A DISTRIBUTED MODEL OF INTERNET GOVERNANCE

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INTRODUCTION

Across the world, increased internet adoption has radically altered people's lives. Many, though by no means all, of the changes have been salutary. Positive or negative, there is no doubt that the internet and its associated technologies have transformed the way we live, communicate, work, play, and learn.

It is easy today to take these changes for granted. Yet the continued growth of the internet depends in substantial part on the underlying framework of governance that enables the network to exist and flourish. And, increasingly, it is becoming clear that we need new ways of internet governance that are more effective, more flexible, more inclusive, and more legitimate.

This paper seeks to address that need by proposing a distributed yet coordinated framework for internet governance. This framework would be able to accommodate a plurality of existing and emerging decision-making approaches, while at the same time enabling broader participation by, and more collaboration among, a wider range of institutions and actors across borders and sectors. Specifically, the framework we propose calls for:

- Enhanced coordination and cooperation across institutions and actors;
- Increased interoperability in terms of identifying and describing issues and approaches for resolution throughout the ecosystem (i.e., creating a common internet governance ontology);
- Open information-sharing and evidence-based decision-making; and
- Expertise- or issue-based organization to allow for both localization and scale in problem-solving.

In many ways, this framework builds on an already emerging paradigm shift in the internet governance ecosystem, one marked by more collaborative, global, and decentralized models of decision-making. It is important, however, to distinguish our framework from the frequent calls for "multistakeholdership" in governance. While our model does share and build on certain features of multistakeholdership, it draws equally on/more from lessons offered by the Open Governance movement, and particularly its emphasis on innovative techniques such as opening data, crowdsourcing and using expert networks to facilitate coordination, information-sharing, and evidence-generation. **Chapter 2** of this paper explains in greater detail the relationship between our framework and the Open Governance movement.

In **Chapter 1**, we explain the need for a new model of internet governance; we explore some shortcomings of the current model and explain how those could be remedied (or at least alleviated) by a more distributed approach. **Chapter 2** outlines the key features of our distributed internet governance framework, distinguishing that framework from multistakeholdership and explaining its relationship to open governance. **Chapter 3** fleshes out our conceptual description of the framework with some real-world examples; it uses a variety of case studies to show how some of the features we describe as part of our framework are, in fact, already being deployed in different fields. Finally, in the **Conclusion**, we provide some operational considerations to help accelerate a more distributed approach to internet governance.

01

THE NEED FOR DISTRIBUTED INTERNET GOVERNANCE

Historically, internet governance has been seen as an arcane and even marginal topic, of interest primarily to a few "geeks" and government officials. In recent years, however, the topic has been receiving greater attention, particularly following the disclosure of classified U.S. National Security Agency (NSA) documents by Edward Snowden. That episode highlighted how connected and vulnerable to surveillance we all are; it also shed a spotlight on some of the key issues (e.g., privacy and security) that are central to discussions about internet governance.

In addition, questions about internet governance have risen to prominence in a number of sectors not traditionally seen as internet-enabled—healthcare, for instance, as well as education, manufacturing, and even government. Overall, there is a new level of awareness that the way in which we govern the internet at both the global and domestic level will have a significant effect on our society, economy, and polity.

Despite this awareness, however, global collective action and coordination on internet-related issues have generally been ineffective, too slow, and often lacking in legitimacy. These shortcomings are particularly problematic for a global, public good like the internet, whose value stems in large part from its interoperability. Increasingly, it is clear that, in order to accelerate and broaden the potential of the internet, new paradigms of governance are needed that will embrace the global, distributed, and open nature of the internet—all without damaging or limiting the technical layer of the network, which has been so central to its rapid growth and success.[1]

The distributed framework we propose in this paper (and that we flesh out more fully in the next section) seeks to address some shortcomings in existing governance models. It seeks to go beyond not only the prevailing centralized model[2] of governance that has long dominated politics and traditional policymaking, but also beyond the multistakeholder[3] [4] and devolved national governance[5] approaches that are sometimes upheld as panaceas for the weaknesses of that model. In addition, our framework goes beyond a model of pure decentralization, which, as important work in the field has now made clear, often replicates the failings of more conventional models.[6]

Broadly, a distributed framework would address two key shortcomings in the existing approaches: *the need for innovation* and *the need for more cooperation and coordination*.

1. Christoph Meinel and Harald Sack, "Internet and Transport Layer", Internetworking, April 2014 .
2. For critiques of a purely centralized governance approach, see David R. Johnson, Susan P. Crawford, and John G. Palfrey, Jr., "The Accountable Net: Peer Production of Internet Governance", *Virginia Journal of Law and Technology* 9, no. 9 (2004) ; and Maria Ivanova and Jennifer Roy, "The Architecture of Global Environmental Governance: Pros and Cons of Multiplicity", University of Massachusetts Boston
3. For support of the multistakeholder model, see Sally Costerton, "The Multi-Stakeholder Model of Internet Governance: Developing a New Governance Model for the 21st Century", Chatham House; Mark Cooper, "Why Growing Up Is Hard To Do: Institutional Challenges for Internet Governance in the 'Quarter-life Crisis' of the Digital Revolution," Bestbits; Parker Higgins, "Congressional Witnesses Agree: Multi-Stakeholder Processes Are Right for Internet Regulation," Electronic Frontier Foundation; and Arne Hintz and Stefania Milan, "At the Margins of Internet Governance: Grassroots Tech Groups and Communication Policy", *International Journal of Media and Cultural Politics 5*, nos. 1-2: 23-28.;
4. For critiques of multistakeholder practice, see Laura DeNardis and Mark Raymond, "Thinking Clearly About Multistakeholder Internet Governance", SSM; Samantha Dickinson, "Multistakeholder processes are messy," *Lingua Synaptica*, February 19, 2014; and Stefania Milan and Arne Hintz, "In Multistakeholderism We Trust: On The Limits of the Multistakeholder Debate", Center for Global Communications Studies Media Wire
5. See Michael Trebilcok and Robert Howse, "Trade Liberalization and Regulatory Diversity: Reconciling Competitive Markets with Competitive Politics," *European Journal of Law and Economics 6*, no. 1 (1998): 5-37. which argues regulatory diversity can "minimize the threat points that each country brings to these negotiations so as to reduce the risk of coerced forms of harmonization reflecting asymmetric bargaining power, or worse, coerced forms of discriminatory managed trade arrangements." Governance diversity, however, poses challenges of "legal competition[, which] could have unintended consequences, ranging from increased collusions of laws and inter-state tensions to cyberspace fragmentation." Internet and Jurisdiction Project, "Towards a Multi-Stakeholder Framework for Transnational Due Process", Internet & Jurisdiction, 2014
6. G. Shabbir Cheema and Dennis A. Rondinelli, "From Government Decentralization to Decentralized Governance," Brookings Education, last modified 2007,

