Network of Excellence in Internet Science

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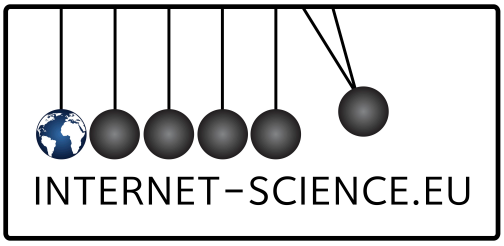
ICT - Information and Communication Technologies



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Executive Summary

This final report of JRA4 builds on the earlier works defining regulation and governance of the Internet (D4.1, 2012) and conceptual modelling of regulation using a software engineering approach (D4.2, 2013) in order to provide a concluding analysis both integrating those works and bringing fresh insight from the case studies and other research projects of the JRA4 authors in the period 2012-14. It proceeds as follows.

In Chapter 1, we summarise the five case studies presented in their updated and expanded form as an Annex to this report:

1. Internet addressing infrastructure: ICANN and the DNS (Prof. Bygrave, Oslo)
2. Governance of open data licensing projects: Creative Commons (Dr Morando, NEXA Turin)
3. Open Hardware Standards: Open Hardware Licenses (Dr Powell, LSE)
4. Net neutrality legislation: the case of Slovenia (Prof. Turk, Ljubljana).
5. Inter-domain: a far west to regulate (Prof. Salamatian, Savoie).

To these five studies, there is the addition of a substantial study on International Organisations (IOs) and new actors in Internet governance, led by Dr Marzouki. Note that as there are no enforcement or outcome categories to this study, it focuses on the research needs and conclusions drawn from the study of non-traditional actors.

In Chapter 2, Prof. Marsden and Ben Zevenbergen conduct case study analysis to assess the relationship of case studies to our EDEKO framework explained in D4.1.

Professor Turk in Chapter 3 introduces the concept of algorithmic regulation and how it differs from the conceptual modelling of regulation-related processes. He applies the regulation process model described in D4.2 to the case studies. This verifies the model and exposes some deficiencies.

Drs Marzouki and Powell in Chapter 4 explain the role of new actors in Internet governance, focussing on intergovernmental organizations. These actors are reshaping their own identity, moving from part of government sector to a stakeholder in itself, from periphery to core of Internet governance, crafting their roles via issue/policy entrepreneurship. Their conclusions and suggestions for further researchencompass the following new actors: Civil Society; Citizens; Technical Community; Technical artefacts.

Dr Cave in Chapter 5 explores cross-cutting governance issues, beginning with the governance of, on and by the Internet. He then explores cross-cutting governance domains, governance zones and instruments. His exploration draws on much economics and complexity science literature in exploring governance organisations; participation and incentives. In examining the formation of well-regulated systems and new failure modes, he takes examples from EC legislation recently enacted in the field of labelling to demonstrate the application of these lessons.

Our jointly written concluding chapter explores the future challenges in inter-disciplinary analysis of regulation and governance, in regulatory models and impact assessment, and in governance models for funding basic Internet research.

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1 Case study summaries

The case studies are:

1. Internet addressing infrastructure: ICANN and the DNS (Prof. Bygrave, Oslo)[1]
2. governance of open data licensing projects: Creative Commons (Dr Morando, NEXA)
3. Net neutrality legislation: the case of Slovenia (Prof. Turk, Ljubljana).
4. Open Hardware Standards: Open Hardware Licenses (Dr Powell, LSE)
5. Inter-domain: a far west to regulate (Prof. Salamatian, Savoie).

The separate Annex provides full details of our five case studies conducted during 2014, with their pre-selection and methodological framework explained in D4.1. To these five studies, there is the addition of a substantial study on International Organisations (IOs) and new actors in Internet governance, led by Dr Marzouki. Note that as there are no enforcement or outcome categories to this study, it focuses on the research needs and conclusions drawn from the study of non-traditional actors. Chapter 4 in this report details some of the key findings and further research requirements in examining new governance actors.

Internet addressing infrastructure: ICANN and the DNS

The case study concerns the governance approach to the Domain Name System (DNS), a global resource that affects not just the technical functioning of the Internet but has economic and cultural-political consequences. Since its foundation by the United States government in 1998, ICANN oversees the regulation of domain names and is often confronted by diverging interests from stakeholders. For example, trademark holders and national governments were particularly concerned by gTLD namespace expansion in 2014. ICANN is not a broadly based multi-stakeholder (MSH) organisation, but operates under a contract with the US Department of Commerce from which base it has attempted to be more inclusive, notably by relocating headquarters to Singapore in 2014 under Chief Executive Fadi Chehade.

The case study is especially interesting as an example of the way in which contract can perform a “legislative” function for a large hybrid community of actors. The study highlights the tensions in using a contractual, private sector led regulatory scheme to govern a set of globally critical resources that many people would regard as warranting treaty-based regulation presided over by an IO. The study also provides a useful reference point for future discussion about the utility and legitimacy of transnational private regulation in governing such resources. Finally, it shows how governance by contract can end up paralleling “top-down” statutory governance in terms of the intricacy and density of the regulatory structure.

The governance of open data licensing projects: the case of Creative Commons

Creative Commons (CC) is a U.S. non-profit organization founded in 2001, whose mission is to develop, support, and steward legal and technical infrastructure that maximizes digital creativity, sharing, and innovation. CC is an interesting example of a standardization path with the involvement of a diverse community of “new participants” (from law professors to technologists, from open source activists to artist

[1] There is a book-length research monograph from which this study is taken, see Bygrave Lee A. (2015) Internet Governance by Contract, Oxford University Press, ISBN: 9780199687343

labour unions). Creative Commons believes that the default rule of current copyright rules is no longer (or, at least, not always) adequately regulating the production and circulation of intellectual goods in the digital environment, reducing the chance for users to generate creative content and limiting sharing of knowledge and information.

CC seeks input from related communities and organizations, especially during the license versioning process and when deciding whether to engage on a policy/advocacy front. It operates as a multi-stakeholder organisation when possible to increase its legitimacy and credibility, but not out of a formal commitment. For example during its recent review (the "4.0" licence process), CC solicited input from various stakeholders on digital rights management (now called Effective Technological Measures in the 4.0 licenses) and which restrictions imposed by platforms fell within the definition of ETMs or not. Among others, CC consulted widely to define the language concerning such technological measures. The final drafting phase was done behind closed doors, however. On matters of policy, CC also tends to works regionally rather than globally whenever a policy is specific to a region. The CC staff is explicitly committed to inform and solicit input from the remainder of the network, because local or regional policies can have ripple effects in other regions and worldwide.

The analysis of the governance of the CC network shows that – even in the absence of any formal commitment to a democratic or multi-stakeholder governance – the practice of providing fora in which all sides can be heard, engaging in healthy debates, and demonstrate an understanding of concerns on all sides, may create a licence setting body in which its community of reference respects its decisions as a steward of the standard.

Net neutrality legislation – the case of Slovenia

While the formal drivers for changing the Slovenian telecommunication legislations originates in the harmonization with EU directives, the policy motives behind the Slovenian net neutrality law were to preserve the Internet as technology that reduces inequality, to preserve the open nature of the internet, and to prevent the creation of artificial scarcity. The policy intervention was primarily aimed at preventing the creation of artificial scarcity by powerful commercial interests and to create competition in the market that also encourages investment in Internet infrastructure.

Many stakeholders were involved in shaping the final policy outcome, from the National Slovenian Council for Telecommunications, the Special Interest Group on Communication at the Chamber of Commerce, Internet Society of Slovenia, major telecommunication operators, and the Information Commissioner, as well as civil society actors. Pressure from stakeholders on politicians led to parties abandoning their traditional and expected positions and adopt conflicting positions during the net neutrality policy debate.

The net neutrality law has not been successful in all cases and uncompetitive behaviour still exists, for example in streaming of popular football matches, where it appears some preferential data treatment deals do exist in secret. Calls now exist to use net neutrality legislation in combination with competition law to curb some of this behaviour.

It is getting very clear that without enforcement by truly independent regulators the legislation itself is not sufficient.

Open Hardware Standards: The Case of Open Hardware Licenses

Given the expansion of Internet network-based connections from computers to objects, increasing attention is being paid to the openness of standards for hardware. Policy challenges for open hardware licenses are partly due to difficulty in applying the equivalent logic to software and hardware production. The licenses in this case study use three general mechanisms to support sharing: copyright and copyleft, patent law, and social norms that encourage attribution of designs without specifying a legal mechanism.The use of licenses as a form of governance necessarily limits the range of stakeholders who are able to participate, as a level of both legal and technical expertise is required. Relying on licensing rather than technical standardization or enforcement of community norms brings some risks, including license proliferation and poor operationalization of goals. From the Internet Science point of view, only some of these are directly related to the opportunities that open sourcing hardware provides for expanding access to networked devices by prosumers, but other aspects touch on related social issues such as the ability to access information about the function of internet technology. The European scientific institution CERN has developed the most widely accepted open hardware license, and it is being encouraged to develop it further to be as widely applicable as possible. The significance of CERN as an institution gives legitimacy to the license and to the concept of open hardware. Despite CERN employing a fairly structured conception of open hardware, in keeping with its status as an established research institute, the license development process needed to involve the members of a distributed community of practice in order for the license to gain legitimacy and be broadly used.

The enforcement of the licenses occurs in two main ways: as **social enforcement** through the development of a shared definition of openness across a community of practice, and **economic enforcement** through the benefit that accrues to companies that provide CERN (for example) with electronic hardware that also includes open design specifications. These specifications can then be used by future providers of electronics, as well as being available to the public.

Inter-domain interconnection: a far west to regulate

The case study describes the lack of (international institutional) regulation in inter-domain connection of Autonomous Systems enabled by the Border Gateway Control (BGP). Two sub-case studies illustrate the importance of regulating BGP internationally, namely in Net Neutrality and Cyber Security. The case study provides an analysis of the necessity to regulate commercial transit and peering agreements that are not transparent, and have significant impact on the operation of the Internet.

National courts and regulators have tried to force transparency of peering agreements, but so far to no avail. Litigation amid strong claims for commercial confidentiality from some stakeholders delay any enforcement decisions. The three key actors (consumer facing content providers, transit operators and downstream destinations such as customers) have different interests and perspectives in the operation of inter-connection, which the case study analyses using game theory. The case study suggests dealing with the complex entanglement between the technical, political, economic and cyber-security issues of inter-connection in an international multi-stakeholder forum, rather than states trying to enforce a form of multilateral cyber strategy.

2 Relationship of case studies to EDEKO framework

2.1 Introduction to the EDEKO framework

EDEKO is an acronym for **Environmental Drivers, Details, Enforcement, Key-Actors and Outcomes**. It was developed as a case study template to assess the socio-economic as well as technical efficiency of Internet design. Note that prior work commissioned by the EC from consortium members over the period since 2000 has resulted in a unique set of in-depth case studies, and the methodology is refined based on those experiences[2]. Below follows a description of the categories, drawn from D4.1:

Environmental Drivers: The initial part of each case study sets out the policy environment and its drivers. These are firstly the social impact of standards and adoption. Then consider the policy drivers of a socially successful standards body:

1. entry barriers in its market;
2. network/scale effects that successful technologies deploy;
3. user demand and creation of new markets/solutions;
4. competition for standards.

Details of that standards body's technical solutions: the layer at which standards solutions are deployed according to the OSI layers model, location of deployment and identity of user constituency:

Enforcement of standards by authors, users and developers, and the role of governments in attempting to regulate standards in the public interest.

Key actors: National, regional and global. Case studies examine how legitimate and accountable they are, and particularly explore the role of multi-stakeholderism.

Outcomes from the political economy of each case study, assessed according to:

1. transparency of outcome;
2. enforcement of regulatory goals;
3. interoperability as a solution; and
4. efficiency.

2.2 EDEKO Comparison

A cross comparison of these case studies yields the following analysis.

Environmental Drivers: The case studies highlight the necessity for governance in this domain to take into account the multidisciplinary nature of the environments explored, more than the mere technical environment in which the changes or initiatives are undertaken. Many broader social, political and economic drivers are identified, as well as political-economic dilemmas or opaque private contracts that govern the functioning of the Internet architecture or content distribution. These factors lead to complex negotiations between stakeholders, whereby regulatory tools are found not only in law and technology, but also via social norms or market pressure and solutions are sought in (international) multistakeholder approaches.

[2] See Oxford University IAPCODE study (2001-4) http://pcmlp.socleg.ox.ac.uk/research/project/selfregulationinfo-iapcode RAND Co- and Self-Regulatory study (2006-8) http://www.rand.org/pubs/technical_reports/TR566.html Blackman et al (2010) Towards a Future Internet study final report. Details of the prior pair of studies, and updated analysis related thereto, can be found in Marsden (2011). See further Cave's work at RAND for the EC: http://www.rand.org/about/people/c/cave_jonathan.html#publications. Cave and Marsden have therefore worked on Internet regulation case studies for an unbroken 15 year period.

Details: Each case study describes the resulting tension that divides stakeholders in a specific situation when a governance decision has been taken, or the tensions that led to governance decisions. In the Creative Commons case, for example, tensions have largely been overcome and the discussions are now between a wide range of stakeholders who strive to reach specific agreement. In the ICANN, Net Neutrality and Open Hardware licensing cases, stakeholders question the necessity or rationales of certain governance decisions. Most cases have a transparent procedure, however, whereas the BGP governance study reveals a lack of transparency, which means agreements are concluded without any public oversight and stakeholder engagement. Tensions have not proliferated but problems are emerging in security and neutrality[3]. As Zevenbergen states: "networked systems research projects are collecting increasingly sensitive data on individuals, or affecting people in previously unknown ways" raising ethical research issues[4].

