Internet Governance

Asia-Pacific Perspectives

Edited by **Danny Butt**
Foreword by **Nitin Desai**

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Foreword

The Working Group on Internet Governance

–Nitin Desai

The Working Group on Internet Governance (WGIG) was established by the Secretary-General of the United Nations, in accordance with the World Summit on the Information Society (WSIS) Declaration of Principles adopted in Geneva 2003. The relevant principles read as follows:

48. The Internet has evolved into a global facility available to the public and its governance should constitute a core issue of the Information Society agenda. The 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.

49. 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:

    a) 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;

    b) 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;

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

    d) Intergovernmental organizations have had and should continue to have a facilitating role in the coordination of Internet-related public policy issues;

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

50. International Internet governance issues should be addressed in a coordinated manner. We ask the Secretary-General of the United Nations to set up a working group on Internet governance, in an open and inclusive process that ensures a mechanism for the full and active

> participation of governments, the private sector and civil society from both developing and developed countries, involving relevant intergovernmental and international organizations and forums, to investigate and make proposals for action, as appropriate, on the governance of Internet by 2005.

WGIG was asked in its report to develop a working definition of Internet governance, identify the public policy issues that are relevant to Internet governance, develop a common understanding of the respective roles and responsibilities of governments, existing international organizations, and other forums, as well as private sector and civil society, and to make recommendations as appropriate.

This was not an easy task. The Internet is now critical infrastructure in many parts of the world, and its impact can be felt among many spheres across the globe. Even though most people in the world are not yet online, they are nevertheless affected by the far-reaching changes the Internet brings to institutions responsible for international trade and development, media and information, commerce, government, and education, to name but a few. There are many varied perspectives on the nature of the Internet, what constitutes its governance, and who should have responsibility for which parts of its management and development.

The report has achieved what was asked of it. Three key features of its process helped in arriving at this happy conclusion. First, the WGIG was a multi-stakeholder process, bringing together 40 people from very diverse backgrounds, from many different parts of the world, with very different concerns and preoccupations, which made people listen to one another and hence allowed mutual understanding to develop.

The second feature that made a huge difference to the working of the Group was the insistence of some members that the process be kept open. The Group met with all stakeholders in open consultations at every meeting and members participated in a large number of outreach events, including regional processes like the Open Regional Dialogue on Internet Governance (ORDIG) in the Asia-Pacific region. This openness reminded the Group members of the sentiment and opinions outside the Group.

The third crucial process feature was that the Working Group was not a negotiating group. The effort was not to try and negotiate a compromise amongst different points of view. The stakeholder groups sought to understand different points of view, and then to try and agree on the range of options which needs to be looked at by the preparatory process. More than that, they functioned as individuals rather than as representatives since they were not formally committing any stakeholder group.

These features of the WGIG process are as important as the product, because they have brought a new type of open and participative modality into UN diplomacy. These features also reflect, in some ways, the manner in which the present arrangements for Internet governance work. In this sense, the WGIG reflects the influence of the Internet ethos on diplomatic culture.

The Report of the Working Group

The report of the WGIG is quite short: the substantive part of the report is about 15 pages, concentrating on key recommendations and definitions. However, there is a longer background report available that consolidates and synthesizes the material on the basis of which the Working Group report was written. The background report is not, in that sense, a full consensus report. It was prepared from contributions of the Group members for the different working papers, as well as contributions received from outside. It provides a convenient way for the wider public to get a sense of the various aspects that we have considered in producing the Working Group's report.

The report contains a working definition of Internet governance:

> 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.

A substantial part of the work of the Group was a careful mapping of the existing system of Internet governance and management, with an assessment of strengths and weaknesses. The group focussed on public policy issues and its report presents not just a listing of public policy issues, but some notion of the priority in which they need to be tackled in whatever process we have for Internet governance. These include:

- Administration of the root zone files and system
- Interconnection costs
- Internet stability, security and cybercrime
- Spam
- Meaningful participation in global policy development
- Capacity-building
- Allocation of domain names
- IP addressing
- Intellectual Property Rights (IPR)
- Freedom of expression
- Data protection and privacy rights
- Consumer rights
- Multilingualism

Section Four of the report talks of the common understanding of the respective roles and responsibilities for each of the sectors that we normally refer to – government, private sector, and civil society – in the context of Internet governance. The Group notes the special role of the scientific and academic community, which straddles these three sectors.

The proposals for the reform of Internet governance structures in Section Five are built on the foundation of two basic agreements. Firstly, the idea of a multi-stakeholder forum to provide a

space for a dialogue amongst different stakeholders on Internet public policy issues; and, two, the feeling that oversight arrangements as presently exercised need to be modified.

Each of the four options proposed for global public policy and oversight require a change in the status quo, though the nature of the change which arises from these two basic points of agreement varies. To summarise:

An Intergovernmental Global Internet Council would have the responsibility for securing coordinated action by governments on public policy issues. The Internet Corporation for Assigned Names and Numbers (ICANN) would continue with its role of providing technical and operational oversight.

No specific new body would be formed, but ICANN's Governmental Advisory Committee (GAC) would be expanded and strengthened in order to meet specific governmental needs; and ad hoc problem-solving groups would be set up as necessary.

An International Internet Council of government agencies, with advisory seats for the private sector and civil society, would work alongside the technical bodies of ICANN and the Internet Assigned Numbers Authority (IANA).

Three new coordinating organizations would be created: the Global Internet Policy Council run by government entities; an internationalized "World ICANN" to continue its current role as the technical and operational body; and the multi-stakeholder Global Internet Governance Forum to discuss related public policy issues.

There was an agreement in the Group that what these oversight or governance arrangements should be concerned with are certain public policy functions. The Group did not propose any significant modification or change in the technical and operational management of the Internet itself.

The Group's recommendations on the arrangements suggested for policy dialogue and for policy oversight are clearly of the greatest interest in the WSIS process. These respond to the issues raised in the first part of this publication by Peng Hwa Ang , who was a member of the Group, and Mohamed Sharil Tarmizi, Chairman of ICANN's GAC. However, this is not the only area the Group worked on. It also has suggestions about coordination amongst the institutions involved in Internet management, and the strengthening of national arrangements for Internet management. Though we may do what we like at the global level, unless there is a counterpart system at the national level, which is also addressing similar issues, it is going to be very difficult to make that global system work. Beyond infrastructural issues, the WGIG report deals with other matters relating to the Internet, such as spam, cybercrime, identity theft, consumer protection, interconnection charges, multilingualism and many other issues addressed in Part II of this publication. From the point of view of the everyday user of the Internet, these are perhaps at least as important, if not more important, than the matters relating to the governance and management of the Internet infrastructure.

The policy discussions on Internet governance are not going to be over all that soon. The Internet is a very dynamic and changing medium. If we had asked the questions which we have asked in this Working Group five years ago, we would, almost certainly, have come up with the wrong answers, because the world then was so different. The Internet that we were looking at five years ago in the year 2000, towards the end of the dot-com boom, was so different from what we are looking at now. We have no idea what it is going to look like five years from now, in 2010. So the one final message is to be flexible because we have no idea what we are going to cope with in the next five years.

Nitin Desai

Chairman of the UN Working Group on Internet Governance and
Special Advisor to United Nations Secretary General

Abbreviations

3G	Third Generation
ALAC	At Large Advisory
ALAI	Latin American Information Agency
APAN	Asia-Pacific Advanced Network
APCAUCE	Asia Pacific Coalition Against Unsolicited Commercial Email
APDIP	Asia-Pacific Development Information Programme
APEC TEL	Asia-Pacific Economic Cooperation Telecommunications and Information Working Group
APNG	Asia-Pacific Networking Group
APNIC	Asia Pacific Network Information Centre
APRICOT	Asia-Pacific Internet Conference on Operating Technologies
ASCII	American Standard Code for Information Interchange
ASEAN	Association of Southeast Asian Nations
ASEM	Asia Europe Meeting
ASO	Address Supporting Organization
B2B	Business-to-business (e-commerce)
B2C	Business-to-consumer (e-commerce)
ccNSO	Country Code Supporting Organization
ccTLD	Country Code Top-Level Domain
CDNC	Chinese Domain Name Consortium
CERT	Computer Emergency Response Team
CHOGM	Commonwealth Heads of Government
CTO	Commonwealth Telecommunication Organization
DDoS	Distributed Denial of Service
DoC	Department of Commerce (of the United States Government)
DoS	Denial of Service
DOT Force	Digital Opportunity Task Force
DNS	Domain Name System
EU	European Union
FDI	Foreign Direct Investment
FOSS	Free and Open Source Software
GAC	Governmental Advisory Committee (to ICANN)
G8	Group of Eight
gNSO	Generic Name Support Organization
gTLD	Generic Top-Level Domain (e.g. .com, .net, .org, .info)
HDI	Human Development Index
IAB	Internet Architecture Board
IANA	Internet Assigned Numbers Authority
ICAIS	International Charging Arrangements for Internet Services
ICANN	Internet Corporation for Assigned Names and Numbers
ICT	Information and Communications Technology
IDNs	Internationalized Domain Names
IDRC	International Development Research Centre
IETF	Internet Engineering Task Force
ILPF	Internet Law and Policy Forum
INFITT	International Forum for Information Technology in Tamil

IOSN	International Open Source Network
IP	Internet Protocol
IPR	Intellectual Property Rights
IPv6	Internet Protocol version 6
ISO	International Organization for Standardization
ISOC	Internet Society
ISPs	Internet Service Providers
ITU	International Telecommunication Union
IXPs	Internet Exchange Points
Kbps	Kilobits per second
MAAWG	Messaging Anti-Abuse Working Group
MDGs	Millennium Development Goals
MIC	Ministry of Internal Affairs and Communications (Japan)
MINC	Multilingual Internet Name Consortium
MOU	Memorandum of Understanding
NGO	Non-Governmental Organization
NITA	National IT Agenda (Malaysia)
NITC	National IT Council (Malaysia)
npIX	Nepal Internet Exchange
NOG	Network Operator Group
OASIS	Organization for the Advancement of Structured Information Standards
OECD	Organization for Economic Cooperation and Development
ORDIG	Open Regional Dialogue on Internet Governance
PC	Personal Computer
PSTN	Public Switched Telephone Network
QoS	Quality of Service
RIR	Regional Internet Registry
RSSAC	Root Server System Advisory Committee
SANOG	South Asia Network Operator Group
SIDS	Pacific Small Island Developing States
SMEs	Small and medium sized enterprises
SSAC	Security and Stability Advisory Committee
TCE	Traditional Cultural Expression
TK	Traditional Knowledge
TLD	Top-Level Domain
TLG	Technical Liaison Group
TRIPS	Trade-Related Aspects of IPR
UDRP	Uniform Domain Name Resolution Policy and Rule
UNDP	United Nations Development Programme
UNOPS	United Nations Office for Project Services
UN-WGIG	United Nations Working Group on Internet Governance
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
VoIP	Voice over Internet Protocol
W3C	World Wide Web Consortium
Wi-Fi	Wireless Fidelity (IEEE 802.11b wireless networking)
WiMax	Worldwide Interoperability for Microwave Access
WIPO	World Intellectual Property Organization
WSIS	World Summit on the Information Society
WTO	World Trade Organization

The Open Regional Dialogue on Internet Governance

–Danny Butt

Internet Governance: Asia-Pacific Perspectives is the culmination of almost a year's worth of activity by the Open Regional Dialogue on Internet Governance (ORDIG), a project of UNDP's Asia-Pacific Development Information Programme (UNDP-APDIP). Broadly, the initiative represents an effort to increase stakeholder participation in discussions of Internet governance within the World Summit on Information Society (WSIS) process and, in particular, to increase participation from the Asia-Pacific region. Over the last year, ORDIG has solicited and analyzed regional priorities through a variety of research and outputs, including:

- a survey on 22 key governance issues conducted in 12 major regional languages, which received over 1,200 responses from 37 countries and from all major stakeholders;
- an online discussion forum on Internet governance, which included 180 participants from 27 countries in the region; and
- one regional conference (Bangkok) and four sub-regional conferences (Bishkek, Suva, Bali and Kathmandu) organized in collaboration with the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP), involving several hundred participants, from 50 countries and 35 regional and international organizations.

Based on the results of these activities, ORDIG commissioned a number of background papers on six key topics identified as priorities in the region. These papers, written by experts from the region, explore these priorities in greater depth. The findings from the research were summarized in the ORDIG Input Paper "Voices from the Asia-Pacific" – a paper referenced in the UN Working Group on Internet Governance (WGIG) final reports – and presented in numerous WSIS- and WGIG-related meetings, and on UNDP-APDIP's Internet governance portal http:/www.igov.apdip.net. These background papers addressed specific aspects of Internet governance outlined by WGIG, but from a distinctly Asia-Pacific perspective. While our focus is regional, the book is intended for a broader audience than just the Asia-Pacific region. Our aim is to develop an understanding of the complex interaction of social, legal, organizational and technical issues related to Internet governance, in the developmental context of WSIS. My hope is that this book will give technical workers and managers a deeper understanding of the critical relationships between their technical practices and developmental aims. It also aims to provide information to specialists in developmental areas, so they can more accurately understand the technical issues that impact developmental aims. This publication is not an academic one, and the general focus is on practical and policy responses. However, all papers have been through a process of expert review for content accuracy.

As well as the ORDIG paper, we have added three collaborative papers on specific Internet governance themes; country reports on India, China, Pakistan, Indonesia and Thailand; and reports on ORDIG's survey and discussion forum. We are also fortunate in being able to include contributions from three key figures in Asia-Pacific Internet governance: Nitin Desai, Chair of WGIG, provides insight into the processes of WGIG in his foreword; Peng Hwa Ang, member of WGIG and Dean of the School of Communication and Information at Nanyang Technological University, Singapore, gives us insight into the political tensions around Internet governance, and some of the challenges of "multi-stakeholderism"; and, Mohamed Sharil Tarmizi, General Manager, Malaysian Communications and Multimedia Commission (MCMC) and Chair of ICANN's GAC, gives us an inside view of Internet governance processes as they take place "at the coalface" and practical insight into the challenges to increasing Asia-Pacific participation in Internet governance.

Internet governance: new governance for a new medium?

As Nitin Desai noted in the foreword, WGIG developed a working definition of Internet governance:

> "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."

This is a broad definition, which this book follows, as both Information and Communications Technology (ICT) strategies and the public policy issues related to development are generally coordinated across a range of governmental bodies – not just those related to communications and finance. As the Internet becomes a critical global infrastructure, there are very few areas of Internet governance that are solely related to the Internet and not to broader public policy concerns. This creates governance challenges for Internet governance organizations (such as ICANN, the Internet Engineering Task Force [IETF], etc.) that have emerged within a smaller, less diverse and more easily manageable context. The Civil Society Human Rights Caucus expressed a very clear set of concerns that highlight the stakes of the definitions of Internet governance:

> "The civil society human rights caucus is deeply concerned with the tendency to address any Internet related aspect within the framework of Internet governance. We recognize that a number of transnational issues related to Internet lack a global space for political discussions and agreement. However, discussions on issues such as privacy, freedom of expression, prohibition against discrimination, access to information, intellectual property, and illegal content, must be addressed within a human rights framework. Internet governance must not result in a lawless zone escaping international human rights protection."[1]

[1] Civil Society Human Rights Caucus (2005). Statement by the Civil Society Human Rights Caucus, PrepCom2, WSIS second phase, plenary session. Geneva, 24 February 2005. Available http://www.iris.sgdg.org/actions/smsi/hr-wsis/hris-gov-240205-en.html. Accessed 27 March 2005.

While there are unique features to the transnational space of the Internet that provide an opportunity to establish new governance arrangements, it is not the case that these are completely separate from other domains, or that there is nothing to be taken from arrangements dealing with offline issues. As WGIG member William Drake puts it in a discussion of Voice over IP (VoIP),

> "You see even governments that favour a 'light touch' policy approach grappling with the implications for public interest mandates and such – national security and law enforcement requirements, public safety, disability access, services reliability and reporting obligations, restoration after failures, call prioritization in emergencies, privacy and consumer protection, universal service obligations, service categorization, inter-carrier compensation, competition etc. The solutions may need to be different, given the distinctive properties of VoIP, but many of the questions are similar."[2]

Loosely following the distinctions set out by WGIG, we have spilt discussion of Internet governance issues into three areas. Norbert Klein and I look at cultural inclusion and development with respect to Internet governance. While Internet governance is usually considered a purely technical or economic question, it is both determined by particular cultural interests as well as rapidly transforming cultures wherever it goes. In particular, for historical reasons, the various bodies usually associated with Internet governance (ICANN, IETF, Internet Society [ISOC]) have been dominated by participants from English-speaking North America and Europe. While these bodies market their inclusivity and openness, they nevertheless fail to reflect the diversity of the users of the Internet within key positions of power. This has significant effects on their decision-making capacity in areas that primarily affect non-English speaking users, such as Internationalized Domain Names (IDNs), where little progress has been made on a viable and scalable implementation.

The following chapter is "Governing Internet Use: Spam, Cybercrime and e-Commerce", by Suresh Ramasubramanian, Salman Ansari, and Fuatai Purcell. The use of the Internet as a global facility allowing instantaneous cross-border communication brings with it many difficult questions of governance. Highlighted here are challenges facing Small Pacific Island States in developing e-commerce without access to credit card facilities; and security issues, such as viruses and spam, are faced by all users every day, yet remain very difficult to regulate.

The final chapter is related to emerging access technologies and their potential to reduce the cost of physical Internet connections and services; and the chapter "Development and the Regulation of Access Technologies: Wireless and VoIP" by Samudra Haque, Onno Purbo and Fuatai Purcell looks at the issues for developing regions associated with the different charging models of the Internet, and the potential of these new technologies for assisting developing regions. Wireless access appears to hold much hope for developing regions due to lower setup costs, but it comes with its own challenges including spectrum management. Finally, while VoIP can provide cheaper call access to end-users, its growth, like that of the various "call-back

[2] Drake, W. 2005. Message to Civil Society Internet Governance Caucus email list, 21 March 2005 https://ssl.cpsr.org/mailman/listinfo/governance.

services", does not provide a source of telecommunications settlement revenue that traditionally financed network growth in developing countries.[3]

Representation and multi-stakeholderism

The question of how to negotiate the policy-setting processes in the complex multi-stakeholder environment is one of the key issues facing the WGIG itself. The WGIG background report noted that "from an operational point of view, the WSIS criteria of multilateralism, transparency, democracy and full involvement of all stakeholder groups have somewhat different meanings, possibilities, and limits in relation to different types of governance mechanisms."[4] When it comes to public policy questions, the questions of who should be involved become political struggles and issues of capacity that are not easily solved. The Internet is governed by bodies that must debate technical processes in minutely precise detail, but are rarely called upon to consider stakeholders outside their own dialogues in the way that policy makers are obligated to. Meanwhile, groups seeking to affect Internet governance processes to reach development objectives often lack technical understanding of exactly how processes can be changed for the better. The meetings between these two perspectives in online forums – most commonly those devoted to technology – can be characterized as mutual frustration. There is dismay on the part of development advocates that the nominally self-selecting, culturally non-diverse groups primarily responsible for Internet governance fail to reach out to broader stakeholders. The "netizens", by contrast, feel that they have invested a lot of time and energy into making the Internet work, they are open to anyone who will contribute, and if all the non-techies would take some time to properly learn how the systems work then there would not be any problem. Indeed, many within the technical community question whether the concept of governance applies to the Internet at all. The question is not merely about government control, but by what processes can those without financial resources or the capacity to speak English find a voice for their legitimate claims. After the report of the WGIG was released, Indian government representatives expressed some of the challenges of representation within non-governmental processes:

> "But when we look at something like the Internet, where the constituency is far, far larger than any group of civil society representatives can claim to represent, we must ask the question, are we not risking capture of the process by… a few well-organized people with very clear perspectives? Often, at least in theory, [is it] possible that the alternative perspectives which are equally deserving of attention get blocked out because the more knowledgeable, the more organized find representation in bodies like these."[5]

Such questions highlight the very complex issues of representation toward truly inclusive Internet governance. We hope that readers will find strategies for bridging the gaps and finding new voices for the Asia-Pacific in Internet

[3] Peake, A., 2005, "Internet Governance: Urgent issues for Asia Pacific" in Chin, S.Y. (ed.) *Digital Review of Asia-Pacific 2005/2006*, Penang: Southbound, pp.15-29. http://www.digital-review.org

[4] Report of the Working Group on Internet Governance [hereafter "WGIG Report"], http://www.wgig.org p. 4.

[5] Comments from the Indian delegation, Presentation of the Report for the Working Group on Internet Governance, Geneva, 18 July 2005 (afternoon session). http://www.wgig.org/July-scriptafternoon.html

Post Script

Since this publication was assembled, the second phase of WSIS, held in Tunis 2005, has passed. Internet governance issues are now accepted as serious issues and will be addressed over time. Complex issues, such as controlling spam; interconnection charges; or the relationship between Internet governance and economic development or cultural diversity, remain a long way from even having a common definition of the problem among various stakeholders.

An agreement was reached in Tunis to recognize the complex nature of Internet governance; delegations accepted that it has impacts across a wide range of organizations and stakeholders. WSIS asked the UN Secretary-General to convene an Internet Governance Forum in 2006 to discuss public policy issues and facilitate dialogue between the many organizations involved in Internet governance. While the forum will have no binding power, it nevertheless builds on the work of WGIG in addressing cross-cutting issues. However, it will take some time to develop effective changes to existing regimes of governance. We hope this book can become a valuable contribution to that process.

(Danny Butt, December 2005)

PART I

Perspectives on Governance

- The Legacy of the Working Group on Internet Governance
- Strengthening the Voice and Participation of Developing Countries in Internet Policy-making

Chapter One

The Legacy of the Working Group on Internet Governance

–Peng Hwa Ang[1]

It has taken almost 10 years since the mass public availability of the Internet in about 1994 for an international group to be formed to look into the issue of regulation and governance. Even as recently as at the turn of the century, just a few years ago, the idea that such a group could ever be formed was difficult if not impossible to imagine. After all, in the early days, scholars and promoters alike declared the Internet beyond the realm of government.[2]

There are many reasons for the perception that the Internet is beyond control.[3] One of the key reasons is the decentralized nature of the architecture of the Internet. This decentralized nature means that there is no central authority over all aspects of the Internet; there are various bodies and agencies that have some control over some aspects of the Internet, but no one authority over *all* aspects of the Internet. It explains why it is difficult, though not impossible, to censor the Internet.

In the early 1990s, researcher Harry Bouwman observed that decentralized networks were more successful in diffusion than were centralized networks. In his 1993 study of videotext systems in the United Kingdom, France and Germany, Bouwman found that the French version called Minitel was the most decentralized in its architecture. Information providers used Minitel as a conduit to purvey their wares; the French telecommunication company, the owners of Minitel, merely facilitated the transaction. That is a simplification of the process but the distinction is key: the videotext systems creators and owners in all the other countries also tried to be the information providers.[4] It was, after all, the era of the Information Age where information was the gold of the future.

[1] Peng Hwa Ang was a member of WGIG. The views expressed are his own.
[2] See David R. Johnson and David G. Post, (1996), Law and borders – the rise of law in cyberspace. *Stanford Law Review*, 48(2), 1367, and John Perry Barlow, (1996), *Cyberspace Independence Declaration*. Davos, Switzerland. 8 February. *WIRED* 4.06. See Peng Hwa Ang, (2005). *Ordering Chaos: Regulating the Internet*. Thomson, Singapore, especially pp. 35-38 for a history of these "first-generation scholars".
[3] In fact, *Beyond Our Control* (2001, MIT Press) is the title of a book by Stuart Biegel of UCLA discussing regulations of the Internet.
[4] Harry Bouwman, 1995. Videotex in Europe: Success and Failure. In *Videotex Development in the Asia-Pacific: Policy, Marketing and Implications*, (Eds.) Eddie Kuo and K. C. Ho. Singapore: AMIC. 18-34.

Counter intuitively, the decentralized French Minitel was the one videotext service that thrived. But if Minitel was decentralized, the Internet is even more so. The telecommunication companies that used to provide videotext services are now reduced to being mere conduits of the information. They are not needed in the transactional process between the provider and the consumer of any information or service online.

So if decentralization was a key factor in the success of the Internet, why is there a need for centralization in its regulation?

There are a few reasons. First, a decade after the Internet was introduced to the public, it has become too important not to have some form of government involvement in its running. Second, governments and international agencies have come to realize that it is important to have governance at the international level. And third, governments and international agencies have come to realize that, in fact, it is the developed world that has done the most by way of regulating the Internet.

As the WGIG report has shown, there is much that can and needs to be done by way of governance. The notion of governance, as the Group has defined it, is sweeping: it encompasses all aspects of rule-, standard- and norm-making surrounding the Internet. It goes beyond issues related to the Domain Name System (DNS) under the watch of ICANN. The Working Group's proposals surrounding governance do not amount to anything resembling a take-over of the Internet. On a day-to-day basis, the Internet works – the WGIG Report recognizes that. However, decentralization as an end in itself is not necessarily a good form of governance. There are many areas that would help the Internet if there were, at the very least, more coordination among governments, international agencies and other stakeholders. An obvious example of such an area is spam. As the WGIG Report observes, it has reached the stage where, in developing countries, spam is now the bulk of email traffic. There are technical solutions to spam but they can only go so far and, fundamentally, they impose the cost of spam on the receivers. Without disincentives, spammers grow bolder. The only way to stop spam is to stop the spammer; international coordination among agencies with enforcement powers is therefore the best way to stop spam.

For most people, at the very minimum, there is a need for a body that comes together to meet and discuss issues pertaining to the Internet in a coordinated manner. The countries that would derive the most immediate benefits would be the developing countries. They would be brought up to speed on key Internet law and policy issues; they would be able to learn the best practices; and they would be better able to avoid the pitfalls in the diffusion of the Internet.

However, the developed countries would also benefit. The Internet after all derives its power from the network effect: the more people there are on the Internet, the more useful and, thus valuable, the network of the Internet is.

This chapter discusses the coming together of various stakeholders in the governance of the Internet. It bears repeating that I am not advocating for a coup, but for fine-tuning and adjustments as part of an attempt to improve governance in the system.

Internet governance is more about governance than the Internet

The first point to note is that the issues of Internet governance are more about governance than the Internet. To be sure, there is a need to understand the mechanics of the Internet, to understand its special characteristics, such as why many people say it is ungovernable, as well as to understand its limitations. And so the issue papers lay those characteristics and limitations out.[5]

Governance already exists on the Internet, and existed even before WGIG. The term refers to the total policies, processes and outcomes of formal and informal regulation. In fact, modern life would be impossible without governance. Etiquette, say keeping quiet when a person, no matter how boring, is speaking, is a form of governance for meetings and seminars to proceed. This simple informal rule, informal because in most settings it is not written down and the sanction is usually in the form of cold stares from others in the audience, is a form of governance.

Given that the Internet already works, how can governance be improved?

Well, it should be remembered that governance pertains to human behaviour, not technology. In other words, when laws are applied to technology, they do not so much apply to the technology as to the *use* of the technology. So legislation that, say, outlaws spam, does not bar spam from entering one's mailbox. The legislation aims to reduce spam by penalizing the spammer, assuming, of course, that the spammer can be caught and prosecuted.

Once the passage of law is an important factor, then one enters the realm of how the laws are made. And here, WGIG has made the recommendation that any government or agency making laws and policies concerning the Internet should be **transparent**, **democratic**, **multi-stakeholder** and **multilateral**. The recommendation addresses the process of governance by recommending the parties who should be involved and the manner in which they should be involved. So governments, the private sector and civil society (multi-stakeholders) from many countries (multilateral) should be open (transparent) in their meetings and consultative in acknowledging the majority's interests (democratic) in their decisions. Merely having these four factors present in a governance mechanism does not necessarily guarantee the best decision. However, not having them is more likely to lead to a poorer decision.

Multilateralism

Multilateralism, or the participation of many countries, assumes the participation of governments with equal capacity and interest to handle the issues at hand. The interests of governments do not coincide so perfectly. For example, while the larger developing countries such as China, India and Brazil want to have a larger say on the world stage, smaller developing countries are prepared to let the USA take the lead in policy formulation concerning the Internet. Informal comments from officials of some of these countries to the author indicate that many

[5] The issue papers are available on the WGIG website - http://www.wgig.org.

are privately pleased with the "generosity" of the USA in allowing the rest of the world to connect to the Internet, which was, after all, invented by the Americans.

This disparity between the public and private faces highlights the inevitable politics that accompany multilateral meetings. Having such a meeting under the UN system would bring in the geo-politics of the UN. For example, Taiwan, with its .tw country code Top-Level Domain (ccTLD) name is not officially recognized by the UN.

Nevertheless, the process of being multilateral in governance necessitates a common forum because that is the means for multilateralism to work. And for all its flaws, the UN has enough influence and goodwill to be the host of the umbrella organization of the forum that is among the four forum proposals of WGIG.

Transparency

Transparency means that the process leading up to the formation of the rule or policy or guideline is evident to the stakeholders, especially the final end-user of the Internet. It does not mean that all deliberations have to be open to the public. Just as it is difficult to live in a glass house without at least some curtains, so it is difficult to have completely open meetings all the time. Even in the case of the Working Group, which was conscious that it was working under a magnifying glass, there were closed sessions to allow its members to express what has been called "premature" and "incomplete" thoughts. Closed meetings, where ideas may be quoted but without attribution (what the Group called the semi-Chatham House, after Chatham House in the UK), allow radical, even foolish, and politically sensitive ideas to surface and be tested. Transparency in meetings, at a minimum, should mean that outcomes from the meetings and reasons for the outcomes should be made public so that the interested public may be able to respond.

In itself, transparency does not ensure better decisions. It does, however, tend to reduce corruption, whether of power or money. It also empowers the general public and all stakeholders as they can understand how the law was developed, and even see their feedback taken into account in the development of the law. Finally, it holds public officials to higher standards of accountability.

On the Internet, calls for greater transparency are typically made on governments. This is understandable as governments are the chief promulgators of laws and policies. But with the Internet, technology allows for greater transparency and this is becoming the Internet community's expectation. So, for example, WGIG meetings became more and more transparent during the course of the consultations. After the first meeting, wireless Internet access was made available at the UN building. After the second meeting, webcasts of the open consultation were made available and transcripts of the meeting posted online.

Transparency is a continuum and can always be improved. In the case of WGIG, perhaps some statements explaining why certain things were done in certain ways would have been helpful. For example, in the last meeting, the Group was cloistered in a chateau that was difficult to

access from Geneva so that there would be fewer distractions. As the Chairman had expected, the Group needed six to eight hours after dinner for debate and drafting.

Democratic process

Closely linked with transparency is the notion that good governance is marked by a democratic process. This is not merely a voting process in which the majority presents and voting wins. Instead, this embodies the spirit that outcomes are arrived at after a discussion process that takes into account the interests of the majority.

In local and national politics, the notion is readily understood because one can see the practical outcome of democracy. At the international level, where no such voting process takes place on a large scale, the notion of democracy is harder to apply. In essence, it calls for the larger nations to respect smaller ones. It does call for some give and take because democracy is antithetical to the notion that "might is right".

As with transparency, there are limits to the application of democracy. With technological standards, for example, within IETF the rule of thumb has been "rough consensus and working code" not "democracy and working code". Not everyone is consulted to arrive at a "rough consensus"; typically with industry standards, it is the industry players involved. Given that small group, it would be stretching the word to describe the process as democratic. The key, however, is that outcome is accepted by industry, users and governments without serious objection, a form of consensus. There is no formal definition of the term *consensus* but it is generally understood to mean the lack of serious objections: one may not fully agree but one can live with it. And should there be objectors, the process is able to incorporate the views of these critics.

Another limitation is in self-regulatory regimes. By definition, self-regulatory regimes are not democratic. The rule-making process is often confined to the industry involved. The public is typically not involved in the debate and discussion even though they may be affected; rules are often not made publicly available, presumably on the assumption that the rules are often intended to apply to industry anyway. Here the process is non-democratic but some steps can be taken to improve the process, such as, for example, making access to the rules easier and having public consultation before the promulgation of the rule.

Notwithstanding some of these limitations, a democratic process that brings together the diverse views of the community will lead to more robust outcomes.[6]

Multi-stakeholderism

Until fairly recently, it had been taken for granted that government is the only legitimate party to promulgate law and policy decisions. Indeed, in many countries, this notion is still

[6] See James Surowiecki's (2004), *The Wisdom of Crowds: Why the Many are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations,* Doubleday, New York.

widespread. The notion of multiple stakeholders is that government, the private business sector and civil society should come together in making regulatory and policy decisions. The WGIG process has shown that diverse groups can come to common agreements on many areas. To be sure, not all areas can work but there are enough common agreements. It is well-documented that a diversity of views helps the final decision.[7]

Here is another reason for a more cautious approach to legislation concerning the Internet – the tension that exists concerning the roles of government, civil society and business. To be blunt, there is mutual suspicion among all three stakeholders. This leads to a tendency to polarize on issues, with each painting themselves as white and the others as black.

In truth, all three groups need each other. Multi-stakeholder participation is especially critical in areas of fast-changing information and where expertise and domain knowledge lie outside the government, descriptions that apply very well to new technology. It may be increasingly evident now as multi-stakeholder participation in public policy formulation has been embraced officially by groups as diverse as the Commonwealth Heads of Government (CHOGM)[8] movement and the Islamic Development Bank.[9]

Such acceptance overcomes the question of the legitimacy of civil society: who chooses civil society groups and to whom are civil society groups accountable? It may be that the question of representation is the wrong question to ask because civil society groups are, by definition, not elected. Neither do they represent any particular segment of society. For example, civil society sometimes includes academia. But in some countries, academics are civil servants instrumental in developing and spreading the use of the Internet. Perhaps they might be seen as stakeholders highly interested in the development and use of the Internet for larger social goals, such as economic well-being, or freedom of expression, or gender equality. The early development of the Internet was shaped by activists interested in no more than the well-being of the Internet.

As is clear from the WGIG Report, each of the groups has a role to play. For governments, it is passage and enforcement of the legislation. The call for legislation is strongest where the social harm is greatest in areas such as cybercrime: phishing, online fraud and scams. But legislation may also be appropriate in areas where there is social nuisance that has been difficult to rectify, such as spam, which has reached proportions such that it is no longer possible for governments to ignore.

Even in self-regulatory regimes, a government backstop is essential for self-regulation to be effective. Indeed an attempt to create the Internet Law and Policy Forum (ILPF) has met with, at best, very limited success. In contrast to the similarly named IETF, the ILPF is open only to paying entities; its annual membership costs US$ 20,000 a year.[10] Its schedule of activities has

[7] Surowiecki's *The Wisdom of Crowds* concludes on this note.
[8] The Commonwealth Secretariat has a section on its website on civil society at http://www.thecommonwealth.org/Templates/Internal.asp?NodeID=142018&int1stParentNodeID=20639.
[9] Closing address by Dr Ahmad Mohamed Ali, President of the Islamic Development Bank, 23-24 June 2005, Kuala Lumpur, Malaysia available at http://www.isdb.org/annualmeeting/eng/p821.php
[10] Information from the Internet Law and Policy Forum at http://www.ilpf.org/join/application.htm

been sporadic, especially after 2002[11] while its 2005 membership roll comprised a total of 17 companies.[12] The incentives for rule-formation are simply much weaker.

Government intervention may also be necessary to create the infrastructure, legal and otherwise, to facilitate Internet diffusion and development. So, for example, laws to recognize electronic evidence, online contracts and digital signatures are essential for e-commerce to develop and thrive. Business and civil society may come together to adopt norms and standards but without the legal sanction from the courts, such standards will not go far enough.

Because the Internet is a new technology, government legislation should be slow on the uptake. The expertise concerning the use and development of fast-changing new technologies lies with business and civil society. Already, there are examples where hasty legislation has been made obsolete by technology such as the early digital signature laws that were technology-specific. Such legislation will need to be updated to be technology-neutral on the means of creating digital signatures.

Forum

Given these diverse interests and needs, it seems obvious that a forum is the best way to exchange ideas and best practices, and coordinate cooperation that would enhance the development of the Internet. Seen in this light, therefore, it is difficult to understand objections against a forum that will, after all, have no enforcement powers. And in the WGIG report, we have proposed such a forum in the four models.

The WGIG process has shown that diverse groups, ably led and with the intention to arrive at solutions, can come to agreements. In fact, there were some thoughts that the WGIG might develop into a forum but that idea was quickly rejected. Besides being immodest, it just would not be a good model of governance for WGIG to perpetuate itself.

The forum must meet the criteria of being transparent, democratic, multilateral, and multi-stakeholder. It could use the WGIG model of having a mix of open and closed meetings. The open meetings should allow all interested parties to participate. There should be no cost, other than the cost of getting to the location, for participation. The proceedings should be webcasted.

Such a forum may, in the end, report directly to the UN Secretary-General instead of coming under any existent UN body to avoid legacy issues.

Inputs for the forum would be through the various agencies that currently exist. ICANN, IETF, governments, civil society groups, etc. would give their inputs. There could be sub-sections of the forum to deal with specific issues. It would then be up to governments to decide on implementation.

[11] Information from the Internet Law and Policy Forum at http://www.ilpf.org/about/press.htm
[12] Information from the Internet Law and Policy Forum at http://www.ilpf.org/about/members.htm

The forum would issue recommendations on best practices. Such recommendations, while not having the force of law, would be persuasive and make it easier for organizations and agencies to cooperate on such issues as spam, child pornography and cybercrime such as phishing. Governments that do not have the capacity to develop their own laws and policies would be able to look to the forum as a pacesetter for their own practices.

