31 August 2012

THIRD DRAFT OF THE SECRETARY-GENERAL'S REPORT

for the
Fifth World Telecommunication/Information and Communication Technologies Policy Forum
2013

1.   Preamble

1. 1   The fifth World Telecommunication/ICT Policy Forum (WTPF) [1]

1.1.1   Originally established by the 1994 Plenipotentiary Conference, the WTPF provides a forum where ITU Member States and Sector Members can discuss and exchange views and information on emerging telecommunication/ICT policy and regulatory matters, especially global and cross-sectoral issues (Resolution 2, Rev. Guadalajara, 2010).

1.1.2   By Decision 562, the 2011 Session of ITU Council decided that WTPF-2013 would discuss all the issues raised in: Resolution 101: "Internet Protocol (IP)-based Networks" (Rev. Guadalajara, 2010); Resolution 102: "ITU's role with regard to international public policy issues pertaining to the Internet and the management of Internet resources, including domain names and addresses" (Rev. Guadalajara, 2010); and Resolution 133: "Roles of administrations of Member States in the management of Internationalized (multilingual) domain names" (Rev. Guadalajara, 2010).

1.1.3   The ITU Secretariat prepares annual reports to Council on ITU's activities in relation to the implementation of Resolution 101 (Rev. Guadalajara, 2010), Resolution 102 (Rev. Guadalajara, 2010) and Resolution 133 (Rev. Guadalajara, 2010). Other relevant activities are also undertaken by ITU within the framework of its Strategic, Operational and Financial Plans.

1.1.4   Building on the work of the Dedicated Group, the Council Working Group on International Internet-Related Public Policy Issues (CWG-Internet)[2] was established as a separate group by 2011 Council Resolution 1336, in accordance with Resolutions 102 and 140 of the 2010 Plenipotentiary Conference. Its terms of reference are to identify, study and develop matters related to international Internet-related public policy issues, including those issues identified in 2009 Council Resolution 1305. Participation in the CWG-Internet is limited to ITU Member States, with open consultation for all stakeholders[3]. Council 2012 Resolution 1344 further elaborated the modality of open consultation for the CWG-Internet to include online consultations for all stakeholders[4].

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[1] Note: the title of WTPF-13 is specified in Res. 2 (Rev. Guadalajara, 2010), Council 2011 Decision 562, and Council 2012 Decision 572.
[2] CWG-Internet, available at: http://www.itu.int/council/groups/CWG-Internet/index.html.
[3] Quoting *instructs the Council 1* of Res. 102 (Rev. Guadalajara 2010).
[4] Council 2012 Res. 1344 (available at: http://www.itu.int/md/S12-CL-C-0086/en).

1.1.5 WTPF-2013 shall prepare reports and adopt non-binding opinions by consensus for consideration by ITU membership and relevant ITU meetings, bearing in mind items 1.1.3 and 1.1.4, and the need to avoid contradiction between the debates at WTPF and ongoing activities undertaken as part of ITU's mandate under Plenipotentiary Resolutions (and other decisions of ITU Conferences and Assemblies) and the terms of reference of CWG-Internet[5].

1.1.6 All information relating to WTPF-2013 is posted at: http://www.itu.int/wtpf.

1.2   Preparatory process for the Secretary-General's Report

1.2.1 Discussions at WTPF-2013 shall be based on a Report from the Secretary-General, incorporating the contributions of ITU Member States and Sector Members, which will serve as the sole working document of the Forum, and shall focus on key issues on which it would be desirable to reach conclusions (2011 Council Decision 562). This draft Report outlines a potential scope for discussions and presents some of the Internet-related public policy issues under consideration among different stakeholder groups[6].

1.2.2 According to Decision 562, the Secretary-General shall convene a balanced Informal Experts Group (IEG), each of whom is active in preparing for the Policy Forum. Membership of the IEG is now open to all stakeholders. At its 2012 Session, the Council agreed that all relevant stakeholders should participate in the work of the (IEG) of WTPF-13 to contribute their unique perspective to the preparatory process, based on their roles and responsibilities under Para. 35 of the *Tunis Agenda* (2005). Consequently, participation in the work of the IEG will be open to all relevant stakeholders in accordance with the Council decision, taking into account Decision 562 and the need to maintain a balanced group of experts. Relevant stakeholders are invited to express their interest in participating in the IEG by registering at: http://www.itu.int/wtpf.

1.2.3 A revised timetable, based on input received from membership and approved by Council 2012[7], is given below.

Table 1: Timetable for the elaboration of the Secretary-General's Report

9 March 2012	Deadline for membership to submit materials considered relevant for the first draft of the Secretary-General's report.
13 April 2012	Online posting and circulation to membership of the first draft of the Secretary-General's report (drawn up on the basis of available material).
15 May 2012	Deadline for receipt of membership comments on the first draft and additional materials for the second draft.
5 June 2012	First meeting of the IEG. Preliminary Second Draft of the Secretary-General's report.
25 June 2012	Deadline for receipt of comments on preliminary Second Draft.
3 July 2012	Online Posting of Second Draft incorporating comments received.
1 August 2012	Deadline for receipt of comments on the Second Draft and request for contributions to develop the Third Draft, including broad outlines for possible draft opinions. Invitation letter sent to all stakeholders to participate in the IEG.

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[5] Please note that para 1.1.5 was included in Council Document C12/27 (Rev. 2) which was endorsed by Council 2012.
[6] Note: One draft Opinion outline (UK, 1 August, 2012) has been received at the time of writing this Report, available at: http://www.itu.int/md/S12-WTPF13PREP-C-0018/en.
[7] Council 2012 Document C12/27 (rev. 2). Preparations for the fifth WTPF, available at: http://www.itu.int/md/S12-CL-C-0027/en.

31 August 2012	Online posting of Third Draft and broad outlines for possible draft opinions.
30 September 2012	Deadline for receipt of comments on the Third Draft.
10-12 (am) October 2012	Second meeting of the IEG.
10 January 2013	Online Posting of the Fourth Draft including draft opinions.
Feb 2013 (During CWG Cluster of Meetings)	Third meeting of the IEG.
1 March 2013	Finalization and publication of the Secretary-General's report.
13 May 2013	Proposed date for the WTPF Strategic Dialogue
14-16 May 2013 (In parallel with WSIS Forum 2013)	Proposed dates for 5th WTPF on Internet-related public policy issues.

2.   Themes for WTPF-2013

2.1   By Decision 562, in accordance with Decision 2 (Rev. Guadalajara, 2012), the 2011 Session of Council decided that the fifth WTPF would discuss all the issues raised in Resolution 101 (Rev. Guadalajara, 2010), Resolution 102 (Rev. Guadalajara, 2010) and Resolution 133 (Rev. Guadalajara, 2010). Resolutions 101 (Rev. Guadalajara, 2010) and 102 (Rev. Guadalajara, 2010) were adopted in 1998 and amended most recently at PP-10. Resolution 133 (Rev. Guadalajara, 2010) was adopted in 2002 and amended recently at PP-10.

2.2   Bearing in mind that, in accordance with Council 2011 Decision 562, the WTPF would discuss all the issues raised in Resolutions 101, 102 and 133 (Rev. Guadalajara, 2010), given below are some of the suggested broad themes (from the first IEG meeting)[8] under which these issues could be discussed:

- The multistakeholder model of the management of the Internet;
- Global Principles for the Governance and Use of the Internet;
- Development and Diffusion of ICTs Globally;
- How to develop an enabling environment for encouraging growth and development of the Internet;
- How can the Internet contribute to developing an enabling environment for encouraging growth [Source: UK [9]];
- Strategies for increasing affordable global connectivity: the critical role of IXPs [Source: ISOC[10]].

2.3   For the purposes of this report, issues raised in Plenipotentiary Resolutions 101, 102 and 133 (bearing in mind item 1.1.5) are listed in the sections below.

2.3.1   Development & Diffusion of ICTs Globally

a)   The Internet traces its origins[11] to concepts developed in the United States more than 40 years ago, which made significant investments – financial, intellectual and human – in the

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[8] Chairman's report of the 1st IEG meeting.
[9] UK contribution (1 August, 2012).
[10] ISOC Contribution (26 June, 2012).
[11] "Brief History of the Internet", by Barry M. Leiner, Vinton G. Cerf, David D. Clark, Robert E. Kahn, Leonard Kleinrock, Daniel C. Lynch, Jon Postel, Larry G. Roberts, and Stephen Wolff, available at:
http://www.internetsociety.org/internet/internet-51/history-internet/brief-history-internet/.

development of early and later iterations of the Internet. Various technologies underpin the Internet (such as computing, digital communications and semiconductors). For example: In 1973, TCP/IP was first proposed and experimentally deployed a few years later to link packet networks. Thus was born the set of interconnected networks, computers and their applications known as the Internet. In 1983, the Domain Name System (DNS) was introduced to allow the use of semantic names for host computers, which could be resolved to IP addresses, thus simplifying use of the Internet [Source: US/CNRI[12]]. Indeed, some of the key characteristics of the Internet today reflect priorities and historical choices made during the course of its development (e.g., its architecture, the priority given to information-sharing and exchange, and the possibility of anonymity).

b) The Internet has evolved far beyond its initial experimental setting. Today's global information infrastructure encompasses a host of public and private IP-based and other networks.

c) The success of the Internet can be measured by a number of quantitative and qualitative metrics. Quantitative metrics measuring the size and growth of the Internet include, for example, growth in infrastructure deployment[13] (e.g., International Internet bandwidth, length of fibre deployed, the number of Internet servers), content (e.g., number of websites, volume of data traffic transmitted or stored[14]) and ICT adoption (e.g., number of Internet subscriptions, number of fixed and wireless broadband subscriptions, number of Internet users[15]) and diverse activities carried out through the Internet (e.g., integration of the Internet into existing business or citizen processes), *inter alia*. Qualitative metrics include measuring the success and impact of the Internet in transforming or inventing new business and citizen processes, for example. Accompanying (and partly due to) its growth, the Internet has also become a vehicle for spam[16], online child pornography and other abuses of children[17], identity theft and cybercrime[18,19]. ~~Indeed, the lack of security may limit wider adoption of the Internet and its use for the greater good; further, some note that lack of local-language content might also limit use in many parts of the world [Source: Saudi Arabia and Sudan [20]].~~ The success of the Internet can be measured also - as we do in Bulgaria - by the connection speed. Bulgaria is No. 1 in the EU in terms of percentage of users, connected at speeds above 10 Mbps (in fact - above 100 Mbps). As stated in the official document, submitted by the MTITC to the PP-10, this is in direct relation with the liberalization of the legal framework, which brought competition in Bulgaria to the extent, where to 7 Million people, there are more than 2000 Internet Service Providers (ISPs).

> **Comment [A1]:** There is no evidence to connect "wider adoption of Internet" to the assumption that it's lacking security, and it's not described what actually this "security" is.

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[12] See US/CNRI contribution (1 August, 2012) for a more detailed timeline of major technology milestones

[13] Minges (2000), « Counting the Net : Internet Access Indicators", available at: http://www.isoc.org/inet2000/cdproceedings/8e/8e_1.htm.

[14] See for example, the IDC report on the Size of the Data Universe.

[15] ITU World Telecommunication/ICT Database.

