

Inter MEDIA

THE WORLD'S MOST INFLUENTIAL TELECOMS AND MEDIA POLICY, REGULATORY AFFAIRS AND COMPLIANCE JOURNAL

AUTUMN 2013 | VOLUME 41 | ISSUE 4

INTERNET: THE FIFTH ESTATE

William Dutton writes on how the internet is becoming a new democratic force

DIGITAL TV: THE REVOLUTION

With the digital switchover at various stages globally, Michael Starks reviews progress

HUNGRY FOR BANDWIDTH

Sub-Saharan Africa needs broadband – Alison Gillwald reviews current status and policy

VIEWPOINTS

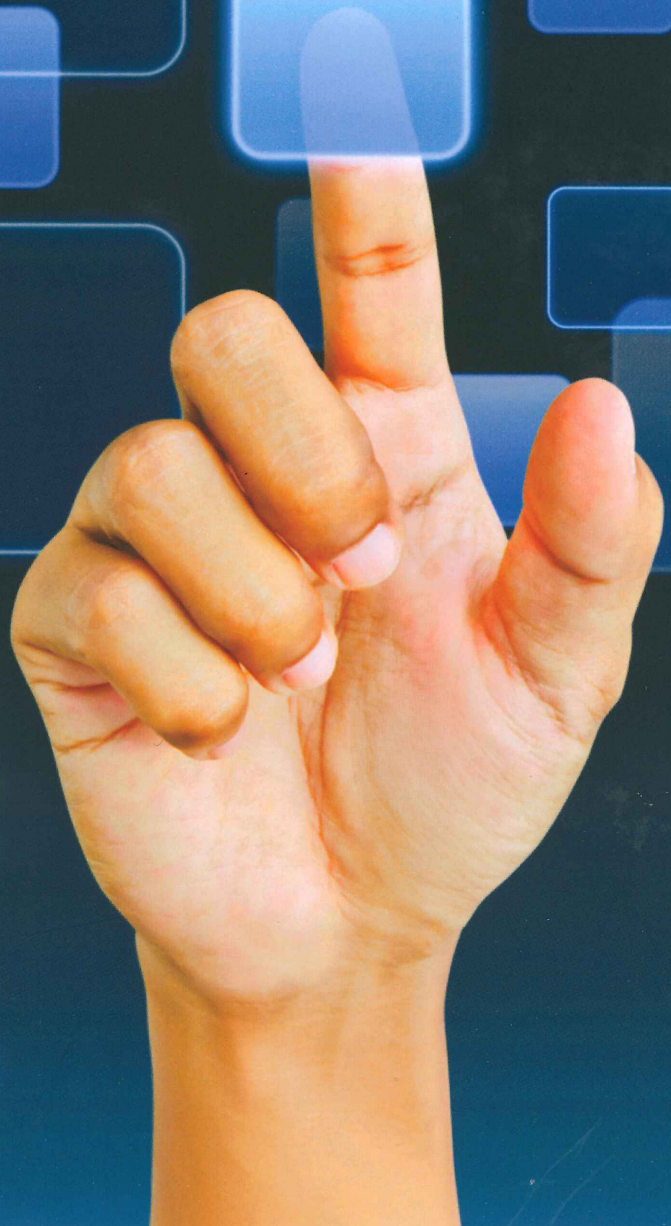
From regulators and senior industry people



Picking the best internet

Why we need federated
internets, not just one

BY ELI NOAM



TOWARDS THE FEDERATED INTERNET

A one-size-fits-all internet was good but is no longer fit for purpose in a world with wide diversity. We need to relax global governance and let multiple internets drive choice and innovation, says **ELI NOAM**

Following the acrimonious breakdown in treaty negotiations in Dubai on the new International Telecommunications Regulations for the internet, there has been a lot of talk about a ‘digital cold war’, in which countries and regions would be at fundamental loggerheads over ways to run the internet. And there has been a lot of talk about how calamitous this would be, weakening a system that has brought us many benefits and creating instead disjointed pieces operating under different legal rules and technical principles.



The single internet was a good system in the past but not in the future. Let us think ahead with anticipation and not backwards with nostalgia.



internet is the past but not the future. And that the future is a federated internet, not a uniform one.

I used to think that this was regrettable but unavoidable. Even that upsets many people: how can one doubt the integrity of the one internet that has served us so well? Now, I want to go one step further to argue that it is not regrettable at all. It is actually a good thing. The single internet was a good system in the past but not in the future. Let us think ahead with anticipation and not backwards with nostalgia.

The past internet was a system of interconnection and interoperability arrangements created to a large extent by computer scientists, most of them in