Enforcement: enforcement practices, methods and tools diverge across the case studies. A common theme is the failure of public regulatory enforcement. The designated agency to enforce the Slovenian net neutrality law as well as courts that attempted to regulate BGP disputes are unsuccessful thus far. The BGP case shows that public enforcement is not effective and therefore suggests that the international civil society and wider Internet governance communities should act. The Open Hardware case demonstrates that a stakeholder with significant reputation - CERN in this case - has the ability to create moral suasion for compliance and guide future developments in governance. ICANN uses private contract to enforce its will, driven by its own contractual arrangement with the Department of Commerce.

Key Actors: Each case study is characterised by the wide variety of actors that are involved in shaping the governance outcome, as well as the emergence of non-traditional actors in both legislatures, corporations and civil society. National governments are frequently an actor, but not necessarily central or significant. The governance processes take on board the views of distributed networked communities of relevant practice or mediate between the arising tensions. The role or methods of the more central organisations, such as ICANN, CERN and Creative Commons, can be considered experimental. Established mechanisms are under constant development and could be abstracted to apply to other areas of Internet governance, as explored in Chapters 4-5 below.

Outcomes: An underlying theme across the case studies concerns increasingly complexity of the subject matter, technical environment and socio-economic environments affected by change. Although the legitimacy and effectiveness of regulators such as ICANN, the Slovenian Communications Networks and Services Agency, national courts and CERN are doubted by some stakeholders, they have contributed to the broadly applicable definitions of the area to be governed and established frameworks for further multistakeholder governance. The BGP case study is the only area where no effective measures have been established, so it suggests that the international multistakeholder forums lead a discussion on the complex entanglement of technical, political, economic and social issues affected.

[3] A December 2014 M-Lab report provides an example of these tensions: http://broabandtrafficmanagement.blogspot.co.uk/2014/12/m-lab-blames-transit-carriers-for-isps.html

[4] See Zevenbergen, B. (2015) 'Networked Systems Research: Ethical, Legal and Policy Issues' in 7th International Workshop on Traffic Monitoring and Analysis co-located event: 5th PhD School on Traffic Monitoring and Analysis http://tma-2015.cba.upc.edu/phd-school-program

2.3 Triangular Diplomacy and the Modes and Processes of Governance

The fascination of the case studies, which deliberately explore the outer edges of Internet governance in terms of traditional state-corporate relations and stakeholders, is in the settling of disputes and creation of norms far from enforcement practices and regulatory discussions engaged in normal 'legitimate' legal forums. As a result of discussion and analysis by the case studies authors guided by Cave, Marsden and Zevenbergen, we created a schematic for these relationships as a triangular Figure 3.1[5]. Note that the traditional corporatist state-multinational engagement is at the point of the triangle. Multistakeholder in this figure is shorthand for the presence of new civil society actors. Private here refers to new private actors, not entrenched multinationals within the corporatist consensus in national politics.

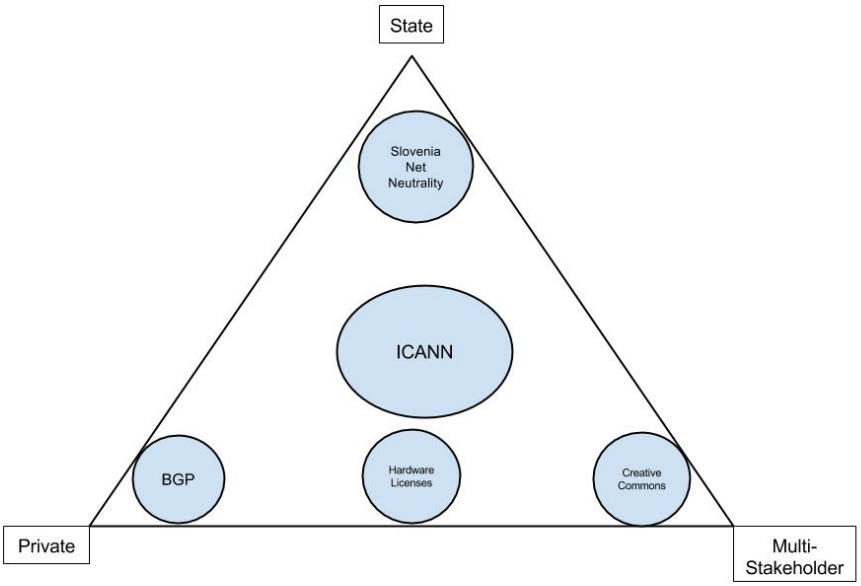

Figure 3.1: The State-Private-Multistakeholder Triangle

The traditional state-corporate processes are more or less maintained in the Slovenia net neutrality law, with little input by either civil society non-traditional actors or new private actors such as Content Delivery Networks (partly as for US actors, Slovenia's is a relatively unknown legislature). By contrast, we see 'triangulation' in the case of ICANN, with traditional actors including multinationals, new civil society actors, and new private actors such as registrars all represented. Much of the controversy over ICANN policy formation may be traced to its deliberately hybrid or even Janus-faced orientation. The strongest case for really private contractual or commercial arrangements is BGP, where the 40,000+ Autonomous Systems that make up the Internet use a variety of peering, transit and other arrangements to route traffic with little state oversight or civil society input, and corporatist actor involvement extends to

[5] This schematic is drawn from the classic formulation of state-firm diplomacy in Stopford, J. and Strange, S. (1991) Rival States, Rival Firms: Competition for World Market Shares. Cambridge: Cambridge University Press.

the engineering arms of the Tier 1 transit operators (large formerly state-owned telcos) that in reality treat BGP as a relatively non-politicised domain, though there is some evidence that this is beginning to change. A classic civil society domain is that of Creative Commons, a largely commerce-free zone though hosts and commercial users of photos using CC licences play a role, for instance Flickr-Yahoo. A hybrid of non-state private and civil society actors is that of the open hardware licensing community, little known to regulators and working in an environment of trust based on technical competence.

The Figure 3.2 below alters the categories of environment and detail into processes, and modes. Actors remain as described in the full case studies. The idea in this Figure is to show the extent to which the case studies present non-traditional processes and modes – and how much these relate to new actors. Unsurprisingly the representation is largely linear, with the non-traditional processes producing the most 'exotic' actors from a state perspective, and the most deliberative processes as compared to traditional top-down processes. Note that 'autocracy' is an **extreme** not applicable in democratic states just as is 'deliberative' as an ideal, with all processes placed between these extremes.

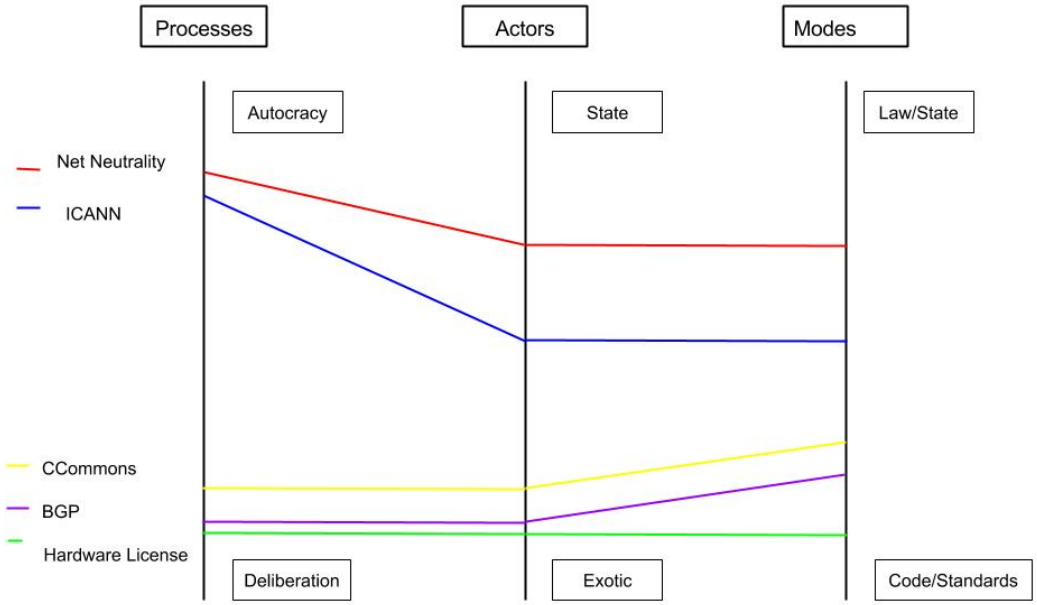

Figure 3.2: State-Private-Multistakeholder Relations: Processes, Actors, Modes

The analytical controversy lies in deviations from a linear representation. Open hardware licensing remains a vigorously private undertaking, 'off the regulatory radar'. Both BGP governance and Creative Commons licensing have come onto that radar, reflecting the blip upwards in modes, due to the former entering into net neutrality and security regulatory discussions, and the latter creating licences suitable for use by governments in open data repositories. The more profound changes are that net

neutrality in Slovenia is a traditional state-led legislative process but with both less statist modes of enforcement, and some more exotic actors, and that ICANN may be a 'broad church' in both enforcement modes and actors, but much of its policy is set top-down by a board composed of corporatists and state-led actors, though even here it is sufficiently obscure that a vigorous debate may be had regarding the degree of deliberation in its processes.

This analysis places the case studies in sharper relief than the initial EDEKO categorisation, and opens much debate as to the particular hybrids of regulation involved. We now proceed by exploring 'exotic' actors beyond the case studies in Chapter 4, and cross-cutting governance in Chapter 5 including by and of private actors removed from corporatist relationships, but first analyse the case studies according to the D4.2 algorithmic regulation template, in Chapter 3.

3 Case study analysis applied to algorithmic regulation D4.2

3.1 About algorithmic regulation

Algorithmic regulation is a concept of regulating society not only by laws and courts but (additionally) by computer algorithms. In the real world, events in a society are (1) noticed, (2) interpreted, (3) matched to the law and (4) its legality is decided. Legality or non-legality of an action is based on the human interpretation of the real world actions, human interpretation of the law and their correspondence. For a matter to be examined legally it first has to identified as deserving this, either by a duty of some state institution or by the party that might have been harmed by the procedure. The process is slow (takes hours or years) and prone to human error.

The **algorithmic regulation** scenario is built on an abundance of digital data about what is going on in a society and on an assumption that there are computerized means to alter the behaviour of elements in a society. Events are monitored digitally (e.g. speed of cars). Improper behaviour (e.g. speeding) is identified algorithmically. It is matched to rules about speed limits and measures against it. The speeding car is identified, speeding ticket is sent automatically and perhaps the bill is even automatically settled. In some future scenario, an internet connected car discovered speeding might find be sent a message from the road authorities to slow down and would actually slow down with no interference from the driver.

The example was trivial but the available "**big data**" on one hand and advances in the field of **artificial intelligence** on the other are inviting thinking about where else big data could be deployed to speed up regulation in supervisory services that governments are providing.

While as a buzzword algorithmic regulation is very catchy, the scenarios that come to mind are more related to the algorithmic implementation of the law rather than the law itself. The algorithms are prescriptive, they are good at specifying the "how". Laws are ideally descriptive, they specify the "what". So there is room for both.

3.2 Algorithmic regulation and process model of regulation-making

In D4.2 Section 4.2 a generic process model for the creation of regulation was defined. It is shown in the Figure below as an IDEF0 diagram (Air Force, 1981). The regulation creation and use process is shown in its most generic form. In terms of the Figure, algorithmic regulation would be limited to "use and enforcement stage" in the regulation creation and use process. It is quite beyond the scope of current technology to algorithmically identify the need of a regulation, design and adopt it.
With a simple matching of the idea of algorithmic regulation to a generic process model, the hype associated with the concept is significantly reduced and the expectations are more realistic. This is not to say, however, that regulators and all the other actors in the regulation creation process should not seriously consider an algorithmic implementation of regulation.

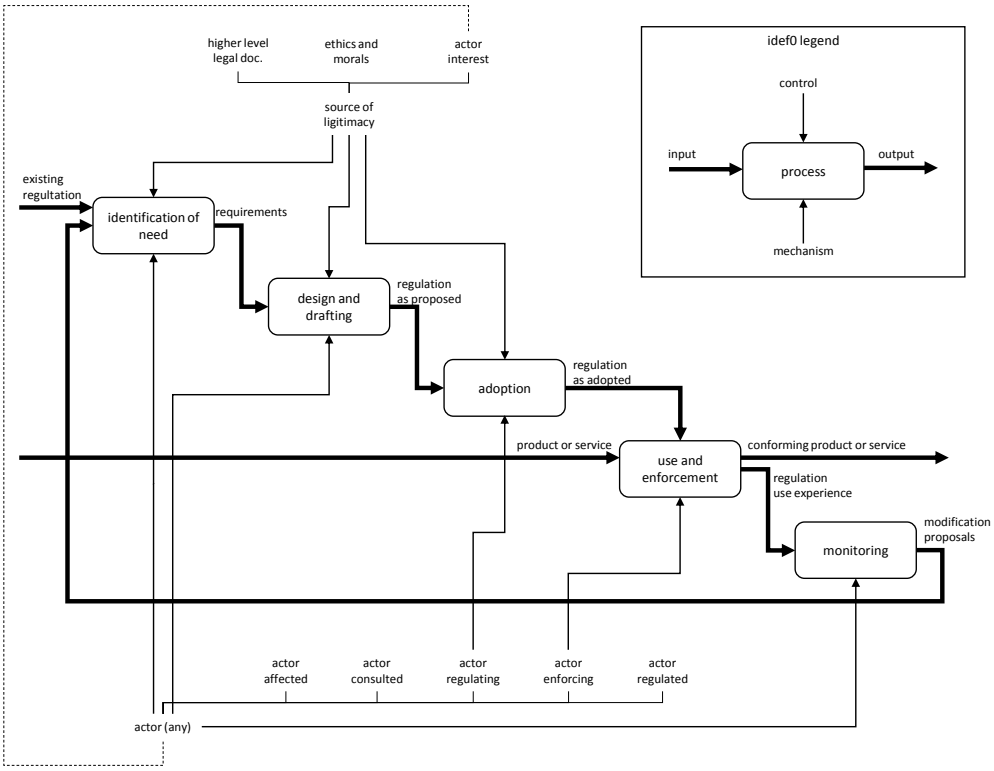

Figure 4.1: Process model on regulation creation and use, including the key actors.