The need for innovation in how we govern the net

Internet governance, like the internet itself, has evolved in a bottom-up, participatory manner, shepherded by the private sector and civil society, and in cooperation with national governments. Essential internet governance mechanisms grew from this approach, such as the internet Engineering Task Force (IETF), formed in 1986 to coordinate the setting of standards for the net; The internet Society (ISOC), created in 1992 to promote the open development, evolution, and use of the internet; and the internet Corporation for Assigned Names and Numbers (ICANN), incorporated in 1998 to coordinate the development of policies related to the internet's addressing systems, particularly the Domain Name System (DNS).[7] In addition to these civil society-driven, participatory approaches to governing some of the internet's technical functions, national governments "layered on" domestic regulations impacting how businesses and people can use the net (i.e., to address more non-technical, "informational" or "behavioral" issues). By the late 1990s, it had become clear that internet governance needed a more coordinated and more global approach, as existing mechanisms had not kept pace with the underlying technology.

To date, the participating patchwork of institutional players in internet governance has experimented with a variety of different forms of decision-making. For example, the internet Engineering Task Force (IETF) adopted a "rough consensus" model to make decisions around setting standards, a model that was supposed to be more flexible and adaptable.[8] The European Union has applied a layered approach in attempts to resolve informational or behavioral issues in internet governance, working to balance input from public and private, individual and institutional, national and international entities;[9] ICANN has experimented with "direct governance" by netizens to make decisions regarding the internet's unique identifier systems;[10] and in the early 2000s, as mentioned previously, DOT Force paved the way both for multi-sector and multistakeholder governance models with experiments in cross-sector engagement[11] that were adopted by WSIS and the IGF.

However well-intentioned they may have been, these initial experiments have not mitigated the serious and complex governance challenges of today, especially around issues such as privacy, access, and spam. Add to this a growing fear of fragmentation on the internet—a result of the divergent approaches among various nation states to find ways for dealing with issues like surveillance, censorship, data security, and privacy—and the current crisis of governance becomes apparent.[12]

The need for cooperation and coordination

In addition to being challenged by new technologies and patterns of innovation, internet governance must also address the increasingly cross-border and cross-sector nature of the network—factors that make securing legitimacy in decision-making (something traditionally derived from citizenship within a given territory) a more problematic endeavor.

There is consensus that issues affecting the technical operation of the internet require global coordination to ensure the internet functions as one coherent system (the internet). Emerging and complex issues like spam, privacy, or security, however, are increasingly analyzed and addressed in a fragmented way, posing risk to the sustained operation of the internet if not better coordinated. When it comes to issues touching on informational or behavioral aspects, although not a consensus view, there has been an operating presumption that each nation regulates speech and information exchange (e.g. copyright, pornography, etc.) according to its own laws or the laws of the multinational associations, such as the European Union, of which it is a part. This has worked well to incentivize production of locally relevant content and the development of local digital

7. Jovan Kurbalija, "An Introduction to Internet Governance," Diplo, accessed September 25, 2014. http://www.diplomacy.edu/sites/default/files/An%20Introduction%20to%20IG_6th%20edition.pdf
8. Iljitsch von Beijnum, "25 Years of IETF: Setting Standards without Kings or Votes," ars technica, last modified January 18, 2011, http://arstechnica.com/tech-policy/2011/01/25-years-of-ietf-setting-standards-without-kings-or-votes/; and Paul Hoffman, "The Tao of IETF: A Novice's Guide to the Internet Engineering Task Force," Internet Engineering Task Force, last modified 2012, http://www.ietf.org/tao.html.
9. Clive Walker and Yaman Akdeniz, "The Governance of the Internet in Europe with Special Reference to Illegal and Harmful Content," Criminal Law Review, December Special Edition (1998): 5-19.
10. GOVLAB, "ICANN PRIMER—Primer on the Internet Corporation for Assigned Names and Numbers," GOVLAB, last modified October 13, 2013, http://images.thegovlab.org/wordpress/wp-content/uploads/2013/11/icann-primer-the-govlab.pdf.
11. United Nations ICT Task Force, Internet Governance: A Grand Collaboration: An Edited Collection of Papers Contributed to the United Nations ICT Task Force Global Forum on Internet Governance, New York: United Nations Publications, 2004.
12. Internet & Jurisdiction Project, "The IGF 2014 Fragmentation Track," Internet & Jurisdiction, last modified September 2-5, 2014, http://www.internetjurisdiction.net/igf-2014-fragmentation-track/; Internet & Jurisdiction Project, "IGF 2014 Workshop: Will Cyberspace Fragment along National Jurisdiction," Internet & Jurisdiction, last modified September 4, 2014, http://www.internetjurisdiction.net/igf-2014-workshop/; and Eugene Kaspersky, "What Will Happen if Countries Carve Up the Internet," The Guardian, December 17, 2013, http://www.theguardian.com/media-network/media-network-blog/2013/dec/17/internet-fragmentation-eugene-kaspersky.

economies,[13] but it presents challenges when not well coordinated; take, for example, the laws passed by the U.S. in 2006 to block foreign internet gambling websites, which significantly affected economies hosting online gambling websites such as Antigua and Barbuda, setting in motion a dispute resolution process at the World Trade Organization.[14] This paper does not aim to espouse one set of rules of the road in terms of governance approaches for the internet. Rather, governance diversity should be respected for its ability to allow each country to make decisions according to the values systems of it citizens. Yet in instances where governance diversity threatens to undermine national sovereignty or contributes to the possibility of internet fragmentation, a need for greater coordination across the ecosystem exists.

