



Member Update

Special Edition

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Special Edition on the World Summit on the Information Society and "Internet Governance"

This special edition of the Member Update is devoted to the ongoing "Internet governance" debate. It has been several years since the discussion of different models of "Internet governance" began and this discussion has gained momentum during the course of the World Summit on the Information Society (WSIS). It is difficult for the Internet community to be directly involved in this, as the main participants in the WSIS are governments and governmental organisations like the International Telecommunication Union (ITU).

However, the outcome of the WSIS could impact seriously on the bottom-up, industry self-regulatory processes that have underpinned the Internet since its inception. It is therefore essential that the RIPE

NCC and the other Regional Internet Registries actively participate in these discussions and work together to represent the needs of their members and the Internet community as a whole.

In order to keep our members informed about the latest developments in this area, we have prepared a special edition of the RIPE NCC Member Update that focuses on issues relevant to the WSIS and "Internet Governance."

More detailed information, including links to other relevant articles, is available at: <http://www.ripe.net/info/internet-management/index.html> ■

The NRO and the World Summit on the Information Society (WSIS)

The Regional Internet Registries (RIRs) have participated in the World Summit on the Information Society (WSIS) processes for over a year, including regional Prepcoms and the Summit itself. The RIRs have attended as observers, and as subject matter experts to assist in debates and discussions related to Internet Number Resources in general and to IP addresses in particular.

On 21 October 2004, the Director of ITU TSB published a memorandum, 'ITU and Internet Governance', for comment. This memorandum included a proposal to create a new IPv6 address space distribution process based on national authorities. This proposal was based on certain assumptions about the history and status of IPv4 address space and the current allocation principles for allocating IPv6 address space. The Number Resource Organization (NRO) offered a public response on behalf of the Regional Internet Registries and their communities. The NRO response corrected the proposal's assumptions about IP address distribution, detailed the flaws of the proposal and described the negative impact this proposal would have on Internet operations.

The NRO response was well supported by RIPE NCC Members, with almost nine hundred explicit expressions of support from members based in

more than 60 countries in the RIPE NCC service region. There were also more than 20 explicit expressions of support from ITU sector members.

On 11 November 2004, Secretary-General Kofi Annan of the United Nations announced the formation of a Working Group on Internet Governance (WGIG) to prepare for the second phase of WSIS (World Summit on the Information Society), to be held in Tunisia in November 2005. The purpose of the group is to develop a working definition of Internet governance, to develop a common understanding about the roles and responsibilities of participants in Internet governance, and to identify public policy issues relevant to Internet governance.

The WGIG includes 40 members from around the world, representing a diverse range of stakeholders, including governments, the private sector, international organisations, and civil society. The RIRs are represented by Raúl Echeberría, the Executive Director of LACNIC, who has been selected as one of the members of the WGIG.

"The NRO wants to support the work done in the WGIG to ensure a positive outcome that benefits the global Internet community," said Paul Wilson,

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The mission of the RIPE NCC is to perform activities for the benefit of the membership; primarily activities that the members need to organise as a group, although they may compete with each other in other areas.

Opinion: ICANN, the ITU, and Internet Governance



Geoff Huston, Chief Scientist, APNIC, provides a perspective on the current international discussions on Internet governance. This is an edited version of an ISP Column article originally published online in October 2004 at: <http://www.potaroo.net/ispcolumn>

It may have taken some three decades to get here, but there's now no doubt that the Internet is a major public communications utility. That's hardly the most important piece of news you are likely to read today, but the implication of this public role is that there are legitimate issues of public policy to consider when looking at the broad topic of coordinating various aspects of Internet infrastructure. In other words, 'Internet governance' is a matter of significant concern to many.

In this column we will look at the various range of views about ICANN and its rationale and role over its brief history. Of course, no look at Internet governance would be complete without also looking at the role of the International Telecommunications Union (ITU) as well as the broader background to this topic.

It is a large topic and it's already been the catalyst for numerous articles. Here I'll try to be as succinct as I can!