3.3 Case studies and the process model of regulation

The process model in the Figure above as well as the conceptual model underlying it (see EINS D4.2, Section 4.2-4.3) can also be used to model the case studies of the EINS project. The case studies can be abstracted into the regulatory model. A Web form was used to gather the information on the case studies from this perspective. The Table below summarizes how the case studies correspond to that model (this data is collected via web form):

Regulation title	**Slovenian Telecommunications Act**	**Creative Commons: open data licensing projects**	**Regulation of Internet Inter-domain**	**Internet addressing: ICANN and the DNS**	**Open Hardware Standards: Open Hardware Licenses**
Summary	Slovenia enacted a rather explicit net neutrality legislation in addition to the Dutch one one of the most precise in the EU. It mandates that all Internet traffic should be treated equally.	U.S. based non-profit organization Creative Commons exploits the existing legal framework to develop a set of legal tools (licenses) accessible also to those authors who do not possess specific legal skills. These tools are conceived to help users managing	Internet is an Inter-net. The inter domain communication are essential to Internet and are the major cross-boundary, international component of it. However, the Inter-domain is fully unregulated despite its importance both for net-neutrality and cyber-	DNS governance affects not just the technical functioning of the Internet but has also economic and cultural-political consequences. Domain names are not only address identifiers but signifiers of broader identity and value as well. Domain names	Devising and implementing governance standards in an open-source community. It describes the dynamics of this negotiation, as an example of a socio-technical formation oriented towards the formation of knowledge commons rather than competitive

Regulation title	Slovenian Telecommunications Act	Creative Commons: open data licensing projects	Regulation of Internet Inter-domain	Internet addressing: ICANN and the DNS	Open Hardware Standards: Open Hardware Licenses
		the rights they hold on their works, assigning broader permissions on their works and clearly notifying their choice to other users.	security	are also scarce resources economically. Thus, the policies and rules for DN allocation generate considerable conflict.	or exclusionary control of information
Web page	https://www.ip-rs.si/index.php?id=504	http://creativecommons.org/		www.icann.org	
Current stage	Used, enforced, monitored	Used, enforced, monitored	Identification of need	Used, enforced, monitored	Design and drafting
Motives for regulation (5=strong, 1=weak)					
To ensure competition.	4	3	5	4	4
To enable new businesses and innovation.	3	5	5	4	5
To prevent harm.	3	2	5	4	3
To prevent market failure.	5	4	5	5	2
Higher level legislation	4	2	5	3	1
General ethics and morals	2	4	5	3	2
Stakeholder urgency	4	4	1	5	4
Please select stakeholders that considered this regulation urgent	a government, group of non government stakeholders	group of governments, group of citizens, group of non government stakeholders	a government, a business or other institution, group of governments, group of businesses or institutions	group of governments, group of citizens, group of non government stakeholders	group of citizens, group of non government stakeholders
Comment related to legitimacy	The answers relate to the net neutrality aspects of the regulation.	Originally urgency was expressed by creators, academics and web activists who wanted to develop tools providing a balance inside the traditional “all rights reserved” setting that copyright law creates. More recently, governments wanting to publish open data complained that CC licences were not strictly regulating the management of	All stakeholder are (or should be) concerned by inter-domain regulation.	-	

Regulation title	Slovenian Telecommunications Act	Creative Commons: open data licensing projects	Regulation of Internet Inter-domain	Internet addressing: ICANN and the DNS	Open Hardware Standards: Open Hardware Licenses
		rights on databases: this urge led to version 4.0 of the CC licenses that include sui generis database rights among licensed rights.			
Which elements of the communication model are the focus of regulation.	transmission channel	transmission channel	source of information/ communication, transmission channel	source of information/ communication, destination of information/ communication	
What OSI layer is regulated	application, presentation, session	application, presentation	transport, network		
More information about the technical scope of the regulation		The above description fits better in case of a technological regulation model. However, we opted for the selected options since CC licences are conceived as legal tools to pass digital and physical objects from A to B (human beings) for re-use them according to the licence conditions and provide a set of machine-readable metadata pertaining the licensed material, the author and the chosen licence.			
Where does regulation apply	nationally	globally	globally	globally	optionally

Regulation title	**Slovenian Telecommunications Act**	**Creative Commons: open data licensing projects**	**Regulation of Internet Inter-domain**	**Internet addressing: ICANN and the DNS**	**Open Hardware Standards: Open Hardware Licenses**
More information about the geographical scope of the regulation		Until 3.0 licenses the text of the licences was ported to translate and properly adapt the original text - to better comply with the specific legal terms in force within each of the jurisdiction. Newest 4.0 licences are a unique global suite of licences whose text is merely translated: the porting process was substituted by a longer drafting process trying to elicit ex ante all possible contributions from CC Affiliate Network legal experts.	Inter-domain is by definition international	Inter-domain is by definition international	the use of open hardware standard is generally optional
Governance mechanism					
implicit (1) or explicit (3)	3	3	2	3	2
voluntary(1) or obligatory(3)	3	1	2	3	1
preventive (1) or repressive(3)	2	1	2	1	1
ex-ante (1) or ex-post(3)	1	1	2	1	1
Who were stakeholders					
Who were stakeholders to be regulated.	ISPs	Licensors/creators (including platforms promoting license adoption e.g. Wikipedia); licensees/re-users	Network operators	DNS service providers, actors on domain name market	hardware manufacturers
Who were stakeholders consulted (experts).	ISPs, Telcos, Civil Society, Industry ...	legal experts; digital rights activists groups; NGO's; media and other major users (academia, governments, newspapers)	Nobody has really been consulted	ISPs, Telcos, Civil Society, Industry ...	innovation ecosystem
Which were stakeholders adopting & passing regulation	Government	Creative Commons (U.S. non-profit organization)	No regulation has been passed	Civil Society represented in ICANN	innovation ecosystem
Who are stakeholders enforcing the regulation	National Regulator, BEREC member	National courts	Network operators and national market regulators		innovation ecosystem

Regulation title	**Slovenian Telecommunications Act**	**Creative Commons: open data licensing projects**	**Regulation of Internet Inter-domain**	**Internet addressing: ICANN and the DNS**	**Open Hardware Standards: Open Hardware Licenses**
Who are stakeholders affected by the regulation	ISPs	Licensors/creators (include platforms promoting license adoption - e.g. Wikipedia); licensees/ re-users	All	all internet users and providers	innovation ecosystem
Preparation phase How were the different stakeholders involved in **preparing** the regulation					
Stakeholders to be regulated	actively contributing	actively contributing	informed, not contributing much	actively contributing	actively contributing
Stakeholders consulted on regulation	actively contributing	actively contributing	not much	actively contributing	actively contributing
Stakeholders formally adopting regulation	leading the process	leading the process	informed, not contributing much	leading the process	actively contributing
Stakeholders enforcing regulation	actively contributing	not much	not much	not much	actively contributing
Stakeholders to be affected by regulation	actively contributing	actively contributing	informed, not contributing much	informed, not contributing much	actively contributing
Enforcement phase How were the different stakeholders involved in **enforcing** the regulation					
Stakeholders to be regulated	informed, not contributing much	leading the process	not much	informed, not contributing much	informed, not contributing much
Stakeholders consulted on regulation	informed, not contributing much	not much	not much	informed, not contributing much	informed, not contributing much
Stakeholders formally adopting regulation	leading the process	informed, not contributing much	not much	informed, not contributing much	informed, not contributing much
Stakeholders enforcing regulation	actively contributing	informed, not contributing much	not much	informed, not contributing much	informed, not contributing much
Stakeholders to be affected by regulation	actively contributing	leading the process	informed, not contributing much	informed, not contributing much	informed, not contributing much
Monitoring phase How were the stakeholders involved in **monitoring** the use of the regulation					
stakeholders to be regulated]	actively contributing	not much	not much	informed, not contributing much	not much
stakeholders consulted on regulation]	informed, not contributing much	actively contributing	not much	informed, not contributing much	not much
stakeholders formally adopting regulation	informed, not contributing much	leading the process	not much	informed, not contributing much	not much
stakeholders enforcing regulation	leading the process	not much	not much	informed, not contributing much	not much
stakeholders affected by regulation	actively contributing	not much	not much	informed, not contributing much	not much
Your comments				no direct input	no direct input
Your name	Žiga Turk	Claudio Artusio	Kavé Salamatian	Žiga Turk drafted	Žiga Turk drafted

4 New actors in Internet governance

4.1 Introduction

In our identification of new actors in internet governance we identify three related levels/frameworks of transformation for IG:

1. at the intergovernmental/supranational level,
2. at the state-level and
3. in terms of the participation of civil society, activist and citizen actors.

Since 2011 there have been significant developments at all of these levels, in part due to the massive loss of confidence in US-based control of internet resources that resulted from the Snowdon revelations, even though debates were already occurring before this watershed. There has also been a related expansion of understanding of the role of technologies and applications as gatekeepers across these levels of governance: as elsewhere we explore algorithmic governance, in this section we identify how artefacts also intersect with these governance actions.

This section identifies how four categories of new actors in internet governance:

- international organizations;

2. civil society and individual 'experts' including academics;

3. citizens, through contact with elected representatives also the technical community including participants in forums such as ICANN/ISOC;

4. technical artefacts including applications that operate as gatekeepers.

This section identifies how these actors have emerged, and how they:

- interact with older/classical/better established actors in the field
- have been transforming (or not) the IG field, in term of (political) architecture, agenda, and outcomes (rules, standards, practices, etc.)
  - how they have been transforming (or not) their own "constituency" (or even individual organization), in same all terms
  - how they have been redefining (or not) main IG issues and identifying new ones, including privacy and security
- how they have succeeded (or not) in reaching out to grass roots/public opinion.

4.2 Intergovernmental organizations

Research in the field of global Internet governance has grown dramatically in the last several decades (see, for example, Brousseau et. al., 2012; DeNardis, 2014, 2009; Epstein, 2013; Levinson and Cogburn, 2011; Levinson 2012; Malcolm 2008; Mueller 2002, 2010; Mueller, et. al., 2007; Pavan, 2012). Much of the work has focused on the role of nation-states. More recently, other work examines the rise of what is termed 'multistakeholderism' (DeNardis, 2013), the involvement of nonstate as well as state actors in Internet governance and the rise of new institutions such as the Internet Governance Forum (IGF). However, international organizations are often not explicitly included in listings of stakeholders. Their role in the dynamic organizational infrastructure of global Internet governance is seldom addressed as part of the complex and subtle interactions among technical/physical infrastructure and organizational infrastructure and among local and global, nation-state and regional,

state actors and non-state actors. It should also focus on interactions among international organizations and other organizations as possible conduits for isomorphic processes among international organizations.

Research on International organizations in the Internet governance field can learn a lot from the Political science and International relations literature addressing governance processes in general or in other fields, and interactions among different stakeholders. Useful discussions on the concept of "regime complexes" and their management in the environmental, human rights, trade and energy arenas (for instance Raustilia and Victor, 2004; Keohane and Victor, 2011; Orsini et al., 2013; and Orsini, 2013), as well as the notion of "institutional complexes" (Zelli and van Asselt, 2013) can feed such research. Transnational public-private partnerships (Borzel and Risse, 2005) are also useful to study "transboundary interactions".

Referring to nonstate actors partnering with the UN, Weiss and colleagues (2009) craft the argument for a 'third' UN. Pallas and Uhlin (2014) address strategies of influence by civil society organizations through states and international organizations channels. Using a database of international organizations covering a twenty-five year period, Tallberg and Colleagues (2014) cogently write of the 'opening up' of international organizations to what they term transnational actors such as civil society organizations. While they do not deal with the internet governance arena, their data do demonstrate international organizations' growing openness to transnational actors over time and in certain issue arenas (human rights, trade and development as opposed to finance and security); In sum, they argue that international organizations today are actually 'political opportunity structures' with, of course, varied opportunity patterns. The Tallberg study is very significant but is primarily unidirectional in outlook, focusing on access for transnational actors. Schemeil's (2013, 2014) goes beyond openness or access and shows that IOs can be proactive in their own right, reshaping themselves and, indeed, their environments, including interacting proactively with civil society.

Regarding the relationships between international organizations and states, Barnett and Finnemore (2005) began to establish an understanding of IOs as actors in their own right. Schemeil (2013) provides compelling arguments that IOs are, indeed, proactive and resilient entities, that adapt and evolve and even shape their own survival in transformative times and under conditions of resource uncertainty. Discussing the empowerment of IOs in the information field, Schemeil (2012) identifies four strategies that weak or jeopardized organizations may develop towards external partners or adversaries: mandate enlargement, coalition and controlled overlap, nesting and mutual recognition (mainly in interacting with NGOs).