Such coordination is important both at the technical layer and beyond in order to enable an increasingly diverse group of institutions and actors to determine together, from among a diversity of approaches, which approach is appropriate to adopt for handling internet issues spanning borders and cultures. This requires (and in turn can build) greater trust and transparency among actors. It also requires a greater effort at inclusiveness, and more rigorous use of evidence, data, and case studies to help stakeholders and governments from all countries determine where to turn to address issues within the intricate—and largely fragmented—matrix of internet governance.

13. Bevil Wooding, "The Role of IXPs in Growing the Local Digital Economy," Internet Government Forum, http://www.intgovforum.org/cms/wks2014/index.php/proposal/view_public/65.

14. U.S. Federal Deposit Insurance Corporation, "Unlawful Internet Gambling Enforcement Act of 2006: Overview," U.S. Federal Deposit Insurance Corporation https://www.fdic.gov/news/news/financial/2010/fil10035a.pdf.

02

DISTRIBUTED INTERNET GOVERNANCE: A FRAMEWORK PROPOSAL

Distributed internet governance and open governance

As noted, the distributed internet governance framework takes inspiration from the practices and ideas that are emerging as part of the open governance movement around the world.

Open governance is, of course, itself something of a contested concept, and various competing definitions exist.[15] Three main features can be said to emerge from a comparison of open governance definitions, each of which informs aspects of our proposed framework:

i) **Transparency:** The open governance movement has promoted the creation and sharing of data, often held by government agencies, through downloadable, machine-readable, and reusable formats. This has led to new forms of transparency and, as a result, greater scrutiny of decisions made by policymakers. Overall, transparency can be said to have introduced a heightened level of accountability and responsiveness to the governance ecosystem. These would be central features of our proposed framework, helping to address the crisis of legitimacy mentioned previously.

ii) **Participation**: One of the key features—and benefits—of open governance is that it promotes citizen engagement in all aspects of governance. This has helped to devolve and diversify the types of expertise and knowledge involved in decision-making. In particular, greater participation by a wider range of actors, across sectors, breaks down knowledge silos and allows citizen "experts" previously on the margins to participate in governance.[16] In effect, greater participation moves users of the internet to the center of internet governance—once again, a central feature of our distributed framework, which seeks to encourage collaboration and coordination among a diverse group of individuals and institutions.

iii) **Experimentation and innovative problem solving**: Finally, open governance embraces agile, iterative decision-making, in the process leading to more innovative (and ultimately effective) ways of addressing problems. As movement, open governance places an emphasis on experimentation, enabled through the generation and sharing of quantitative as well as qualitative data. This data is used to determine best practices and ensure that results and decisions can be meaningfully analyzed, replicated or iterated-upon for various needs and in different contexts. The distributed internet governance framework proposed here would embrace the development and use of open data in particular to shift decision-making from a "faith-based" to "evidence-based" approach.[17]

15. Justin Longo, "Open Government—What's in a Name?" GOVLAB, last modified August 5, 2013, http://thegovlab.org/open-government-whats-in-a-name/.
16. Beth S. Noveck, "Wiki-Government," Democracy Journal, Winter (2008), http://www.democracyjournal.org/7/6570.php?page=all.
17. Beth S. Noveck, "From Faith-Based to Evidence-Based: The Open Data 500 and Understanding How Open Data Helps the American Economy," Forbes, August 1, 2014, http://www.forbes.com/sites/bethsimonenoveck/2014/01/08/from-faith-based-to-evidence-based-the-open-data-500-and-understanding-how-open-data-helps-the-american-economy/.

What are the key functions of distributed internet governance?

Applying these elements of open governance to internet governance allows a distributed governance design with the following characteristics:

1) First, distributed governance **facilitates cooperation between existing and emerging actors and organizations**, in the process eliminating the need for new institutions or bureaucracy and enabling more flexibility, fluidity, and creativity in the actions of existing actors. By focusing on cooperation, distributed governance moves away from a top-down system in which a single authority sets agendas and decides on responses. Instead, it facilitates a decentralized dialogue about issues, implementation, and accountability

2) Distributed governance also **serves a "routing" function, enabling interoperability and collaboration**[18] within the internet governance ecosystem. It does so primarily through the adoption and use of common "languages" or "standards"— a common ontology—among players and across actors. Distributed governance networks source ideas from multiple and dispersed actors, encouraging more creative responses to problems, and shifting power to experts or individuals who may not otherwise have the ability to participate in power systems.

3) Distributed governance relies on and fosters **increased information-sharing and evidence-based decision-making**. This is in part an outcome of the dispersed nature of distributed governance structures; because they prioritize coordination and knowledge-sharing knowledge, they are able to collect, analyze, and act upon a wide variety of evidence and data. An evidence-based approach can deepen opportunities to accurately answer questions about the impacts and effectiveness of specific governance initiatives over time and help us better understand whether programs work differently in different geographic spheres, what factors contributed to successes, and how we can learn from failures.[19]

4) Distributed governance allows for both granularity (localization) and scale (globalization) by adopting **expert- or issue-based organizing principles that help coordinate decision-making** on issues across and between the local, national, regional, and global levels. In addition to better incorporating actors at the edges of the network (many of whom would by definition be closer to the local origins of an issue), distributed networks permit local actors with shared interests to discover each other and coalesce into expert- or interest-based bodies. Distributed networks in effect permit a "re-localization" of issues that may otherwise have unproductively escalated to the national or regional level, and can be a powerful tool in helping to overcome the sense of marginalization that some stakeholders in internet governance (particularly in developing countries) have felt over the years.

How is distributed governance different from multistakeholder governance?