[16] 2011 MessageLabs Intelligence Report, available at http://www.symantec.com/about/news/release/article.jsp?prid=20110524_02

[17] http://www.itu.int/osg/csd/cybersecurity/gca/cop/; also see for example M. Taylor and E. Quayle, Child Pornography: an Internet Crime (2003, London: Routledge) at 159-163; Y. Akdeniz, International Child Pornography and the Law: National and International Responses (2008, Aldershot: Ashgate) at 7; the Convention on the Rights of the Child and its optional protocol on the sexual exploitation of children; the 2009 G-8 Ministers' Declaration (http://www.justice.gov/criminal/ceos/downloads/G8MinistersDeclaration20090530.pdf); all cited in Alisdair A. Gillespie, Jurisdictional issues concerning online child pornography, International Journal of Law and Information Technology, (Oxford University Press), vol. 20, no. 3, Autumn 2012.

[18] See for example, monitoring and intelligence from Symantec (available at: http://www.symanteccloud.com/en/us/globalthreats/) or the growing sophistication of cyber-risks for enterprises from the Cisco Annual Security Report 2011, available at: http://www.cisco.com/en/US/prod/collateral/vpndevc/security_annual_report_2011.pdf.

[19] It has been estimated that as much as 30% of Internet traffic may be related to accessing adult-entertainment web sites, see http://www.extremetech.com/computing/123929-just-how-big-are-porn-sites.

[20] ~~Saudi Arabia and Sudan contribution (1 August, 2012).~~

d) The Internet today is global in scale and supports applications that touch on virtually all aspects of society. The Internet has become a critical national resource for governments, a vital part of national infrastructure, and a key driver of socio-economic growth and development, among other drivers. A 10% increase in broadband penetration has been estimated to yield a 1.21 – 1.38% increase in Gross Domestic Product (GDP) growth on average for high-income and low/middle income countries respectively (World Bank, 2009). Country case studies yield similar estimates for individual countries (e.g., for Panama, the Philippines and Turkey[21]).

e) Total global Internet users numbered some 2.3 billion by the end of 2011 (Figure 1, left). Total mobile broadband subscriptions amounted to 1.192 billion. English and Chinese are the languages most commonly used by Internet users, with English-speaking and Chinese-speaking Internet users amounting to some 565 million and 510 million or 27% and 24% of total global Internet users respectively by May 2011 (Figure 1, right), with Spanish a distant third. If current growth rates continue[22], the number of Internet users accessing the Internet predominantly in Chinese will overtake the number of Internet users accessing the Internet predominantly in English by 2015.

f) There is substantial evidence to suggest that the strong and sustained growth of telecommunication/ICT markets internationally, laying the foundations for the Internet, is mainly attributable to the introduction of market reforms from 1988 onwards, including market opening and competition[23], reforms to the billing arrangements for the transfer of international telecommunication traffic, market liberalization, and private sector participation in telecom markets, including privatization[24]. Indeed, global mobile markets have been subject to a greater degree of private sector participation (compared to, for example, fixed line markets) and have enjoyed the highest and most sustained growth rates of any ICT sector[25].

g) Para. 50 of the *Tunis Agenda* recognizes the important role of local Internet Exchange Points (IXPs), with growing evidence for the significant cost and performance gains associated with IXP development in some emerging markets (for example, Kenya and Nigeria, where reductions in telecommunication traffic costs, reduced latency of local traffic, increased amounts of local content and greater usage of the Internet were observed associated with the establishment and activities of the IXPs in these countries[26]).

h) The increased use of the Internet enables additional applications and services based on its architecture and the "intelligence at the edges" paradigm, e.g., the utilization of e-mail and text messaging, Voice over IP (VoIP), streaming and real time video, TV (IPTV) over the Internet, social networking, search capabilities, e-books, e-government, e-learning, e-health etc. By 2011, there were 135.4 million VoIP subscribers and 60 million IPTV subscribers worldwide[27].

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[21] See the series of country case studies for broadband, available at: www.itu.int/broadband/
[22] Broadband Commission report on "The State of Broadband 2012: Achieving Digital Inclusion for All"
[23] ITU "World Telecommunication Development Report 1996/7: Trade in Telecommunications", available at: http://www.itu.int/newsarchive/press/WTPF98/TradeInTelecomsExSum.html.
[24] ITU "World Telecommunication Development Report 2002: Reinventing Telecoms", available at: http://www.itu.int/ITU-D/ict/publications/wtdr_02/.
[25] See, for example, ITU "World Telecommunication Development Report 2002: Reinventing Telecoms", available at: http://www.itu.int/ITU-D/ict/publications/wtdr_02/ and ITU Trends in Telecommunication Reform Report 2007: The Road to NGN", available at: http://www.itu.int/ITU-D/treg/publications/trends07.html.
[26] Kende (2012): "Assessment of the impact of IXPs – empirical study of Kenya and Nigeria", Internet Society, available at: http://www.internetsociety.org/ixpimpact.
[27] Point Topic statistics (2012), available at: http://point-topic.com/dslanalysis.php.

Figure 1: Total Global Internet Users, by geographic region, and by language, 2011
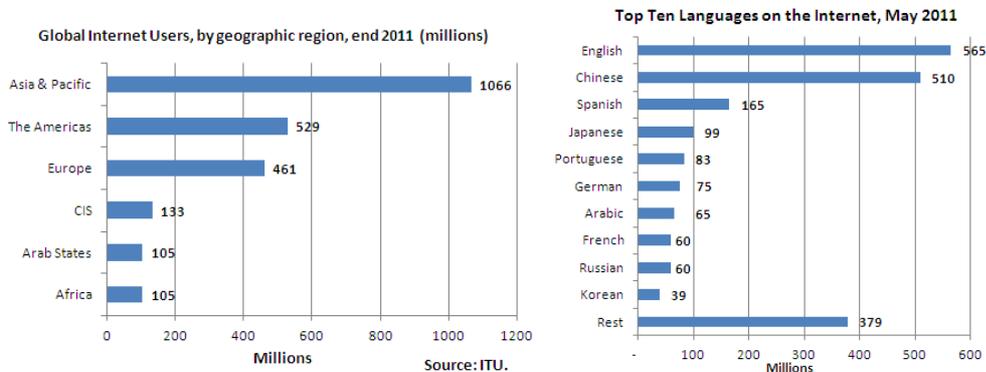
Source: ITU from http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html (left); Internet World Statistics from http://www.internetworldstats.com/stats7.htm (right).

i) It can be observed that[28]:
  i. Broadband and Internet penetration rates are markedly higher in developed countries than they are in developing countries, while the differences with respect to mobile cellular penetration are smaller.
  ii. The growth of fixed (wired)-broadband subscriptions, Internet users and mobile cellular subscriptions during the period 2005-2011 has slowed mainly in developed countries, as these markets reach saturation. In the developing world, growth continues at double digit rates.
  iii. In most of the developing world, 2.5G and 3G mobile has grown far faster than fixed Internet. Mobile broadband continues to be the ICT service displaying the sharpest growth rates. Between 2010 and 2011, growth continued at a high rate of 40% globally, 23% in the developed world and 78 % in developing countries. By end 2011, there were around 1.1 billion active mobile-broadband subscriptions, up from 770 million a year earlier. Contrary to mobile-cellular penetration, no saturation point has yet been reached for mobile-broadband penetration, and growth is expected to continue at double-digit rates over the next few years.

j) The Internet has fundamental value as a platform for innovation, democratic expression, access to information and scientific progress. In the growing digital economy, the Internet represents a portal for knowledge, education and entertainment which is becoming increasingly available to more of the world's population, especially if growth in the use of mobile broadband can mirror the recent overall growth in mobile communications.

k) Today, the information and knowledge provided over the Internet are often cited as examples of global public goods[29]. Applications such as the World Wide Web, E-mail, and Instant Messaging have changed the lives of ordinary people in some parts of the world. It is widely recognized that the utility and value of a network increases with growth in the number of nodes and users of that network.

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[28]ITU *Measuring the Information Society 2012* Report, see http://www.itu.int/ITU-D/ict/publications/idi/index.html.
[29] "Knowledge as a Global Public Good", Joseph Stiglitz, in http://cgt.columbia.edu/files/papers/1999_Knowledge_as_Global_Public_Good_stiglitz.pdf. A chapter in Providing Global Public Goods: Managing Globalization argues that telecommunications and the Internet are themselves global public goods; however, most observers agree that it is the knowledge and information provided over the Internet which are non-rivalrous and non-excludable, rather than the networks (which may be rivalrous and excludable).

l) Some take the view that the Internet, as a decentralized and open system, must be allowed to enable the world's citizens to connect freely and express themselves consistent with fundamental principles of freedom of expression, while taking into consideration national security or of public order (ordre public), or of public health or morals[30]. Consistent with the nature of knowledge, information and forms of expression provided over the Internet as global public goods, ITU Member States may wish to consider policy measures to increase and promote the continued growth of the Internet and the markets and economies based thereon.

m) At the World Summit on Information Society (WSIS), world leaders and Heads of State adopted general principles on a multi-stakeholder governance model, which offer a fundamental framework on which to base such policy measures. Various initiatives have been undertaken at the national level to enunciate high-level governing principles for cyberspace including, *inter alia*, the United States International Strategy for Cyberspace, and Brazil's ten "Principles for the Governance and Use of the Internet" and at the international level, such as the OECD Council Recommendation on Principles for Internet Policy-Making[31].

n) Advances in global information infrastructure, including the development of IP-based networks and the Internet, taking into account the requirements, features and interoperability of next-generation networks (NGN) and future networks, are vitally important as a major engine for growth in the world economy in the twenty-first century.

o) The management of digital information has emerged in recent years as an important aspect of the Internet going forward. This will benefit many new efforts such as those involving Cloud Computing, Big Data and the Internet of Things – new architectures, such as the Digital Object Architecture, are being developed and deployed which support these initiatives [Source: US/CNRI [32]].

2.3.2 The Multi-stakeholder Model

2.3.2.1 The Multi-stakeholder Model has been recognized at WSIS as the global model for Internet governance; WSIS outcome documents provided a set of framework *principles* for the multistakeholder model

a) Two key outcomes of WSIS were: (1) the clear enunciation of principles for the multi-stakeholder governance model of the Internet[33] and (2) the recognition of this model as the way forward for the global governance of the Internet, as reflected throughout the WSIS outcome documents[34], examples of which are included in paragraphs (b)-(e) of this subsection.

b) "A working definition" of Internet governance was developed by the Working Group on Internet Governance (WGIG, a group comprising all stakeholders[35]) and later adopted by Summit and included in para. 34 of the *Tunis Agenda,* which states that Internet Governance is "the development and application by governments, the private sector and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programmes that shape the evolution and use of the Internet". The working deifinition also notes that *"Internet governance includes more than Internet names and addresses, issues dealt with by the Internet Corporation for Assigned Names and Numbers (ICANN): it also includes other significant public policy issues, such as critical Internet resources, the security and safety of the Internet, and developmental aspects and issues pertaining to the use of the Internet."*

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[30] Article 19, International Covenant on Civil and Political Rights (1966); Article 34 of the ITU Constitution.

[31] http://www.oecd.org/dataoecd/11/58/49258588.pdf

[32] US/CNRI contribution (August 1, 2012)

[33] §§ 29-82 of the Tunis Agenda, as described in para 2.3.2.1(d).

[34] Tunis Agenda for the Information Society (2005), Available at http://www.itu.int/wsis/docs2/tunis/off/6rev1.html.

