of Recommendation G.993.2.

2.9. Shaping of the frequency-domain transmit spectrum

The Frequency-domain transmit spectrum shaping (tss_i), both upstream and downstream, are vendor discretionary and they should be in the range of 0 to 1 (linear) and in steps of 1/1024. The highest tss_i value across all sub-carriers is 1. Smaller values of tss_i provide attenuation and when tss_i is 0 means that no power is transmitted on the particular sub-carrier. If there is no shaping of the frequency-domain transmit spectrum, the values of tss_i have to be equal to 1 for all sub-carriers.

3. CONCLUSIONS

The Working Group on Technology recommends that CITELE PCC.I endorses ITU-T Recommendation G.903.2, “Very High Speed Digital Subscriber Line 2 (VDSL2)” with no deletions, additions or modifications.

4. FUTURE WORK

The Rapporteur Group on Standards Coordination will continue to monitor the evolving broadband access work of the ITU-T (especially Study Group 15), and other relevant standards groups that address the broadband needs of the Americas. As appropriate, the RGSC will recommend endorsement of additional standards that serve to enhance broadband access technologies in the Americas.

5. RESOURCE DOCUMENTS

[1] "Standards Roadmap – Asymmetric Digital Subscriber Line System (ADSL), CCP.1-TEL/doc.1472/02, May 2002.

[2] Technical Notebook on "Next Generation Networks – Standards Overview (May 2006), CCP.1-TEL/doc.0776, May 2006.

[3] ITU-T Recommendation G.993.2, "Very High Speed Digital Subscriber Line Transceivers 2 (VDSL2)", February 2006.

PCC.I/RES.99 (IX-06) ⁴

ITU-T RECOMMENDATION J.122, “SECOND-GENERATION TRANSMISSION SYSTEMS FOR INTERACTIVE CABLE TELEVISION SERVICES – IP CABLE MODEMS”

The IX Meeting of the Permanent Consultative Committee I: Telecommunications,

CONSIDERING:

1. That there is a consensus that new forms of communication are fundamentally transforming the way in which people, communities, businesses and governments interact with each other;
2. That Resolution PCC.I/RES.4 (I-02) identifies broadband as a priority issue for examination by PCC.I;
3. That Resolution PCC.I/RES.21 (II-03) emphasizes the advantages of a prompt evolution towards a national broadband infrastructure in an environment of convergence, and
4. That Resolution PCC.I/RES. 86 (VII-05) creates a Technical Notebook on Broadband Access Technologies,

RECOGNIZING:

1. That the region’s economy can be strengthened and its communities transformed by fostering the development of broadband Internet access throughout the Americas;
2. That today, the most advanced form of communications requires high bandwidth interconnection;
3. That ITU.T Recommendation J.122, “Second-generation transmission systems for interactive cable television services – IP cable modems” defines an access technology that exploits the existing infrastructure of copper wires that were originally deployed for television services;
4. That ITU-T Recommendation J.122., “Second-generation transmission systems for interactive cable television services – IP cable modems” allows operators to offer services such as high definition TV (HDTV), video-on-demand, videoconferencing, high speed Internet access and advanced voice services including VoIP, over a all-coaxial or hybrid-fiber/coax (HFC) cable network;
5. That the ITU-T Study Group 9 approved Recommendation G.993.2 in December 2002 and it is now in force,

⁴ Document CCP.I-TEL/doc. 942/06

RESOLVES:

To endorse ITU-T Recommendation J.122., “Second-generation transmission systems for interactive cable television services – IP cable modems” with no deletions, additions or modifications; and

RECOMMENDS:

- a) That the Rapporteur Group on Standards Coordination continues to monitor the cable modem work of ITU-T Study Group 9 and determines its applicability for the Americas as this work evolves; and
- b) That the Rapporteur Group on Standards Coordination continues addressing the broadband access needs of the Americas and provides additional recommendations for endorsing standards that meet customer demands for ever higher bit rate data services, high-speed Internet access and other innovative services.

ANNEX TO RESOLUTION PCC.I/RES. 99 (IX-06)

STANDARDS COORDINATION DOCUMENT ON ITU-T RECOMMENDATION J.122, “SECOND-GENERATION TRANSMISSION SYSTEMS FOR INTERACTIVE CABLE TELEVISION SERVICES – IP CABLE MODEMS”

1. EXECUTIVE SUMMARY

The Working Group on Standards Coordination (WGSC) has addressed broadband access technologies as part of its studies of standards for Next Generation Networks (NGN), Services, Signaling, and Operations as they relate to the service access needs of the Americas. Part of this activity has included monitoring the work of the ITU-T. ITU-T Study Group 9 (Integrated broadband cable networks and television and sound transmission) has been designated as the Lead ITU-T Study Group integrated broadband cable and television networks. In this capacity, Study Group 9 approved, in December 2002, ITU-T Recommendation J.122, called “Second-generation transmission systems for interactive cable television services – IP cable modems”.

Based on CableLabs⁵ DOCSIS specifications, J.122 defines the second generation radio-frequency interface specifications for high-speed Data-Over-Cable systems. It belongs to the family of ITU-T Recommendation J.112, “Transmission systems for interactive cable television services”. The main reason for the creation of J.122 was that, although high-speed data services on cable television systems have been widely deployed for sometime, there has been an increasing demand for higher upstream bandwidth, especially with the popularity of symmetric data applications. J.122 also allows for an improvement on noise immunity.

The second generation Data over cable system uses the same RF channel and its technology is backwards compatible with that of the first generation. It provides a significant increase in upstream channel capacity

⁵ Cable Television Laboratories, Inc. (CableLabs®) is a non-profit research and development consortium that is dedicated to pursuing new cable telecommunications technologies and to helping its cable operator members integrate those technical advancements into their business objectives. It was founded in 1988 by members of the cable television industry.

with wider channels and better spectral efficiency. It provides for both Synchronous-CDMA⁶ and Advanced-TDMA⁷ coding.

The service will allow transparent bidirectional transfer of Internet Protocol (IP) traffic, between the cable system headend and customer locations, over an all-coaxial or hybrid-fiber/coax (HFC) cable network, as it can be seen in Fig 1-1/J.122 reproduced below for convenience.

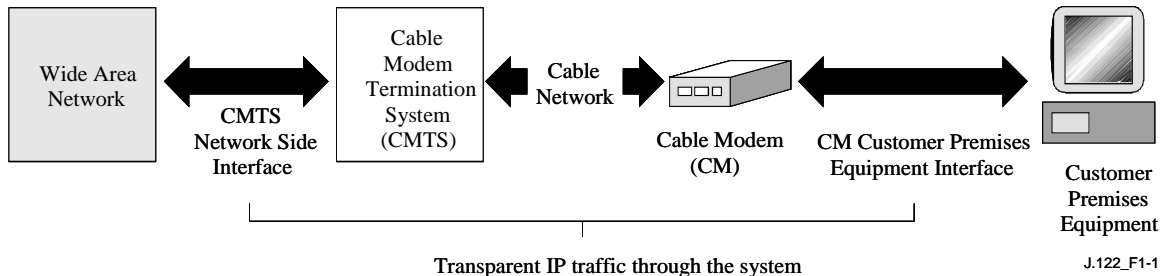


Figure 1-1/J.122 – Transparent IP traffic through the Data-Over-Cable system

Where:

Headend is the central location on the cable network that is responsible for injecting broadcast video and other signals in the downstream direction. CMTS is the Cable Modem Termination System located at the headend and CM is the Cable Modem located at the customer location.

Both, CMTS and CM, realize the transmission path over the cable system. At the headend (or hub), the interface to the Data-Over-Cable system is called the Cable Modem Termination System-Network Side Interface (CMTS-NSI). At the customer locations, the interface is called the cable-modem-to-customer-premises-equipment interface (CMCI). The intent is for operators to transparently transfer IP traffic between these interfaces.

2. BACKGROUND

Cable Modems

Digital data signals are transmitted over radio frequency (RF) carrier signals on a cable system. In order to get bi-directional communication, there is one carrier signal that carries data in the “downstream” direction (from the cable network to the customer), and another that carries data in the “upstream” direction (from the customer to the cable network). Cable modems (CM) are devices at the subscriber premises that convert digital information into a modulated RF signal in the upstream direction, and convert the RF signals to digital information in the downstream direction. Cable modem termination systems (CMTS), perform the converse operation for multiple subscribers at the cable operator's headend.