As mentioned earlier, it is important to distinguish the distributed framework under discussion here from emerging notions of multistakeholderism. Multi-stakeholderism[20] in the internet context reflects the view that there are different groups with diverse "interests" in governing the internet, and that each of these interest groups should have an equal opportunity to participate. Interest groups include those who operate internet-based businesses such as Amazon or Google. They also include those that make their living selling internet access services such as Internet Service Providers (ISPs) or domain name registries. Multi-stakeholderism also accommodates the individual views of national governments that have a responsibility to safeguard the values of their societies and citizens. Those having a "stake" also include individuals and groups with an interest in safeguarding certain values such as economic flourishing, creative expression,

18. Urs Gasser and John Palfrey, "Interoperability," Berkman Center for Internet & Society, last modified June 2012.

19. Aleise Barnett, David Dembo, and Stefaan G. Verhulst, "Toward Metrics for Re(imagining) Governance: The Promise and Challenge of Evaluating Innovations in How We Govern," GOVLAB, last modified April 18, 2013, http://thegovlab.org/wp-content/uploads/2013/04/GovLabMetrics.pdf.

20. The 2005 World Summit for the Information Society (WSIS) working group described multistakeholderism as: "Internet governance is the development and application by Governments, the private sector and civil society, in their respective roles, of shared principles, norms, rules, decision-making procedures, and programmes that shape the evolution and use of the Internet." See Chateau de Bossey, "Report of the Working Group on Internet Governance," WGIG, last modified June 2005, http://www.wgig.org/docs/WGIGREPORT.pdf.

or educational achievement. By emphasizing interests and "stakes," however, the multistakeholder model tends toward the concept of entitlement over expertise.

The notion of "respective roles" in the multistakeholder model represents its most contested aspect. Different organizations in today's ecosystem (e.g., ICANN, the IETF, or the ITU) engage in different "flavors" of multistakeholderism in that their schemes of prioritization of particular interests or "roles" vary. For instance, the ITU supports a "multilateral" approach, which tends to question whether participating non-governmental stakeholders are truly representative of certain segments of society. Alternatively, those advocating for ICANN's multistakeholder model, for instance, often question the "multilateral" approach and the legitimacy of governments to regulate the internet without greater involvement from non-governmental stakeholders. These varied approaches to multistakeholderism can perhaps be taken as proof, as some have put it, that the internet is "resistant to traditional forms of regulation"[21] and that many debates over internet governance end up being a "battlefield"[22] of political ideologies, at the expense of solving real issues.

Distributed governance in fact mediates between the "purely multistakeholder" and "purely multilateral" approaches. Its goal is not to replace or devalue the existing model, but rather to enhance it by adding a way to operationalize notions of collaborative, transparent, and bottom-up responses to pressing and complex issues. The mediating function is apparent in the fact that the fundamental unit of governance in a distributed model is the issue at hand, and not the stakeholder. Thus, positioning and agreeing to respective "stakes" as to a specific issue (or range of issues) is no longer the (often impossible) prerequisite for participation; rather, legitimacy is derived from one's capacity and willingness to contribute information and approaches for problem-solving around specific issues.

The focus of a distributed governance model is thus less on the internal mandates of specific stakeholders, and more on the specific features of issues at hand. In such a governance context, the use of evidence in decision-making and evaluations is critical. Furthermore, it is essential that evidence is shared across the distributed governance ecosystem, so that a common "information architecture" exists for all internet governance actors, regardless of sector or "role," to identify issues and to identify and test responses—in the process building common understanding as to what has worked (and what has not) over time.

21. Zoe Baird and Stefaan Verhulst, "A New Model for Global Internet Governance," Markle, http://www.markle.org/sites/default/files/ahs_global_internet_gov.pdf.

22. Mike Stone, "Pluralism and Internet Governance," in 13th Central Asia Media Conference, 1-162, Dushanbe, Tajikistan: Organization for Security and Co-operation in Europe, 2011.

03

DISTRIBUTED GOVERNANCE IN THE REAL WORLD

Distributed governance is a fledgling concept in the context of internet governance, but a variety of examples, many drawn from non-technical fields, do exist. Considering such examples can help us better understand the principles of distributed governance and how they could be applied to internet governance. The following discussion focuses on the key functionalities of distributed governance, accompanied by existing examples.

Function 1 – Facilitating and enhancing cooperation between actors and organizations

OpenStand is a movement driven by groups from industry, civil society, government, the technical community, and academia to promote a unified set of standards for the internet and the Web.[23] The OpenStand community experiments with new designs and technologies, and provides ongoing feedback based on these experiences to shape the next generation of standards. In this way, existing organizations coordinate to build a global standards environment that is straightforward and easy to navigate. This process eliminates the burden of country-by-country standard requirements that slow technological innovation.[24]

To support the establishment of a modern paradigm for global, open internet standards, OpenStand has a guiding set of principles that include: cooperation among standards organizations; adherence to due process, broad consensus, transparency, balance, and openness in standards development; commitment to technical merit, interoperability, competition, innovation, and benefit to humanity; availability of standards to all; and voluntary adoption.[25]

Function 2– Serving as a "routing" function using a common ontology to ensure interoperability throughout the ecosystem and to empower players toward coordinated action

The Marine Stewardship Council (MSC), which was initiated in 1997, serves as a good example of an organization that provides a routing function aimed at empowering actors around specific issues and actions. The MSC emerged as a response to growing pessimism about the status of fish stocks, the impacts of fishing on the marine environment, and the future of the fishing industry and communities.[26] In an effort to increase the overall sustainability of the world's seafood supply, groups and individuals with a stake in or concern for the fishing industry and fish population joined to develop and maintain a common MSC standard, which serves as the basis for their eco-label certification. This certification was developed as a result of consensus from all affected and concerned players as to the criteria for indicating via MSC eco-label that seafood comes from a sustainable fishery. This standard evolves over time, to reflect input

23. Open Stand, "About," Open Stand, http://open-stand.org/about-us/.
24. Open Stand, "OpenStand FAQs," Open Stand, http://open-stand.org/about-us/faqs/.
25. Olaf Kolkman, "Keeping the Internet Open: Happy Anniversary, OpenStand," Internet Society, last modified August 29, 2014, http://www.internetsociety.org/blog/tech-matters/2014/08/keeping-internet-open-happy-anniversary-openstand.
26. Nancy Vallejo and Pierre Hauselmann, "Governance and Multi-Stakeholder Processes," International Institute for Sustainable Development, last modified 2004, http://www.iisd.org/pdf/2004/sci_governance.pdf/.

from the MSC Stakeholder Council and, as part of the certification process, requires input from local stakeholders, ensuring that local interests are consistently incorporated in this global effort.