There is of course the hurdle in the form of the US Government which disapproves the idea of a forum, preferring instead to let matters stay at status quo, where matters are discussed at multiple fora.[13] This is not entirely unexpected as the United States has not participated in dozens of international treaties on human rights and social development. It has not endorsed the International Criminal Court nor, ironically, earlier treaties on terrorism. Without the support of the world's most powerful nation and the one that invented and has great influence over the Internet, such a forum will not be truly effective.

Next steps

Today, the Internet works. It is not broken. Nevertheless the governance of the Internet can be improved both in substance and process. Much work has been done by the more developed countries in substantive areas such as spam, online fraud, privacy protection and online child pornography. International coordination and cooperation in these areas will help the developing countries. And with the network effect, where the value of a network rises in geometric progression as the network size increases, such coordination and cooperation will also benefit the developed world.

At the international, regional and national levels, Internet governance can be improved by being more transparent, democratic, multilateral and multi-stakeholder. Here it is ironic that the US Department of Commerce (DoC), in shooting down the idea of a forum, has given itself a black eye in public opinion. Until then, it seemed quite evident that ICANN was well-managed. Against the yardstick of being transparent, democratic, multilateral and multi-stakeholder, ICANN measured up very well. In fact, many international organizations would pale in comparison to ICANN in this regard. And the US Government, having given birth to ICANN, would have earned kudos for its boldness in cutting the final apron strings of ICANN when its contract with the DoC expires in 2006.

Furthermore, governments are much more aware of the importance of the Internet and of Internet governance for their affairs, and therefore want a larger say, notwithstanding that the Internet was not invented on their soil.

Optimistically, one way of looking at the US position against such a forum is to treat it as a bargaining position. Just as one quotes high when selling and low when buying, so the US is uttering its position before "negotiations" begin for the WSIS meeting in Tunis. Hopefully by then, it will be clearer that the Internet is beyond the control of one government and that all governments do want to have their say in the governance of the most important communication technology today.

[13] Michael Gallagher, (2005) U.S. Principles on the Internet's Domain Name and Addressing System available at http://www.ntia.doc.gov/ntiahome/domainname/USDNSprinciples_06302005.htm

Post Script

The WSIS meeting in Tunis decided to create the Internet Governance Forum (IGF), a light weight (minimal cost) structure with no decision-making powers. Oversight of the root zone, however, would remain in the hands of the US Government. Interestingly, the decision mirrors that of the WGIG Report. The Summit got stuck at exactly the same points where WGIG got stuck. WGIG agreed on the forum but WGIG could not settle on one model of oversight. To be precise, the US delegation did concede a key sticking point with Paragraph 63 of the Tunis Agenda: "Countries should not be involved in decisions regarding another country's country-code Top-Level Domain (ccTLD)." The first meeting of the IGF is to be held within the first half of 2006, in Greece.

(Peng Hwa Ang, December 2005)

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Chapter Two

Strengthening the Voice and Participation of Developing Countries in Internet Policy-making

– Mohamed Sharil Tarmizi[14]

"Internet policy-making" is, in some ways, a paradox for some countries, especially developing ones. When one has never used the Internet nor knows what the Internet can be used for nor experienced the deluge of emails coming through one's mailbox, how does one make decisions with respect to this creature? Access to the infrastructure remains the primary challenge.

Another is the perspective and definition one applies to the Internet. The very name itself is a coined term with a capital "I". Why is this choice of a capital "I" in the description significant? It is a word which never existed before the mid-1970s. In almost every community, irrespective of language the term "Internet" is universally recognized but often with a variety of implications and meanings.

However, the base understanding seems to be the same, i.e. a recognition that the use of ICTs is critical as part of the broader agenda to building an Information Society[15]. In particular, the Internet has almost been singled out as the biggest potential ally in bridging the 'digital divide' and a potential tool in assisting countries to meet the Millennium Development Goals (MDGs) of the UN[16]. Interestingly enough, the MDGs in themselves do not mention either ICT or the Internet.

When discussing the Internet, I very often quote a story of the "three blind men and the elephant". Each blind man approaches the elephant – one from the front, one from the rear and the other from the side. Each has his own description of the elephant with the one in front describing the elephant to be something like a muscular tree trunk, the one from the back describing the elephant as more of a twig and the one from the side describing the elephant as something akin to a wall. Each blind man is correct from his own perspective, but we know that all of them are quite far from achieving the description of an elephant, as we know it.

[14] This chapter represents the author's personal opinion and does not represent the views of the author's current employer, the Malaysian Communications and Multimedia Commission or the Government of Malaysia, nor does it represent the position that the author holds as Chairman of the Government Advisory Committee of ICANN.
[15] Article 1, WSIS Declaration of Principles, WSIS-03/GENEVA/DOC/0004.
[16] Passed as a resolution of the UN at the 8th Plenary Meeting on 8 September 2000, see http://www.un.org/millenniumgoals/

In a manner of speaking, this is what the Internet is all about. Each one has a perspective on what the Internet is to us – some identify the Internet with web browsing, some with email, some with e-commerce, and so on. A large part of this definitional perspective would depend on the level of development a particular economy has achieved. The developed economy would have many of the institutional frameworks and policies in place as such that much of Internet policy-making could be left in the hands of the private sector. In contrast, those countries or economies which are less developed would arguably require much more direct government intervention in assisting to build capacity to manage the resource.

The above statement is, of course, very much a generalization of a very complex issue. There are also many examples of the private sector taking the lead in less developed countries and economies where most government resources are spent on developing far more basic infrastructure such as electricity and water. For example, in Mongolia and Indonesia, many initiatives on the introduction of the Internet to the community started from the private sector, where like-minded people, educational institutions or companies invested directly in the setting up of the local Internet infrastructure. A primary reason for this was that the governments in these countries had to focus scarce monetary resources on more basic goods and services such as building roads, providing clean water and electricity to the population.

Notwithstanding, I would posit the argument that for the Internet to reach the masses, governments have to play a key role in making available the policy framework for ICT and the Internet, more specifically to be used to bridge the digital divide and meet the objectives of the MDGs. Governments could then allocate resources to make the Internet available to everyone but this may be at the expense of other more pressing development needs. I would submit that governments should set policies and frameworks which encourage the private sector to put in the necessary investments in order to make it available to the people. However, these two role players will not be complete without the third element: the support of civil society to assist in building capacity of the masses and encouraging broad user adoption.

In some ways, the three key stakeholders, government, the private sector and civil society, are like the three blind men; each will have its own perspectives but all three are required to make the picture complete.

Forums for Internet governance: a multilayered approach?

I am concerned about the use of the term "governance" itself for I have learnt through interactions in the process leading up to the first WSIS meeting that the term itself is open to many interpretations in different languages. In plain language, the term can mean anything from coordination, to management to control or the exercise of sovereign authority.

Many others have written extensively about the different forms or types of governance, analyzing the current models available and providing extensive frameworks for analysis[17] or

[17] See, MacLean, D.J., "Herding Schrodinger's Cats : Some Conceptual Tools for Thinking about Internet Governance"

critiques[18]. I therefore do not wish to repeat the analysis other than to commend them for their extensive research into the matter. I would, however, like to start almost afresh from a practical perspective and perhaps from the perspective of someone who lives in a developing Asian country but has worked and was schooled in a developed European country. In this respect, I would refer readers to the relevant articles in the WSIS Declaration of Principles[19], as mentioned in WGIG Chairman Nitin Desai's preface in this publication. It would not be an exaggeration to say that this text took up the majority of discussions in the WSIS and WGIG[20] meetings.

Efficacy of the current structures?

The Internet, as we know it, operates at several layers – a physical layer, a logical layer and an applications layer. Could this therefore mean that the governance of the Internet could also be conceived as layered? The WGIG attempted to classify the clusters of key issues surrounding the concept of Internet governance[21] to include:

- infrastructure, both physical and logical;
- applications and the surrounding problems;
- broader issues such as intellectual property rights and consumer protection; and last but not least,
- developmental aspects of Internet governance, including capacity building, etc.

In every aspect, WGIG also attempted to identify the institutions, formal or otherwise, which have a role to play or are currently performing a function with respect to the identified issues. The attempt at classification by WGIG is, in my opinion, a reflection of the "stakes" claimed by the five institutional groupings identified in Article 49 of the WSIS Declaration of Principles: governments, private sector, civil society, intergovernmental organizations and international organizations (hereafter referred to as "institutional groupings". So, now, the three blind men may have just become five).

Each institutional organization brings with it a certain perspective with respect to Internet policy-making that may well be accurate from within its own constructs but, as in the case of the blind men, the picture may not be complete. Each has its own weaknesses. One issue of major concern with each institutional grouping, taken on their own, is that of the transparency of information and decision-making processes with respect to Internet policy-making. I will briefly deal with each one in turn.

- **Government or sovereign nations**

Traditionally, government is identified as the representative of the people or the population. With an increasingly globalized world and the empowerment provided by the Information Society, the subject of governments truly representing the people is increasingly questioned.

[18] See, George Sadowsky, Raul Zambrano and Pierre Dandjinou " Internet Governance: A Discussion Document," in *Internet Governance: A Grand Collaboration*, A collection of papers contributed to the United Nations ICT Task Force Global Forum on Internet Governance, New York, 25-26 March 2004. United Nations ICT Task Force, 2004, pp. 183-226.
[19] Articles 48 to 50, WSIS Declaration of Principles, WSIS-03/GENEVA/DOC/0004.
[20] See http://www.wgig.org
[21] See: http://www.wgig.org/docs/Clusters.pdf

Government meetings are usually held behind closed doors in locations which are sometimes remote from the issue at hand. There is often no way in which the average citizen can have his voice heard except through his elected representative in government. The voice of the elected representative is subsequently represented by the public officials engaged in the service of the country. Public officials are often not experts in the respective area of debate, in particular to one that relates to the Internet and may find themselves debating about a subject that relates to Internet policy-making without much input from the technical community or the public. Often, the detail or the impact of the input from the average citizen is lost in translation as it makes its way through the myriad of governments.

Notwithstanding the above account, it is generally acknowledged that governments provide a type of formalized and structured decision-making environment and, to a large extent, the roles and areas of responsibility of the various parts of governments are sufficiently clear. Depending on how one looks at it, it can almost certainly be said that governments by structure and definition should provide a holistic view of issues of concern within a society.

- **Private sector**

This grouping has always been identified with profit motivation as its prime objective. Therefore, there is concern that the needs of the users and society may be relegated in the pursuit of profits. Furthermore, unless one is a stakeholder within the corporation, there is often no *locus standi* to speak and be heard. Any oversight function is only exercised by those who have *locus standi* and perhaps by a regulatory agency of some form.

- **Civil society**

Civil society groupings are a fairly recent innovation, especially within developing countries. In many ways, they are the most powerful with those most involved in the issue championing the cause. They are a force to reckon with, due to the fact that they are usually issue-based or have a generally narrow focus on specific issues which may not initially be picked up by governments or the private sector, either intentionally or otherwise. For example, issues such as human rights, child labour, land mines and environmental issues are some early examples in which the civil society played a very strong role in creating awareness and, in some cases, public pressure to the extent that the issues can no longer be 'ignored' or relegated by the government or the private sector.

However, such groupings may not always be representative of the voices on the ground as they are potentially prone to be captured by the voices of a few "loud" ones. The challenges that are imposed on the resources to attend meetings are high. This grouping is usually self-financing and, consequently, faces resource constraints to meet the goals that it has set for itself. Therefore, apart from potential capture issues, this grouping potentially faces sustainability issues.

- **Intergovernmental organizations**

This grouping is by far the most institutional of organizations at the international level. It is often set up by consensus of national governments to deal with specific issues or areas, and is dependent on the national governments themselves for a mandate in dealing with issues which are not directly within its charter. Consensus is a major feature in decision-making and, in this

regard, the consensual approach helps to minimize any extreme positions by members of the intergovernmental organization. This often results in relatively neutral positions being taken by these organizations.

These international organizations also usually have extensive rules of procedure which can be laborious to understand, especially for those coming from developing countries where resources are limited. Due to its nature, this grouping is also often bureaucratic and slow to react to the ever-changing needs of the Information Society. Its membership is almost always governmental in nature although some organizations have mechanisms to allow for the limited participation from the private sector but almost never from the civil society. Currently, there is also no single intergovernmental organization at the global level which is equipped to deal with the complexities of Internet policy-making on its own.

However, the picture is not at all that bleak. In my personal experience, the greatest value that these intergovernmental organizations bring to any discussion is the wealth of expertise that they have within their areas of competencies. For example, ICANN and member governments of the GAC have relied extensively on the World Intellectual Property Organization (WIPO) for advice and guidance on intellectual property issues with regard to domain names.[22]

Several other specific examples are that of the Organization for Economic Cooperation and Development (OECD) which has developed several papers on trade- and commercial-related issues on the creation of new Top-Level Domains (TLDs)[23] and even that of the UNDP which has come up with various capacity building programmes and initiatives[24] to help leverage participation from developing countries.

- **International organizations**

This fifth and final category of the five institutional groupings is perhaps the closest to an egalitarian model for Internet policy-making that we have today. However, it is not without its own shortcomings. These organizations usually operate under their own charter established by their members. Due to their nature, they are perhaps not as bureaucratic as intergovernmental organizations and may be in the best position to use their relative "nimbleness" to serve the needs of their constituents. Due to their relatively limited resources, they probably make better use of ICTs in reaching out to their community and in disseminating information. They also probably have a combination of the civil society aspect and the private sector model within their constructs but often lack the participation of governments. Therefore, on their own, they also lack the complete package.

I am of the view, however, that the construct is far more complicated than that. It involves a myriad of intersections between the physical, logical and applications layers with the five institutional groupings mentioned earlier. It is the "internetworking" of these sections that is

[22] See the First WIPO Internet Domain Name Process at http://arbiter.wipo.int/processes/process1/index.html and the Second WIPO Internet Domain Names Process at http://arbiter.wipo.int/processes/process2/index.html

[23] http://www.oecd.org/dataoecd/56/34/32996948.pdf

[24] See examples of capacity building programmes such as "Internet on Wheels-Mobile Internet Unit" at http://www.undp.org/dpa/choices/2000/june/p15-17.htm and "Launching of Internet for High Schools in Ethiopia" at http://www.et.undp.org/ict/Launching.html

one of the key questions in the debate over Internet governance. To illustrate this, we should revisit the role undertaken by the respective stakeholders in the internetworking model.

Learning about layered 'internetworking' from the Internet itself

The network of networks, as the Internet is sometimes called, operates over the traditional physical infrastructure which was historically the purview of the telecommunications industry. The Internet rides over that physical layer with the respective protocols produced by collaborative effort within the IETF, together with various other stakeholders such as the Internet Architecture Board (IAB). Root server operators and Regional Internet Registries (RIRs) manage the protocols and the routing functions. The work done by IETF, RIRs and root server operators – for lack of a better description – is akin to the logical layer. Finally, the third layer is the applications layer. This layer is likely, by far, the most familiar to us as users of the Internet. It is the layer with which most of us interact. It is about websites, domain names, email, and things of a similar nature including concomitant side effects such as cybersquatting, spam, phishing, pharming, and virus attacks.

In some cases, I would even argue that there is a fourth layer that is distinct from these three layers and that is the e-commerce layer. It is possible to categorize e-commerce within the applications layer but I believe that e-commerce deserves its own label, and this is possibly the very reason why governments are now fast becoming interested in the Internet.

I would submit that each one of the five institutional groupings has a major role to play in the layers of Internet architecture. The degree of involvement or focus may differ but the involvement is nonetheless important to make the picture complete.

Internet policy-making: what is it all about ?

When we discuss the topic of Internet policy-making in the context of Internet governance, what exactly are we referring to? Is it the governance over root server management, domain names, intellectual property rights, security issues, pornography, spam or what? As mentioned above, WGIG has categorized these issues into four clusters; and all of the above which I have listed are also included within the four WGIG clusters.

Figure 1 attempts to illustrate some of the complexities of the issues that the global community was faced with just a few years ago, when the Internet moved out of being mostly a research network and came into the mainstream. Just like the three blind men and the elephant, each grouping had its own perspective on what the important issues were. Intertwined with those various competing interest groups were the underlying issues about resource management relating to IP addresses, root servers and the role of the US Government with respect to the Internet. It was also acknowledged at that time that the "old way" of doing things, with one man[25] managing the Internet and consequently Internet policy-making functions, was inadequate and in need of reform.

[25] Dr. Jon Postel who worked in the Internet Addressing and Naming Authority (IANA) under contract from the U.S. Government.

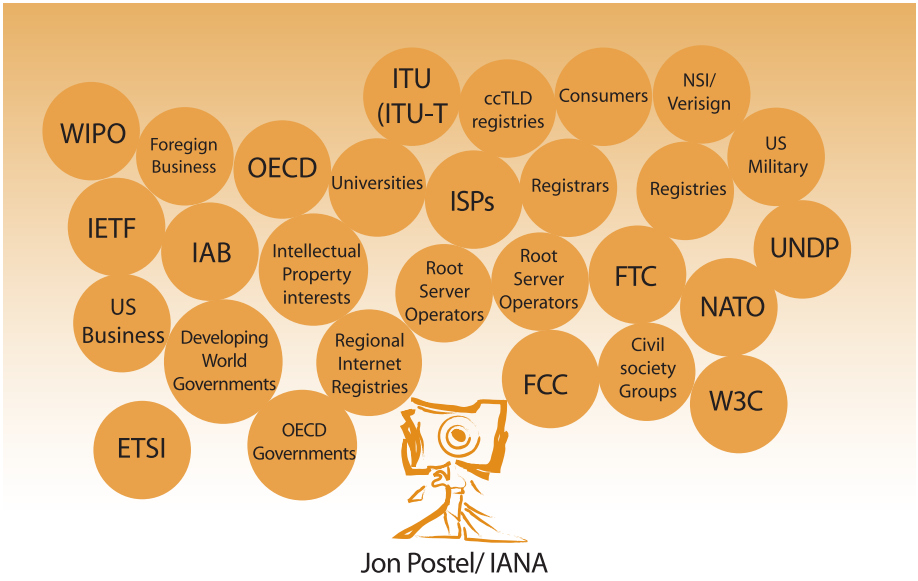

Figure1 **Complexities of Internet Issues**

Courtesy of Dr Paul Twomey, ICANN

In particular, there was a need to internationalize the Internet policy-making functions to be more reflective of the spread of the Internet worldwide within the global Information Society. Also, at that time, there was very little awareness amongst governments in developing countries on issues about the Internet.

As evidenced from the outcome of WSIS and WGIG deliberations, it has to be acknowledged that the list of issues has now grown from merely resource management in relation to IP addresses, intellectual property rights and domain names and addressing (which I refer to as ICANN-related issues), but for purposes of this chapter, I would propose as a starting point, to confine the discussion to those issues. In essence, the ICANN-related issues perhaps constitute the base elements of Internet policy-making with respect to what is sometimes referred to within the ICANN community as the "plumbing of the Internet".

The ICANN model and what it represents

It was for this very need to internationalize the parts of Internet policy-making that relates to IP addresses and domain names that an organization called ICANN was created.

The US Government initiated a public consultation in 1997 that resulted in the US DoC's Green Paper.[26] By 1997-1998, a number of governments were actively negotiating with the United States about the outcome of the consultation process based on the US DoC's Green Paper and White Paper.[27]

[26] http://www.ntia.doc.gov/ntiahome/domainname/domainname130.htm

[27] Statement of Policy on "Management of Internet Names and Addresses" (Docket Number 980212036-8146-02), U. S. Department of Commerce, 5 June 1998.

These early inputs to the process of internationalization are reflected in several texts from that period, qualifying in several respects the leading role of the private sector in Internet management. Consequently, in the conclusions to the 1998 US DoC White Paper:

> "The U.S. Government believes that the Internet is a global medium and that its technical management should fully reflect the global diversity of Internet users. We recognize the need for and fully support mechanisms that would ensure international input into the management of the domain name system. In withdrawing the U.S. Government from DNS management and promoting the establishment of a new, non-governmental entity to manage Internet names and addresses, a key U.S. Government objective has been to ensure that the increasingly global Internet user community has a voice in decisions affecting the Internet's technical management."

By and large, the ICANN model of a multi-stakeholder partnership was an experiment in multi-stakeholder governance, taking into account the shortcomings of the five institutional groupings mentioned above. It was intended to organize inputs from the various stakeholders within the Internet community namely, from the technical community, the intellectual property community, the user community and governments.

The main aim was a relatively lightweight model (Figure 2) which could address some parts of Internet policy-making where inputs from the various institutional groupings and the various layers could be taken into consideration in the course of policy development. Stakeholders bring with them the requisite level of expertise in their respective areas as contributions to the discussion within the ICANN community. In order to be lightweight, a private sector model was chosen to be the form of this organization with the Board of Directors comprising representatives from all interested stakeholder communities receiving inputs from the broader community.

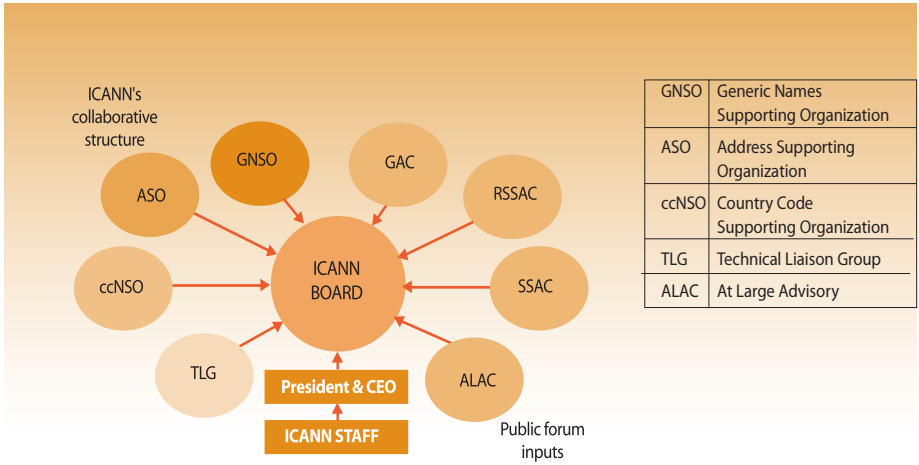

Figure 2 **ICANN's Collaborative Structure**

As an example, the governmental grouping within ICANN, represented by the GAC is primarily responsible for bringing public policy considerations to the Board[28]. The Generic Names Supporting Organization (GNSO) has the primary responsibility of providing support with respect to generic Top-Level Domains (gTLDs). Within the GNSO, there is a more diverse grouping consisting of gTLD Registries, Registrars, Internet Service and Connectivity Providers, Commercial and Business Users, Non-Commercial Users and Intellectual Property Interests.[29]

The Address Supporting Organization (ASO) has the responsibility of providing support with respect to IP addressing in general[30] and the Country Code Supporting Organization (ccNSO) has responsibility for coordinating the input from all Country Code Managers[31], some of which are privately run, government run, or run by a combination of the two with input from civil society.[32]

The Technical Liaison Group (TLG) is a unique collection of technical bodies which are involved in the Internet architecture including intergovernmental organizations such as the International Telecommunication Union Telecommunications Standardization Sector (ITU-T), European Standards Technical Institute (ETSI), W3C and IAB. The role and functions of the TLG are defined under Article XI-A, Section 2 of the ICANN Bylaws.

The other three groups that make up the ICANN framework are the At Large Advisory (ALAC), the Security and Stability Advisory Committee (SSAC) and the Root Server System Advisory Committee (RSSAC). ALAC's primary task is to consider and provide advice to ICANN insofar as they relate to the interests of individual Internet users.[33] ALAC is, in my view, the closest thing that we currently have to a civil society interested and involved in Internet issues. SSAC's role is to advise the ICANN Board and the community within ICANN on matters relating to the security and integrity of the Internet naming and address allocation systems[34], whilst RSSAC has the responsibility to advise the Board about the operation of the root name servers of DNS.

Through ICANN's collaborative structure and unique composition, governments which generally assume the role of custodians of public policy benefit from direct interaction with those from the technical community as well as Internet user groups within the same forum. Direct interaction with the technical community enables them to better understand the technical complexities of the Internet. The technical and Internet user community would be able to interact with government officials directly as equals without any of the impediments currently present in most governmental or intergovernmental organization structures. Often, in intergovernmental structures, private sector participants are relegated to the position of

[28] Article 1, Principle 1, GAC Operating Principles http://194.78.218.67/web/docs/GAC_Operating_Principles_20 July2004_Rev1.0.doc
[29] Article X, Section 5, ICANN Bylaws.
[30] Article VIII, ICANN Bylaws.
[31] Article IX, ICANN Bylaws. A list of the Country Code TLD Managers can be found at http://www.iana.org/cctld/cctld-whois.htm
[32] Geist, Michael A., University of Ottawa Law School, ccTLD Governance Project, ITU Workshop on Member States Experiences' with ccTLDs. http://www.itu.int/itudoc/itu-t/workshop/cctld/cctld006_ww9.doc
[33] Article XI, Section 2, Item 4.
[34] Article XI, Section 2, Item 2.

"sector members" and do not have the same rights of audience or speaking privileges as the government members. This interaction, on equal footing, which the ICANN structure allows can perhaps help the technical and Internet user community better understand the concerns that governments have with respect to domain names and IP addressing.

The cooperation and collaboration of these various groups is absolutely critical for the development of policies which have taken into account the myriad issues and perspectives involved with regard to the Internet. A mismatch of understanding could lead to policies which do not reflect reality and, worse, completely disconnect with what is required.

I would say that I observed some disconnect during the first phase of the WSIS process, where member government officials were debating about issues relating to Internet resource management without understanding even the basics of how the Internet works. It is encouraging to note that the second phase of the WSIS process seems to be more of a debate of substance on key issues and areas concerning governments. There is still much room for improvement but I am encouraged by what I have observed.

I have also observed that WGIG has taken on a similar model of multi-stakeholder cooperation which is open and inclusive, and provides an opportunity and platform for all stakeholders to come together and discuss issues of mutual interest from different perspectives. I believe this is an encouraging sign.

Forms of multi-stakeholder cooperation: how to get started

What model of multi-stakeholder cooperation or regional resource pooling or information sharing will work? I would submit that several fundamental questions need to be asked first.

The first question to be asked is "What are we talking about?" And the second is "Are we clear on what we are talking about?" When these two questions are answered, the priority areas to be addressed need to be listed and identified.

With reference to the different levels of understanding that currently exist at the global level on the topic of Internet governance, it is important that developing countries are clear on what they mean when they consider Internet governance within their own national context first. The way to do this is to first define what the Internet means to them, as they see it, by having domestic consultations with relevant communities and stakeholders within the country. No community should be excluded – be it the private sector, government or civil society.

For some countries, having the Internet means an opportunity to bridge the digital divide; for some it is an opportunity to tap into the global economy and take advantage of globalization; and for others, it would simply be the management of resources that should be distributed for access by the masses. Clarity on these issues at the national level would very much help define the priorities for that given country.

Once the priorities are clearly identified, then the roles of the various stakeholders using the

first three of the five institutional constructs mentioned above will be defined accordingly. For a start, I would also offer the list of issues considered by WGIG to be of importance. One will likely find that there is much that could be done by the government, the private sector and the civil society within a nation, first, on their own and subsequently in a cooperative and collaborative manner. In this regard, I offer another matrix model (Table 1) for consideration which governments can use to start the discussion.

'Potluck' approach for Internet governance?

The matrix approach (Table 1) is what I call the "pot-luck" approach. Here, instead of pointing fingers at each other or requiring only one party to do something with the others waiting by the wayside or a particular grouping trying to define the role that each one has to play or determining whether one community even has an involvement or not; everyone comes to the table bringing their own respective contributions. These contributions can then be compared, aligned and harmonized towards an agreed common goal, based on an agreed set of priorities. The common goal or vision can then be translated into a set of national policies and priorities which can be collectively implemented.

Depending on the level of development, it is likely that the roles played by the three stakeholders – government, the private sector and civil society – will differ. In the more developed economies amongst developing countries, it is likely that governments will play the role of providing an enabling policy framework, with the private sector taking much of the

***Table 1**: Matrix for defining priorities at the national level*

	Role of governments	**Role of private sector**	**Role of civil society**
What does the Internet mean for you?			
What can you contribute at the infrastructure level, both physical and logical?			
What applications can you contribute and what might be the surrounding problems?			
How can you address the possible surrounding problems?			
What is your function with regard to broader issues such as intellectual property rights and consumer protection?			
What is your function with regard to the developmental aspects of the Internet, including capacity building?			
What does Internet governance mean to you and what is your likely role to be?			

leadership role in actual implementation and rollout; and civil society playing a big role in education and capacity building. In the case of a less developed economy, it is more likely that the government, apart from providing the necessary policy guidance, is likely to be actively involved in implementation and rollout of services and networks, and even capacity building and education programmes. There is no one right sized model; everything depends on the current situation in the country. As the less developed economies develop further, I would submit that the private sector will play an increasing role in implementation and the government would continue to provide a guiding hand.

In this regard, I would like to use Malaysia as an example. There was recognition by the government in the mid-1990s that ICT was a key enabler in Malaysia achieving developed country status and improving the quality of life and well being for the people. The government, together with the input from the private sector and the civil society, helped to develop a National IT Agenda (NITA) and created the National Information Technology Council (NITC)[35] NITA was premised on the assumption that, with the necessary skills, appropriate hard and soft infrastructure and applications, people will be able to use ICT to transform society.[36] The idea was that the government could help to push ICT adoption by creating ripple-like initiatives that would lead to a tidal wave of change.

The NITC was made up of key persons from government, private sector and civil society groups, and was headed by the Prime Minister. Each sector had equal rights and say in the development of the agenda and priorities for the country. Subsequently, when the agenda and respective roles of the stakeholders were agreed upon, each grouping moved ahead to develop their respective programmes to help bridge the digital divide by using ICTs. To date, these programmes have been quite successful, bringing a much higher degree of ICT literacy and use of ICT amongst the people of Malaysia. Notwithstanding the measure of success, there is still much to be done to move Malaysia to the status of a developed nation. Though the experience in Malaysia is not specifically on Internet governance, there are similarities that can be drawn in the approach that it has taken with regard to ICT and correlate that with the current debate on Internet governance in the WSIS.

How to work together at the regional level – cooperation, coordination and collaboration

I am of the view that most of what needs to be done to achieve the MDGs and address issues currently debated in the WSIS are national issues and, in actual fact, there is little that is required to be done at the regional and international levels apart from, perhaps, the coordination of initiatives and resource pooling.

As an example, a regional grouping of countries could each utilize the "Pot-luck Matrix" at the national level first. In this way, they would be looking at a set of common issues but with possibly different sets of outcomes. Once these outcomes and national priorities have been identified, these countries can then compare notes as to which areas are common priorities for all of

[35] See http://www.nitc.org.my
[36] Multimedia Malaysia : Internet Case Study by International Telecommunication Union (ITU).

them and, once again, using the "pot-luck" approach identify what each of them can bring to the regional community. This can be done at governmental levels, private sector levels and at the level of the civil society groups. There are many existing regional forums which can be used to kick-start initiatives like the regional UN agencies or development programmes such as UNDP-APDIP and the Asia-Pacific Telecommunity (APT) which can bring together the various contributions and assist in coordinating, aligning and harmonizing the efforts to avoid duplication of efforts and resources.

I would suggest that, in developing countries, instead of debating who governs the Internet or what is governance, all stakeholders get down to the issues at hand and identify priorities, i.e. how to use ICTs to help achieve the MDGs. The more developed of the developing countries could even assist in 'showcasing' successful national initiatives for others to emulate and also share experiences of success stories as well as failures with others. It is important for all not to just share success but also to learn from failures.

As an example, there is much debate in WSIS about root servers, assignment of Internet protocol address blocks or IP numbers and Internet charging arrangements, which are currently very much in favour of the developed countries. In this regard, there is a need to understand and appreciate the difference in approach required in dealing with those three areas that I have cited as examples.

To put it very simply, the root server system merely acts to coordinate the use of the IP address blocks and the DNS. IP address blocks are assigned by the RIRs and there is one for North America, one for South America, one in Asia, one in Europe and one was recently formed in Africa. Collectively, these RIRs coordinate with one another and together with ICANN to manage global IP address allocation. Without getting into too much detail, IP addresses are allocated and given to those who need them, based on their request and usage requirements. As far as I am aware, there is no restriction or control of these resources at the international level. Those who want and require them, only need to apply for the resources.

Internet charging arrangements are far more complex and currently expensive for developing countries. In many cases, the charging arrangements are based on full circuit costs, which basically means that countries seeking access to the international circuit have to pay for the entire cost of the circuit. Countries seeking access are usually developing countries or less developed countries because most of the content and information sought on the Internet originates largely from the developed world. Hence, paying the full circuit cost is burdensome to the developing or less developed countries. In the telecoms sector, the approach has been largely based on the case of payment of half circuits. On the face of it, the telecoms approach seems much more equitable.

As mentioned above, much of this cost is incurred due to the fact that many users throughout the world are accessing content and applications in the developed world, and as such, most of the traffic is flowing from the developing world to the developed world and hence the high charges. Potentially, on the Internet, this traffic can be reversed if there is more local content since the Internet works somewhat differently from the telecoms infrastructure. In addition to creating more local content and charging mechanisms based on half circuits, some proponents

in the telecoms world have contended that the charging arrangements should be remodeled to be similar to the telecoms charging arrangement with the application of subsidies being given for the developing countries. However, that debate is still ongoing at many international forums such as OECD[37], Asia-Pacific Economic Cooperation Telecommunications and Information Working Group (APEC TEL)[38] and ITU.[39]

Furthermore, due to the lack of interconnectivity in the developing countries themselves and amongst them, traffic from point A to point B within the same country often goes out of the country to the developed world only to return back to the same country to reach point B. This challenge can be somewhat mitigated if there are more local or regional Internet exchanges, where local traffic can be kept local and regional traffic be kept regional without having to rely too much on global connectivity.

I would contend, whilst the aforementioned debate is ongoing, that it is equally important, if not more so, for something to be done at the national level to encourage the development of local content and applications on the Internet and the improvement of local 'connectivity' so that there is less need for traffic to flow out of the country or the region, only to return again.

In this regard, developing countries should focus on building national Internet exchanges and subsequently create regional Internet exchanges so that local traffic is kept local and regional traffic is kept regional. By focusing on these types of initiatives at the infrastructure level, developing countries can reduce their cost of connectivity to the developed world and, subsequently, also focus on local content development. The reference to Internet exchange is one example that I would like to cite as one item that can be placed in the pot-luck matrix for analysis at both national and regional levels.

Balancing the different policy values – freedom of expression, privacy, national sovereignty, affordable access

Just like the three blind men and their description of the elephant, the values cited above can have different interpretations and flavours notwithstanding that some of them have been defined at the level of UN Declarations. There is much discussion and debate in international fora about these values. They are important and there will be a need to reconcile and balance these values against the challenges brought about by greater access to the Internet.

However, in my view, before even trying to address and balance the different policy values, I believe developing countries must first identify their respective priorities.

Some of the notions expressed above are nice but if there is no affordable access to the Internet and ICT, then, the term is meaningless. I would submit that the first priority for developing countries is to get connected and create the environment for people to get connected. The appreciation of other policy values such as freedom of expression, privacy and others will

[37] http://www.oecd.org/dataoecd/43/55/1894684.pdf
[38] http://www.apectelwg.org/apecdata/telwg/ICAIS/chap-1.html
[39] http://www.itu.int/ITU-T/studygroups/com03/iic/index.html

subsequently come naturally once the people are empowered with ICT tools. It is then at that time when affordable access has reached the masses.

Meanwhile, as the debate continues, people are still not connected.

PART II

Internet Governance Issues

- Internet Governance in the Asia-Pacific Region
- Internet Governance and Socio-cultural Inclusion
- Governing Internet Use: Spam, Cybercrime and e-Commerce
- Development and the Regulation of Access Technologies: Wireless and VoIP

Chapter Three

Internet Governance in the Asia-Pacific Region

– *UNDP-APDIP**

Introduction

At the start of 2005, there were an estimated 400 million Internet subscribers and perhaps as many as 750 million regular Internet users worldwide. Asia contributed the highest share, with around one-third of the world's total online population, and more than 40 percent of the world's broadband users. Several of the fastest growing Internet economies were in the region, notably China and India which together account for around 130 million users[1].

Inevitably, such numbers will have a profound impact on the nature and functioning of the Internet. As the online world's centre of gravity continues shifting – and shifting rapidly– from North America to Asia, so too will the content of websites and the range of activities on the network shift. The precise nature of these shifts may be hard to predict, but it is clear that Asian priorities, opinions and habits are now a critical component of the Internet's future.

The purpose of this paper is to present a snapshot of those priorities at a particularly important moment in the network's history. As WSIS heads to Tunis, debates over the future of the Internet, and in particular the future of Internet governance, are gathering momentum. Much is at stake in the WSIS process: there is a sense that very real and important decisions may soon be reached. At such a moment, it is critical for every region and stakeholder group to have a voice; whatever new Internet governance arrangements may emerge must be as inclusive as possible.

The views presented in this paper represent the culmination of almost a year's worth of activity by ORDIG, a project of UNDP-APDIP. ORDIG and its activities are discussed in detail in Appendix

** This paper was produced under UNDP-APDIP's Open Regional Dialogue on Internet Governance (ORDIG) initiative. It was written in June 2005 to provide a summary of Asia-Pacific perspectives to the WGIG, based on consultations, forums, surveys, and research undertaken by the ORDIG initiative. The paper was noted by WGIG in their Background Report, and has been noted in other WSIS regional processes.*

Since the time of publication, dialogues around specific aspects of Internet governance have developed considerably, in part due to the work of ORDIG and other initiatives that have synthesised the views of diverse stakeholders. In particular, this paper was completed earlier than the other chapters in this volume, and should be read with this time difference in mind.