[35] http://www.wgig.org/members.html.

c) Para. 29 of the *Tunis Agenda* reaffirmed that international management of the Internet should be multilateral, transparent and democratic, with the full involvement of governments, the private sector, civil society and international organizations. It should ensure an equitable distribution of resources, facilitate access for all and ensure a stable and secure functioning of the Internet, taking into account multilingualism.

d) The roles and responsibilities of each stakeholder group are specified in para. 35 of the *Tunis Agenda*, which states that:

"The management of the Internet encompasses both technical and public policy issues and should involve all stakeholders and relevant intergovernmental and international organizations. In this respect, it is recognized that:

i. Policy authority for Internet-related public policy issues is the sovereign right of States. They have rights and responsibilities for international Internet-related public policy issues.

ii. The private sector has had, and should continue to have, an important role in the development of the Internet, both in the technical and economic fields.

iii. Civil society has also played an important role on Internet matters, especially at community level, and should continue to play such a role.

iv. Intergovernmental organizations have had, and should continue to have, a facilitating role in the coordination of Internet-related public policy issues.

v. International organizations have also had and should continue to have an important role in the development of Internet-related technical standards and relevant policies".

e) Under the broad framework of the multistakeholder governance model, the *Tunis Agenda* provides *guiding principles* for various aspects of the management of the Internet, including:

i. The relevant outcomes (§§ 29-82 of the Tunis Agenda) concerning Internet governance.

ii. §§ 68-71 and 72-78 of the Tunis Agenda with regard to enhanced cooperation on Internet governance and the establishment of the Internet Governance Forum (IGF).

2.3.2.2   Through its Plenipotentiary Resolutions, ITU membership recognizes the multi-stakeholder governance model based on WSIS principles as the framework for global Internet governance

a) The recognition of WSIS principles, of the multistakeholder model of Internet governance and of the important role and responsibilities of each stakeholder group is emphasized in the various Plenipotentiary Resolutions, especially in Res. 102 (Rev. Guadalajara 2010).

b) Many of the paragraphs from the *Tunis Agenda* on multistakeholder cooperation are included, *inter alia*, in Resolutions 101, 102 and 133. The need for multistakeholder cooperation is also apparent in paragraphs such as the ones below[36] where the contribution from specific stakeholder groups towards the development of the Internet is acknowledged, while urging the involvement of all stakeholders in various aspects of its management:

i. The development of the Internet is today essentially market-led and has been driven by both private and government initiatives.

ii. The private sector continues to play a very important role in the expansion and development of the Internet, for example through investments in infrastructures and services.

iii. The management of the Internet is a subject of valid international interest and must flow from full international and multistakeholder cooperation on the basis of the WSIS outcomes.

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[36] Paras 1-5 are from Res. 102 (Rev. Guadalajara, 2010); Para 6 is from Res. 133 (Rev. Guadalajara, 2010).

iv. As stated in the WSIS outcomes, all governments should have an equal role and responsibility for international Internet governance and for ensuring the stability, security and continuity of the ~~existing Internet and its future development and of the future~~ Internet, and that the need for development of public policy by governments in consultation with all stakeholders is also recognized.

v. WSIS recognized the need for enhanced cooperation in the future, to enable governments, on an equal footing, to carry out their roles and responsibilities, in international public policy issues pertaining to the Internet, but not in the day-to-day technical and operational matters that do not impact on international public policy issues.

vi. Recalling the results of WSIS, there should be a commitment to working earnestly towards multilingualization of the Internet, as part of a multilateral, transparent and democratic process, involving governments and all stakeholders, in their respective roles.

2.3.2.3   The implementation of the WSIS multistakeholder principles is under discussion. The issues raised in the Plenipotentiary Resolutions reflect the delicate interplay between the roles and responsibilities of different stakeholders in the management of the Internet

a) Discussions on Internet governance have been carried out from both a narrow and broad perspective. The narrow perspective focuses on Internet architecture and infrastructure (DNS, IP numbers, and root servers) – fields in which organizations such as the Internet Corporation for Assigned Names and Numbers (ICANN), the Regional Internet Registries (RIRs) play a significant role, with many stakeholders therein. A broader perspective on Internet governance goes beyond infrastructural points and address other legal, economic, developmental, and socio-cultural issues, such as the approach adopted by the WSIS [Source: Brazil[37]].

b) The WSIS outcome documents and ITU Plenipotentiary Resolutions, as well as many national and regional initiatives [38], have endorsed the WSIS multistakeholder model for the management of the Internet that includes governments, private sector, international and intergovernmental organizations, civil society and academia.

c) A divergence in opinion is observed in the *implementation* of the WSIS multistakeholder model in the current Internet governance ecosystem:

i. Some hold the view that the current management of the Internet is sufficiently multistakeholder and inclusive in terms of involvement of all stakeholder groups[39] [Source: Cisco, UK, US, ISOC[40]]. Those holding this view state that the current organizations, systems and processes have successfully met the needs of its stakeholders through "industry-led, bottom-up, voluntary, decentralized and consensus-based" processes. The current model has been cited has being "flexible, transparent and accountable" [Source: UK[41]]. These characteristics have been credited with helping maximize flexibility and innovation and are cited as one reason why the Internet has been able to evolve and grow so quickly, both as a technological platform and as a means of expanding the free flow of commerce and ideas. Bulgaria is likely

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[37] Brazilian contribution (18 May, 2012).

[38] United States International Strategy for Cyberspace, the OECD Council Recommendation on Principles for Internet Policy-Making, Brazil's ten "Principles for the Governance and Use of the Internet".

[39] http://www.circleid.com/posts/us_european_union_to_support_icann_but_demand_reform/.

[40] Cisco contribution (25 June, 2012), UK contribution (25 June, 2012), US contribution (18 May, 2012), ISOC contribution (26 June, 2012).

[41] UK Contribution (25 June, 2012).

Comment [A2]: No need of "existing", and no explanation of the 'future Internet' – this is not the language of the WSIS outcomes; if it is, a source is needed.

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the first country to legally define the role of the government in management of Internet names, numbers and addresses, with changes in the Telecommunications Act in 1999, by avoiding interference in Internet names and addresses. (source: Bulgarian contribution to the PP-10, http://www.itu.int/md/S10-PP-INF-0007/en)

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Some others hold the view that further evolution is needed to keep pace with the global spread of the Internet, how the Internet is used today and the roles of the various players who need to work together to ensure its ongoing evolution[42] [Source: Saudi Arabian and Sudan, Algeria[43]]. Those holding this view state that, with regards to international Internet-related public policy, the role of one stakeholder – Governments – has not been allowed to evolve according to WSIS principles. They consider this to be a reason for the lack of success of the Internet with respect to issues such as exploitation of children, security, cyber-crime and spam, etc. Those with this view point also raise issues with the flexibility, transparency and accountability of the current management structure and issues concerning, for example, the adequacy of the role of governments in ICANN through formal bodies such as the Governmental Advisory Committee (GAC) (see Section 2.3.6).

> **Comment [A3]:** This "lack of success" needs to be accompanied with some data, if it is to stay in the document.

> **Comment [A4]:** The fact that someone raises an issue, but does not point to facts to support this issue, should alone not be enough for the statement to remain in the report. ICANN does not deal with children online protection, cybercrime or spam.

ii.   Res. 102 (Rev. Guadalajara, 2010) recognized "§§ 71 and 78a) of the *Tunis Agenda* with regard to the establishment of enhanced cooperation on Internet governance and the establishment of the IGF, as two distinct processes". The IGF, as a forum for multi-stakeholder policy dialogue, has been set up and continues to bring all stakeholders together annually to have a dialogue on international Internet-related public policy issues.

A topic of discussion[44,45] concerning the implementation of the process of enhanced cooperation has been the role of different stakeholder groups. Some hold the view that the "process towards enhanced co-operation involves all stakeholders in their respective roles, a recognition of the need for all stakeholders to recognize the ongoing roles of each stakeholder and for all to co-exist in an environment of mutual trusted co-operation" [Source: UK [46]]. Some others identify a specific role for governments, stating that "§69 of the *Tunis Agenda* is very clear that enhanced cooperation is needed to enable governments, on an equal footing, to carry out their roles and responsibilities in international public policy issues pertaining to the Internet. Para. 71 says that the process towards enhanced cooperation will involve all stakeholders in their respective roles" [Source: Saudi Arabia and Sudan, Algeria[47]].

iii. Some have commented that participation of different stakeholder groups (especially civil society) could be improved in ITU forums discussing Internet-related public policy issues [Source: CISCO, ISOC[48]]. This has been a topic of active discussion at recent ITU

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[42] http://articles.timesofindia.indiatimes.com/2012-07-30/edit-page/32924041_1_internet-governance-internet-corporation-root-servers.

[43] Saudi Arabian/Sudan contribution (1 August, 2012), Algerian contribution (2 August, 2012).

[44] CSTD (http://unctad.org/en/Pages/MeetingDetails.aspx?meetingid=61), UN General Assembly. (http://unctad.org/meetings/en/SessionalDocuments/a66d77_en.pdf).

[45] Open consultations on enhanced cooperation on international public policy issues pertaining to the Internet - written contributions.

[46] e.g. UK contribution (25 June, 2012).

[47] Saudi Arabia, Sudan contribution (1 August, 2012), Algerian contribution (2 August, 2012).

[48] CISCO contribution (25 June, 2012), ISOC contribution (26 June, 2012).

conferences, assemblies and meetings. Detailed discussions on this topic were held as recently as in Council 2012 in the context of the modalities for open consultations by the CWG-Internet.[49] Under the WSIS principles, ITU Plenipotentiary Resolutions 101, 102 and 133 resolve "to explore ways and means for greater collaboration and coordination between ITU and relevant organizations* involved in the development of IP-based networks and the future Internet, through cooperation agreements, as appropriate, in order to increase the role of ITU in Internet governance so as to ensure maximum benefits to the global community" (* including, but not limited to, ICANN, RIRs, Internet Engineering Task Force (IETF), the Internet Society (ISOC) and World Wide Web Consortium (W3C), on the basis of reciprocity).[50]

It is important to note that ITU's multistakeholder membership includes governments, regulators, industry, international organizations (intergovernmental and non-governmental), financial institutions and civil society — all participating in different capacities and in a wide range of ITU's activities. ITU's membership ranges from mobile and fixed phone operators to satellite companies, from equipment vendors to broadcasters and Internet Service Providers (ISPs). It also includes organizations focusing on access for people with disabilities, for example, or on emergency communications. ITU members also include Internet-related organizations and academic institutions, including universities and research institutes focusing on ICTs. (Indeed, non-profit institutions having an international character can request exemption from membership fees. For example, ISOC has been exempted from payment of membership fees) [51] It is also important to note that sector members of the ITU do not enjoy same status as member states, and often they are not allowed to be present at member-states only meetings, or if they are allowed in the room, they are not allowed to speak, unless invited by the chair of the meeting.

> **Comment [A5]:** Are there other non-profits, which are exempt?

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Some claim that there is a lack of clarity on whether civil society is part of ITU membership and how such organizations can become members of the ITU. It should be noted that all civil society organizations of an international nature and which are working on issues related to ICTs are entitled join the ITU as members.

2.3.3 Internet Protocol (IP)-Based Networks and Management of Internet Resources

> **Comment [A6]:** Idally the whole point 2.3.3. needs to be re-written, as there are too many errors and flaws

a) Broadband Internet is today a critical infrastructure in the growing global economy. The increased use of the Internet enables additional applications and information services e.g. the utilization of e-mail and text messaging, VoIP, streaming and real-time video conferencing, IPTV, social networking, e-government, e-banking, e-health, e-learning, mapping, search capabilities, e-books, etc. These services have become commonplace, although challenges regarding quality of service, and uncertainty of origin for some applications, and high costs of international Internet connectivity (IIC) persist for many developing countries.

b) The Internet is today a critical information infrastructure and is a vital part of national infrastructure. The Internet introduced Current and future IP-based networks and future IP developments will continue to introduce dramatic changes in the way we acquire, produce, circulate and consume information. Ensuring liberal legal framework, encouraging

> **Comment [A7]:** There are no challenges regarding QoS, but that remark fits well into some lobbyist organizations' attempts to expand the ITRs and the role of the ITU in the Internet world.
> Further, the costs of IIC are a matter of usage of Internet, and development of the Internet in the countries, not of international agreements. Usually, wherever there's a monopoly, prices are high.