The effort began when diverse stakeholders and concerned parties organized around a specific issue, using evidence-based policies to inform the development of their certification. Over the years, the certification has served as a common standard for the industry's networks and has gained significant legitimacy in the global markets, with major corporations vying for the official MSC eco-label.[27]

Another frequently cited example of a distributed governance network involves the International Air Transport Association's (IATA) Join Slot Advisory Group (JSAG). This working group of those in the airline industry consists of an equal number of IATA member airlines and airline coordinators. Since 1947, JSAG has met twice a year to agree on slot allocations, defined as the scheduled time of an airplane arrival or departure on a specific date. In the 1960s, increased congestion at several major airports prompted the IATA to broaden slot allocation discussions to include acceptable levels of anticipated delays. Today, biannual meetings wherein members jointly consider proposals for changes to IATA continue the Worldwide Slot Guidelines. Through bilateral discussions, the process established by the JSAG working group ensures that all airline operators follow a common set of coordinated standards that are consistent for all airports throughout the world.[28]

Function 3 – Promoting open information-sharing, capacity-building, and evidence gathering and use to enable open participation and support coordinated action

A growing international concern involves maritime governance of oceans,[29] and particularly the Arctic Ocean. This body of water is experiencing dramatically reduced ice coverage each year, creating the potential for major changes in worldwide shipping and access to new energy resources. Since there is a severe lack of information and no single entity with sovereignty over the Arctic Ocean, the United States Coast Guard and traditional maritime governance organizations from around the world are pursuing a new strategy to broaden international partnerships so as to enhance critical information collecting efforts. The U.S. Coast Guard describes this as a "collective effort that includes international collaborative forums, drawing upon their cumulative authorities, capabilities and experience."[30]

An information-sharing arrangement has emerged from this initiative, called the North American Ice Service (a collaborative partnership featuring a diverse set of actors including the International Ice Patrol, the National Ice Center, and the Canadian Ice Service), which provides ice information and services to marine interests throughout North America. The group shares data on weather and environmental modeling, international treaty obligations, and ecological analyses for safe and efficient maritime operations, and it publishes this information online via a regular bulletin and chart visualizations.[31]

Function 4 – Allow for granularity (localization) and scale (globalization) by adopting expert- or issue-based organizing principles to help coordinate decision making across spheres

VIVO is an open source semantic web application originally developed and implemented at Cornell in 2003, further developed by a National Institute of Health-funded consortium, and now being established as an open-source project with community participation from around the world.[32] At the "local" level, when installed at an institution and populated with a researcher's interests, activities, and accomplishments, the application enables the discovery of research and scholarship across disciplines at that select institution and provides data to facilitate connections and information sharing around specific research topics or agendas. The VIVO web also scales beyond individual universities and enables the

27. Jeff Skoll and Sally Osberg, "McDonald's Signals Good News for Sustainable Fishing," Mercury News, March 14, 2014, http://www.mercurynews.com/opinion/ci_22775756/jeff-skoll-and-sally-osberg-mcdonalds-signals-good.
28. International Air Transport Association, "The Slot Allocation Process Questions," IATA, http://www.iata.org/policy/slots/Pages/faq.aspx.
29. Richard Schiffman, "Are the Oceans Failed States?" Foreign Policy, July 3, 2014, http://www.foreignpolicy.com/articles/2014/07/08/are_the_oceans_failed_states_overfishing_climate_change?utm_content=buffer635e9&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer.
30. Christopher Lagan, "Strengthening maritime governance partnerships in Norway," Coast Guard Compass, June 3, 2013, http://coastguard.dodlive.mil/2013/06/strengthening-maritime-governance-partnerships-in-norway/.
31. "About North American Ice Service," U.S. Coast Guard Navigation Center, last modified October 18, 2012, http://www.navcen.uscg.gov/?pageName=NAIceService.
32. "What is VIVO?" VIVO, http://www.vivoweb.org/about.

discovery of research and scholarship from experts on particular issues across institutions by creating a semantic cloud of information that can be searched and browsed. Current efforts aim also to extend VIVO to enable searching and links "to cover research resources, ranging from datasets to spacecraft and their scientific instruments, to agriculture, cell lines, and research impact."[33] At the close of 2012, VIVO had over 20 countries and 50 organizations provide information in VIVO format on more than one million researchers and research staff, including publications, research resources, events, funding, courses taught, and other scholarly activity.

Another example of this function is exemplified in *Nextdoor*,[34] a social networking site built for neighbors grouped within a community to communicate on topics like safety, service, and crime. On a granular level, the website enables neighborhood-specific networks and allows for individual connections and hyperlocal information sharing around particular topics (for example, an individual can share information regarding the sale of furniture within a single building).

Additionally, the platform allows for larger scale communications and more dynamic coordination. The site has the capacity to deliver real-time city alerts, crowdsourced reports, and crisis maps that connect users to resources.[35] Expanding its scale, Nextdoor partnered with AlertSF, a text-based notification system, in order to alert an entire community about a massive fire in the Mission Bay area.[36]

33. Ibid.
34. Nextdoor, "Discover your neighbourhood," Nextdoor, https://nextdoor.com/.
35. Justine Brown, "How the Sharing Economy Is Changing Disaster Response and Recovery," Emergency Management, last modified September 3, 2014, http://www.emergencymgmt.com/disaster/How-the-Sharing-Econoomy-Is-Changing-Disaster-Recovery.html.
36. Jason Shueh, "San Francisco Partners with Next-door for Emergency Alerts," Govtech. last modified April 29, 2014, http://www.govtech.com/public-safety/San-Francisco-Partners-with-Nextdoor-for-Emergency-Alerts.html.

04

ENABLING AN EFFECTIVE, EVOLVING, AND LEGITIMATE DISTRIBUTED INTERNET GOVERNANCE ECOSYSTEM

To realize a framework for distributed internet governance—one that is effective, evolving, and legitimate—we propose a breakdown of the distributed internet governance process into six "stages" of policy making:

1. Issue identification;
2. Response identification;
3. Response formulation;
4. Implementation;
5. Enforcement;
6. Evaluation or review.