⁶ CDMA stands for *Code-Division Multiple Access*, which is a digital cellular technology that uses spread-spectrum techniques. In CDMA every channel uses the full available frequency spectrum instead of assigning a specific frequency to each user. Individual conversations are encoded with a pseudo-random digital sequence. CDMA is the common platform on which 3G technologies are built.

⁷ TDMA stands for *Time Division Multiple Access*, which is a technology for delivering digital wireless service using time division multiplexing (TDM). TDMA works by dividing a radio frequency into time slots and then allocating slots to multiple calls. I.e. a single frequency can support multiple, simultaneous data channels. TDMA is used by the GSM digital cellular system.

First Generation Transmission systems for interactive cable television services

In March 1998, ITU-T SG 9 approved Recommendation J.112, “Transmission systems for interactive cable television services” based on a series of Data Over Cable Service Interface specifications developed by CableLabs, called DOCSIS 1.0 and 1.1. DOCSIS defines interface requirements for cable modems involved in high-speed data distribution over cable television system networks. DOCSIS-compliant cable modems are at present the most successful and cost-effective method for providing high-speed data services, being now in competition with DSL technologies.

In DOCSIS 1.0 and 1.1 the downstream channel is 6 MHz and occupies the space of a single television transmission. It is compatible with digital set-top MPEG⁸ transport stream modulation, and can provide up to 40 Mbps. The upstream channels, shared by several hundred users, can be up to 3.2 MHz wide, and it can deliver up to 10 Mbps-per-channel.

Second Generation Transmission systems for interactive cable television services

J.122 allows for a higher upstream bandwidth than J.112. In J.122, upstream channels that can be up to 6.4 MHz, can deliver up to 30 Mbps. A media access control (MAC) layer coordinates shared access to the upstream bandwidth.

Since the sharing of the channels could offer a threat to the security and privacy of data, J.112 and J.122 technologies use encryption and security mechanisms for the operator to prevent theft of service.

Physical Layer Options in J.122

As different networks in the world adopt different cable spectrum, J.122 defines three possible options for the physical layer technology. These three options have equal priority and are not required to be interoperable. They are:

- 1) Based on the downstream multi-program television distribution that is deployed using 6 MHz channeling, this option supports upstream transmission in the 5-42 MHz region.
- 2) Based on a multi-program television distribution using 8 MHz channel spacing, this option supports upstream transmission in the 5-65 MHz region.
- 3) The third technology option is based on 6 MHz channel spacing and supports upstream in the 10-55 MHz region.

To be compliant with J.122, implementations must be compliant only with one of the three options and it is not required for equipment built according to one option, to interoperate with equipment built according to another option. However, all optional physical-layer technologies are required to be backwards compatible with the earlier versions of those options.

J.122 refers to the first technology option in its main body and the second and third options are referred to in Annexes F and J respectively. It also assumes that the access network is coaxial-based broadband, understanding that coaxial-based may be either an all-coax or a hybrid fiber/coax (HFC) network. In any of these cases, the network is referred to as a “cable network”

⁸ MPEG here refers to the family of digital video compression standards and file formats developed by the ISO Moving Picture Experts Group. MPEG achieves high compression rate by storing only the changes from one frame to another, instead of each entire frame.

A cable network uses a shared-medium, tree-and-branch architecture with analogue transmission. The key functional characteristics assumed are:

- 1) two-way transmission;
- 2) a maximum optical/electrical spacing between the CMTS and the most distant CM of 100 miles, although typical maximum separation may be 10-15 miles;
- 3) a maximum differential optical/electrical spacing between the CMTS and the closest and most distant modems of 100 miles, although this would typically be limited to 15 miles.

3. CONCLUSIONS

The Working Group on Technology recommends that CITEI PCC.I endorse ITU-T Recommendation J.122, “Second-generation transmission systems for interactive cable television services – IP cable modems” with no deletions, additions or modifications.

4. FUTURE WORK

The Rapporteur Group on Standards Coordination should continue to monitor the evolution of cable service specifications in ITU-T, (especially Study Group 9), and other relevant standards groups that address the broadband needs of the Americas. As appropriate, the RGSC will recommend endorsement of additional standards that serve to enhance broadband access technologies in the Americas.

5. RESOURCE DOCUMENTS

[1] ITU-T Recommendation J.122, “Second-generation transmission systems for interactive cable television services – IP cable modems”.

PCC.I/RES. 100 (IX-06)⁹

INTERNET PROTOCOL VERSION 6 (IPV6) SPECIFICATION

The IX Meeting of the Permanent Consultative Committee I: Telecommunications,

CONSIDERING:

- a) That there is a consensus that new forms of communication are fundamentally transforming the way in which people, communities, businesses and governments interact with each other;
- b) That IPv6 could help to eradicate a potential digital gap between the info-rich and info-poor countries, as occurred with IPv4, with the consequences of generating development and new business opportunities for the local community;
- c) That Resolution PCC.I/RES. 83 (VII-05) instructs the Working Group on Standards Coordination to work on the preparation of a Standards Coordination Document on IPv6 standards,

RECOGNIZING:

- a) That IPv6 provides the basis for continued technical innovation in communications technologies;
- b) That IPv6 has been developed in the Internet Engineering Task Force (IETF) to replace mainly to solve the problem of lack of address space for the increasing demand of IP services;
- c) That most future wired and wireless telecommunication and multimedia services will be transported over IP, and that IPv6 has mandatory security and mobility, built-in QoS, and more scaleable routing and robustness than IPv4,

RESOLVES:

To endorse IETF RFC 2460 "Internet Protocol version 6 (IPv6) Specification with no deletions, additions or modifications; and

RECOMMENDS:

That the Rapporteur Group on Standards Coordination continues to monitor the IETF IPv6 developments and determines its applicability for the Americas as this work evolves.

⁹ Document CCP.I-TEL/doc. 943/06

ANNEX TO RESOLUTION PCC.I/RES. 100 (IX-06)

STANDARDS COORDINATION DOCUMENT INTERNET PROTOCOL VERSION 6 (IPV6) SPECIFICATION

1. EXECUTIVE SUMMARY

The Working Group on Standards Coordination (WGSC) has addressed IP based technologies as part of its studies of standards for Next Generation Networks (NGN), Services, Signaling, and Operations as they relate to the service access needs of the Americas. Part of this activity has included monitoring the work of the IETF.

The Internet Protocol version 6 (IPv6), described in RFC 2460, was created as a replacement of the current IP version 4 (IPv4), described in RFC 791, mainly due to the limited number of addresses that IPv4 can offer. Besides a 128-bit wide address range, the TCP-UDP/IPv6 protocol suite provides additional features such as mandatory security and mobility, ease of administration and auto-configuration features, built-in QoS, and more scaleable routing and robustness.

At the Eighth Meeting of PCC.I (Santo Domingo; May 2006), the PCC.I Assembly instructed the Working Group on Standards Coordination to develop a Standards Coordination Document (SCD) on IPv6. Therefore, this SCD presents now IETF RFC 2460 to PCC.I for its endorsement for the region of the Americas.

2. BACKGROUND

Internet Protocol version 6 (IPv6), started standardization as a replacement of the current IP version 4 (IPv4), described in RFC 791 (Standard), due to the depletion of the limited number of IPv4 addresses foreseen already in the 1990's. Up until present time, various techniques such as Classless Inter-Domain Routing (CIDR), Network Address Translation (NAT), and Multi Protocol Label switching (MPLS) have managed to delay this depletion. The IETF Internet Next Generation (IPNG) working group developed IPv6, RFC 2460 (Draft Standard).

The current Internet Protocol IPv4, supports up to 4 billion addresses with 32-bit address space. While 4 billion is a lot bigger than the currently estimated 2.5 billion addresses in use by several hundred million Internet users, in practice IPv4 supports a much lower number. That is because addresses are not used efficiently. They are allocated in regional blocks, and there is an over supply in some areas of the world and other areas (e.g., Asia, Europe and Latin America) are close to running out of addresses. At the current rate of 60% efficiency, IP addresses will run out some time in the future. IPv6 128-bit address format allows for 340,232,366,920,938,463,374,607,431,768,211,456 IP addresses (340 duodecillion), enough to award one to every grain of sand on earth. Figure 1 depicts the IPv6 header format.