Data networking and public networks

Whether it was because of its antecedents in the research community, or simply because it was not originally envisaged that the Internet would become a global communications platform in its own right, or for whatever set of reasons, the administration of the Internet's infrastructure was not originally crafted with conventional public network coordination in mind. The retrofitting of a model that incorporates considerations of a public utility role is proving to be a rather involved process. For example, the original hierarchical name space for the Internet used a set of generic top level root zone names: 'edu', 'net', 'com', 'gov', and 'mil'. Adding country codes to the root of the name space was a later modification. Even then, the original country code delegations were undertaken to individuals or entities who appeared to have some form of link to the national Internet community, rather than specifically seeking out an appropriate office of the national administration of communications services as the point of delegation. Similarly, IP addresses were structured without any form of national prefix, nor were IP addresses distributed along any national lines. In these respects, the Internet was really no different to any of the other computer networking protocols of the 1980s, such as DECnet, XMS, Appletalk, or IBM's SNA, where names and addresses were defined in the limited context of the scope of the network, rather than within some broader public name framework.

There were two notable exceptions to this characterisation of computer network protocols and both were designed with a public communications utility as their primary objective, namely X.25 and OSI. Both these protocols have an indirect bearing on the current situation with the Internet. X.25 and OSI can be regarded as offerings from the data services sector of the established telephone industry. X.25, the earlier of these two protocols, had a very obvious relationship to telephony, complete with the notion of a 'call' as the means of establishing a data connection and as the unit of a transaction. The addressing scheme used a structured space that drew heavily on the telephone number structure, complete with a national prefix and nationally defined sub-fields. Like telephony there was no associated name scheme: end systems were identified by their numeric X.25 protocol address. OSI represented a later effort to design a packet switched network architecture that was intended to reflect an increasing level of experience with this technology. OSI continued to draw heavily on telephony design for the structure of the address space, and still included the concept of a call as one of its basic transactions. Much was written about OSI at the time, and it would be a diversion to explore it in depth here. However, the salient observation here is that despite the extensive effort invested into its promotion, OSI was a market failure, and whatever its technical merits it was simply not accepted by the communications industry.

OSI was supported by the ITU, and by virtue of this very active sponsorship of this technology, the implication, in the aftermath of OSI, was that the ITU was simply out of touch with data networking. It was perceived that the ITU was coming from a mindset that was incapable of engaging with either the data communications industry or the broader consumer market for data services. From the perspective of data networking the failure of OSI was seen as a failure of the ITU itself.

The ITU and the Internet

Not only was the ITU perceived as being out of touch with the data communications sector more critically, it was perceived as being incapable of making the necessary reforms to its mode of operation and policy setting to bring it back into relevance for the rapidly changing communications industry of the 1990s. The inference drawn was that the ITU was in a state of denial over progressive deregulation of national communications sectors. In many cases, the national position had moved to a position of lightweight regulation, relying on strong competitive pressures to enforce regimes of efficiency and effectiveness in the supply of communications services to consumers. The ITU, as an intergovernmental organisation, was increasingly being seen as an anachronistic relic of an earlier era of communications service provision.

It was also evident that this critical view of the ITU was most strongly held within the US, and in particular those parts of the

US administration and industry that were involved with the growth of the Internet. It was perhaps no coincidence that in these growth industries of personal computer technologies and the related Internet industry, it was US enterprises that were the poster children of this new model of industry-led deregulated communications services. Their consequent rapid expansion into the massive undertaking of the global Internet was perhaps the most eloquent statement about the effectiveness of deregulation and the degree to which the previous regulatory model had simply not managed to encompass the burgeoning demand for data services in a timely fashion.

From this perspective it should be no surprise that when the transition of the IANA function – from a fully federally-funded research activity to some form of new foundational base – was being considered by the US administration, it appears that the ITU was never seriously contemplated as a viable home for this function. If the Internet was a child of deregulation and industry initiative-taking on the outcomes of research activity, then it was appropriate that the IANA function should also progress from a research context to an enterprise context. It was felt that IANA should be responsive to industry needs, and to best achieve this the IANA function itself should be undertaken as a task housed within the deregulated private enterprise sector, rather than establish yet another public bureaucracy, or use existing bureaucracies for the role. ICANN was the embodiment of this aspiration on the part of the US administration.