The following discusses each of these stages at greater length, suggesting enabling mechanisms for participation and collaboration within the global internet community that emphasize open data, information sharing, and experimentation.

1. Issue identification

Issue identification refers to the process by which the distributed internet governance ecosystem would identify a problem or challenge that needs addressing. The process of issue identification also involves identifying the appropriate geographic sphere or level at which an issue should be addressed—i.e., at the local, national, regional, or global levels. During the issue identification stage, cooperation is required to understand the various facets of a challenge or issue, so that existing responses can be understood and, if necessary, new approaches can be crafted (e.g., policy model responses or technical standards responses). Cooperation is needed here also so that the most responsible or capable actors can be engaged to generate action on an issue. It is therefore necessary to develop a standardized ontology for identifying and describing issues. Currently, the internet governance ecosystem lacks a systematic approach to understanding existing and emerging issues, as well as each actor's roles and responsibilities with regard to any given issue.

Issue identification in a distributed governance environment may at times employ crowdsourcing techniques. Crowdsourcing (outsourcing a task or function to a large group of actors) is a technique for broadening participation; it can be done

in-person or online, and it engages networked groups to expand the toolkit for problem-solving. Crowdsourcing ideas, opinions, and data from the global internet community can play a valuable role in identifying trends in internet-related issues.[37] Semantic tagging can highlight common or dividing aspects between issues,[38] while ranking and voting systems can highlight which issues are most widely relevant, and, when combined with semantic analysis,[39] can show which issues are important to which stakeholders.

2. Response identification

Once an issue is identified and better understood, the network can work toward the formulation of a particular response or set of potential responses to an identified issue. To identify the "solution space," it is important to create and communicate a shared understanding regarding the several types of responses and outcomes that are already in existence (e.g., laws, policy guidelines and models, technical requirements, contractual models, incentives and funding, procurement provisions, certification criteria, or more informal procedures). In addition, response identification should consider mapping and supporting coordination of the organization(s) responsible for further formulation and implementation, as well as possible timetables.

Today, actors within the internet governance ecosystem are either inundated with complex requests for participation or left out of the loop on decisions that most directly affect them. This creates an environment where players are responsive largely only to formal mandates and where actions taken on issues are identified in a fragmented way, with little information-sharing across the ecosystem. This system is inimical to innovative and flexible problem-solving. Information shortcomings are at the heart of such challenges, but they can be overcome in a distributed governance environment. For example, information technologies that identify and collect responses or outcomes can help various actors identify and learn about possible responses. They can also help map new and innovative "solution spaces."

3. Response formulation

The "response formulation" stage refers to the period during which the most responsible, capable, or interested actors can be identified and engaged to collaborate in order to develop actionable responses to problems. These responses can then be compared and evaluated (by whom?) using objective criteria and data in a transparent process. Selecting the relevant criteria for evaluation (by whom?) is itself part of the process. Responses should be evaluated on the basis of technical feasibility, economic feasibility, political viability, administrative viability, legality, and so on.

Central to the response formulation process is the use of agreed-upon benchmarks, metrics, and indicators—that is, the use of evidence derived for the particular context and geographic sphere relevant to the issue at hand. Objective evaluation criteria are critical to build and maintain trust in a distributed governance environment, where responsibilities for implementing responses are to be allocated to different actors based on capacity.

Response formulation can be achieved in a distributed manner through the use of shared platforms that make information about internet issues available in open formats. Techniques that allow for the standardized description of expertise, skills, and experience ("expert networking" technologies) may be particularly useful in this regard.[40] Expert networks and expert networking technologies can allow for the breakdown of issues into component parts that can then be matched to specific experts or areas of expertise.

37. Harry Halpin, "Crowdsourcing a Magna Carta for the Web at the Internet Governance Forum," World Wide Web Consortium, last modified September 3, 2014, http://www.w3.org/blog/2014/09/crowdsourcing-a-magna-carta-for-the-web-at-the-internet-governance-forum/.
38. Leena Rao, "Idea Scale Power 23 Crowdsourcing Sites for The U.S. Government," TechCrunch, February 7, 2010, http://techcrunch.com/2010/02/07/ideascale-powers-24-crowdsourcing-sites-for-the-u-s-government/
39. For example, along a Likert scale, as employed by the survey/polling software Agreeble; see "Agreeble." Agreeble LLC, accessed September 2014, http://www.agreeble.com.
40. Jillian Raines, "Proposal 1 for ICANN: Get Smart With Expert Networks," GOVLAB, last modified January 31, 2014, http://thegovlab.org/proposal-1-for-icann-get-smart-with-expert-networks/.

4. Implementation

At the implementation stage, actors within a distributed governance network can work collaboratively to ensure that recommended responses or binding decisions are implemented and monitored. Such monitoring must include both those identified in the response formulation stage as being most equipped for execution, and those who will be most affected by the response. Issue-based distributed networks can help facilitate this and assist in overseeing the process of implementation so that needed changes can be responsively identified and addressed, and so that those tasked with bringing about a desired response have access to the required knowledge and expertise both from those within and without the network.[41]

This type of networked, collaborative, and distributed approach to response implementation differs quite significantly from what exists today. At present, proposed responses too often lack adequate direction for execution and adoption. Response development and response implementation often get conflated into one decision-making phase focused almost entirely on achieving consensus around broad objectives, rather than on first collaborating around the discovery, design, and testing of more nuanced and tailored responses derived from shared knowledge.

5. Enforcement

As noted, internet governance is characterized today by significant jurisdictional confusion and overlap; this complicates the "enforcement" stage of decision-making. The effectiveness of enforcement requires a strong focus on measurement, using metrics and indicators to understand the impact of responses. The enforcement stage can thus provide for monitoring adherence in implementation to agreed-upon governance principles and values, such as those articulated in the NETmundial Multi-stakeholder Statement.[42] Enforcing adherence also requires identification of the responsible or capable or willing actors within the distributed governance networks during the response identification and response formulation stages. This could be achieved, for example, through the use of "dashboard" visualizations that trace the relationship of certain indicators to specific objectives over time to show impact.