As part of the few existing work dealing directly with IOs and Internet governance, Rogerson (2004) finds that the international organizations he studied were grappling with Internet policy as it related then to the developing world. Rapidly changing contemporary events (from internet-related security revelations and cybersecurity challenges at local and global levels to increases in regional and national IGFs and global meetings highlighting multistakeholderism and possible structural transitions for ICANN) during the years 2012-2014 have catalyzed the internet governance ecosystem and its actors, providing a dramatic and important setting for current research.

In this way, Intergovernmental Organizations (IOs), whether regional (such as the OECD or the Council of Europe) or global (such as some UN agencies like the ITU and UNESCO), are crafting roles for themselves as stakeholders. Underlining the need for their invaluable experience, capacity and mandate to co-elaborate binding and non binding standards, they have been trying – with varying degrees of success - to establish themselves as the appropriate settings to deal with the cross-border nature of the internet networks in an effective way.

Within the United Nations system, several organizations are playing lead roles (UNESCO, the ITU, WIPO, and also CSTD) while there is also a UN-crafted institutional innovation, the Internet Governance Forum (IGF), a multistakeholder entity with a provision for fostering multistakeholder dialogue and not decision-making. The IGF, now in its ninth year, is only one part of the fuzzy Internet governance ecosystem, characterized, as noted earlier, by multiple entities at multiple governance levels and with multiple mandates.

The ecosystem itself also includes local, national and regional governments; standards setting bodies (usually composed of technical experts from a range of countries); international organizations most of which have operated in the internet governance space for many years; representatives of the private sector and especially the relatively new and dramatically growing internet domain name registry sector; ICANN (the Internet Corporation for Assigned Names and Numbers), a private organization with a public and global purpose- now in the process of reinventing itself with multistakeholder input after sixteen or so years directly under the purview of the US Department of Commerce; and a wide range of NGOs from around the world.

We report here on a research conducted in the EINS framework by Levinson and Marzouki (2015a, 2015b) to explore a specific corner of the Internet governance ecosystem, that is, the role of international organizations as organizational actors with a special focus on their relations with other actors. This research focuses on WSIS (the World Summit on Information Society, 2003-2005) and its main outcome, the IGF (Internet Governance Forum, 2006-present), and uses multiple methods. Interviews with those individuals charged with Internet related policy functions at the international organizations we selected in this first step (UNESCO, OECD, CoE) constitute a major data gathering function. Additionally, content analysis of documents and archival analysis amplifies and provides a foundation for interview findings. Finally, observation and participant observation at key meetings adds to data gathering and data analysis.

4.2.1 IOs reshaping their own identity

Document analysis and participant observation indicates that during the World Summit on the Information Society (WSIS), even though it was convened by the International Telecommunications Union (ITU) on behalf of the United Nations, the roles of international organizations themselves in the emerging Internet governance ecosystem were traditionally conceived international organization roles: convening and coordinating the multiple actors in a very uncertain and increasingly global Internet governance policy arena. Even at WSIS, the traditional nation state member of an international organization type culture prevailed.

The Working Group on Internet Governance (WGIG 2005) discussed stakeholder roles in detail, providing a documentary baseline for examining the role trajectories of IOs in Internet governance and the incipient institutionalization of such roles. What is

particularly interesting is the lack of attention to these changing roles and the absence of discussion of such changes.

The overarching finding that emerges from our research is a subtle and growing transformation of international organizations as distinct players and stakeholders in the Internet governance ecosystem during the post WSIS era and an incipient institutionalization/regularization of such roles. While international organization staffs continue to emphasize their roles as serving the preferences of member states, our data indicate a shift in how this perception has been and continues to be implemented in actuality. Of course, each individual international organization has its own special history and niche. Complicating these patterns was accompanying policy turf issues within and across international organizations. As the roles of nation states as primary Internet governance actors began to change and as technological complexity and uncertainty increase, the emergence of other stakeholders reshaped a rather messy playing field.

For example, the 2014 NETMundial meeting in Brazil, originally convened by an ICANN alliance with the President of Brazil, a nation state from the global south side by side with the major private sector domain name-related organization with, as it itself notes, a public purpose, provides a measuring point, although only one point in a time of multiple transformations to the ecosystem. Examining data even from that meeting indicates that international organizations are treated by some still as a related part of nation state governments—at least in terms of speaker order and line-ups (Levinson and Marzouki 2015a). However, international organizations were clearly and vocally present.

4.2.2 IOs from part of government sector to a stakeholder in itself

The IOs we report on here (UNESCO, OECD, and COE) have been involved only progressively over time from WSIS First phase PrepCom1 in July 2002 in Geneva to the present. Moreover, this involvement in Internet governance was by no means framed as such when they began participating in this policy landscape. Three main reasons can explain this relatively late appearance as actors on the Internet policy stage.

The first reason is general, as it relates to the identification, specification and adoption of the very concept of Internet Governance in its broad sense by all the concerned actors, even beyond the sole IOs. These diverse understandings of the scope of Internet governance (Brousseau and Marzouki, 2012: 368-371) relate in particular to what is exactly governed, in other words to whether Internet governance field should be restricted to the management of critical Internet resources (mainly infrastructure and protocols) or should embrace any and all Internet policy issues.

The second reason, not limited only to the IOs we studied, is that IOs are not always identified as stakeholders in their own right in all Internet governance processes, at least not as clearly as other stakeholder categories, such as governments, civil society and the private sector. The fuzziness of this categorization is illustrated in the various WSIS documents and outcomes. While the Internet Governance Forum (IGF), by definition and mandate, has been much more flexible in its practical organization and proceedings since 2006, interestingly, the NetMundial meeting convened by the Brazilian government in April 2014, did not include in its multistakeholder Committees representatives from intergovernmental organizations as a stakeholder per

se (the two IOs that were also part of these structures were appointed by the UN Secretary General).

The third reason for the relatively late appearance of the IOs we have studied as actors on the Internet policy stage relates to their structures, mandates and internal strategies, each shaped by their own historical and functional settings.

4.2.3 IOs from periphery to core of Internet governance

There are several examples of the ways in which the IOs we study have moved from the periphery to a more core position in the Internet governance ecosystem. Findings from OECD, UNESCO, and the COE illustrate their evolution from what appeared to be marginalization across sectors and even marginalization within an international organization secretariat itself. Both data from the interviewees and data from an analysis of international organization roles at the IGF over time highlight these movements.

Our research indicates, that while there have been and may continue to be differentiated perceptions on the part of international organizations, their roles in the multistakeholder setting have clearly increased (Levinson and Marzouki 2015a). Paralleling this increase at the organization-wide level, there also has been an increase within international organizations due to a confluence of factors, some of which may have been serendipitous and others clearly proactive on the part of international organizations.

With regard to serendipity, one interviewee proclaims 'thanks to Snowden' for making that interviewee (whose portfolio includes Internet governance) a truly 'essential person' at that international organization: a dramatic move from periphery to core! At the time of WSIS and the first IGF, there were fewer individuals and almost no budget related to Internet governance. In fact, the interviewee had to justify whatever small work was done in that policy space (one year there was not even budget to send anyone to the IGF). Another interviewee from a different international organization highlights similar changes. "We (anyone interested in working on Internet governance in the early days) had been marginalized" within our international organization. Today that international organization has its own, member-state approved Internet governance related strategy.

OECD role has grown in the Internet governance ecosystem, just as the Internet has expanded into the economy exponentially. UNESCO had a two year plan in 2006, with no mention in it of the Internet or Internet governance issues. Today Internet governance issues are an essential part of its policy portfolio. In fact, it is promoting distinctive concepts relating to Internet governance in its 2014 missions. The CoE undertook a major turn in its vision after 2004, "putting back on its feet" the concept of Internet governance as the governance of the Internet itself, its actors and its usages finds. This change, from a vision of Internet governance as mainly the governance of political affairs using the Internet rather than as the governance of the Internet itself as integral part of the political affairs, finds its main explanation in the institutional interplay inside the CoE Secretariat.

In summary, three patterns of periphery to core movements are clear: the heightened link at each IO between IG policy issues/spaces and the IOs' policy purviews as they change over time; increases in the number of people within the IO working on topics related to IG; and the movement of IG-related topics and the concomitant link to more

central/powerful elements/ sections divisions of the IO. One subtheme that emerges is the role of individual leadership within the secretariat with regard to catalyzing interests, resources and ideas linked to IG topics.

The full report in the Annex details two case studies of such movements: (1) UNESCO and the "Internet Universality" concept and (2) CoE and the Human Rights Issue. Both case studies allow for an examination of IOs crafting an idea that can be called an idea with multi-tasking modalities.

4.2.4 IOs crafting their roles via issue/policy entrepreneurship

Directly related to the above-discussed moves from periphery to more core is a pattern of the creation and dissemination of ideas that places each international organization in a more central position in the IG policy space. This pattern has a significant dimension related to the transformation or re-crafting of an international organization itself in terms of its mission in its ever changing, increasingly global and uncertain environment. The three studied IO highlight through interviews how they have succeeded in shaping the IGF dialogue with their work and ideas, with their secretariat promoting issues (OECD and data protection, UNESCO and Internet universal access, and CoE and human rights more generally).

Another element relating to this theme is the role of the secretariat vis-a-vis the member states. The secretariats in each clearly play a role in crafting ideas, first to be adopted by the member states and then disseminated externally, often with external 'allies' or 'partners'. At OECD, for example, where the 1998 Seoul ministerial was vital in highlighting Internet governance issues as they relate to the digital economy, an interviewee noted that it was vital to have civil society there and as an ally. Turning to the earlier mentioned example at CoE, the Diplo Foundation played an important 'partnering' role in idea dissemination. And, at UNESCO, there actually has been a much longer history of partnering with civil society than working on Internet governance related issues.

Where do the ideas come from? In some cases, as documented in the annexed report, the secretariat itself creates the idea and then collects feedback before formalizing. And, in other cases, the secretariat selects consultants to produce a report that, in turn, provides ideas or possibly reifies secretariat ideas. Yet, in other cases, ideas come directly from an IGF meeting. Our findings show, in particular, how an important way for IOs secretariats to exchange ideas, test issues or policies in the making and start promoting them on a large and diverse scale before bringing them back home to undertake formal adoption process by their member states, is provided by an innovation of the IGF itself: the Dynamic Coalitions, loose structures established since the first IGF in Athens in 2006, and described as "informal, issue-specific groups comprising members of various stakeholder groups."

The full report in annex details the example on the CoE partnering with other stakeholders in the Dynamic Coalition on Internet Rights and Principles (DC-IRP), and the process by which an informal collaborative writing exercise of a Charter of Human Rights and Principles for the Internet, started in 2008 (Franklin 2013), was eventually turned into a CoE soft law instrument, Recommendation CM/Rec(2014)6 on a Guide to human rights for Internet users, adopted by its Committee of Ministers on 16 April 2014. This example shows, as noted earlier, how informal multistakeholder work conducted through informal discussions and consultations in the framework of the IGF process was fully institutionalized by an IO. It also attests of the mutual

consolidation of IGF and IOs roles and activities (Levinson and Marzouki, 2015b), as further detailed in the full report in annex.

4.2.5 Conclusion and further research

The research reported in this section illustrates the evolution in one set of the Internet governance ecosystem actors, the International Organizations. It also underlines the importance of examining organizational infrastructure and the subtle interactions among different stakeholders. From residing in the periphery, the IOs we are studying and the cases presented here illustrate that these IOs have proactively promulgated identities and ideas to reenergize their organizations and move more toward the core, also demonstrating the importance of approaching IOs as organizations and not just as entities created by nation states to carry out their work.

Additionally, in so doing, each of these international organizations have defined Internet governance and their related ideas for the policy space as integral to their own organizational identity and future survival, thus substantiating important recent research that redefines the study of international organizations using organization theory (see, for instance, Schemeil, 2013).

Moreover, by the level of their involvement in the IGF, they constitute major contributors to the institutionalization of this innovation seen by many in its early days as quite fragile and quite different from other organizational actors. In many ways, the IOs we are studying constitute the backbone of the IGF as a process; and possibly a guarantee of its institutionalization in a very turbulent environment.

There is a need now for further research on these and other international organizations (such as WIPO and other UN agencies and organs), continuing to trace ecosystem (and organizational infrastructure) changes over time, using a range of research tools calibrated to capture these nuanced and changing roles, as they continue to evolve. In particular, research with actors in civil society and nation state governments as well as with private sector organizations in the ecosystem is necessary to support further the collected international organization data. Also required is in-depth data regarding the inner workings of the studied international organizations, particularly with regard to secretariat-member state interactions/outcomes and inside secretariat division or section interactions, changes, and outcomes in longitudinal perspective.

4.3 Civil Society

Two trends have influenced the role of civil society and individual experts as actors in internet governance: first, the breakdown and transformation of consultative bodies that had previously been associated with IG, and second the shifting to new consultative bodies whose new constitution has invited individual experts to participate.

Whereas the existing IG bodies such as ICANN (as explored in the case study) are facing the prospect of structural change, new bodies and meeting places are emerging. Some of these, such as the 1Net initiative have recruited individual members including academic experts to represent their own interests rather than those of an organization. This represents an increasing individualization of participation - and also responsibility - for high level negotiations regarding internet governance.