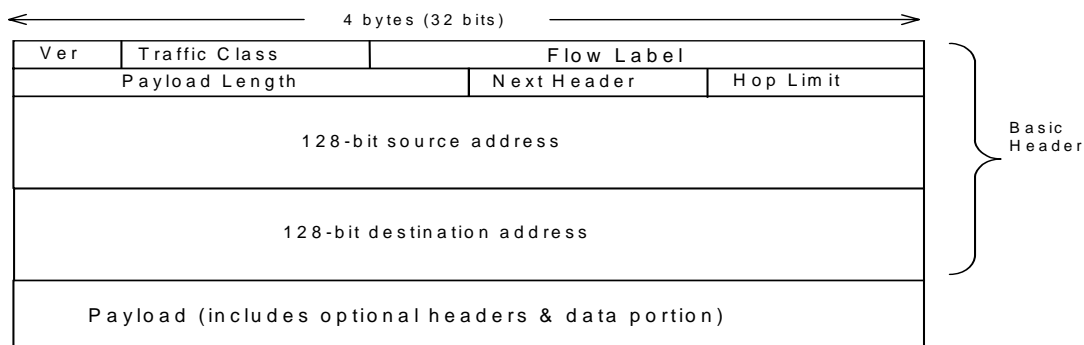


Figure 1 – IPv6 Header Format

Besides a 128-bit wide address range, the TCP-UDP/IPv6 protocol suite provides additional features such as mandatory security and mobility, ease of administration and auto-configuration features, built-in QoS, and more scalable routing and robustness to mention a few. Many of these have been retrofitted in IPv4 with various limitations and decreased functionality.

Wireless will have the greatest impact on IP. The forthcoming 3G will make much greater use of IP than the previous generations of cellular radio. Until now, IP has been used as an add-on to cellular networks, in a not too distant future, cellular networks will be data oriented, as voice will be treated as another IP session within the network. The development of new radio protocols such as 802.11B (Wireless Ethernet) plus new wired serial interfaces such as IEEE 1394 (Firewire) will provide the opportunity for consumer products to require an IP address to connect to the net.

IPv6 Addressing

The IPv6 addressing architecture is described in RFC 2373. The advantage of the IPv6 addressing architecture over the IPv4 one is mainly the length of the address. While IPv4 32-bit addresses can be divided into two or three variable parts (the network identifier, the node identifier and sometimes the subnet identifier); the IPv6 128-bit addresses can support different fields within the address.

IPv6 Address Representation

There are three conventional forms for representing IPv6 addresses as text strings. The preferred form is x:x:x:x:x:x:x:x, where the 'x's are the hexadecimal values of the eight 16-bit pieces of the address, however certain styles of IPv6 addresses may contain long strings of zero bits that can be represented by "::". The third alternative is a mixed environment of IPv4 and IPv6 such as x: x:x:x:x:d.d.d.d, where the 'x's are the hexadecimal values of the six high-order 16-bit pieces of the address, and the 'd's are the decimal values of the four low-order 8-bit pieces of the address (standard IPv4 representation).

IPv6 Address Types

There are three types of addresses in IPv6 (unicast, anycast and multicast) and all of them are assigned to interfaces, not to nodes:

Unicast addresses specify a single IPv6 interface. A node can have more than one IPv6 network interface. Unicast addresses can be viewed as 128-bit field that identifies one particular interface. However, the data

in the address field can be parsed out into smaller pieces of information, although all that information when put together will result in a 128-bit field that identifies a node's interface.

Anycast addresses are IPv6 addresses that are assigned to one or more network interfaces (typically belonging to different nodes), with the property that a packet sent to an anycast address is routed to the "nearest" interface having that address, according to the routing protocols' measure of distance. Multiple nodes may be sharing the same anycast address, like a multicast address. However only one of those nodes can expect to receive a datagram sent to the anycast address.

Multicast addresses, like broadcast addresses, are used in local networks like Ethernet, where all nodes can sense all transmissions on wire. However, IP multicast is more complicated because all packets are not forwarded to all nodes in the network; instead, the packets are only forwarded to members of the multicast group. When a node subscribes to a multicast address, it announces that it wants to become a member and any local router will subscribe on behalf of that node.

3. CONCLUSIONS

The Working Group on Technology recommends that CITEI PCC.I endorses IETF RFC 2460 "Internet Protocol version 6 (IPv6) Specification with no deletions, additions or modifications.

4. FUTURE WORK

The Rapporteur Group on Standards Coordination will continue to monitor the progress of the Internet Protocol and its capabilities, particularly of IPv6, since this protocol will benefit CITEI Members State as to stay competitive in the delivery of telecom and multimedia services in this very fast-evolving technical world.

5. RESOURCE DOCUMENTS

- [1] IETF RFC 2460, Internet Protocol Version 6 (IPv6) specification, December 1998.
- [2] Technical Notebook on "Next Generation Networks – Standards Overview CCP.I-TEL/doc.0776, May 2006.
- [3] CCP.I/doc.1262/01, "The Protocol labelled IPv6"
- [4] CCP.I/doc.1382/01, "IPv6 Addressing"

PCC.I/RES.101 (IX-06) ¹⁰

WORKSHOP ON IPv6 ADDRESS ALLOCATION POLICIES AND PROGRAM

The IX Meeting of the Permanent Consultative Committee I: Telecommunications,

RECOGNIZING:

The importance of the Internet to all sectors of the economy and civil society and in particular the already identified need for a very large Internet address space eclipsing the capacity of the present IPv4 address space.

FURTHER RECOGNIZING:

That new technologies such as RFID and human nomadicity needs are driving a potentially unlimited appetite for more address space.

NOTING:

The excellent information exchange achieved by the PCC.I Workshop on IPv6 Address Allocation Policies held at the IX meeting, included in the report (document CCP.I-TEL/doc.930/06),

RESOLVES:

To instruct PCC.I Working Group Chairs to ensure that proper account is taken of this subject in their working projects and that the appropriate aspects are addressed in their on-going Work Plans.

¹⁰ Document CCP.I-TEL/doc. 929/06

POLICY AND REGULATORY ISSUES IN NEXT GENERATION NETWORKS (NGN)

The IX Meeting of the Permanent Consultative Committee I: Telecommunications,

RECOGNIZING:

The important information exchanged at the ITU/CITEL Workshop on “Interconnection and Next Generation Networks (NGN): Addressing the Regulatory Challenges, held on September 11, 2006 in Buenos Aires, Argentina,

FURTHER RECOGNIZING:

The convergence of telecommunication network technologies and services towards an IP packet-based core network and that this convergence has potentially significant implications for policy and regulatory approaches to ensure an efficient and effective evolution of this converged network, known as the Next Generation Networks (NGN),

NOTING ALSO:

That the telecommunications network is fast becoming a crucially important platform over which practically the whole economy operates, and which is vitally important to society as a whole for social interaction, commerce and recreational needs,

RESOLVES:

To instruct the Working Group on Policy and Regulatory Considerations to study the national challenges of Interconnection and Next Generation Networks (NGN) and include in its Work Plan a survey of regulatory experiences already in place in various regions to guide NGN evolution, and furthermore to create a Technical Notebook describing these practices, as a living document, with on-going updates as more and more countries formulate their regulatory and policy approaches to the NGN.

¹¹ Document CCP.I-TEL/doc. 897/06 rev.1

PCC.I/RES. 103 (IX-06)¹²

AGENDA, VENUE AND DATE FOR THE X MEETING OF PCC.I

The IX Meeting of the Permanent Consultative Committee I: Telecommunications,

RESOLVES:

1. To hold the X Meeting of the Permanent Consultative Committee I: Telecommunications on March 19 to 22, 2007 in Argentina.
2. To adopt the Draft Agenda for the X Meeting of PCC.I attached to this resolution.

ANNEX TO RESOLUTION PCC.I/RES. 103 (IX-06)

1. Approval of the agenda and schedule of activities.
2. Establishment of the Drafting Group for the final report.
3. Report and meeting of the Working Groups:
 - 3.1 Working Group on Technology (WGT)
 - 3.2 Working Group on Policy and Regulatory Considerations (WGPRC)
 - 3.3 Working Group on Network Operation and Service Provisioning (WGNOSP)
 - 3.4 Working Group on Development (WGD)
4. Agenda, venue and date for the XI Meeting of PCC.I.
5. Approval of the Final Report.
6. Other Business.