Any meaningful enforcement mechanism is likely to reveal shortcomings or problems in response implementation; in a distributed governance environment, such problems need to be collaboratively resolved. This highlights the importance of information-sharing and collaborative processing of data, as various actors responsible for enforcement may be distributed across regions and sectors, and require a way to access and communicate findings. For example, in many online community forums, certain users may be active enough or have gained enough "reputation points" to become forum moderators who can flag content as spam or inappropriate. In much the same way, a distributed internet governance ecosystem could enable or suggest specific actors to enforce specific responses based on evidence of their competencies, abilities, or based on community agreement that those actors are the best suited to conduct enforcement.

6. Evaluation or review

The distributed governance network will also be responsible for reevaluating and adjusting responses throughout or after implementation. Without comprehensive, evidence-based evaluation of implemented responses, there would exist a lack of ecosystem-wide understanding about the appropriateness or effectiveness of any given response, or the competencies or abilities of specific actors who were tasked with responding.

41. Ilves Report, "Towards a Collaborative, Decentralized Internet Governance Ecosystem," Internet Governance Panel, last modified May 2014, http://internetgovernancepanel.org/sites/default/files/ipdf/XPL_ICAN1403_Internet Governance iPDF_06.pdf.

42. NETmundial, "NETmundial Multistakeholder Statement," NETmundial, last modified April 23-24, 2014, http://NETmundial.br/wp-content/uploads/2014/04/NETmundial-Multi-stakeholder-Document.pdf.

Currently, evaluation processes for internet governance responses focus largely on internal organizational mandates; organizations rely on adherence to internal processes to the detriment of critically assessing whether issues relevant to the entire ecosystem are appropriately addressed.[43] A far better solution would be for evaluation to be collaborative, and achieved in a way that allows the global internet community to assess the impact and quality of specific responses and actions. Once again, information sharing is key. For example, Stimulus Watch technologies—a platform created following passage of the Recovery Act and the creation of Recovery.gov to help track U.S. federal government spending of stimulus funds technologies—employs a distributed crowd in monitoring stimulus spending by the federal government by asking citizens to share their knowledge on local stimulus projects and to discuss and rate those projects.[44]

The evaluation stage could also generate open "scorecards" developed in a transparent and inclusive manner by the global internet community.[45] These scorecards would help identify priorities across the internet governance ecosystem and inform further issue and response identification. Moreover, evidence gained from the evaluation and review of responses can inform the selection of relevant criteria for response formulation and thus lends to the development of a set of metrics and benchmarks that can help actors better understand the issues at hand.

43. Bruce Jenks and Bruce Jones, "United Nations Development at a Crossroads," New York University Center on International Cooperation. last modified August 2013, https://www.dropbox.com/s/5zs83s5dzjcnjvx/jenks_jones_un_development_crossroads.pdf.

44. Julian Sanchez, "Stimulus stimulates crowdsourced oversight, activism," Ars Technica, last modified February 2, 2009, http://arstechnica.com/tech-policy/2009/02/stimulus-stimulates-crowdsourced-oversight-activism/.

45. See, for example, the Sunlight Foundation's "Open States Transparency Report Card" which uses a set of criteria to evaluate the "openness" of state legislative data in the U.S.; James Turk, "Open States: Transparency Report Card," Sunlight Foundation, last modified March 11, 2013, http://sunlightfoundation.com/blog/2013/03/11/openstates-report-card/.

05

TOOLS TO REALISE DISTRIBUTED INTERNET GOVERNANCE

A practical roadmap is needed to guide actors within the internet governance ecosystem so that, confronted with an issue requiring a governance response, they could identify at least the following elements:

a) The nature of the issue;

b) The severity of the issue;

c) The geographic sphere within which the issue may be most appropriately addressed;

d) The appropriate actors to respond to the issue; and

e) Any existing frameworks and/or organizations that may already be equipped to address the issue, or indeed that may already be addressing it.

A number of innovative tools and techniques for connecting people and enabling collaborative decision-making already exist. For instance, open data helps facilitate information-sharing; expert networks and systems can help locate and leverage the skills, credentials, experiences, and passions within the global internet governance community to help solve issues. While these techniques and tools may all be leveraged, it is possible that the existing toolkit will prove insufficient, and that a set of new tools will be needed to test and realize our proposal for a distributed internet governance framework. This section discusses two key components of this supplementary toolkit: **A map of internet governance approaches** and **Internet governance knowledge networks**.

A map of internet governance approaches

Both the Ilves Report and the NETmundial Multi-stakeholder Statement strongly recommended the development of mechanisms to map internet governance issues to responses and actors.[46] Several initiatives are exploring various purposes and functionalities of such a mapping mechanism.[47] In particular, the Netmundial Solutions Map (NSM) (map.netmundial.org) sought to map top-level issues to existing initiatives and responses, and to find corresponding institutions and experts for a given geographic sphere (using data on the role, capacities and previous actions taken by such institutions). The NSM sought to define an information model for the issues, responses, and geographic spheres that comprise the field of internet governance. More importantly, perhaps, the NSM did so by leveraging a crowdsourcing platform where anyone within the internet governance ecosystem can share information and expertise. Following on from the staged problem-solving model laid out earlier, the NSM sought to specifically support

46. Internet Corporation for Assigned Names and Numbers, "Global Panel Announces New Approach to Managing Future of the Internet Final Report Addresses Growing Interests in Internet Governance," ICANN, last modified May 20, 2014, https://www.icann.org/news/announcement-fb-2014-05-20-en

47. For example, besides the NETmundial Solutions Map, the European Commission's Global Internet Policy Observatory is intended to provide resources for the global Internet community, with an emphasis on "automation" (GIPO); William Drake and Lea Kaspar suggest a "coordinated clearinghouse function" to "access, assess and compare" "a plethora of governance activities underway in technical and policy bodies at the national, regional and global levels"; see William Drake and Monroe Price, eds., "Beyond NETmundial: The Roadmap for Institutional Improvements to the Global Internet Governance," Internet Policy Observatory, accessed September 25, 2014, http://globalnetpolicy.org/wp-content/uploads/2014/08/BeyondNETmundial_FINAL.pdf.

the development of a common understanding of existing internet governance arrangements by sphere, issue-type, or response-type.