The formation of ICANN

Whatever the original motivation in creating ICANN to administer the IANA responsibilities, it is now apparent that ICANN was deliberately structured to confront the industry with an alternative structure of governance within national and international communications sectors to that of the ITU. The critical difference is that ICANN has not placed governments at the forefront of visible activity, but instead placed industry needs and the operation of a competitive, deregulated international communications sector as being the major thrust of coordination activities.

As with any novel model of public policy determination, ICANN's acceptance has ranged from cautious to highly sceptical. Even within the US administration ICANN has not been 'unleashed' and it continues to operate under the terms of a Cooperative Agreement with the National Telecommunications and Information Administration of the US Department of Commerce under a sole source cooperative agreement. Formally, the US administration has not yet passed any authority to ICANN, or admitted it any true autonomy of operation. As per the US General Auditor's Office report on ICANN, ICANN continues to be an advisory body to the US National Telecommunications and Information Administration (NTIA) in the matter of functions performed by the NTIA in the

administration of Internet infrastructure elements. In this light, ICANN appears to be a cautious step in a bold direction.

ICANN undertakes activities of management of Internet protocol infrastructure in the areas of the content of the root of the DNS and the identification of parties to whom are delegated administrative and operational control of the top level domains and the associated specification of terms and conditions of this delegation. ICANN, through IANA, also manages the pool of unallocated IP addresses (IPv4 and IPv6 addresses and AS numbers), and also manages the protocol parameter registries as defined by IETF Standards Actions.

ICANN MkI

The initial structure of ICANN had three supporting organisations, focusing on:

- coordination of the DNS with the Names Supporting Organization (NSO);
- coordination of address policies with the Address Supporting Organization (ASO); and
- operation of Internet protocol parameter registries with the assistance of the Protocol Supporting Organization (PSO).

The intended role of these supporting organisations was to provide a venue where interested parties could develop and consider policy proposals, leaving the task of ultimate identification of broad support for particular policy initiatives to the ICANN Board.

As has been evident to any observer of the ICANN process, things did not proceed within the parameters of that particular plan.

The PSO was placed under strong pressure to include the ITU-T and ETSI and the W3C was also enlisted, in addition to the IETF. If the objective of the PSO was oversight and policy formulation concerning the role of protocol parameter registration of IETF protocols, then this enlarged membership of the PSO was unwarranted. Even within the terms of consideration of the PSO as a source of standards-based technical advice to the ICANN Board, the presence of these additional organisations was somewhat puzzling in terms of the match of the resultant structure of the PSO to its intended role. The PSO, however, had a role in seating individuals on the Board of ICANN, and it was likely that this aspect of the PSO was the reason for the interest in broader institutional membership. Uncertainty about the extent of the role of ICANN saw many groups attempting to gain access to Board seats.

The ASO was formed within the parameters of a different model. The Regional Internet Registries had already developed a considerable history of working within their communities, and

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Opinion: ICANN, the ITU, and Internet Governance

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had been widely accepted by these communities as an appropriate means of coordination of activity in the role of number resource administration and distribution. The ASO was formed with membership of the associated Council based on processes determined by each RIR. Even then, it was unclear as to the relationship between the RIRs' already well-established open policy development process and the ASO and ICANN. The RIRs were unwilling to pass all regionally-developed policies to ICANN for a second round of consideration and potential alteration. They insisted that only those policies that were considered to be 'global', in that they were both common to all the RIRs and unable to be altered regionally, would be passed into this ICANN sphere.

The NSO struck problems due to the diversity of interests that were encompassed by the DNS domain, including emerging national and regional interests in the country code top level domains, the operators of the generic top level domains, the trademark and intellectual property collection of interests, the emerging industry of registrars, and the continuing interest of individuals who maintained that they had legitimacy of inclusion by virtue of their representation of interests of end users and consumers, or, to use an emerging ICANN lexicon, the 'at large' constituency.