DETAILED DRAFT AGENDAS OF WORKING GROUPS

WORKING GROUP ON TECHNOLOGY (WGT)

1. Approval of the Agenda.
2. Report of the activities of the Working Groups since the last Meeting.
3. Allocation of Contributions to Rapporteur Groups.
4. Meeting and Report of the Rapporteur Groups.
 - 4.1 Meeting of the Rapporteur Group on Standards Coordination.
 - 4.2 Meeting of the Rapporteur Group on Network Infrastructure.
 - 4.3 Meeting of the Rapporteur Group on Advanced Services.

¹² Document CCP.I-TEL/doc. 937/06

5. Work plan revision.
6. Other Business.
7. Adoption of the final report.
8. Conclusion of the meeting.

WORKING GROUP ON POLICY AND REGULATORY CONSIDERATIONS (WGPRC)

1. Approval of the Agenda.
2. Meeting and Report of the Rapporteur Groups.
 - 2.1. Rapporteur Group on Issues related to Internet Resources.
 - 2.2. Rapporteur Group on Economic Aspects of Telecommunications.
 - 2.3. Rapporteur Group on Cybersecurity and Critical Infrastructure.
 - 2.4. Rapporteur Group on MRA and Conformity Assessment Procedures.
 - I) MRA**
 - Presentation and approval of draft agenda.
 - Report on the last meeting.
 - Participation dates proposed by Member States.
 - Presentations and status updates by Member States on the regulations and procedures they plan to use or are using to implement Phase I of the MRA.

 - Discussions on:
 - MRA Training.
 - Database to store information produced in the implementation.
 - Information International activities.
 - Review of action items and preparation of draft agenda for the next meeting.
 - II) Conformity Assessment Procedures**
 - Proposal for preparing and approving plans for the Yellow Book on Conformity Assessment Procedures for Telecommunication Equipment in the Americas.
 - Date and agenda for the next meeting.
 - Other business.
 - 2.5. Rapporteur Group on Convergence.
 - 2.6. Rapporteur Group on Preparation for WTSA and WCIT.
3. Other Business.
4. Adoption of the final report.

WORKING GROUP ON NETWORK OPERATION AND SERVICE PROVISIONING (WGNOSP)

1. Approval of the Draft Agenda and Schedule.
2. Report and Meeting of Rapporteur Groups:
 - 2.1 Rapporteur Group on Impact of New Services
 - To submit the Questionnaire on service provisioning under convergent environments.
 - To submit the resolution to create a technical notebook.
 - 2.2 Rapporteur Group on Interconnection and Interoperability of Networks
 - To submit the Survey on bandwidth requirements as of 2010.
 - To submit objectives to conduct a study on VoIP Operators in the region.
 - 2.3 Rapporteur Group on Network Security and Fraud Control in Telecommunication Services
 - To submit a report on tasks performed and identify issues to be followed up.
 - To submit a report on the results from the questionnaire on stolen terminals and best practices for fraud control in telecommunications.
 - To submit a report on the study groups dealing with fraud control and security of access networks at ITU level.
 - 2.4 Rapporteur Group on Numbering and Addressing
 - To submit a report on the technical notebook on Number Portability
 - To submit a report on the evolution of E-164.
3. Report of the Meeting.
4. Other Business.

WORKING GROUP ON DEVELOPMENT (WGD)

1. Approval of the Draft Agenda and Schedule.
2. Report and Meeting of Rapporteur Groups.
3. Definition of structure, mandate, terms of reference and action lines or Work Plan for the Rapporteur Group on Emergency Telecommunications.
4. Issue on projects, documents and initiatives on the use of ICTs.
5. National and international ICT parameters for areas or groups insufficiently serviced or under special situations.
6. Final designation, action lines and Work Plan of the Rapporteur Group on Scientific and Technological Research and Technology Transfer.
7. Report of the Meeting.
8. Other Business

PCC.I/RES.104 (IX-06)¹³

STRUCTURE AND TERMS OF REFERENCE OF THE WORKING GROUPS OF PCC.I

The IX Meeting of the Permanent Consultative Committee I: Telecommunications,

CONSIDERING:

- a) The new mandate received from the IV Assembly, approved by Resolution CITES RES. 55 (IV-06);
- b) The new structure of PCC.I and the mandates and terms of reference of the Working Groups approved by Resolution CCP.I/RES. 91 (VIII-06),

RESOLVES:

To approve the structure, mandate and Terms of Reference for the Working Groups of PCC.I as indicated below.

ANNEX TO RESOLUTION PCC.I/RES.104 (IX-06)

1. WORKING GROUP ON TECHNOLOGY¹⁴

Chair: Mr. Oscar Avellaneda (Canada)
Vice Chairs: Mr. Eduardo Gabelloni (Telefonica, Argentina)
Mr. Walter Calil (Brazil)

1.1 Rapporteur Group on Standards Coordination

Mandate:

To focus on the study of standards that are necessary for the smooth transition to Next Generation Networks (NGN). To address issues relating to the convergence of existing networks in a way that maintains interoperability across the Region. To make specific recommendations (Standards Coordination Documents, Technical Notebooks, etc.) that best serve the current and future needs of the users of these networks throughout the Region.

Rapporteur: Mr. Wayne Zeuch (Lucent Technologies, United States of America)

Terms of Reference:

- a) Identify and evaluate technical issues related to the service, architecture and protocol standards required for the interconnectivity and interoperability of existing and future communications networks (wireline and wireless) across the Region that will ultimately result in the emergence of a single, seamless network.

¹³ Document CCP.I-TEL/doc. 949/06

¹⁴ Document CCP.I-TEL/doc. 938/06 rev.1

- b) Draw primarily on the work of existing standards-setting bodies, including the ITU-T, IETF, and other fora as appropriate.
- c) Recommend endorsement of standards that deal with, but are not limited to, the following topics:
- Multimedia service definition and architectures;
 - Signalling requirements and protocols (converged networks);
 - IP-based services (Voice over IP, Video over IP, etc.);
 - Emergency services;
 - Network aspects of IMT-2000 and beyond (wireless Internet, harmonization and convergence, network control, mobility, roaming, etc.);
 - Interworking between traditional telecommunication networks and evolving networks;
 - Metropolitan and Long haul optical transport networks;
 - Access network transport (LANs, xDSL, Ethernet, cable modem, fiber, Wireless LANs, etc.);
 - Terminals (PC, TV, PDA, phone, codecs, etc.);
 - Management of communications services, networks and equipment;
 - Communications system security (lawful intercept, privacy, fraud prevention, cyber crime, sabotage, etc.);
 - Numbering, Naming and Addressing (ENUM);
 - Performance and QoS;
- d) Develop Technical Notebooks that best serve the current and future needs of the users of telecommunications networks throughout the Region;
- e) Identify, on a timely and ongoing basis, obstacles that could prevent full interoperability of networks throughout the Americas and to report on these to the Working Group on Technology;
- f) Establish liaisons with other standards bodies and industry fora as necessary to progress the work.

Work Plan:

By the X PCC.I Meeting (2007)

- a) Assess progress on signaling and protocol standards and recommend the adoption of Standards Coordination Documents (CSDs) as appropriate; current SCD proposals include standards on IPv6, VDSL2, and IP Cable Modems.
- b) Update the Technical Notebook, “Next Generation Networks – Standards Overview” with standards work on access technologies (e.g., WiMax, Satellite).
- c) Initiate studies on the service, architecture and protocol standards related to Digital TV Broadcast/Multicast and IPTV.

By the XI PCC.I Meeting (2007)

- a) Assess progress on convergence standards – specifically NGN and IMS standards and the standards supporting service and application development.
- b) Consider initiating studies of NGN converged QoS framework standards (e.g., Resource and Admission Control Functions—RACF).

- c) Reassess current Work Plan based on new developments in the telecommunications environment and propose a new work plan if necessary.

1.2 Rapporteur Group on Network Infrastructure

Mandate:

To focus on the study of network infrastructure required to support secure, high-performance, network based delivery of personalized services (voice, data and multimedia) to end users – regardless of time and place. To address issues relating to the convergence of existing networks in a way that maintains interoperability across the Region. To make specific recommendations (Technical Notebooks, etc.) that best serve the current and future needs of the users of these networks throughout the Region.

