

# AN ANALYSIS OF INTERNET DEPLOYMENT AND GOVERNANCE

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**Abstract:** Internet governance is concerned with the global management and operation of key internet resources. Given the global nature and reach of internet based services, technological as well as political aspects and considerations are interwoven and cannot be separated. This paper analyses current trends and developments regarding internet deployment and governance and is considering future developments. The paper suggests that governments as well as market governance will remain present for the network access and content. It is further argued that internet governance is having more diversity with respect to governance and more prominent network governance than other communication channels. The paper further considers future developments and proposes alternative perspectives.

## 1 INTRODUCTION

Internet governance refers to the global management and operation of the key internet resources such as the IP address allocation or domain names (Collins, 2006; Mueller, 1999). It is widely seen as a technical and political process (Kleinwaechter, 2004). The operation of the internet is relevant for the global economy and the internet provides a globally adopted communication medium. Thus political and technological aspects are interwoven and cannot be separated. This paper identifies and outlines the most relevant internet deployment implications. It then identifies the key players and developments affecting internet governance. Current trends and arguments with respect to internet governance are put into context and evaluated. The paper further analyses future developments and proposes a set of alternative perspectives.

## 2 INTERNET DEPLOYMENT

The deployment and growth of internet services and online participation (Gibson, 2005) is facilitating the development from legacy network infrastructures towards new network infrastructures. The shift from circuit switching to packet switching is further affecting governance. Both legacy and new network infrastructures require regulation if they are to serve the public's interest (e.g. enable competitive access to the local loop for the provision of broadband services or fair allocation of IP addresses).

A number of architectural and technical aspects are fundamental for the operation of the internet and the provisioning of internet services (e.g. addressing and naming) must be tightly-controlled and supervised (as opposed to market driven governance). It is required to have an ultimate authority with respect to address (and domain name) distribution to avoid (or resolve) potential addressing and naming disputes and ambiguities. On the other hand competition will ultimately benefit customers in areas such as network access (e.g. with respect to performance and prices).

However government intervention may be required to facilitate the provisioning of affordable internet services and to nourish competition. For example in the United Kingdom Ofcom has intervened on a number of occasions to create conditions for a competitive and user-centred market (Collins, 2006). Example interventions include Ofcom's directives forcing BT to introduce Flat Rate Internet Access Call Origination (FRIAC), to implement local loop unbundling or the release and pricing of wholesale datastream products. On a European level the telecommunication industry has been transformed from predominantly uncompetitive state monopolies governed by a detailed (and rather restrictive) framework of regulations into a competitive market (Christou, 2006). The European Commission is largely responsible for the related legislation and the promotion of the recent liberal, multi-layer approach to governance of the telecommunication market and industry (Christou, 2006; Sandholz, 1998). These examples suggest that regulatory intervention is required to address the market position (and its impact upon competition) of major

telecommunication players. This is making fair, efficient and transparent network and internet governance a prerequisite for the operation and development of the internet.

### 3 GOVERNANCE BODIES

Several assumptions prevail with respect to internet governance: that internet governance is distinct from governance of other media (e.g. television), that it is extending effectively through the whole internet community or that it is market driven. However a number a key players and driving forces behind the evolution of the internet put those assumptions in a different light and impact upon the current and future development of the internet. From a European perspective the European Union Framework Directive excludes key elements such as internet addressing and naming from national bodies' responsibilities. Governance of the internet is divided between different institutions. This current state of the art, the activities and authority of these are highly contested and remain uncertain.

The Internet Society (ISOC) is an international, non-profit organisation formed in 1992 to provide support for the internet standards and development process. ISOC accomplishes this through maintaining and supporting other internet administrative bodies such as Internet Architecture Board (IAB) or the Internet Engineering Task Force (IETF). ISOC also promotes research and other scholarly activities relating to the Internet. The IAB is the technical advisor to the ISOC. The main purposes of the IAB are to oversee the continuing development of the TCP/IP Protocol Suite and to serve in a technical advisory capacity to research members of the internet community. IAB accomplishes this through its primary components, the Internet Engineering Task Force and the Internet Research Task Force (IRTF). Another responsibility is the editorial management of the IETFs Request for Comments (RFCs). IAB is also facilitating external liaison between internet and other standards organisations and forums. The vast majority of internet related technological standards are developed and specified by the Internet Society (ISOC) and the units operating under ISOC: Internet Architecture Board (IAB), Internet Engineering Task Force (IETF), the Internet Research Task Force (IRTF), the Internet Research Steering Group (IRSG), Internet Engineering Steering Group (IESG), and the RFC Editor. Whilst these organisations are responsible to ISOC, ISOC aims to