> **Comment [A8]:** The SG cannot speculate what will happen with the IP-based networks in the future.

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[49] Council 2012: Provisional Summary Record of the fourth Plenary Meeting.
[50] Resolutions 101, 102, 133, (Rev Guadalajara, 2010), Resolution 180 (Guadalajara, 2010).
[51] http://www.itu.int/en/membership/Pages/default.aspx.

competition, and providing high speed Internet at low prices will continue changing the way we produce and sell products and services for the benefit of all people.

c) On the basis of such growth, demands are now growing on the existing Internet design and infrastructure. ~~New applications, services and functionality are needed.~~ Some have suggested that the underlying technical architecture of the present Internet may not have been designed for, and hence may not be sufficiently robust, to support some new classes of applications and services, with security, identity management and multilingualization as commonly cited examples[52]. Some others point out that the current architecture has allowed astonishing levels of innovation and growth with, in particular, massive uptake of video traffic and multi-user applications [Source: UK[53]]. According to those holding this view, there is no evidence that the current infrastructure will not be able to continue to evolve and grow to cope with demand.

Comment [A9]: Nobody can tell what is needed, but the people, who create. ITU is not in this business.

d) The high costs of the circuits for IIC between Least Developed Countries (LDCs) and the Internet backbone networks remains a serious problem for these countries. Some have stated that one of the issues is that transit providers, as well as regulatory restrictions in some countries, still constrain the ability for Internet Providers in those countries to conclude commercial agreements with Internet Providers in other countries and with Internet Transit Providers [Source: Cisco[54]]. Para. 50 of the *Tunis Agenda* (2005) acknowledged significant concerns and calls for the charges for IIC to be better balanced to enhance access, particularly from developing countries and called for the development of strategies for increasing affordable global connectivity, thereby facilitating improved and equitable access for all, by:

i.   Promoting Internet transit and interconnection costs that are commercially negotiated in a competitive environment and that should be oriented towards objective, transparent and non-discriminatory parameters, taking into account ongoing work on this subject.

ii. Setting up regional high-speed Internet backbone networks and the creation of national, sub-regional and regional IXPs.[55]

iii. Recommending donor programmes and developmental financing mechanisms to consider the need to provide funding for initiatives that advance connectivity, IXPs and local content for developing countries.

iv. Encouraging ITU and other relevant institutions to continue the study of the question of IIC as a matter of urgency, and to periodically provide outputs for consideration and possible implementation.

v.   Promoting the development and growth of low-cost terminal equipment, such as individual and collective user devices, especially for use in developing countries.

vi. Encouraging ISPs and other parties in the commercial negotiations to adopt practices towards attainment of fair and balanced interconnectivity costs.

vii. Encouraging relevant parties to commercially negotiate reduced interconnection costs for LDCs, taking into account the special constraints of LDCs.

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[52] "The Future Internet", ITU-T Technology Watch Report, April 2009; David Talbot (2005), "*The Internet is broken",* MIT Technology Review; WG-WSIS-18/05*: 'The 'future Internet'' (V.3), at: http://www.itu.int/md/S11-RDG5-C-0004/en; H. Kobayashi, Princeton University: http://kccc.nict.go.jp/keihanna-lab/document/20080623_kobayasi2.pdf.
[53] UK contribution (25 June, 2012).
[54] Cisco contribution (25 June, 2012).
[55] For instance, Euro-IX has run a successful twinning programme for some years which sees engineers from LDCs visit engineers at IXPs in developed countries for training, and engineers in developed countries visit LDCs to provide on-the-ground assistance.

e) Rates for IIC have been studied in ITU-T Study Group 3 with several recommendations[56] having been made on methods to reduce connectivity rates. Bulgaria has contributed with an information document on that subject, as well[57].

f) With the move from traditional networks (based on dedicated service-channels and/or separate networks for each service) to integrated (transport) services on a single packet-based transport infrastructure, pre-defined transmission planning of Quality of Service (QoS)[58] has become a major challenge, since many IP-based networks might not provide for self-standing end-to-end QoS, but only transport classes, which enable QoS differentiation. IP-based networks can support end-to-end QoS if the routers in between support the mechanisms and the network is designed for QoS [Source: CISCO, Nav6 Joint Contribution [59]].

g) Due to the dramatic increase in mobile communications (both in terms of the number of registered devices and of the volume and transmission of requested resources), some have cautioned that migration scenarios and hybrid connections with existing wire-bound and traditional networks and terminals may be neglected and it may become increasingly difficult for network operators to establish or enforce certain QoS standards[60].

h) Some have stressed the importance of standardization so that the quality of service of telecommunications/ICTs is consistent with international standards. They opine that it is in the public interest that IP-based networks and other telecommunication networks should be both interoperable and provide, at a minimum, the level of QoS provided by traditional networks[61]. Some others have stated that any attempt to mandate traditional QoS in a packet switching Internet will significantly increase costs; a likely consequence of this could be to price LDCs out of the Internet and to reduce participation rates in developed and developing countries [Source: UK[62]]. In response to this, some have pointed out that IP-based networks can support end-to-end QoS if the routers in between support the mechanisms and the network is designed for QoS [Source: CISCO, Nav6 Joint Contribution[63], Saudi Arabia and Sudan[64]].

i) According to some, the present situation of the wide penetration of OTT (Over The Top) services[65] over operators' networks and their impact on operators' services, may require ITU to consider management of QoS for OTT services which are carried over the Internet [Source: Russia[66]]. Specifically on OTT, some have stated that OTT is outside the scope of the ITU and that management of QoS for applications that run over the Internet are the core mandate of other organizations except where these organizations should work with the ITU-T for those areas within the ITU-T's mandate [Source: CISCO, UK [67]]. In response, some others have stated that "it would appear that telecommunications services, whether or not carried over the Internet, are within the mandate of ITU" [Source: Saudi Arabia and Sudan [68]].

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[56] For example: www.itu.int/ITU-T/worksem/apportionment/201201/index.html.
[57] See the contribution here: http://www.itu.int/md/dologin_md.asp?lang=en&id=S10-PP-INF-0007!!MSW-E
[58] As defined by ITU Recommendation E800.
[59] CISCO, Nav6 Joint Contribution (June 2012).
[60] http://www.internetsociety.org/qos-emperors-wardrobe-geoff-huston-isp-column.
[61] For more details, see Overview of Quality of Service, Information Document 5, CWG-WCIT, Feb 2012. Available at: http://www.itu.int/md/T09-CWG.WCIT12-INF-0005/en.
[62] UK contribution (25 June, 2012).
[63] CISCO, Nav6 Joint Contribution (June 2012).
[64] Saudi Arabia and Sudan contribution (1 August, 2012).
[65] The term OTT is used to refer to applications and services accessible over the Internet and carried over operators' networks offering Internet access services e.g., social networks, search engines, amateur video aggregation sites, etc.
[66] Russian contribution (15 May, 2012).
[67] CISCO contribution (25 June, 2012); UK contribution (25 June, 2012).
[68] Saudi Arabia, Sudan contribution (1 August, 2012).

j) As ~~a natural~~ consequence of today's environment, from ~~a commercial~~ the perspective of the natural telecom monopolies, there is a growing discrepancy between the growth in traffic (requiring corresponding significant growth in investment in telecommunication infrastructure) and trends in pricing and revenues (Figure 2). ~~This has been cited as posing a significant challenge to network operators.~~ However, reports from Bulgaria, show that where there's competition, prices go down, and Internet access speed go up. EU Commissioner Reding noted the excellent example of Bulgaria in this area.[69]

Comment [A10]: No source given

Figure 2: Trends in pricing and revenues[70]
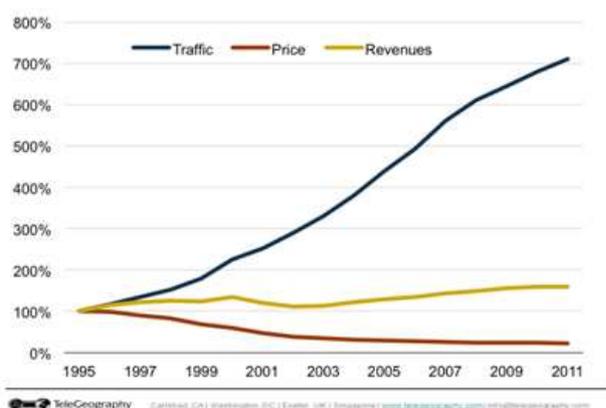
k) Figure 2 does not show cost data. It would be normal for prices to fall if costs were falling, and indeed there is reason to believe that operating costs are falling (but data on operating costs are hard to obtain). On the other hand, it has been stated[71] that capital expenses (which contribute to costs) will rise significantly and that consequently the current billing paradigm for Internet services should be revisited[72]. However, experience from building the Bulgarian ISP networks, show that the capital expenses actually do not rise, because the equipment and the fiber optic cables are getting cheaper every year.

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[69] Interview with Ms. Kroes at Capital Daily.

[70] Source: TeleGeography (www.telegeography.com).

[71] "A Viable Future Model for the Internet", ATKearney (2010), available at: http://www.atkearney.com/index.php/Publications/a-viable-future-model-for-the-internet.html

[72] It should also be noted that revenues of some OTT providers are increasing while costs remain stable, leading to increasing profits and cash balances for some OTT providers.

l)   IP-based networks have evolved into a widely accessible and flexible medium used for global commerce and communication. Resolution 101 (rev. Guadalajara, 2012) therefore states a need to identify the global activities related to IP-based networks with respect to, for example:

  i.   infrastructure, interoperability and standardization;
  ii.   Internet naming and addressing;
  iii.   dissemination of information about IP-based networks and the implications of their development for ITU Member States, particularly among developing countries.

2.3.3.1 Infrastructure, interoperability and standardization[73]

a)   Internet-related applications are carried over the telecommunication infrastructure (wired and/or wireless)[74].

b)   Convergence of ICT technology is making IP a key protocol for services provided over modern telecommunication networks[75], and IP is also playing an increasing role in underpinning infrastructure; in a sense, the Internet and telecommunication services are becoming indistinguishable, although some differences still persist.

c)   There have been calls for bold new initiatives to continue to expand the flexibility and capabilities of the Internet well beyond incremental improvements to its deployed capabilities[76]. In order to provide additional flexibility and functionality to accommodate current and new and unforeseen innovations, further research and development and innovation in the fundamental design of the Internet (including architecture, protocols, interfaces and services) may need to be encouraged.

d)   Given the depth to which the Internet is today embedded in the socio-economic fabric of many societies, any evolutionary approach to building the future Internet should ensure full interoperability with the existing one.

e)   Standardization plays an important role in ensuring this interoperability, while promoting the continuous development of the Internet and its capabilities[77]. Significant work and research on IP-related issues and the future Internet is being conducted by many bodies at the national, regional and international levels. Some examples include: ITU; the Internet Engineering Task Force (IETF); US National Science Foundation (NSF) projects, including the Global Environment for Network Innovations (GENI) and Future Internet Design (FIND) projects; Japan's NeW Generation Network (NWGN) research and development initiative, including the Akari project by Japan's National Institute of ICT (NICT); and the European Union's Future Internet Research & Experimentation (FIRE) initiative.

2.3.3.2 Internet Naming and Addressing

a)   Every device connected to the Internet is identified by an IP address, a unique numerical label used to route data packets globally across the Internet. IP addresses are a finite resource. The

Comment [A11]: Who says so?

