The role of multi-stakeholder governance models in policy-making processes for cyberspace

Virgilio Almeida
Harvard University
Cambridge, September 2016
Who controls the internet? Ted Cruz’s fantasy vs. the reality
Ted Cruz proposes bill to keep U.S. from giving up internet governance role

By Andrew Blake - The Washington Times - Wednesday, June 8, 2016

Internet legislation proposed Wednesday in the Senate would prohibit the U.S. government from relinquishing its role with respect to overseeing the web’s domain
Ted Cruz Keeps Trying to Protect Internet Freedom in Weirdly Wrong Ways

By Lily Hay Newman

At the Republican National Convention on Wednesday night, Ted Cruz delivered a controversial speech. Most of it was about freedom and party differences, but did you know that Cruz also has strong views about the technical bodies that oversee the
Social Layer Added to the Established Layered Model of Internet Governance

- Trust and Identity
- Human Rights Applied to the Internet
- IG Principles (e.g. Net Neutrality)

Content Layer
- Intellectual Property Rights
- Cybercrime
- SPAM

Logical Layer
- Internet Naming and Numbering
- Protocols & other Standards

Infrastructure Layer
- Connectivity & Universal Access
- Net Neutrality
What does ICANN do?

WHAT DOES ICANN DO?

To reach another person on the Internet you have to type an address into your device—a name or a number. That address must be unique, so computers will know where to find each other. ICANN maintains and administers these unique identifiers across the world. Without ICANN’s management of this system, known as the Domain Name System (DNS), we wouldn’t have a global, scalable Internet where we can find each other.
NUMBER RESOURCES

A key IANA function is the global coordination of the Internet Protocol addressing systems, commonly known as IP Addresses. There are two types of IP addresses in active use:

- IPv4
- IPv6

192.0.2.53 2001:db8:582::ae33

The allocation of blocks of AS numbers to Regional Internet Registries (RIRs) is another part of this function. AS numbers are used to identify the networks that control their own routing by connecting to multiple networks controlled by other organizations.

The allocation of IP addresses and AS numbers to RIRs are made according to global policies. The five RIRs, each of which serves a continental region, establish consensus-based global policies.

PROTOCOL ASSIGNMENTS

The Protocol Parameters management function involves maintaining many of the codes and numbers used in Internet protocols. This is done in coordination with the IETF.

IANA CHEAT SHEET

IANA: Internet Assigned Numbers Authority
ICANN: Internet Corporation for Assigned Names and Numbers
IETF: Internet Engineering Task Force
NTIA: National Telecommunications and Information Administration
DNS: Domain Name System
DNSSEC: Domain Name System Security Extensions
AS number: Autonomous System Number
TLD: Top-Level Domain

DOMAIN NAMES

Maintaining the Root Zone Database is a key IANA function. It contains the authoritative record of all the TLDs.

Part of that function is processing routine updates for TLD operators, as well as adding new TLDs into the root of the DNS.

The Root DNS Key Signing Key allows people to verify DNS answers from the root zone. DNSSEC is critical to the security of the Internet.

WHAT IS DNSSEC?

DNSSEC is a technology that digitally ‘signs’ DNS answers so you can know they are valid. To be sure of an answer’s validity, a digital signature is needed at each stage in the hierarchy from the root zone to the final domain name (e.g., www.icann.org). DNSSEC does not encrypt DNS queries or answers. It lets you know whether a DNS answer is valid.
NTIA Announces Intent to Transition Key Internet Domain Name Functions

March 14, 2014
News Media Contact:
NTIA, Office of Public Affairs

“The Internet’s multistakeholder community has risen to the challenge we gave them to develop a transition proposal that would ensure the Internet’s domain name system will continue to operate as seamlessly as it currently does,” said Assistant Secretary for Communications and Information and NTIA Administrator Lawrence E. Strickling. “The plan developed by the community will strengthen the multistakeholder approach that has helped the Internet to grow and thrive, while maintaining the stability, security, and openness that users across the globe depend on today.”

NTIA said the transition proposal must have broad community backing and:

- Support and enhance the multistakeholder model;
- Maintain the security, stability, and resiliency of the Internet DNS;
- Meet the needs and expectations of the global customers and partners of the IANA services; and
- Maintain the openness of the Internet.

In addition, NTIA also said it would not accept a plan that replaced NTIA’s role with a government-led or intergovernmental organization solution.
Update on the IANA Transition

Two months ago, we passed an important milestone in a nearly 20-year effort to privatize the Internet domain name system (DNS). We announced on June 9 that the transition proposal developed by the Internet multistakeholder community meets the criteria we outlined in March 2014 when we declared our intent to transition NTIA’s stewardship role related to the DNS. While this was a significant moment in this journey, we said in June that the Internet Corporation for Assigned Names and Numbers (ICANN), which currently operates the IANA functions under a contract with NTIA, still had work to do to implement key action items called for in the transition plan.