Free culture activism is another outgrowth of digital rights and free speech related activism, and one that reveals boundaries between the dynamic actions of groups advocating for alternatives, and institutions that consolidate forms of influence. In a similar vein, this activism establishes modes of relationship based on expertise.

A third form of activism is focused on development and expansion of secure communications. Bodo argues that this constitutes a new form of hacktivism that he refers to as 'hacktivism 2.0' (2014). Examples of this form of action include an expanded focus on secure communications including projects like the Electronic Frontier Foundation's 'security checklist' that helps individuals identify products and services that protect privacy and enhance individual security.

4.4 Citizens

These forms of activism identify how Internet governance 'by other means' is expanding. A good example of this expansion is the extensive civic participation in opposition to the Stop Online Piracy Act (SOPA) and the Anti-Counterfeiting Trade Agreement (ACTA) by citizens in the US and across Europe. This example demonstrates both the normative interest in engagement in internet governance issues by citizens, and the significance of networked modes of engagement in mobilizing response to these policy issues.

SOPA, and related legislation PIPA (Protect Intellectual Property Act) were bills intended to curb international infringement of US-based IP rights. They included proposals to cut off infringing websites from US-based funding by requiring US search engines, advertising networks and other providers to withhold their services in relation to such websites. Besides the introduction of new actors through shifts in the responsibility for and composition of consultative bodies, there has also been an intensification of public and civic participation on IG-related issues, including mass mobilizations against legislative action seen to unduly constrain the ability to speak freely using the internet. Both the proposed US Stop Online Piracy Act and Protect IP Act (SOPA and PIPA) were overturned in 2013 before passage into law after thousands of people contacted their elected representatives. In a related civic mobilization, later the same year thousands of citizens

These mobilizations are forms of participation in IG that take a networked form and mobilize thousands of people. Their reach and intensity are new in the IG field, identified by some scholars as forms of 'discursive policy-making' are opening up the scrutiny of the legislative space related to IG. Through networked information sharing (see Benkler, 2013) and media presentation (Powell, 2012) these civic actions, which included not just contact with elected representatives but internet 'blackouts', mass street protests, and responses to 'viral' online media such as comedian John Oliver's description of the risks of losing net neutrality. These varied and new forms of civic participation on IG-related issues do emerge from digital rights movements that focus on speech rights (Postigo, 2012; Mackinnon, 2012) but also depart from these because they seek to rally and connect a much broader range of people. This happens both online and through the development of new media narratives.

A second set of activism has argued in favour of expanded opportunities for participation in development and use of internet resources including both hardware and software. This, a more narrowly focused mode of participation, is described in the case study on open hardware license development. This participation is concentrated in social practices related to the development of Free Culture, including an expansion

of free culture licensing from software to hardware. This form of participation tries to codify particular kinds of practices including the use and development of open designs. Thus, these kinds of actions redefine the IG field through the development of a different political architecture that includes national but also international political opportunities.

When studies of social movements consider the relationship between activist or oppositional movements and the media, they often do so by examining how the media (usually the mass media) allows for activists to communicate their messages. Social movement studies defines political 'opportunity structures' as the "dimensions of the political environment that provide incentives for people to undertake collective action by affecting their expectations for success or failure' (Tarrow, 1994, p. 85). These are structural elements outside of the individual experiences of advocates and activists. While these are often considered in terms of national and international policy opportunities, they are also shifted by the perceived opportunities of global networks of participation.

In a recent study of the role of Wikipedia editors in agreeing to action in opposition to SOPA, Konieczny (2014) argues that free culture actors organizing worldwide and in the United States responded to a 'nested' political opportunity structure based primarily on Kurzman's notion of political opportunity as 'the public's awareness of opportunities for successful protest activity' (cited in Konieczny, p. 999). This included both an international political opportunity structure that they engaged with through international discussions about the threat that SOPA posed to Wikipedia, as well as a national political opportunity structure that included the ability of Wikipedia editors to directly contact their own political representatives. Konieczny's research found that for Wikipedia editors with US nationality, SOPA was a domestic policy issue, while for international editors it was a global issue of free access to information. This identifies the transnational nature of free culture activism and the ways that this activism nests national political opportunity into international political opportunity, and highlights the importance of considering the relationship between the national and the global in analysis of transnational digital rights movements.

These actions are integrated into broader digital rights movements that reposition human and civil rights in terms of their capacity to be sustained within digital communications environments, including in terms of hardware, software and connection protocols (see Postigo, 2012).

The protests over SOPA marked what was at the time an unprecedented and extensive citizen engagement in intellectual property (IP) policy. Thousands of people contacted elected representatives to express their opposition to the bill. This level of public engagement was, as Yoder (2013) argues, unexpected in a context where industry players such as the Motion Picture Association of America (MPAA) and the Record Industry Association of America (RIAA) who heavily backed SOPA as a means to curb in an effort to halt what they saw as a threat to the entertainment industry. To be sure, digital rights movements had been growing over the past decade as more people began to understand and respond to increased enclosure of intellectual property. As this enclosure took place both legislatively and through the construction of technical systems (Gillespie, 2009) such rights movements have expanded the range of activist tactics to include hacking of such closed systems, the use of 'technical activist' methods descended from forms of electronic civil disobedience () including denial of service attacks, in parallel to forms of action directed at mobilizing mass participation

to oppose legislation. This combination of activism through traditional political venues as well as direct action that sometimes employs technical tools has resulted in a powerful social construction related to hacking (Postigo, 2012) as well as an expectation of broader participation in policy-making related to digital rights, especially including the possibility for more discursive citizen participation in policy making (Bridy 2012).

4.4.1.1 Networked Policy Making Environments

The significance of networked social environments for policy comes in part from the idea that networked relationships can create spaces for greater participation in policy making activities. Levine and Bridy observe how these dynamics influence the negotiation of SOPA and ACTA in terms of the procedural democratic space created for the participation of multiple publics. From this Habermasian point of view, the legislative space created for participation in SOPA, where information about the legislation was available online, was open enough to invite participation: "in sharp contrast to deliberations over ACTA, congressional deliberations over SOPA/PIPA were marked by a much more open flow of information between policymakers and the public. This was due in large part to the free availability of the primary documents and an interest in their contents that propagated virally across the Internet" (2013 p. 158). Levine sees the openness of the deliberative space as related to accessibility of information by citizen publics (2012) whereas Bridy stresses the importance of information flows from citizens to policy-makers, claiming particular significance for the SOPA protests that encouraged citizens to contact their elected representatives. This is in line with what Gangadharan (2013a) positions as a deliberative model for participation in policymaking: "a deliberative alternative, which focuses on the collective formation of ideas, concerns, or proposals of individuals and communities affected by communication regulation" (p. 1). Activism facilitated over the internet and in relation to communications policy has a dual character: it employs features of participatory and networked information sharing and uses these to develop discourses that support the internet as a site for free expression. Bridy characterizes this as a "multi-vocal chorus of input from the Internet—both on behalf of the Internet and by means of the Internet" (p. 163).

The capacity for networked coordination as well as the availability of information over the network create space for deliberative policy making. The space may be even more extensive than Bridy and Levine were able to assess, since the leaked information about the substance of the ACTA treaty (released through WikiLeaks, by means of the internet) provoked equally significant public and civic responses from citizens to elected representatives in Europe. Nevertheless, it remains that case that as significant as the network structures that facilitate this mode of communicative action may be, they are also in dialectic with the media, whose symbolic power to frame and represent remains important. Even in Bridy's defence of the dialogic mode of policy making, evidence for civic action was comprised of media reports. From the perspective of discursive policy-making, where language "reproduces hierarchies of political competence between experts and non-experts" (Mochnacki, 2013 p. 529), the media can seek to establish and reposition these hierarchies, by presenting particular interpretations of shared discourses.

Thus, the addition of new actors to IG processes is not limited to the expansion of the political opportunity in either national or transnational spaces but also to the opportunities for participation in discursive policy-making.

4.5 Technical Community

Civil society includes, in IG circles, other kinds of civil society groups (such as universities and academic associations), loose thematic coalitions, and most importantly, individuals participating in their own capacity. In addition, other groups needed to be recognized and included to accommodate both their specific structural composition and membership, and, above all, specific interests they managed to push forward.

The Internet Technical Community is an additional category of stakeholder that managed to have itself recognized as such. The emergence of this group of actors, with its specific interests, constitutes a major shift in Internet policy making and more generally in the global political communication order. Members of this group include ICANN (the Internet Corporation for Assigned Names and Numbers), as discussed in the case study, ISOC (the Internet Society), and a dozen of other structures dedicated to Internet management and research, most of them ensuring a vital part of the network operation. They have themselves a multistakeholder composition, and are registered (or sometimes not even registered) as different kinds of constituencies.

This recognition of the Technical community as a stakeholder is relatively recent. Due to the high controversy around the role of ICANN and the Internet governance issue during WSIS, the Working Group on Internet Governance (WGIG), while discussing stakeholders in details, provides a long, bulleted individual list for governments, private sector and civil society, but only devotes one sentence to the technical community, to recognize it as "deeply involved in Internet operation, Internet standard-setting and Internet services development" (WGIG 2005, para 33). Members of the Technical community have been cautiously referred to, in IGF circles since 2006 and especially the IGF MAG (Multistakeholder Advisory Group), as part of civil society, being made clear that the latter "includes representatives from the academic and technical communities", identified as a standalone stakeholder. At the Baku IGF in 2012 however, members of the technical community appeared under the category of "Internet Community" on its own, while individual academic participants were registered under the "Civil Society" stakeholder group. This move from the IGF in stakeholder definition and characterization is, in itself, meaningful of the rise of the technical community in this arena.

The Internet Technical Community officially emerged as such through the blessing of the OECD, when it decided, after its 2008 Ministerial Conference on the Future of the Internet Economy in Seoul, to create two new Advisory Councils, in addition to the pre-existing Business and Trade-Union ones: the Civil Society and the Internet Technical Advisory Councils, both restricted to OECD work in the field of Information and Communication policy. Since then, the Technical community established itself as an inescapable stakeholder in IG discussions.

As part of our above-mentioned research on international organizations and their interactions and partnership with other stakeholder groups, we extended our data collection on activities during the IGFs to the two main representatives (ICANN and ISOC) of this contemporary, specific to the field, category of stakeholders, which is the Technical community. We analyzed their presence and participation in the overall activity at the IGF (which is mainly discursive, by organizing the dialogue among stakeholders and the global Internet governance agenda setting) through the assessment of 411 workshops that were held from the 1st IGF in Athens in 2006 to the

7th in Baku in 2012. We tracked workshops organizers and their participants as chairs or speakers.

All in all, the 2 technical organizations account for 21% (ICANN 8% and ISOC 13%) of the total IGF workshop activity in this period. These figures need to be compared against the share of each stakeholder group attendance to the IGFs. The figure below compares, across time, the share of active involvement (as we identified it w.r.t. to workshop organization and participation) of the 2 technical organizations to the share of attendance of the whole 'technical and academic community' (as noted above, this was the stakeholder group where technical organizations were belonging until 2012).

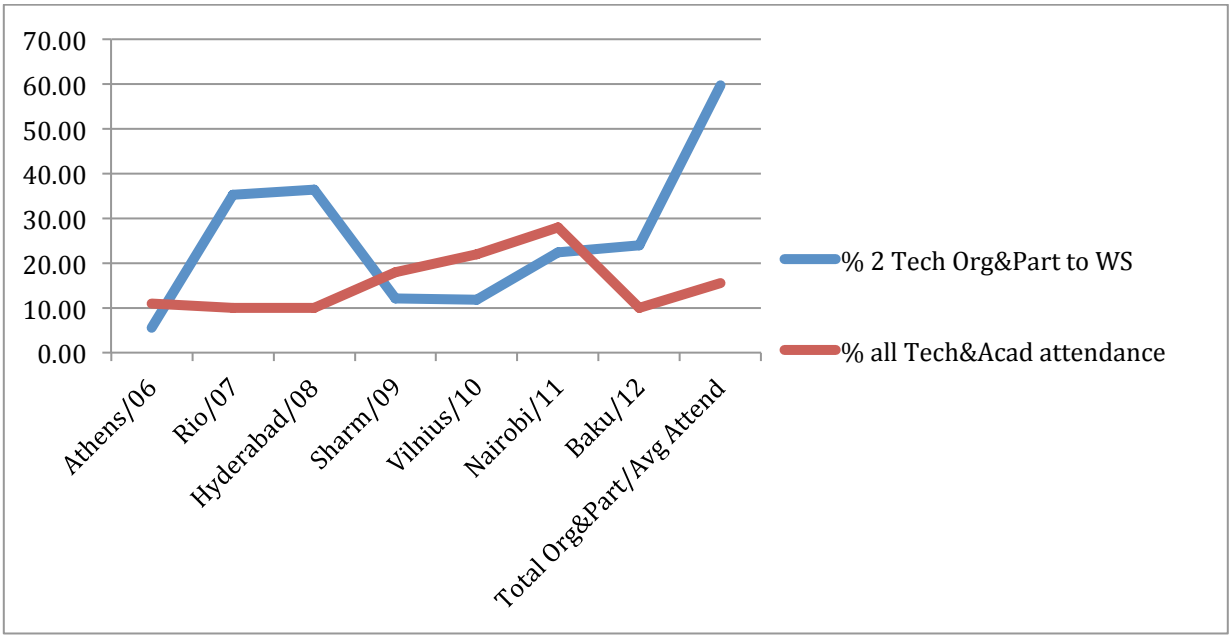

Figure 4.1: Technical Organizations Participation level in IGF activities

The two curves of the figure cross each other at two points. The first corresponds to Sharm El Sheikh IGF in 2009, and the second to IGF Nairobi in 2011. Before IGF 2009 and after IGF 2001, we note that the level of involvement of the two technical organizations almost reaches 40% at its peak, while the share of the whole technical community stakeholder group remains around 10% of the overall IGF attendance. However, in the case of IGF 2009 and 2010, and to a lesser extent IGF 2011, we observe an inversed trend, where technical organizations involvement does not scale with its level of attendance, and is even lesser.

