



Open Regional Dialogue on Internet Governance
(ORDIG)

Voices from Asia-Pacific

Internet Governance Priorities and Recommendations

An ORDIG Input Paper

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TABLE OF CONTENTS

INTRODUCTION	1
I. GENERAL VIEWS AND WORKING PRINCIPLES	3
A. The Discussion Forum: A Scan of Regional Opinion.....	3
B. The Survey: A Call for More Governance.....	3
C. Six Working Principles of Governance.....	4
II. THE INFRASTRUCTURE DIMENSION	7
A. Access Costs	7
B. VOIP.....	10
C. Wireless Networks	11
III. THE LOGICAL DIMENSION.....	14
A. DNS Management.....	14
B. IP Address Management	17
C. Technical Standards	19
IV. THE CONTENT DIMENSION	21
A. Content Pollution: Spam, Viruses, Spyware, and Other Malware.....	21
B. Cybercrime	23
V. THE SOCIAL AND DEVELOPMENTAL DIMENSION	26
A. Cultural Diversity.....	26
B. Participation	28
VI. RECOMMENDATIONS.....	30
CONCLUSION: THE WAY FORWARD	32
ACKNOWLEDGEMENTS.....	33
APPENDIX I: ORDIG AND ITS ACTIVITIES.....	34
APPENDIX II: LIST OF ACRONYMS.....	37

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 per cent 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. 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 the World Summit on the Information Society (WSIS) heads towards its meeting in 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 the Open Regional Dialogue on Internet Governance (ORDIG), a project of UNDP's Asia-Pacific Development Information Programme (UNDP-APDIP). ORDIG and its activities are discussed in detail in Appendix 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 nine months, ORDIG has solicited and analyzed regional priorities through a variety of research and outputs. Now, we are in a position to present a consolidated paper to the United Nations Working Group on Internet Governance (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 forward for discussions of Internet governance.

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

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.

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 3000 people in the Asia-Pacific region. ORDIG's activities over the last nine months include an online discussion forum featuring more than 180 participants; a survey on Internet governance that collected 1243 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 1 and 2) 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.

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

I. 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 Asia-Pacific citizens and users.

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.

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 altogether replace it.

Some of the views expressed on 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 Asia-Pacific opinion, 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 1, which shows that, in general, people have a positive opinion of the contributions that can be made by the Internet. Overall, 69% of respondents disagreed with the statement that “the Internet does not provide any significant benefits for most people.” In addition:

- 60% felt that the Internet could help combat poverty;
- 92% agree that the “Internet is an essential tool” that “should be made available” to all; and
- 92% believe that the benefits provided by the Internet will “grow significantly” over the next 3-5 years.

Such figures represent a 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 2 shows, a surprisingly large number of respondents expressed at least some dissatisfaction with a variety of Internet issues. Virus attacks, spam, online fraud, cyber-crime 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.

At 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% of users feel that it is somewhat or very important to develop solutions to virus attacks and spam; when 61% are unhappy with availability and cost; and when 59% 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

⁴ Of course as an online survey, respondents were self-selected, and certain biases may be built into their responses. Nonetheless, the 1243 responses received represent a substantial sampling of regional opinion.

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>

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

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

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 Millennium Development Goals (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 co-operation and co-ordination. 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.

⁶ See <http://www.wgig.org/Definitions.html>

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.