Missing from this mosaic of diverse interests was the inclusion of various national public communications sector entities who also felt that they had clear legitimacy to undertake an active role within the ICANN policy development process. In response to this, the Government Advisory Committee (GAC) was formed.

ICANN evolution and reform

If a camel is a horse designed by a committee, then it's unclear whether ICANN was a three-humped camel or a three and three quarter-humped camel as a result of all this, but a camel it undoubtedly was.

- The PSO was dysfunctional and missing any tangible agenda of activity. A fracture was apparent in the relationship between ICANN and the IETF. Attempts to create an agreement between ICANN and the IETF over the IANA function were not recognised by the US administration, who continued to insist that, formally, the IANA function for the IETF was undertaken at the behest of the US Department of Commerce rather than the IETF. This was not a view shared by the IETF.
- The ASO was accused by ICANN itself of being insufficiently 'representative' of the addressing community and the ICANN Board established its own ad hoc advisory committee on addresses and, in so doing, alienated the RIR community from the entire ICANN framework.
- The NSO was hopelessly wedged into factional-based politics.

- The GAC decided at the outset that it would operate behind closed doors, in contrast to ICANN's continuing efforts to operate in an open and transparent manner. ICANN was unable to exercise any formal control over the operators of the DNS Root Servers and a formal contract or agreement between these operators and ICANN was not looking as if it would happen any time soon.
- The 'at large' election process undertaken by ICANN appeared to be of dubious validity due to problems in establishing a reliable constituency database of individuals who had an interest in ICANN and a direct election process was attempted only once.

Not surprisingly, ICANN fell into some disarray under these pressures and, by early 2002, the CEO of ICANN at the time, Stuart Lynn, was warning all who cared to listen that ICANN was paralysed, dysfunctional, and in danger of an imminent demise. Whether this message was directed to a fractious ICANN Board, or to the fractious set of communities that had some intersection with ICANN, or to the US administration who had been influential in determining the original ICANN structure, was not entirely clear to any observer of the process.

However, given that ICANN had been set up as an example of a new form of international coordination of communication infrastructure support activities that was based on private sector activity rather than governmental fiat, this message of imminent failure was interpreted both as a potential failure of ICANN and a sign of failure of this new model of coordination of international activity. ICANN was seen as a point of vulnerability with respect to the US administration's diplomatic efforts to reform this international activity sector. The ITU-T's activities in this same area were re-invigorated, with considerable support from national sectors who saw their national interests being potentially advantaged in a ITU-led international environment.

ICANN mkII

While still firmly positioned as a private sector activity, and while still making no concessions in the direction of the ITU, ICANN has managed to reorganise its structure through a protracted evolution and reform process.

- With respect to the ASO, the RIRs formed their own coordination entity, the Number Resource Organization, and have proposed this entity to ICANN as the means of interfacing between the addressing community and ICANN's policy development activities.
- The PSO was abolished, to be replaced by a Technical Liaison Group which, apart from its function of seating an individual on the ICANN Board, is a group without an obvious agenda.

- The NSO was forced to recognise the fundamental difference between the generic top level domains, which fall under a more direct relationship with ICANN and its processes, and the country code domains, which have, from the outset, been quite wary of ICANN. From the ICANN reform process emerged the Country Code Name Supporting Organization (CCNSO) and the Generic Names Supporting Organization (GNSO), a recognition that these two groupings are so dissimilar that they have almost nothing in common.
- In addition, an At Large Advisory Committee was formed. This was a curious move, in that the role of representing the interests of end users in international domains has traditionally been that of government, and the current role of the At Large Advisory Committee appears to be somewhat opaque to the outside observer.
- Staffing of ICANN has increased significantly, as has ICANN's level of expenditure.

The reform process has had some more tangible outcomes, in that formal open meetings of the ICANN Board of Directors have managed to be progressively refined from efforts at direct dialogue and debate into highly structured events with many formalisms and appropriate quantities of ceremony.