Comment [A12]:

Comment [A13]: Based on the experience in the developmenf of the Internet in Bulgaria, we believe that it is not necessary to have the ITU urge, or encourage it. The biggest driving force of the development of the Internet is being the needs of the users, and the wise governmental policy of non-interference, liberal legal framework, and ensuring competition.

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[73] WG-WSIS-18/05*: 'The 'future Internet' (Version 3.0), available at: http://www.itu.int/md/S11-RDG5-C-0004/en.

[74] WTDC-02 Programme 2

[75] In addition to older protocols such as SS7. In terms of number of users, SS7 is at present the most widely-used connectionless packet-switched network (because it supports mobile networks), and it is also is the most widely-used messaging system (because it supports SMS).

[76] "David Talbot (2005), "*The Internet is broken*", MIT Technology Review; WG-WSIS-18/05*: 'The 'future Internet'' (V.3), at: http://www.itu.int/md/S11-RDG5-C-0004/en; H. Kobayashi, Princeton University: http://kccc.nict.go.jp/keihanna-lab/document/20080623_kobayasi2.pdf.

[77] Note: The IANA contract references certain standards that must be followed or that must be considered, such as certain IETF RFCs and ISO Standards; by reference to PKI, it implicitly references Recommendation ITU-T X.509. See: http://www.ntia.doc.gov/files/ntia/publications/sf_26_pg_1-2-final_award_and_sacs.pdf.

first implementation, IP version 4 or 'IPv4', was deployed on 1 January 1983 and uses 32 bits to represent addresses, generating a theoretical total limit of 2^{32} (4 billion addresses). It is still the most widely used today.

b) The Internet Assigned Numbers Authority (IANA)[78] is responsible for globally coordinating the IP addressing systems and its role is to allocate IP addresses from the pool of unallocated addresses to the RIRs, according to their needs. Another key IANA role is the reservation of IP addresses for specific technical purposes, which is done following the direction of the IETF. Examples include Multicast assignments, transition tunnelling technologies and private use addresses.

c) The continued rapid growth of the number of devices connected to the Internet is leading to the exhaustion of the IANA pool of IPv4 addresses. In February 2011, IANA assigned the last five remaining free blocks of IPv4 addresses to the five RIRs and IANA's global IPv4 pool was exhausted. In anticipation of this exhaustion, in 1998 the IETF developed a new version -IPv6[79] - which provides a greatly expanded address space since it uses 128 bits to represent addresses (generating a new limit of 2^{128} addresses, equivalent to some 340 unidecillion). IANA began allocating blocks of IPv6 addresses in 1999[80,81].

d) The smooth migration from IPv4 to IPv6 represents a key global issue, the fundamental crux of which is that IPv6 and IPv4 are not compatible at Layer 3. The same infrastructure, equipment, etc. can be used for IPv6, but a modified Layer 3 stack must be deployed that supports both protocols: IPv4 and IPv6 [Source: CISCO-Nav6, Malaysia Joint contribution [82]]. In addition, some applications (that use IP address literals) must be modified. While some point out that IPv6 implementation has been picking up relatively significantly in recent years [Source: ARIN, US[83]][84], absolute statistics show that IPv6 deployment is still low[85] [Source: Algeria[86]] and more could be done to encourage the deployment and smooth migration to IPv6. According to ~~some~~Syria, deployment of IPv6 should become a clearly-stated priority objective for national policy-makers and all stakeholders to enhance the pace of IPv6 deployment[87]. The WTSA 2008, WTDC-2010, and Plenipotentiary 2010 resulted in Resolutions related to IP addressing that stressed the need for human capacity development and training with respect to IPv6 address deployment.

e) Many have supported the approach that new IPv6 allocation policies could be similar to IPv4 policies, on a "first come, first serve" basis with 'demonstrated' need. However, some have

Comment [A14]: The paragraph does not address the usage of the current IPv4 addresses, and its utilization. Our experience in Bulgaria shows that real IPv4 addresses, while needed for a number of services and/or devices, are not crucial for a number of services and/or devices, which can use some of the so-called reserved networks, which are not being broadcasted outside of the networks of each ISP

Comment [A15]: footnote 86 only points to one country's contribution, and not "some"

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[78] The IANA is responsible for technical services to the operation of the Internet's underlying address book, the DNS. The IANA functions include: (1) the coordination of the assignment of technical IP parameters; (2) the administration of certain responsibilities associated with the Internet DNS root zone management; (3) the allocation of Internet numbering resources; and (4) other services related to the management of the ARPA and INT top-level domains (TLDs). Since February 2000, the IANA functions have been performed by ICANN under the contract with the US Department of Commerce (DoC). The current IANA contract ~~expires~~ expired on 30 September 2012, and ICANN will continue to perform the IANA function for the new IANA contract dates from 1 October 2012 to 30 September 2015, with two separate two-year option periods for a total contract period of seven years." (Source: IANA Functions Contract, The National Telecommunications & Information Administration, the US Department of Commerce (DoC), Available at http://www.ntia.doc.gov/page/iana-functions-purchase-order).

[79] IETF RFC 2460. Available at http://tools.ietf.org/html/rfc2460.

[80] Number Resources, IANA, http://www.iana.org/numbers.

[81] Initial IANA Delegation of IPv6 address space, https://www.iana.org/reports/1999/ipv6-announcement.html.

[82] CISCO-Nav6, Malaysia Joint contribution (June 2012).

[83] ARIN contribution (22 June, 2012), US contribution (1 August, 2012).

[84] http://bgp.potaroo.net/v6/as2.0/.

[85] http://labs.apnic.net/dists/v6dcc.html

[86] The reasons stated range from technical issues to challenges faced by developing countries (Algerian contribution, 2 August, 2012) and other assertions, such as market failure.

[87] ITU's related capacity building efforts can be found at http://www.itu.int/ITU-D/cyb/ip/index.html. One example of current initiatives to promote deployment of IPv6 is the World IPv6 Launch Day.

suggested that this may represent a cause for concern[88]. They caution that this policy has led to the occupancy of a substantial amount of the finite IP addresses in the IPv4 address space and may work against late entrants, especially developing countries. On the other hand, many argue that the IPv6 address space is virtually inexhaustible, and that the quasi-inexhaustibility of the IPv6 space means that any past issues regarding imbalances [Source: ARIN, CISCO] [89] would be avoided in the future and therefore the previous allocation policies of the RIRs are feasible for IPv6. The background report of WSIS-Working Group on Internet Governance (WGIG) in 2005 acknowledged that "the current numbering management is required to ensure equitable distribution of resources and access for all into the future".

f) Furthermore, after IANA and APNIC exhausted their IPv4 free pools in February and April 2011 respectively, in current migration stage to IPv6, ISPs using IPv6 still need to use IPv4 in order to be able to access content[90] and users[91] that are IPv4-only in large percentage for now and might likely remain so in significant volume in many years, therefore, the availability (or lack thereof) of IPv4 addresses is a factor which continues to be relevant today. Special policies have gone into effect to secure blocks of IPv4 addresses for the new networks in the long term [Source: Cisco, ISOC, ARIN [92]]. This is a critical measure necessary to allow new networks to reach both the IPv4 and IPv6 Internets while IPv6 reaches its full deployment.

g) The exhaustion of IPv4 address and migration to IPv6 has led to suggestions by some that the governance structure of IP addresses needs reform for improvement. Some say that any reform should come from within the existing structures and processes [Source: UK [93]][94,95] while some say that this might not be sufficient and that greater reform is needed [Source: Algeria [96]][97,98].

h) Specifically on the issue of IPv6 address allocation, the ITU's IPv6 Group, formed by ITU Council under the Directors of the ITU Development and Standardization bureaus, concluded "that current IPv6 allocation policies and processes met the needs of stakeholders"[99]. On this matter, some recommend organizing rational usages of IPv6 addresses in all regions within further ITU function of the IPv6 allocation [Source: Russia, Algeria[100]], while some believe

Comment [A16]: the ITU's Council IPv6 working group conclusion " that current IPv6 allocation policies and processes met the needs of stakeholders " contradicts the immediate sentence after it, which calls for the ITU to become a regional Internet registry.

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[88] "Internet Protocol version 6", Contribution from the Syrian Arab Republic to the IPv6 Group, available at: http://www.itu.int/md/T09-IPV6-C-0019/en.

[89] Some point out that that most of the legacy address allocations were allocated before the current address allocation system was in place. See ARIN contribution (22 June, 2012), Cisco contribution (25 June, 2012).

[90] Note: According to an analysis by RIPE-NCC (Available at https://labs.ripe.net/Members/emileaben/world-ipv6-launch-lasting-effect-on-content), less than 10% of top 1 million websites (as compiled by Alexa) are IPv6 enabled. Many commercial Content Delivery Networks (CDNs) enabled their networks for IPv6 before 6 June 2012 (World IPv6 Launch Day).

[91] http://labs.apnic.net/dists/v6dcc.html shows on 29 August 2012, 0.14% of Internet users are IPv6 users worldwide.

[92] Cisco contribution (25 June, 2012), ISOC contribution (26 June 2012), ARIN contribution (22 June, 2012).

[93] UK contribution (25 June, 2012).

[94] ICANN contribution on the effectiveness of bottom-up policy making in IP address management. ITU IPv6 Expert Group, June 2012.

[95] Co-chairs' report on the APNIC 29 Community Consultation: "IPv6 Address Management and ITU: Is an 'additional parallel structure' required?"

[96] Algerian contribution (2 August, 2012).

[97] Stewardship and the Management of the Internet Protocol Addresses, Milton Muller, available at: http://internetgovernance.org/pdf/CyberDialogue2012_Mueller.pdf.

[98] The Country Internet Registry (CIR) model: An alternative approach for the allocation and distribution of IPv6 Addresses. Murugesan et al. HONET'09 Proceedings of the 6th international conference on High capacity optical networks and enabling technologies, Pages 216-220, 2009.

[99] Report of the 4th meeting of the IPv6 Group, Geneva, 12 June 2012; Council 2012 document C12/62 on the Report on the closure of the IPv6 Group.

[100] Russian contribution (15 May, 2012). Algerian contribution (2 August, 2012).

present IPv6 allocation mechanisms are adequate and that the key objective should be identifying ways to spur IPv6 adoption by relevant stakeholders [Source: UK [101]].

i) As the Internet evolves, resources become scarce and the potential for abuse of Internet resources grows. Some major changes are underway in Internet routing and addressing policy to incorporate new measures for secure authentication. Resource Public Key Infrastructure (RPKI)[102] is a security technology that would create a hierarchy of digital certificates which would be used to authenticate the allocation of address blocks and route announcements using those blocks in order to improve the security of the global routing system. These certificates could be used by ISPs to secure their route announcements in order to improve the security of the global routing system.

j) Some caution that such a rigid global hierarchy could converge on a single trust anchor and that "if RPKI is used there are concerns that could affect the growth, freedom and democratic process that the Internet currently enjoys"[Source: Nav6, University Sains Malaysia[103]]. The Syracuse University-based Internet Governance Project states that[104]:

"The critical feature of the proposed RPKI solution is the attempt to link resource certificates to the authoritative sources of Internet resources, namely ICANN and the RIRs. This could fundamentally change their governance role".

k)j) Some have clarified that while RPKI is a good tool to provide others with authentication, it is optional and up to the network operators if they wish to use this technology [Source: ARIN, ISOC[105]].