Table 1: Perceived Benefits of Internet

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

Table 2: Asia-Pacific Concerns and Priorities (ranked by level of dissatisfaction)

Rank	Issue	% dissatisfied	% satisfied
1.	Cybercrime	94	5
2.	Virus	93	6
3.	Spam	93	7
4.	Illegal Content	82	16
5.	Privacy	66	31
6.	Availability/Cost	61	38
7.	Reliability/Speed	59	40
8.	Wireless	59	25
9.	Availability of Public Info	58	39
10.	E-Commerce Payment	53	37
11.	Local Language Software	53	39
12.	IPR	52	31
13.	Local Content	52	42
14.	Internet Telephony	51	30
15.	Network Interconnection	47	39
16.	ISP Market Conditions	46	34
17.	Secure Server/Encryption	44	33
18.	Technical Standards	37	39
19.	IDNs	37	23
20.	DNS Management	35	44
21.	IP Address	32	40

II. 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 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 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. Voice Over Internet Protocol (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 the 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 2 illustrates, 61% of respondents expressed at least some dissatisfaction with the availability and cost of the Internet, and 59% expressed some dissatisfaction with the Internet’s reliability and speed (issues that are intimately connected to access costs). In addition, 47% 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% of respondents from high-HDI countries expressed concern over the cost and availability of access, that figure was 66% and 51% for medium and low-HDI countries, respectively. Likewise, while 60% of high-HDI countries were satisfied with interconnection and backbone access, only 35% 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

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

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 Asia-Pacific 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 on 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 But it does mean that licensing requirements should be the least burdensome as 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 Rs. 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.

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 a group of four dominant ISPs.

⁹ Well-designed licenses can also provide protections for new operators, against incumbents.

One participant mentioned that the cost of access in Fiji for a 128Kbps (kilobits per second) line could amount 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% 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 the Asia-Pacific Economic Cooperation Telecommunications and Information Working Group (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% of the total international bandwidth in the country. The traffic of npIX has increased 100% 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 reducing 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 Voice over Internet Protocol (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 2 shows, only 30% were satisfied with the availability of IP telephony, and 51% 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% replied that the quality of calls was greater or equal to that of cellular phones, and 67% 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

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% of respondents expressed dissatisfaction with existing policies for

¹³ Japan, for example, uses the 050 prefix to denote IP telephones, and Malaysia uses 0154.

¹⁴ MIC Communications News, February 10, 2005, Vol. 15, No. 21. Available at: http://www.soumu.go.jp/joho_tsusin/eng/Releases/NewsLetter/Vol15/Vol21/index.html

¹⁵ "The Real Digital Divide," *Economist*, March 10, 2005.

wireless internet, spectrum, and access. The figure was substantially higher in medium- HDI (61%) and low-HDI (54%) countries than in high-HDI countries (47%), 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 2.4GHz 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 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 Wi-Max. 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 policymakers hope to achieve through their decisions. In the late 1990s, many European countries auctioned 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 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.

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

Recommendations on Wireless: ORDIG supports countries adopting spectrum management regimes that embrace unlicensed spectrum and encourage the spread of Wi-Fi, Wi-Max, 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; policymakers and others involved in governance should keep that potential in mind.

III. 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. Domain Name System (DNS) management, including root servers, Country-Code Top-Level Domains (ccTLDs), and Internationalised Domain Names (IDNs);
- B. Internet Protocol (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% said they were dissatisfied with the situation of IDNs; 35% with DNS management; 32% with IP allocations; and 37% with technical standards. As Table 2 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% expressed satisfaction, and in the case of IDNs, the satisfaction level was only 23%. 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 ten of the thirteen original root servers are still located in the United States.¹⁷

¹⁷ The only original root server in Asia is located in Japan.

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 exist, 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 the 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 the 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 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

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 ten in the region.

¹⁹ For a discussion, see the Internet Architecture Board's comment at: <http://www.faqs.org/rfcs/rfc2826.html>

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.

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 3). 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.

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 Internet Engineering Task Force (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 co-ordination between communities that share common scripts (e.g., China, Japan, and Korea). Identifying the appropriate groups to represent the communities, and

²¹ These include the Chinese Domain Name Consortium (CDNC), the Multilingual Internet Name Consortium (MINC), and International Forum for Information Technology in Tamil (INFITT).

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.

Table 3: 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

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 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

²² Klein, N. (2005), “Cultural Diversity and Preservation in Cyberspace: Software Customization,” UNDP-APDIP, Bangkok.