These two inflexions have a twofold explanation. The first aspect relates to the IGF evolution in terms of substantive focus and diversification of attendance: until 2009, issues raising high controversy were not directly addressed at IGF, at least not as such. It was then natural to see technical organizations involved a lot in these sessions, with many events dealing with the technical management and stewardship of the Internet. 2009-2011 was a kind of transition period in the evolution of the IGF towards more political issues, in the wide sense of the term; moreover, the IGF itself and all the IGF community were somehow on hold between IGF 2010 and IGF 2011, waiting for the UN decision to extend – or not - IGF mandate by another 5 years period. The second aspect relates to the evolution of these two technical organizations themselves, who opened up to the more political considerations mentioned above,

because of one or more of the following causes: internal tensions, external pressure, and (especially remarkable for ISOC) the deployment of a global strategy to gain a prominent role in the whole Internet governance ecosystem, rather than simply remaining in a stewardship capacity. For all these reasons, both technical organizations restricted themselves to the position of observer, much more than actor of the IGF in 2009-20011.

4.6 Technical artefacts

Technical artefacts and even internet infrastructure can also enact governance. As Musiani and De Nardis note: “there is increasing recognition that points of infrastructural control can serve as proxies to regain (or gain) control or manipulate the flow of money, information, and the marketplace of ideas in the digital sphere” (2014, LSE MPP blog). Governance by infrastructure includes the control of all aspects of the infrastructural stack, including the assignment of domain names, the structural function of interconnection, the hardware platforms that are likely to be used, the data transit infrastructure, and the algorithmic return of relevant links and connections. Some of the ways that this infrastructure is controlled occur through tussles over standardization, as evidenced by the increasing participation of corporate representatives within standardization organizations (see Russell, 2014).

At the hardware level, the importance of independent oversight is one reason for the development of open hardware standards. Also at issue, as highlighted by Musiani and De Nardis, is the level of interconnection between networks.

At the level of data transit, control of infrastructure reinvigorates and recasts geopolitical tensions. The recent completion of undersea cables from Brazil to Portugal, in order to bypass transit points located in the US, where presumably US surveillance apparatus (as well as US corporate interests) would be able to benefit from Brazilian data. This return to infrastructure control as an expression of geopolitical power is also significant as a constraint on expectations of the Internet to operate as a global communications platform.

Finally, the algorithmic return of search results is an area of internet function that is strongly controlled by Google and which impacts on the ability of individuals to gain access to information. Various forms of algorithmic control are investigated in section 4.3 but it is important to note that this aspect of governance through infrastructure impacts fundamentally on the ability of societies to achieve normative democracy.

This list of examples from across the stack illustrates how infrastructural aspects of internet governance cut across a number of areas relevant to everyday life. In particular, the shifts in the cultural climate that have resulted from the revelations of extensive state surveillance have re-invigorated existing geopolitical governance negotiations as well as inspiring mass participation in governance-related policy advocacy. It is thus unsurprising that, in addition to the new actors outlined here, existing actors including states parties such as Brazil are intervening in debates through control of infrastructure. We can also observe such efforts at control in proposals for stricter data-protection controls within the EU.

5 Cross-cutting governance issues

5.1 Governance of, on and by the Internet

It is increasingly clear that the Internet will not be confined to traditional governance domains – indeed, if it can be said to have been designed at all, it seems capable of transcending such domains. This makes it necessary to reconsider the compromises built into the way governance is partitioned, as the strategy of make-do-and-mend applied to existing divisions of power and responsibility is creating more problems than it solves and doing so in ways that magnifies the visible effects while obscuring the causes. To simplify and caricature, consider governance of a 'patchwork quilt' of institutions and norms, including:

- Government, business and civil society entities, tools, modes of action and objectives
- Market, legislative, adversarial, voting, negotiation and coercive forms of interaction
- Technological, economic, societal, cultural and scientific domains of knowledge and power
- Geographical and other jurisdictions, layered together with market segments and sectors

These divisions form a more or less stable (institutional) basis within which people can learn, experiment, make decisions, implement rules, etc. As they do so, they affect each other; this shapes their interactions and – to the extent that it can be linked to institutions, creates the basis for further interventions, rules, organisational structures and so on. Our ability to recognise and willingness to implement useful changes depends on the relevance of the assumptions embedded in those institutions For example, we assume market outcomes tend towards efficiency, that adversarial and tussle-based processes provide an emergent form of intelligence capable of solving problems that resist individual solution, that democratic process and deliberation provide legitimacy and credible accountability, and so on.

When things change in essential ways, these assumptions may be challenged. To take a simple (if highly contentious) example, the principles of free movement of persons, goods, services and capital are assumed to lead – in an essential way – to the fulfilment of common European objectives. Much of the underlying logic is derived from economic reasoning – to lower transaction costs of non-value-adding movements of people, products, services and capital.

The effectiveness of the underlying mechanism is limited by scale and scope and reason. If people, and the goods, services and capital they command cannot understand, identify or anticipate 'better' opportunities, they may not be able to move towards them. Indeed, they may move towards novelties offering only short-term benefits, or back towards old certainties and away from new possibilities or threats (as is the case with climate change). Moreover, the interactions of the Four Freedoms may produce unforeseen side effects. The assumption behind the principles is predicated on equilibrium reasoning; an efficient and equitable society will have only modest, controlled and balanced movements in response to stable and resilient perturbations and the gradual advance of human society. But suppose that one of these resources (say capital) was much more mobile than another (say people or the skills they possess) and that in response to the emergence of a new technology (say the internet)

it was easier to move capital and economic production to where people are than to move people to where the economy needed them to be. Then it might easily come about that a region might find itself starved of employment opportunities – and eventually income – as a result of its own rational cleverness in developing the technology in the first place. If governance was undifferentiated, this would pose no problem – regions could not have absolute advantages over other ones, but only comparative advantages, and every part of the world would (eventually) make its efficient and contribution and reap its equitable rewards. But governance is partitioned and the movement of the four resources mentioned (not to mention information) is not free. Instead, it is prone to turbulence and complexity. Just as we cannot simply assume that free movement will solve all problems (or even the ones it creates) we cannot even assume that all actors are rational, or that our governance institutions can even detect changes before they become irreversible.

The parts of the governance system that are most aware of developing threats, or that (seem to) have the power to intervene, may be most prone to action. This action may strain the relations among parts of the system, causing disaffection and division, and even disruptive change; this is beginning to be obvious across many domains, for example the impacts of economic and environmental forces on the cohesion and power structure of the European Community and the manifest weakness of institutions throughout the world to make progress on issues of economic stability, human rights, peace and security or climate change.

So what is the impact of the Internet, and what are the implications for Internet governance? In simple terms, the **Internet in general, reduces (to near zero) information transaction costs – the costs of storing, finding, moving and re-using information. Digital technology greatly reduces the costs of creating information. Internet increases the scale of human interaction**, accelerates the pace of change, links together individuals and organisations whose fundamental perspectives are widely different and 'delocalises' attention and activity. For this reason, **'layered governance'** built on an assumed hierarchy running from family to community to region to the global level is likely not to describe reality efficiently, though it does persist as a 'toy model' that can be bent to fit observations. Similarly, the assumption that people are **rational in specific ways** – or that they are nudged by their market, societal, legal and political interactions into behaving as though they were rational and that networks of rational individuals behave like large 'compromise' or representative rational individuals - is decreasingly tenable (citation to Nudge book here?). Again, it is flexible enough to appear to describe or rationalise much of the behaviour we think to observe.

What does this change mean in practice? It could mean building better models and 'fixing' the existing institutions – for instance by replacing policy hierarchies with policy networks or by extending rationality based models to behavioural models. But this may miss the point that the existing divisions of power and responsibility (that which belongs to individuals, to firms and to governments and the relative merits of rules and rulemaking) may no longer be fit for purpose and that – this being the critical point – it may not be possible to stand back, diagnose and devise a solution to the problems that trouble us.

A recent think-piece by Doyle makes the case for a more fundamental change – albeit largely within the existing set of institutions[6]. He states that:

> "Internet-ready legislation means a comprehensive process of deciding whether legislation is the right approach – given slow speed and that nudge may work better - and if so identifying new, fundamental characteristics which need to be addressed. To rely only on legacy concepts from earlier market paradigms risks irrelevant or ineffective legislation."

He points out the growing complexity of societies (complicated more than complex in the technical sense) and draws attention to a growing welter of small, incoherent and slow-to-change rules and regulations, that expands despite the growing consensus that they constitute an important and damaging obstacle to individual initiative; moreover, citizen's faith in the 'rule of law' (or the 'law of rules') has been further shaken by the financial crisis and the manifest failure of the best organisations and minds effectively to learn the lessons it offers.

This does not mean that fewer and lighter touch rules are necessarily better[7]. Historically, individual attempts to surmount, circumvent or change burdensome rules provide both a necessary irritant for the improvement of governance and a 'platform' for the coming-together of individuals whose interests are entwined but who might (or should) never engage effectively in the normal course of business. If complexity – in its technical sense – teaches us one thing, it is to beware of false monotonicities: if a bit of simplification, lightness of touch, responsiveness and adaptability are good, that more must be better. It also teaches us to pay attention to disparities; a complex adaptive system of governance that works well may fail if part of the system begins to operate at a much faster or slower rate – even if there is no change in the agenda it pursues or the methods by which it considers problems and devises or implements solutions. The further implication is that it is not possible simply to aggregate responsibility or discretion to a benign central authority or disaggregate to an empowered citizenry or business ecosystem; institutions and individuals interact with others and there are things that cannot be perceived and actions that cannot be taken at the individual or the collective level.

To sum up, governance is not a matter of mechanism design so much as of self-organisation. The 'design perspective' is an artefact of history, of sovereign institutions sustained by efficient markets and effective democracy, which had the luxury of time in which to reflect and of discretion with which to act. When their power began to slip, they were rescued by crises that reinforced the 'toy model' of how societies function.

The Doyle analysis does point to a possible route forward in the form of twin initiatives that move in the direction of a lighter-touch and more responsive mode of governance. The REFIT programme, which seeks to rationalise and streamline the formal and coercive elements of public-sector governance, and the ECOSEARCH initiative, which exemplifies a flexible, trusting form of governance that encourages the flow of information as a means of simultaneously improving the effectiveness of rules, the equity of rule-making processes and the incentives for all concerned stakeholders to find effective ways to seek to understand and influence market outcomes.

[6] Doyle, J. (2014) 21st Century governance opportunities, paper on file with JRA4 authors.
[7] An interesting future debate would be about descriptive (mandating goals) and prescriptive (mandating ways) regulation. Descriptive regulation could be largely independent of technological environment. Another interesting debate would be a comparison of whether the Anglo-Saxon legal tradition with strong emphasis on case-law is more flexible and future proof that the continental tradition.

As an example, consider the difference between the 1929 crisis that led to the Great Depression and the present malaise. The Crash of '29 was sudden and had the effect of reducing societal differences, being concentrated – as economic power was at the time – in a few highly-visible areas that largely shared a common intellectual perspective. Even so, it took many years and another World War to recover; this recovery took the form of the institutionalisation of the Welfare State linked to a regulated competitive economy, with highly-coercive international institutions (Bretton Woods) connecting the two. The current 'crisis has not had the same 'levelling' effect, the 'necessary war' has not materialised and international cooperation is regarded as impossible, and a

Without repeating the Doyle analysis, it is appropriate to highlight a few points of particular relevance to the cross-cutting aspects of governance in the Internet context. First, the analysis recommends speed and agility. It goes without saying that this should not be recommended as a universal principle, but rather as a means of addressing a particular perverse aspect of today's division of power, in **which increasingly myopic political actors are in charge of making the most persistent decisions** (e.g. treaties and statute laws) while those able – or forced – to look beyond the present (industries) make the most dynamic decisions (buy, sell, invest …). If the decisions of these two sets of actors did not interact in such complex ways, this might be sustainable. But as the failure to get to grips with issues such as privacy, human rights and climate change illustrates, it is not.

Second, any governance process operates on the basis of observations and analysis, both retrospective and prospective. The information and deliberation, in turn, are shaped by institutions and rules which determine what is observed and how the observations should be shared, processed and interpreted. If the frames of reference change too slowly, emergent phenomena will not be detected (or at least not commonly recognised and responded to) in time; instead, they will be interpreted using obsolete frames of reference and managed using out of date rules. On the other hand, if things change too fast, so that both frames of reference and legal or institutional certainty are absent, only 'big data' forms of perception, communication and intelligence are available. Long-term and structural developments will be missed, learning will merely change (but not deepen) and interested parties may spend considerable time in trying to channel or distort the flood of current small-scale data – or simply in magnifying it to the point where proscribed actions can be hidden in plain sight. In the process that essential characteristic that differentiates governance from decision-making by tying together expectations in different places, times and contexts (trust) may also be lost and replaced by a brute and uncomprehending surveillance.