Rapporteur: Ms. Josefina Cano (COPACO, Paraguay)

Terms of Reference:

- a) Develop frameworks, architectures and scenarios to foster the enhanced understanding of new networks and related technologies in the region of the Americas - how they interrelate, and how they contribute to network and service convergence and evolution.
- b) Investigate, report on, and raise awareness of new network technologies, such as Next Generation Networks, Wide Area Ethernet, Broadband Access, and their application among the member states of the region.
- c) Develop Technical Notebooks and related guidelines that best serve the current and future needs of the users of telecommunications networks throughout the Region.
- d) Identify, on a timely and ongoing basis, obstacles that could prevent full interoperability of networks throughout the Americas and to report on these to the Working Group on Technology.
- e) Establish liaisons with other industry fora as necessary to progress the work.

Work Plan:

By the X PCC.I Meeting (2007)

- a) Assess the evolution of network architectures and propose studies on evolving access technologies.
- b) Update Technical Notebook on Best Practices and Case Studies for Next Generation Networks.
- c) Undertake the restructuring of the Technical Notebook on Broadband Access Technologies.
- d) Initiate the study of network architectures based on IP Multimedia Subsystem (IMS).

By the XI PCC.I Meeting (2007)

- a) Assess progress on convergence network technologies - specifically NGN and IMS network infrastructures.
- b) Undertake studies of NGN security implementation in networks of the Region.
- c) Reassess current Work Plan based on new developments in the telecommunications environment and propose a new work plan if necessary.

1.3 Rapporteur Group on Advanced Services

Mandate:

To focus on the study of the development of next generation services, especially supported by IP and their impact in the Americas Region; as well as providing information on these services to the countries of the Region. To promote projects geared towards facilitating the delivery of personalized services (voice, data and multimedia) to end users – regardless of time and place. To make specific recommendations (Technical Notebooks, etc.) that best serve the current and future needs of the users of these networks throughout the Region.

Rapporteur: Mr. Jorge Zavleon (Argentina)

Terms of Reference:

- a) Develop studies on the development of next generation services in the region of the Americas.
- b) Investigate the impact on the implementation of new telecommunication services, particularly those supported by IP, such as IP Telephony, IPTV, Location, Push/Pull, Presence, Multimedia, and Emergency Communications Services - as well as providing information about these services to the countries of the Region.
- c) Develop Technical Notebooks and related guidelines that best serve the current and future needs of the users of telecommunications services throughout the Region.
- d) Identify, on a timely and ongoing basis, obstacles that could prevent full interoperability of services throughout the Americas and to report on these to the Working Group on Technology.
- e) Establish liaisons with other industry fora as necessary to progress the work.

Work Plan:

By the X PCC.I Meeting (2007)

- a) Assess the evolution of advanced services and propose studies of those services most widely deployed.
- b) Restructuring of the Technical Notebook on “Study on characteristics of voice based networks using IP”.

- c) Initiate the study of IPTV and the potential impact of its deployment on the countries of the Region.

By the XI PCC.I Meeting (2007)

- a) Initiate the comparative study of NGN based emergency communications services.
- b) Initiate studies of the ways the countries of the region are evolving towards the convergence of services (e.g., wireless-wired, PSTN-IP based networks, etc).
- c) Reassess current Work Plan based on new developments in the telecommunications environment and propose a new work plan if necessary.

2. WORKING GROUP ON POLICY AND REGULATORY CONSIDERATIONS¹⁵

Chair: Ms. Amal Abdallah (United States of America)
Vice-Chairs: Mr. Mario Fromow Rangel (Mexico)
Mr. Rodrigo Robles (Guatemala)
(Colombia)

2.1 Rapporteur Group on issues relative to Internet resources

Mandate:

To focus on the analysis of government policies and experiences in management of ccTLD and IP address blocks, including a comparative analysis of these experiences in order to identify “Best Practices” in the countries of the region.

Rapporteur: Mr. Oscar Messano (Argentina)

Terms of reference:

- a) Continue working with Member States and Associate States in collection of information on Internet resources, namely: ccTLD and IP address block management, including the activities of other competent organizations.
- b) Analyze regional policies on IP address block management.
- c) Follow up ICANN activities, especially the organization’s reform process.
- d) Follow up the tasks of the UN General Secretary Group for Internet Governance, in coordination with the Rapporteur Group on Telecommunications Economic Aspects.

Work Plan:

By the X PCC.I Meeting (2007)

¹⁵ Document CCP.I-TEL/doc. 896/06 rev.2

- a) Update ccTLDs in the region.
- b) Generate the first partial report on the IP address block management situation in CITEL countries.
- c) Generate a document on regional policies.
- d) Generate two reports on the follow up of ICANN activities, a partial one in the X meeting and an advanced one in the XI meeting.
- e) Follow up on the UN General Secretary Group for Internet Governance coordinated by the WG on Economic and Tariff Issues.

By the XI PCC.I Meeting (2007)

- a) Update ccTLDs in the region.
- b) Generate the first partial report on the IP address block management situation in CITEL countries.
- c) Generate a document on regional policies.
- d) Generate two reports on the follow up of ICANN activities, a partial one in the X meeting and an advanced one in the XI meeting.
- e) Follow up on the UN General Secretary Group for Internet Governance coordinated by the WG on Economic and Tariff Issues.

2.2 Rapporteur Group on Telecommunications Economic Aspects

Mandate:

To develop studies on the economic aspects and tariff principles of the telecommunications systems, and to examine the need for new or adapted charging and accounting mechanisms for the provision of such services in the Region.

Rapporteur: Mr. Facundo Fernandez Begni (Argentina)

Terms of reference:

- a) Identify, analyze and evaluate cost models for the different telecommunication services, prioritizing the experience in the region and the needs of member countries, with an ongoing evaluation of the impact of new technologies.
- b) Identify, analyze and evaluate the economic aspects relative to new generation network-based services in the countries of the region, considering their impact on the sector growth, their costs and potential savings.

- c) Study the economic aspects relative to tariffs such as rates, access charges, etc., considering the impact on new generation networks.
- d) Identify, analyze and evaluate the different factors relative to the activities in telecommunications, their impact on economic growth and income distribution.
- e) Study economic aspects associated with Internet in the Americas (International Internet Connectivity and Traffic Flow Methodologies).
- f) Study competitiveness in the telecommunications market, including the effects of anti competition practices and regulatory measures to prevent them.
- g) Take into account the activities of ITU-T Study Group 3, so that contributions from the Region of the Americas can be submitted.

Work Plan:

By the X PCC.I Meeting (2007)

- a) Update the Report on methodologies for telecommunication service cost determination (the updated information on the methodologies applied by each country in the region will be provided together with new technologies being contemplated from the cost analysis viewpoint).
- b) Submit a proposal for the drawing up of a Comparative Study on (Policies and Regulations) of costs and tariffs in the telecommunications sector (fixed and mobile) in the region.
- c) Submit a proposal for the drawing up of a document on Common Regulatory Principles of separate Regulatory Accounting applicable to telecommunication services (fixed and mobile), including services supported by new technologies.
- d) Monitor economic aspects associated to Internet in the Americas (International Internet Connectivity and Traffic Flow Methodologies).
- e) Update the Technical Notebooks on the economic aspects related to power-line network utilization (PLC) for telecommunication service provision and financing mechanisms for telecommunication service provision to people with impaired capacities.

By the XI PCC.I Meeting (2007)

- a) Monitor economic aspects associated to Internet in the Americas (International Internet Connectivity and Traffic Flow Methodologies).
- b) Update the Technical Notebooks on the economic aspects related to power-line network utilization (PLC) for telecommunication service provision and financing mechanisms for telecommunication service provision to people with impaired capacities.

2.3 Rapporteur Group on Cybersecurity & Critical Infrastructure

Mandate:

To study the security aspects related to communication network development, its role in supporting other critical infrastructures, the role of the private sector in securing the communication network, and domestic and regional approaches required in the Americas Region on this matter. Assessing the current work undertaken in the OAS, ITU, and other fora on issues pertaining to the security and critical infrastructure of communication networks across the region. This issue should cover, but not be limited to:

- a) Developing domestic and regional approaches to network security, deployment strategies, information exchange, and outreach to the public and the private sector.
- b) Reviewing the various frameworks and guidelines on network and cyber security and their applicability within the Americas region.
- c) Fostering dialogue regarding the work of the ITU (i.e. Study Group 17) and other relevant fora on network and cyber security.