ICANN today

Despite the effort to encompass coordination activities in the areas of names, addresses, and protocol parameters, ICANN has been largely captured by the names industry and ICANN's agenda, activity focus, and outcomes are by and large concentrated in the name domain.

In this activity, the track record of ICANN is very mixed. To its credit, it has managed to:

- dismantle the most objectionable parts of the monopoly hold over the generic top level domains;
- create an operational model that makes a clear distinction between registry operators and registrars;
- impose price and business controls on the registry operation as a means of controlling the natural tendency of the registry operation to reflect its unique position in the form of monopoly rentals; and
- assist in the creation of a global network of competitive enterprises, with the expectation that competition will instil operational and price efficiency in the registrar business.

In addition, ICANN has been successful in not only introducing new gTLDs to compete with the established brands of .com,

.net, and .org, but also in moving .org and .net to new registry operations (.net is underway at the time of writing this article). Despite these positive achievements, it is not clear that this new regime has been entirely successful.

True competition in the name space is still some way off, with the recently introduced gTLD brands failing to gain expected leverage within the market. The name market itself remains one where the role of name speculators continues to play a significant role in terms of proportion of registered names. The dominance of .com as a brand has continued.

The nature of the relationships between the IETF, ICANN, and the US administration over the protocol parameter registries remains unresolved. There is also the lingering set of concerns that if ICANN were once more to explore positioning itself on the brink of imminent demise, the collective task of picking up the pieces and continuing to support the operation of the Internet is one that appears to have an uncomfortable level of uncertainty.

The DNS Root Server operators continue to operate as an independent group. The recent moves to dramatically increase the number of DNS root servers and improve the overall robustness of DNS resolution through anycasting root servers and distributing anycast instances across the globe has been an initiative that has been well received. The fact this has occurred without any form of ICANN involvement is an interesting commentary on the ability of ICANN to engage with the operational parts of the Internet's infrastructure. Comparable activities to improve the DNS in terms of resolution services within the ICANN sphere have become protracted exercises that impose a very heavy burden on the patience of the players. The moves to introduce IPv6 AAAA records into the DNS root have been anticipated for many years, and the response to the recent ICANN announcement is, in general, of the tenor, "why didn't this happen some years ago?" The continuing frustration to get the DNS root to include DNSSEC key information continues to illustrate a perspective that the ICANN process appears to be unresponsive to technical needs and end user imperatives.

The situation today is that ICANN appears to enjoy a mixed level of success. It has managed to establish itself as a means of administering the infrastructure elements of the Internet Protocol in a manner that is reflective of the deregulated nature of the Internet industry. It has managed to reform parts of the landscape and generate an industry structure that uses open competition as the major control mechanism. ICANN has managed to bring much of the discussion about the administration of Internet infrastructure out into the open. All of these are major milestones, and it is to the credit of many dedicated individuals that ICANN has managed this impressive set of outcomes. However, it has been able to achieve all this with the continued sponsorship of the US administration, and the question of whether it can firmly establish itself in its own right in the coming years remains today perhaps a matter of hope rather than absolute certainty. ■

UK ISPA Nominates RIPE NCC for Internet Hero Award



The UK Internet Services Providers' Association (ISPA) has nominated the RIPE NCC for an Internet Hero award. UK ISPA is a Trade Association for providers of Internet services and promotes competition, self-regulation and the development of the Internet industry. The UK ISPA council nomi-

inated the RIPE NCC for the award as recognition "for their efforts to stop the International Telecommunications Union (ITU) from undermining the tried and trusted systems of Internet governance, with the threat of bureaucracy, government interference and disruption to the very essence of why the Internet is a success."

The Internet Hero shortlist reflects the UK ISPA Council's opinion as to the people and organisations that have helped the interests of the Internet industry. The UK ISPA Council selects the shortlist and eventual winner in these categories.