[1] "ITU Internet Reports 2004: The Portable Internet", Geneva, Sept 2004.

I. Broadly, the initiative represents an effort to increase stakeholder participation in discussions of Internet governance within the WSIS process, and in particular to increase Asia-Pacific participation. Over the last year, ORDIG has solicited and analyzed regional priorities through a variety of research and outputs, culminating in a consolidated paper and policy brief that were submitted to the UN WGIG.

We present our findings in six sections. Section I contains a broad overview of regional perspectives on Internet governance, and a list of six Working Principles (derived from our research and consultations) that provide a conceptual framework and guide the remainder of the paper. Sections II-V contain a list of specific governance priorities, categorized into four "dimensions"[2] : infrastructure; logical; content; and social and developmental. For each of these dimensions, we discuss a range of issues and regional priorities, and include a list of specific policy recommendations. Section VI includes a more general list of recommendations that attempts to synthesize the various suggestions made throughout the text. Finally, the Conclusion offers some thoughts on the road ahead for discussions of Internet governance.

It is important to emphasize, at the outset, that the priorities and issues discussed here are the outcome of an extensive multi-stakeholder and participatory process that has involved more than 3,000 people in the Asia-Pacific region. ORDIG's activities over the last year include an online discussion forum featuring more than 180 participants; a survey on Internet governance that collected 1,243 responses from 37 countries; several sub-regional consultations throughout the region; and a variety of research on governance and other topics.[3] The survey results (Tables 2 and 3) and the discussion forum, in particular, have proven invaluable in generating a truly stakeholder-driven view of governance priorities. It is our hope that the list of recommendations included in this paper and in the accompanying policy brief will help address those priorities through the WSIS process.

General views and working principles

As noted, ORDIG's various activities have identified Asia-Pacific views on a range of specific governance topics. ORDIG's work has also had a further, equally important, purpose – it has given us a more general idea of how the region views governance, and what Internet governance means to citizens and users of the Asia-Pacific region.

These issues are essential, because the concept and definition of Internet governance are frequently matters of debate. This paper does not engage in a detailed discussion of the meaning of, and justification for, Internet governance. The bulk of our discussion is focused on specific topics and actionable steps. However, in view of some of the debate and conceptual lack of clarity, it may be helpful at the outset to establish some broad views of governance, and to establish certain key Working Principles.

[2] We use the notion of "dimensions" strictly to order our list of issues in an intellectually coherent fashion. Several alternative models exist, of course, notably the use of "layers" and the WGIG's own "cluster" approach. Our use of dimensions should not be taken to imply the superiority of any particular model nor to imply any ranking or hierarchy among the list of topics discussed.

[3] These various activities are more fully described in Appendix I.

A. The discussion forum: a scan of regional opinion

The discussion forum, which gathered the perspectives of over 180 users, helps shed some initial light on regional views of Internet governance. Indeed, the participants in the forum spent considerable time debating the definitions, scope and mechanisms of the concept. These debates were often quite heated: participants expressed strong – even ideological – viewpoints on what Internet governance means, and should mean. And while they did not achieve any consensus, their opinions are nonetheless helpful in contextualizing the ensuing discussion.

Many of the expressed opinions reflect concerns that have been raised for some years now in the global Internet community. We saw, for instance, the common division between those who believe in a narrower definition of Internet governance, and those who take a broader approach. "Please don't try to fix something that isn't broken," one participant in the discussion pleaded, taking the former view. Others argued for a more expansive definition, arguing that Internet governance should cover a gamut of social and cultural issues. There was also a third position, representing the middle ground: while some participants agreed that the current system was imperfect, they suggested focusing on steps that could be taken to improve it rather than replace it altogether.

Some of the views expressed in the forum appeared more specific to the Asia-Pacific region, or at any rate to developing countries. One participant argued that developing countries should not waste time "bidding for a larger share of the i-governance pie". Instead, he suggested, they should focus first on ensuring that their citizens "are able to get the full benefit of the proposed changes", for example by ensuring broadband connections and lower access charges. Others took the opposite position, arguing that developing countries, in fact, had a particularly important stake in Internet governance.

B. The survey: a call for more governance

These views are helpful as an initial scan of the opinions in the Asia-Pacific region, and as a way of understanding how the regional debate relates to the broader, global debate. In order to achieve a more precise view of Internet governance, however, it is helpful to turn to the survey, which points to a somewhat greater consensus regarding the need for governance.

Considered in their totality, the survey results reflect a delicate mix of optimism and pessimism. The optimism can be seen in Table 2, which shows that, in general, people have a positive opinion of the contributions that can be made by the Internet. Overall, 69 percent of respondents disagreed with the statement that "the Internet does not provide any significant benefits for most people". In addition:

- 60 percent felt that the Internet could help combat poverty;
- 92 percent agree that the "Internet is an essential tool" that "should be made available" to all; and
- 92 percent believe that the benefits provided by the Internet will "grow significantly" over the next three to five years.

Table 2: *Perceived benefits of the Internet*		
Question	**% agree**	**% disagree**
No benefits from the Internet?	30	69
The Internet helps combat poverty?	60	35
The Internet should be for available for all?	92	7
Benefits of the Internet will grow	92	6

Such figures represent remarkable optimism concerning the current status of the Internet[4]. However, alongside this optimism, a somewhat less positive view is evident in the responses to questions regarding specific topics. As Table 3 shows, a surprisingly large number of respondents expressed at least some dissatisfaction with a variety of Internet issues. Virus attacks, spam, online fraud, cybercrime and illegal content top the list of issues on which people expressed dissatisfaction. A varying degree of unhappiness was also expressed on a range of other issues, including wireless networks, availability, and cost.

Table 3: *Asia-Pacific concerns and priorities (ranked by level of dissatisfaction)*		
Issue	**% dissatisfied**	**% satisfied**
Cybercrime	94	5
Virus	93	6
Spam	93	7
Illegal Content	82	16
Privacy	66	31
Availability/Cost	61	38
Reliability/Speed	59	40
Wireless	59	25
Availability of Public Info	58	39
e-Commerce Payment	53	37
Local Language Software	53	39
IPR	52	31
Local Content	52	42
Internet Telephony	51	30
Network Interconnection	47	39
ISP Market Conditions	46	34
Secure Server/Encryption	44	33
Technical Standards	37	39
IDNs	37	23
DNS Management	35	44
IP Address	32	40

[4] Of course as an online survey, respondents were self-selected, and certain biases may be built into their responses. Nonetheless, the 1,243 responses received represent a substantial sampling of regional opinion.

For those involved directly with ORDIG, we believe that underlying these apparently contradictory attitudes (optimism on general matters, pessimism on particular issues) rests a more cohesive message – one that suggests a sentiment in favour of more effective governance. When 93 percent of users feel that it is somewhat or very important to develop solutions to virus attacks and spam; when 61 percent are unhappy with availability and cost; and when 59 percent express dissatisfaction over wireless networks – these results suggest a strong desire for steps to address problems on the network, and to enhance existing mechanisms. As we argued in a "Summary Analysis" of the survey released in April 2005:

> The survey clearly points out a number of eminent problems in Internet governance that require urgent attention… A very sizeable number of respondents were not happy with the current situation of more than twenty major topics in Internet governance, pointing to a governance system that is far from perfect and leaves much to be desired in the eyes of many.[5]

C. Six working principles of governance

The survey suggests the need for some form of Internet governance, but it does not help define it. As noted, this paper does not engage in lengthy debates or discussions over definitions. Instead, we begin from the premise that certain governance steps are necessary to bring out the full potential of the network, and we take as our task not to justify those steps, but rather to describe them, particularly as they are relevant to our regional context.

In taking this more pragmatic approach, we rely on six Working Principles that provide the conceptual basis for our discussion of specific topics. Three of these are borrowed from the definitions reached by the WGIG. An additional three are derived from ORDIG's own work and consultations, and can be seen as particularly relevant or important in the Asia-Pacific context. Taken together, these six principles can be considered parameters for our recommendations, and as a conceptual framework for the ensuing discussion of particular governance topics.

Three WGIG principles

The following three principles of governance were offered by WGIG in its preliminary report issued in February 2005. WGIG offered them as general principles, applicable across regions, and considering them in light of ORDIG's consultations and research, we conclude that they do indeed apply to the Asia-Pacific region. The WGIG principles are as follow:

1. The terms "governance" and "govern" mean more than "government activities";
2. The enabling dimension includes organized and cooperative activities between different stakeholders; and
3. Internet governance encompasses a wider range of conditions and mechanisms than IP numbering and domain name administration.[6]

[5] UNDP-APDIP (2005), "Internet Governance Priorities for Asia-Pacific: Summary Analysis of a Regional Survey," UNDP-APDIP, Bangkok, p. i; http://igov.apdip.net/ORDIG.Survey.Report.pdf
[6] See http://www.wgig.org/Definitions.html

ORDIG's three principles

In addition, ORDIG's research and other activities suggest three further principles that we believe are particularly relevant to the Asia-Pacific region. These principles are supplemental to the WGIG principles, not alternatives. They suggest the need for governance mechanisms that represent the following values:

4. ***Broad, holistic and oriented towards human development:*** We believe that a broader, more holistic view of Internet governance is particularly relevant to the Asia-Pacific region, which is made up of a large number of developing countries. As recognized by the WSIS process, the Internet has an essential role to play in meeting the objectives set forth in the MDGs, and the outcomes of its governance therefore extend beyond merely the technical domain. It is in view of this belief that we have included a social and developmental dimension to the three more traditional dimensions of governance described above (i.e., infrastructure, logical, content).

5. ***Balancing global and local interests:*** We believe that effective Internet governance should extend across national borders. Governance mechanisms and processes should recognize the Internet as a unified and co-ordinated global platform, and should foster international cooperation and coordination. In addition, Internet governance must recognize (and, when possible, reconcile) the genuine conflicts that sometimes exist between the need for global solutions and the desire to safeguard national interests.

6. ***Maintain stability and interoperability:*** We believe that the Internet is an essential service and a critical infrastructure in the region, and it must be governed in a manner that reflects its operating realities and exigencies. Any proposed evolutions or changes that arise through the process of governance must therefore take into account the need to maintain the stability and continued interoperability of the network.

These six principles will surface repeatedly in this paper. As noted, they can be considered an underlying conceptual framework for the specific topics we discuss in the following sections. Those topics are ordered by the four previously mentioned dimensions. For each topic, we include an overview of Asia-Pacific views and priorities, followed by a brief description of the issues involved; we then conclude with a series of policy recommendations to enhance governance of the topic in question.

The infrastructure dimension

Infrastructure cannot be separated from the rest of the network, but it can be considered the foundational dimension of the network. Carl Shapiro and Hal Varian explain the relationship between dimensions well in their book *Information Rules:* "Infrastructure is to information as bottle is to wine".[7] This suggests that the Internet as a whole depends on and is constituted by all dimensions, but it also suggests the extent to which content (and, indeed, the other dimensions) depend on infrastructure. In what follows, we discuss the following three

[7] Shapiro, C. and H. Varian (1999), *Information Rules*. Boston: HBS Press, p. 8.

governance issues, each of which contains a range of sub-issues:

A. Access costs, including a discussion of competition policy and international connection charges;
B. VoIP; and
C. Wireless networks.

A. Access costs

Asia-Pacific priorities

A significant number of countries in Asia-Pacific are ranked as low or medium on the Human Development Index (HDI) produced by UNDP. For such countries, the cost of access to bandwidth is a major issue. Indeed, the importance of cost is evident in ORDIG's survey results. As Table 3 illustrates, 61 percent of respondents expressed at least some dissatisfaction with the availability and cost of the Internet, and 59 percent expressed some dissatisfaction with the Internet's reliability and speed (issues that are intimately connected to access costs). In addition, 47 percent of respondents were dissatisfied with the state of network interconnection and access to the backbone.

The significance of these numbers increases when broken down by the development level of countries. While only 43 percent of respondents from high-HDI countries expressed concern over the cost and availability of access, that figure was 66 percent and 51 percent for medium and low-HDI countries, respectively. Likewise, while 60 percent of high-HDI countries were satisfied with interconnection and backbone access, only 35 percent were in medium- and low-HDI countries.

Issues involved

These results suggest that, despite new technologies and increasing competition, the cost of access remains a serious concern in the region, particularly for poorer countries. Many issues, and at several dimensions, contribute to the problem. Here we discuss two key issues: the lack of adequate competition policies and the persistence of high international settlement charges.

Competition Policy: In general, high charges for Internet access result from underdeveloped or distorted markets in a particular economy. ORDIG's work suggests there are three areas in which competition policy may help develop an Internet market, increase competition and bring down the costs of access.

The first area is that of access to international bandwidth (whether via terrestrial or undersea cable, or satellite), which in many cases is controlled by the national monopoly telco, either directly through physical control of facilities, or indirectly through legislative or license mechanisms which grant exclusive rights on certain facilities or technologies. This exclusive control puts competing Internet Service Providers (ISPs) in the position of being customers to the dominant telco, and limits their ability both to negotiate input costs and to compete on a

price basis. Some countries in the Asia-Pacific region still maintain such restrictions. Others have begun to deregulate access to international connectivity, notably India in April 2005.

The second area where competition policy is essential relates to the relative status of ISPs as "customers" or "peers" of the providers with which they connect. This relationship, which has important consequences for the cost of access, is often determined by the relative sizes of ISPs, with smaller ones being at a distinct disadvantage. In a fair market situation, smaller ISPs can collaborate effectively in order to increase purchasing power and efficiencies. However, in immature or otherwise inefficient markets, the disadvantaged position of smaller ISPs may be impossible to control without particular policies aimed at levelling the playing field. In one notable case, the Australian competition regulation authority issued a warning and threat of substantial fines to the dominant ISP, Telstra, in effect demanding that it enter a peering relationship with three other ISPs. Telstra immediately complied, suggesting the power of well-designed regulation to level the playing field and foster competitive markets.[8]

A final issue pertains to licensing conditions for ISPs. Despite progress on this front, several countries in the region continue to apply burdensome licensing norms, similar to those applied to telecommunications providers that erect high entry barriers against entrepreneurs seeking to provide Internet connectivity. A number of individuals consulted by ORDIG on this topic believe that the deregulation of ISP licensing is an essential precondition to the creation of dynamic Internet markets. Deregulation does not necessarily mean that governments have to do away with licensing altogether.[9] However, it does mean that licensing requirements should be the least burdensome possible, and that licensing should not be used as a barrier to entry. In this context, the Indian ISP licenses, which require only a nominal fee of Re. 1 (70 cents), have been mentioned as good examples.

Recommendations on Competition Policy: Governments should ensure the smooth functioning of competitive markets, with limited barriers to entry, and strong provisions to prevent monopolistic behaviour by dominant or incumbent operators. Important steps in this direction include: liberalization of access to international bandwidth, promoting diversity in supply of domestic infrastructure such as trunk cables and last mile technologies, and easing of ISP licensing restrictions and requirements. In addition, specific policies should be put in place to limit anti-competitive pricing practices by ISPs, and to encourage "peering" relationships between ISPs. Generally, all steps should be taken to level the playing field and promote competition.

International Connection Charges: Inefficient markets are not the only contributing factor towards high access costs. A number of participants in the discussion forum also drew attention to the major role played by the high cost of connectivity to upstream Internet access points, which are often located in the USA or major regional hubs such as Singapore. Users from the Pacific Island states, for example, registered serious concern regarding this issue. One participant mentioned that the cost of access in Fiji for a 128 Kbps (kilobits per second) line could amount

[8] One ironic result, however, was that the three ISPs with new peering status immediately halted any demand for action on behalf of other ISPs, who were now left in the position of customers and dependent on a group of four dominant ISPs.

[9] Well-designed licenses can also provide protection for new operators, against incumbents.

to US$ 3500/month. He pointed out that, given the small populations in island states, there is little traffic, and that "people are surfing sites which are overseas even for sites delivering local content".

In some cases, the situation is under the control of governments or monopoly telcos, both of which play a large part in setting international bandwidth charges and, therefore, in determining charges for Internet access. Often high access costs are artificially sustained by the knowledge that cheaper access will result in lower international phone and fax revenues.[10] In such situations, solutions may be found in policies (such as those just described) that encourage free markets and competition.

Some observers argue that the underlying reason for high bandwidth charges has to do with the lack of a settlement system for sharing of connection costs between ISPs in the Asia-Pacific and their upstream providers. Because Asia-Pacific ISPs are regarded as customers of upstream ISPs, they generally pay 100 percent of the costs for such links. This has resulted in an unfortunate situation in which Asia-Pacific users can, in effect, be seen as subsidizing access for users in richer countries. As Adam Peake puts it in an article for the *Digital Review of Asia-Pacific*: On the Internet, "connectivity flows down and money flows up".[11]

The absence of an international settlement regime has, in fact, been on the regional agenda since at least 1998, when APEC TEL issued a study, *International Charging Arrangements for Internet Services* (ICAIS). Several commentators have since called for the establishment of a mechanism akin to the settlement system that has long existed in international telecommunications. Technically, though, the problem is complicated as the Internet is fundamentally different from telephony, where it is far easier to measure and determine the originator of traffic in any particular direction. Put simply, when a given volume of traffic on the Internet flows from one point to another, it is not possible to say which of those points is deriving a net benefit, and it is therefore difficult to determine charging arrangements.

Internet Exchange Points (IXPs), which bring together several closely located ISPs in a peering relationship, have been proposed as one way to sidestep the domestic or regional aspects of this broader issue of interconnection arrangements, and have been successfully deployed in some Asia-Pacific settings. For example, the Nepal Internet Exchange (npIX) has, for the past two and half years of its operation, seen local traffic volume reach 10 percent of the total international bandwidth in the country. The traffic of npIX has increased 100 percent every six months, and more growth is expected as more ISPs join the exchange. More importantly, smaller ISPs in Nepal stand to benefit from the exchange as, in some cases, their capacity may increase twofold or more.

[10] In addition, a lack of competition and diversity in provision of shorter paths (e.g., via cross-border or intraregional cables) causes the cost of such options to be higher than that of connection over much longer distances. The underlying reason for this lack of diversity is simply that sufficient demand does not exist to fund individual local or regional connections, and hence connections to longer paths are necessary to aggregate demand.

[11] Peake, A. (2005) "Internet governance and the Asia Pacific: Urgent issues for the region," forthcoming in Chin, S.Y. (ed.), *Digital Review of Asia-Pacific*: 2005-2006 Edition, Penang: Southbound.(http://www.digital-review.org)—Upcoming.

Although IXPs do not address the underlying issue (i.e., the absence of a settlement regime), they help by keeping local traffic local and thus reduce international traffic charges. However, it is important to note that IXPs are relatively easy to establish, and will generally arise as the result of independent business decisions by closely located ISPs. While governments can certainly help by establishing free markets and enabling conditions, the creation of IXPs is best left as the outcome of the market.

Finally, it is important to note that high costs are often the result of poor levels of service and insufficient infrastructure capacity within regional economies. In such cases, costs may be lowered by providing aid for direct investments in infrastructure. Aid could be directed, for example, at projects such as the construction of regional undersea cable systems, or the provision of domestic cable systems to link major population centres. Direct investment in local infrastructure is perhaps the most effective way of creating useful and efficient access mechanisms for many developing communities within the region.

Recommendations on International Connection Costs: Despite the technical difficulties, it is imperative that the issue of high international access costs be addressed. One requirement concerns the need to identify an appropriate global forum to deal with what is essentially a global issue. Discussions at the ITU have been slow, possibly due to a focus on settlements-based solutions, and some participants in ORDIG's forum have suggested the need for alternative fora (e.g., the WTO). Whatever the venue, governments and others involved in Internet governance should take the lead in identifying a forum, and pushing the discussions on this issue towards resolution. It is also important that such fora consider means by which developing countries can be assisted to develop infrastructure capacity and market diversity; aid programmes, in particular, can help foster large scale infrastructure development.

B. VoIP

Asia-Pacific priorities

Another key issue in the infrastructure dimension concerns the need for governance to promote the spread of VoIP. As a service, VoIP can lower telephony charges, and hasten the convergence of the Internet and the existing Public Switched Telephone Network (PSTN), thereby maximizing the utilization of existing resources.

Despite the many potential benefits offered by VoIP, survey respondents registered a considerable degree of unhappiness with current conditions. As Table 3 shows, only 30 percent were satisfied with the availability of IP telephony, and 51 percent were dissatisfied. Others consulted by ORDIG have also expressed general unhappiness with the state of IP regulation in the region. The author of an ORDIG-commissioned paper on VoIP, for example, pointed to a wide variation in the availability and pricing of the service, and to the difficulty of securing information on VoIP regulations in many countries.[12]

[12] Purbo, O. W. (2005), "Internet Governance for Emerging Technologies: VoIP and Convergence Issues," UNDP-APDIP, Bangkok.

Issues involved

Broadly, there are three ways in which VoIP services can be provided:

1. PC to PC based VoIP;
2. PC to the PSTN; and
3. Phone to phone based VoIP services, which use Internet Protocol (IP) to interconnect to the PSTN.

In Asia-Pacific, governments have generally not regulated or licensed the first category of service. The situation is somewhat different with categories 2 and 3, however, where interconnection with the already-regulated PSTN had led to varying degrees of regulation. Some countries have implemented stringent regulations that altogether bar the use of VoIP. Such regulation is often imposed with the desire to maintain an incumbent or government-owned telco's revenues.

An increasing number of countries, however, have taken a more liberal approach. Malaysia, Singapore and Japan are three frequently cited regional examples where various forms of "light-handed" regulations have been put in place. These countries have not only eased access to, and use of, VoIP; they have also implemented guidelines to support and encourage IP services, including the allocation of number resources.[13] ORDIG's research suggests that, in general, countries with more liberal regulation tend to have lower prices, and greater customer satisfaction. In a 2004 survey of Japanese IP users conducted by the Ministry of Internal Affairs and Communications (MIC), 88 percent replied that the quality of calls was greater or equal to that of cellular phones, and 67 percent said they were overall satisfied with voice quality.[14]

Recommendations on VoIP: ORDIG recommends a "light touch" approach when it comes to regulation of VoIP services. In general, VoIP should be legalized, and pricing and other decisions left to the market. In order to fully encourage the spread of VoIP, countries should also supplement legalization with supporting laws to encourage greater Quality of Service, allocate number resources, and provide access to emergency services.

C. Wireless Networks

Asia-Pacific priorities

Better deployment of wireless networks has emerged as a key issue throughout the developing world, and Asia-Pacific is no exception. Wireless networks are today seen as an important way of increasing connectivity and helping to bridge the digital divide. Indeed, a recent *Economist* cover story went so far as to argue that the gap in wireless technologies, not landlines, represented the "real digital divide".[15]

[13] Japan, for example, uses the 050 prefix to denote IP telephones, and Malaysia uses 0154.
[14] MIC Communications News, 15 (21), 10 February 2005. Available at: http://www.soumu.go.jp/joho_tsusin/eng/Releases/NewsLetter/Vol15/Vol21/index.html
[15] "The Real Digital Divide," *Economist,* 10 March 2005.

While this may somewhat overstate the case, there is no doubt that wireless networks are critical to increasing access in Asia-Pacific. Their importance was highlighted in ORDIG's survey, in which 59 percent of respondents expressed dissatisfaction with existing policies for wireless Internet, spectrum, and access. The figure was substantially higher in medium- HDI (61 percent) and low-HDI (54 percent) countries than in high-HDI countries (47 percent), suggesting the extent to which wireless is seen as especially important for economies and societies that remain on the wrong side of the digital divide.

Issues involved

Perhaps the most critical issue in governance of wireless networks pertains to the manner in which spectrum is allocated and used. Historically, spectrum has been managed by telecoms and broadcast regulators, who have treated it as a scarce resource requiring control and regulation. Technological innovations and more efficient usage, however, have led some to question the scarcity of spectrum, and even to suggest that spectrum should no longer be regulated at all (or only minimally regulated).

Unlicensed Spectrum: A more typical regulatory response has been to deregulate portions of the spectrum. In particular, a growing number of countries, building on ITU recommendations, have de-licensed portions of the spectrum (notably the 2.4 GHz range) to facilitate the spread of Wireless Fidelity (Wi-Fi), Worldwide Interoperability for Microwave Access (WiMax), and other radio technologies. Such actions hold great potential for the spread of the Internet. As noted by UN Secretary-General Kofi Annan: "With considerable speed and without enormous investments, [such technologies] can facilitate access to knowledge and information, for example by making use of unlicensed radio spectrum to deliver cheap and fast Internet access."[16]

ORDIG has encountered near consensus on the need for de-licensing of certain frequencies, particularly those required for Wi-Fi and WiMax. However, several Asia-Pacific countries continue to restrict these frequencies, often citing national security as a reason. India, for example, only recently de-licensed the spectrum band used for Wi-Fi. Other countries (e.g., Malaysia) have taken something of a middle path, making available open and unrestricted use of low power Wi-Fi networks to ensure that they do not interfere with other services.

End Goals of Spectrum Management: Regulators frequently face difficult choices in deciding how to regulate wireless networks. In such situations, it is helpful to keep in mind the ends of regulation – i.e., the goals that policy makers hope to achieve through their decisions. In the late 1990s, many European countries auctioned Third Generation (3G) spectrum with the apparent goal of raising money for the State. Such goals, however, may not necessarily be paramount in Asia-Pacific. Some observers feel that the chief goal of wireless networks in the region should be to lower the costs of connectivity, and thus increase penetration rates. In this sense, observers have called for regulation that is led by social and developmental imperatives. Keeping such social goals in mind can help guide decisions on spectrum allocation, licensing, and a variety of other issues. In contrast to the European approach, for example, the Indian

[16] See http://www.firstmonday.dk/issues/issue8_9/press/

telecommunications regulator has recently recommended that 3G spectrum be made freely available to operators in order to increase broadband penetration rates and facilitate the spread of associated services. Malaysia, too, has taken a "nation-building" approach in its treatment of 3G.

Recommendations on Wireless: ORDIG supports countries adopting spectrum management regimes that embrace unlicensed spectrum and encourage the spread of Wi-Fi, WiMax, and other emerging radio technologies. ORDIG also believes that spectrum allocation and the regulation of wireless should be governed by its potential social and economic benefits. Wireless is a key technology for bridging the digital divide; policy makers and others involved in governance should keep that potential in mind.

The logical dimension

The logical dimension sits atop the infrastructure dimension; it is the interface between hardware (infrastructure) and applications (content). It consists of the code and logical switches that make infrastructure work. In this sense, the logical dimension can be considered the "brains" of the network. Here, we consider the following key issues that have arisen frequently in ORDIG's work:

A. DNS management, including root servers, ccTLDs, and IDNs;
B. IP address management; and
C. Technical standards.

Together, these topics constitute probably the most common – and perhaps the most contentious – group of issues in the global discussion on Internet governance. They pertain directly to the technical coordination of the Internet, and are included in even the most narrowly conceived definitions of Internet governance.

Asia-Pacific priorities

The Asia-Pacific region is certainly not immune to a certain dissatisfaction over the technical coordination of the Internet. Yet ORDIG was somewhat surprised to find that its survey revealed a more ambiguous picture than might be suggested by the tone in many discussion threads, media articles, and statements by certain national governments. Indeed, just 37 percent said they were dissatisfied with the situation of IDNs; 35 percent with DNS management; 32 percent with IP allocations; and 37 percent with technical standards. As Table 3 suggests, these issues sit at the bottom of the dissatisfaction rankings.

However, it is important to note that despite these low levels of dissatisfaction, relatively few respondents express satisfaction on these issues. Indeed, for all four topics, less than 50 percent expressed satisfaction, and in the case of IDNs, the satisfaction level was only 23 percent. Therefore, when considered in its totality, the survey points to a certain polarization of opinion, a sharp division between those who defend, and those who are against the status quo. This polarization of opinion (reflected in global debates and on our discussion forum) suggests the urgent need for solutions and compromises in governance of the Internet's logical dimension.

We discuss some possible solutions below.

A. DNS management

Issues involved

Three inter-related issues make up the topic of DNS governance. These include root servers, ccTLDs, and IDNs.

Root Servers: One of the oldest, yet still controversial, issues at the logical dimension pertains to the root servers. Broadly, two concerns exist. The first is over the location and security of the root servers. One of the very first discussion threads on ORDIG's forum involved a heated debate over this issue, with some participants voicing the now well-known complaint that 10 of the 13 original root servers are still located in the United States.[17] Participants argued that such concentration (geographical and topological) threatens the stability of the Internet (particularly given current geopolitical tensions and the potential for a large terrorist attack), and is inappropriate from a diversity point of view. Other participants, however, were less concerned. They pointed out that the concentration is largely a result of the historical evolution of the network, and of technical protocol limitations. In addition, the introduction of Anycast techniques appears to have addressed many of the problems.[18]

However, a second set of concerns exists, pertaining to national sovereignty and pride. Dissatisfaction was expressed on the discussion forum, for example, regarding the unilateral authority held by the US government (through ICANN and the IANA function) of the root zone. In theory, the US government could use this control to remove a country's ccTLD. While such a development may be highly unlikely, it is nonetheless taken as an affront by many countries. Such concerns need to be addressed: for Internet governance to be truly effective, it is essential that all countries and regions feel included.

Recommendations on Root Servers: ORDIG believes that operational concerns over root servers have largely been addressed, particularly by Anycast techniques. However, national sovereignty concerns persist, and the solution lies in continuing efforts to enhance the international and participatory nature of Internet governance. ORDIG also cautions, however, that any governance steps that affect root servers (or, indeed, any aspect of DNS management) should respect the need for one and only one authoritative root. A unique root is essential to the seamless functioning of the Internet.[19]

Country Code Top- Level Domain Names (ccTLDs): Another important issue concerning the DNS is the manner in which ccTLDs are allocated and managed. Here, too, the ICANN process has come under some criticism. In particular, as we saw above, concerns exist about the US government's power (potentially exercised via ICANN and the IANA) to remove a ccTLD from

[17] The only original root server in Asia is located in Japan.
[18] There are now more than 80 Anycast root servers operating around the world, and more than half are outside the US. Asia-Pacific received its first Anycast root server in November 2002, and to date, the Asia Pacific Network Information Centre (APNIC) has coordinated the establishment of more than 10 in the region.
[19] For a discussion, see the Internet Architecture Board's comment at: http://www.faqs.org/rfcs/rfc2826.html

the root, and its authority to redelegate a ccTLD. The key issue – and the key challenge to national sovereignty, perceived or otherwise – is that no country other than the US has autonomous control over its own ccTLD. Given that a ccTLD can be considered a country's virtual footprint, the lack of ownership has been interpreted as a lack of sovereignty in the online world.[20]

Despite such concerns, much of the discussion on our forums focused not on ICANN, but rather somewhat surprisingly, on the role played by local actors in managing (or mismanaging) this valuable resource. Participants from Bangladesh complained, for example, about alleged poor management of their ccTLD (.bd), which is run by the state telecommunication operator. Management of the Philippines and Cambodia ccTLDs, too, came under some criticism. Some observers have also complained that international management of ccTLDs is complicated by confusion and competing interests at the local level (between government agencies, and with other members of the Internet community). It has been pointed out that in cases where conflicts exist at the national level, ICANN is left with no choice but to retain the status quo, with the result that it is frequently criticized for being slow or ineffective.

Another issue concerns the marketing of certain ccTLDs that have value to non-citizens. For example, the .mn (Mongolia) domain name is popular among users from the US state of Minnesota, and the .tv (Tuvalu) domain name (the Pacific Islands of Tuvalu) has also found commercial application (Table 4). Questions are frequently raised about how such marketable domain names should be governed. Participants in our forum appeared to express a broad consensus that marketing should be allowed – and can in fact benefit national economies – as long as ultimate control rests with the countries in question and that commercial interests do not supersede national interests.

Recommendations on ccTLDs: In all matters concerning ccTLDs, ORDIG believes that the guiding principle should be of local control. While it is recognized that ICANN will need to play a coordinating role, national and local interests should come first. However, it is also essential to recognize that confusion over authority frequently exists at the local level, and ORDIG believes it is essential that all countries take a multi-stakeholder approach to ccTLDs so as to ensure coordinated and participatory processes of governance.

Table 4: *ccTLDs as alternative top-level domain names*

Country Code	Country	Domain Area
Tv	Tuvalu	TV stations
Mu	Mauritius	Music
Md	Moldova	Medicine and health
Fm	Federation of Micronesia	Radio
Tm	Turkmenistan	Trademark

[20] It is important to note, however, that to date there has been no known instance of US Government interfering in a redelegation process if consensus exists at the local level, and if the parties have the requisite technical capabilities. Observers note that problems related to redelegation usually stem from a local conflict or lack of clarity.

International Domain Names (IDNs): The use of non-ASCII scripts to express domain names in international languages has been on the Internet governance agenda for some time now. The slow pace of progress, particularly at the top level of domain names, has left many users in the developing world frustrated. There have been some examples of successful implementation, but certain obstacles remain, particularly in non-technical domains.

At the technical level, IDNs can be treated as a standardization issue. Asia-Pacific has in fact taken the lead on this issue: in 2000, an Asia-Pacific Task Force was constituted to develop regional solutions, and today a range of entities exist to implement solutions for various scripts.[21] By early 2003, the IETF had developed a comprehensive set of standards, and ICANN finalized policy and other guidelines later that year.

Despite progress on the standardization front, certain technical challenges do remain. Prominent among these is the sheer difficulty of implementing Unicode standards that will accommodate the complexity and diversity of many Asia-Pacific languages. In addition, getting software developers to adopt non-English scripts can pose a challenge. While some browsers support IDNs, current versions of Microsoft Windows still do not comprehensively support existing IDN technical standards.

Some observers feel that technical challenges no longer represent a major obstacle. However, challenges also exist due to the fact that successful implementation requires a certain amount of coordination between communities that share common scripts (e.g., China, Japan and Korea). Identifying the appropriate groups to represent the communities, and achieving consensus on standards, has sometimes proven difficult. In his paper on "Cultural Diversity and Preservation in Cyberspace", Norbert Klein describes the serious intra-community disagreements that occurred when attempts were made to codify the Khmer script;[22] ultimately, as many as 20 different standards were developed. Thus, in addition to the technical challenges, there exist political, cultural and social challenges too.

Recommendations on IDNs: ORDIG believes that substantial ground has been covered in developing technical standards for IDNs, and that some of the most serious obstacles to implementation remain the need for cultural, social, and political coordination. Achieving such coordination will require a truly collaborative and multi-stakeholder process that occurs within countries *and* across borders. Finally, ORDIG believes that the lack of perfect solutions should not be used as a reason to hold up progress. Existing standards may be imperfect, but they do work, and their potential benefits are significant enough to merit deployment.

B. IP address management

The debate surrounding IP address allocation was perhaps the most contentious on the discussion threads, reflecting the clear divisions and polarization referred to above. While much of the dissatisfaction is the result of historical patterns of allocation during the early days of

[21] These include the Chinese Domain Name Consortium (CDNC), the Multilingual Internet Name Consortium (MINC), and International Forum for Information Technology in Tamil (INFITT).
[22] Klein, N. (2005), "Cultural Diversity and Preservation in Cyberspace: Software Customization," UNDP-APDIP, Bangkok.

the Internet, fresh concerns are also emerging with regard to new allocation procedures.

Issues involved

Perhaps the chief source of unhappiness stems from the historical "first come, first served" basis for distribution that has been used in the IPv4 space. Participants on the forum from China, in particular, expressed quite grave dissatisfaction with this process, arguing that it had resulted in an inequitable distribution of IPv4 address space around the world. Although there exists no documented case of an Asia-Pacific request for IP allocations being rejected due to space shortages, concerns persist about the availability of IPv4 address space in the future.

The much larger size of the IPv6 address space has led some to argue that such concerns have effectively been resolved. However, others have observed that the basic system of "first come, first served" applies equally to IPv6, and raise the possibility of a similar inequity in allocations as time goes on. Indeed, the question of IPv6 allocation is emerging as a new frontier of debate in the arena of Internet governance, with some making calls for national allocations or reservations of IPv6 address space to guarantee supply for all countries. Such calls have introduced new fault-lines, which were evident in our discussion threads:

- On the one side stand those, particularly users from China, who advocate a national sovereignty approach to IP space allocation. Arguing that IP space distributed on a "first come, first served" basis could in future once again result in unfair allocations, they suggest a system by which a certain block of space is pre-allocated to national governments.
- Others on the forum, however, strongly disagreed with such a country-based approach. They spoke, for example, of the pitfalls of "centralized planning", and pointed out that in an era of global networking, the concept of national IP allocations flies in the face of technological and operational realities, and may risk the integrity of the Internet itself by compromising the global routability of IP address space (leading, as some have suggested, to a breakdown of the Internet as a single cohesive global network). Some concern was also expressed that national allocations could inhibit innovation and transnational cooperation, and may end by restricting civil liberties.

Overall, while this debate continues to evolve, it appears that governments are likely to take an increasing role in IPv6. China, Korea and Japan, for example, have launched a collaborative effort to enhance IPv6 network development. Many other governments in the region are similarly mindful that they missed the boat last time (i.e., with development of IPv4 infrastructures), and are determined not to be left out this time.

Recommendations on IP Address Management: While recognizing the perceived importance of national participation in IP address management, ORDIG recommends that central planning-type approaches be avoided. Overall, the emphasis should be on developing equitable and effective mechanisms for IPv6 allocations. In any such solutions, the operating integrity of the Internet as a single global network must be maintained, as necessary through consistent management of IP addresses globally. ORDIG also believes

that any mechanisms for greater national control over IP addresses need to include protections for civil liberties. In particular, government management of the IP space could be used to facilitate censorship, inhibit innovation, or prevent the deployment of new services, all outcomes that must be avoided.