On Friday, ICANN informed NTIA that it has completed or will complete all the necessary tasks called for in the transition proposal by the end of the contract term. NTIA has thoroughly reviewed the report. We informed ICANN today that based on that review and barring any significant impediment, NTIA intends to allow the IANA functions contract to expire as of October 1.

The IANA stewardship transition represents the final step in the U.S. government’s long-standing commitment, supported by three Administrations, to privatize the Internet’s domain name system. For the last 18 years, the United States has been working with the global Internet multistakeholder community to establish a stable and secure multistakeholder model of Internet governance that ensures that the private sector, not governments, takes the lead in setting the future direction of the Internet’s domain name system. To help achieve this goal, NTIA in 1998 partnered with ICANN, a California-based nonprofit, to transition technical DNS coordination and management functions to the private sector. NTIA’s current stewardship role was intended to be temporary.

In March 2014, NTIA initiated the final step in the privatization of the DNS by asking ICANN to convene Internet stakeholders to develop a plan to transition NTIA’s stewardship role for the DNS to the Internet multistakeholder community. Stakeholders spent two years developing a thoughtful consensus proposal that meets the criteria we outlined in 2014 and will strengthen the multistakeholder approach, while maintaining the stability, security, and openness of the Internet that users across the globe depend on today. This multistakeholder model is the key reason why the Internet has grown and thrived as a dynamic platform for innovation, economic growth and free expression.

We appreciate the hard work and dedication of all the stakeholders involved in this effort and look forward to their continuing
Definition: Internet governance is the development and applications by governments, the private sector, and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programmes that shape the evolution and use of the Internet.

WGIG - United Nations working definition of IG
The Internet Governance Ecosystem and the Rainforest

Figure 1. Formal Internet governance structures. (IAB = Internet Architecture Board; IANA = Internet Assigned Numbers Authority; ICANN = Internet Corporation for Assigned Names and Numbers; IETF = Internet Engineering Task Force; ISOC = Internet Society; ITU = International Telecommunication Union; and W3C = World Wide Web Consortium.)
Internet Governance: concepts and framework

• Many different implementations: different countries have adopted different models.
  – From utopian self-governing models of individual liberty beyond the reach of government control, to models in which Internet-related activities are subject to regulation through governments and regulatory agencies.

• Origin and Fundamentals of Multi-stakeholder models of governance

Cyberspace Governance, Harvard 2016
Discussion Points

• What are multistakeholder governance models
  – How do they work?

• What are strengths and weaknesses of multistakeholder models?

• Examples of multistakeholder bodies.

• Multistakeholder models in the context of cyberspace governance and cybersecurity.
Global Ecology of Choices for Internet Governance Models

- National Governmental Policy & Regulation
- Industry, ISP, SNS Policy & Regulation
- User Self-Regulation (Learning & Education)
- Bilateral & Multilateral Treaties, Inst.
- Tech Populism
- Multistakeholder, Multilateral Global Internet Governance
Internet Governance

Narrowly defined

The centralized coordination of critical resources for Internet’s functioning as a unified space.

- The curation of protocol parameters, which label and organize a unified database shared by the technical communities involved with the development and operation of the network.
- The (decentralized) allocation of addressing resources (IP numbers and domain names); and
- Some tasks related to the administration of the DNS root zone.

Widely defined → Cyberspace

Policy elements within a complex ecosystem that result from the spread of Internet technologies in contemporary societies and the circular relation between technological and societal variables, e.g.:

- Infrastructure and capacity development;
- Telecommunications regulation;
- Access;
- Privacy concerns and freedom of speech;
- Civil and criminal liability of users and network intermediaries;
- Intellectual property and other types of rights enforcement;
- Cyber crime, public safety and national security;
- ...


Definition: the development and application by governments, the private sector, and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programs that shape the evolution and use of the Internet.

Stakeholders: individuals or groups that have an interest in a particular decision because they can either influence or be affected by it.