2.3.3.3 Dissemination of information about IP-based networks and the implications of their development for ITU Member States, particularly developing countries

a) Providing open and equitable access to information about critical Internet resources by enabling the adaptation of adequate national and/or regional policy processes, specifically for IP-based networks – including the transition from IPv4 and migration to/deployment of IPv6, domain names and their internationalized versions – and ensuring that countries improve awareness of issues pertaining to Internet-related public policy, including Internet governance, are key issues for all stakeholders, including ITU Member States[106].

b) With the ever-increasing migration to all-IP based networks and the evolution of the current Internet governance arrangements, many developing countries need to build national capacity and improve their contribution and involvement in the management and effective governance of the Internet[107].

c) Resolutions from WTSA-08, WTDC-10 , and PP-10 all point to the importance of coordination and collaboration with respect to human capacity development and training with respect to the deployment of IPv6 addresses and the transition from IPv4 to IPv6.

d) Some note that participants from developing and LDCs are disadvantaged by the significant costs and human capacity requirements associated with participation in various global fora where Internet-related technical and public policy issues are discussed[108]. This has often been

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[101] UK contribution (25 June, 2012).

[102] http://www.apnic.net/services/services-apnic-provides/resource-certification/RPKI.

[103] Details included in contribution from Nav6, University Sains Malaysia, "Resource Public Key Infrastructure (RPKI): A tradeoff between security and freedom".

[104] Ruling the Root part II: RPKI and the IP address space, available at: http://blog.internetgovernance.org/blog/_archives/2010/3/13/4479658.html.

[105] ARIN Contribution (22 June, 2012); ISOC contribution (26 June, 2012).

[106] WTDC-10 Programme 2.

[107] Para 3.2., WTDC-10 Programme 2.

[108] See, for example, the IGF workshop on "Why do developing countries have a low participation in the Internet

Comment [A17]: The IG Project is not known for having the technical expertise needed to deal with such a complex issue, and should not be used as a source.

Comment [A18]: Point 2.3.3.3.d is not needed, given the content of 2.3.3.3.e - they need to be edited to reflect the reality that, unlike ITU meetings, the participation in "various global fora where Internet-related technical and public policy issues are discussed" is actually free for all, open for all, and every such meeting takes place in different countries, and many organizations (ISOC, ICANN, to name a few) provide grants for participants from developing countries.

highlighted as a barrier to equitable access to participation in the open global decision-making process on Internet-related matters.

e) To enable participants from developing and LDCs to participate in various global fora where Internet-related technical and public policy issues are discussed, a range of capacity building programmes are being developed, including the use of remote participation and electronic working methods. These initiatives should be encouraged, regularly assessed and reviewed in order to facilitate equitable access to participation in the open global decision-making process on Internet-related matters.

2.3.4   International public policy issues and the management of Internet resources

2.3.4.1   Generic Top-Level Domains (gTLDs) under the DNS

a) The DNS specifies a hierarchical structure of the delegation authorities in domain naming. As read from right to left, the DNS hierarchy is divided into top-level domains (TLDs), second-level domains (SLDs), and so on. For example, in the ITU web address www.itu.int, the TLD is ".int" and the SLD is "itu". TLDs are generally categorized in two different groups: namely, gTLDs and country code Top Level Domains (ccTLDs)[109].

b) Originally, there was one gTLD called .arpa, and seven more gTLDs (.com, .org, .net, .gov, .edu, .mil and .int) were subsequently added. Following growth in the demand for more gTLDs, several gTLDs (i.e., .biz, .info, .aero, .coop, and .post) have been added to the DNS. Historically, a new gTLD was added to the DNS based on proposals solicited by ICANN during specific application periods. Currently, there are 22 functional gTLDs[110].

c) ENUM defines a method for entering Recommendation E.164 country codes into the Internet DNS. A specific zone under the .arpa gTLD, namely "e164.arpa", has been allocated for use with ENUM E.164 numbers. Res. 133 (Rev. Guadalajara, 2010) states that the existing role and sovereignty of ITU Member States is recognized with respect to allocation and management of their Country Code Numbering resources, as defined in Recommendation ITU-T E.164[111].

d) In June 2008, ICANN announced its new gTLD expansion policy, under which any public or private-sector entity can apply to create and operate a new gTLD. ICANN clarifies that applying for a new gTLD is not the same as buying a domain name on a "first come, first served" basis, but will be operating a registry business for a new gTLD based on the applicant's technical and business capability and a commitment to implement ICANN's policies effectively. After more than three years of preparation and consultation, ICANN finally initiated the first round of the new gTLDs application opening on 12 January 2012 for three months. Each gTLD applied-for string requires an online application via ICANN's online application system and an evaluation fee, US$ 185,000 per requested application to cover the cost of the evaluation process.

e) Some have raised concerns about the magnitude and scale of gTLD expansion and transparency in the cost evaluation used in the determination of registry fees.[112] They are particularly concerned about adverse economic impacts in the market for gTLDs, and the risks

Comment [A19]: Point 2.3.4. has a number of flaws and errors, and requires serious editing. For example in 2.3.4.1.c. there's no mentioning of the lack of progress in using ENUM, and relation to the fact that it's being run by the ITU. In 2.3.4.1.d. there's no mentioning of the ICANN special support program for developing countries. Point 2.3.4.1.e talks about "some", who have raised concerns, but footnote 110 points only to one lobbyist organization's opinion, expressed publicly; if there are more, they should be mentioned. 2.3.4.1.g. talks about imaginative scenario of registering multiple domain names accross all gTLDs, however there is no data that this has been happening with the existing TLDs.

Governance Process?".

[109] For example, ccTLD is a TLD with two characters for countries and territories based on the ISP 3166 list (i.e., ".ch" for Switzerland) and so a gTLD is a TLD which is not a ccTLD, such as ".com" or ".net".

[110] TLDs, Version 2012082101, last updated on Aug 22 07:07:02 2012 UTC, http://data.iana.org/TLD/tlds-alpha-by-domain.txt.

[111] See http://www.itu.int/en/ITU-T/inr/enum.

[112] Daniel L. Jaffe, Vice President, Association of National Advertisers (ANA), The US House Energy and Commerce Committee, December 14, 2011; Jon Leibowitz, The US Federal Trade Commission (FTC), Hearing before the House Judiciary Subcommittee on Intellectual Property, Competition and the Internet, December 7, 2011.

to public interest, business and consumer protections.[113] According to the ICANN's New gTLDs Applicant Guidebook, there is no upper limit on the number of applications for new gTLDs[114].

f) There is some concern about competition in the market for gTLDs. For example, some are concerned about the risk of creating a multitude of monopolies in the new gTLDs[115], especially associated with the cross ownership issues for registries and registrars[116], while some others say that the new gTLDs represent a substantial step toward increasing competition in the domain name market.[117] Some are concerned that the current arrangement regarding the DNS might result in insufficient competition in the domain name marketplace in general[118].

g) Some remain concerned about the impact of multiple new gTLDs on trademark holders or rights holders, especially those in developing countries, who would be compelled to assume high costs of addressing the possible proliferation of cyber-squatters inhabiting an unlimited number of new gTLDs[119]. For example, since a domain name resolves to a website for a certain company or organization, there are more possibilities that trademark abusers could use new gTLDs with trademark protected names or look-alike names that may lead users/consumers to spoofed websites ("phishing") or to rival company websites ("free riders"). It may thus be necessary for "www.A.com" registrant to register the same domain name in all other gTLDs, such as "A.info", "A.biz", "A.mobi", and "A.(all other new gTLDs)" to protect the trademarked name of "A". With the proposed simultaneous roll-out of multilingual (IDN) gTLDs, observers point out that applicants may find themselves having to pay several multiples of the application fees for multiple domain names in different languages. Some say that this could result in a significant financial burden, especially for applicants from developing countries[120].

h) While ICANN has put in place some dispute resolution procedures to resolve disputes as they arise, some note that various policy challenges persist[121]. The protection against the possible misleading use of the names and acronyms of inter-governmental organizations (IGOs) has been cited as one example. Within ICANN, it has been acknowledged that the rights of governments or public authorities in relation to the rights of the sovereign state or territory which they represent cannot be limited or made conditional by any procedures that ICANN

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[113] Consumer Protection Concerns Regarding New gTLDs, the US Federal Trade Commission, December 16, 2011; Concerns about the new gTLD Expansion, Congress of the United States, August 7, 2012.

[114] Find more information about the concept of batching the new gTLDs application at: http://archive.icann.org/en/topics/new-gtlds-rfp-clean-30may11-en.pdf; During the root scaling discussion, it was agreed that ICANN would not delegate TLDs at a rate greater than 1,000 per year. http://newgtlds.icann.org/en/announcements-and-media/announcement-29jul12-en.

[115] New gTLDs: Competition or Concentration? Innovation or Domination?, Phil Corwin, June 6, 2012, available athttp://www.domainnamenews.com/new-gtlds/new-gtlds-competition-or-concentration-innovation-or-domination/11833;

[116] Cross Ownership Issues, Letter from Lawrence Strickling (the US DoC, NTIA) to ICANN, June 16, 2011, available athttp://www.icann.org/en/correspondence/strickling-to-dengate-thrush-16jun11-en.pdf.

[117] Rationale for Board Decision on Economics Studies Associated with the New gTLD Program, ICANN, March 21, 2011, available at http://www.icann.org/en/groups/board/documents/rationale-economic-studies-21mar11-en

[118] ICANN's Escape from Antitrust Liability, Justin T. Lepp, 89 Wash. U. L. Rev. 931 (2012), available at http://lawreview.wustl.edu/in-print/icanns-escape-from-antitrust-liability/.

[119] Defensive Registrations for New gTLDS, ANA, 7 May 2012; Mallory Duncan, Vice President, National Retail Federation, October 21, 2011.

[120] Why The New gTLD Program Remains of Concern to Business, Intellectual Property Owners Association (Appendix), http://www.bakerlaw.com/files/Uploads/Documents/News/Articles/INTELLECTUAL%20PROPERTY/2011/IPO_Comments_Einhorn-3-2011.pdf; New gTLD and IDNs for development: Importance and Obstacles, IGF 2010 (Session 61), http://www.intgovforum.org/cms/component/content/article/102-transcripts2010/634-61; WIPO Arbitration and Mediation Center observations on ICANN's "April 2011 Discussion Draft of the New gTLD Applicant Guidebook, Erik Wilbers, Director WIPO Arbitration and Mediation Center, May 13, 2011, http://www.icann.org/en/correspondence/wilbers-to-beckstrom-13may11-en.pdf.

[121] Concerns about the new gTLD Expansion, Congress of the United States, August 7, 2012; Why the New gTLD Program Remains of Concern to Businesses, Intellectual Property Owners Association (Appendix).

introduces for new gTLDs, and as such, ICANN should avoid country, territory or place names, and country, territory or regional language or people descriptions, unless in agreement with the relevant governments or public authorities[122].