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, Asia-Pacific 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., W3C and 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, Asia-Pacific 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 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 country code top level domain space).

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

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.

IV. 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 2 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% 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, ten out of every thirteen emails sent today are spam²⁴—and Asia-Pacific is no exception. Recently, it was estimated that 15% 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% from China.²⁵ According to some studies,²⁶ China also hosts a disproportionately high portion (70%) of the websites referenced in spam.

These types of figures do not just reflect a nuisance. In a report for ORDIG, Suresh Ramasubramaniam 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 \$11,700; salary expenses for staff to manage spam problems are an additional \$75,000 per year.²⁸ Such costs, it should be added, are particularly burdensome for those countries and users that can least

²⁴ Gelbstein, E. and J. Kurbalija, “Internet Governance: Issues, Actors and Divides,” Diplo, p 62. Available at: <http://www.diplomacy.edu/isl/ig/>

²⁵ The leading source of spam remains the US, which accounts for 42% of the total worldwide.

²⁶ <http://www.sophos.com/spaminfo/articles/dirtydozen.html>

²⁷ Ramasubramaniam, 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.

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% to 70% 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 dent 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 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 policymakers should take steps to increase user awareness of the issues involved.

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 e-mail law," *PC World Malta*, Sept. 16. Available at: <http://www.pcworldmalta.com/news/2003/Sep/161.htm>

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.

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 thirteen 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.

B. Cybercrime

Asia-Pacific Priorities

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

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 cyber-criminals 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:

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

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 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 cyber-law 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 (this 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 cyber-crime conventions pose the danger of globalizing particular definitions of crime, in the process neglecting that each country has a legal system which is in

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

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.

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

V. THE SOCIAL AND DEVELOPMENTAL DIMENSION

The Internet is a complex and multi-dimensional network that touches all aspects of our lives. Its governance affects not just the technology embedded in the network, but a variety of issues 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% 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% of respondents registered dissatisfaction with the availability of local language software, and 52% with the availability of local content. These figures are more striking when broken down by development level: fully 68% of low-HDI countries are dissatisfied when it comes to local software, and 66% 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. The underlying difficulties remain those of standardization, and of achieving consensus and

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>).

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, an upcoming 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 a number of 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 co-operation 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 Sullivan notes, the lack of an effective identity authentication model and protections against copying are significant issues for indigenous groups in placing their

³⁷ For general information, see www.iosn.net. The following page is dedicated specifically to links on FOSS and localization: <http://www.iosn.net/110n>

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.

B. Participation

Asia-Pacific Priorities

Participation has emerged in recent years as a key and cross-cutting issue on the agenda of global Internet governance. 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 policymaking.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 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 policymakers from the region are able to attend and meaningfully

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 Organisation & Panos, London.

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 multi-sectoral: 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.

VI. 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 to 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. Free and open source software, 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 brief⁴⁰, 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 upcoming 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 paper 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 policymakers in the region. All these efforts will not only enhance governance for 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.



APDIP (www.apdip.net) is an initiative of the United Nations Development Programme (UNDP) that aims to promote the development and application of new information and communication technologies (ICTs) for poverty alleviation and sustainable human development in the Asia-Pacific region.

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

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APPENDIX I: ORDIG AND ITS ACTIVITIES

The Open Regional Dialogue on Internet Governance (ORDIG) was initiated in October 2004 as a core activity of UNDP's Asia-Pacific Development Information Programme (UNDP-APDIP) in collaboration with various other organizations, including the International Development Research Centre (IDRC) of Canada, the UN Economic and Social Commission for Asia and the Pacific (UNESCAP), and the Asia Pacific Network Information Centre (APNIC).¹ Envisioned as a series of consultations and outreach activities with tangible research outputs, the initiative was created to take stock of Asia-Pacific realities in order to better inform policy-makers. It was also created to provide Asia-Pacific perspectives to the UN Working Group on Internet Governance (WGIG) and the World Summit on the Information Society (WSIS). At its broadest level, ORDIG represents an effort to foster multi-stakeholder participation in the process of Internet governance, with a particular emphasis on views and priorities from the Asia-Pacific region.²