Rapporteur: Ms. Marian Gordon (United States of America)

Terms of Reference:

- a) Develop domestic and regional approaches to network security, deployment strategies, information exchange, and outreach to the public and the private sector:
 - Collect regional best practices for network communication and infrastructure protection, taking into account ongoing activity in the ITU-D sector (question 22/1).
 - Review the various frameworks and guidelines on network and cyber security and their applicability within the Americas region.
- b) Foster cooperation among Member States on aspects related to network security:
 - Help Administrations to encourage network and service providers to implement technical standards for secure networks.
- c) Identify and evaluate implementation and policy issues relating to standards required for security of existing and future communications networks (wireline and wireless) across the region. This task will draw primarily on the work of ITU-T (especially the security Study Questions of SG 17. Other existing standards-setting bodies, including the IETF, and Regional SDOs will also be considered, as appropriate.
- d) Identify, on a timely and ongoing basis, obstacles to implementation of security measures in the networks of the region.
- e) Establish liaisons with other standards bodies and industry fora as necessary to advance work on the OAS mandates.

Work Plan:**X and XI PCC.I Meeting (2007)**

- a) Solicit further input from CITELE membership for the technical notebook to facilitate discussion of regulatory and policy aspects of cybersecurity.
- b) Explore possible regional best practices to develop a culture of cybersecurity in the Americas.
- c) Identify various frameworks for national action for cybersecurity in the Americas.
- d) Identify elements of existing national cybersecurity frameworks.

2.4 Rapporteur Group on Mutual Recognition Agreements and Conformity Assessment Procedures**Mandate:**

To encourage the implementation of the Inter-American MRA and to study the conformity assessment requirements of telecommunication equipment in the different Member States.

Rapporteur & Co-Rapporteur: Mr. Efrain Guevarra (Canada) & Mr. Raul Topete (Mexico)

Terms of Reference:

- a) Work towards the implementation of the Inter-American MRA.
- b) Hold a workshop on a yearly basis to provide information and training to members which are planning to implement the MRA and to hold forums and seminars on conformity assessment (i.e. certification processes) to promote information and capacity building of human resources in the Region.
- c) Cooperate with other regional groups especially the APEC TEL group in the implementation of the MRA.
- d) Complete the Yellow Book on Telecommunication Equipment Conformity Assessment Processes in the Americas.
- e) Study the requirements of the Conformity Assessment processes for telecommunication equipment in the different Member States.

Work Plan:**X and XI PCC.I Meeting (2007)**

- a) Support all Member States in their MRA implementation efforts.
- b) Hold a second international MRA workshop in 2007, with support of the OAS.

- c) Finish the Yellow Book on Telecommunication Equipment Conformity Assessment Processes in the Americas.
- d) Develop guidelines on conformity assessment policies and procedures aligned with ISO/IEC standards, appropriate for the possible application by CITELE Member States.
- e) Develop a cooperation Program with other regions on their conformity assessment processes, and propose suitable solutions for the CITELE Member States.

2.5 Rapporteur Group on Convergence

Mandate:

To exchange information and experiences on convergence from the viewpoint of regulatory and telecommunication policies, aiming to issue reports, proposals and guidelines that facilitate adjustment of regulatory frameworks and the establishment of new policies in accordance with convergence tendencies.

Rapporteur & Co-Rapporteur: (Colombia) and (Ecuador)

Terms of reference:

- a) Collect regulatory, policies and market information on service provision and networks within a framework of convergence in CITELE member countries.
- b) Study and analyze international best practices relative to convergence from a regulatory and policy viewpoint, as well as from the perspective of its impact on the consumer and the industry.
- c) Identify potential domestic barriers to the implementation and development of convergence and interconnection.
- d) Provide proposals and guidelines regarding the adequacy of regulatory frameworks and the establishment of policies that foster the development of convergence and user protection.

Work Plan:

X and XI PCC.I Meeting (2007)

- a) Draw up and distribution of surveys on the current situation of convergence in member countries.
- b) Collect and analyze the information obtained by means of the surveys.
- c) Research and collect information on convergence and the regulatory frameworks and policies that they apply in domestic markets of countries other than CITELE members.
- d) Submit a status report in the next PCC.I meeting.
- e) Draw up and draft a final study report including proposals and guidelines on the regulatory framework and convergence policies.

2.6 Rapporteur Group for the Preparation of WTSA and WCIT

Mandate:

To coordinate the regional preparations for the World Telecommunication Standardization Assembly (WTSA) and the World Conference on International Communications (WCIT) by the ITU.

Terms of reference:

- a) Identify issues that are relevant to the region in connection with the activities in the Telecommunication Standardization sector of the ITU (ITU-T); discuss possible solutions and elaborate proposals to address those issues.
- b) Coordinate common Inter-American proposals for submittal before the WTSA by CITELE.
- c) Define regional actions, based on the results on International Telecommunications Regulations of the Plenipotentiary Conference of 2006.

Work Plan:

X and XI PCC.I Meeting (2007)

World Telecommunication Standards Assembly

- a) Define the activity schedule.
- b) Establish a work methodology.
- c) Consider the reports from Study Groups and ITU's Telecommunication Standardization Advisory Group in order to identify issues of interest to the region.
- d) Establish a discussion group in the electronic forum to receive contributions on the subject from Member States and Associate Members.
- e) Follow up on regional activities (APT, CEPT, RCC, etc.) that take place as preparatory steps for WTSA.

World Conference on International Communications

Consider the results of the Plenipotentiary Conference 2006 and, coordinate Common Inter-American Proposals, as applicable.

3. WORKING GROUP ON NETWORK OPERATION AND SERVICE PROVISIONING (GNOSP)¹⁶

Chair: Mr. Verny Zamora (Costa Rica)
Vice-Chairs: Ms. Silvana Pérez Figueroa (El Salvador)
Ms.. Carolina Jacquet (Paraguay)
Alternate Vice-Chair: Mr. Kenji Kuramochi (Paraguay)

3.1 Rapporteur Group on the Impact of New Services

Mandate:

To study and recommend strategies and best practices for the appropriate deployment and provisioning of telecommunication services in a convergent environment.

Rapporteur: (Ecuador)

Co-Rapporteur: Mr. Giovanni Mancilla (TELECOM Colombia)

Terms of reference:

- a) Study different service provisioning modalities in a convergent environment and their impact on the sector players.
- b) Study the feasibility of implementing convergent services in the region.
- c) Identify strategies and experiences to be a reference for the appropriate implementation of service provisioning in a convergence environment.
- d) Promote the exchange of experiences related to the provisioning of new ICT based services.

Activities:

- a) Review CITELE information in connection with new services and convergent environments.
- b) Submit a study of service provisioning practices in convergent environments, based on data collected from a questionnaire answered by member administrations and associate members.
- c) Create a Technical Notebook on strategies and experiences related to the introduction of new services and services into a convergence environment.
- d) Compile information documents regarding this issue and initiatives proposed by other bodies related to the sector (ITU, APEC, OECD, others).

Work Plan:

By the X Meeting PCC.I (2007)

- a) Submit a report on CITELE's background information regarding this issue.

¹⁶ Document CCP.I-TEL/doc. 933/06 rev.1

b) Submit the relevant Questionnaire, which will be the basis for complying with item b of the scheduled activities.

c) Draft resolution on the creation of the above mentioned technical notebook on strategies and experiences related to the introduction of new services in a convergent environment, including the corresponding Table of Contents.

By the XI Meeting PCC.I (2007)

Submit a compilation of information documents regarding this issue and initiatives proposed by other bodies related to the sector.

3.2 Rapporteur Group on Interconnection and Interoperability of Networks

Mandate:

To study interconnection and interoperability issues to be faced by operators in the region as a result of the evolution towards convergent networks.

Rapporteur: Mr. Jose Wilberth Solano Solano (Costa Rica)

Terms of reference:

a) Recommend transparent interconnection and interoperability framework agreements among operators with a view to convergent networks.

b) Recommend regional dimensioning models for convergent networks which provide levels of service compliant with ITU's international standards.

c) Foster network development initiatives that would guarantee the quality of services provided at Inter-American level, such as deployment of redundant networks, supervision of compliance with standards related to packet loss rate, delays, etc.

Activities:

a) Accomplish transparent interconnection and interoperability among different operators with a view to convergent networks.