2.3.4.2 Country code Top-Level Domains (ccTLDs) under the DNS

a) A ccTLD is generally used or reserved for a country, territory or area of geographical interest. Its subdivisions are identified in ISO 3166-1 standard and represented by two US-ASCII characters. The two letters chosen for each ccTLD are taken directly from the ISO 3166-1 list or the list of reserved Alpha-2 code elements defined by the ISO 3166 Maintenance Agency.

b) IANA is responsible for the delegation or re-delegation of an appropriate trustee for each ccTLD, but it has no responsibility over the entries on the ISO 3166-1 list. From the list of ccTLDs, the authority over each ccTLD is delegated to a trustee responsible for the policies and operation of the domain.

c) Since ccTLDs are based on a "territory" set, debates over ccTLD often focus on the relationship between a TLD string and a "territory" (per the ISO 3166-1 list). More specifically, questions could arise as to whether a TLD string exactly matches with the territory in the ISO 3166-1 list, whether the ccTLD easily represents the name of the territory, how many ccTLDs are possible for one listed territory, and so on.[123] For example, ".uk" is the primary ccTLD of *the United Kingdom of Great Britain and Northern Ireland*, instead of ".gb", which is now exceptionally reserved for the country. ".ax" for *Åland Islands* has been reserved on request of Finland and ".fx" for France, Metropolitan has been reserved on request of France[124].

d) The current delegation or re-delegation of a ccTLD is a process comprising several stages, with many different players involved in the process. It starts with[125]:
   i. a proposed new operator who is an applicant for a name in a ccTLD; and
   ii. the existing operator who confirms the change is appropriate, in the case of a re-delegation request.
   iii. in many cases, a national Government associated with the ccTLD is asked to verify that the re-delegation is supported as the sponsoring organization.
   iv. those parties served by the ccTLD are asked to show that they support the request and that it meets the interests and needs of the local Internet community.
   v. the IANA functions as the coordinator and analyzes the request, including investigating the details of the request, preparing a recommendation for the ICANN Board, and implementing the request if it is approved.
   vi. the ICANN Board of Directors considers the IANA recommendation and votes on whether the request should move forward.
   vii. finally, the U.S. Government evaluates a report on the request prepared by IANA.

e) ~~As the socio-economic potential of a ccTLD has become more widely acknowledged, a steady flow of ccTLD re-delegation requests have been observed [Source: UK [126]].~~ Some note that

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[122] Protection Against the Misleading Use of the Names and Acronyms of International Intergovernmental Organizations in the DNS, Legal Counsels of Public International Intergovernmental Organizations, December 13, 2011; Letter from T. Stelzer (Secretary of CEB) to Akram Atallah, United Nations, July 11, 2012; GAC Principles regarding new gTLDs (March 28, 2007).

[123] Issue Paper Selection of IDN ccTLDs associated with THE iso 3166-1 two letter codes, ICANN, July 9, 2007, http://www.icann.org/en/resources/idn/ccnso-gac-idn-issues-report-09jul07-en.pdf.

[124] Exceptionally reserved code elements, ISO 3166-1 decoding table, http://www.iso.org/iso/country_codes.

[125] Understanding the ccTLD Delegation and Redelegation Procedure, IANA, available at: http://www.iana.org/domains/root/delegation-guide/.

[126] ~~UK contribution (25 June, 2012).~~

Comment [A20]: Point 2.3.4.2. does not explain the history of the ccTLDs, and their management, including the pre-ICANN relations between Jon Postel and the ccTLD managers. We recommned that a reference to a relevant factual document is included, instead of rewriting history.

Comment [A21]: This point requires editing, to make it more accurate with regards to the new IANA contract.

Comment [A22]: Couldn't find such a text in the referenced text. It would be good for all such references to point to page numbers.

some issues have arisen with regard to the authority to delegate and administer the ccTLDs[127]. In fact, some governments have sought assistance from the United Nations system to reclaim their own ccTLDs or tried to use national legislation to reclaim ccTLDs from incumbent ccTLD managers. As an example, the application for re-delegation of ".so" ccTLD was accepted by the ICANN Board in February 2009. The ".so" TLD is designated in the ISO 3166-1 standard for Somalia, but the initial delegation of the .so TLD was performed in 1997 to World Class Domains, which is a US-based company. The application for re-delegation of .so TLD had been put forward by ITU, and finally the .so TLD was re-delegated to the Ministry of Posts and Telecommunications of the Transitional Federal Government of Somalia in 2009[128].

f) Member States represent the interests of the population of the country or territory for which a ccTLD has been delegated[129]. Para 63 of the *Tunis Agenda* states that countries should not be involved in decisions regarding another country's ccTLD and that their legitimate interests, as expressed and defined by each country, in diverse ways, regarding decisions affecting their ccTLDs, need to be respected, upheld and addressed via a flexible and improved framework and mechanisms".

2.3.4.3 Security of the DNS

a) The DNS resolution mechanism has critical security flaws that malicious entities have taken advantage of in order to launch attacks such as 'man-in-the-middle' attacks (a malicious third party can intercept a query, send a fake response and redirect the user to their own site) and 'cache poisoning' (the introduction of fake DNS data into the cache stored in DNS name servers). These types of attacks are sources of identity theft incidents and threaten users' "trust" of the Internet[130]. To counter these threats, a set of Security Extensions to the DNS, known as DNSSEC, have been developed[131] to provide origin authentication and validation of integrity of DNS data to DNS clients – a mechanism that provides an added layer of assurance that a responding entity (name server) really is what it purports to be.

b) DNSSEC facilitates the provision of cryptographic signatures which allow relying parties to verify that DNS responses are authentic. The resolution process ensures the "origin authentication of DNS data" by establishing an unbroken "chain of trust". The key characteristic of this chain of trust is that each parent zone vouches for its child. If any part of the authentication chain breaks due to a response from an unrecognized entity, then the resolution of that address is not achieved.

c) For the "chain of trust" in DNSSEC to work, it needs a single origin of trust (at the root) i.e., a trust anchor that the users can have faith in and from where the trust chain can be built. This entity managing this is responsible for creating and maintaining the key that signs the root. The U.S. Department of Commerce and ICANN have identified a private organization, VeriSign, as the entity to manage and have operational responsibility for the Zone Signing Key.

d) The U.S. Department of Commerce has identified the maintenance of this cryptographic key and the publication of the corresponding trust anchor as an IANA function[132], currently carried

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[127] Sovereign Domains: A Declaration of Independence of ccTLDs from Foreign Control, Kim G. von Arx and Gregory R. Hagen, 9 RICH. J.L. & TECH. 4 (Fall 2002) at http://jolt.richmond.edu/v9i1/article4.html#_edn87; The National ccTLD Disputes: Between State actors and non-state actors, Y. J. Park, International Journal of Communications Law & Policy, Winter 2009, http://ijclp.net/files/ijclp_web-doc_10-13-2009.pdf.
[128] IANA Report on the Redelegation of the .SO Top-Level Domain, http://www.iana.org/reports/2009/so-report-03feb2009.html.
[129] Resolution 102 (Rev. Guadalajara, 2010).
[130] http://www.verisigninc.com/en_AU/why-verisign/innovation-initiatives/dnssec/overview/index.xhtml.
[131] DNSSEC Protocol RFC (IETF): RFC 4033, RFC 4034, and RFC 4035.
[132] http://www.ntia.doc.gov/page/iana-functions-purchase-order.

Comment [A23]: This should move in a foot note, and other examples should be given, if such exist.

Comment [A24]: while this may be true, it also might be false, as there are different ways of implementing the DNS. We would also recommend removing footnotes 132 and 133, and replacing them with some facts.

Comment [A25]: Doesn't sound correct. Any references?

out by ICANN. A private organization, VeriSign creates the bulk of the cryptographic signatures in the root zone in its role as Root Zone Maintainer.

e) While some are concerned about this arrangement supporting this critical function[133,134,135], some others have expressed confidence in the arrangement and processes in place stating that the US National Telecommunications Industry Association (NTIA), ICANN and VeriSign have liaised with the naming and security communities to make the processes "transparent, independently audited and effective"[Source: UK, ISOC[136]].

2.3.4 Role of administrations of Member States in the management of internationalized (multilingual) domain names[137]

a) Resolution 133 (Rev. Guadalajara, 2010) recognized the following with respect to the management of internationalized (multilingual) domain names:

  i. The *Tunis Agenda for the Information Society* adopted by the WSIS made a commitment to advance the process for the introduction of multilingualism in a number of areas, including domain names, e-mail, Internet addresses and keyword look-up.

  ii. There is a need to promote regional root servers (see section 2.3.5.2) and the use of internationalized domain names in order to overcome linguistic barriers to Internet access

  iii. Considering the continuing progress towards the integration of telecommunications and the Internet, and the fact that that Internet users are generally more comfortable reading or browsing texts in their own language, for the Internet to become more widely available to a large number of users, it is necessary to make the Internet (DNS system) available in non-Latin based scripts, taking into account the progress recently made in this regard.

  iv. Recalling the outcomes of WSIS, there should be a commitment to working earnestly towards multilingualization of the Internet, as part of a multilateral, transparent and democratic process, involving governments and all stakeholders, in their respective roles.

  v. The current domain name system does not fully reflect the diverse and growing language needs of all users.

  vi. Internationalized Internet domain names, and more generally ICTs and the Internet, must be widely accessible to all citizens without regard to gender, race, religion, country of residence or language.

  vii. Internet domain names should not privilege any country or region of the world to the detriment of others, and should take into account the global diversity of languages.

  viii. Recalling the results of WSIS and the needs of linguistic groups, there is an urgent need to:

  • advance the process for the introduction of multilingualism in a number of areas, including domain names, e-mail addresses and keyword look-up.

  • implement programmes that allow for the presence of multilingual domain names and content on the Internet and the use of various software models in order to fight

Comment [A26]: Likewise – any references?

Comment [A27]: needs some editing, too. For example point ii) talks about "need to promote regional root servers", but puts it in the same sentence with "use of internationalized domain names", which is aiming at overcoming "linguistic barriers to Internet access". Internet access has nothing to do with the IDNs; it has to do with the ability of users to connect, at affordable price, and at a certain speed. Point iii) notices the recent progress in using IDNs, but does not quote any data to show that some countries (by chance, some of them are the ones that have produced a lot of documents about the Internet) have not really used the opportunities, opened to their citizens with the introduction of the IDNs. Point v) states that " current domain name system does not fully reflect the diverse and growing language needs of all users ", but there's no data to support it. Point vi) puts the access to IDN on the same level as access to ICT and the Internet, while there is no such connection that we are aware of (there's no reference in the SG document, too). Point vii) talks about "Internet domain names", and it is not certain if these are TLDs (and what exactly - ccTLDs, gTLDs, IDN gTLDs, IDN ccTLDs?). Point x) talks about ITU's "close cooperation with both WIPO and UNESCO", but does not mention that both organizations are actually pretty much involved in working with the relevant Internet organizations.

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[133] See more, http://www.zoomerang.com/Shared/SharedResultsSurveyResultsPage.aspx?ID=L23VTKJEXCE9.

[134] http://www.internetgovernance.org/2008/02/15/eeny-meeny-miny-moe-will-verisign-control-the-root/.

[135] http://www.internetgovernance.org/2009/06/12/former-principal-scientist-at-verisign-blasts-us-control-of-dnssec-root-signing/.

[136] UK contribution (25 June, 2012), ISOC contribution (26 June, 2012).

[137] Resolution 133 (Rev. Guadalajara, 2010).

against the linguistic digital divide and to ensure that everyone can participate in the emerging new society.

- strengthen cooperation between relevant bodies for the further development of technical standards and to foster their global deployment.

ix. There are a number of challenges with regard to intellectual property and the deployment of internationalized domain names, and adequate solutions should be explored.

x. The roles played by the World Intellectual Property Organization (WIPO) (with regard to dispute resolution for domain names), and by the United Nations Educational, Scientific and Cultural Organization (UNESCO) (with regard to promoting cultural diversity and identity, linguistic diversity and local content) are recognized. It is also recognized that ITU enjoys close cooperation with both WIPO and UNESCO.

xi. It is paramount to maintain global interoperability as domain names expand to include non-Latin character sets.

b) While the need for and importance of a multilingual Internet is universally accepted, there is some divergence on the current status of the urgency of the need to advance the process towards multilingualism and to implement programmes in this regard. Some state that the introduction of Internationalized domain names (IDNs) under the DNS (see section 2.3.5.1) has progressed considerably under the current process established by ICANN and therefore, the previously acknowledged urgency of need is being met by the current process [Source: UK [138]]. Some others say that though IDNs are possible, there is much work to be done with respect to email addresses and keyword lookup. ~~Those holding this view also point out that the current IDN implementation is "effectively a patch on an ASCII based system and that the DNS will properly reflect multilingualism when support is native to the system"~~ [Source: Saudi Arabia and Sudan, Algeria[139]].