In the approximately nine months of its existence, ORDIG has undertaken a number of activities, commissioned significant research, and consulted with a wide range of citizens, users and other stakeholders. These outputs are summarized below. It is important to emphasize one common quality that applies across the variety of outputs: ORDIG's emphasis on transparency, consultation, and inclusiveness. As the name implies, ORDIG is committed to *openness*—the point of the entire exercise has been to solicit as many views as possible, from as many sectors of the Internet and the Asia-Pacific communities as possible. Output such as the report on the online survey and forum, for example, were posted on the Internet and subject to peer review by a variety of stakeholders; similarly, the ORDIG advisory panel, consisting of thirteen members from the region, includes representatives from governments, civil society, and the private sector. ORDIG firmly believes that effective Internet governance—and, indeed, even an effective working definition of Internet governance—can only arise from a truly inclusive process that considers all views and opinions. The activities described below were designed with that goal in mind; while they of course remain imperfect, they represent a concerted effort to widen the discussion on governance.

1. Online Regional Survey

Among the most significant activities undertaken by ORDIG was an online survey designed to identify priority topics and concerns in the Asia-Pacific region. Conducted between February 8th and March 7th, 2005, the survey solicited views on 22 key governance issues, and received over 1200 responses from 37 countries and from all major stakeholders. As part of its commitment to inclusiveness, ORDIG translated the survey into 12 major regional languages³ and made it available to all online.

The survey results are summarized in Tables 1 and 2.⁴ Overall, the survey points to a significant degree of dissatisfaction with existing governance mechanisms. More importantly,

¹ For more information on APDIP, please visit <http://www.apdip.net>. For more information on ORDIG, please visit <http://www.igov.apdip.net>.

² In accordance with UNDP-APDIP's mandate, ORDIG focuses on countries from Iran east to the Pacific islands.

³ Besides English, these included Bahasa (Indonesian), Farsi, Chinese, Japanese, Vietnamese, Mongolian, Korean, Lao, Pashto, Thai and Khmer

⁴ In addition, a summary report of survey results is available online at <http://igov.apdip.net/ORDIG.Survey.Report.pdf/>

as the first systematic and quantitative expression of priorities in the region (at least that we know of), it helps identify those issues that matter to the Asia-Pacific Internet community, and, in doing so, allows us to begin designing solutions and mechanisms to enhance governance.

2. Online Discussion Forum

From January 13th to February 17th, 2005, ORDIG facilitated an online discussion forum on Internet governance. The forum, which received more than 350 postings, included 180 participants from 27 countries in the region. It covered 10 major topics, and several other topics, concerning Internet governance.⁵ Topics discussed included governance of the domain name system, ISP liability, the role of the Internet in promoting and preserving culture, network security, and a number of other issues.

As the variety of topics suggest, the discussion forum provided a sounding board for a broad range of stakeholder groups leading to a lively and very candid exchange of views. As expected, no firm results or conclusions were reached, as the online forum was designed to allow for open discussion and for the issues to emerge without judgment. Combined with the survey, the forum offers valuable insights into opinions in the Asia-Pacific region. While the former provided the rigor of quantified data, the latter highlighted the range of perspectives on the issues at stake.

3. Sub-regional Consultations

In collaboration with UNESCAP, one regional conference (Bangkok) and four sub-regional conferences (Bishkek, Suva, Bali, and Kathmandu) were held, involving several hundred participants, from 50 countries and 35 regional and international organizations. Furthermore, in an effort to gather views from civil society, ORDIG organized Internet governance consultations with the Conference of Non-Governmental Organizations (CONGO), the Association for Progressive Communications (APC), Asia Pacific Regional Internet Conference on Operational Technologies (APRICOT), and the APEC Telecommunications and Information Working Group (APEC TEL).