Internet governance and sustainable development are processes that share some similarities. The concept of sustainable development refers to development that meets present needs without compromising the needs of future generations.
Multistakeholder Model for Cyberspace Governance

**Multistakeholder model:**
- Issues, goals, scope,
- participants, timelines,
- connection to decision-makers
Characteristics of Multi-stakeholder Models (MSM)

- **Goals**: MSMs can be designed to reach goals that would be unachievable if each stakeholder worked alone.
- **Participants**: MSMs should involve representatives from different groups interested or affected by the issue under examination.
- **Scope**: MSMs can help address issues at national, regional, or international levels.
- **Timelines**: MSMs can be constructed for single events or open-ended processes, depending on the issue under examination.
- **Connection to Decision-Makers**: Multistakeholder bodies can interact in different ways with official decision-making processes at the international, regional, or national levels.
Examples of Multistakeholder Bodies

1. @ICANN: multistakeholder process under private sector leadership. Governments participate in ICANN processes only in an advisory capacity. At the end of the day, it’s the ICANN Board — where governments are represented by one non-voting liaison — which decides.

2. @IGF (Internet Governance Forum), all stakeholders are involved on equal footing, but the IGF has no decision-making capacity.

3. @NETmundial, similar to the IGF (i.e., discussion process), but it produced tangible results. It involved all stakeholders — similar to ICANN — but treated them as equals in the decision-making process.

4. CGI.br, multistakeholder internet steering committee in Brazil
Multilateralism vs. Multistakeholderism

• Multilateral governance of the global internet through existing international institutions such as the United Nations (UN), that allows for all states to participate on an equal and democratic basis.

• The discussion of the future of Internet governance shouldn’t become a boxing event where the “blue corner” (some governments) fights the “red corner” (a rainbow coalition). It’s not “right versus left” or “conservatives versus progressives,” and neither is it “East versus West” or “North versus South.”

• There’s no such contradiction between multilateral and multistakeholder approaches because the two concepts are complementary.
Brazilian Internet Steering Committee

History of CGI.br

Multistakeholder model

- 9 representatives from the government
- 4 representatives from the private sector
- 4 representatives from the non-profit sector
- 3 representatives from the scientific and academic community
### PARTICIPATION

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expression of interest</td>
<td>869</td>
</tr>
<tr>
<td>Attendees</td>
<td>1070</td>
</tr>
<tr>
<td>Press</td>
<td>183</td>
</tr>
<tr>
<td>Countries</td>
<td>110</td>
</tr>
</tbody>
</table>

### OUTCOME DOCUMENT

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content contributions</td>
<td>188</td>
</tr>
<tr>
<td>Comments on first draft</td>
<td>1,370</td>
</tr>
</tbody>
</table>

### REMOTE PARTICIPATION

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worldwide hubs</td>
<td>33</td>
</tr>
<tr>
<td>Countries</td>
<td>28</td>
</tr>
<tr>
<td>Cities</td>
<td>30</td>
</tr>
</tbody>
</table>

![Remote participation map]
Goals

Internet governance principles

Roadmap for the further evolution of the Internet governance ecosystem
Stage LAYOUT

- BIG SCREEN

- Remote hub bidirectional manager
- Session Chairs Advisors
- Remote hub unidirectional manager + Individuals
- 4 microphones
  - AC/TC
  - Gov/IGO
  - BS
  - CS

Separate lines per stakeholder sector

Translation into 7 languages

Interpretation booths
Multistakeholder and Equal Footing Participation
What is driving opposition to MS model and how can this be overcome?

• Decision-making process
  Consensus building is a key activity for multistakeholder governance bodies. Stakeholder representatives present their views and positions on a particular issue. Then, they engage in a dialogue to achieve mutual understanding of problems. The quest for consensus in MSMs is almost never an organized or orderly process. Because all stakeholders participate on equal footing, discussions are usually messy, with unpredictable developments.

• Government role in Internet governance
  Critics say that unrepresentative organizations are given the same powers as nation states over public policy issues.

• Structure and operational aspects of a multistakeholder governance body.
What checks and balances are required to avoid interests groups monopolizing internet governance?

• Capacity building for the different stakeholders involved in the Internet governance process: civil society,…

• Adequate structure of the multistakeholder organization: choice of stakeholder groups and number of representatives for each stakeholder group;

• Adequate process to select the representatives of the different stakeholders;

• Transparency in governance processes.
Multistakeholder and cybersecurity?

- Cyber Threats
  - Cyber war: state actors
  - Economic espionage: state actors
  - Cyber crime: non-state actors
  - Cyber terrorism: non-state actors

- Evolution
  - As cyber threats alliances, tactics and technology evolve, the categories of actors will increasingly overlap -> multistakeholder organizations

- Examples:
  - Big business: Sony, Target, JPMorgan, Home Depot attacks;
  - Government: OPM, ...
  - Civil Society Organizations (CSOs) face the same threats as the private sector and government; 10 CSOs reported attacks (citizenlab.org)
Carter: Cyber Domain Presents Profound Challenges
By Claudette Roulo
DoD News, Defense Media Activity
WASHINGTON, March 13, 2015 – Defense Secretary Ash Carter gave his first domestic troop talk as secretary to the cyber warriors assigned to U.S. Cyber Command at Fort Meade, Maryland, today.