ensure a large degree of independence in their technical work. IETF is a loosely self-organized, grass-roots technical group consisting of mainly of researchers, vendors and networking industry. It is acting as an activity of ISOC and has no formal management. There is no formal membership and generally, attendance at IETF meetings and subscription to IETF mailing lists is open to all volunteers. Participants are expected to contribute as individuals, rather than as representatives of companies or organizations. The IETF concerns itself with the engineering and architecture of the internet. It is the principal body that develops, tests and implements new internet technological standards, including protocols, that are published in the form of Requests for Comments (RFCs). The IETF relies on 'volunteers' (often representing the interests of an industry stakeholder) and is using "rough consensus and running code" results in a potentially slow process the number of contributors is either too small to make progress or too large (i.e. making consensus difficult). For protocols like Simple Mail Transfer Protocol (SMTP) which is used to transport e-mail over the internet, there is also considerable resistance to any change which is not fully backwards compatible. Given the number of contributors with opinions on standards issues is very large, consensus mechanisms on how to improve the standardisation process prove difficult to realise.

The Internet Corporation for Assigned Names and Numbers (ICANN) is the non-profit corporation that was formed by the U. S. government in 1998 to assume responsibility for the IP address space allocation, protocol parameter assignment, domain name system management and root server system management functions (in conjunction with Generic Name Supporting Organisation, GNSO). This was formerly performed under U.S. Government contract by IANA and other entities. The IP Addresses are allocated by means of a central authority that franchises them to interested organisations. For Europe ICANN has delegated authority to the Réseaux IP Européens (RIPE).

However the independence and neutrality of ICANN remained questioned (Mueller, 1999). Although the ICANN's board of directors was composed of members from different regions of the world to represent the heterogeneity of the internet community the close relationship between ICANN and the US government remained. The U.S. government have been heavily criticised for using its unique ICANN relationship to ICANN its advantage. In one example, the administration of

U.S. President George Bush objected to the .xxx adult domain that eventually led ICANN to reverse an earlier decision and reject the domain suffix (Plau, 2006). However, the fact remains that some analysts and researchers value ICANN as an independent body representing the interests of the Internet community as a whole whilst others refer to it as a 'public-private partnership' (Collins, 2006; Fromkin, 2003; Christou, 2006).

## 4 ANALYSIS

ICANN decides on new top-level domain names and delegates the implementation and management of existing and new domains. This process takes place in conjunction with the Governmental Advisory Committee (GAC). ICANN is intent on keeping the existing model and aims to evolve rather than being replaced by a new model of communal state-led internet governance. On the other hand the modelling and implementation of new structures for internet governance is the clear intention of a large proportion of the international community (Wray, 2005). The position regarded as control-oriented approach proposed and supported by a number of states (e.g. China, Pakistan) aims to create a new governing council based in the United Nations (UN) that would oversee and ICANN and to which ICANN would be accountable. Another approach envisages a 'lightweight' governance structure (initially recommended by the EU) based on a cooperation model encompassing governments, industry and other relevant organisations dealing and overseeing ICANN and a forum to provide a recommendations and proposals for internet practice and operation. At the same time a discussion surrounding the possible control (i.e. censorship) of control surrounds this discussion, with some players seemingly more concerned with the control of content than others (e.g. the official EU position is that the cooperation model is not about content and that it advocates free speech on the internet).

In January 2002 the United Nations General Assembly issued a proposal on Information and Communication Technology (ICT) issues leading towards the World Summit on the Information Society (WSIS) series of United Nations sponsored conferences (Kleinwaechter, 2004). The task of organising and running the WSIS leading to the global summit of Tunis in November 2005 was delegated to the International Telecommunications Union (ITU). The ITU can be seen as a potential key player in counterbalancing the power of the US

government and ICANN. However the internet community seems unconvinced of ITU's ability to play a constructive role in the development and governance of the internet (e.g. given failure of 'global' standards such as the OSI model and its perceived history of bureaucracy and sluggishness). At Tunis discussions over internet governance and the role of ICANN dominated the conference, leading to the "decision" to leave overall control with ICANN. Additionally it was decided to establish the purely consultative Internet Governance Forum (IGF). Supporters of the outcome argue that the concern over US dominance over the internet (e.g. with respect to freedom of information) are insubstantial and that the US will guarantee the best possible development of the internet. However the given status quo remains controversial and contested given its strategic economic, cultural and technological importance (Christou, 2006; Collins, 2006). It can be argued that further refinement of internet governance must be linked to wider regulatory changes of a predominantly globalised economy and international governance.