The overall lesson, however, remains the same; open up the flow of information and the platforms for its exchange and interpretation. This will inevitably threaten existing power and responsibility; it will be disruptive and costly. But the disruption is already upon us and the strains are beginning to accumulate. If we do not invite information and parties beyond those currently involved in or bound by policy making into the governance domain, we shall continue to pay attention to the wrong things and to channel our best and brightest efforts away from the goal of a well-regulated system.

5.2 Cross-cutting governance domains

Governance domains refer to areas of governance – aspects of Internet or connected behaviour – that have been associated with governance entities (e.g. ministries, self-regulatory bodies, standards bodies, etc.). For the sake of convenience, they may be characterised as technical, economic and societal. They cannot be entirely separated, however, because the structure of the Internet and the activities and institutions that take place in conjunction with it overlap substantially.

We might start with a layered view of the Internet, elaborated from the canonical OSI-type model. This can be extended into several regulatory areas. First, **technological and scientific domains** that contribute specific knowledge and implementations – often in response to needs, opportunities or threats arising on the Internet and taking the form of artefacts, systems and intangible protocols, norms, designs and architectures of a technical nature. Second, **economic activities** carried on in order to secure the tangible and intangible inputs needed to provide, maintain, operate and monitor the layers of the Internet; or to exploit (in one layer or vertically across several layers) services coming from other layers; to provide services of use to other actors; or to use Internet-hosted services to conduct business and commercial operations, or analyse and interpret data relating to economic activities, etc. Third, **societal activities** that are facilitated by the Internet, and/or a result of Internet-mediated interactions, or even specific to the Internet

Conventional governance analysis recognises a range of interdependences among technical, economic and societal domains. **Concerns from one domain** may be addressed by organisations or instruments rooted in another: the quasi-regulatory functions performed by DNS system players like ICANN or Nominet; the 'CSR' activities of regulated telecom providers; content control activities of policing entities like CEOP; use of spectrum auctions to control market power; or the development of tax arrangements to limit base erosion and profit shifting which has both technological and societal implications. **Ancillary services** that support governance may be provided across institutional or domain boundaries (e.g. traffic monitoring and QoS data). There may be **inclusion in formal governance arrangements** of presumed 'value chain' relationships (e.g. ISP liability for users' activities).

Increasingly, it is recognised that linear models are inadequate, and that concepts of efficient and effective governance need to be re-thought. Value chains are giving way to **'value networks'** characterised by non-linear, reversible, state-dependent and dynamic linkages. At the same time, more examples are surfacing of the endogeneity of power, in which flows of influence, information and interests change as they are applied or as technical, economic and societal changes evolve

It is also necessary to observe that the domains themselves are subject to change; we can already observe different structures (alignments of power, participation, responsibility and capability) in different countries – for instance, the extent to which self- and co-regulation form an explicit part of formal regulatory strategies, the competition, consumer protection and related powers (if any) of national (communications) regulatory agencies and the way these are coordinated with analogous general competition, consumer protection, etc. powers or with sector-specific powers in other domains. Another example is the presence or absence of Internet regulation as a formal power or statutory obligation, and the evolving varieties of 'converged regulation' and their informal analogies.

Finally, there is a need better to understand the interaction of governance domain structures proper to or arising from the Internet with both 'legacy' and emergent governance domains, since this will determine whether, in a given situation, a governance issue will belong to one or another entity and whether new developments will be interpreted as:

- Making an existing issue harder to manage;
- Creating wholly new governance problems;
- Rendering former governance issues obsolete or the available solutions counter-productive;
- Calling for the inclusion or empowerment of new players or organisation and the disestablishment of others; and/or
- Requiring new powers or instruments or modification of existing ones (e.g. law, regulation, codes of conduct, technological or design 'solutions' information exchange or mandatory provision, sanction for collaboration/enforced competition).

This would determine whether, for instance, privacy or security concerns should be handled by individuals based on general principles of informed consent, protected by ex-ante fundamental rights or dealt with by specialised measures in e.g. financial, health, political, etc. contexts.

5.3 Cross-cutting governance zones

Beyond the issue of cross-cutting domains, there is a need to understand with greater clarity the concept of overlapping jurisdictions or *governance zones*. In one sense, this has long been noted as a specific challenge to Internet governance; many of the governance bodies are either formally or effectively bound to specific market sectors, geographic areas or formal governments, while the issues they seek to tackle do not simply transcend such boundaries, but may be shaped by their existence. The above example of base erosion and profit shifting illustrates this, as do patterns of data mobility across domains with different levels of privacy protection.

- One aspect of this is the potential for a 'race to the bottom' as governance zones compete to attract profitable enterprises and activities and to encourage the 'emigration' of less-desired ones.
- A second is the linkage across domains caused by inter-zone spill-overs – for instance, the impacts of Internet-hosted outsourcing on education and investment conditions in source and destination zones.
- A third factor is the potential aggregation of such zones – e.g. the movement of competence for network operation, content, privacy, data quality, etc. to higher or lower levels of aggregation or the formation of networks of bilateral and multilateral coordination arrangements.
- This aggregation may more generally be understood as a rewiring of policy networks; this has been discussed in the political science literature (Cave, Grant, Medley et. al. 2008); what may be significant here is that the transfer of power to different levels may militate in favour of or against specific framings of governance issues or the use of specific instruments. Continuing the example of tension between Internet and non-Internet domains, it may be easier to agree the creation of observatories allowing global information collection and sharing than to agree common standards or reciprocity-based enforcement of specific rules.

5.4 Cross-cutting instruments

In addition to instruments from one domain or zone being used in another, it is possible to envisage hybrid instruments that combine a range of different features. For example, new forms of corporate governance (or modification of existing structures) could be designed to allow collaborative deliberation on matters of common or overarching interest in ways that did not lead to market failure.

Another form of hybrid may involve the provision of governance services between entities in which one governance body or network may collect information or conduct experiments that are of little relevance to its primary concerns, but which it can more easily attempt (e.g. because of its market position, technical competence or membership structure) than another body that is in a better position to make use of the results. A better known example is *regulatory forbearance* which often takes the form of one organisation (e.g. a firm or group of firms) performing a function that is in the interest of another (e.g. a regulator or the government or society it represents) in exchange for greater autonomy or discretion or indeed greater market power.

Special cases of such hybrid instruments are already under discussion in relation to network-mediated and algorithmic financial trading (e.g. to combine prudential and macro-prudential regulation by means of monitoring information and transaction structures or through the implementation of network-specific circuit breaker rules) and Internet-affected healthcare and health information (e.g. to separate patient-specific and anonymised health records, to incorporate 'real-world' and clinical data and to implement incident-specific changes in access and processing privileges).

5.5 Governance organisations; participation and incentives

Just as the set of governance issues and governance competences form (interacting) networks, so do the participants, from individuals to organisations. This produces a rich set of 'policy linkage' possibilities, for instance when the same individuals or entities that perform technical governance also have market contact and serve as 'market-makers.' We can distinguish three aspects of this complexity.

1. Participation – who joins governance, why, what resources do they bring?
2. Incentives – what does participation do to change their perspectives, powers and behaviour (what consequences for governance-related and 'secular' activities)?
3. Shared identities – how do their preferences, powers, information and understanding come to overlap, converge, etc. through the exercise of governance?

5.6 The formation of well-regulated systems and new failure modes

A well-regulated system is one that functions as its participants expect it to. The property of being well-regulated does not imply the existence of a regulator, or even the persistence of a given allocation of power, responsibility, information and roles. If an efficient and effective allocation means that these attributes are aligned, then as things change the roles should change. Complex systems are capable of this kind of change in what is called self-organisation. However, this self-organisation tends towards states that may not be in the interests of participants. **Complexity science** has many models of 'self-organised criticality' that gravitates towards disruptive phase change boundaries. This tension is not new in the study of designed governance, of course; the tension between stability (or the urge to seek and defend security) and innovation is well-known and poses a fundamental challenge to market and

democratic governance paradigms. The key Internet novelty is that in dynamic network environments the structure of these dynamics may not be visible or capable of anticipation.

Some simple 'rewiring' can increase the odds of a useful form of self-organisation and the embedding of structural dynamism in regulation, without the need for global government' to make it happen. For instance, mandating the making available of commercially relevant information (e.g. food labelling or quality of service) on any website serving customers can bind Internet actors wishing to sell in those areas. Once they comply, it is virtually costless to provide the same level of information to their customers in other markets – who in the interim will have become aware not only that such information is provided, but also of its contents. In this way, jurisdiction provides the traction, but contagion (through market competition) provides the reach.

This contagion is magnified by the fact that Internet interactions are highly diversified and variable. As Doyle puts it "nudge becomes shove on the Internet." The provision of information and the tools necessary to collect, upload and interpret it, cross domains and time. This on its own does not guarantee efficient or desirable results. Doyle draws attention to the way in which energy labelling has created a market for more efficient appliances and the societal reinforcement of environmental preferences. However, the supporting analysis also showed that the price differentials between more- and less-efficient appliances were much larger than the implied energy savings, even when valued at full social cost. The network epidemiology of information-based governance triggered by allowing individuals to communicate freely about the goods and services offered to them merely makes improved market governance possible – it does not compel it (any more than the four freedoms compel the realisation of an efficient and equitable Common Market).

It is still necessary to use deliberative platforms for rule-making and reform. The 'relaxation' implied by light-touch and democratically empowered rulemaking simply means listening to all kinds of affected parties instead of limiting participation to those with 'standing.' This *could* complicate the operation of legislative, legal and commercial processes alike. But it need not (self-organisation and the 'wisdom of the herd' come in here), especially if the object of the exercise is to review regulatory agendas to differentiate issues whose understanding and management are:

- made harder by a given change (e.g. the cloud);
- made easier;
- entirely new or
- rendered irrelevant or unnecessary to deal with.

The speed of governance processes is likely to change. In some sense, many aspects will be accelerated tremendously, becoming in effect little more than **algorithmic regulation** (regulation by, rather than of algorithms). This, in turn may reduce incentives to interfere with governance processes for selfish or ideological reasons, and may produce a more concentrated and refined deliberation when the automated rules are put in place. At the same time, the presumed availability of much more information on compliance may improve compliance rates, reduce the deadweight loss of monitoring and enforcement and thereby increase the resemblance between the post-regulation world and the solution of the problem that led to the creation of the rules (fewer unintended consequences). This may not be an unalloyed benefit; compliance may become less considered, nuanced or informative as to the true costs

and benefits it entails. But overall it may encourage those subject to rules to become more involved in informing rulemaking as opposed to merely complying. In this way, they can volunteer innovative alternatives to compliance that have the same (measured) impacts.

Ultimately, the processes of designing rules may change out of all recognition; rulemaking may move closer to a non-coercive consensus-driven or multistakeholder) ideal. Indeed the distinction between the rules of the game and the play of the game (and thus the role of the 'designer' of governance) may disappear altogether.

6 Conclusion: challenges in inter-disciplinary analysis of regulation/governance

Regulatory concepts in D4.1 (multistakeholderism and co-regulation) and D4.2 (algorithmic regulation, conceptual model of regulation processes) are becoming mainstream, as are ideas portrayed in official JRA4 workshop (measuring effect of multistakeholderism) and in *'Regulating Code'* (Brown/Marsden 2013, completed February 2012), our first book-length collaboration with JRA5.

The case studies demonstrate the breadth and depth of emerging institutions and actors in regulation and governance, from open interoperable hardware, domain name system (DNS) governance and Border Gateway Protocols (BGP), to international organisations and multi stakeholder governance (MSH), to bottom-up communities creating innovative copyright solutions. Moreover, many ideas to educate politicians about regulating the Internet have been accelerated by the Snowden revelations, causing an intense interest in Internet governance, which we exploited in the Internet Governance blog month on the LSE Media Policy blog, organised with SEA2, featuring both our work at the IGF 2013 and the #*PostSnowden* event hosted by Dr Alison Powell at LSE. In 2013-14, we continued work on all these strands, notably with Marsden's contributions to the three Code of Practice Agora meetings hosted and chaired by Director General Madelin, as member of its Steering Group, and with contributions by all members to inter-JRA collaboration, notably by speaking at other JRA workshops (JRA6, JRA1, JRA2) in summer 2014.

6.1 Introduction: Holistic Regulatory Analysis

We begin this concluding chapter by noting the importance of integrating social and technical sciences has been integral to both the innovation engine that the Internet represents, and its success. Now that the Internet, and digital information sharing more generally, is becoming the growth engine for the post-industrial economies, these lessons need to be reinforced throughout policy making, notably in both the assessment of regulation and the use of regulation of technology funding. *Nature* (2015) editors state:

> "If you want science to deliver for society, through commerce, government or philanthropy, you need to support a capacity to understand that society that is as deep as your capacity to understand the science."[8]

That means using social science inputs to help support better regulation/governance of society.

We detail the implications for a research agenda into both regulatory impact assessment, and regulation of support for science and technology. We find a continued lack of integration across particularly between technical and social sciences in both cases. Marsden (2001) wrote: "The omission of research from nationally-oriented agendas due to funding and resource constraints, is compounded by the disciplinary

[8] Nature (01 January 2015) *Time for the social sciences: Governments that want the natural sciences to deliver more for society need to show greater commitment towards the social sciences and humanities* 517, 5 at doi:10.1038/517005a

gulf between social scientists and computer scientists"[9]. While EINS has played a useful small role in bridging this gulf, more systemic research is needed.