"We are delighted to have been nominated for this award," said Axel Pawlik, Managing Director of the RIPE NCC. "The RIPE NCC and the other Regional Internet Registries have always worked closely together to represent the needs of their communities. We have participated in the World Summit on the Information Society (WSIS) for over a year, and we will continue to ensure that the views and needs of our communities regarding IP address space distribution are represented and understood. The positive feedback we have received from our members, industry partners and the Internet community at large has been very encouraging."

The winner of the Internet Hero award will be announced at the 2005 UK ISPAs to be held at the London Marriott Hotel, Grosvenor Square, on 24 February 2005.

More information is available at:

<http://www.ispaawards.org.uk/categories/hero.htm> ■

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NRO Chairman for 2004. "We are keen to support an open working group where all relevant stakeholders are represented equally".

The WGIG is expected to submit a report on its findings to the Secretary-General in July 2005. The report will then be available to the WSIS second phase in Tunis in November 2005.

More information on the Working Group on Internet Governance (WGIG) is available at:

<http://www.wgig.org>

More information on the World Summit on the Information Society (WSIS) is available at:

<http://www.itu.int/wsisis/> ■

ICANN and the NRO Sign MoU on the Address Supporting Organization

On October 21, 2004, the Number Resource Organization (NRO) and ICANN signed a formal Memorandum of Understanding (MoU) which specifically concerns the Address Supporting Organization (ASO). It stipulates how the NRO will fulfill the role, responsibilities, and functions of the ASO as outlined in the ICANN Bylaws. The signing ceremony took place at the ARIN XIV meeting held in Reston, USA.

For the Internet community, the new ASO MoU outlines a policy process that promotes industry self-regulation of the unallocated number resource pool (IPv4, IPv6, and AS numbers). The same policy process has been in practice for years in each of the RIRs that comprise the NRO.

"This is an important development for the global Internet community," said Paul Wilson, NRO Chairman for 2004. "The MoU fosters RIR cooperation, providing mutual benefit for the development of global policies that affect all RIR communities, while preserving the individual policy development procedures used by the various RIR communities to make their own decisions".

The ASO was originally formed in 1999 by an MoU between the RIRs and ICANN, with the purpose of reviewing and developing recommendations on number resource policy and advising the ICANN Board on these matters.

The new MoU describes a procedure for global policy development. This is a 15-step process for global policies that the RIR communities cannot ratify on their own, such as policies defining how IANA allocates address space to the RIRs. This ensures that global policies continue to be developed in the bottom-up, open, and transparent manner common to all RIR communities. The MoU does not affect how each regional community and RIR arrives at a policy position. The regional community for each RIR will continue to determine the processes used to arrive at a policy position for their region.

Another new feature of the MoU is the replacement of the members of ASO Address Council (AC) with the members of the NRO Number Council (NC). The voting scheme for the NRO NC is similar to the former voting scheme used for the ASO AC, where two members are selected by the regional policy forum of each of the RIRs. The only difference is that for the NRO NC, the Executive Board of each RIR also appoints one person from its respective region.

As was the case in the original MoU, the ASO AC will provide recommendations to the Board of ICANN about recognising new RIRs and will define procedures for selecting individuals to serve on other ICANN bodies (such as the ICANN Board). The RIRs will also continue to provide all funding for the ASO. ■

NRO Comments at ICANN WSIS Workshop

The recent ICANN meeting in Cape Town, South Africa, included a panel session to discuss the newly formed Working Group on Internet Governance (WGIG). In that session, held on 1 December 2004, Paul Wilson, Chairman of the Number Resource Organization (NRO) for 2004, made the following statement on behalf of the NRO.

The Regional Internet Registries have been participating in WSIS for over two years, individually and, more recently, through the Number Resource Organization, which represents RIRs globally. There are a few WSIS areas where we might like to spend our time, but the WGIG is now demanding all of our attention.

We are participating in WSIS as experts in the area of IP addressing and as supporters of ICANN. We've given our support not as components of ICANN, but as independent members of this broader framework of Internet administration, which ICANN itself is intended to support.