- Interoperability among VoIP operators:
 - Confidentiality of information shared among operators
 - Exchange of information. Type of information, formats, contents, etc.
 - Quality of service
 - eNUM
 - Emergency Services
 - Emergency response
- Exchange of information among Legacy Networks and Convergent Networks.

b) Recommend regional dimensioning models for convergent networks which provide levels of service compliant with ITU's international standards.

- Convergent networks dimensioning models:
 - Level of Service
 - Dimensioning algorithms
- c) Foster network development initiatives that would guarantee the quality of services provided at Inter-American level, such as deployment of redundant networks, supervision of compliance with standards related to packet loss rate, delays, etc.
- Transport redundancy to ensure the reliability of the services provided:
 - Bandwidth projection for the countries in the region.

Work Plan:

By the X Meeting PCC.I (2007)

- a) Compilation of studies and reports on network interconnection and interoperability discussed in previous PCC.I working groups.
- b) Survey on bandwidth requirements for 2010 for each country in the region, in order to determine new redundant interconnection projects required at Inter-American level to comply with the quality of services and other issues related to network reliability and security.
- c) Study on convergent networks in the region to identify interconnection and interoperability best practices.

By the XI Meeting PCC.I (2007)

- a) Compilation of the main dimensioning models for convergent networks and the main variables used.
- b) Technical notebook on international network project initiatives that would allow providing network reliability and a better provision of convergent services.
- c) Study on Quality of Service parameters to be complied with in the region and applied to convergent networks.
- d) Study on operation best practices in case of emergency events.
- e) Technical notebook on interconnection and interoperability best practices among convergent networks.

3.3 Rapporteur Group on Fraud Control in Telecommunication Services

Mandate: Study and recommend strategies and best practices to detect and reduce fraud in the area of telecommunications.

Rapporteur: Mr. Giovanni Mancilla (TELECOM Colombia)
Co-Rapporteur: Mr. Patricio Hsu (Argentina)

Terms of reference:

- a) Study the different methods of perpetrating fraud and unauthorized accesses to the networks used in the provision of telecommunication services.
- b) Define strategies and best practices to increase network security in order to minimize the impact of fraud and unauthorized accesses.
- c) Promote dialogue and regional exchange of information on fraud in telecommunications and unauthorized accesses.

Activities:

Review and carry out the outstanding tasks necessary to fulfill the mandate related to the following issues:

- a) Review the tasks performed by the previous Rapporteur Group, identify issues that need to be followed up and changes to be introduced to fully comply with the requirements of the new PCC.I authorities.
- b) Continue with the work done by the previous Rapporteur, in terms of continuing with the current action plan, particularly the questionnaire, which must be sent before September 29.
- c) Review CITELE's background information regarding fraud and unauthorized access to telecommunication networks.
- d) Study and identify the different methods of perpetrating fraud and unauthorized access to telecommunication services in Member States.
- e) Bring together international best practices to minimize the impact of fraud and unauthorized access to telecommunication networks and services.
- f) Foster cooperation between Member States on aspects related to fraud control and access security to telecommunication networks.
- g) Invite Member States to develop joint strategies for the fight against fraud and unauthorized access to telecommunications.
- h) Establish liaisons with organizations specializing in preventing fraud and network security in telecommunications.
- i) Create a Technical Notebook on strategies and best practices for Fraud Control and access security to telecommunication networks.
- j) Identify tasks to be performed with the other groups, define the methodology for participation and work scope with those groups.
- k) Identify Study Groups dealing with the issue at the ITU, study the scope thereof, the resolutions passed by them, establish methodologies to exchange information, and set scenarios for mutual cooperation aimed at attracting the best practices and knowledge developed by this global organization to the Americas.

Work Plan:**By the X Meeting PCC.I (2007)**

- a) Report on the tasks performed by the previous Rapporteur Group, identify issues that need to be followed up and changes to be introduced to fully comply with the requirements of the new PCC.I authorities.
- b) Report on the results of the questionnaires distributed among Member States on stolen Terminals and best practices in fraud control in telecommunications.
- c) Prepare a document on fraud typification and possible impacts on the provision of telecommunication services.
- d) Report on Study Groups work on issues related to fraud control and access network security at the ITU, identifying: i) their scope; ii) resolutions issued, and iii) best practices and knowledge developed by this global organization.

By the XI Meeting PCC.I (2007)

- a) Issue a document recommending the actions to be taken by Member States taking into account the obtained results.
- b) Report on CITELE's background regarding fraud classification and description.
- c) Index of the technical notebook on the issue.

3.4 Rapporteur Group on Numbering and Addressing**Mandate:**

To identify and evaluate technical issues related to Numbering Plans for the network evolution and new services, and to meet the demand of numbering resources to support convergent networks, as well as creation of specific recommendations and Technical Notebooks.

Rapporteur: Mr. Walter Calil (Brazil)

Terms of Reference:

- a) Identify and evaluate technical issues related to Numbering Plans for the network evolution and new services.
- b) Identify Recommendations of the ITU and other bodies and fora as appropriate.
- c) Establish liaisons with other standard bodies and industry fora as necessary to advance the work.
- d) Develop studies on the impact of new services on convergent networks.
- e) Study topics related to services, numbering systems and addressing.

- f) Elaborate best practices guidelines of Numbering Plans.
- g) Study and evaluate technical issues related to portability.
- h) Study and evaluate technical issues related to ENUM.

Work Plan:

By the X Meeting PCC.I (2007)

- a) Report on Technical Notebook on Portability PCC.I/RES. 84 (VII-05) RESOLUTION CCP.I-TEL/doc. 923/06.
- b) Submit report on Standard E-164 evolution.

By the XI Meeting PCC.I (2007)

- a) Submit report on National Numbering Plan Mapping of CITELE Countries.
- b) Submit a Draft Technical Notebook on ENUM.

4. WORKING GROUP ON DEVELOPMENT¹⁷

4. Strategic objectives for the 2006-2010 period

- a) To facilitate, promote, and encourage telecommunication development and universalization in the countries of the region, supporting their growth and taking into consideration possible deployment of modern technologies in developing countries.
- b) To take into account the Quito Action Plan mainly regarding “the Agenda of Connectivity for the Americas”, coordinating efforts with the corresponding COM/CITEL group, towards achieving real connectivity of the countries in our region, both in physical networks as well as in services and platforms.
- c) To review and consider the decisions made by the countries at the Summit on the Information Society in Tunis, especially the issues referring to access to Information Society. Also consider the topics worked upon and studied in other international and regional forums regarding the use of ICTs in order to join efforts and provide more efficient solutions.
- d) To achieve a genuine technology and knowledge transfer among the countries of our region, especially between the most developed and the ones with the best telecommunication technology research development capacity and developing countries, mainly in areas concerning Human Resources and cooperation on research and development projects.
- e) To spread and encourage the mass use of Information and Communication Technologies by promoting their knowledge and development, thus narrowing the Digital Gap. To foster the Information and Knowledge Society, fight Digital Exclusion and achieve the development of national, regional and

¹⁷ Document CCP.I-TEL/doc. 902/06 rev.3

world proprietary services in our countries so that each of them can participate with their own identity in the Regional and World Information Society.

f) To raise awareness among the Member States and make the necessary efforts to integrate each country of our region, vulnerable groups, those with different capacities and cultures and the indigenous communities in order to contribute to the development of those groups by means of the ICTs, as an overall part of the Telecommunication development in our countries.

g) To put forward studies, recommendations and initiatives to make Broadband access a reality in our countries, together with objective e).

h) To develop strategies to diminish the vulnerability of telecommunication infrastructures to natural disasters and encourage the use of all kinds of communication means that may improve access to communication in case of disaster, taking into account that telecommunication infrastructure provides the necessary means and links to prevent and mitigate the impact of catastrophes as well as enhance aid operations. They are even more necessary for people who live in extreme poverty conditions and/or have no access to basic communication facilities where they could be warned about imminent catastrophes.

i) To recognize the importance of the gender perspective and the need to improve women's equal access to ICTs benefits and to ensure these can become a fundamental tool to empower women and to promote gender equality. The policies, programs and projects must ensure that the differences and inequalities in ICTs access and use are identified and dealt with in a comprehensive way.

Should there be any subjects of interest, work can be done together with ITU so as not to duplicate efforts.