The mission of Cybercom is vital to the economic and physical security of not just the nation, but to Americans in their individual lives, Carter said.

“With all that's going on in the world, from Iraq to Ukraine, to the Asia-Pacific, the domain that you protect -- cyberspace -- is presenting us with some of the most profound challenges, both from a security perspective and from an economic perspective," he told the troops.

National leaders at every level are "seized with the need to get on top of this problem," the defense secretary said.

Building Bridges to Society
The Defense Department must be open to sources of good people and new technology to better position itself to defend the nation in cyberspace, he said.

“And that means we need to build bridges to society. Bridges that aren't as necessary in other fields of warfare that don't have a civilian or a commercial counterpart to the extent that this field does," Carter said.
Examples of multistakeholder national and international initiatives

• Initiatives at a National level
  – The Dutch Cyber Security Council (15 members from gov., industry, scientific community)
  – Brazilian CGI.br (CERT, Port 25 Management Initiative, etc.)

• Initiatives at International Level
  – Technical groups only: Conficker Working Group and DNS-changer working group
• Tendency for multistakeholder dialogues in the cybersecurity policy making and implementation process.
• Many strategies share the view that dialogue with non-governmental stakeholders is key to good cybersecurity policy making and implementation.
• Some strategies establish a dedicated body including these stakeholders to provide information and advice to the government.
• Input from business is widely recognized as essential, including for the implementation of the strategies, but less information is available as regards the consultation with the civil society, beyond academia.
Cyberspace governance challenges

• Scale and scope of the convergence of social and technological networks in cyberspace
  – Cyber-physical systems (IoT)
  – We know how to predict behavior of technical systems;
  – We do not know to predict behavior of social systems;
  – Opacity of socio-technical systems;
  – Algorithm-based decisions;
  – Real risks to human life and properties;
  – Need of governance mechanisms & regulation;

• What should be regulated?
  – Digital technologies are horizontal and transversal to all fields.
Research Questions

• How do we identify the most adequate set of stakeholders to work on a particular issue?
• How do we define the mechanisms for selecting representatives from different groups?
• How to we avoid letting influential NGOs and corporate power capture the multistakeholder process?
• How can crowdsourcing techniques be used to provide input into the dialogues of hard issues?
• What kind of technological framework will facilitate dialogue in a multistakeholder body so that a minimum consensus can be achieved?
• What type of technology could be developed to accelerate the decision process in multistakeholder organizations?
• What kind of theoretical model will support consensus building and decision making in multi-stakeholder environments?
Cyberspace Governance Model: Layers

Social Layer Added to the Established Layered Model of Internet Governance

<table>
<thead>
<tr>
<th>Social Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Trust and Identity</td>
</tr>
<tr>
<td>- Human Rights Applied to the Internet</td>
</tr>
<tr>
<td>- IG Principles (e.g. Net Neutrality)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Content Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Intellectual Property Rights</td>
</tr>
<tr>
<td>- Cybercrime</td>
</tr>
<tr>
<td>- SPAM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Logical Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Internet Naming and Numbering</td>
</tr>
<tr>
<td>- Protocols &amp; other Standards</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructure Layer</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Connectivity &amp; Universal Access</td>
</tr>
<tr>
<td>- Net Neutrality</td>
</tr>
</tbody>
</table>
Case #1 Internet governance: Wikileaks and private corporations

Cyber attack forces Wikileaks to change web address

wikileaks live again. Resolves DNS, moves to Switzerland (Updated)

WikiLeaks website pulled by Amazon after US political pressure

WikiLeaks loses major source of revenue

By Juergen Baetz - Associated Press - Saturday, December 4, 2010

BERLIN | Wikileaks has lost a major source of revenue after the online payment service provider PayPal cut off its account used to collect donations, saying the website is engaged in illegal activity.
Conclusions

1. Cyberspace governance is a process under construction;
2. Cyberspace governance and the rainforest metaphor;
3. Cyberspace governance initiatives lag behind the evolution of the digital world.
4. Cybersecurity initiatives require the participation of all sectors of the society;
5. Multistakeholder approaches can contribute to improve global cybersecurity;
6. Need of innovative solutions for global governance processes for a connected world;
7. Need of more cyber policy research (e.g.: theoretical models, empirical research, and interdisciplinary teams)
References for Next Class: group discussions


• Articles:
  
THANKS!
Valmeida@cyber.law.harvard.edu