In the second round of WSIS, the RIRs will continue to play an active role, especially in the WGIG. We will continue to support ICANN, and to work with ICANN to address the genuine questions that it faces.

We feel that within WSIS, the principle issues are those of the independence and genuine internationalisation of ICANN. The NRO has called on ICANN to continue its work in this area, not by building a monolithic multinational organisation, but rather by increased cooperation and collaboration with its core stakeholders.

We've also called on ICANN to work with the US government to publish a genuine, unambiguous plan for its independence after the current MoU and to commit to this plan before the conclusion of the second phase of the WSIS. This is critical to provide the WSIS community with certainty as to the future form and status of ICANN after WSIS, a question which is certainly still unclear to many.

Also as a critical issue of Internet governance, the NRO rejects any concept of an alternative Internet administrative model located within any governmental or intergovernmental structure. We acknowledge fully that there is a valid role for governments in the administration of the Internet; however, this can and should be placed in the context of the current model.

Recently, the NRO posted a public response to Houlin Zhou's memorandum on Internet governance, addressing the proposal for a national allocation scheme for IPv6 addresses. Like others, such as the Japanese Internet Governance Taskforce, we have serious and very genuine concerns about the technical and operational implications of such a scheme.

The assertion of sovereign concerns in this case is a certainly powerful and legitimate argument; however, there are mechanisms either in place now or certainly feasible, which may address the same concern with far lower risk. For the sake of the stability and security of the Internet, such solutions should certainly be explored.

Finally, in relation to the WGIG, I'd like to revisit some comments I made during the Geneva meeting last week. It seems that the definition of Internet governance, which is the first of WGIG's tasks, is being driven by negative aspects of the Internet, as a list of 'problem areas' of the Internet. Or in other words, as a list of bugs rather than features.

The point here is that many aspects of the Internet are not being suggested as topics of governance, simply because they currently work well enough not to be on the radar. These include such things as the routing system (which is pretty stable), competition between alternate root servers (which would certainly be an issue in the absence of the concerted efforts that have been made to avoid it), and the global interoperability of all parts of the Internet (which is assumed without question, but by no means guaranteed).

I suggested to the Working Group last week that these and other aspects of the Internet must not be taken for granted and the famous principle of 'do no harm' should be borne strongly in mind. I suggested that rather than seeing Internet governance as a list of bugs, WGIG should consider features of the Internet which are to be appreciated and preserved, and include this consideration in the scope of its work. The risk of overlooking them – and this is a real risk – is to 'do harm' to the Internet, and potentially, therefore, to leave a longer list of problems for some future Working Group to solve. ■

The RIRs and the WSIS

The RIPE NCC and the other Regional Internet Registries (RIRs) have been actively involved in the World Summit on the Information Society (WSIS) from the first phase of the summit in Switzerland (December 2003), through the PrepCom 1 in Tunisia (June 2004) and the regional meeting in Syria (November 2004). They will continue to represent the needs of their members and communities throughout 2005 at the PrepCom 2, to be held in Switzerland, the regional meetings in Ghana and Brazil, and the second phase of the summit, to be held in Tunisia in November 2005. ■

Flying and “Internet Governance” By Daniel Karrenberg, Chief Scientist, RIPE NCC

Theories are tools used by scientists to describe aspects of the world based on observations. Theories are judged in the first instance by how well they explain past observations and predict future observations of the world. In the second instance they are judged by their complexity and the elegance of their description; contrary to popular belief, less complexity is considered better.