Comment [A28]: While this is a correct quote, it shows lack of understanding of the way the DNS works, and why the IDNs need to be "interpreted" in ASCII.

2.3.5.1 Internationalized Domain Names (IDNs) under the DNS

a) Historically, the DNS root zone was limited to a set of characters conforming to US-ASCII or the Latin alphabets. This changed with the introduction of IDNs, which introduced TLDs in different scripts (e.g., characters in Arabic, Chinese, Cyrillic or Korean), which enables Internet users to access domain names in their own languages.

b) The process to advance the introduction of multilingualism in the DNS through IDNs has progressed considerably since 2010. Approval of the IDN ccTLD Fast Track Process by the ICANN Board at its annual meeting in Seoul, South Korea in October 2009, enabled countries and territories to submit requests to ICANN for IDN ccTLDs representing their respective country or territory names in scripts other than US-ASCII characters.

c) Implementation of IDN in the new gTLDs programme and the implementation of IDN ccTLDs raise some complex issues – for example, defining policies for scripts that the registries can accept, agreement on the type and number of characters in the strings etc. [140]

d) By June 2012, a total of 30 countries/territories requests have successfully passed through the String Evaluation. Of these, 21 countries/territories (represented by 31 IDN ccTLDs) are delegated in the DNS root zone; with the remainder either readying to apply, or actively applying for, delegation of the string[141].

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[138] UK contribution (25 June, 2012).

[139] Saudi Arabia and Sudan contribution (1 August, 2012), Algerian contribution (2 August, 2012).

[140] IDN Variant TLD program , ICANN, (4 May, 2012), http://www.icann.org/en/news/public-comment/idn-variant-tld-revised-program-plan-04may12-en.htm.

[141] Information on the status of IDN ccTLD implementations in different scripts can be found at:

2.3.5.2 Regional Root Servers

a) The DNS associates IP addresses with semantically meaningful domain names assigned to computers. When a user types "www.itu.int", the DNS resolves this address in a right-to-left order by first going to a root server ("."), which provides a referral to the location of an ".int" name server, which in turn provides a referral to an "itu.int" name server. Here, a root name server is a DNS server that answers requests for the DNS root zone, and provides referrals for names within a particular TLD to that TLD's name servers. There are currently 12 operators running 13 root servers specified with names in the form "letter.root-servers.net", where the letter ranges from A to M. The A, C, E, F, G, I, J, K, L and M servers now exist in multiple locations on different continents to provide decentralized service[142].

Table 2: Operators and Root Servers

Server	Operator	Locations
A	VeriSign, Inc.	Distributed using anycast
B	Information Sciences Institute	Marina Del Rey, California, US
C	Cogent Communications	Distributed using anycast
D	University of Maryland	College Park, Maryland, US
E	NASA Ames Research Center	Distributed using anycast
F	Internet Systems Consortium, Inc.	Distributed using anycast
G	U.S. DOD Network Information Center	Distributed using anycast
H	U.S. Army Research Lab	Distributed using anycast within the US
I	Netnod (formerly Autonomica)	Distributed using anycast
J	VeriSign, Inc.	Distributed using anycast
K	RIPE NCC	Distributed using anycast
L	ICANN	Distributed using anycast
M	WIDE Project	Distributed using anycast

b) The 12 operators manage the system used to publish the root zone that is administered through the IANA functions process and cryptographically-signed and distributed by VeriSign as the Root Zone Maintainer.

c) In the geographical sense, only 3 root server operators have administrative headquarters outside of the US (the Netherlands, Sweden and Japan); however, most of the root server operators have deployed mirror copies of existing root servers throughout the world. For instance, while ICANN has headquarters in California in the U.S., service for L ROOT-SERVERS.NET is provided using mirror copies (instances) located in 112 locations in 49 countries.

d) Some have noted the uneven geographical distribution of the DNS root servers (and mirrors) [143]. Figure 3 highlights the disparity between this geographical distribution and the global

> **Comment [A29]:** Point d) claims " the uneven geographical distribution of the DNS root servers (and mirrors) ", although point 2.3.5.2.c. claims the opposite. And there's no mentioning of the technical requirements needed for installation of root servers (or their mirrors)

http://www.icann.org/en/resources/idn/announcements.
[142] Details of root server deployment can be found at http://www.root-servers.org/.
[143]For more information on the uneven distribution of DNS root servers on the Internet, see:

distribution of Internet users. In Res. 133 (Rev. Guadalajara, 2010), ITU membership has highlighted the need to promote regional root servers.

e) Some have stated that the existing system has demonstrated it is capable of facilitating wider distribution of root servers, and that it is not necessary to modify the administrative structure of the root server system by reassigning responsibility for existing root servers or adding new ones in order to achieve this goal [Source: UK [144]].

Figure 3: Geographical distribution of DNS root server sites and Internet users, 2011[145]
Geographical distribution of DNS root server sites (left chart) and Internet users (right chart).
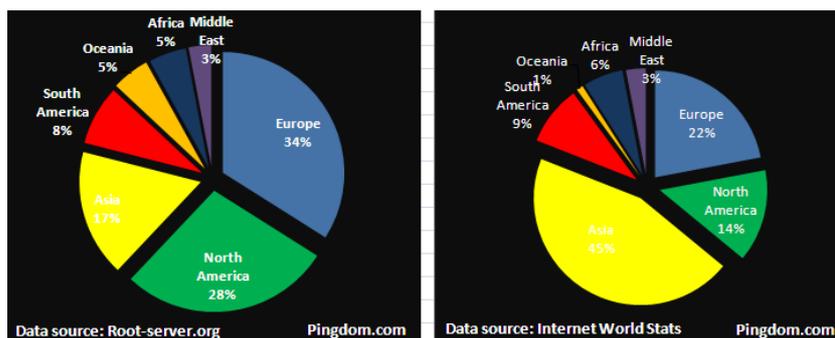
2.3.6   It is to be noted that the GAC[146], a non-decision making advisory body within the ICANN structure, discusses intensively public policy issues related to the topics highlighted above and many others[147] related to the stability, security and continuity of the DNS. The GAC provides advice to the ICANN Board. According to ICANN Bylaws, the ICANN Board must take into account the advice of the GAC on public policy matters shall be duly taken into account, both in the formulation and adoption of policies or provide an explanation for not doing so. [148] The GAC also maintains a non-voting liaison on ICANN's Board. Some have noted that GAC, currently composed of 114 Country Members and 17 Observers[149], despite its earnest efforts, is however limited by its

http://royal.pingdom.com/2012/05/07/the-very-uneven-distribution-of-dns-root-servers-on-the-internet/.

[144] More details included in the UK contribution (25 June, 2012).

[145] http://royal.pingdom.com/2012/05/07/the-very-uneven-distribution-of-dns-root-servers-on-the-internet/

[146] https://gacweb.icann.org/display/gacweb/About+The+GAC.

[147] GAC Communiqué, 43, (16 March, 2012), available at:
https://gacweb.icann.org/display/gacweb/GAC+Recent+Meetings.

[148] ICANN Bylaws -Article X1: Advisory Committees (https://gacweb.icann.org/display/gacweb/ICANN+Bylaws).

[149] Membership of GAC is open to all national governments and distinct economies recognized by international fora.

role as an advisory body only. There are some occasions where the ICANN Board has not requested GAC's opinions or rejected GAC's advice[150] despite public policy implications relating to the issues under discussion. There have been joint efforts between the ICANN Board and GAC to address the concern of integrating the GAC more effectively into ICANN's structure[151]. Some have noted that "further integrating the GAC into multi-stakeholder policy development has several obstacles, including misunderstandings about the GAC as an organization of nation state representatives" [Source: UK[152]].

> **Comment [A30]:** Page number in the reference?

3.   Conclusion

This draft report of the Secretary-General to the WTPF-2013 aims to provide a basis for discussion at the Policy Forum, incorporating the contributions of ITU Member States and Sector Members, and serving as the sole working document of the Forum focusing on key issues on which it would be desirable to reach conclusions (2011 Council Decision 562).

Annex A: List of Acronyms

ARIN	The American Registry for Internet Numbers
ARPANET	The Advanced Research Projects Agency Network
APNIC	The Asia Pacific Network Information Centre
ccTLD	Country code Top-Level Domain
CWG	ITU Council Working Group
CWG-Internet	The Council Working Group on International Internet-Related Public Policy Issues
DoD	U.S. Department of Defense
DNS	Domain Name System
DNSSEC	Domain Name System Security Extensions
FIND	Future Internet Design project
FIRE	European Union's Future Internet Research & Experimentation
GAC	Governmental Advisory Committee
GDP	Gross Domestic Product
GENI	Global Environment for Network Innovations
gTLD	generic Top-Level Domain
IANA	Internet Assigned Numbers Authority
ICANN	Internet Corporation for Assigned Names and Numbers
ICT	Information & Communication Technology
ICTs	Information & Communication Technologies
IDN	Internationalized Domain Name
IEG	Informal Experts Group
IETF	Internet Engineering Task Force
IGF	Internet Governance Forum
IGOs	Inter-governmental Organizations
IIC	International Internet Connectivity
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
IPTV	Internet Protocol Television
ISOC	Internet Society
ISPs	Internet Service Providers
ITU	International Telecommunication Union
ITU-T	ITU Telecommunication Standardization Sector

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[150] "ICANN has rejected the GAC's advice that the definition of "Community-based" strings be expanded to include strings that purport to represent a particular group of people or interests based on historical, cultural, or social components of identity, such as nationality, race or ethnicity, religion, culture, etc., or particular sectors, on the grounds that doing so would be extremely difficult to implement", GAC comments on the Applicant Guidebook (April 15th, 2011 version).

[151] Report issued by the Joint Working Group (JWG) of the ICANN Board and the GAC, June 2011. Available at: http://archive.icann.org/en/committees/board-gac-2009/board-gac-jwg-final-report-19jun11-en.pdf.

[152] UK contribution (25 June, 2012).

IXPs	Internet Exchange Points
JWG	ICANN's Joint Working Group
LDCs	Least Developed Countries
NASA	U.S. National Aeronautics and Space Administration
NGN	Next-Generation Network
NICT	Japan's National Institute of ICT
NSF	U.S. National Science Foundation
NTIA	U.S. National Telecommunication Industry Association
NWGN	Japan's NeW Generation Network (NWGN) research and development initiative
OECD	Organization for Economic Cooperation and Development
OTT	Over The Top
QoS	Quality of Service
RIPE	Réseaux IP Européens/European IP Networks
RIR	Regional Internet Registry
RPKI	Resource Public Key Infrastructure
SLD	second-level domains
TCP/IP	Transmission Control Protocol/Internet Protocol
TLD	top-level domain
UNESCO	United Nations Educational, Scientific and Cultural Organization
VoIP	Voice over Internet Protocol
WIDE	Widely Integrated Distributed Environment project
WGIG	Working Group on Internet Governance
WIPO	The World Intellectual Property Organization
WSIS	World Summit on the Information Society
W3C	World Wide Web Consortium
WTPF	World Telecommunication/ICT Policy Forum
WTSA	World Telecommunication Standardization Assembly
WTDC	World Telecommunication Development Conference