A number of critics of the United Nations led IGF are concerned by the lack of any decision-making abilities with respect to the core aspects and issues surrounding internet governance. A recent IGF meeting in Athens was overshadowed by discussions of the role of ICANN and the clashing of opinions. Whilst European Union endorsed an announcement by the U.S. Department of Commerce to consider ending its control of ICANN, the International Telecommunication Union (ITU) regarded the same issue as making *"little or no change"* (Blau, 2006). Given the lack of any real decision-making abilities makes it difficult to evaluate the results or recommendations from the IGF at this stage.

It is therefore clear that institutional (e. g. originating from government) as well as market governance are present for the network access and content. Additionally network governance is having a major impact upon these aspects and is further strongly present in the control and operation of the internet. Furthermore it becomes clear that the internet is having more diversity with respect to governance and more prominent network governance than other communication channels (e.g. based on legacy network infrastructures). This suggests that network governance and self regulation have the potential to contribute towards efficient and constructive governance. However, this discredits the notions of 'market knows best' and that the

internet is distinct from issues surrounding legacy media. It can be argued that cases such as the .eu Top Level Domain (TLD) provide evidence of international private-public governance in the internet community and that this reflects the development towards post-regulatory state governance (Christou, 2006). Institutions and institutional cooperation have been essential to the development of the internet. The IETF and ICANN provide an interesting contrast of different organisational and internet governance cultures. It can be argued that ICANN has partly 'failed' because it represents a move away from traditional internet self-governance and given its close links to the government of a nation state (i.e. the US). It can be argued that ICANN's effectiveness has been impeded by a lack of sense of itself and by its dependence upon the US government to legitimate its rule and that the resulting lack of an established culture has undermined the achievement of an effective and successful modus operandi (Bowrey, 2005). On the other hand the IETF always had a clear mission statement and 'voluntary' participation which has enabled it to evolve and renew itself. Given the predominantly technical nature of its tasks facilitates an open, fair and transparent modus operandi.

## 5 CONCLUSIONS AND OUTLOOK

The internet is best understood as a network of networks with a multitude of interconnected and layered aspects as opposed to one closed medium or infrastructure. It can be compared to a dynamic organism with constantly changing operational and governance requirements. Hence it can not have a single, centralised and unified all-encompassing governance organisation. The tendency to think of the internet as a unity that can be regarded in isolation is not reflecting the nature of the communications phenomenon. The critical issues are whether technical and operational standards are set according to specific interests. Hence internet governance becomes a political issue. Certainly control might be exerted to undermine the interests of the internet community.

Ultimately the challenge is to find a way to implement and operate a new governance system that will meet the requirements of the 21<sup>st</sup> century. A successful diplomacy for the information age will be much more complex and interconnected. There will

be more stakeholders than governments (e.g. private industry and civil society), all with different interests on different issues.

## REFERENCES

- Blau, J., 2006. Internet forum participants clash. *Computerworld – The voice of IT Management*. 3 November 2006. Retrieved 11 November 2006, from <http://www.computerworld.com.au/index.php?id=2072639607>.
- Bowrey, K., 2005. *Law & Internet Cultures*. Cambridge University Press. 30 May 2005.
- Christou G., 2006. The Internet and Public-Private Governance in the European Union. *Journal of Public Policy*, Vol. 26, 1: 43-61.
- Collins, R., 2006. Internet Governance in the UK. *Media, Culture & Society*. Vol. 28 (3): 337-358.
- Froomkin, M., 2003. ICANN Governance. *In Loyola Law Review of Los Angeles*. 36 (3).
- Gibson, R., 2005. Online Participation in the UK: Testing a 'Contextualized' Model of Internet Effects. *Political Studies Association, BJPIR*, 2005 Vol 7: pp. 561-583.
- Kleinwaechter, W., 2004. Beyond ICANN vs ITU? *In Gazette: The International Journal for Communication Studies*. Vol. 66 (3-4): 233-251.
- Mueller, M., 1999. ICANN and Internet governance - Sorting through the debris of "self-regulation". *Info*, 1, 1999.
- Sandholtz, W., 1998. The Emergence of a Supranational Telecommunications Regime. *European Integration and Supranational Governance*, Oxford University Press: 134-163.
- Wray, R., 2005. EU says internet could fall apart. *The Guardian*. 12 October 2005.