C. Technical standards

As noted, governance of standards forms the "third leg"– after DNS and IP management – of the technical coordination of the Internet. Standards are essential because they facilitate interoperability and, thus, the spread of the network. They are also critical because they are increasingly seen as forms of control. Indeed, some commentators have characterized standards as themselves a form of governance, determining the limits of possibility on the network.

Issues involved

Standards encompass a wide range of issues. Perhaps the most important of these is the question of access to, and participation in, standards bodies. In the early days of the Internet, the Asia-Pacific region did not have sufficient capacity and opportunity to participate in the creation of standards. That situation has somewhat improved today, with a growing regional presence in standards-creating organizations.

However, as suggested by our survey results and by our various consultations, regional users still have concerns over access and participation. In particular, while participation is generally less of a problem for developing nation governments in inter-governmental bodies (e.g., at the ITU),[23] ORDIG has encountered concern over the rise of private standards bodies, e.g., the World Wide Web Consortium (W3C) and the Organization for the Advancement of Structured Information Standards (OASIS), which often require a fee, and are generally more closed. The Asia-Pacific presence also remains low in market-driven processes that result in *de facto* standards. Many of these standards emerge as a result of market power by large companies located in the West, and do not take account of Asia-Pacific interests.

In addition to formal participation, the Asia-Pacific region requires capacity building to participate in a substantive sense. This is a particular concern with regard to technical standards organizations, which often require a certain level of technical expertise and knowledge. Exclusion of regional voices is sometimes justified on the ground that uninformed participation reduces the efficiency of the standards-creation process. But the need for efficiency cannot be used as a reason to limit representation; the solution, rather, is in outreach efforts, education, and other capacity building measures.

Finally, in addition to the need for greater participation and capacity building, ORDIG has also encountered concern over the accessibility and cost of standard specifications. Many standard specifications (notably those at the IETF) are provided royalty free, but some bodies charge. In 2003, the International Organization for Standardization (ISO) announced plans to begin

[23] It should be noted, however, that other stakeholders, including civil society, are generally under-represented even in these groups.

collecting royalties for their standards. This stand was later revised, but it has led to a certain amount of concern, especially given the fact that the Internet makes extensive use of one ISO standard in particular (ISO 3166, which is the basis of the ccTLD space).

Recommendations on Technical Standards: ORDIG believes that all measures should be taken at the national and international levels to increase participation in the standards-creation process. Such measures should be supplemented by capacity-building steps to ensure that participation is substantive and meaningful, not merely procedural. In addition, standards bodies should ensure that their specifications are easily available to users and developers. In this regard, ORDIG notes and encourages the rise of Free and Open Source Software (FOSS): technical standards based on FOSS are an effective way to increase participation and representation in the standards process.

The content dimension

The content dimension is the one most directly experienced by users. It contains the applications and services through which users communicate, seek information, and perform e-commerce transactions. As with each of the other dimensions, a wide range of issues could be discussed. Here, we focus on two:

A. Content "pollution" – including spam, viruses, spyware and other forms of malware – which is emerging as perhaps the most serious governance issue today; and
B. The related issue of cybercrime, which includes online fraud, phishing, terrorism and other topics.

A. Content pollution: spam, viruses, spyware, and other malware

Technical coordination issues may garner the lion's share of attention in governance debates but, increasingly, the biggest problem concerns the proliferation of spam, viruses and other malware – issues that are sometimes grouped under the label of "pollution".

Asia-Pacific priorities

As Table 3 indicates, virus attacks, spam and online crime (see next section) were, by a fairly large margin, considered the most serious problems in the regional survey conducted by ORDIG. Indeed, 93 percent of respondents considered the need to develop solutions for virus attacks somewhat to very important, and the same percentage felt that way about spam. For both issues, concern was shared across development levels and countries, making them universal priorities in the region.

The concern is certainly not unfounded. Content pollution is a serious and growing problem around the world – by some estimates, 10 out of every 13 emails sent today are spam[24] – and

[24] Gelbstein, E. and J. Kurbalija, "Internet Governance: Issues, Actors and Divides", *Diplo*, p 62. Available at: http://www.diplomacy.edu/isl/ig/

Asia-Pacific is no exception. Recently, it was estimated that 15 percent of all global spam originates in South Korea (where the prevalence of always-on broadband has been exploited by hackers and virus writers), and 10 percent from China.[25] According to some studies,[26] China also hosts a disproportionately high portion (70 percent) of the websites referenced in spam.

These types of figures do not just reflect a nuisance. In a report for ORDIG, Suresh Ramasubramanian emphasizes the tremendous economic costs of spam.[27] Estimating the costs incurred by one large, Hong-Kong based ISP with over 40 million users, he calculates the monthly financial burden for bandwidth and storage used by spam as US$ 11,700; salary expenses for staff to manage spam problems are an additional US$ 75,000 per year.[28] Such costs, it should be added, are particularly burdensome for those countries and users that can least afford it: bandwidth-starved nations (particularly landlocked countries and the Pacific Island States) suffer disproportionately from the clogging of their networks that arises as a result of spam.

Issues involved

Spam has proven an elusive foe, and for good reason: the Internet's open architecture – its principles of end-to-end connectivity and "dumb" packets – are designed specifically to maximize openness and ease of access, and to minimize central administration.[29] On the Internet, there are few gatekeepers, and this makes it very difficult to control the flow of "polluting" content.

Legal Measures: Certain legal measures are, of course, possible, and several States in the region have taken steps (albeit with varying degrees of success). For example, Australia, Japan and South Korea already have advanced anti-spam policies in place, and several other countries are currently drafting laws. In 2002, South Korea (the second largest originator of spam after the United States) tightened its email laws, with the result that the percentage of commercial emails represented by spam fell from 90 percent to 70 percent in a three-month period.[30]

Maintain Openness: While such laws are necessary and should be part of any global Internet governance agenda, a certain degree of caution is in order. The Internet's open architecture may make it easier to send spam, but it also accounts for the network's success. Laws and policies that tighten the flow of information could deal a serious blow to the network; solutions therefore need to be developed carefully, taking into account the need to balance openness with control. For example, it is quite common for ISPs to block large swathes of IP space in the

[25] The leading source of spam remains the US, which accounts for 42 percent of the total worldwide.
[26] http://www.sophos.com/spaminfo/articles/dirtydozen.html
[27] Ramasubramanian, S. (2005), "Spam Issues in the Asia-Pacific Region," UNDP-APDIP, Bangkok.
[28] Such figures, it should be noted, do not take into account a range of ancillary expenses, and as such should be considered conservative. In addition, the costs are for filtering spam on one mail server cluster (the company in question has several such clusters around the world). While these costs are based on an extremely large user-base, their scale serves to highlight the problem that most ISPs around the world face on a smaller scale.
[29] In this sense, the proliferation of content pollution should not be seen as a network failure, but rather as a reflection of trends in society.
[30] Williams, M. (2003), "Spam falls after South Korea strengthens email law," *PC World Malta*, 16 September. Available at: http://www.pcworldmalta.com/news/2003/Sep/161.htm

Asia-Pacific region, in an attempt to stop spam. While spam filtering and blocking IP space may be necessary to protect customers, ISPs and block list operators must apply conservative blocks to avoid unnecessary rejection of valid traffic, and to unblock when the issues have been resolved.[31] In addition, State attempts to restrict content pollution can easily develop into censorship – it would be a pity indeed if efforts to limit spam ended by limiting legitimate free speech.

Innovative Solutions: For such reasons, more innovative solutions are required to address the problem of content pollution and to supplement law. Technology may itself offer some responses: private companies like Yahoo! and Microsoft, as well as several independent technologists, have been working together to develop technical measures to determine sender authentication and reputation.

More generally, spam requires a truly multi-stakeholder approach to governance, one that includes national governments, the private sector, individual consumers, and non-profit (e.g., consumer) groups. In particular, well-educated and informed users can help substantially in reducing the harms that arise as a result of pollution, and policy makers should take steps to increase user awareness of the issues involved.

International Cooperation: Finally, as in many areas of Internet governance, an increasing degree of cooperation and coordination is also required. Spam is a global problem that transcends borders, and regional organizations like APEC as well as the ITU with input from ISPs, should work together to help combat it. Recent regional initiatives include the Seoul-Melbourne Multilateral Memorandum of Understanding (MoU), a multi-stakeholder MoU that includes signatories from Australia, China, the Philippines, Malaysia, Japan, Thailand, New Zealand and Taiwan. In addition, in February 2005, an agreement was signed between the EU and 13 Asian countries, including China, South Korea and Japan. There is also some discussion regarding the possibility of a global MoU on the issue, perhaps under the auspices of the WSIS, although certain differences exist between developing countries and developed nations.

Recommendations on Content Pollution: ORDIG supports the use of law to limit Internet pollution, but believes that legal measures alone cannot solve the problem: they must be supplemented by technology, user education and other mechanisms. In addition, ORDIG strongly believes that attempts to limit spam and other unwanted content should take great care not to infringe on freedom of expression or other civil liberties. Finally, ORDIG notes that the problem is global in scope, and thus requires a global solution; recent international efforts to improve coordination and harmonization should be carried forward, with the ultimate goal of developing a global and consensus-based approach to combating unwanted content.

[31] It should be noted that operators of blocklists such as Spamhaus have provided important input into the global Internet governance process (e.g., at the ITU/WSIS thematic meetings), and their operations should not be treated as hostile to ISPs. Rather, they are an essential – and, for the moment, required – tool in the battle against spam.

B. Cybercrime

Asia-Pacific priorities

Like content pollution, online crime – which includes a range of activities from terrorism to pornography to financial fraud –has recently emerged as a major concern. As noted, survey respondents listed online fraud and cybercrime alongside viruses and spam as their major concerns on the Internet. In fact, with 94 percent of respondents registering dissatisfaction on the issue, cybercrime topped the list of issues requiring solutions; illegal content stood at 82 percent.

Once again, the concerns of survey respondents are well-founded. For some years now, Asia-Pacific has seen a regular spate of cyber-attacks and hacking attempts, and financial fraud and other forms of crime are also a regular feature of the Internet landscape in the region. Much of this crime has had a nationalistic flavour, reflecting political tensions. For example, Chinese users' attempts to hack into Japanese and Taiwanese websites have coincided with negotiations over disputed territories; and, as Salman Ansari points out in a paper for ORDIG, the region has also witnessed several instances of Pakistani and Indian cybercriminals hacking across their disputed borders.[32]

Issues involved

Cybercrime is a complex topic, involving a range of issues. Three in particular that ORDIG has repeatedly encountered include:

Legal Measures and Limitations: As with content pollution, legal measures may have only limited success in checking cybercrime – and, also as with content pollution, any measures that are employed need to tread a delicate balance between maintaining openness and imposing control. Many countries in the region do now have statutes on the books that try to address cybercrime. Some of these – e.g., in Japan and Australia – are generally well drafted. Others are often thinly veiled justifications for the State's political or ideological aims. For example, participants in the discussion forum argued that some countries use filters designed for pornography also to filter out politically sensitive sites. In addition, a number of countries have detained users for postings that were political, rather than criminal, in nature. A report issued in 2004 by Reporters without Borders, *Internet Under Surveillance*, highlighted the danger of governments advancing their political aims by censoring the Internet.[33] The report cited a number of regional examples.

Innovative Solutions: Fortunately, less repressive methods exist to limit online crime. The Computer Emergency Response Team (CERT) model, in particular, has proven to be an effective, international and multi-stakeholder way of limiting network attacks. Although the number of CERTs in Asia-Pacific is still too low, regional CERTs and other incident response groups have been working together to coordinate responses to criminal incidents. In addition, efforts are

[32] Ansari, S. (2005), "Network Stability and Security: Emerging Policy Responses and Future Strategies," UNDP-APDIP, Bangkok.

[33] The report is available at: http://www.rsf.org/rubrique.php3?id_rubrique=433

underway under the aegis of APEC to provide the training and expertise that would help build capacity to fight cybercrime in the region. Network vulnerabilities can also be reduced by using the right technologies and, in particular, open source software, which has proven more stable and less likely to be attacked.

A further issue that draws attention to the need for more innovative solutions is the extent to which ISPs and other service providers should be held liable for illicit traffic that passes through their networks. In late 2004, Indian cyberlaw made headlines when the authorities arrested the head of eBay India, Avnish Bajaj, for a pornographic video that had been sold on the company's auction site (despite the fact that the posting of the video violated the user terms of service provided by the company). Although Bajaj was subsequently released on bail, the case generated a fair amount of discussion on our forums, in particular regarding the potential of more innovative measures.

Some participants argued that Bajaj's arrest points to the need to establish "safe harbours" that would allow providers to run their businesses without fear of undue government intervention. Instead of government control, forum participants suggested that a certain amount of self-regulation, implemented through codes of conduct, could help ensure that ISPs do everything possible to limit illicit traffic on their networks. The broader point is that non-traditional methods like self-regulation, wider adoption of open source, and collaboratives like CERT, may ultimately be as effective as law in facilitating governance solutions at the content dimension.

Cultural Diversity: Finally, while cybercrime is an international problem requiring international solutions, it is also important to acknowledge the variations in national and regional definitions of crime. In a paper commissioned by ORDIG, Danny Butt points out that international cybercrime conventions pose the danger of globalizing particular definitions of crime, in the process neglecting that each country has a legal system which is in some ways culturally specific.[34] Governments frequently "borrow" cybercrime legislation from other countries; it is important that they use such model legislation judiciously, paying close attention to their own particular needs.

Recommendations on Cybercrime: As with content pollution, ORDIG recognizes the need for legal solutions to combat cybercrime, but believes such solutions should be implemented with strong protections for civil liberties. ORDIG also supports the use of regional multi-stakeholder collaboratives, and other innovative mechanisms (e.g., self-regulation and codes of conduct), to combat cybercrime. Finally, ORDIG strongly supports the need to ensure that definitions of criminality are culturally and regionally sensitive.

The social and developmental dimension

The Internet is a complex and multidimensional network that touches all aspects of our lives. Its governance affects not just the technology embedded in the network, but a variety of issues

[34] Butt, D. (2005), "Cultural Diversity in Cyberspace: Preservation and Development of Minority Culture Content," UNDP-APDIP, Bangkok.

important to global culture, society, and economy. All these issues are important, but they cannot be comprehensively dealt with here. This section focuses on two topics that have repeatedly arisen in ORDIG's work, and that have emerged as key regional priorities. These include:

A. Cultural diversity, with a focus on localized software and local content; and
B. Participation, supplemented with capacity building.

A. Cultural diversity

Asia-Pacific priorities

Despite the fact that the Internet is a global network, its addressing system and content remain highly localized. All domain names continue to be in ASCII characters, and, by some estimates, up to 80 percent of websites are still in English.[35] This monolingualism poses serious challenges to access in the region. It also challenges cultural diversity. For a culture, having a presence on the Internet today is critical to survival; it ensures a foothold and an audience in a rapidly globalizing world.[36]

These issues are particularly important in the Asia-Pacific region. With hundreds of languages and cultures represented, the region would be ill-served by a global network that is unresponsive to local issues. These concerns are registered in ORDIG's survey. Overall, 53 percent of respondents registered dissatisfaction with the availability of local language software, and 52 percent with the availability of local content. These figures are more striking when broken down by development level: fully 68 percent of low-HDI countries are dissatisfied when it comes to local software, and 66 percent when it comes to local content. Overall, low-HDI countries express more dissatisfaction on these issues than on any others included in the survey. In addition, the dissatisfaction expressed over IDNs (see above) is another indication of regional concerns over the lack of cultural diversity of the Internet.

Issues involved

Broadly, the issues of monolingualism and cultural diversity on the Internet can be divided into two topics – software localization, and content localization.

Software Localization: Software localization refers to the practice of translating or otherwise adapting user interfaces for specific locations. In certain cases, it can also require modifying certain forms of content (e.g., dates or measures).

Localized software offers many of the same benefits, and poses many of the same challenges, as IDNs: it can increase access, and enhance the presence of minority cultures on the Internet.

[35] http://www.simulconference.com/clients/sowf/dispatches/dispatch2.html
[36] In its *Declaration of Principles*, the WSIS recognizes the importance of multi-culturalism on the Internet, stating that: "The Information Society should be founded on and stimulate respect for cultural identity, cultural and linguistic diversity, traditions and religions, and foster dialogue among cultures and civilizations" (A.8.52 at http://www.itu.int/wsis/docs/geneva/official/dop.html).

The underlying difficulties remain those of standardization, and of achieving consensus and collaboration between diverse cultural representatives within a given region. The scope for localization can also depend on whether the software was originally designed with global users in mind – e.g., when developers separate the program code from textual information, it becomes easier to adapt software.

Localization also poses a unique challenge that is not raised by IDNs: the difficulty and high cost of adapting proprietary software. Western companies that own the intellectual property on commonly used applications frequently have little incentive or interest to localize software for smaller regional markets. This challenge accounts for the growing regional interest in FOSS, which is far easier to localize and adapt to a specific nation's or community's needs. APDIP's primers on FOSS, as well as a special initiative dubbed the International Open Source Network (IOSN), contain a considerable amount of information on the relationship between FOSS and localization.[37] In addition, a recent primer is dedicated specifically to the topic of FOSS and localization. It discusses a number of case studies from the region, showing how FOSS has been used to produce localized software in several regional countries. FOSS offers particular promise for use in government agencies, which can quickly (and cheaply) adapt software to meet provincial and community needs.

Content Localization: Content markets are today dominated by large providers, many of which are based in the West. The methods that these providers use to generate "mind-share" are often expensive (such as advertising), or require integration with other content forms (e.g., television producers can make popular web sites around "event programming"). In the case of community-oriented sites that provide services such as discussions, classifieds, recommendations, reviews, or auctions, the very nature of the genre means that the largest sites are the most useful to end users.

This self-perpetuating cycle, in which the largest content providers steadily increase "mind-share", poses a severe threat to cultures that are unable to make the requisite investments or keep up technically. It leads to a gradual erosion of minority culture presence on the Internet, and also to a decline in the capacity of cultures to take part in the global economy and benefit from technical innovation. Where exceptions exist, they are generally the result of well-developed internal markets, or of support for content that is uniquely suited to local needs. Throughout the region, grassroots content generation has been fostered by aid agencies and civil society. These efforts, however, often remain highly localized and dependent on aid; there is a need to develop scalable and self-sustaining solutions. This, in turn, will require collaboration and cooperation between civil society and local business; in addition, governments may need to provide support for content generation, at least until viability has been achieved.

Another issue raised by local content concerns the need to preserve indigenous intellectual property rights. It is important to remember that local knowledge placed on the Internet can be viewed and used by users anywhere in the world. This may conflict with indigenous cultural systems that specify who can access particular knowledge and under what conditions. As Robert

[37] For general information, see www.iosn.net. The following page is dedicated specifically to links on FOSS and localization: http://www.iosn.net/l10n

Sullivan notes, the lack of an effective identity authentication model and protections against copying are significant issues for indigenous groups in placing their cultural material on the Internet.[38] Increasing attention is given to the needs of multinational corporations in protection of their intellectual property online, but a truly inclusive medium would also manage intellectual property in a way that is responsive to the needs of local communities.

Recommendations on Cultural Diversity: The effects of governance on cultural diversity and minority culture must be carefully considered. Steps should be taken to enhance localization of software as well as the development of local content. FOSS offers great promise for the former. Developing local content, however, may require financial support and other forms of capacity building from governments and civil society. Asia-Pacific nations should critically assess their implication in intellectual property regimes and ensure they are responsive to local needs. Where critical discussion on these issues is lacking, there may be a need to convene multi-stakeholder dialogue to raise awareness.

Participation

Asia-Pacific priorities

Participation has emergedas a key and cross-cutting issue on the agenda of global Internet governance in recent years. The outcomes of many of the issues described above are directly affected by the extent to which Asia-Pacific or other regions are able to participate in decision-making processes.

This issue was first raised in the work of the G8 Digital Opportunity Task Force (DoT Force) in its Genoa Plan of Action in 2001, which called for strengthening the support for "universal participation in new international policy and technical issues raised by ICT and the Internet" and "to make special effort" to support "universal participation" from developing countries. A landmark 2002 study, *Louder Voices,* as a follow up of this G8 Plan of Action, found substantial under-representation by developing countries in ICT policy-making.[39] The study, produced by the Commonwealth Telecommunications Organization (CTO) and Panos, concluded that developing countries were particularly under-represented in technical standards bodies (e.g., W3C) and market-driven processes of standardization (which result in *de facto* monopoly standards). While Asia-Pacific has, in general, fared better than some developing countries, ORDIG has found substantial concern across the region and stakeholders that, despite some progress, the region remains under-represented in a variety of governance bodies. The fear is that a lack of participation will lead to decisions and outcomes that do not serve the regional interest.

Issues involved

Increasing participation begins with greater efforts by the organizations in question to include a wider range of stakeholders and representatives. This often requires institutional reform, or

[38] WIPO (2003), "Intellectual Property and Traditional Cultural Expressions/Folklore. Booklet No.1," Available at http://www.wipo.org/tk/en/publications/tce_ip.pdf

[39] MacLean, D. *et al.* (2003), "Louder Voices: Strengthening Developing Country Participation in International ICT Decision-Making," Commonwealth Telecommunications Organization & Panos, London.

changes in the way members and elected officials are selected. But formal participation is just a start: as discussed in the section on standards (above), it needs to be supplemented by a wide range of capacity building measures. These should include awareness-building and education to increase local knowledge of the issues; and the allocation of financial and other resources to ensure that policy makers from the region are able to attend and meaningfully participate in conferences and meetings around the world. Without such capacity building, participation will remain mainly procedural: Asia-Pacific countries will not be able to take part in governance decisions in a substantive and meaningful sense.

A further issue concerns the need to widen the list of stakeholders. Increasing participation does not simply mean increasing national representation. It also means increasing the opportunity of other under-represented groups and communities to have their voice heard. ORDIG has found considerable concern, for example, regarding the under-representation of women in international decision-making. In addition, certain categories of countries (notably landlocked countries and the Pacific Island Countries) have particular needs which are often unacknowledged in international fora. Finally, it is essential to ensure that participation is multisectoral: governments, civil society and the private sector all have important contributions to make.

The list of participants discussed here cannot possibly encompass every sub-group or sub-region. The important point, however, is to ensure that as wide a variety of stakeholders as possible is given a chance to participate – and participate in a meaningful sense. Only then can the process of Internet governance be truly inclusive and equitable.

Recommendations on Participation: Internet governance must include a wide variety of stakeholders in its decision-making and implementation processes. Stakeholders should include various regions, nations, and sectors; women should specifically be included given their under-representation in most areas of decision-making. The inclusion of all these stakeholders should be supplemented by capacity building measures to ensure that participation is meaningful and substantive. Forums and organizations working on Internet governance and ICT issues should make a special effort to bring representatives of developing nations into their discussions and decision-making processes.

Recommendations

The preceding discussion includes a number of policy recommendations, directed at specific governance topics. Those recommendations are most useful at a micro-level, as a way of addressing particular priorities in the region.

In this section, we present a list of somewhat broader recommendations, directed at more general processes of governance. These can be seen as a synthesis of the preceding discussion. They pull together issues that cut across topics and dimensions, allowing us to identify common themes and issues. Taken together, they represent a six-step actionable list of priorities to enhance Internet governance in the Asia-Pacific region. As the global discussion on governance moves forward, ORDIG believes these steps merit the highest consideration:

1. Subsidiarity: The Internet is a distributed network, and Internet governance should similarly be distributed, with its mechanisms and decision-making located as close as possible to the issues or problems that are being addressed. While some issues require global or regional coordination, many others (notably IDNs, ccTLDs, and localized content and software) demand local input, and are best designed with the participation of those most directly affected. It is therefore vital to design mechanisms and structures that include representation from the national level, as well as from grassroots and other local communities.

2. Governments Have a Role: National governments have a vital facilitating and enabling role to play in Internet governance. Governments can set up an efficient market environment, establish and monitor broad competition principles, and ensure that the benefits of the network are equitably maximized. A liberal market environment, nurtured by the government, is often important in lowering access costs and encouraging innovation. Governments should also encourage the development of comprehensive national ICT agendas to optimize resources and ensure coordinated participation in national and international governance processes.

3. Multi-stakeholder Participation is Required: Internet governance is a broad-ranging process that affects, and frequently requires, collaboration between a variety of actors. Governance mechanisms should therefore include all affected stakeholders in the processes of decision-making and implementation. Such multi-stakeholder participation, which would include actors from the private sector, government and civil society, is essential for successful governance on a range of issues, including content pollution, ccTLDs, and standards.

4. Preserve Cultural Diversity: Bodies responsible for international Internet governance functions should reflect the priorities of all affected cultures in their operations. They should ensure an effective voice for all cultures in the deliberations and decision-making processes of these bodies. Such representation will facilitate the development of local content in local languages, help implement IDNs, and ensure that cybercrime is confronted in an effective and culturally appropriate manner.

5. Enhance Participation with Capacity Building: Multi-stakeholder participation is most meaningful when supplemented by capacity- and awareness-building measures. Governance topics (for example, standards) are frequently complex and require technical knowledge and other forms of expertise. In order to participate in a substantial sense, stakeholders need information, knowledge, resources, and the opportunity to participate.

6. Supplement Law with Other Tools: Law and regulation are not the only tools available for Internet governance. On a variety of issues (e.g., cybercrime, content pollution and localized software), these traditional tools should be supplemented by a variety of innovative mechanisms, including codes of conduct, self-regulatory mechanisms, and international, multi-stakeholder collaboratives. In addition, technology itself can play an enabling role in achieving governance goals. FOSS, in particular, can help increase participation and network stability, and facilitate the development of local content and localized software.

Conclusion: The way forward

These six recommendations, it should be clear, do not constitute a comprehensive list. A full list of recommendations is available in the accompanying policy brief[40] , and includes both the particular recommendations made throughout the text, and the six Working Principles established at the start of this document. Taken together, these constitute a multi-stakeholder- and participation-driven framework for effective Internet governance in the Asia-Pacific region.

In conclusion, it is important to note that the framework is likely to evolve over time: as we stated at the outset, the discussion here represents only a snapshot of priorities at a particular –if particularly important – moment in the history of Internet governance. It is our belief that the WSIS summit in Tunis represents not the conclusion of a process, but rather a milestone on an ongoing discussion that will no doubt change over time. As that discussion continues, it is essential that Internet governance remain as open and participatory as possible, encompassing the views and priorities of all stakeholders, regions and communities of the world.

This chapter represents ORDIG's commitment to ensuring a voice for the Asia-Pacific region in that continuing discussion. In the coming months and years, we will continue listening, and we will solicit views and opinions on an ongoing basis. ORDIG is also planning to develop a range of tools to enhance capacity building, particularly among policy makers in the region. All these efforts will not only enhance governance for the Asia-Pacific, by increasing the inclusiveness and representativeness of Internet governance in general, they will strengthen the process itself, ensuring that the network continues to grow in a manner that is equitable, human-centred and development-oriented.

[40] See http://www.igov.apdip.net/ORDIG_Policy_Brief.pdf for the complete document.

Chapter Four

Internet Governance and Socio-cultural Inclusion

– Danny Butt and Norbert Klein

It is commonplace in the cultural development sphere to work with imprecise definitions of culture. After all, what we call culture is very broad, and embodies the most basic and often mysterious processes of communication and cohabitation. Cultures are not easily reducible to rules, and many cultures actively resist such codification. Still, we can identify certain uses of the word culture that are important and interrelated. Firstly, the formal aspects of culture are defined by UNESCO's Universal Declaration on Cultural Diversity:

> "culture should be regarded as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs."[41]

When we think of "other cultures", we usually have this kind of definition in mind – we think of those who might speak a different language, or have different spiritual or religious practices. But we also use "culture" in a looser sense, when we speak of an "organizational culture". Where these two definitions overlap is in the practical operation of governance, where the dynamics of power and who is able to have their opinions recognized relies heavily on our shared cultural assumptions.

While this chapter does not pretend to exhaust all the interrelationships between Internet governance and cultural diversity, it does attempt to identify some of the key points of "cultural tension" in Internet governance discussions, and suggest how cultural diversity may be affected. Particular attention is paid to IDNs and software localization. The chapter finishes with conclusions and recommendations for future activities toward developing cultural diversity in the Internet environment.

[41] UNESCO. 2002. UNESCO Universal Declaration on Cultural Diversity. Available http://unesdoc.unesco.org/images/0012/001271/127160m.pdf. Accessed 20 March 2005. p.13.

Defining culture

This report takes its definition of cultural diversity from the UNESCO Universal Declaration on Cultural Diversity, that

> "culture should be regarded as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs."[42]

The relationships that affect culture cannot easily become the sole responsibility of individual government departments or organizations. Most importantly, culture is not synonymous with the nation-state. While nation-states are responsible for many aspects of cultural development and preservation, the experiences of Indigenous peoples, in particular, have highlighted the dangers of cultural nationalism. In this respect, the Internet has played an important role, led by NGO movements, in facilitating dialogue between cultural groups outside of the nation-state mechanism.

Indeed, this is particularly true in the Asia-Pacific, many of whose member-states encompass a diversity of cultures with large diasporic interconnections. Our "ways of living together" are mediated through the technical architectures of online interactions, from the secure transaction services that diaspora use to wire money home, to cultural and political associations who use online forums to collaborate and organize. While culture and technological development concerns may have different organizational priorities, they are not separate. Technology itself enables new cultural forms, and every culture also has a characteristic use of technology.

The last important factor is that cultures – "ways of living together" – are always changing. Culture is not merely a static object in the way a painting is, even though a painting may be

[42] UNESCO. 2002.ibid.
The international instruments supporting cultural diversity are still in the early stages of development. UNESCO has developed a draft Convention on the Protection of the Diversity of Cultural Contents and Artistic Expressions with the objectives to:

- protect and promote the diversity of cultural contents and expressions and to foster intercultural respect;
- give recognition to the distinctive nature of cultural goods and services as vehicles of identity, values and meaning;
- reaffirm the sovereign rights of States to maintain, adopt and implement policies and measures that they deem appropriate for the protection and promotion of the diversity of cultural expressions on their territory;
- create the conditions for cultures to flourish and to freely interact in a mutually beneficial manner.
- encourage dialogue among cultures with a view to ensuring wider and balanced cultural exchanges in the world in favour of a culture of peace;
- foster respect for the diversity of cultural expressions and raise awareness of its value at the local, national and global levels;
- strengthen international cooperation and solidarity in a spirit of partnership with a view, in particular, to fostering the capacities of developing countries to protect and promote the diversity of cultural expressions;
- reaffirm the importance of the link between culture and development for all countries, particularly for developing countries, and to support actions undertaken nationally and internationally to secure recognition of its true value; and
- foster interculturality in order to develop cultural interaction with the spirit of building bridges among peoples."

While the convention is still in draft status, and does not critique the primary instruments of cultural domination raised by Internet governance mechanisms (such as Intellectual Property Regimes [IPRs]), it nevertheless provides a widely recognized set of cultural diversity objectives that guide investigations in this chapter.

considered a cultural treasure. Culture is the significance that is attached to our ways of life. Our approach to cultural diversity is not just one of preservation, but creating environments where cultures thrive, transform, and evolve. We cannot predict the way a given culture will use Internet technologies, so cultures must be supported to develop their own approaches to the technology. It is this approach to technology which is "cultural" as much as any of the "content" presented via technological means. These approaches will, in turn, shape the technology itself. New media present limitless opportunities for new cultural developments, yet they will also be connected to established norms and ways of life. As Moran and Hawisher suggest, new media are 'new' in the way that we say a child is new:

> "The child, in some lights and at some moments, looks very much like her mother; in other lights and other moments, she resembles her father, and sometimes she even reminds you of a grandparent...the e-child is still young and other genes and influences are still waiting for the proper conditions for their expression. The e-child has been, and will be, shaped by her cultural contexts, and as an agent she will shape the culture that she joins."[43]

There is a real danger that promotion of the Internet without attention to cultural inclusion will exacerbate the dominance of existing perspectives. In background research for ORDIG, Fuatai Purcell found that most small and medium sized enterprises (SMEs) with a website in Samoa are owned by people who used to live overseas or a local person married to a foreign-born resident. Most locally owned SMEs uses the Internet only for email. When asked why they did not have a website, they explained that they could not afford the cost of building a website. It can be argued that the lack of awareness of the benefits of e-commerce by locally owned SMEs, high cost of Internet access and web building, and the skills to manage the websites effectively are the main reasons why locally owned SMEs are not adopting fully integrated e-commerce in Samoa. This is evident in the number of locally operated tourist ventures with websites that are owned by one or more partners from overseas, who bring in the money for establishing such ventures.

The impact of Internet governance on cultural diversity

Even the topics considered under a "narrow" conception of Internet governance, focusing on the issues of ICANN, IETF, and root servers will have a significant impact on the cultures within the region. For historical reasons, the various bodies usually associated with Internet governance (ICANN, IETF, ISOC) have been dominated by participants from English-speaking North America and Europe. While these bodies market their inclusivity and openness – particularly ICANN who advertise the number of languages spoken on their Board – they nevertheless fail to reflect the diversity of the users of the Internet within key positions of power, and this has significant effects on their decision-making capacity in areas which affect primarily non-English speaking users, such as IDNs, where little progress has been made on a viable and scalable implementation.

[43] Moran, C. and Hawisher, G.E., 1998, The rhetorics and languages of electronic mail. In: I. Snyder (Ed.), *Page to Screen: Taking Literacy into the Electronic Era*. Routledge, London and New York, pp. 80-101.

Cultural effects of decisions by these bodies would include:

- The ability to use domain names within particular languages. In the literature on Internet economy, for example, a domain name is carefully selected as a branding device, communicating not just a unique location on the Internet, like a phone number, but a whole range of psychological associations in relation to organizations[44] . Domain names are bought and sold for large amounts of money because they are, ultimately, meaningful. In this way, the internationalization of domain names is a cultural issue. There remain serious problems with both the ability of the DNS system to handle non-roman domain names, as well as inadequate procedures to facilitate this occurring. Adam Peake notes that the introduction of a fully internationalised system will "require cooperation between countries and country code domain name operators, particularly between countries of the same language group. Internationalized top-level domain names will require new governance structures and policy development processes that are representative of the language groups they will serve."[45]
- The culturally-specific nature of the available domain names, particularly top-level domains, whose registration requirements may require users to regulate their activities in ways that have cultural implications. This is particularly notable in relation to the newly added top-level domains such as .jobs and .travel. A typical narrow view of domains treats them as essentially a technical question of putting a zone file into the root. However, as Wolfgang Kleinwächter has pointed out, creating a new domain is like the creation of "new territory in cyberspace" and has unavoidable economic, political, and cultural implications.[46] The decisions of "what new territories to create, and which are the guidelines that will apply to them" will structure ways of life in terms of how online interactions take place. While this is unavoidable, it becomes a serious developmental issue when these decisions are made without global representation. It is also notable that some countries such as Tuvalu (.tv) and Niue (.nu) market their domain names almost exclusively as gTLD names like .com and .info.
- The Uniform Domain Name Dispute Resolution Policy and Rules (UDRP) on domain names has been developed in collaboration with the WIPO, a policy which has been seen to foreground the commercial rights of corporations over the cultural rights of individuals. The interrelationships here are highly complex. As the Global Knowledge Partnership's summary points out, "WIPO treaties on circumvention of copyright protection may not mesh with UNESCO-supported norms regarding the promotion of science and culture. […] Some are concerned that arbitration extends precedent-based law globally and gradually suppresses other national legal systems. In the case of commercial law, this might prove to be more acceptable, given the already high level of unification of substantive rules. However, it would be a more delicate proposition when it came to content and socio-cultural aspects, where a national legal

[44] Murphy, J., Raffa, L. and Mizerski, R. (2003) "The Use of Domain Names in e-Branding by the World's Top Brands," *Electronic Markets*, 13(3): 222-232.

[45] Peake, Adam (2004) Internet governance and the World Summit on the Information Society (WSIS). Report for Association of Progressive Communications, http://rights.apc.org/documents/governance.pdf. Accessed 27 March 2005.

[46] Kleinwächter, W. 2005. Beyond ICANN vs. ITU? How WSIS tries to enter the new territory of Internet Governance. http://www.unicttaskforce.org/perl/documents.pl?id=1294. Accessed 27 March 2005.

system reflects specific cultural content."[47] This is particularly the case where free speech and critical commentary are seen as core cultural values that may be adversely affected by restrictive international policies.

- The ability of one nation-state's government (the United States) to unilaterally introduce changes to the root DNS file, which could potentially affect access to all ccTLDs, with significant cultural impacts. While, as Adam Peake points out, the US Government is unlikely to exercise this authority, it nevertheless affects the governance of individual ccTLDs, as well as prevents a truly international governance regime.[48]
- ICANN policies regarding access to contact data about domain name registrants through the WHOIS system conflicts with some widely accepted international norms regarding privacy and some national laws. All cultures have some level of privacy protection or other constraints on the circulation of private information in a public context.
- Security issues require cross-border initiatives that lead to the globalization of particular model laws, which have an impact on the diverse forms of behaviour that might be considered allowable in different cultures.