We begin with governance of research funding. Issues here arise with respect to fundamental regulatory requirements for new technologies, notably in privacy but also security, interoperability and other respects. Whereas regulation is often considered reactive, in the field of scientific research it can be proactive, saving vast time and expense in ensuring that innovation meets basic societal needs in its planning. The calls for a 'Magna Carta for the Internet' in the wake of the Snowden revelations miss the point that since the OECD 1980 *Guidelines on the Protection of Privacy and Transborder Flows of Personal Data*[10], and especially since Directive 95/46/EC there has been such a document in regard to privacy. As our colleagues in JRA5 point out in regard to Privacy by Design, the standard use of such guidelines in funded research would prevent some of the most egregious failures to innovate with basic concern for human dignities. These are not difficult outcomes to effect, though it requires attention to social science and basic regard for regulation in the evaluation of bids to for instance European Research Council or Horizon 2020 funding[11]. A simple initial answer may be to ensure a social scientist with privacy regulatory experience is involved in evaluating each bid with some personal data component.

Evaluation of funding needs connecting to the policy process to ensure regulatory outcomes can be matched to potential innovations in technology. A classic case in point of regulation anticipating and responding to such concerns is the Internet of Things, where the Commission introduced several innovations in the policy process to address regulatory concerns, having been intimately involved in the funding of such components as RFID[12]. A rather less successful such example might be network neutrality, where the funding of Quality of Service did not come accompanied by a commitment to ensuring an open Internet with fundamental freedoms observed in implementing so-called 'Specialized Services'[13]. As a result, such regulatory requirements have had to be retrofitted into the ongoing deployment of such

[9] Marsden, C. (2001) *Towards the Hyperglobalisation of the Individual: How the Ubiquitous Internet Will Make the International Political Economy Increasingly Dynamically Unstable* at http://ssrn.com/abstract=1578203 or http://dx.doi.org/10.2139/ssrn.1578203, also Marsden, C. (2004) "*Hyperglobalized individuals: the Internet, globalization, freedom and terrorism*", foresight, Vol. 6 Iss: 3, pp.128 – 140 DOI http://dx.doi.org/10.1108/14636680410547735

[10] http://www.oecd.org/internet/ieconomy/oecdguidelinesontheprotectionofprivacyandtransborderflowsofpersonaldata.htm

[11] See http://ec.europa.eu/research/participants/portal/desktop/en/experts/index.html noting that data protection forms part of an illustrative list under research ethics, and http://ec.europa.eu/research/participants/portal/desktop/en/support/legal_notices.html

[12] See Commission Decision of 10 August 2010 setting up the Expert Group on the Internet of Things. OJ C 217, 11.8.2010, p. 10–11 and EC (2013) Conclusions from the Internet of Things Consultation http://ec.europa.eu/digital-agenda/en/news/conclusions-internet-things-public-consultation

[13] The European Commission had to force the UK Government to amend its privacy and data interception legislation in 2011 in response to the PHORM-BT privacy invasive scandal of 2006-7. See Marsden, C. (2012) *Regulating Intermediary Liability and Network Neutrality*, Chapter 15, pp701-750 in Walden, I ed.'Telecommunications Law and Regulation' (Oxford, 4th edition).

technologies[14]. Much time and effort can be saved by ensuring that regulatory requirements are addressed at an early stage in such processes, through standardisation and implementation of privacy impact assessments for instance.

A pressing need is to strengthen the EC capacity in foresight for technological innovation in the area of Internet policy. EINS itself grew out of three pioneering and highly successful foresight exercises, Towards a Future Internet (TAFI)[15], Reflection Group on the Future of Europe[16], and EIFFEL[17]. While there is a small scale Roadmap exercise within EINS itself, and the Internet and technological issues are prominently represented in EU strategic work such as ESPAS[18], there is a clear need for a much larger scale foresight exercise identifying the many challenges that are presented by digital social innovation (DSI)[19], notably those identified by JRAs 4,5,6 within this project. We also note that the Code of Practice Agora provides an example of a limited but successful umbrella gathering of experts on co-regulation, which may prove a template for a DSI Foresight assembly of experts. We acknowledge certain issues arise with regard to expertise versus advocacy in DSI, which is to some extent mapped onto other policy controversies, for instance on privacy, net neutrality and so on. The CAPS 2014 event, at which JRA1/6 speakers were involved, showed the potential and need for a rigorous foresight exercise to be conducted[20]. Professors Turk, Cave, Marsden and others have been involved for an extended period with foresight exercises in information technology and society, and would be pleased to contribute to such an exercise.

We note a particular need for policy making in dealing with disruptive innovation. 'Black swans' have been an issue of great interest to policy makers in the wake of the long recession and Euro crisis since 2008[21]. Turk details the events in 2008-10 that led to the Reflection Group final report: June 2008's failed referendum in Ireland; September's collapse of Lehman Brothers; December 2009 when the Treaty of Lisbon came into force; March 2010's Greek and Euro crisis that is ongoing. One could add in information policy the various attempts to suggest cyberwar culminating in the North Korea-Sony farce of December 2014; Assange's work in Wikileaks 2008-11; Snowden's revelations since 2013; the NetMundial initiative of 2014[22]. A foresight panel would be

[14] See BEREC (2014) *Monitoring quality of Internet access services in the context of net neutrality* BoR (14) 117 at http://berec.europa.eu/eng/document_register/subject_matter/berec/reports/4602-monitoring-quality-of-internet-access-services-in-the-context-of-net-neutrality-berec-report

[15] Blackman, Brown, Cave et al (2010) *Towards a Future Internet: Interrelation between Technological, Social and Economic Trends* at http://ec.europa.eu/digital-agenda/futurium/en/content/towards-future-internet-0

[16] See on final results Turk, Z. (2010) http://www.slideshare.net/ziga.turk/project-europe-2030

[17] See http://www.fp7-eiffel.eu/publications.html and Trossen, D. (2010) *The EIFFEL Think Tank* http://www.slideshare.net/FIA2010/1-eiffel-fia-171210-6503523

[18] See »The World in 2030«, http://europa.eu/espas/pdf/espas-outreach-leaflet.pdf

[19] See EC (2015) H2020-ICT-2015 Collective Awareness Platforms for Sustainability and Social Innovation at http://content.digitalsocial.eu/resource-category/funding-and-support/

[20] See http://caps-conference.eu/ and more generally http://caps2020.eu/ for community action platforms.

[21] Taleb, Nicholas (2007) *The Black Swan: The Impact of the Highly Improbable*, Allen Lane.

[22] See some Internet Science outputs on black swam effects: Marsden, C. [2015] Technology and the Law, Foundation Chapter in International Encyclopedia of Digital Communication & Society Wiley & Sons; Marsden, C. [2014] Hyper-power and Private Monopoly: the Unholy

at least the start of an attempt to identify some of the issues at stake and potential outcomes. Cave's experience in integrating complexity analysis into regulatory structures, notably in academic work at Warwick and advisory work with the UK Treasury and Department of Business, is an example of where such foresight exercises can shape regulatory practice[23].

6.2 Regulation and Internet Science

Better regulation requires better evidence of impact and actors. Two outcomes have been presented to the EC in the CoP Agora to improve the evidence base. The first is formal research/impact analysis task for EC, rather than just claiming Option Zero if regulation is undertaken by corporate/NGO/standards actors instead of government (i.e. the other two points of the regulatory triangle in our case studies). For example, hardware governance and BGP needs to be understood by government in order to formulate useful policy even in the absence of formal regulation .How do these emergent areas interrelate to other parts of Internet governance? How does such governance interrelate with regulation, for instance where new actors and institutions (including IGOs as explored by Marzouki) are forming new coalitions of interest and epistemic communities?

JRA4 has in the 2012-14 period identified new areas for regulation and governance – content, information, flows, liabilities, security. Note that the EINS bid was put together in 2010 in the wake of Wikileaks 'Cablegate' Iraq War Logs, yet developed with JRA5 through the post-Snowden environment. Further research into areas such as cyber-security, jurisdiction and borders, and standard setting is needed urgently, as our research has shown[24].

These new areas also shine a light on the increasing role of non-traditional actors – institutions, third sector, MSH, ISPs, social networks, and participation of individuals in policy related activism as evidenced by responses to the SOPA and PIPA legislation in the US and the ACTA treaty transnationally. How do we understand the meaning of online activism? Actors who are not strongly involved, how do they position issues? What made a difference was stakeholders acting through main political veins, instead of the network make-up of actors. You can create new discourses but not everything shifts at once. Dynamic activities are taking place in different places. Recent work by Powell[25] identifies how participation in policy making employs networked dynamics but also created new discourses related to the internet that countered the ways that governments had attempted to position these regulatory interventions.

In addition to the 'what' and 'who' questions, our research also reveals 'where' answers: non-conventional venues – international, non-state, code-based, for instance in the case studies of BGP, Creative Commons, IGF/NetMundial. We are moving towards a more multistakeholder environment, and our case studies demonstrate this, with more forms of regulation by market actors, away from legislative bodies. 'Exotic'

Marriage of(Neo) Corporatism and the Imperial Surveillance State Critical Studies in Media Communication Manuscript ID: RCSM-2013-Nov-0013.R1

[23] http://www2.warwick.ac.uk/fac/cross_fac/complexity/research/

[24] Note Marsden and Brown are Advisory Board members for UK ESRC-funded

[25] Powell, A. (2013) "Assessing the influence of online activism on internet policy-making: SOPA and ACTA" at GIGANet conference, Bali Indonesia, October 17 2013.

actors include Anonymous, hackers, Wikileaks and others, and have a strong impact on Internet governance. The recent calls by Chancellor Merkel and others for a 'sovereign cloud' is related to BGP regulation and the Snowden revelations. Governments need to **commission a research programme to understand** these processes, actors and venues.

Our case studies illustrate 'how' participation can occur in many modes, but they also stress that effectivelparticipation in standardization and governance is not only a matter of greater numbers of people representing different groups, but also contingent on the legitimacy of spaces for participation. For code-based governance, this is often linked with expertise, but as the cases of BGP and hardware licensing demonstrate, this legitimacy also emerges in relation to other actors and through the use of the technical solutions. Standards setting processes can be hijacked to further private interests. In some case studies, we see that the more stakeholders, the less effectiveness - see also climate change or cyber security. Experts, notably engineers, may migrate to another forum to avoid tedious legitimacy discussions and to conduct 'real work'. Thus, institutional contexts remain important, and understanding thus depends on development of new analytic models that:

1. Identify the ways that governance and legitimacy emerge socio-technically
2. Employ analysis of power, including the power of policy networks and the significance of discourses as developed by activists, individuals, the media and governments
3. Avoid justifying Potemkin multistakeholderism by separating policy domain and policy issues.

ICANN demonstrates itself as a Potemkin stakeholder process. Processes it puts in place are post-facto opportunities for input. Loss of legitimacy of institutions is important, whether due to mission creep or issue linkage. Take into account a separation between policy domain, and policy issues. As a body stultifies, it can become global and irrelevant; if an issue is becoming more important, more actors become involved e.g. the ICANN London meeting had a record number of participants but more people showing up does not necessarily lead to more influences on outcome. How do you **separate increased participation from decision making** in drafting new processes? What do you do when greater participation breaks effectiveness? Proximity allows stakeholders to take each others' interests into account, but a research question that emerges is: Do we take into account the direction of 'travel' in the case studies, e.g. downstream effects? Repulsion and attraction of different multistakeholders is a **dynamic process that needs more research**.

Now we ask the 'how' in creating solutions. Economic-technical efficiency and human rights reasons predominate in the emergent areas studied, net neutrality as a case in point. Solutions could involve non-traditional methods such as complexity, behavioural solutions, co-regulation, filtering, private censorship, licensing and contracts (see ICANN and Creative Commons case studies), security audit and liability rules. We can identify a gap between case studies: processes that are more deliberative, or processes that depend on state legitimacy. A **new institutional analytical model is emerging** that is based in policy networks literature, epistemic communities built around issue areas such as: net neutrality or BGP governance, domain name governance. Issues themselves have actors, accumulate people and

define powers and instruments: applying institutional context defines these emerging regulatory communities.

We note the fundamental nature of informational challenges for global public goods including governance (with new venues for international state-firm diplomacy) and security (both of supply and contagion risks). The alarming lack of expertise revealed by the recent escalating calls for 'cyberwar' and sanctions against extremely under-developed information economy North Korea, and retaliatory strikes between states hides a much more interesting need for informed debate about encryption-by-default and liabilities for poor security by companies such as Sony Corporation and Booz Allen Hamilton (who employed Edward Snowden). The rise of the policy agenda surrounding privacy in the wake of Snowden's revelations is often obscured by the surveillance industry's calls for greater intrusion against real or inflated risks rather than sensible evidence-led policy. Global public goods are too important in this sphere to be left to corporate lobbyists without a **robust independent scientific evidence base**. Both within EINS wider affiliate network, and the research community generally, there is a need to **nurture the independence of security researchers** who can robustly analyse real rather than invented risks.

We finally offer some concluding thoughts on methods. In searching for hard regulatory cases, we have devoted our case studies to understanding actors with empirical analysis of method. Our official workshop in October 2013 asked is multistakeholderism a reality? Our analysis reveals that multi-stakeholderism requires legitimacy. Thus, we need to **expand our methodological toolset** so that we understand how this legitimacy is constructed, in order to avoid creating the conditions for Potemkin multistakeholderism. Our case studies highlight sites and methods for undertaking this work, but we also identify, for example through the JRA4 workshop at the 2013 IGF, other methodological and empirical sites and approaches. To construct the possibility for real multistakeholderism we need to understand the **technical and social aspects of governance**, and to work constructively on developing methods in this area. We urge the European Commission and member states to **urgently address the need to strengthen the research base** in this vital agenda.

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