The NSM sought to assist the internet governance community by helping to enable two key functions: cooperation among actors and institutions, and open information-sharing. The NSM provided a means of understanding the existing field of governance and the types of tried-and-tested responses already undertaken (whether successful or not). Geographic spheres were local, national, regional, and global; issues were categorized according to five themes: "access," "content," "code/standards," "trust," and "trade." Responses could take the form of policies and laws, initiatives and events, research and advocacy, tools and resources, or standards. Finally, the NSM allowed third parties to document "solution spaces" by providing information on responses or actions taken around a given issue, in the process helping to identify gaps in action. For instance, child pornography mapped to various initiatives around the world and pointed to institutions working on the topic as well as relevant laws and local experts who could be engaged in problem-solving. The NSM pointed to all relevant data about the issue, as well as to active actors and responses already underway.

Internet governance knowledge networks

Similarly built on a "living platform" describing expertise and skills of experts, the Knowledge Networks (or Knowledge Net) could take the form of an expert network for internet governance. Using expert discovery and networking technologies, the tool could model itself after existing systems, including reputation-based systems like LinkedIn Recommendations, credential-based systems like ResearchGate, and experience-based systems like StackOverflow. Ultimately, this tool could present a searchable index that would allow for the tracking of skills and experiences of experts who could be tapped locally in countries or other jurisdictions to help in the various stages of governance described above.

Knowledge Net could address the need for expertise at all stages of the internet governance process. Sources and types of expertise would be diversified by allowing people to participate directly in the Knowledge Net, thus opening them to the chance of being called upon by internet governance actors to contribute to issues that match their skills profile. Participants in the network could be asked to fill out a profile describing their relevant skills, experiences, and interests, including for example courses taken or taught related to internet issues (e.g., through ICANN Learn), internet governance forums or conferences attended, online campaigns or projects they were part of, technology skills or applications built, and so on.

Embedded within the Knowledge Network there could be functionalities allowing individuals to self-select and form open groups around issues that they know or care about, perhaps in their specific region. Being able to self-identify around skills and expertise rather than institutional membership could remove barriers to entry for newcomers to the governance space. And, once part of the network, an expert would be able to take advantage of open discussion forums, brainstorming or Q&A tools, or challenge platforms where participants could form groups or launch challenges related to a particular internet governance issue (e.g., to design draft evaluation scorecards for broadband deployment in a small city, or to help promote IPv6 adoption around the world).

Having a comprehensive network for internet governance and related fields would also make it easier to identify and target experts with specific questions related to internet governance. For example, if an institution or other actor is trying to gain insight into internet access and affordability issues in a specific region, a policymaker will want to reach those who have actual technical, regulatory,

business, and specific regional experience. The database could be extremely useful in helping to identify experts who have collected, analyzed, or published relevant data. Finally, a database of willing contributors with rich expertise and access to data could itself help formulate governance policies; the network could function in essence as a repository of knowledge that could underpin efforts to develop and operationalize the proposed new, distributed internet governance framework.

CONCLUSIONS

If a convincing case for innovating within and enabling new forms of coordination in internet governance has been made (the "what"), then the prospect of constructing new platforms, mechanisms, and toolkits to support such distributed governance arrangements can be taken up by a variety of global initiatives (the "how"). This paper proposes two specific supporting tools—a Map of Internet Governance Approaches and internet Governance Knowledge Networks––both of which are actively under development. The value in both of these information tools relies on accurate and up-to-date internet governance related content and data. Like other open data projects, these tools will grow in both usefulness and value when experts and enthusiasts alike build an "ecosystem" of specific applications using the shared data.

The distributed governance framework presented within this paper is achievable through an action-based, participatory, experimental, and analytically rigorous approach.

The internet is doubtless one of the most significant human accomplishments in history, and it should follow that internet governance has similar significance. Clearly, the internet has both technical and non-technical components, as must its governance. The endeavor of developing an effective and legitimate system of governance has been and will continue to be a global one, requiring not only participation from all, but also a diversity of expertise that crosses borders, languages, and disciplines. This framework proposal suggests a "construction plan" for a governance ecosystem that is distributed, flexible, collaborative, and global. But this framework is not exhaustive, and critical questions must be answered to inform operationalization:

- **Issue identification**: How, when, and who decides whether an issue requires global coordination or devolution? What data is needed to help facilitate that process?

- **Network identification**: How do we move from actor identification to the facilitation of distributed networks capable of addressing a global issue?

- **Response development**: How do responses get developed in a distributed fashion, across disciplines? Acknowledging that we all have a stake in the future of the internet, what techniques work best for promoting cooperation, not competition, in problem-solving?

- **Oversight**: Who will, and how to, monitor adherence to principles of internet governance in order to ensure accountability?

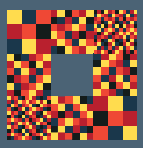
- **Coordination**: In addition to the development of the tools articulated in this paper, how do we coordinate across issue areas, sectors, cultures, and regions? How do we systematically add, translate, and share knowledge accumulated openly, responsively, and responsibly within the ecosystem?

- **Incentives**: What incentives exist to use tools that support a distributed internet governance ecosystem, and what incentives might make such tools more useful? What incentives exist to overcome issues of self-selection bias? How can we increase participation on global issues from those presently "unwilling" or "unable" (politically, technologically, or otherwise) so as to avoid reinforcing existing ecosystem divisions?

- **Use Cases and Case Studies**: What examples of distributed governance exist that embody the necessary functions of the distributed framework? What groups and mechanisms serve as "building blocks" for the conceptual model described here? What can we learn from these examples and how should we connect with those involved? What use cases can accelerate the creation of a distributed governance model?

- **Limitations**: What are the limits of such an information-based approach? What are the problems it cannot solve?

It is necessary to further study whether and how a distributed framework for internet governance could present a truly viable alternative to existing models of internet governance. Surely many more initiatives will be launched with mandates to coordinate internet governance approaches and to develop more effective and legitimate forms of problem-solving. It is clear that the capacity to deliver a framework such as the one outlined in this paper exists, and the author looks forward to further innovations in the field.



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