Broad governance questions

As previously suggested, the broader questions of Internet governance promoted by less-developed countries and civil society groups are deeply intertwined with issues of cultural diversity. The ability of governance to be effective is strongly constrained by access to the cultural, social and economic resources necessary for participating in it, and this is easily lost sight of by those who have the resources. As Sally Burch of the Latin American Information Agency (ALAI) suggests:

> "There is nonetheless some concern among civil society actors that the heated nature of debate around the control and regulatory aspects of Internet governance, such as those mentioned above [ICANN issues] and issues such as cybercrime and spam, are tending to overshadow the broader but very necessary discussions on the more enabling and social aspects of Internet governance."[49]

A summary of the issues at stake, not "purely of the Internet" but transformed by it, would include:

Supporting effective use of information via the Internet

The emergence of the Internet also affects those who are not online, as resources are diverted from offline to online structures. The question becomes how to involve in Internet governance

[47] Gelbstein, E. and Kurbalija, J. 2005. Internet Governance: Issues, Actors and Divides. Global Knowledge Partnership & DiploFoundation http://www.globalknowledge.org/gkps_portal/index.cfm?menuid=483&parentid=179. Accessed 20 March 2005. p.79.
[48] Peake, ibid., p. 10.
[49] Association for Progressive Communications. 2005. World Summit on the Information Society: A very long road. http://www.apc.org/english/news/index.shtml?x=31093. Accessed 30 March 2005.

those who are not on the Internet but are nevertheless impacted by its effects. For this reason, the digital divide has emerged as a key issue in relationship to a broader conception of Internet governance during WSIS. The issues of access and interconnectivity are covered in Chapter Five. However, the divide is not always a simple one, as Mark Warschauer has pointed out:

> "Access to ICT is embedded in a complex array of factors encompassing physical, digital, human, and social resources and relationships. Content and language, literacy and education, and community and institutional structures must all be taken into account if meaningful access to new technologies is to be provided."[50]

One of the most significant issues is the text-dominated content of the Internet, which prevents users without print literacy from engaging with Internet content and services. This has a particularly significant impact on oral cultures, which cannot make use of the text Internet, but may have other ways of circulating information that could anticipate the audio-visual future of networked media. How to foster participation by oral cultures is potentially important for their survival as well as for innovation within the Internet system.[51] Oral cultures are generally the least able to afford information technologies. However, the media convergence fostered by technologies such as VoIP potentially provide an important context for non-text based interactions within and between cultures on the Internet.

At the user level, ongoing support is a particularly difficult area for the least developed countries. In some cases, cell phones have the potential to address some of these issues, as they are relatively cheap and low maintenance. The potential delivery of Internet-like services through the phone system is illustrated by innovative telemedicine projects in the Philippines. "One service allows a subscriber to post a casual question through Short Message Service (SMS). A real doctor replies via SMS. The other service has a software back-end that can instantly answer inquiries about description, symptoms and home remedies of a variety of ailments"[52] . These projects highlight the importance of thinking flexibly about delivery platforms of electronic content, as what we now understand to be a relatively computer-based Internet may soon include a host of other devices and ways of accessing content.

Linguistic diversity

UNESCO states that language is "not only a tool for communication and knowledge but also a fundamental attribute of cultural identity and empowerment, both for the individual and the group."[53]

For many cultures, even where there are large populations, and languages are officially

[50] Warschauer, M. 2002. Reconceptualizing the Digital Divide. *First Monday*, 7(7).
[51] This point is made by Eric Michaels with respect to video in Michaels, E. 1994. *Bad Aboriginal art: tradition, media and technological horizons*, Minnesota University Press, Minnesota.
[52] Lallana, E. 2003, 'Philippines Chapter', In (Ed, Saik Yoon, C.), *Digital Review of Asia Pacific* UNESCO Chairs in Communications (ORBICOM), International Development Resource Centre (IRDC), Asia Pacific Development Information Programme (APDIP) of the United Nations Development Programme (UNDP), Ottawa.
[53] UNESCO. (2003). Education in a multilingual world. UNESCO Education Position Paper No. (ED-2003/WS/2). Paris. p9.

standardized, hardware and software which can make use of them may not be easily available. Language availability may also differ across many of the various technical components comprising the Internet experience (e.g. operating systems, HTML pages, applications and document formats). Some languages also cross national borders, making coordination of policy difficult.

Development of local software and local language content is the most basic and urgent priority for cultural diversity, as language constitutes the very basis for what we understand to be culture. The number of languages spoken in the world is estimated at between 6,000 and 7,000, and a vast number of these are located in the Asia-Pacific nation-states (Table 5). For example, Indonesia has over 700 languages, and Papua New Guinea has over 800 languages. Over 200 languages are spoken in the Pacific region.[54] As UNESCO note, "the actual distribution of linguistic diversity is uneven. Over 70 percent of all languages in the world are found in just 20 nation-states."[55]

The burden of preservation of these languages currently falls primarily on these less-developed

Table 5: *Living languages in various Asia-Pacific countries/regions*

Country	Languages	Indigenous Languages	Country	Languages	Indigenous Languages
Afghanistan	51	47	Micronesia	19	18
American Samoa	6	2	Myanmar	113	108
Australia	275	231	Nauru	9	3
Bangladesh	46	39	Nepal	125	123
Bhutan	31	24	New Caledonia	41	39
Cambodia	24	21	New Zealand	21	3
China	241	235	Niue	3	2
Cook Islands	6	5	Pakistan	77	72
Fiji	20	10	Palau	5	4
French Polynesia	11	9	Papua New Guinea	820	820
Guam	8	2	Philippines	180	171
India	427	415	Samoa	2	2
Indonesia	742	737	Singapore	30	21
Iran	79	75	Solomon Islands	70	70
Iraq	25	21	Sri Lanka	7	7
Japan	16	15	Taiwan	27	22
Kiribati	3	2	Thailand	83	74
Korea, North	1	1	Timor-Leste	19	19
Korea, South	4	2	Tokelau	2	2
Lao PDR	86	82	Tonga	3	3
Malaysia	147	140	Tuvalu	2	2
Maldives	2	1	Vanuatu	115	109
Marshall Islands	2	2	Viet Nam	104	102

Source: Ethnologue[56]

[54] Landbeck and Mugler, 2000.
[55] UNESCO, ibid. p.9.
[56] Gordon, Raymond G., Jr. (ed.), 2005. *Ethnologue: Languages of the World*, 15th edition. Dallas, Tex.: SIL International. Online version: http://www.ethnologue.com/

nation-states in the Asia-Pacific, but their loss would be for all humanity. More than just the languages themselves, the forms of Internet communication that are developed by particular language groups form part of the diversity of online communication, and provide the base of innovation that has the potential to transform this young medium.

Two of the most significant linguistic issues related to Internet governance are software localization, and, as a subset of this issue, IDNs. These are covered in their own section later in this chapter.

Content development and control

The Internet is much more difficult to regulate than broadcast media, and this also applies to the content within it. Many governments are unhappy about the lack of content regulation usually applied to Internet content, and various strategies have been applied to automatically filter Internet content.[57] There are many serious human rights issues involved in the suppression of access to content that must be carefully balanced with legitimate needs to regulate the circulation of restricted materials in the public interest (e.g., controlling obscenity).

More challenging for public policy is the fostering of local content in ways that will allow for sustainable local content development. In the network economy, markets follow a "power law" creating a bimodal economy with a few large organizations and many small ones.[58] There is only a limited number of organizations that can hold a strong enough recognition among a wide variety of people to remain viable. The methods that content providers use to generate "mind-share" are often expensive (such as advertising), or require integration with other content forms (e.g., television producers can make popular sites around "event programming" – the most popular entertainment websites are aligned with traditional media products). In the case of community-oriented sites providing services such as discussions, classifieds, recommendations, reviews, or auctions; the very nature of the genre means that the largest sites are the most useful to end users. This poses a severe threat to minority culture efforts to provide their own versions of content services, as they will not be able to afford to invest in the technology and features that will allow them to keep pace with dominant "category killers"[59], even if they provide a distinctive cultural perspective. This creates a vicious cycle due to the negative effect on innovation, collective learning and human development in the minority culture.

However, many examples show that the domination of external multinationals is not a given if there were well-established local alternatives. New Zealand, a predominantly English-speaking country with a very similar industrial structure to Australia, has managed to escape the category killer eBay in the domain of online auctions. Trade Me has over 500,000 active customers and around 1,500 new users joining the site every day, and a growth of 979 percent. In 2004, there

[57] See for example the Berkman study on Internet Filtering in China: http://cyber.law.harvard.edu/filtering/china
[58] On the "power law" see Adamic, L., & Huberman, B. 1999. The Nature of Markets in the World Wide Web. Retrieved 12 November 2000, from ftp://parcftp.xerox.com/pub/dynamics/webmarkets.ps.gz; on "bimodal" economies see Bartos, O. J. 1996. Postmodernism, Postindustrialism, and the Future. *The Sociological Quarterly*, 37(2), 307-326.
[59] Chakrabarti, R. & Scholnick, B. 2001. "International expansion of e-retailers: Where the Amazon flows", *Thunderbird International Business Review,* 44(1), 85-104.

were 600,000 online auctions per month, with an average sale price of NZ$ 50. In the years 2003/4, Trade Me grew from seven employees to 28. The founder attributes some of its success to the "distinctive New Zealand culture" represented on Trade Me.[60] Meanwhile, US-based multinational eBay continues to dominate the Australian auction market as it does many others.

One of the most significant areas of tension surrounds the WTO's General Agreement on Trade and Services, and the available exemptions for government-provided services. If these are treated narrowly (as favoured by countries such as the US and UK), education may fall outside of these exemptions, forcing countries to open up their education markets to companies from other nations. In an age where e-learning continues to grow, it will become increasingly likely that large educational institutions will maximize their technical and organizational infrastructure to take a leading market position. Education has a central role in cultural development and care must be taken to ensure that "special case" provisions for trade liberalization in the electronic environment do not end up jeopardising cultural maintenance through formal education.

Technology and labour transfer via ICTs

While communications networks are often viewed in terms of what they "bring to" an area, it is also true that, like transportation networks, they allow resources to be "taken out".[61] The "brain drain" issues raised at WSIS are integral to the idea of the Internet as a "global network", and proactive steps need to be taken to ensure the benefits of the Internet are evenly distributed. According to Saskia Sassen, the distinctive way information facilitates dispersal of routine information activities and centralization of control activities explains the increasing dominance of cities in global economic activity, and this holds important lessons for ICT-related development.[62] If regions do not develop their own "control activities" they become mere markets of franchises for organizations which are controlled elsewhere. The most developed human capital in these market situations will invariably be attracted to locations where control and capital amass. As Christopher May has demonstrated, informational marketplaces are highly competitive and more subject to occupational 'task migration' than non-informational work.[63] In other words, jobs in the informational market are much more likely to be relocated to different physical locations. A "virtuous cycle" emerges for organizations and regions at the top of the ICT value chain, while it becomes increasingly difficult for dependent groups to accumulate capital.

This is not to say that participation in the international ICT-driven division of labour always leads to cultural domination. Economic relationships such as outsourcing, which form a large proportion of Internet-related income for Asia-Pacific nations, can also be a crucial source of market knowledge and skill development. Further, the rapid increase in service economy jobs in the East stems in part from a trend away from simple outsourcing toward mature and strategic relationships that share resources and knowledge between outsourcing partners.[64] However,

[60] Wellington City Council. 2004. Trade Me. http://www.wellington.govt.nz/innovation/details/trademe.html. Accessed 2 April 2005.
[61] Daniels, P. W. 1985. *Service Industries: a Geographical Appraisal*. London; New York: Methuen.
[62] Sassen, S. 1991. *The Global City: New York London and Tokyo* (Updated Edition 2000). Princeton: Princeton University.
[63] May, C. 2000. "Information Society, Task Mobility and the End of Work". *Futures*, (32), 399-416.

to maximize the benefits of these relationships an overall plan for knowledge retention is crucial.

Protection of traditional knowledge from inappropriate exploitation

While there are numerous Internet mechanisms for protection of unauthorized use of commercial trademarks, there are no such protections in place for traditional knowledge. Traditional knowledge generally has its own culturally-specific protocols for circulation and use, which may be deeply disrupted by the impersonal nature of content transfers on the Internet. "The so-called level playing field for international trade ensures that some goods – like genetic resources, materials, design, timber, textiles, techniques, know-how, practices and knowledge that are extracted from the "less developed countries" – flow freely, whereas others – genetically modified or industrially developed seeds, fertilizers, pesticides, software, medicines – do not flow freely in trade but are received only as monopolies that command lengthy requirements of rent payments for each and every usage of their informational content. The field is not a level one; those who merely provide resources or information (and resources whose "information" can be extracted through the technologies of others) that they cannot protect as works of intellectual property are at a profound disadvantage."[65]

Traditional Knowledge (TK) and Traditional Cultural Expressions (TCE) generally have very specific functions within the communities that maintain them, and they are often not intended for consumption by an anonymous "public". The lack of i) an effective identity authentication model, and ii) protections against copying are significant issues for indigenous groups in placing their cultural material on the Internet.[66] As Robert Sullivan notes, when considering the digitization of cultural material, the important questions for indigenous maintainers of knowledge are:

> How do we send a message that strengthens the holistic context of each cultural item and collection? How do we ensure that both indigenous and non-indigenous peoples receive the message? How do we digitize material taking into account its metaphysical as well as its digital life?

Sullivan also points out that "the challenge in building a successful indigenous digital library model is winning the trust of the people the library aims to serve. Trust is won through the governance and administration of the digital library, and the way that flow-on economic benefits are distributed to the people providing the content. For trust to exist, there must be a mutual ethic of reciprocity."[67] This ethic of reciprocity is not adequately addressed in either traditional intellectual property law, or alternative IP movements such as the *Creative Commons* or *General Public License*. These systems tend to posit a relatively anonymous content user;

[64] Greaver, Maurice II (1999). Strategic Outsourcing: A Structured Approach to Outsourcing Decisions and Initiatives. New York: AMACOM.
[65] Coombe, ibid., pp. 9-10.
[66] WIPO, 2003. Intellectual Property and Traditional Cultural Expressions/Folklore. Booklet No.1. http://www.wipo.org/tk/en/publications/tce_ip.pdf. Accessed 20 April 2005.
[67] Sullivan, R. 2002. "Indigenous Cultural and Intellectual Property Rights - A Digital Library Context" *D-Lib Magazine* 8(5) May 2002. http://www.dlib.org/dlib/may02/sullivan/05sullivan.html. Accessed 15 April 2005.

while, for example, indigenous Pacific cultures emphasize the location of knowledge. Knowledge and information is what Maori call *taonga tuku iho*, a gift from the ancestors to the present, with different obligations attached to its care and use for different people. It is not that these diverse relationships to knowledge cannot be encoded digitally or transferred remotely, but that the appropriate infrastructure does not yet exist to enable this cultural perspective. The prototyping of such online systems remains a promising opportunity for fostering cultural diversity by considering a much broader spectrum of questions with respect to intellectual property and content control.

Intellectual property regimes, copyright and trademarks

There are a number of intellectual property issues which affect freedom of speech and cultural diversity, given the highly-asymmetrical flows of legislation and money in Intellectual Property regimes. These are deeply implicated in Internet governance issues through the controversial workings of the UDRP. Developed countries have also been trying to extend the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) coverage to e-commerce and to the Internet by using two approaches. First, by citing the principle of "technological neutrality" they argue that TRIPS, like other WTO rules, should be extended to any telecommunications medium, including the Internet. Second, some developed countries have requested closer integration of WIPO's "digital treaties" into the TRIPS system. TRIPS provides stronger enforcement mechanisms than WIPO conventions.

Further, Mueller *et al* have pointed out that "WIPO/ICANN in 2001 proposed the creation of entirely new domain name rights [related to UDRP procedures] with no basis in trademark law".[68] The net result is the increasing globalization of a very specific view of intellectual property law that serves the interests of the richest countries. The UN WGIG suggested:

> For some, the current international framework for intellectual rights management is targeted towards an extensive and ongoing protection of monopoly rights granted to producers, and stricter pressure and enforcement on non-complying entities, be they countries or individuals. The main objective of regulation thus appears to grant producers long-term and full control over the use and redistribution of intellectual objects.[69]

In the information and communications sector, economies of scale tend to be gained from distribution as much as production. This has led the creation and domination of value chains by global multinational enterprises, using Intellectual Property Regimes to protect themselves from competition (e.g., by patenting business processes). Organizations without such ICT infrastructure and market control will be locked out of many networks, reduced to slipping between cracks in multinational-dominated markets.

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[68] Mueller, M., Mathiason, J. & L. McKnight. 2004. *Making Sense of "Internet Governance:" Identifying Public Policy Issues*. Internet Governance Project Syracuse University. http://www.internetgovernance.org. Accessed 20 March2005.
[69] United Nations Working Group on Internet Governance 2005. *Cluster Three Assessment Report: Intellectual Property Rights*. http://www.wgig.org. Accessed 13 April 2005. p.5.

This will pose serious challenges to the developing nations of the world, including much of the Asia-Pacific, since their economies are composed of smaller producers who face significant challenges in either a) building similar global markets, or b) making use of the expensive intellectual property enforcement frameworks. A global IPR framework brings even larger challenges to the human rights of peoples whose cultural identity exists outside market economies. The lack of "collective rights" in global IPR instruments – notwithstanding efforts by WIPO on traditional knowledge – makes them specifically exploitative of indigenous knowledge, which tends to provide collective rather than individual control of cultural material.

Asia-Pacific countries must think beyond attracting Foreign Direct Investment (FDI) through franchise or multinational arrangements into their e-commerce markets and begin supporting their own IP-generating digital content industries. They must also lobby the international bodies that set Internet and Intellectual Property policy for a more supportive environment for both these local content industries and non-market driven cultural practices.

Even countries with low participation in the Internet economy must be wary of losing future opportunities through IP expansion. Free trade agreements increasingly contain troubling intellectual property arrangements which may seem unimportant now but will "kick in" with consequences later on. Examples include trade agreement restrictions on the ability for governments to subsidize cultural development. While such issues may appear less important in the short term, these sectors are significant for developed economies and care must be taken not to reduce the Asia-Pacific's control over its future knowledge economy.

The languages of the Internet: software localization and internationalized domain names

An ICANN Fact Sheet dated 12 January 2004 points to the international nature of ICANN in relation to the global Internet community, not only noting that ICANN meetings have been held in Tunis, Bucharest, Montreal, Shanghai, Rio de Janeiro, Accra, Rome, Kuala Lumpur, and Cape Town, but proudly adding:

> The ICANN Board and staff reflect the international nature of the organization. The staff hails from seven different countries (Australia, Denmark, France, The Netherlands, Niger, the United Kingdom, and the United States), exhibiting fluency in more than 14 languages. Similarly, the Board represents twelve nationalities and is fluent in many languages.[70]

Perhaps it is exactly this international capacity of the staff and board which results – perversely – in a disregard of the fundamentally crucial language problem, when it comes to the users of the Internet in many countries, people outside of the small circle of those with international connections and skills. In a WSIS workshop on 1 December 2004 during the ICANN Meetings in Cape Town, Mohammad Diop, an ICANN board member from Senegal, reminded everybody in an passionate speech of the context in which ICANN is working and towards which it has to orient itself: the many different languages and scripts in Africa, the fact that the majority of

[70] http://www.icann.org/general/fact-sheet.html

people in many countries do not even have access to written information because they are illiterate, and the harsh reality that all the nice talk is futile if the question of funding is not faced squarely. "We are talking about an information society that is inclusive. So we need to use the technology in order to reach the population and not ask for the people to be literate before they get access to the information."[71]

Internationalized Domain Names

It is difficult to develop a systematic overview of the challenges facing IDNs, because the stakeholders required to implement them are spread across many different organizations and processes. The lack of progress on IDNs is a key example of the limitations of current Internet governance structures to address cross-cutting issues, which is why the WGIG identified the need for a new multi-stakeholder forum. Reasons why there has been little progress on IDNs include:

1. Languages to have an agreed electronic representation of their scripts in order to be used. This is not a trivial task as many scripts are used in more than one country and language group, therefore require intergovernmental cooperation if any of these encodings are to reach "official" status. On the other hand, countries with many internal languages (which tend to be the least developed countries) may not be able to support script development. Finding the appropriate stakeholders is not always simple, particularly if representatives from local language communities are not specifically included in the development process. See the case study on Khmer (page 88) for an example of how the process for the implementation of the language standard Unicode (ISO/IEC 10646), dominated by English-speaking technical groups, has led to the implementation of standards without consultation of important stakeholders in local language communities.

2. For technical reasons, **it is not possible for the Domain Name System (DNS) as it stands to incorporate full Unicode script encoding to be used in top-level domains**. Rather than rewriting the basic underpinnings of the DNS to allow a clean fix compatible with all scripts support (an operation determined by the IETF to be impractical), the IETF and ICANN developed a system called IDNA (RFC 3490) that maps Unicode characters to ASCII-compatible encodings at the application level. The benefit of this approach is that the IDNA system is compatible with the existing DNS. However, this requires applications to be "IDN-aware", so if a URL has to pass through non-aware systems, the translation is broken. The downside is that a lack of control over implementation that comes from requiring conformance at the application layer rather than within the DNS infrastructure.[72]

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[71] http://www.icann.org/meetings/capetown/captioning-wsis-workshop-01dec04.htm

[72] See e.g. Eric Hall, "Primer: Internationalized Domain Names." http://www.ehsco.com/reading/20040605nmw1.html May 2004.
"Most instances of Internet software don't perform any kind of IDNA transformation yet. Everyday applications such as Traceroute will have to be extended to perform input and output conversions before the Internet can appear to be anything other than an ASCII-centric network. Similarly, basic services such as DHCP and SNMP will need to be upgraded before they can be used to reach domains containing non-ASCII characters. A 100 percent international experience requires a 100 percent replacement of every user-facing piece of code on the planet, from ping to printer drivers."

3. Because users rely on the visual presentation of URLs to authenticate sites, IDNs increase the ease of phishing (see previous chapter), as some characters with different Unicode representations in different scripts may look identical. These characters are called **homographs**, and there is the potential for malicious site owners to pretend that their site is another. It is already possible for copycat URLs to be used in ASCII (for instance "paypal.com" instead of paypal.com, as the lowercase "l" and uppercase "I" are identical in a font like Arial. However, IDNs greatly increase the number of homographs, and this has led to some browsers disabling IDN support. Recently, Opera and Mozilla browsers have begun re-enabling IDN support for top-level domains that have appropriate policies for preventing such attacks. IETF working groups responsible for IDN development are currently spending much time on the homograph attack issue; many of these discussions are about what kinds of ways IDNA should highlight potential attacks. Some of these groups feel that these discussions are being outpaced by market implementations which are not waiting for the debate to be resolved.

4. Some enterprising groups have set up privately-run **"keyword" systems**, that resolve a set of characters into an IP address. Essentially, these function like an alternative DNS. However, because there is no central authority for these keywords, should an official URL be registered in the future under an IDN scheme, two or more competing organizations may have claims on a particular URL. The keyword systems have had greatest uptake in South Korea (and to some extent, China), which has an extremely high rate of Internet access. Comments by Japanese research centre GLOCOM submitted to WGIG point out that there are no universal standards for keyword systems and also a higher potential for "collisions" between various names.

Recent comments by former IAB Chair John Klensin have acknowledged that the approach taken by IDNA, while better than any other actually existing alternatives in his view, suffers from significant limitations. "If IDNs are this hard and do not solve the problem... maybe it is time to go back to the problem and do some serious thinking about models" which would be "non-DNS" or "above-DNS". He notes:

> "Giving up the ideas of:
> • Any two Internet users being able to communicate, regardless of language
> • Any Internet user being able to access any public host, using a globally-available name would make many of these problems much easier, but... it would be a high price to pay."[73]

The question of global interoperability within a limited set of arrangements must, therefore, be balanced against the detrimental effect of many users not being able to effectively use their own language in the construction of information exchange systems via Internet protocols. The perspective one has on this question is necessarily determined by how easily one is able to use one's own language within existing systems. For many users, the benefits of such a globally interoperative system are theoretical rather than practical.

The WGIG Background Report clearly identifies many of the implications of the IDN issue and areas where progress is needed, noting that:

[73] http://ws.edu.isoc.org/workshops/ 2004/ICANN-KL/ICANN-ISOC-KL-IDN-part2.ppt

> "The current market-led approach to IDN only tends to maximize the number of domain names that are sold. However, there might be cases in which global public service issues should be considered – for example, whether gTLDs should be required to support all scripts, including minority scripts that might not be commercially viable. Without these considerations, IDN might become available only for scripts used by big countries and communities, thus contributing to the loss of linguistic diversity. The most pressing areas where progress is needed is the identification of stable character sets, developing rules on how to construct IDNs for specific languages/alphabets, developing a clear strategy to address consumer protection and to ensure that all languages are supported, and the construction and operation of test beds with systems that are actually operational. Some policy issues that emerge are the extensions of naming collisions, not only with trademarks but also with culturally significant names."

This is a more sophisticated reading of the issues facing IDNs than was noted in WGIG's background paper on the issues, when an evaluation of IDNs against WSIS criteria concluded:

> "As the IDN process is basically a bottom-up one, the main actors have been gTLD operators in coordination with users and other ICANN constituencies... Language communities that have come together around specific representations of alphabets and scripts, coordinating across national borders, have been successful in launching internationally accepted IDN systems or at least are in the process of doing so with solid success perspectives. All interested organizations or individuals may join."[74]

For many, it is impossible to accept the invitation that "all interested organizations or individuals may join". There are many technical, linguistic and institutional complexities to get a script codified under Unicode, and the necessary capacities (trained human resources and financial backing) are scarce in many countries with economic difficulties, including in small countries or language groups which have their own "minority" script since many centuries, such as Cambodia. There is also a serious technical challenge in developing software applications localized in such scripts before moving to the level of IDNs. Thus, the benevolent invitation, which invites those who may most need to come but disregards the fact that they cannot even hear that they are invited, sounds almost cynical when compared with the vision of the Geneva WSIS Declaration of Principles, where the representatives of the peoples of the world declared their "common desire and commitment to build a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge."

A number of country-focused ccTLDs within the Asia-Pacific and beyond have adopted and deployed IDNs for their own scripts or scripts used in their countries.

[74] ibid.

- Domain names using also country specific special characters variations with the Latin script exist in Finland, France, Germany, Italy, Norway, Spain, Sweden, and some of the Spanish and Portuguese-speaking Latin American countries.
- In the Arabic script based group: Farsi is deployed in Iran, and there has been a lot of discussion and action in Egypt, Saudi Arabia, and Syria, but there is no up-to-date consolidated information about the extent of how much actual deployment has been done and how.
- In Asia, most deployment has happened in China (those arrangements also cover Hong Kong and Taiwan), Japan, and South Korea. There are also keyword search systems in Korea and China. These illustrate what is possible if deployment is limited to individual countries. However, as a global network, many users of particular languages lie outside countries where they are official languages.
- Thailand has deployed successfully, and there are plans for doing Hindi, Tamil and other official languages in India.
- Among the gTLDs, .info, .org, and .museum have been moving forward quickly but carefully, with the first two stressing a "one language at a time" model.[75]

The status of recognition of Asia-Pacific languages and cultures

IDNs become a concern to general Internet users only after they have achieved the possibility to use and communicate by having easy access to general software applications localized in their own languages and scripts. Those countries in the Asia-Pacific with a relatively high level of economic and technological development – and therefore the necessary research and development capacities – were also the first to develop facilities to use their languages and scripts on computers. This posed completely new challenges, because the scripts used presented different requirements from the way in which European scripts – a series of letters to be combined freely on a line – were handled:

- Japanese uses a combination of roughly 2000 Chinese characters plus two sets of syllabaric scripts of 50 signs each, combines up to two script types in one word, and may use all three types of scripts in one sentence.
- Chinese uses several thousand ideographic characters.
- Korean uses Hangul – a combination of consonant and vowel signs assorted in a square place per syllable – and sometimes also adds Chinese ideographs.
- Thai uses a letter-based script that contains some special features not found in European scripts, such as pre-positioned vowel signs and double accents.

The economic and educational base of these countries, together with their developed social infrastructures, allowed them to create computer usable scripts, though a small variety of different input and rendering methods continue in use until today.

However, there are serious problems with each country or language group developing separate solutions to the problems of using their scripts on computers and the Internet. Thus, the development of different computer systems, combined with the interest to achieve and maintain interoperability between different computers, especially since the Internet expanded

[75] Based on information provided to Norbert Klein courtesy of John Klensin.

the possibility of communication tremendously, led in 1991 to the creation of a special-interest group – Unicode.[76] This is basically an open industry organization, which has the major US software companies (Apple, IBM, Microsoft, Novell, Sun, Xerox, etc.) in its membership, and which aims to develop unified standards for all the scripts of the world. A second player in the drive to set international standards is a grouping of other bodies which have partly technical and partly normative functions[77], such as the ISO.

Even our own ORDIG process highlights some of the difficulties in developing awareness of the issues. The fact that the scarcity of local language software and of local language content does not receive stronger negative comments calls for some interpretation. Thirty-eight percent of the 1,243 submissions were in one of the 11 non-English languages offered[78] – so those respondents were at least satisfied with the fact that they could, in this case, submit their responses in their own languages. However, it seems likely that most of the other respondents, all of whom answered in English, are different from the mass of the people in their society in that they have mastered English. Thus, the lack of local language software and content is less of an issue for them personally. The people who could not handle any of the 12 survey languages – those to be included through the goal of "common desire and commitment to build a people-centred, inclusive and development-oriented Information Society, where everyone can create, access, utilize and share information and knowledge" – of course could not answer the survey, nor even know about it. Is there any identifiable lobby at all for those left out because of their languages? There are available declarations that aim to protect cultural diversity. As an umbrella, UNESCO has provided a space for such concerns, specifically spelled out for different fields or events. These include education[79], the International Mother Language Day[80], and the draft recommendation on the promotion and use of multilingualism and universal access to cyberspace adopted by the 30th UNESCO General Conference in February 2000.[81]

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[76] http://www.unicode.org

[77] Character sets are defined also as "ISO/IEC 10646 Universal Multiple-Octet Coded Character Set (UCS)" by the multibyte charset working group (WG2) of the character set subcommittee (SC2) of the joint technical committee JTC1 of the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), defining international information processing standards through the votes of national delegates. - http://czyborra.com/unicode/standard.html

[78] These included also languages in non-English character sets: Chinese, Farsi, Japanese, Khmer, Korean, Lao, Mongolian, Pashto, Thai, and Vietnamese.

[79] http://portal.unesco.org/education/en/ev.php-URL_ID=12871&URL_DO=DO_TOPIC&URL_SECTION=201.html

[80] http://webworld.unesco.org/imld/

[81] http://webworld.unesco.org/imld/res_en.html#37

It is quoted here in full; though the lofty goals have not yet come to reality, illustrating that more commitment, action, and funding are needed, as well as declarations.

> "5. Also invites the Director-General to undertake the following concrete actions to promote multilingualism and cultural diversity on global information networks:
> (a) to strengthen activities to make cultural heritage in the public domain which is preserved in museums, libraries and archives freely accessible on the global information networks;
> (b) to support the formulation of national and international policies and principles encouraging all Member States to promote the development and use of translation tools and terminology for better interoperability;
> (c) to encourage the provision of resources for linguistic pluralism through global networks, in particular by reinforcing the UNESCO international observatory on the information society;
> (d) to pursue further consultations with Member States and competent international governmental and non-governmental organizations for closer cooperation on language rights, respect for linguistic diversity and the expansion of multilingual electronic resources on the global information networks;
> 6. Further invites the Director-General to submit to it at its 31st session a report on the implementation of the actions outlined above and a draft recommendation on the promotion and use of multilingualism and universal access to cyberspace."

UNESCO is especially facilitating multilingual development for the promotion of Internet accessibility in the Arabic script. While this is a much needed initiative, it is always easier to work on larger projects in better organized contexts than poor and minority situations. The term 'minority' here includes national languages with their own scripts in smaller countries in Asia, such as Cambodia, Lao PDR and Myanmar.

Unfortunately, the list of regional or sub-regional associations that can be expected to assist in localization is quite limited. The Association of Southeast Asian Nations (ASEAN) is primarily concerned with economic integration and cooperation, and increasingly also with peace and security issues as international challenges. The English language is the natural means of communication; national languages and their development for access to the Information Society have not always been an issue.

Over the years, a variety of structures have been spawned by the Asia Pacific Networking Group (APNG). These promote the use of the Internet in different ways, but have not addressed the language situation in individual countries.

The PAN Localization project, supported by the International Development Research Centre (IDRC) and coordinated by the Centre for Research in Urdu Language Processing, National University of Computer and Emerging Sciences, Pakistan[82] is a collaborative effort that extends to the following countries: Afghanistan, Bangladesh, Bhutan, Cambodia, Lao PDR, Nepal, Pakistan and Sri Lanka. Under the heading of Standards it covers problems of Character Set, Keyboard, Keypad, Collation Sequence, Interface Terminology, Handheld Device Interface Terminology and Locale. The eight countries collectively conduct software research in many areas ranging from key board drivers and spell checkers to mobile/PDA fonts, Optical Character Recognition (OCR) and text-to-speech systems. For some countries, the collaborative support covers localization projects on Linux, in others on the Microsoft Windows platform; ultimately, the PAN Localization project aims to support cross-platform development of local language software throughout the region.

UNDP-APDIP has also published a guide to localization and supports many related projects in the Asia-Pacific region through the International Open Source Network (IOSN), also supported by IDRC-PAN.[83] A number of important country-specific and language-specific initiatives also exist. In Thailand, NECTEC, a statutory government organization under Ministry of Science and Technology has established a research and development unit to develop sorting, line breaking and word breaking, and font development in Thai language software and operating systems.[84] NECTEC have also developed Thai word processors and OCR software. In Pakistan, the Centre for Research in Urdu Language Processing[85] undertakes projects in Linguistics, Script Processing, Language Processing and Speech Processing. While an exhaustive list of efforts is beyond the scope of this chapter it should be noted that significant national efforts have taken place in China, Japan, Korea, among others; and there are a number of emerging networks of localization in developing countries, e.g. MCF (Myanmar), ICTA (Sri Lanka) and ACSA (Afghanistan).

[82] http://www.panl10n.net
[83] See http://www.iosn.net/l10n/
[84] See http://www.nectec.or.th/
[85] http://www.crulp.org

In addition to regional and national support structures, small local initiatives may also play important roles. Investment in one country may have positive spill-on effects to others. For example, the Cambodian Open Source software initiative has provided internship experience to a person from Timor-Leste who will start another open source based localization initiative – opening the way to creating software in the national language Tetum, and at the same time, helping to save scarce financial resources by creating legally license free quality software. Such processes help to create a self-sufficient local basis for small local software corporations and related companies.

Many traditional societies consider knowledge and wisdom as goods to be shared for the healthy development of their communities. The concept of marketable ownership of knowledge is for many difficult to grasp. Software that costs a US buyer a fraction of a monthly salary may cost the equivalent of several years of a local income, if bought legally. Furthermore, many people using unlicensed software do it without considering it fraud and theft – but they would strongly and convincingly deny that they would ever intend to steal even one fruit from a market stall. A people-centred Information Society, where everyone can create, access, utilize and share information and knowledge, enabling individuals, communities and peoples to achieve their full potential in promoting their sustainable development and improving their quality of life, will need new insights, new decisions and new actions on making all peoples' native languages the primary interface to information.

Conclusion

Basic ICT policy is difficult enough of a challenge for developing states. Don MacLean summarises the key factors in the lack of developing country participation in relation to international ICT policies as: a) lack of awareness of the importance of ICT-related issues in relation to development goals; b) lack of technical and policy capacity; c) lack of easy, affordable and timely access to information; d) weaknesses in governance processes; and e) financial barriers.[86] These are not easily addressed, and greater participation in Internet governance bodies will be a long-term process for many nations and groups.

However, the issues are not always a mere lack of policy development expertise. Some countries have robust policies on information and communication with governance components, which have never been implemented. There is great potential for sharing experiences through regional groups to forge shared priorities and collaborative projects. An example would include the e-Pacifika programme implemented by UNDP and UN Office for Project Services (UNOPS), which raises awareness among leaders and decision-makers about ICTs, drives adoption of national ICT strategies, and implementing concrete programmes and projects.[87]

[86]MacLean, D. (2004) *Herding Schrödinger's Cats: Some Conceptual Tools for thinking About Internet Governance.* Background Paper for the ITU Workshop on Internet Governance Geneva, 26-27 February 2004. http://www.itu.int/osg/spu/forum/intgov04/contributions/itu-workshop-feb-04-internet-governance-background.pdf. Accessed 20 March 2005. p.8.

[87]Guild, R. 2003, 'Pacific Islands Chapter', In (Ed, Saik Yoon, C.), *Digital Review of Asia Pacific* UNESCO Chairs in Communications (ORBICOM), International Development Resource Centre (IRDC), Asia Pacific Development Information Programme (APDIP) of the United Nations Development Programme (UNDP), Ottawa.

Cultural diversity may seem an even less pressing priority with few direct benefits to be gained when compared to direct economic benefits promised by increasing ICT access. However, culture covers all of the ways that people make use of their resources, and is central to our very understanding of who we are, and even the areas in which our economies can be profitable. Increasingly, empirical economic evidence suggests that firms are not given units of coordinating ability, but are instead limited in their decisions by their capabilities, knowledge, and learning.[88] Among nation-states, trade economists have demonstrated that exports differ in the degrees of product variety and quality depending on their social organizational features – whereas a "hard line economic" approach suggests the only real distinguishing variable should be the difference in market-friendly policies.[89] This evidence suggests cultural development and economic development should be seen hand-in-hand, rather than separated. Culture is not a luxury that appears when a certain level of economic attainment has been reached. Far from being a distraction, cultural issues offer powerful ways of exploring the cross-cutting social and economic challenges raised by the Internet and networked information technologies.

Opportunities for strengthening cultural inclusion in the Asia-Pacific

To summarize, a number of specific opportunities can be identified to foster cultural inclusion in the Asia-Pacific region. While some things can be done to foster change immediately, others will require longer, more coordinated timeframes.