All of us use theories all the time in our everyday life. These daily-life theories tend not to be as rigorously defined as their scientific brethren, yet they determine how we perceive reality. Let us examine this using the example of ‘Internet Governance’ and more specifically the area of Internet address distribution:

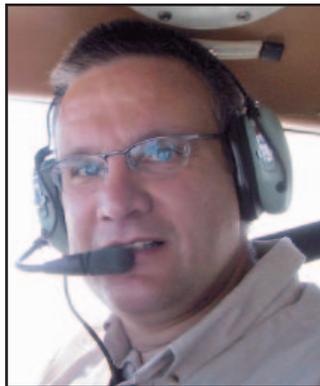
One theory about Internet address distribution postulates that Internet addresses are a resource held in a global pool by the IANA, which in this theory is often simply referred to as ICANN. IANA allocates addresses to Regional Internet Registries (RIRs), who often further allocate addresses to Local Internet Registries (LIRs) and finally the numbers are assigned to end-users. Implicitly this theory postulates that the IANA, as holder of the global resource, has the power to set global policies that are passed down towards the end-user by each element in the hierarchical chain. Let us call this theory the “Hierarchical Top-Down” theory.

Another theory views Internet addresses as elements of the Internet routing system, the system that directs Internet traffic along its way between end-systems across the administrative domains of various Internet Service Providers (ISPs). This requires a certain level of co-ordination between the ISPs who otherwise act autonomously in a distributed fashion. This theory considers the distribution of Internet addresses to be part of this routing co-ordination for which the ISPs have organised neutral RIRs and associated policy processes. In order to achieve co-ordination among the regional policies, the RIRs have set up the Number Resource Organization (NRO). The RIRs also use the services of the IANA to keep IP addresses globally unique. Let us call this theory the “Distributed Bottom-Up” theory.

A third theory views Internet addresses as a commodity that is traded among ISPs. It postulates that there is a regulated market for Internet addresses that is currently dominated by the RIRs because they have access to a huge pool of resources which, being not-for-profit, they provide at cost price. Let us call this theory the “Market” theory.

All these theories aim to describe the same ‘reality’, e.g. the sum of past and future observations of the real world. I am not going to point out “The Correct Theory” to you, because my job is Chief Scientist and not Chief Ideologist. All these theories have some merit and can be useful. Personally I prefer to use the “Distributed Bottom-Up” theory because it best matches my observations about current Internet operations; see also

<http://ispcolumn.isoc.org/2004-12/addressing.html> for some pertinent observations. But I am certainly biased, having helped to build some of the elements that feature prominently in this theory. The “Market” theory is not talked about much any more; but one can clearly observe addresses being regarded as assets and some trading in addresses is going on. I believe this theory holds tremendous potential for the time when the unallocated (IPv4) address pool will be exhausted. The “Hierarchical Top-Down” theory is conveniently simple and easy to explain. Hierarchical governance is also a concept familiar to many of us. Therefore this theory is used in many descriptions of “Internet Governance”. Yet this theory cannot explain some observations about the real world, mainly those relating to the distributed nature of the development and operation of the Internet. I observe that an integer becomes an IP address by an ISP announcing a route to it **and** other ISPs accepting and propagating the route in a distributed and coordinated fashion. I do not observe an integer becoming an IP address by being on an IANA list.



A danger of using theories is to confuse them with ‘reality’. Reality in this context means what can be observed about the world. A theory can become so strong in our minds that we stop observing carefully and observe what we expect according to our theory rather than what there is to observe. This was driven home to me one fine day when my flight instructor pointed out that I had checked the position of a particular switch twice in a row and announced its position loudly and clearly while it was in fact in another position. How could I fail to observe correctly something as simple as the position of a switch? I suddenly realised that in my mind the theory about my previous actions and the phase of flight had become so strong that I failed to observe correctly. Even worse, I had ignored some other observations caused by the incorrect switch position because they did not fit my theory! The aeroplane was still flying, but our performance was less than optimal. If not detected and corrected this even had the potential to get dangerous later in the flight.

In the current “Internet Governance” discussion something similar appears to be happening. Many participants appear to be locked into “Hierarchical Top-Down” thinking and they appear to be disregarding observations that do not fit their theories. Also it often seems to be difficult for people to communicate because they are not clear about the theories they are using. I hope that there is still time to address this fundamental problem before it leads to “Internet Governance” being implemented in a way that does not work well, that negatively affects Internet performance and that may even become dangerous to the future stability of the Internet.

Let us all observe more carefully and develop the administration and co-ordination structures that work well not only in our theories but also in practice. ■