The consensus among participants in all of these consultations was that there is a need for partnerships involving all stakeholders, including governments, the private sector and civil society, in making Internet governance more transparent, democratic and multilateral.

4. Commissioned Research

Based on the priorities and concerns identified through the above exercises, ORDIG commissioned a number of papers on six key topics identified as priorities in the region. These papers, written by experts from the region, explore the identified priorities in greater depth and detail. Their empirical and conceptual explorations have significantly aided in the production of "Voices from Asia-Pacific: Internet Governance Priorities and Recommendations".

5. Primer on Internet Governance

As part of a series of primers on the Information Society, Economy and Polity produced by APDIP, ORDIG commissioned a primer on Internet governance.⁶ The primer, which explains key concepts in a lucid and accessible fashion, is aimed at policymakers, average users, and

⁵ A summary report of the forum is available at http://igov.apdip.net/news/forum_summary/

⁶ To see a list of APDIP's primers, please visit <http://www.apdip.net/publications/>

other stakeholders who may have an interest in the topic but who lack the requisite technical knowledge. It is our belief that it will be particularly useful for capacity building among policymakers and other stakeholders.

6. Other Activities

The above represents just a sampling of the many activities undertaken by ORDIG. Over the last several months, we have also:

- conducted a quantitative and qualitative consultation with over 100 youth from 13 Asia-Pacific countries to understand youth priorities;
- included a thematic chapter on Internet governance in the forthcoming issue of the *Digital Review of Asia Pacific* (2005/2006 edition);
- facilitated research on national policies on wireless connectivity and satellite connectivity.

All these—along with a series of less formal products and conversations—have contributed to the ORDIG’s findings. Put together, we believe that ORDIG’s outputs over the last several months add up to a substantive and important picture of governance priorities in the Asia-Pacific region. It is our hope that this picture will contribute to the ongoing discussion over Internet governance at the WSIS and WGIG, and ultimately that it will help design policies and mechanisms that are more inclusive, accountable and transparent.

APPENDIX II: LIST OF ACRONYMS

3G	Third Generation
APDIP	Asia-Pacific Development Information Programme
APEC TEL	Asia-Pacific Economic Cooperation Telecommunications and Information Working Group
APNIC	Asia Pacific Network Information Centre
ccTLD	Country-Code Top Level Domain
CDNC	Chinese Domain Name Consortium
CERT	Computer Emergency Response Team
DNS	Domain Name System
EU	European Union
FOSS	Free and Open Source Software
G8	Group of Eight
HDI	Human Development Index
IANA	Internet Assigned Numbers Authority
ICAIS	International Charging Arrangements for Internet Services
ICANN	Internet Corporation for Assigned Names and Numbers
IDNs	Internationalized Domain Names
IDRC	International Development Research Centre
IETF	Internet Engineering Task Force
INFITT	International Forum for Information Technology in Tamil
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
ISO	International Organization for Standardization
ISPs	Internet Service Providers
ITU	International Telecommunication Union
IXPs	Internet Exchange Points
Kbps	Kilobits Per Second
MDGs	Millennium Development Goals
MIC	Ministry of Internal Affairs and Communications (Japan)
MINC	Multilingual Internet Name Consortium
MOU	Memorandum of Understanding
npIX	Nepal Internet Exchange
OASIS	Organization for the Advancement of Structured Information Standards
ORDIG	Open Regional Dialogue on Internet Governance
PC	Personal Computer
PSTN	Public Switched Telephone Network
QoS	Quality of Service
UNDP	United Nations Development Programme
UN-WGIG	United Nations Working Group on Internet Governance
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
WSIS	World Summit on the Information Society
WTO	World Trade Organization