1. Localization: The building of Internet related software and operating systems to local languages. As language is the basis of culture, the most urgent and basic priority is to provide opportunities for all people to use their native languages with information technology. As voice and imaging technologies develop, this should also include opportunities for non-text interfaces to communications systems. Such work will entail a broad effort in adapting both open-source and proprietary software systems. Legislation has a role to play here – in India, for example, the government has mandated that computer manufacturers include fonts of major Indian languages on machines to be sold in the country. They expect to have all 22 major languages available by the end of 2005.[90]

At the narrow end of Internet governance, support must be given for non-ASCII script language group participation in the Euro-US dominated forums that determine technical policies regarding the Internet, such as ICANN, IETF, and IANA. In particular, as Jean-François Morfin noted on the ORDIG discussion list, the IETF sets a definitive schema for Internet language tags through consensus of a linguistically non-diverse group, and a similarly non-representative self-constituting body approves individual tags themselves. While more fully representative bodies may establish procedures in the future (for example, bodies that support languages other than English), in the interim it is vital that Asia-Pacific stakeholders familiarize themselves

[88] Mokyr, J. 2002. *Gifts of Athena: Historical Origins of the Knowledge Economy*. Princeton, N.J.: Princeton University Press.
[89] Guillen, M. 2000. *The Limits of Convergence: Globalization & Organizational Change in Argentina, South Korea, and Spain*. Princeton: Princeton University Press.
[90] *Financial Express*. 2005. "Local language fonts to be made mandatory for computers in India." http://www.financialexpress.com/fe_full_story.php?content_id=89025. Accessed 5 August 2005.

with the workings of these standards-setting bodies and increase their participation. The ultimate goal should be that language standards are approved by broadly representative groups of native speakers, to ensure that language diversity is not constrained.[91] Given the IETF's reliance on ISO codes, which may be considered the ISO's intellectual property, there could also be serious financial implications for language groups seeking to make use of Unicode standards, and pressure should be applied to move these into the public domain.[92]

2. Shared infrastructure for Local Content Initiatives. With many local content providers facing similar market and technical issues with respect to their initiatives, as noted above, there may be opportunities to support them at a regional level. This could be through policy vision mechanisms to develop a shared understanding of local content issues and potentials, as well as coordination bodies to share infrastructure. These initiatives could be seen as analogous to the kinds of roles multinational corporations play with respect to their regional subsidiaries, a model which has generated proven results in the Internet content market (e.g. C-Net, eBay, etc.).

3. Regional Taskforces on Intellectual Property. Intellectual Property is one of the key issues threatening cultural diversity online. This is due to the harmonization of laws, treaties, technologies, language and genre that the Internet's global network facilitates. The instruments by which this occurs are diverse, ranging from Internet bodies such as ICANN/IETF through to WIPO and the WTO. In the case of Digital Rights Management (DRM), the rules by which content travels are set by wholly private organizations and standards with little regard for legal balances of copyright negotiated within individual nation-states. The issues at play overlap many of these organizations and are interconnected in complex ways, which are only touched on in this document. There is a serious gap in regional policy analysis in this area and much could be gained by a truly multi-stakeholder body or bodies (perhaps along the lines of UN-WGIG with governmental, business, and civil society inputs) charged with forging consensus on the important questions and approaches for the region. This will be a pre-requisite to regional bodies and nation-states developing effective, proactive measures on IP.

4. Supporting Collective Ownership Mechanisms and Alternative IP Arrangements. The traffic of both concept and law in global Intellectual Property arrangements follows clear geo-political lines: it emerges from the most developed nations to be implemented in the lesser developed. It is crucial that the diverse ways that cultures generate and circulate intellectual products can be maintained. While harmonization of particular arrangements can be useful for international cooperation, care must be taken in committing to IP agendas whose full implications for local cultures may not be clear. A strong commitment to multi-stakeholder approaches in policy development will be the surest way of gaining the diversity of local perspectives needed for responsive policy.

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[91] The most important discussions with respect to the IETF processes take place at https://www1.ietf.org/mailman/listinfo/ltru and http://www.alvestrand.no/mailman/listinfo/ietf-languages

[92] See for example the article by Hansen, E. 2003. New ISO fees on the horizon? 19 September 2003, 5:55 PM PDT http://news.com.com/2100-1032_3-5079256.html. Accessed 10 April 2005. Although the International Organization for Standardization (ISO) later issued a press release saying they only intended to collect royalties for commercial uses, this, to our knowledge, has not been adopted as policy and there is still the potential for IETF standards to become subject to intellectual property claims by the ISO (a private NGO).

Cultures are slow to develop and highly resilient – like the architecture of the Internet itself, cultures adapt to circumstances and make use of material for their own ends. Nevertheless, global communications media such as the Internet bring an unprecedented level of change in the cultural forms available in particular parts of the world. Combined with the securing of this content through international agreements, the potential exists for distinctive cultural forms to fail to survive. It is only through a clear vision and commitment to supporting cultural inclusion that the benefits of new media can be harnessed.

The Case of Khmer in Cambodia

The complex technical nature of the script codification and the necessity to be cooperatively involved with a number of different international organizations has led to a situation in which the scripts of economically strong language groups were able to get their scripts codified first.

However, if codification of script is delayed in a country or language group while the use of computers is growing, an ever-increasing complex of problems for the use of the local language on computers may develop. The situation in Cambodia may serve as an example. The first widely used program to write in the Cambodian language, Khmer, on Microsoft DOS based computers was "Khmer in Office", available from around 1990. With the arrival of the Microsoft Windows operating systems, a number of Cambodian computer enthusiasts – in the country, and in various countries in North America and Europe – started to develop Khmer font systems independently from each other. As a result, in the absence of any existing norms, there are now more than 20 mutually non-compatible font systems in use.

Some well-meaning people outside of the country intended to remedy this situation by initiating a process to codify Khmer script for the Unicode and ISO systems – but without any Cambodian procedures. After these procedures had been concluded, Cambodian computer scientists and linguists in Cambodia also became aware of this – they had some fundamental misgivings about the method which had been designed to handle their script on computers. After a series of expensive international delegation visits to Unicode and ISO meetings, in April 2002 a letter was received from the President of the Unicode Consortium:

"As a result of our discussions we have learned that:

1. The encoding approach taken for the representation of the Khmer subscript letters in Unicode, the so-called "virama model", is not the preferred approach of the Cambodian National Body or of Khmer linguistic experts, and is at odds with the way the Khmer script is perceived and taught in Cambodia.

A number of characters were added to the encoding of the Khmer script; which upon receipt of further input from the Cambodian National Body, now appear to have been clear mistakes. Those characters cannot properly be considered to be a part of the Khmer script.

A number of symbols and other characters used in the representation of the Khmer script were overlooked in the encoding.

The Unicode Consortium acknowledges and regrets that over the last several years, and especially during crucial periods when the decisions about development of the Khmer script encoding proposals were being made, insufficient efforts were made to maintain full communication and consultation with all interested parties in Cambodia. This has resulted in the current unfortunate situation where all interested parties now have to deal with a less-than-optimal outcome with respect to the Khmer encoding.

The Unicode Consortium sincerely regrets the impact that this may have on the perception of the Khmer script, as well as any confusion that may result for those who are implementing the Khmer script on the basis of the Unicode Standard."

It is well known that the codification process in some other countries in Asia has met related difficulties – these are exacerbated as the decisions are being taken far away from the places where the languages are being used. It will probably be extremely difficult to move beyond the plea for sensitivity and arrive at firm policy and financial commitments, but even an appeal to sensitivity might have a positive effect. Small language groups, or users of a language that does not have a strong international advocate and for which software has not yet been localized, will normally not be able to do much. Indeed, they will probably not even know that there is anything to be done.

The Ministry of Education, Youth, and Sport of Cambodia invited a group together in late 2004 for a one-day brainstorming session to present a three-year draft plan for the computerization of the Ministry, of all Teachers Training Colleges, and for the Offices of Education of all provinces. The draft plan was written in English, though the meeting was otherwise held in the Khmer language. Of course this distanced many participants from being able to understand or contribute in the planning. Furthermore, the plan had no hint about the language in which this computerization would happen, but there was also no awareness that computerization in Khmer might be possible. Fortunately, there is, in fact, at present a concerted effort going on to create a whole series of different Open Source software applications – based on the Unicode standard – in the Khmer language. The Ministry is now in the process of starting to work with that software in the future.

Chapter Five

Governing Internet Use: Spam, Cybercrime and e-Commerce

–Suresh Ramasubramanian, Salman Ansari and Fuatai Purcell

Developmental approaches to the Internet are often focussed on getting people connected to the Internet and providing them with tools to send text and audiovisual content across it. This is usually the extent to which we understand that there is a "digital divide". However, from a governance perspective, the physical connections are in some ways the easiest to address. It is when use of the Internet grows that its nature as a relatively unified global platform creates a whole series of new challenges for public policy that lay outside of the easy control of nation-states. As WGIG noted, the coordination required due to the global nature of the Internet is not well defined, but may require "international legal frameworks, coordination mechanisms or cooperation structures to promote effective and consistent handling of these issues".[93] This chapter explores three related dimensions of global Internet use and the challenges raised by them: spam, security and e-commerce.

The Internet is used for many activities that were not envisaged by the designers of the key technical protocols for information transfer that underpin it. In some cases, such as spam, the lack of easy-to-use authentication mechanisms can be attributed to the large installed base of mail servers – any new solution would have to maintain some level of interoperability with existing protocols. For other issues, such as e-commerce, many of the issues relate less to technology and more to the increase in cross-border transactions that the Internet facilitates, sometimes with little regard for policy attempts to regulate markets.

And in general, the "disembodied" nature of e-commerce and email – where there is no clarity about which physical location or human initiates an electronic communication – combines with the scale of digital communication to raise difficult security issues. If a user in Samoa interacts with a server in China to transact with an Australian company, it may be difficult for legal authorities to track the people whose behaviour they must regulate. Despite these difficulties, Internet use continues to grow in the region and addressing the issues of Internet use remains central to increasing participation in the Information Society, so the need to address these issues is crucial.

[93] WGIG Background Report, http://www.wgig.org para. 106

e-Commerce

Some cross-border issues are most visible in e-commerce. e-Commerce is the process of exchanging products, services and information using computer networks including the Internet (Turban *et al*, 2002), as well as automated business processes, automated services and online buying and selling. Many studies were conducted since then and research found that e-commerce can benefit organizations of all sizes, and is particularly important for the small business sector (Bright, 1997; Rommel, 1997; Huff & Yoong, 2000). Despite this high potential, SMEs in many developing countries are still reluctant to infuse e-commerce into their business processes. New technologies provide tremendous potential for SMEs, especially the suppliers of cultural goods (e.g., handicrafts,) and services in the in the Pacific Small Island Developing States (SIDS) (UN 2005) to access global markets. However, there is need for greater access to computers and the Internet – especially low-cost broadband – and for the creation of the enabling legal framework to facilitate e-commerce.

While numerous studies have explored the issues of e-commerce adoption by SMEs, nearly all such studies have been conducted in developed and highly populated developing countries. One of the functions of WSIS is to address more specifically the situation of Pacific Small Island Developing States (SIDS) in relation to Information Society issues.

Table 6 below summarizes the findings of research undertaken by Fuatai Purcell on the key challenges and barriers to e-commerce adoption by SMEs in Samoa.

Table 6 : *Summary of the issues that impact e-commerce adoption by SMEs in Samoa*

Existing e-commerce activities and opportunities		**Reported challenges and barriers to adoption**	
Activities	**Opportunities**	**Challenges**	**Barriers**
Email	Allows SMEs with possibilities not previously available e.g. online selling	Lack of awareness of the perceived benefits of e-commerce	Poor telecommunication infrastructure
Search for information	Cheaper and faster method of communication	High costs of computer hardware and Internet costs	Monopoly
Can order online but payment is done manually by vendor going to the bank to check credit card details, etc.	Empowerment through increased knowledge and skills	Lack of skills of SMEs to use computers and the Internet	Affordability
Only 5% of SMEs have Internet access	SMEs will significantly contribute to the economy	SMEs owners are also managers	Lack of an enabling environment
Only 5% of SMEs with Internet access have a website	Added value to existing products and services	Most tourist operators in rural villages have limited knowledge of the English language	Lack of initiatives to enable capacity building
Most SMEs with websites are in the tourism sector	Government deregulation strategy increases the number of SMEs	Lack of skills to upgrade websites i.e. changing photos of products, etc.	Cheaper alternatives e.g. open source software systems
Most SMEs with websites are owned by foreigners	Better ways of managing customers relationships		Trust and security of cyberspace

The Samoan situation brings to light a number of difficulties faced by SMEs that are not reducible to regulatory or financial issues. Purcell's research suggested that there were no fully integrated e-commerce systems used by SMEs in Samoa. A fully integrated e-commerce is where the selling and buying of goods and services are all conducted online. When SMEs and ISPs participating in this study were asked how payments were made when customers ordered their goods or services online, they explained that:

- For local customers, they (SMEs) receive orders through email, then they deliver the orders and collect the cash.
- For overseas customers, there are two forms of payments:
  - Customers email their credit card details, then SMEs verify the details with the bank, or
  - SMEs email the customers their bank account details, after which the customer makes the payment and faxes or emails the payment confirmation.

Greenturtle Holidays, for example, is an SME that uses the first type of payment (above) for overseas customers. The following paragraph appears at the bottom of the booking form:

> "Once your itinerary is prepared from the above information, one of our reservations staff will email you our quotation. On your approval of itinerary and quotation, we will request a 50 percent deposit for your confirmed reservations. Just email us your credit card details (we advise you to break up the numbers in two separate emails for security reasons) and we will process this deposit and will confirm all your bookings with you by email. The balance of your payment is due one month prior to your arrival in Samoa"[94]

Transaction systems and credit cards

Almost all business-to-consumer (B2C) e-commerce systems require use of a major credit card, but this brings a number of issues for a variety of Asia-Pacific countries. Firstly, credit cards may not be available in countries like Iran due to trade embargos. The dominant credit card companies are located in the United States, and therefore they cannot legally do business in Iran. Secondly, due to credit card fraud, many businesses increasingly exclude purchases made by credit cards with billing addresses in countries like Indonesia, which have had a high level of credit card fraud. Finally, and most important, in the Pacific, developing country SMEs are unlikely to have freehold title or other tradable assets that can be used for security for trading banks. Most of the lands they own are customary land which cannot be transferred for cash – altering this situation would have significant cultural and economic effects, with a significant risk of increasing inequality over the long term.

Branches of overseas-owned banks also cannot process credit card applications in Samoa because there is no central credit risk management in place. This means that if a person applies for a credit card, the bank has no way of knowing if this person owes money to other banks or

[94] http://www.greenturtleholidays.com/bookings/samoa/tanumatiu.html

companies. It is a manual process of bank staff using the telephone to call other banks or utility companies. The issue of debt management has also been raised by the acting CEO of SamoaTel. He explained that debt management was one of the key issues they face. They disconnect as much as they connect new phones, especially in the rural villages.

Moreover, SMEs do not trust payment online. Quite often this is based on incorrect information or a lack of experience. As one SME owner explained:

> "I do not like online payment by customers because what if the customer tells me that payment has been made and I have not yet received it? Do I supply the goods or not? If someone else got the money by other means, who is responsible? How would I find out who got the money? It is much easier if they make the payment to my bank account. When I check my bank account and the money is there, then I send the goods."

Trust and security

The question of trust brings with it questions related to security. As noted above, when so many transactions become largely automated or exist in uncertain physical locations, it can be difficult to tell who the people might be on the other end of the communication and transaction. However, this is not simply a question of providing more and better security, even if this was technically possible. As WGIG note, "the transactional certainty obtained through authenticating the parties to a transaction needs to be balanced with legitimate privacy needs and rights of users to ensure that data used in the authentication process is not used illegally or in an unauthorized fashion by third parties."[95]

Part of the challenge in addressing security is in the speed of response required to match the instantaneous nature of online transactions, and the rapid spread of information about security vulnerabilities. For this reason, the first line of defence is often in information security, and is often relatively informal and loosely networked. Examples include CERTs, which are "typically made up of technical experts who are in communication with other CERTs to share knowledge and best practices and to warn of impending attacks... Because a standardized approach to information security may undermine the level of network security, security requires a holistic approach, with each participant undertaking measures appropriate to their role, understanding that there may be principal spheres of influence, and that collaboration on many levels will be required."[96]

As WGIG notes, the guiding principle of security is that there can never be perfect security, but that all stakeholders must be able to find a level of security that is proportional to their level of investment and which does not create unnecessary burdens.

[95] WGIG Background Report paras 153-4.
[96] Ibid. para 137.

Security: an example from Pakistan

The interlocking nature of technology and policy issues related to security are illustrated by the example of Pakistan. In 2000, Pakistan came up with a forward-looking ICT policy and made strategic interventions to dramatically increase bandwidth, reduce process and rapidly increase the ingress of ICT in the government and the private sector. Demand for the Internet spread rapidly as it started to be used for more than chat and email. Bandwidth also increased rapidly with costs dropping precipitously.

All this was happening without the requisite oversight on network capacity, stability and security. The monopoly service provider at that time (the market has since been deregulated) had one point of entry and the international bandwidth was brought in via one undersea fibre with no redundancy. The ambition of the government to deploy pornographic content blocking on the core gateway router by putting up access control lists (which turned out to be a futile exercise) added to the vulnerability. The total bandwidth coming into Pakistan was less then 250 Mbps. Finally, the total lack of any security awareness and training in the staff manning the Internet Exchange set the stage for trouble.

A childish exercise by Pakistan-based hackers to deface Indian sites was met by an equally immature response by the Indian hackers in devising the 'yaha virus'. This was originally a Denial of Service (DoS) attack on all .gov sites. This rapidly escalated to a Distributed Denial of Service (DDoS) attack in different strains of the virus. The attacks were routed via Korea, China and other countries to mask the originating sites.

This attack was accompanied by different varieties of attacks (fragmented packets, etc.) which coupled with the overloaded core router handling the pornographic access lists brought the complete network down. The attacks collapsed web servers, choked the domestic bandwidth, overloaded the router and consequently flooded the international bandwidth. These attacks continued intermittently for several months as the Pakistanis tried desperately to address the multiple threats. The national network went down for hours and days at a time.

Finally several mitigation measures were put in place: important web sites were also hosted outside Pakistan, powerful core routers, proper attack mitigation schemes and redundant networks were implemented, and there was re-training for critical staff. This episode forced Pakistan to take a long hard look at information security – not only the government but also the banking and corporate sector, and take steps to create more reliability and availability in their systems.

Recent trends in security attacks[97]

With time there is an increased level of sophistication in the cyber-attacks and a downward trend in the average level of competence of the attacker, due to the spread of attack tools that can be used by malicious "script kiddies" with little sophisticated programming knowledge.

[97] Based on Information from the CERT® Coordination Center.

Trend 1 – Automation; speed of attack tools

Automated attacks commonly involve four phases:

- scanning for potential victims,
- compromising vulnerable systems,
- propagating the attack, and
- coordinated management of attack tools distributed across many Internet systems.

This automation has allowed tools like Code Red to self-propagate to a point of global saturation in less than 18 hours.

Trend 2 – Increasing sophistication of attack tools

Attack tool developers are using more advanced techniques than before. They use anti-forensic techniques that obfuscate the nature of attack tools. Some also become polymorphic tools that evolve to be different in each instance. Increasingly, they can execute on multiple operating system platforms, and use common protocols like HTTP to become difficult to distinguish from legitimate network traffic.

Trend 3 – Faster discovery of vulnerabilities

The number of newly discovered vulnerabilities reported to the CERT/CC continues to more than double each year. It is difficult for administrators to keep up to date with patches. Subsequent reviews of the existing code for examples of the new vulnerability class often lead, over time, to the discovery of examples in hundreds of different software products. Intruders are often able to discover these exemplars before the vendors are able to correct them.

Trend 4 – Increasing permeability of firewalls

Firewalls are often relied upon to provide primary protection from intruders.

However, technologies are being designed to bypass typical firewall configurations; for example, IPP (the Internet Printing Protocol) and WebDAV (Web-based Distributed Authoring and Versioning). Certain aspects of "mobile-code" (ActiveX controls, Java, and JavaScript) make it difficult for vulnerable systems to be protected and malicious software to be discovered.[98]

Trend 5 – Infrastructure attacks

Infrastructure attacks are attacks that broadly affect key components of the Internet. They are of increasing concern because of the number of organizations and users on the Internet and their increasing dependence on the Internet to carry out day-to-day business. Their impact

[98] See http://www.cert.org/reports/activeX_report.pdf

includes DoS, compromise of sensitive information, spread of misinformation, and significant diversion of resources from other tasks.

Cross-border transactions make regulation of security issues extremely difficult. While this may, in some cases, provide opportunities for trade and commerce, it also allows for the illegal use of resources whose effects weigh most significantly on minority cultures with few financial resources. The spate of unsolicited email which is an annoyance to the worker with a broadband connection in a highly-developed city becomes an expensive and critical issue for less developed communities in a low bandwidth situation.

Cybercrime

The above security breaches are usually criminal in nature, but they only cover a small proportion of the broad spectrum of cybercrime. The most common crimes include:

- **Hacking** – recreational hacking can lead to unauthorized modification of programs and data, or damage to intangible property; criminal hacking may be involved in fraud or espionage, or blackmail; political hacking may seek to convert websites with a public presence to unauthorized political messages. Mhacking is undertaken by company insiders.
- **Denial of Service** attacks prevent or hinder access to information on particular sites.
- **Viruses** and Trojan horses cause malicious damage to usually untargeted computers without a human directly attacking them.
- **Fraud** and scams such as 'phishing', where a website masquerades as another.
- **Pornography**, especially child pornography.
- **Hate sites** or those that seek to encourage violence against other groups.
- **Intellectual Property** violations such as piracy.
- **Cyber-stalking** where email or instant messaging is used to harass or threaten an individual (particularly women).

These crimes range from the extremely serious through to the relatively victimless, and different nations and cultures have different interpretations as to which of these are criminal. Some activities may raise conflicts between different national systems (e.g., IPR). Existing laws and arrangements are not enough to address the challenges posed by these crimes and criminals, and new laws are required to be framed in every jurisdiction. However, if we only focus on national legislations, then we face the problem that the very idea of jurisdiction based on geographic boundaries is difficult to apply to the Internet which does not easily recognize geographical distinctions. The WGIG Background Report noted that "to avoid the creation of 'cybercrime havens', it will be necessary to ensure that criminalization of specific conduct committed in cyberspace, should be put in place on a global level, while respecting the diversity of cultures and legal systems".[99] In practice, this will be quite difficult.

Security issues such as cybercrime ranked as the highest concern among respondents to the ORDIG survey on Internet governance priorities for the Asia-Pacific. While the scale of the

[99] WGIG Background Report, para 137.

problem is severe, caution should be used with respect to legislation to address the issue, and its side-effects on freedom of speech and cultural diversity should also be considered.

For example, according to Wong, Malaysia's Computer Crimes Act allows that "any police officer arrest without a warrant any person whom he reasonably believes to have committed or to be committing an offence against this Act. Further to this, the Act also allows police officers above the rank of Inspector to conduct search[es] at premises without warrant, should the officer believe that delays may effect them obtain[ing] necessary evidence."[100] While, as Wong points out, the legislation's broadness also introduces many opportunities for errors in procedure, preventing successful prosecution, there are also grave human rights consequences to such significant changes to due process being implemented under legislation brought about for the laudable purposes of curbing a new threat. Analogies can be drawn to the United States' Digital Millennium Copyright Act, which used technical change as a justification for the imposition of new legislation that conflicts with free speech principles and consumer rights such as fair use, and has drawn ire from civil society groups supportive of cultural diversity.[101]

International cybercrime conventions also pose dangers in its globalization of particular definitions of crime, neglecting that each country has a legal system which is in some ways culturally specific. It is important that governments using model legislation and critically assess its relevance for their own needs. Civil society has a strong role to play in this process of signalling the limitations of Internet policies from a cultural and social perspective.

Spam

It is an accepted fact that spam is a problem around the world, and it is the area of cybercrime that affects most people using the Internet every day. It is a problem that makes itself felt even more strongly in economies that are comparatively new to the Internet, such as several economies throughout the Asia-Pacific region, where the rapidly developing Internet infrastructure has not been accompanied by a corresponding development of policy and governance systems at an ISP and government level. Further, user awareness tends to lag far behind the norm in more developed economies, thus making users far more vulnerable when exposed to the seamier side of the Internet – scams, identity thefts, viruses – and spam.

ISPs and email providers in large parts of the Asia-Pacific region often find their meagre resources stretched to the limit dealing with high levels of spam, with little or no budget available to invest in new resources just to deal with the ever-increasing levels of spam. There is always the danger that when a new virus is released "in the wild" and begins to propagate, traffic spikes may overload their mail server infrastructure, causing it to slow down or even completely stop functioning.

Representatives cutting across government and industry from around the Asia-Pacific region have strongly expressed their views on the threat that the Internet economy in their countries

[100] Wong, C. Y. 2002. *Malaysian Law and Computer Crime*, Sans Institute, 4 April 2005,<http://www.securitydocs.com/library/1268>.
[101] Electronic Frontier Foundation. 2003. *Unintended Consequences: Five Years under the DMCA*, Electronic Frontier Foundation, http://www.eff.org/IP/DMCA/unintended_consequences.php. Accessed 3 April 2005.

faces from spam at international forums such as the WSIS Thematic Meeting on Spam, and the WGIG. Based on the ORDIG survey, there appears to be a near-unanimous consensus that spam and viruses are serious threats, and that countries in the Asia-Pacific region lack the resources, know-how and policies to effectively mitigate these threats. This threat is magnified by a lack of comprehensive cybercrime, anti-spam and data protection laws.

Even in highly developed economies with world class Internet infrastructure, with some of the highest levels of broadband penetration in the world, have their own dimensions to the spam problem. This has, however, led to several poorly secured personal computers, running without the latest operating system and anti-virus security updates, and without a proper firewall or other means of security – making them highly vulnerable to viruses and hackers – getting connected to the Internet on a continuous basis. Further, Internet providers in these economies may lack a comprehensive framework of policies and standard operating procedures to deal with spam issues, and soon find themselves overrun by spammers.

While this chapter can only give a brief overview of the economic, technical and social aspects of spam, we also suggest measures to mitigate the spam problem. The word "mitigate" has been carefully chosen to avoid suggesting that there exists a solution to the spam problem, any more than there is a solution to pollution and global warming. The most that can be achieved is to mitigate the effects of spam and enable various stakeholders in the spam problem to cope with it and reduce it to acceptable levels. However, coordinated approaches such as the OECD anti-spam Toolkit exist, where legislative and technical measures are backed by initiatives for international cooperation against spam, and campaigns to educate and empower users, giving them access to secure computing resources and sensitizing them on net abuse issues.

Like other security issues, spam is an international problem, and therefore requires international cooperation and communication in order to help resolve spam issues on a continuous and proactive basis. It poses unique public policy challenges because, as WGIG note, "legal, policy and regulatory frameworks at the national level are complementary with the development and implementation of technological solutions to spam: technical work can affect the context for policy decisions, [while] protecting legitimate use of email can conflict with anti-spam requirements".[102]

Economics of spam

Spam exploits the recipient-pays nature of email, coupled with the comparatively negligible cost of sending vast quantities of email. Almost all the costs are borne by the receiving site, and finally by the user who receives the spam in his mailbox – the costs of receiving, storing and downloading spam, and the costs of hiring administrators and buying or developing filters to block spam. These costs far outstrip the costs incurred by the spammer, whose expenses are limited, at the most basic level, to the cost of an Internet connection and software to send bulk email.

It is also much easier for senders of bulk email to achieve economies of scale, as they can ramp

[102] WGIG Background Report para 136.

up the volume of email sent out by orders of magnitude with a comparatively low corresponding expansion in their bulk emailing infrastructure. Thus, a spammer finds that nearly all the costs of his advertising campaign are unwillingly subsidized by several parties completely unrelated to him, such as the ISPs and bandwidth providers. Inevitably, the increased costs faced by ISPs to deal with spam are passed on to their users, so end-users are unintentionally paying higher costs, so that they can receive spam.

Contrast this with the sender-pays model of traditional marketing tactics like telemarketing and bulk postal mail, or media advertising where the sender bears nearly all the costs of transmission, and where receiving these communications does not normally incur any costs. In fact, newspapers and free-to-air channels are typically heavily subsidized by revenues derived from carrying advertising.

It should be noted that legitimate senders of bulk email, who maintain contact with their customers and carry out bulk marketing over email, also find that the recipient-pays nature of email works in their favour. Their costs are far lower when using bulk email than when they use traditional sender-pays methods of marketing such as bulk postal mail.

In their constant quest to remain anonymous and undetected by ISP spam filters and law enforcement, and to ramp up their rate of sending spam, several spammers now seek to gain unauthorized access to third party computing resources, such as poorly configured open relays and open proxy servers, as well as deliberately compromised hosts such as virus-infected PCs and hacked servers. These server compromises, combined with techniques such as rapidly cycling through a huge list of compromised servers, or infecting thousands of PCs around the world with viruses, create a "zombie army" or "botnet" of hijacked machines that are coordinated to send out spam, perpetrate DDoS attacks and, as a measure of self perpetuation, further swell the zombie army's ranks by infecting and compromising even more machines.

This horizontal scaling tactic can be a nightmare for email and spam filter administrators and law enforcement officials investigating anti-spam cases, as they make spammers a rapidly moving, hard-to-detect target. Using these techniques, spammers can illegally harness virtually unlimited resources, namely the computing power and bandwidth of thousands of innocent people around the world in order to send out their spam.[103] Many people have had the experience of receiving an email from someone saying that "you have a virus" when in fact the offending email had been sent by someone completely different.

The challenges of authentication

Various sender authentication schemes are being suggested, and in some cases, aggressively promoted by their sponsors, as solutions to effectively put an end to forgery of email, and hence to phishing (identity theft) and spam, but they are all under various, but very early, stages of development at the time of writing, and will require substantial engineering analysis to refine them before they start to have a tangible effect on reducing the amount of forged spam. Further, spammers may well change tactics and send non-forged spam, but using

[103] An excellent technical presentation to the North American Network Operator Group (NANOG) on botnets, by John Kristoff, is available at http://www.nanog.org/mtg-0410/pdf/kristoff.pdf.

disposable "throwaway" domains that are registered several hundreds at a time, at less than US$ 10 per domain, and using cheap hosting services that cost around US$ 10 a month.

Contact information for such disposable domains is invariably bogus, and the domains are often bought using stolen credit cards. These domains and their associated web hosting are then disposed of after a few days, and the spammer moves on to send out more spam using a different combination of domains and web hosting. Additionally, it has been noted that the stolen cards used by spammers are increasingly being obtained from phishers, identity thieves who pretend to be banks or online merchants and try to cheat gullible people into disclosing their identity and credit card information.

We thus see the spam problem has developed new levels of complexity, starting from over a decade ago when most spammers were small-time, individual operators to the current situation, where well-coordinated organized spam is the norm.

Technical measures to curb spam can only serve, to a limited extent, to mitigate the spam problem, as they typically try to mitigate the symptoms (block incoming spam) rather than address the actual cause (target the spammers). Regulatory measures take much longer to implement, and it is only right that they be put in place prudently, with a conservative approach that limits regulation to minimal levels, backed with an efficient and well trained enforcement mechanism (judiciary, law enforcement, etc.). Any proposed measures to mitigate spam must keep in mind the desirability of destroying the economic advantage that spammers have and exploit. These measures must ensure that both the spammer, and the person or organization that hires the spammer to send out an advertisement using spam email, are equally liable.

Table 7: *Percentage of messages estimated to be spam in 2004 (courtesy Messagelabs)* [104]

% of Spam	Month												
Country	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Average 2004**
Australia	30.9%	24.9%	24.6%	30.9%	30.7%	40.2%	44.8%	46.0%	45.3%	58.1%	64.7%	33.6%	44.5%
China	0.0%	0.0%	8.0%	28.4%	51.5%	45.5%	47.6%	47.6%	48.9%	51.8%	67.5%	93.7%	47.8%
Hong Kong	37.7%	19.9%	18.6%	20.4%	27.6%	33.2%	40.4%	43.1%	45.1%	51.9%	66.2%	72.1%	44.5%
India	14.4%	11.6%	13.0%	21.0%	31.4%	26.2%	25.9%	31.4%	38.5%	56.9%	39.2%	55.4%	34.4%
Indonesia			0.0%	8.8%	8.8%	8.6%	9.1%	10.0%	9.0%	9.7%	13.6%	9.7%	9.4%
Macau			38.8%	35.1%	45.9%	43.7%	44.7%	45.0%	54.9%	47.9%	48.3%	58.7%	47.0%
New Zealand	10.8%	29.2%	26.0%	31.5%	29.0%	33.0%	36.1%	38.2%	64.3%	46.8%	45.8%	40.9%	
Singapore	45.4%	41.7%	37.8%	40.0%	54.9%	51.2%	49.6%	52.7%	46.4%	34.0%	40.1%	41.7%	45.1%
South Korea	57.1%	54.5%	59.7%	51.3%	72.1%	64.0%	64.9%	73.0%	79.7%	70.3%	64.3%	64.8%	
Sri Lanka	25.1%	36.4%	30.3%	32.2%	41.2%	41.1%	40.1%	48.3%	46.3%	41.8%	50.1%	43.3%	39.1%
Thailand	52.9%	54.0%	58.4%	65.4%	87.2%	80.3%	79.0%	74.3%	74.2%	66.3%	72.0%	68.3%	68.9%
Average	37.0%	26.4%	24.6%	28.6%	33.2%	39.3%	43.9%	45.9%	45.5%	54.9%	64.4%	63.5%	44.6%

[104] These statistics are provided courtesy of Messagelabs, a provider of email security and management services, based on spam and virus statistics gleaned from analyzing over 100 million messages a day across a userbase of over 10,000 businesses based across 12 countries. - http://www.messagelabs.com

Challenges to the technical solutions

Spam, and the control of spam, is a major cost centre for ISPs, and one that is not going to earn them a single cent in profit by itself. It is however a necessary cost, as it saves the ISP significant amounts of money and goodwill in terms of customers who have a better online experience as they get less spam, and in terms of other ISPs who note the proactive stance of an ISP against spam, and refrain from blocking mail from it.

The costs of receiving, storing and downloading spam, the opportunity costs of hiring administrators solely to do spam filtering, when their talents could be devoted to other tasks within the company, are all high. Another cost that tends to get factored in is the cost of terminating services to a paying customer because the customer is a spammer. However, these are necessary costs, due to the associated savings in bandwidth, server infrastructure and, most of all, in retention of customers who would otherwise shift to another ISP just because it offered better filters, and had a reputation as a spam-free ISP.

Users whose Internet connectivity is a slow and expensive dialup, who find it difficult to even download their email, may not be prepared to download software updates for programs installed on their PC, even if they could, even if they have installed legal and licensed software on their PCs that makes them eligible to download these updates. For example, a new installation of Windows XP, with the latest service packs and other updates, may take a few hours even on a fast broadband line. It may be practically impossible to download all these updates, amounting to several hundred megabytes, over an expensive and unreliable dialup, even if the user is prepared to stay up all night, when Internet access is likely to be faster and less congested than during daytime, to download the required updates, paying telephony and ISP bandwidth charges on a per hour or per byte basis. Such users can order a CD with the necessary updates from their software manufacturer or vendor, but given the rapid spread of viruses, they may find their PCs infected, and abused as a vector to send out thousands of spam emails (probably with their email address, and email addresses from their address book, spoofed into the front line of the spam), before the CD reaches them.

Automated attempts to delete spam before it reaches the end user carries with it the danger that valid and non-spam email, such as an enquiry from a new client, may be rejected as spam, possibly losing large amounts of money for the company as a result of their not getting the new client's business. This does indicate the need for a more fine-grained and conservative approach to spam filtering, an approach that necessarily costs the business more in terms of money, and/or time and effort on the part of the corporate email administrator.

Asia-Pacific ISPs

ISPs in several Asian countries have at their disposal abundant bandwidth and state-of-the-art data centres, but there is often a corresponding lack of anti-spam policies and procedures. This causes a migration of spammers to their service, from ISPs that have comparatively better enforced anti-spam policies. A real world analogy would be criminals who shift their base of operations to a country with less stringent law enforcement and no extradition treaties with countries where they risk being arrested. Similarly, an ISP with a lax or complacent attitude

towards spam attracts not just local spammers but, in several cases, spammers from other countries who find it convenient to move their operations abroad. In keeping with current industry trends across the economy, several spammers are known to be outsourcing their spamming to spammers based in Asian countries.

Besides lax enforcement policies at ISPs, it has been alleged that some cash-strapped ISPs find that spammers are an attractive source of revenue, and have been known to provide "bulk hosting" services, that is, a service that is specifically geared towards hosting of spammer websites and spam sending servers, in addition to a commitment to ignore any spam complaints directed towards them. Such contracts between ISPs and spammers are colloquially known as "Pink Contracts".

This is again a question of opportunity cost, however, as ISPs hosting such contracts will inevitably find that their reputation among other ISPs is diminished, and that ISPs and blocklist providers around the world start to block email and other traffic from their networks because of the spam. They may also face action taken by their "upstream" ISPs, that is, larger ISPs from whom they buy international connectivity and bandwidth, and who may exert pressure on customer ISPs to enforce their anti-spam policies, or start to restrict available connectivity by "null routing" IP addresses on customer ISPs that are shown to be a consistent source of spam or other net abuse. Null routing is a common method of blocking IP addresses at the router level, cutting blocked IP addresses off from the Internet.

It is also important that ISPs are easy to contact through the established channels and procedures. It is a standard best practice of network administration for IP addresses and domains to have complete and up-to-date records in the WHOIS database maintained by the domain registrars and RIRs.

Spam Filtering

Most of the issues with spam are best addressed by attempts to stop outgoing spam from ISP networks. However, the other side of the anti-spam equation is the filtering of incoming spam. While filtering of inbound email is quite common at ISPs, the importance of filtering outbound email is quite often underestimated and, consequently, ISPs neglect the mitigation of outbound spam, to the detriment of the Internet at large.