4.2 Specific objectives for the 2006-2010 period

a) To identify and develop Human Resources training actions, in coordination with the Coordination Center for the Development on Human Resources of COM/CITEL based on the needs of the Member States, taking into account the different training methodologies so as to fit the realities of the different countries and achieve greater training efficiency. Foster exchange of experiences.

b) To identify and propose studies and projects, frameworks and joint ventures both among Administrations and among Associate Members, aiming to collaborate with the Working Group on Connectivity of COM/CITEL.

c) To study and disseminate the most efficient alternatives (technological, regulatory, etc.) to bring telecommunication services to remote or out-of-reach places, to populations or regions with almost no access to telecommunication. To direct efforts to achieve a real penetration of telecommunication services, especially in countries with lower penetration.

4.3 Main activities to be developed by WGD in the 2006-2010 period.

a) Working together with the Coordination Center for the Development on Human Resources of COM/CITEL, to identify the telecommunication training needs of the human resources of the Member States, and based on this, establish action plans for training divided into three big blocks: Operation, Middle Management and Managerial levels, each level receiving technical, economic, regulatory and general administrative training.

- b) To study, jointly with the corresponding COM/CITEL group, the different realities in the region regarding connectivity, identifying the service and network connectivity status in the convergent reality, mainly reporting the issues concerning data network connectivity, especially those based on Internet Protocol. To make suggestions to enhance connectivity throughout the region.
- c) In order to identify the most efficient technologies to provide telecommunication services, consider solutions via satellite, IP services, wireless solutions, etc. Furthermore, new indicators should be identified or the ones regarding penetration of telecommunication services should be enhanced, since many times they do not properly reflect reality.
- d) Identify and recommend the adoption of regulatory actions and policies for efficient deployment of universal access, access by people with disabilities, access in rural areas, etc., in member countries.
- e) Identify and recommend the adoption of technologies, regulatory actions and policies aiming to enable a better and more efficient access to Broadband, both for wired and wireless services, pursuant to the objectives of the WSIS.
- f) Analyze and recommend actions aiming to propose solutions to the gender equality issue and to include diversity realities and cultural identity, as well as language diversity and local content of the different countries in the region.

4.4 Structure

4.4.1 Rapporteur for developing ICTs in areas and groups with unattended needs or with specific issues, which will deal with the following study questions:

- i. Indigenous peoples and communities.**
- ii. People with disabilities.**
- iii. Access to ICTs in areas or towns with unattended needs.**

Mandate:

To compile, study and disseminate information on best practices and experiences of the region as regards attention to indigenous peoples and communities, people with disabilities and areas and groups with unattended needs, with the object of establishing priorities for the actions in the scope of the activities of the Working Group on Development.

Rapporteur: Mr. Christian Jorge Martínez (Ericsson, Argentina)
Co-rapporteur: Mr. Erick Huerta Velásquez (Mexico)
Coordinator for the Study Question 1: Mr. Erick Huerta Velásquez (Mexico)
Coordinator for the Study Question 2 : Mr. Pablo López Piedra (Ecuador)
Coordinator for the Study Question 3: Ms. Martha Castellanos (Colombia)
Co- Coordinator for the Study Question 3: Mr. Alejandro Moscol Salinas (Peru)

Terms of reference:

- a) Identification of the reference parameters for the successful development of ICTs on each of the study questions of the Rapporteur, according to the research, recommendations and compromises made in the subject.

- b) Know the status of the implementation of said parameters through the administrations of the region.
- c) Establish recommendations and activities in the framework of the mandate of the Working Group on Development based on the priorities that result from the status.
- d) Identify activities and recommendations for the private sector in the subject, contributing to the joint work for bridging the digital divide for these sectors.

Work Plan:

By the X Meeting PCC.I (2007)

Establish the working method of the group, the regional office of the ITU and other stakeholders.

X and XI Meeting PCC.I (2007)

- b) Compile information of national and international recommendations, compromises and parameters.

By the XI Meeting PCC.I (2007)

- a) Prepare and constantly update public technical notebooks to provide information availability.
- b) Presentation of parameters to PCC.I for status awareness.

4.4.2 Rapporteur group on scientific and technological research and technology transfer

Mandate:

To promote issues related to technology transfer, specially in developing countries, and foster cooperation on telecommunication scientific and technological research, in order to improve competitiveness of domestic economies in the global market of the telecommunications industry.

Rapporteur: (Argentina)

Terms of Reference:

- a) Encourage the development of strategies for scientific research, innovation, technology and knowledge transfer, within the telecommunication environment, as well as cooperation mechanisms and networks belonging to the main institutions of higher education and research in the Americas Region.
- b) Promote scientific research programs and technology and knowledge transfer in the telecommunication environment that enable socio-economic development and ICT access for the citizens in the Region in order to overcome the Digital Gap.
- c) Cooperate with network integration among research institutions and technology and knowledge transfer on ICT, both regionally and internationally.

d) Encourage the interrelation and participation of the scientific and academic community, the public and private sectors and of research centers and networks, for the promotion, communication, development and application of ICTs, as well as the instruction and training of professionals using, among others, CITEL Regional Training Centers and the ITU Center of Excellence for the Americas Region.

e) Within the telecommunication environment, cooperate with the efforts facilitating a better integration between research and innovation, on issues regarding the environment, for example, issues related to non-ionizing electromagnetic radiation, waste and recycled telecommunication equipment, etc.

4.4.3 Question: General updated information on projects and initiatives related to ICT

Coordinator: Santiago Reyes Borda (Canadá)

Work Plan:

Prepare a Technical Notebook or Reference Document formatted as a table identifying and describing existing projects and initiatives related to ICT, the countries and sub-regions where those projects are been implemented and their progress status for the development of Latin America and the Caribbean.

IV. DECISIONS

The IX Meeting of the Permanent Consultative Committee I: Telecommunications,

DECIDES:

PCC.I/DEC. 41 (IX-06) ¹⁸	To instruct the Executive Secretary of CITEI to send the Technical Notebook on Best Practices and Case Studies on Next Generation Networks, included in document CCP.I-TEL/doc. 872/06 cor.1 , to the Member States Administrations of CITEI and to associate members of PCC.I, requesting to submit information on the deployment of NGN. This information should be sent to Ms. Josefina Cano, Rapporteur of the issue, with copy to the Secretariat of CITEI (citel@oas.org). Answers of the questionnaire should preferably be submitted by December 4, 2006.
PCC.I/DEC. 42 (IX-06) ¹⁹	To instruct the Executive Secretary of CITEI to send to the Administrations of the Member States of CITEI and associate members of PCC.I the QUESTIONNAIRE ON IMPLEMENTATION OF ACCESS BY PERSONS WITH DISABILITIES TO ICTs included in document PCC.I-TEL/doc. 874/06 . Each administration is also required to designate a liaison to facilitate the corresponding follow-up. This information must be sent to Mr. Christian Martínez, Rapporteur of the Group of the question (christian.martinez@ericsson.com) with copy to Mr. Pablo López (plopez@conatel.gov.ec), coordinator of the subject and to the CITEI Secretariat (citel@oas.org). The suggested deadline to submit the answers is December 4, 2006.
PCC.I/DEC. 43 (IX-06) ²⁰	<p>To accept the proposal submitted by the National Institute of Standards and Technology of the United States (NIST) to hold an MRA Workshop in 2007, in the United States.</p> <p>To instruct the CITEI Secretariat to conduct appropriate consultations with NIST so as to have the MRA Workshop included in the CITEI training proposal for 2007.</p> <p>To invite the Chairman of PCC.I to convey a note to the CITEI Coordinator of Human Resources Development communicating the full endorsement of PCC.I to this important training initiative and requesting its inclusion into the CITEI Training Program for 2007.</p>

¹⁸ Document CCP.I-TEL/doc. 947/06

¹⁹ Document CCP.I-TEL/doc. 934/06

²⁰ Document CCP.I-TEL/doc. 886/06

V. LIST OF BASIC DOCUMENTS

Summary Minutes of the Inaugural Session and the First Plenary Session:	CCP.I-TEL/doc. 908/06
Summary Minutes of the Second Plenary Session:	CCP.I-TEL/doc. 939/06
Summary Minutes of the Third Plenary Session and Closing Session:	CCP.I-TEL/doc. 948/06 rev.1
List of Documents:	CCP.I-TEL/doc. 850/06 rev.4
List of Participants:	CCP.I-TEL/doc..851/06 rev.1
Final Report for the Meeting	CCP.I-TEL/doc. 951/06 rev.1