ISPs and email providers have three options when deploying spam filtering.

- Outsourcing all the spam filtering, and/or their email hosting, to third party providers of spam filtered email such as Outblaze, Postini or Messagelabs.
- Purchasing and installing a commercial spam filter package such as Brightmail or Sophos PureMessage on their mail system, and working with the software's manufacturer to customize it to their needs.
- Using an Open Source spam filtering program such as Spamassassin or ASSP, and then customizing it to their needs themselves, with input from other users of that package provided by asking questions on mailing lists and discussion boards.

In these options, the costs of doing this specialized task entirely inhouse, and dedicating staff to it versus the costs of deploying a commercial anti-spam package or outsourcing spam filtering to a third party vendor will vary from provider to provider, and must be balanced before making a decision on how spam filtering must be implemented in the organization or ISP.

Even rudimentary spam filters, when set up on a mail server, will result in a drastic drop in the volumes of spam reaching the users' mailboxes. Finding and rejecting spam reliably, with a bare minimum of false positives, gets harder as the ISP's user base increases in size, or if there is a requirement to block a larger percentage of spam, so that more complex spam filtering strategies have to be evaluated.

Spam filtering is a task that can be accomplished at two levels – at the acceptance stage, where spam filters running on an ISP's inbound mail gateways filter spam coming in to all the ISP's users. And after the email has been delivered to the users' mailboxes, using "block sender" or "move to trash" filters setup by the user in his email program, as well as desktop anti-spam programs that automatically filter the users' email when he downloads it onto his PC.

Economies of scale, as well as the fact that the ISP's mail gateways make a natural chokepoint/ single point of entry that all the incoming email (and thus, all the incoming spam) to that ISP's users has to pass through, makes it much more efficient for an ISP to filter spam at their mail gateways, so that blocking a single spam source that is sending spam to thousands of the ISP's users means that the spam is blocked from all the ISP's users by the application of a single filter. ISP-wide spam filtering also lets an ISP track "trends" in spam so that a persistent spam source can be blocked, or addressed by other means, such as those detailed in the section about cooperation between ISPs

Desktop filtering software such as Norton Internet Security and McAfee Viruscan, as well as free alternatives such as AVG Grisoft and Avast, serves as an additional layer of protection for the ISP's users, and such software helps protect users' systems and data from any spam or viruses that manages to escape the ISP's anti-spam defences. In a situation where the ISP does not filter spam, or is not very good at filtering spam, desktop spam and virus filters become an even more important protection for end users of email. This is not an efficient solution by itself, as spam that has been delivered to the user's mailbox before being filtered out during download has already been delivered, and the ISP and the user have already borne the costs of receiving the spam.

National and international cooperation in the Asia-Pacific region

Network Operator Group meetings

ISPs should consider attending anti-spam workshops organized by Messaging Anti-Abuse Working Group (MAAWG) and Asia Pacific Coalition Against Unsolicited Commercial Email (APCAUCE), as well as network operator group (NOG) events. NOGs are conferences operated on a cooperative basis by senior and well-known members of the network operator community

in the region, with close coordination and support from the RIRs, where ISPs and network operators from around the region gather to discuss current and emerging operational trends in networking, security and spam, as well as to teach the skills they have acquired to their peers from other networks. ISPs attending such an event can take away with them a great deal of practical and operational knowledge, benefiting from the experience of their peers from other ISPs, as well as expert technologists in several fields of network operations, from DNS administration and routing to network security and anti-spam.

ISPs and network operators in South Asia can consider attending South Asian Network Operators Group (SANOG) besides attending Asia Pacific Regional Internet Conference on Operational Technologies (APRICOT). SANOG is a smaller NOG that is focused on the needs of South Asian economies that are currently at an earlier development stage in their Internet infrastructure and economy, compared to other Asian economies such as Singapore or Japan.

Regional CERTs

As discussed above, CERTs play a crucial role in information security. In the Asia-Pacific region, there exists APCERT, an umbrella association of several regional CERT bodies that are active in incident response and handling. Some other countries in the Asia-Pacific region do have CERTs in place, but their role needs to be expanded, and stabilized in order to concentrate their focus on handling systems and network security issues. CERTs can also work with local and international law enforcement authorities to quickly notify the responsible ISP in cases where illegal and/or harmful content, such as child pornography, or a virus' command and control centre, are located on a particular ISP in their region of coverage.

Regulator and Government level

At a regulatory and government level in the Asia-Pacific region, international organizations such as the Asia-Europe Meeting (ASEM) and APEC, as well as the ITU and OECD can facilitate cooperation, with substantial inputs from ISPs, eminent experts, and anti-spam organizations. International pacts and agreements such as the London Action Plan and the Seoul-Melbourne Anti-spam Agreement; that bring together regulators, ISPs and other stakeholders from different countries in the region will also help foster cooperation in the fight against spam, and provide a sounding board for countries that wish to introduce anti-spam legislation. International cooperation between multiple agencies at the regulatory and law enforcement levels is essential to fight spam, given its international nature, and the criminal aspects of spam, so that a spammer may be based out of the United States, have their web server hosted in China and have their payments processed by a payment gateway provider in the Caribbean.

User education

Education can play an important role in suppressing local spam industries, where people advertise email marketing services. Such services typically sell CDs with "ten million email addresses", all of dubious provenance, and most of which do not exist at all, having been randomly generated by the spammer. These CDs also ship with bulk mailer software that may forge headers, and abuse open relays and proxies to send out spam. Users of such spam software

thus unknowingly violate local laws against computer crime and hacking, even if there are no specific anti-spam laws in their country. As ignorance of a law is not normally regarded as a valid excuse for breaking the law, this may result in innocent people, whose only crime is that they believed the glib claims of a spammer and wanted to promote their business on the Internet, go to jail or have to pay heavy fines.

Developing countries have a major advantage when it comes to running education and awareness building campaigns, due to the way people access the Internet: often, users have limited Internet access at home, so they connect to the Internet at work or school, or use one of several commonly available community access points, such as cyber cafés or public libraries.

Conclusions

As a general rule, solutions to security and spam issues need much further development in the region, as evidenced by the high rates of dissatisfaction with governance in these areas in the ORDIG survey. Some solutions are short-term in scope and implementation, and can be rapidly implemented by local ISPs and NGOs, with the assistance and cooperation of their peers from developed economies. The equally necessary efforts on developing comprehensive legal and regulatory frameworks, and on maintaining high-level channels for cooperation, can proceed at a government-to-government level, at a slower pace, with regular inputs from ISPs, NGOs and other stakeholders in the problem.

Developing economies often lack a proper legislative and regulatory framework, and there is an urgent need to help them develop and build such a framework, and facilitate cooperation between law enforcement bodies in different countries. ISPs in developing economies must be convinced of the need to filter spam coming into their users' mailboxes, crack down on spam originating from their network, and develop policies that prevent their networks being used for spam and cybercrime.

In spam, cybercrime, and e-commerce, implementing local solutions to the challenges of Internet use depends on creating awareness, and building up a large pool of people who are aware of the issues involved and their solutions – trained email administrators, Internet savvy users who refuse to be drawn into the schemes touted to them by phishers and scam artists, people with expertise in online sales and business models, financial services personnel who understand e-commerce, local organizations which educate users and work with ISPs to facilitate better interaction between ISPs and the user community, and policy makers with an understanding of the interaction between technology and policy.

Developing economies are rich in human resources – talented personnel who are aware of the issues involved, and who will benefit enormously from training and interaction with their peers in tackling these problems. Deployment of local personnel and low cost open source software solutions involve comparatively low amounts of monetary investment. Moreover, such soft investments injected into a developing country's Internet economy are directed towards long-term capacity building and development of a trained pool of local expertise, both of which contribute to improving the operational stability of the Internet and its use in those regions.

Chapter Six

Development and the Regulation of Access Technologies: Wireless and VoIP

–Fuatai Purcell, Samudra Haque and Onno Purbo

Basic affordable access to Internet infrastructure remains one of the most fundamental levels of the "digital divide". Many of the discussions about Internet use, the Information Society, or e-business make assumptions about the "global" nature of the network and minimal (or approaching minimal) traffic costs. However, while this may be the situation in more-developed cities, it is not the case in many remote or less developed areas. The Small Island States of the Pacific are a particularly good example: in the ORDIG discussions, a user in Fiji mentioned paying for his 128 Kbps connection at US$ 3500/month. These issues have flow-on effects to end-users. For example, in New Zealand, the flat rate for unlimited dialup Internet access is NZ$ 24.95 (approx US$ 17.50) per month[105] whereas in Samoa, the cost of dialup Internet access is US$ 89 per month which includes free 500 MB and extra MBs at US$ 0.21 per MB.

When asked about the high cost of basic access compared to other countries in research by Fuatai Purcell, Pacific ISPs explained that they have little flexibility in pricing. As WGIG pointed out, "the primary mechanism for interconnection and peering are private negotiated arrangements or contracts between the owners of the physical infrastructure and do not generally fall under the rubric of international governance mechanisms."[106] Those who own capacity and bandwidth have all the power to set pricing for others to connect. Adam Peake has noted that this "money flows upstream" model of the Internet means that developing nations and smaller ISPs pay for the full cost of connectivity to the Internet, and they regard this as unfair. "Comparison with the most commonly used traditional telecommunications settlement regime only makes matters worse. International telecommunications settlements tend to favour high cost monopoly carriers over those operating at lower costs in competitive markets."[107] Thus, uncompetitive markets such as those of many Pacific Island countries lose both ways: they pay through the nose for Internet connectivity and lose an established revenue stream.

For developing countries in the Asia-Pacific, settlement revenue may form a large proportion of overall telecommunications revenue. Samoa, for example, had 40.8 percent of

[105] http://www.telecom.co.nz
[106] WGIG Background Report, para 59.
[107] Peake, A., 2005, "Internet Governance: Urgent issues for Asia Pacific" in Chin, S.Y. (ed.) *Digital Review of Asia-Pacific* 2005/2006, Penang: Southbound, p.18 http://www.digital-review.org

telecommunications revenue attributable to traditional telephony accounting rates in the late 1990s.[108] The shift from traditional telephony to VoIP, for example, will reduce that income, much as callback services are also contributing to this decline. According to WGIG, the ITU estimates that, between 1993-98, "net flows of telecommunications settlement payments from developed countries to developing ones amounted to some US$ 40 billion."[109]

As in many developing nations, the state of the telecommunication infrastructure in Small Pacific Island States is very poor. This is due to the fact that most are still a government monopoly and it is not unusual that telecommunication infrastructure has not been upgraded for at least five years. In three Pacific countries, the ISPs explained that telephone cables have a relatively short life because there are no casings to cover the cables. They were laid directly into the ground, which causes the cables to deteriorate quickly. Most of the cables and other telecommunication assets have passed their use-by date and it is too expensive to replace them.

WGIG notes that "the lack of adequate national and regional backbone may reflect market/public policy failure and require public policy intervention both in terms of funding and policy reform."[110] In some parts of Africa, publicly-owned or consortium-owned backbone operators with a development remit are being supported, with the potential of creating an 'open access' regime to provide transparent low-cost bandwidth to all comers.[111] While the island states of the Asia-Pacific may have logistical issues that prevent precise replication of these examples, the opportunities for regional cooperation on bandwidth provision are nevertheless under-utilized.

Internetworking possibilities

The Internet, as we now know, embodies a key underlying technical idea, namely that of *open architecture networking*. In this approach, the choice of any individual infrastructure technology was not dictated by a particular network architecture but rather could be selected freely by a provider and made to work interactively with the other networks through a meta-level "Internetworking Architecture". The Internet as a network relies on two principles – firstly, an open architecture that allows each computer to freely communicate with any other (the "end to end principle"); and secondly, the creation of open, voluntary standards that are freely available to all who wish to connect to the network.

Therefore, the Internet is not a homogenous network, and it does not rely upon any concept of key infrastructure; in fact it is simultaneously a network where individual networks are established and organized in a haphazard manner; and it is also a proper distributed hybrid communications network. Each network operator and server operator connects to another network operator in order to obtain connection. The networks that make up the Internet are

[108] Guermazi, Boutheina. 1999. International Accounting Rates, Developing Countries and the World Trade Organization: The Dilemma and a Possible Solution. *International Journal of Communications Law and Policy* Issue 3 (Summer). p.12.
[109] WGIG Background Report, Box 2 para 7.
[110] WGIG Background Report, para 197.
[111] infoDev (2004), *Leveraging New Technologies and Open Access Models: Options for Improving Access in Developing Countries (With a Focus on Sub-Saharan Africa)*. Published 17 September, 2004 http://www.infodev.org/files/1035_file_infoDev_Open.Access.Study_TOR_.pdf. Accessed 6 April 2005.

privately owned and autonomously operated. They are held together by a common set of open protocols and standards. There is a tacit understanding that all communication between networks will be carried, not only bi-laterally, but also third party and multi-party traffic relayed from the networks that each of the partners may be connected to themselves. Note, however, that widespread de-peering in some areas is placing this tacit understanding under some pressure.

So while the distributed nature of the network makes it difficult to achieve public policy aims, it also provides a number of opportunities for enterprising groups to create their own networks in ingenious ways. This can be seen in the growth of wireless networking in developing regions of the Asia-Pacific, and the emergence of VoIP.

Factors in the unwiring of the Internet

Telephony traditionally takes place on circuit-switched wired networks, a type of communications in which a dedicated channel (or circuit) is established for the duration of a transmission. It links together segments to create a single unbroken line for each telephone call. Circuit switch networks are complex, labour intensive and expensive to maintain, built on a legacy of technology that exists from the telecommunication provider's central office to the local loop delivering service to the customer premises. These can be very expensive, particularly in providing service to remote areas. They are also inefficient, in that infrastructure connecting individual premises to the network lies dormant for much of the time.

Wireless networks use shared infrastructure for a number of end users. Wireless networks can cover long distances (typically, 1-30 km) and provide a healthy amount of bandwidth for roughly half the cost of fibre-optic cable in terms of equipment and infrastructure, and does not need expensive trenching and explicit legal *Right of Way* (for cable-laying), which would usually be negotiated by the operator for crossing over each roadway, path, property to reach the destination points on their network. On the other hand, some "right of way" is required in the sense of spectrum – as users must either have a right to use a particular wireless spectrum, or open spectrum must be available.

The principal benefit of the choice of Wireless over Wired connection is the speed at which a service provider "turns-up" or "commissions" service. Since most of the radio infrastructure is reused each and every time when a new subscriber is connected, the time to provision a service is measured in minutes, rather than hours or days. Subscribers must give up some things when they choose wireless radio services, such as bandwidth–radio services can deliver less bandwidth per capita than equivalent wired services exclusive access–radio service communication devices have to contend for access to the infrastructure via shared channels individual service – radio services are (typically) dependent upon the facilities of a shared transmission network, any fault and the whole network may fail and stop working sensitivity to natural environment – in certain geographic areas with high humidity and variations in cold/hot climates, radio transmission is affected by the portion of the radio spectrum in use, and the ambient environment – which does not typically affect wired connections.

In the developed world, wireless radio services are usually used for *mobility* when you are

connected to the network, as the lifestyle in developed markets demands constant and aggressive work schedules and always-on connectivity. In the broader parts of the developing world, however, reducing the disparity in *connectivity* is the main driving force for choosing to go wireless rather than wired.

Roles of actors in the wireless network environment

Researchers, manufacturers, engineers and consumers all drive the development process of the technology that allows wireless radio to be used with as a transmission medium for Internet service. The thrust of the technology development, however, comes from the research and academic side of the industry, which must have proper laboratory facilities to develop new hardware, software, firmware that will allow a collection of semiconductors to generate a signal that, after transmission across a distance, will be received and utilized at a similar node elsewhere.

There are significant questions about who influences key policy decisions in the arena of spectrum allocation, that influences so much of the debate on what radio frequency technology to use and how. These discussions are carried out at the ITU under ITU-R[112] , with technical and policy research on spectrum allocation. While market issues relating to wireless are highly advanced in the United States, both Wi-Fi and WiMax are standardized under the IEEE. While corporate research and development labs play a key role in development of new wireless technologies, in many cases the policy environment creates the conditions for uptake (as can be seen from the rise of the mobile GSM network to critical mass through European policy).

Voice over Internet Protocol (VoIP)

In light of the above, an argument could be made that attempts to regulate innovation of emerging technologies (of the future) would always be futile, as limits to the advancement of technology are being removed every day, so that by the time regulation is proposed to "manage" the introduction and use of technology, it would be obsolete and ultimately marginalized. An equally valid alternative argument is that the regulations and practices that are in place today are in fact the catalyst that drives entrepreneurs and innovators to develop one example that circumvents the limitations, which often leads to new inventions. One example of such a an invention is the development of Vo IP, which was created by the private telecommunications service provider community to ensure more telephone conversations could be cheaply carried over existing fixed telecommunication networks that have been put in place for Internet traffic. One of the authors of the early generation O'Reilly book *Practical VoIP using VOCAL*, and co-founder of VOVIDA, Luan Dang candidly admits in an interview in 2002:

> In the US, it took 80 years to create the PSTN and it is excellent. However, in China the requirement is to build the system in one-tenth the time, to serve ten times the number of customers at one-tenth the cost. That adds up to many constraints to meet at the same time, and we believe that VoIP is the only way to accomplish those goals.[113]

[112] http://www.itu.int/ITU-R/
[113] http://www.oreillynet.com/pub/a/network/2002/08/06/voip.html?page=2

However, China's network is still SS7 based, with extensive VoIP being deployed more in telco backbones than in service delivery to end users.

What is VoIP?

VoIP is a protocol for exchanging voice data via Internet, using IP. It basically allows long distance call services through the Internet at the rate of normal Internet browsing, which is often cheaper than standard circuit-switched PSTN calls. Country population plays a significant role in reducing VoIP tariffs as operators trade minutes and bandwidth. Thus, the larger the population the higher the minutes and bandwidth and, thus, it is easier to reduce VoIP tariffs.

China and India, with very large populations, have comparatively cheap rates. Unfortunately, the Pacific islands have the highest VoIP tariff in the Asia-Pacific. This is an example of where policy frameworks may be needed to fulfil universal service obligations for those in the Pacific Islands and similar small island states.

The benefit of VoIP is not purely cost, however, as placing calls from a computer network that also sends email, and instant messaging traffic allows new applications and relationships between these forms of information. For example, VoIP can be used in tandem with text-based chatting (useful for sending codes or long numbers that must be exactly received) in ways that are much more difficult in the traditional telephony environment.

There are a number disadvantages to VoIP in comparison to PSTN. The main ones are:

1. The need for **electricity** at the end point of calling, whereas traditional phone networks can provide service to end users from power sources located at the exchange. This is particularly important for the role of emergency services, which may be required when power sources are not available.

2. Quality of Service (QoS). IPv4 has no mechanism for ensuring that packets are not lost or delayed en route to their destination and, if this happens, VoIP users experience drop-outs or degraded signal quality. While on broadband networks this is less likely to be a problem, on 256 Kbps or less connections in many homes, it is far from ideal.

3. Identification. PSTN and cellular networks use the E.164 system for identifying calling devices on the network, but no equivalent exists for VoIP, which uses a range of different standards depending on the service provider. Further, calls cannot be located geographically which also presents challenges to emergency services that sometimes may not be able to receive location information from their callers.

These issues would commonly be resolved through regulation and standards in a classical telecommunications environment. In an environment of competitive global platforms, issues of market position, technology and regulation are deeply intertwined and regulation itself will have difficulty in addressing these issues.

There are two major VoIP protocol families:

- SIP – Session Initiation Protocol developed by IETF.
- H.323 – developed by ITU.

H.323 is an earlier protocol and has been heavily adopted by many PC operating systems, such as Windows NetMeeting. Unfortunately, it is not an easy task to use H.323 in a Network Address Translation (NAT) device used in many office configurations and mobile networks. As a result, SIP appears to be rapidly becoming the *de facto* standard for public VoIP networks.[114] Private networks use a range of protocols, usually developed in the private sector. Also popular is Skype, a proprietary, peer-to-peer protocol which uses the resources of its clients to route calls over the network. It is particularly popular in China and Taiwan.

It is possible under VoIP infrastructure to get a personal number that can be called from the old PSTN network. The subscribers will receive the call over Internet without having to connect to any single PSTN line. Surprisingly, there are several free PSTN to VoIP gateways in the world that provide free interconnection between VoIP and the PSTN. They are not located in the Asia-Pacific. However, anyone, including in the Asia-Pacific, can practically own their very own PSTN number from these providers, such as FwdOUT, which lets users share their local phone lines, and other people will let the user share theirs. Under free local calling regimes this makes calling effectively free of charge.[115]

Framework for encouraging VoIP

VoIP regulation generally covers the following aspects:

- Classification
- Approval mechanisms for VoIP equipment
- Licensing for VoIP service providers
- Interconnection mechanisms to PSTN/cellular services
- Universal service obligations
- E.164/number allocation for VoIP providers
- Tariffs
- Privacy and security
- Quality of Service

The first three are the bare minimum for a VoIP regulatory framework, while better frameworks also cover the last two. Within the Asia-Pacific only four countries; namely, Indonesia, Malaysia, Sri Lanka and Singapore seem to have an explicit Internet Telephony Service Provider (ITSP) licensing mechanism. However, only Singapore and Malaysia explicitly provide the required licensing fee. Both Malaysia and Singapore are fairly transparent and list the licensed operators on their Web. Service-based operators in Singapore can be checked through the IDA website.[116] Australia is currently in a process of discussion regarding its VoIP policy.[117] India seems to have

[114] http://www.fokus.gmd.de/mobis/siptutorial/ contains a good tutorial on SIP.
[115] A number of private number providers can be found at http://www.voip-info.org/wiki-VOIP+Service+Providers
[116] http://www.ida.gov.sg/idaweb/pnr infopage.jsp?infopagecategory=licensing:pnr&versionid=1&infopageid=I1249
[117] http://www.dcita.gov.au/tel/internet_and_broadband_services/emerging_voice_services

no explicit policy in ITSP licensing. However, it seems to be possible to use international carrier licensing as an ITSP licensing mechanism in India. Malaysia and Singapore have relatively clear, explicit and transparent approval mechanisms for telecommunication equipment including VoIP equipment.

In the case of number allocation, only Indonesia and Malaysia explicitly allocate a specific phone number for ITSP. However, it is not a single step dial to reach a VoIP destination. It involves a two-step dial process to reach the destination. There are no countries in the Asia-Pacific which are known to allocate phone numbers or a prefix for the VoIP infrastructure in the country. Interconnection regulation in Singapore seems quite transparent and it is possible to allocate a phone number for VoIP endpoints by VoIP operators.

An experimental trial SIP-based VoIP and ENUM is currently being tested in the Asia-Pacific by Asia-Pacific Engineering ENUM Taskforce, APEET[118], and demonstrated in various Asia-Pacific Advanced Network (APAN)[119] meetings. China, Japan, Korea, Taiwan, Australia and Singapore are taking the lead in establishing a test bed. The goal appears to be a common ENUM root server in the Asia-Pacific region in coordination with Asia Pacific Network Information Centre (APNIC).

With regard to tariffs, only Singapore has a fairly open telecommunication tariff mechanism. It seems that the annual license fee in Singapore is the lowest and in the Asia-Pacific, at S$ 200 for three years. The license fee is one of the most difficult to find in most regulatory regimes. Only Singapore and Malaysia were found to transparently publish their license fee online on the Internet. Further, in Singapore, no application and approval fee is required to get a VoIP services-based operator license. Thus, Singapore is able to reduce the overhead cost of many VoIP operators.

Interconnection in VoIP infrastructure

Interconnection is a key element to successful deployment of VoIP infrastructure in a country. The existence of

- a clear interconnection scheme, with equal treatment to any operators;
- a clear telecommunication tariff mechanism;
- a network interface disclosure requirement; and
- a comparably efficient interconnection requirement for competitor networks

are essential elements to enable a healthy VoIP infrastructure in a country.

Telecommunication equipment certification/approval

Telecommunication equipment certification/approvals are required to ensure that the telecommunication infrastructure meets a certain standard. A common issue is the differences in tariffs between classification schemes for equipment approval.

[118] http://www.apenum.org
[119] http://www.apan.net

One can easily probe the barriers to VoIP by looking at the number of providers in a country. It is interesting to note that there are 67 VoIP providers in Bangladesh, and 36 in India. A healthy VoIP industry can be found in Australia, China, Hong Kong, Indonesia, India, Iran, South Korea, Malaysia, the Philippines, Pakistan, Singapore and Thailand. However, a large number of VoIP providers does not necessarily mean a lower VoIP tariff. Bangladesh has an average PC to phone VoIP tariff at around US cent 18.2 per minute, far from the cheapest in the region, even though it has a high number of VoIP providers.

Ultimately, while VoIP results in cheaper calling, its overall effect on the telecommunications policy environment raises significant questions for developing regions. Interconnection may be difficult to achieve as a small or medium business and community-based VoIP infrastructure takes a bottom-up approach and uses a paradigm different from the PSTN and cellular industries that are more regulated. Singapore has demonstrated an early stage of practical convergence. It may take some time before such approaches are propagated among other Asia-Pacific countries.

Conclusions

The challenges to universal access to the Internet are complex and significant. Compared to the traditional telephone system, the economic model of interconnection for Internet networks is much more favourable to developed countries and industries. This means that funds that previously went to the fringes of the network to encourage its extension, now flow back to the centre to develop bandwidth between already connected sites. There is a clear need for significant new mechanisms to address the public policy goal of access for all. Technologies such as Wireless and VoIP have potential in reducing the end user costs for Internet connectivity, but there are a complex set of policy concerns that emerge around these new technologies.

Much of the leadership in these areas is coming from the private sector and market demand. There is a tremendous pressure on individual governments to allow popular access technologies from overseas to be used, even if they have not yet been officially adopted as standards, due to the greatly increased flow of people, media and information between nation-states. Suppressing certain technologies to preserve monopolies, for example, may have significant negative economic consequences.

Further, the pace of standards development in these areas creates challenges for public investment in infrastructure, and other activities designed to achieve public policy objectives. Issues such as Quality of Service and Universal Service Provision are much more complex than for standard telecommunications networks.

The paradox of the new access technologies is that the flexibility that makes them affordable also increases gaps between the haves and the have-nots. While new technologies such as VoIP and Wireless have a mixed role in achieving development objectives, they both highlight the new communications environment under which we must find solutions for reducing inequality.

PART III

Internet Governance–Country Reports from the Region

- China
- India
- Indonesia
- Pakistan
- Thailand

Chapter Seven

Country Reports: China, Indonesia, India, Pakistan and Thailand

This section summarizes five reports on Internet governance covering countries in the Asia-Pacific region. For maximum outreach, the ORDIG survey was translated into major local languages in each of the countries, made available online in a low-graphic, easy to-complete format and promoted through various local partners to reach different stakeholder groups. Survey-takers were invited to register their views on 26 Internet governance issues and provide some general information about themselves and their Internet use. The survey received over 1,200 responses from 37 countries and from all major stakeholders.

A range of published research was considered to contextualize results from the ORDIG survey. The following background data provide a comparative picture of the Internet situation in each of the four countries.

The following basic ICT indicators provide a general backdrop for the discussion on Internet governance:

Table 8: *Basic Internet parameters*

COUNTRY	Internet users (2003)	Internet users per 100 population (2003)	Computers (2003)	Computers per 100 population (2003)	Internet host computers (2003)	Internet host computers per 100 population (2003)
China	79,500,000	6.32	35,500,000	2.76	160,421	0.01
India	8,080,000	1.75	7,500,000	0.72	86,871	0.01
Indonesia	18,481,000	3.76	2,519,000	1.19	62,036	0.03
Pakistan	1,500,000	1.03	600,000	0.42	15,124	0.01
Thailand	6,972,000	11.05	2,461,000	3.98	103,700	0.16
AP Average		**7.22**		**4.83**		**0.60**
AP Industrialized Country Average		49.49		40.67		10.74

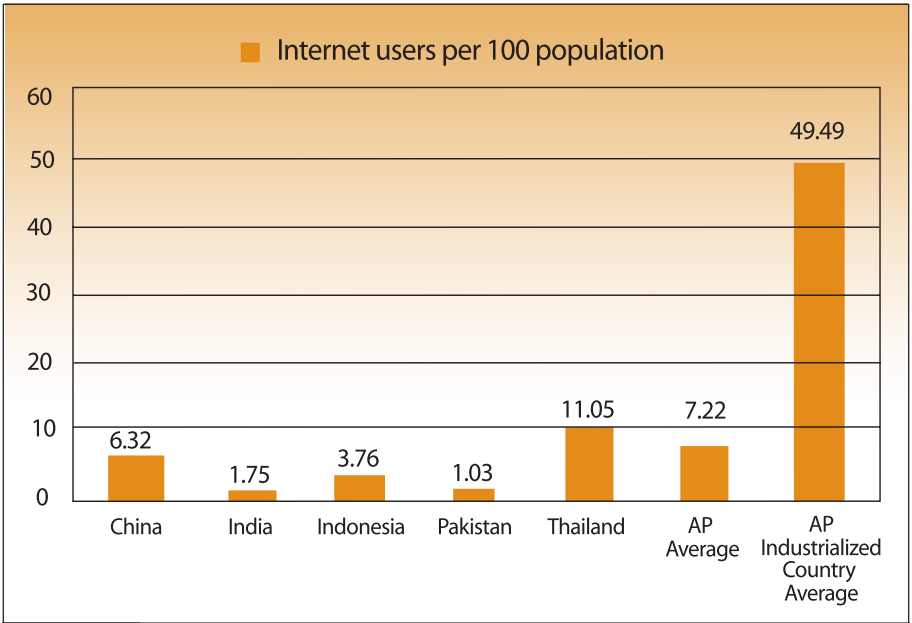

Figure 3 **Internet users per 100 population (2003)**

Source: ITU, 2004

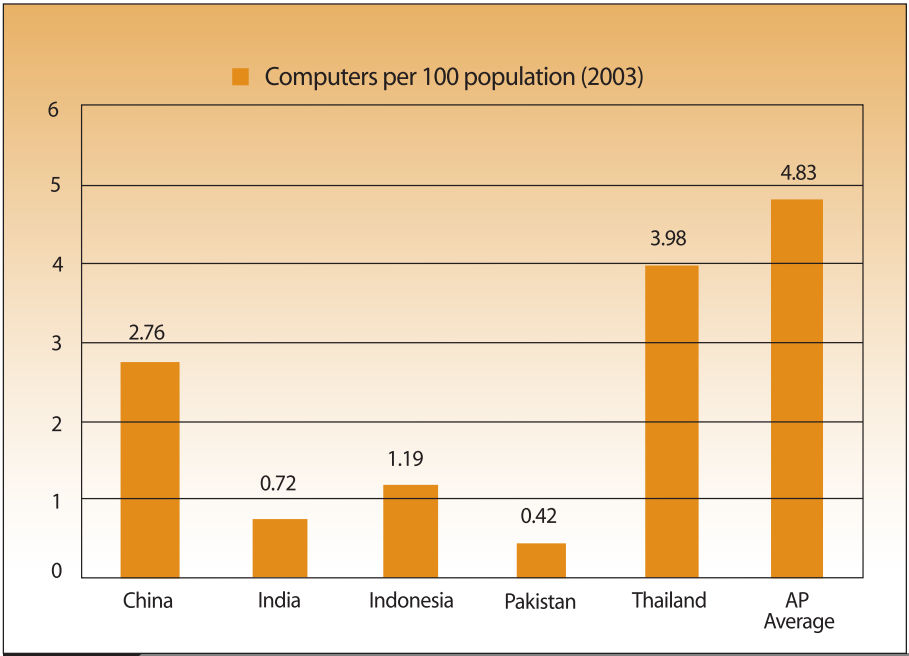

Figure 4 **Computers per 100 population (2003)**

Source: ITU, 2004

In these figures we can clearly see that the reference countries are well behind the Asia-Pacific averages on a per-capita basis. This is particularly the case when it comes to Internet hosts, suggesting a significant bias toward consumption rather than production of information in the Internet environment.

Infrastructure

The rollout and expansion of Internet infrastructures have continued apace, most strongly in the Asia-Pacific region. According to industry data, in 2004 Internet capacity, measured in bandwidth, grew rapidly by 77 percent across Asia, the highest growth rate of all world regions.[1] Likewise, the countries considered here have considerably expanded their international Internet links but relative to population size, the deployed bandwidth is still limited as Table 9 shows.

Table 9: *International bandwidth, reference countries*

	International bandwidth	
Country	**Total (Mbps) 2003**	**Bits per inhabitant 2003**
China	27,216	21.7
Indonesia	573	2.7
India	3,000	2.8
Pakistan	567	3.8
Thailand	1,437	22.8
AP Average	**—**	**55.0**
AP Industrialized Country Average	—	285.3

Source: ITU, 2004

Table 10: *Internet access costs*

	Total monthly costs for 20 hours of Internet access (subscription plus metered costs in US$ for August 2003)	**As percentage of Gross National Income per Capita**
China	10.14	13
Indonesia	22.26	37.6
India	8.74	21.9
Pakistan	15.61	45.7
Thailand	6.98	4.2
AP Average	**—**	**39.7**
AP Industrialized Country Average	—	1.0

Source: ITU, 2004

Emerging Internet technologies

The ORDIG survey has specifically solicited opinions about two new and emerging technologies; wireless Internet and Internet telephony.

As pointed out in the chapter on emerging Internet technologies earlier in this publication, wireless Internet technologies hold enormous potential to make Internet connectivity more available and affordable. As seen in Table 10, developing countries in the Asia-Pacific region

[1] Global Internet Geography 2005 Executive Summary:http://www.telegeography.com

face significant cost barriers to Internet use.[2] Wireless technologies are less vulnerable to natural disasters and sabotage, they can be deployed more flexibly and rapidly, and they typically incur lower last-mile costs to reach the end-subscriber, advantages that weigh heavily in Indonesia's difficult geography, for example. The use of wireless technologies to transmit data over distances between 1 and 60 km could cut costs for equipment and infrastructure in half as compared to conventional wire-based infrastructures.

The multi-stakeholder UN WGIG arrives at the same conclusion:

> "Policy and regulatory incentives and more open access policies are also needed, if private investment and community networks are to be effective in expanding ICT access to high cost (predominantly rural) and low income populations to address the so-called 'bottom of the pyramid' populations"[3]

The enormous success of Wi-Fi technologies, which have flourished in countries that grant open, unlicensed access to spectrum, impressively underscores the advantages of such a light-touch approach to governing the wireless Internet infrastructure. With the official de-licensing of the 2.4 GHz band in January 2005, Indonesia has taken an important first step towards unleashing the potential of wireless Internet technologies, leaping ahead of China and Pakistan as Table11 shows.

Table 11: *Regulatory teatment of Wi-Fi in the 2.4 GHz band*

Country	Unlicensed	Licensed
China		✔ "Network Access License"
India	✔	
Indonesia	✔	
Pakistan		"site approval" required
Thailand	✔ Unlicensed for secondary usage	

Source: Open Spectrum International, 2005

In the same chapter, we find that Internet telephony markets are fairly well developed in Indonesia, China, India and Pakistan, the four reference countries, as measured by the existence of exchange markets where providers offer and purchase services for terminating VoIP calls or routing VoIP traffic.

Table 12: *Providers of VoIP data services*

	Call termination	VoIP providers list
. cn China	11	10
. id Indonesia	1	7
. in India	21	36
. pk Pakistan	11	11
. th Thailand	4	9

Source: UNDP-APDIP research

[2] WSIS Task Force Report on Financing Mechanisms: http://www.itu.int/wsis/tffm/index.html
[3] For details see http://www.volweb.cz/horvitz/os-info/indonesia.html

To some extent, this dynamic VoIP development is aided by Indonesia's large population size, which makes the aggregation of VoIP traffic more cost-effective and helps negotiate more advantageous transit or termination rates with international providers. Nevertheless, population size and number of providers is not a guarantee for low rates, as estimates by Onno W. Purbo confirm:

Table 13: *Typical PC to phone rate for AP countries (calling countries via Internet phone services)*

	Min. (cents)	Average (cents)	Max. (cents)
.cn China	3.00	3.00	3.00
.id Indonesia	5.60	14.30	22.10
.in India		15.60	19.00
.pk Pakistan	26.00	32.50	33.80
.th Thailand	7.02	9.62	9.88

Source: UNDP-APDIP research

The following pages contain information on Internet governance priorities for each of the countries. These reports are not an exhaustive analysis of the Internet policies in place, but rather a country-specific analysis of the ORDIG work. It builds on and should be read in close conjunction with other ORDIG outputs, including the Internet Governance Primer, Survey and Forum Reports and especially the WGIG Input Paper whose structure and categorization of Internet governance topics it loosely follows. Full reports are available from UNDP-APDIP's Internet governance website: http://igov.apdip.net.

Internet Policy Priorities in China

One hundred and six individuals from China participated in the UNDP-APDIP online survey on Internet Governance Priorities in the Asia-Pacific Region.[4] Eighty-seven percent of Chinese survey-takers, over 20 percentage points more than in other countries in the Asia-Pacific, disagree with the proposition that "at present the Internet does not provide any significant benefits for most people". More than 90 percent are optimistic that the benefits afforded by the Internet will even expand further in the future and over 60 percent believe that the Internet also helps to combat poverty.

This overall positive assessment notwithstanding, Chinese respondents register significant dissatisfaction with a large number of specific Internet policy issues.

Table 14: *Internet governance priorities for China (ranked by level of dissatisfaction with management of status quo)*

Rank in rest of AP region	Rank in China	Issue	% dissatisfied	% satisfied	% no view
1	1	Cybercrime, online fraud	100	0	0
2	2	Virus attacks	100	0	0
3	3	Spam	96.2	2.8	0.9
5	4	Privacy online	85.8	12.3	1.9
4	5	Illegal content	84.9	14.2	0.9
8	6	Reliability and speed of Internet	68.9	31.1	0
9	7	Online access to government information	68.6	29.5	1.9
12	8	e-Commerce payment systems	60.6	28.8	10.6
13	9	Fair access to/protection of intellectual property	59.4	17.0	23.6
6	10	Availability and cost of Internet	56.6	43.4	0.0
7	11	Wireless Internet: spectrum and access	55.7	18.9	25.5
17	12	Secure server/encryption	55.2	19.0	25.7
21	13	IP address allocation/management	52.4	18.1	29.5
14	14	Internet telephony (VoIP)	49.1	29.2	21.7
16	15	ISP market conditions	47.6	26.7	25.7
15	16	Network interconnection/ backbone access	41.5	42.5	16.0
20	17	Domain name management	40.0	25.7	34.3
19	18	Domain names with non-Roman character sets (IDN)	40.0	18.1	41.9
18	19	Access to technical standards and their adaptability	36.2	29.5	34.3
11	20	Availability of local content	32.7	66.3	1.0
10	21	Availability of local language software	26.9	70.2	2.9
22	22	Own skills for using Internet	9.5	90.5	0.0

[4] For details on the composition of responses from the full report at http://igov.apdip.net/ORDIG.Survey.Report.pdf

According to industry data, in 2004, Internet capacity, measured in bandwidth, grew rapidly by 77 percent across Asia, the highest growth rate of all world regions.[5] Nevertheless, Internet penetration rates in most countries in the region, including China, remain very low while dissatisfaction rates for Internet availability, costs, reliability and speed are well over 50 percent in China and other countries of the region alike. Statistics on effective access costs corroborate this dissatisfaction. Purchasing an individual subscription to the Internet consumes a significant share of per capita income and is well beyond the means of many households in the region.

Although residents in China are marginally more satisfied with interconnection arrangements and backbone access than their peers in other countries in the Asia-Pacific, a sizeable proportion of 41.5 percent of Chinese respondents are not content with the status quo in this issue area. In addition, 47.6 percent express their dissatisfaction with domestic ISP market conditions, which are more highly regulated than some other countries in the region.

Regulation also plays a key role in emerging technology infrastructures. The enormous success of Wi-Fi technologies, which have flourished in countries that grant open, unlicensed access to spectrum, impressively underscores the advantages of a light-touch approach to governing the wireless Internet infrastructure. However, findings from various industry reports suggest that China, which started to experiment with Wi-Fi very early on, is taking first encouraging steps to create a more enabling environment for the deployment of wireless Internet technologies. A dispute about required Wi-Fi standards has been resolved while the market for Wi-Fi equipment is predicted to grow by 33 percent annually over the next years, reaching US$ 160 million in 2008.[6]

The emergence of Internet telephony, the use of Internet infrastructures for the partial or full routing of voice calls, often also referred to as VoIP, is another new regulatory challenge at the intersection of Internet and conventional telecommunications policies. VoIP has the potential to offer local and long-distance telephone services that are cheaper than conventional phone calls, thus exerting a competitive pressure on telecommunication services that are in many countries dominated by a handful of incumbent operators. China devised a license for VoIP services as early as 1999, but currently only five operators hold these licences.

On the topic of IP address management, on the other hand, the degree of dissatisfaction among Chinese respondents rivals the discontent registered for infrastructure problems with more than 50 percent of respondents indicating that they are not happy with the status quo. This also makes IP address management the issue where responses from China differ most significantly from the views of the Asia-Pacific region as a whole, where the issue is perceived as less of a concern.

With regard to content-related governance issues, Chinese survey respondents confirm virus attacks, cybercrime and spam as the issues that are by far considered as the most important Internet governance priorities across the region. In fact, Chinese respondents convey an even higher sense of urgency for these three issues. Developing solutions to the problems of

[5] Global Internet Geography 2005 Executive Summary: http://www.telegeography.com
[6] For details, see http://www.volweb.cz/horvitz/os-info/china.html

cybercrimes/online fraud and virus attacks is regarded as at least somewhat important by 100 percent of survey takers from China with 99 percent opting for the 'very important' and 'important' categories. Spam is considered as only marginally less urgent with 96 percent finding the issue to be of importance.

Unfortunately, China ranks third in the list of top countries of attack origin, just behind the United States and Germany. This does not necessarily mean that a large number of perpetrators are actually based in China. Hackers increasingly take advantage of security vulnerabilities to hijack unsecured computers and enlist them in their cyber-attacks. This appears to be frequently the case in China as Table 15 indicates, which presents the third-largest share of computers worldwide to be affected by 'Bots' (short for robots), covertly installed programmes that allow an unauthorized user to gain access to and control over the computer.

Table 15: *Top countries by share of bot-infected computers worldwide*

Rank	Country	% of bot-infected computers
1	United Kingdom	25.2
2	United States	24.6
3	**China**	**7.8**
4	Canada	4.9
5	Spain	3.8
6	France	3.6
7	Germany	3.5
8	Taiwan	3.1
9	South Korea	3
10	Japan	2.6

Source: Symantec Corporation

The exposed position of Chinese Internet computers as victims of and contributors to the virus and cybercrime issue is mirrored with regard to spam. On the one hand, China is a major originating country for spam mail, although absolute numbers can be a bit misleading and a per-user weighting of spam would most likely see China dropping out of the top ranks.

Online privacy and data protection are major concerns in China. A significantly larger share of respondents than in any other country in the Asia-Pacific region declares to be dissatisfied with the current status quo in China in this area.

With respect to localization issues, the relatively low level of discontent with the availability of local language software is particularly noteworthy since it diverges markedly from the higher disapproval rates in other countries in the Asia-Pacific region. China appears to benefit in this respect from its large population size that makes the production of local language software both attractive and cheap measured in per-unit costs, and the existence of many Chinese-speaking peoples outside China itself.

Internet Policy Priorities in India

One hundred and fifty-six individuals from all stakeholder groups in India participated in the UNDP-APDIP online survey on Internet Governance Priorities in the Asia-Pacific Region. In general, respondents from India exhibit considerable optimism about the benefits and potential of the Internet, but are slightly more sceptical than their colleagues in other countries, especially with regard to the role of the Net in combating poverty. More than 95 percent of Indian respondents believe that the Internet should be available for everyone and that its benefits will further grow in the future, but only half of Indian survey-takers think that the Internet also helps to combat poverty, as compared to a significantly larger share of 61 percent in other Asia-Pacific countries.

This guarded optimism is also reflected in the survey responses to 22 specific topics in Internet governance, many of which are met with a considerable degree of dissatisfaction by the Indian Internet community.

Table 16: *Internet governance priorities for India (ranked by level of dissatisfaction with management of status quo)*

Rank in rest of AP region	Rank in India	Issue	% dissatisfied	% satisfied	% no view
1	1	Cybercrime, online fraud	90.8	7.8	1.3
2	2	Virus attacks	89.6	9.7	0.6
3	3	Spam	89	11	0
4	4	Illegal content	80.3	16.4	3.3
14	5	Availability of local content	68.6	20.9	10.5
6	6	Availability and cost of Internet	62.8	35.3	1.9
8	7	Wireless Internet: spectrum and access	62.0	18.7	19.3
5	8	Privacy online	61.9	32.9	5.2
13	9	Availability of local language software	60.8	27.5	11.8
9	10	Online access to government information	59.6	38.5	1.9
7	11	Reliability and speed of Internet	58.3	41.7	0.0
16	12	Network interconnection/backbone access	53.3	34.2	12.5
12	13	Internet telephony (VoIP)	45.1	30.7	24.2
11	14	Fair access to/ protection of intellectual property	42.7	36.7	20.7
10	15	e-Commerce payment systems	42.5	46.4	11.1
15	16	ISP market conditions	41.7	31.8	26.5
17	17	Secure server/encryption	33.8	34.4	31.8
19	18	Domain names with non-Roman character sets (IDN)	32.7	15.6	51.7
20	19	Domain name management	30.0	41.3	28.7
18	20	Access to technical standards and their adaptability	29.3	45.3	25.3
21	21	IP address allocation/management	27.3	36.0	36.7
22	22	Own skills for using Internet	3.8	94.9	1.3

As Table 16 shows, around 60 percent of all respondents from India express their discontent with regard to availability, costs, reliability, speed of the Internet as well as with the status quo with regard to IP telephony and wireless Internet. Other statistics underscore these fundamental challenges. Although cheaper than in many other countries, the Internet is still expensive relative to purchasing power. Purchasing an individual dialup subscription to the Net would consume over 20 percent of per capita income in India and is, therefore, well beyond the means of an overwhelming majority of households in the country.

India has made considerable progress in establishing more open policies for international data gateways.[7] ISPs can obtain licences for international gateways. For operating international satellite links alone, 24 such licences were in use in 2004, thereby expanding to the international link the dynamic of the domestic ISP market in India[8], which boasts almost 400 licensed ISPs, 200 of which are active.

These vibrant markets notwithstanding, the choice of smaller ISPs in purchasing upstream connectivity can be limited by a lack of interconnection arrangements in the region, both at domestic or sub-regional level. The Asia-Pacific region, as a whole, suffers from a very low number of IXPs. The relative backwardness of the Asia-Pacific becomes even more apparent, when factoring in population sizes, which would relegate the region to the last place in terms of per capita density of IXPs. Perceived shortcomings with the status quo for interconnection arrangements are particularly widespread in India. Over 53 percent of respondents reported to be unhappy about the current situation as compared to an average of 46 percent in other countries of the region, indicating that problems with interconnection at the domestic level are an important concern.

New technologies might hold the key for reducing the costs of Internet connectivity further and getting the accompanying policy framework right is essential to unlock this potential.

For both wireless Internet and Internet telephony dissatisfaction with the status quo in India roughly mirrors the responses from the region as a whole. More than 60 percent of Indian respondents, slightly more than in the rest of the region, voiced their dissatisfaction about the current policies for wireless Internet, while governance of IP telephony is viewed somewhat less negative than in other Asia-Pacific countries with 45 percent of Indian respondents state being unhappy with the status quo as compared to 52 percent elsewhere in the region.

Finally, although it is only one of many wireless Internet technologies, the treatment of Wi-Fi appears to set the standard for emerging governance models for other new wireless services such as the longer range WiMax. In contrast to China and Pakistan, India has taken encouraging first steps to create an enabling environment for new wireless technologies by de-licensing access to the Wi-Fi spectrum as shown in the introduction to the country reports.

[7] Data on international gateway for 2004 from ITU World Telecommunication Regulatory Database, data on ISP licenses from APT Yearbook 2004, Bangkok: APT.

[8] Additional information on India from APT Yearbook 2004, Bangkok: APT, and Malik, P. (2005): "Regulation and Investment: Case Study of the Indian Telecommunications Industry", in: Mahan, A.K. and Melody, W.H. (Eds.): *Stimulating Investment in Network Development: Roles for Regulators*, Regulateonline.Org

In addition, the Indian regulatory authority is proposing to lower access barriers to other spectrum bands and to encourage the use of converged Wi-Fi-GSM handsets, initiatives that, if approved by the Ministry of Communications, could dramatically leverage the benefits of the new wireless technologies and establish India as one of the policy pioneers in this area.

The emergence of Internet telephony, the use of Internet infrastructures for the partial or full routing of voice calls often also referred to as VoIP is another new regulatory challenge at the intersection of Internet and conventional telecommunications policies. India adopted a licensing regime for VoIP in 2002 and as of December 2003, 118 ISPs have been granted a license for this service.

Less than 40 percent of respondents state being dissatisfied with the status of domain name management, IDNs, IP address management and standards. However, the survey results do not support the claim that the status quo for these issues is viewed as flawless, since a sizeable group of almost one-third of respondents still record their discontent with domain name management and IDNs, while still a quarter register concerns about IP address management and technical standards issues.

With regard to content-related governance issues, survey respondents from India confirm virus attacks, cybercrime and spam as the three issues that are by far considered as the most important Internet governance priorities across the region with around 90 percent regarding the development of solutions to these three problems as important.

While India currently does not rank highly as an originator of virus attacks or spam mail, the problem is on the rise. The required legal framework is only gradually evolving in many Asia-Pacific countries and, by 2004, no legal provisions against spam had been put in place in India.[9]

Concerns about illegal content also feature prominently in replies to the survey from India with 80 percent of respondents expressing their dissatisfaction with the status quo of this issue, while the availability of local content also emerges as a major concern with 68 percent of Indian respondents registering complaints.

As the survey results for these group of governance issues indicate, topics such as the availability of local content or local language software are a major issue in India, a country with more than 400 living languages, many of which rely on non-Roman character sets, which poses additional challenges for domain names and general software compatibility.[10] The only significant exception to all this is the topic of availability of local language software. Here, the degree of dissatisfaction among respondents from India is striking, with more than 60 percent, 8 percentage points more than on average in other countries in the region, indicating that they are not happy with the status quo.

[9] See ITU World Telecommunication Regulatory Database and Ansari, 2005.
[10] See http://www.ethnologue.com/

Internet Policy Priorities in Indonesia

In general, respondents from Indonesia share the enthusiasm of their colleagues in other countries in the region about the benefits and potential of the Internet. More than 90 percent of Indonesian respondents believe that the Internet should be available for everyone and that its benefits will further grow in the future. Indonesians are also very upbeat about the potential of the Internet to combat poverty with 77 percent seeing such a role for the Net, as compared to only 57 percent of respondents in the entire Asia-Pacific region. This overall positive assessment notwithstanding, Indonesian respondents register significant dissatisfaction with a large number of specific Internet policy issues, as demonstrated in Table 17.

Table 17: *Internet governance priorities for Indonesia (ranked by level of dissatisfaction with management of status quo)*

Rank in rest of AP region	Rank in Indonesia	Issue	% dissatisfied	% satisfied	% no view
3	1	Spam	95.6	4.4	0
1	2	Cybercrime, online fraud	95	5	0
2	3	Virus attacks	94.4	5.6	0
4	4	Illegal content	84.9	15.1	0
6	5	Availability and cost of Internet	80.5	18.2	1.3
9	6	Online access to government information	76.1	21.4	2.5
8	7	Reliability and speed of Internet	75.5	23.9	0.6
13	8	Availability of local language software	67.9	26.4	5.7
16	9	Network interconnection/ backbone access	67.1	28.5	4.4
14	10	Internet telephony (VoIP)	66.5	23.4	10.1
7	11	Wireless Internet: spectrum and access	66.0	23.9	10.1
5	12	Privacy online	62.7	34.2	3.2
10	13	e-Commerce payment systems	60.4	33.3	6.3
17	14	ISP market conditions	60.1	29.7	10.1
12	15	Availability of local content	58.5	40.3	1.3
11	16	Fair access to/protection of intellectual property	53.2	37.3	9.5
15	17	Secure server/encryption	39.2	43.1	17.6
19	18	Domain names with non-Roman character sets (IDN)	34.2	34.8	31.0
18	19	Access to technical standards and their adaptability	34.0	50.6	15.4
20	20	Domain name management	32.7	57.2	10.1
21	21	IP address allocation / management	29.3	54.8	15.9
22	22	Own skills for using Internet	13.3	84.8	1.9

Dissatisfaction rates in Indonesia for Internet availability, costs, reliability and speed and all other infrastructure parameters are well over the Asia-Pacific average, culminating in over 80 percent of respondents from Indonesia that complain about availability and costs for Internet

access. Purchasing an individual subscription to the Net would consume over 37 percent of per capita income in Indonesia and is therefore well beyond the means of an overwhelming majority of households in the country.

Geography clearly plays a role in a vast archipelago of over 13,000 islands, creating difficult conditions for spreading connectivity beyond urban centres. Wireless access has a crucial role to play in reducing access costs. What's more, although it is only one of many wireless Internet technologies, the treatment of Wi-Fi appears to set the standard for emerging governance models for other new wireless services such as the longer range WiMax. With the official de-licensing of the 2.4 GHz band in January 2005, Indonesia has taken an important first step towards unleashing the potential of wireless Internet technologies.[11]

High access charges for international bandwidth persist, indicating a more general competition problem that appears at least partly related to domestic regulations. Many countries in the Asia-Pacific continue to impose restrictions on domestic ISPs with regard to owning or purchasing international bandwidth. As survey data from the ITU suggests neither in Indonesia, nor in two of the other countries considered (China and Pakistan), can ISPs other than the incumbents and their affiliates, own or lease their own international data gateways, thereby dramatically reducing the dynamic of a domestic market for Internet services that is relatively vibrant in Indonesia with an estimated 190 issued ISP licenses, 112 of which are believed to be active.[12] The choice for ISPs in purchasing upstream connectivity is further limited by a lack of interconnection arrangements in the region, both at domestic or sub-regional level. Currently three IXPs are operating in Indonesia.[13]

VoIP is an important technology that can increase the affordability of international voice communications, So far, the policy environment for VoIP remains ambivalent in Indonesia. The country has established an explicit licensing mechanism for VoIP services but charges a considerable annual fee of 2.5 percent of gross annual turnover. As discussed in the chapter on access technologies in this volume, only five providers have been officially licensed so far and both licence application and approval costs remain unclear.

Compared to infrastructure or content issues, governance of the logical or soft infrastructural dimensions received better marks from Indonesian respondents to the ORDIG survey. Less than half of respondents state being dissatisfied with the status of domain name management, IDNs, IP address management and standards. However, a sizeable group of almost one-third of respondents record their discontent with all these issues.

The only significant exception to all this is the topic of availability of local language software. Here, the degree of dissatisfaction among Indonesian respondents rivals the discontent registered for infrastructure problems with more than two-thirds of respondents indicating

[11] For details see http://www.volweb.cz/horvitz/os-info/indonesia.html

[12] Data on international gateway for 2004 from ITU World Telecommunication Regulatory Database, data on ISP licenses from APT Yearbook 2004, Bangkok: APT.

[13] See "Regulation on WLAN 2.4 GHz in Indonesia" by Azhar Hasyim, Director of Frequency Spectrum Planning, Directorate General of Post and Telecommunications, Indonesia. Powerpoint presentation at the APEC Telecommunications Working Group Meeting, Thailand, 3-8 April 2005.

that they are not happy with the status quo. This also makes local language software one issue where responses from Indonesia differ most significantly from the views of Asia-Pacific region as a whole, where the issue is perceived as less of a concern.

With regard to content-related governance issues, Indonesian survey respondents confirm spam cybercrime and virus attachs as the three issues that are by far considered as the most important Internet governance priorities across the region with almost 95 percent regarding the development of solutions to these three problems as important.

While Indonesia currently does not rank high as an originator of virus attacks and spam, the problem is on the rise and Indonesian users are increasingly victims of spam as research in the chapter on governing Internet use in this volume shows. The required legal framework is only gradually evolving in many Asia-Pacific countries and by 2004, no legal provisions against spam had been put in place in Indonesia.[14]

Concerns about illegal content and the availability of government information online also feature prominently in replies to the survey from Indonesia with around 80 percent of respondents expressing their dissatisfaction with these topics. While the degree of concern about illegal content is in line with the rest of the region, the dissatisfaction with the availability of government information online clearly stands out with 20 percentage points more dissatisfied respondents than in other Asia-Pacific countries. While network security and illegal content issues are a multifaceted problem with an international dimension, shortcomings in the availability of public information online point to weaknesses in Indonesian information provision and e-government practices, issues that are clearly under the domestic policy remit of the government.

As the survey results for these group of governance issues indicate, topics such as the availability of local content or local language software that are often subsumed under the theme of online cultural diversity are a major issue in Indonesia, a country with an enormous number of over 730 living languages. Besides cultural diversity, the protection of online privacy is found wanting by more than 60 percent of respondents.

Finally, dissatisfaction with the availability of e-commerce payment systems also reached levels above 60 percent of respondents and was also raised by Indonesian participants in the ORDIG discussion forum as a major barrier to harnessing the Internet for economic development.

Many of the significant issues reported by Indonesian participants (spam, cybercrime, viruses) are difficult to reform through national governance mechanisms alone, and will require significant international cooperation in technical communities working in these areas. However, the implementation of a stable local policy environment will be crucial to assist in these areas, and there are many opportunities to foster regional cooperation identified in ORDIG's Voices from the Asia-Pacific chapter.

[14] See ITU World Telecommunication Regulatory Database and Ansari, 2005.

Internet Policy Priorities in Pakistan

In line with all other countries in the Asia-Pacific, Internet stakeholders in Pakistan overwhelmingly regard viruses, cyber-attacks and spam as the most pressing issues for Internet governance. Topics related to multilingualism, such as the availability of local language software and local content are also very pressing concerns for Pakistan. More than two-thirds of respondents from the country are not satisfied with the current status of these two issues, disapproval rates that are markedly higher than in most other countries of the region.

Concerns about illegal content also feature prominently in replies from Pakistan with 85 percent of respondents expressing their dissatisfaction with the status quo of this issue. In several comments, respondents from Pakistan emphasize their concerns about harmful content on the Internet. They also express their frustration about the disorganized nature of information online and the enduring difficulties of locating useful content online, while infrastructure problems with network reliability and speed are also highly ranked on the Internet governance agenda for Pakistan.

One hundred and twenty-one individuals from all stakeholder groups in Pakistan participated in the UNDP-APDIP online survey on Internet Governance Priorities in the Asia-Pacific Region. In general, respondents from Pakistan exhibit a great deal of enthusiasm about the benefits and potential of the Internet, but are slightly more sceptical than their colleagues in other countries, especially with regard to the role of the Net in combating poverty. More than 90 percent of Pakistani respondents believe that the Internet should be available for everyone and that its benefits will further grow in the future, but only around 42 percent believe that the Internet also helps to combat poverty, as compared to 61 percent in other Asia-Pacific countries. This guarded optimism is also reflected in the survey responses to 22 specific topics in Internet governance, many of which are met with a considerable degree of dissatisfaction by the Pakistani Internet community.

More than half of all respondents express their discontent with regard to availability, costs, reliability, speed of the Internet as well as with the status quo with regard to IP telephony and wireless Internet. Internet access is very expensive in Pakistan, both in absolute and comparative terms.

As indicated in the introduction to this section, purchasing an individual dialup subscription to the Internet consumes over 45 percent of per capita income in Pakistan and is therefore well beyond the means of an overwhelming majority of households in the country. International bandwidth prices in the country are estimated to have dropped 90 percent from US$ 30,000

Table 18: *Internet governance priorities for Pakistan (ranked by level of dissatisfaction with management of status quo)*

Rank in rest of AP region	Rank in Pakistan	Issue	% dissatisfied	% satisfied	% no view
2	1	Virus attacks	90.9	9.1	0
3	2	Spam	90.9	8.3	0.8
1	3	Cybercrime, online fraud	89.3	9.1	1.7
4	4	Illegal content	85.1	12.4	2.5
13	5	Availability of local language software	70.9	23.1	6.0
14	6	Availability of local content	68.6	25.4	5.9
7	7	Reliability and speed of Internet	63.6	35.5	0.8
5	8	Privacy online	62.8	33.1	4.1
9	9	Online access to government information	57.9	39.7	2.5
8	10	Wireless Internet: spectrum and access	56.3	20.2	23.5
6	11	Availability and cost of Internet	52.1	47.1	0.8
12	12	Internet telephony (VoIP)	50.0	31.7	18.3
10	13	e-Commerce payment systems	48.8	34.7	16.5
15	14	Network interconnection/ backbone access	48.7	33.6	17.6
16	15	ISP market conditions	47.1	39.5	13.4
11	16	Fair access to/protection of intellectual property	44.5	35.3	20.2
17	17	Secure server/encryption	37.6	34.2	28.2
19	18	Domain names with non-Roman character sets (IDN)	36.4	19.5	44.1
18	19	Access to technical standards and their adaptability	35.7	38.3	26.1
20	20	Domain name management	34.5	37.8	27.7
21	21	IP address allocation/management	27.4	36.8	35.9
22	22	Own skills for using Internet	4.1	95.0	0.8

to US$ 3,950 between 2000 and 2004, but still consume up to 60 percent of an ISP's operational costs.[15]

Compared to infrastructure or content issues, governance of the logical layer receives better marks from Pakistani respondents to the ORDIG survey. Less than 40 percent of respondents state being dissatisfied with the status of domain name management, IDNs, IP address management and standards. However, the survey results do not support the claim that the status quo for these issues is viewed as flawless, since a sizeable group of almost one-third of respondents still record their discontent with all these issues.

The only significant exception is the topic of availability of local language software. Here, the degree of dissatisfaction among respondents from Pakistan is striking, with more than 70 percent indicating that they are not happy with the status quo. This also makes local language software one issue where responses from Pakistan differ most significantly from the views of Asia-Pacific region as a whole, where the issue is perceived as less of a concern.

With regard to content-related governance issues, survey respondents from Pakistan confirm virus attacks, cybercrime and spam as the three issues that are by far considered as the most important Internet governance priorities across the region, with around 90 percent regarding

[15] Ministry of Information Technology (2004): Broadband Policy for Pakistan, www.moitt.gov.pk

the development of solutions to these three problems as important. The required legal frameworks are only gradually evolving in many Asia-Pacific countries and by 2004, no legal provisions against spam had been put in place in Pakistan.[16]

The chapter in this publication on governing Internet use documents the increasing sophistication and damage of attacks that more and more include pivotal Internet infrastructure services on their target lists.[17] As the chapter explains, with an example from Pakistan, the focus of attacks on core infrastructure resources can create a particularly precarious situation for countries that maintain only a very limited number of international or domestic Internet gateways. If these pivotal services are successfully attacked, disruption of Internet use in the entire country can the result, as has been the case in Pakistan in the past.

Concerns about illegal content also feature prominently in replies to the survey from Pakistan with 85 percent of respondents expressing their dissatisfaction with the status quo of this issue. In several write-ins to the survey, respondents from Pakistan emphasize their concerns about harmful content online and also express their frustration about the disorganized nature of information online and the ensuing difficulties of locating useful content.

As the survey results for these group of governance issues indicate, topics such as the availability of local content or local language software that are often subsumed under the theme of online cultural diversity are a major issue in Pakistan, a country with more than 70 living languages, most of which rely on non-Roman character sets, which poses additional challenges for domain names and general software compatibility.[18] This suggests that Pakistan may play an important role in the dialogues on IDNs (see the Cultural Inclusion chapter in this volume).

[16] See ITU World Telecommunication Regulatory Database and Ansari, 2005.
[17] Salman Ansari (2005): Network Stability and Security, UNDP-APDIP Research Paper, forthcoming
[18] See http://www.ethnologue.com/

Internet Policy Priorities in Thailand

In line with all other countries in the Asia-Pacific, the Internet community in Thailand overwhelmingly regards viruses, cyber-attacks and spam as the most pressing issues for Internet governance. Thai Internet stakeholders rate the status quo of access and affordability of the Internet considerably more positively than in other Asia-Pacific countries. However, current regulations and practices in Thailand with regard to backbone access, international link ownership and Internet telephony are quite restrictive and do not appear to optimally support such a dynamic service environment. At the same time, Thailand has recently made important progress by establishing an independent regulatory authority and de-licensing certain types of use of wireless Internet technologies. Thailand receives good marks on the availability of government information online, a performance that is underpinned by a constitutional guarantee for the right to information and specific freedom of information legislation.

In general, respondents from Thailand[19] share the enthusiasm of their colleagues in other countries in the region about the benefits and potential of the Internet. Over 80 percent believe that the Internet should be available for everyone and that its benefits will further grow in the future. Only the potential of the Internet to combat poverty is seen as somewhat more sceptical with 58 percent of Thai respondents believing in such a role for the Net. The survey results also indicate that the Internet community in Thailand is generally happier with the status quo in Internet governance than in other countries in the region. Respondents from Thailand consistently articulate a lower degree of dissatisfaction for 19 out of 22 specific topics in Internet governance.

According to industry data, in 2004, Internet capacity, measured in bandwidth, grew rapidly by 77 percent across Asia, the highest growth rate of all world regions.[20] Thailand has been at the forefront of this growth spurt. Both international bandwidth and domestic capacity at the two domestic exchange points have on average more than doubled each year between 2000 and 2004,[21] and Internet access is relatively affordable compared to other regions.

This overall positive assessment relative to other Asia-Pacific countries notwithstanding, Thai respondents register significant dissatisfaction with a large number of specific Internet policy issues:

[19] The National Electronics and Computer Technology Center of Thailand (NECTEC) provided vital support for several ORDIG activities, including translation of the ORDIG survey into Thai.
[20] Global Internet Geography 2005 Executive Summary: http://www.telegeography.com
[21] Between 2000 and 2004 international bandwidth and domestic exchange capacity grew on average annually by 101 percent and 115 percent respectively. Source: NECTEC http://iir.ngi.nectec.or.th/

Table 19: Internet governance priorities for Thailand (ranked by level of dissatisfaction with management of status quo)

Rank in rest of AP region	Rank in Thai-land	Issue	% dissatisfied	% satisfied	% no view
2	1	Virus attacks	98.2	1.8	0.0
1	2	Cybercrime, online fraud	96.4	0.0	3.6
3	3	Spam	94.6	3.6	1.8
4	4	Illegal content	78.6	17.9	3.6
5	5	Privacy online	64.3	32.1	3.6
7	6	Reliability and speed of Internet	54.4	45.6	0.0
9	7	Wireless Internet: spectrum and access	48.2	30.4	21.4
11	8	Availability of local language software	45.6	42.1	12.3
10	9	e-Commerce payment systems	43.9	42.1	14.0
13	10	Fair access to/ protection of intellectual property	43.9	29.8	26.3
17	11	Secure server/encryption	42.1	33.3	24.6
6	12	Availability and cost of Internet	40.4	59.6	0.0
8	13	Online access to government information	36.8	59.6	3.5
14	14	Internet telephony (VoIP)	35.7	32.1	32.1
12	15	Availability of local content	35.1	57.9	7.0
19	16	Domain names with non-Roman character sets (IDN)	35.1	29.8	35.1
18	17	Access to technical standards and their adaptability	35.1	33.3	31.6
16	18	ISP market conditions	33.9	42.9	23.2
15	19	Network interconnection/ backbone access	30.4	44.6	25.0
20	20	Domain name management	26.3	45.6	28.1
21	21	IP address allocation/management	23.6	40.0	36.4
22	22	Own skills for using Internet	3.5	94.7	1.8

This positive picture is also confirmed by high approval rates for Internet availability and affordability as expressed by ORDIG survey-takers from Thailand. Almost 60 percent indicated to be between somewhat and very satisfied with the status quo for this topic, an impressive 20 percentage points more than on average in other countries in the region. Nevertheless, a number of considerable challenges and shortcomings remain with regard to the governance of the Internet infrastructure.

First, Internet penetration rates in most countries in the region, including Thailand, remain a fraction of rates in fully-industrialized countries and are particularly low outside urban areas. Overall Internet penetration in Thailand compares favourably with some of its regional peers, reaching almost double the level of China, triple that of Indonesia and six times the penetration in India, but still is only a quarter of the average in industrialized countries in the region. Moreover, estimates by NECTEC also indicate that 28 percent of Internet usage in the country is concentrated in the Bangkok area alone, a level of concentration that has only modestly fallen over the last years.[22]

Second, costs for international backbone access can posit a hurdle to making the Internet more affordable for lower income households. Although transit prices for Internet traffic in Asia have fallen sharply over the last year, they continue to be twice as high as European or US

[22] NECTEC (2005): Thailand ICT Indicators 2005 and other statistics available at: http://iir.ngi.nectec.or.th/

prices. This may be influenced by policy. As survey data from the ITU suggest, neither in Thailand, nor in three of the other four reference countries (Indonesia, China, Pakistan and India) can ISPs other than the incumbents and their affiliates, own or lease their own international data gateways. This dramatically reduces the dynamic of a domestic ISP market with a total of 18 competitors that are additionally hampered by what is currently a somewhat unclear licensing regime.[23] However, the establishment of an independent regulatory authority in Thailand at the end of August 2004 bodes well for policy reform in this area, once the new body is able to assert and exert its authority in the rule-making process.

Despite high approval rates in the ORDIG survey, making the Internet more affordable and accessible remains a considerable challenge for Thailand and has prompted a number of rural and low-cost access initiatives. At the same time, concerns of advanced Internet users focus on issues of reliability and speed.[24] Over 54 percent of Thai survey respondents feel dissatisfied with the status quo of these issues, shifting attention to the policy environment for emerging high speed access technologies and advanced applications, two of which have been included in the ORDIG survey.

ORDIG has specifically solicited opinions about wireless Internet and Internet telephony. 48 percent (wireless) and 35 percent (telephony) of survey-takers in Thailand express their dissatisfaction about these issues, while quite a high proportion of respondents state to have no view. By exempting certain types of use of the 2.4 GHz bands from licensing requirements, Thailand has taken an important first step towards unleashing the potential of wireless Internet technologies, although the regulatory environment remains somewhat unclear.[25] So far the policy environment for VoIP remains somewhat restrictive in Thailand. The two incumbents that control the markets for international and fixed-line calls are running VoIP services, while no other private licences have been issued so far.[26]

With regard to Internet broadband technologies, Thailand has set itself the aim of reaching one million users by the end of 2004, a very ambitious goal given that only 200,000 broadband users were estimated to exist at the end of 2003. The government has urged ADSL providers to lower access costs, a move that saw prices coming down quite significantly over the last couple of years.

Governance of the logical layer receives fairly positive marks from the Internet community in Thailand. Less than 40 percent of respondents state being dissatisfied with the status of domain name management, IDNs, IP address management and standards. The only significant exception to all this is the topic of availability of local language software. Here, the degree of dissatisfaction among Thai respondents is well above 40 percent, bearing testament to the software

[23] For an excellent topology of the Thai Internet infrastructure, see http://iir.ngi.nectec.or.th/internet/map/current.html
[24] A look at traffic volumes also confirms the importance of these issues. Between 2000 and 2005 Internet data traffic, as measured at the domestic exchange points, has risen by an annual average of more than 140 percent thereby even growing more rapidly than available bandwidth (115 percent annual growth) and tripling the ratio between average network consumption and capacity from 3.7 percent to 11.9 percent in August 2005. (Source: APDIP calculations with NECTEC data: http://iir.ngi.nectec.or.th/)
[25] For details see http://www.volweb.cz/horvitz/os-info/thailand.html
[26] See Onno W. Purbo (2005): Internet Governance for Emerging Technologies: VoIP and Convergence, UNDP-APDIP Research Paper, forthcoming; Donyaprueth Krairit: VoIP in Thailand and SEA, presentation, available at http://www.apstar.org/busan/Donya-VOIP.ppt

compatibility and integration problems for a language with non-Roman character sets.

With regard to content-related governance issues, Thai survey respondents confirm virus attacks, cybercrime and spam as the three issues that are by far considered as the most important Internet governance priorities across the region with more than 90 percent regarding the development of solutions to these three problems as important.

While Thailand currently does not rank among the top 10 countries worldwide as an originator of virus attacks and spam, the problem is on the rise and Thai users are increasingly victims of spam. The required legal frameworks and practical co-operation arrangements are only gradually evolving in many Asia-Pacific countries. As early as 2000, Thailand set up a national CERT (ThaiCERT), in order to react quickly to network security challenges. However, a Cybercrime bill, which has been modelled on the Convention on Cybercrime of the Council of Europe, is still under consideration.

Concerns about illegal content also feature prominently in replies to the ORDIG survey from Thailand with around 78 percent regarding the development of solutions to this problem as at least somewhat important. This degree of concern about illegal content is in line with the rest of the region, and Thai policy is taking active steps to screen out illegal content.

The availability of government information stands out as a content issue that receives a satisfaction rate of almost 60 percent, a striking 20 percentage points more than in the rest of the Asia-Pacific region. A constitutional recognition of the principle of freedom of information, translated into enforceable entitlements through the Official Information Act of 1997 laid the policy foundations for this encouraging performance.[27] It remains to be seen to what extent these achievements can be preserved and balanced with impending new national security measures. One issue considered to be of considerable importance by survey respondents from Thailand and other countries in the region alike is the protection of privacy in the online environment with well over 60 percent feeling between somewhat and very dissatisfied with the current situation. Thailand recognizes a right to privacy in its constitution, while specific legislation for data protection is not yet in effect but currently under discussion.[28]

Finally, the availability of e-commerce payment systems was found wanting by almost 44 percent of Thai survey takers. This indicates that the development of adequate authentication and secure online payment systems has not quite kept pace with the uptake of e-commerce, which is particularly strong for Business-to-Business (B2B) and Business-to-Government (B2G) transactions in Thailand.[29]

[27] For details see Banisar, D. (2004): "Freedom of Information and Access to Government Record Laws Around the World", available at www.freedominfo.org
[28] Rotenberg, M. and Laurant, C. (2004): "Privacy & Human Rights 2004: An International Survey of Privacy Laws and Developments", available at www.privacyinternational.org
[29] NECTEC (2005): Thailand ICT Indicators 2005 and other statistics available at: http://iir.ngi.nectec.or.th/

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Internet Governance

Asia-Pacific Perspectives

The Internet raises significant challenges for public policy and sustainable human development, both internationally and for individual nations. While the Asia-Pacific region contains the highest share of global Internet users, it is under-represented in the forums that develop Internet-related policies. This book presents the work of the Open Regional Dialogue on Internet Governance, a year-long initiative by UNDP Asia-Pacific Development Information Programme that has collected perspectives from regional experts and end users. It summarizes the key debates in Internet Governance from those involved in international policy-making. It also provides detailed analysis of critical issues such as spam, wireless technologies, security, multilingualism, and cultural diversity in the Asia-Pacific region. The book contributes regional perspectives to important global processes, and will assist anyone involved in planning Internet-related development policies or projects.

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