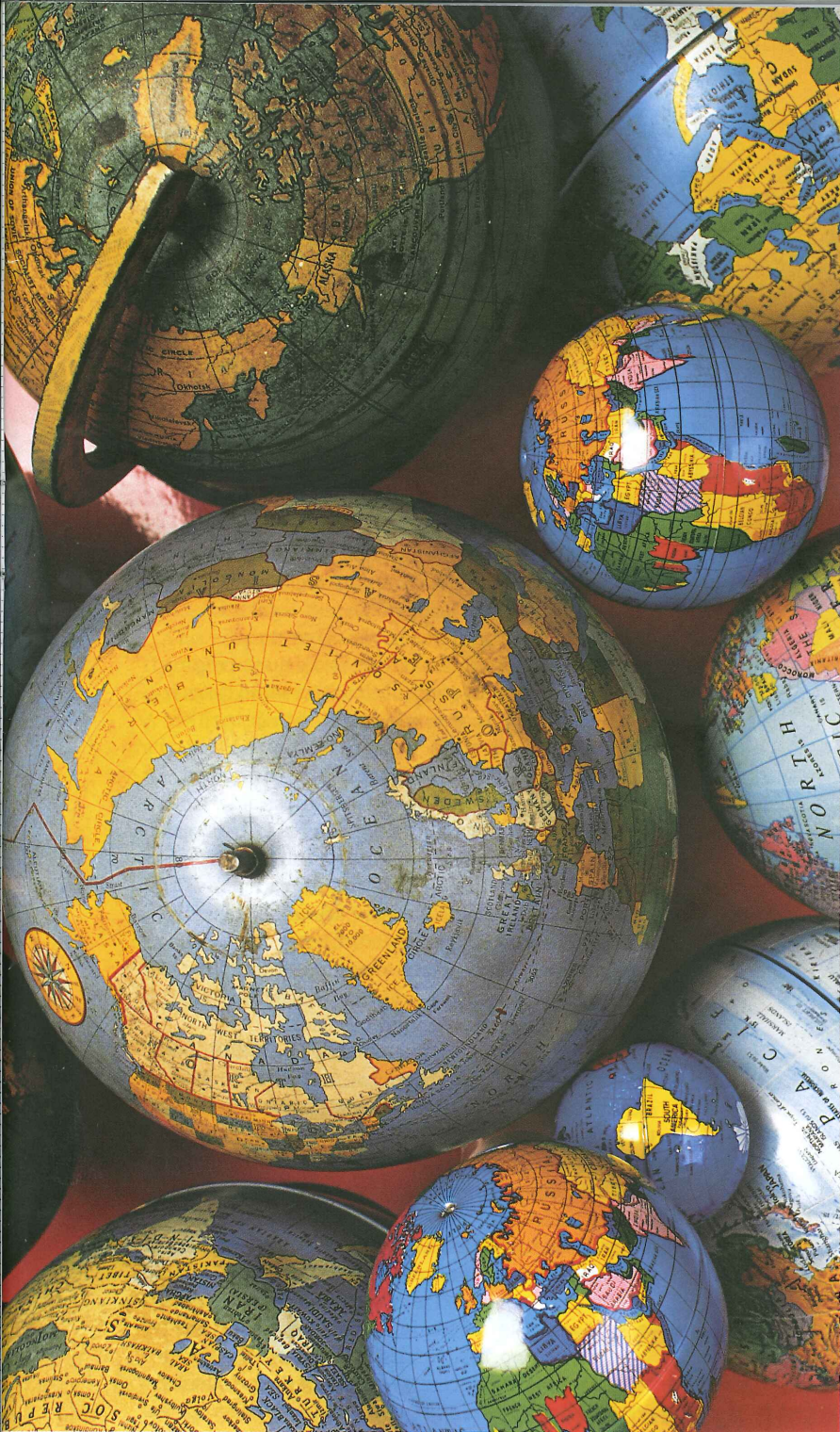
But fear of what might be called a ‘code war’ is backward thinking. Instead of mourning about the passing of uniformity, we should embrace the emergence of diversity. We must get used to the idea that the standardised

American universities and affiliated research labs. It enabled the linking of individual networks and thereby the easy flow of information across such networks. It was based on a common set of values – a non-profit, sharing ideology and a libertarian philosophy of minimal government. The decision process was one of rough consensus. This mechanism was so successful that it enabled the emergence of the key communications system around the world.

At some point, as is often the case when a revolution succeeds, it becomes orthodoxy and even theology. The internet morphed from a technological system of data communications into a belief system – with its saints and villains, dogmas of belief, venerated founding fathers, myths of creation, a sacred central text, mesmerised followers, many of them obsessively spending their time with each other, and of course jargon. Arguments that run counter are discounted with a dismissive signature phrase, “they just don’t get it”. This reduces the need to make any reasoned argument. It basically means “they do not share our belief system”. If you are not a digital native then you are a digital alien. If you twitter instead of tweet you are beyond the realm.

DYNAMIC CHANGE

It is true that many elements of this belief system were right at a certain point. The internet has been an awesome and splendid force for change. But just because it was so at its dawn does not mean that it is now or will be so in its maturity. There is always dynamism – much of it unleashed by the internet. Why should it not affect the internet itself? It seems so obvious. Internet advocates see clearly and correctly that the internet is a force that disrupts everything. Where they go blind is to see that it is



also a force that similarly upends the internet: internet, go disrupt yourself. To oppose fundamental change here is truly conservative – which is why some of the internet ideology is truly conservative. We like it just the way it is. Or was. And we want more of it.

Now of course, this will be denied with a defensiveness that matches that of the music industry. On one level, it will be argued, that actually a lot is changing. Look at Internet Protocol version 6 (IPv6), or at the domain name system. Sure, people fight over these issues. But these are pixels in the big picture. Another line of response is to envelop the observer in a thick fog of geek-speak and minutiae of international bodies, task forces, standards committees, trade treaties, etc. This obfuscates rather than enlightens. The issues are not all that complicated.

One of the basic tenets of the belief system is that the internet system, the fundamental system that

guides the interconnectivity and interoperability of individual data networks, needs to be uniform. Without such uniformity, it would break apart and become either useless or inefficient, and we would all suffer.

Let us deal first with the inevitability of different variations of internets to emerge. As the internet became an essential part of business and society, the interests of the different governments became too big to stay out of it. And since governments around the world diverge widely, their internet perspectives became divergent.

That is not surprising at all. There are few things that we do the same way around the world. What is more surprising and unusual is that we had a uniform system at all. What we have experienced in Dubai is the return to a normal. And that is probably just the beginning of fragmentation.

There are earnest and well-meaning efforts to bridge these divergences. They may succeed this time. But the reality is that the world is a multi-faceted place, and the internet is part of the world. The divergence will grow further as the internet system of interconnected networks becomes the platform for mass video media, where the interests and values of different countries and societies are substantial.

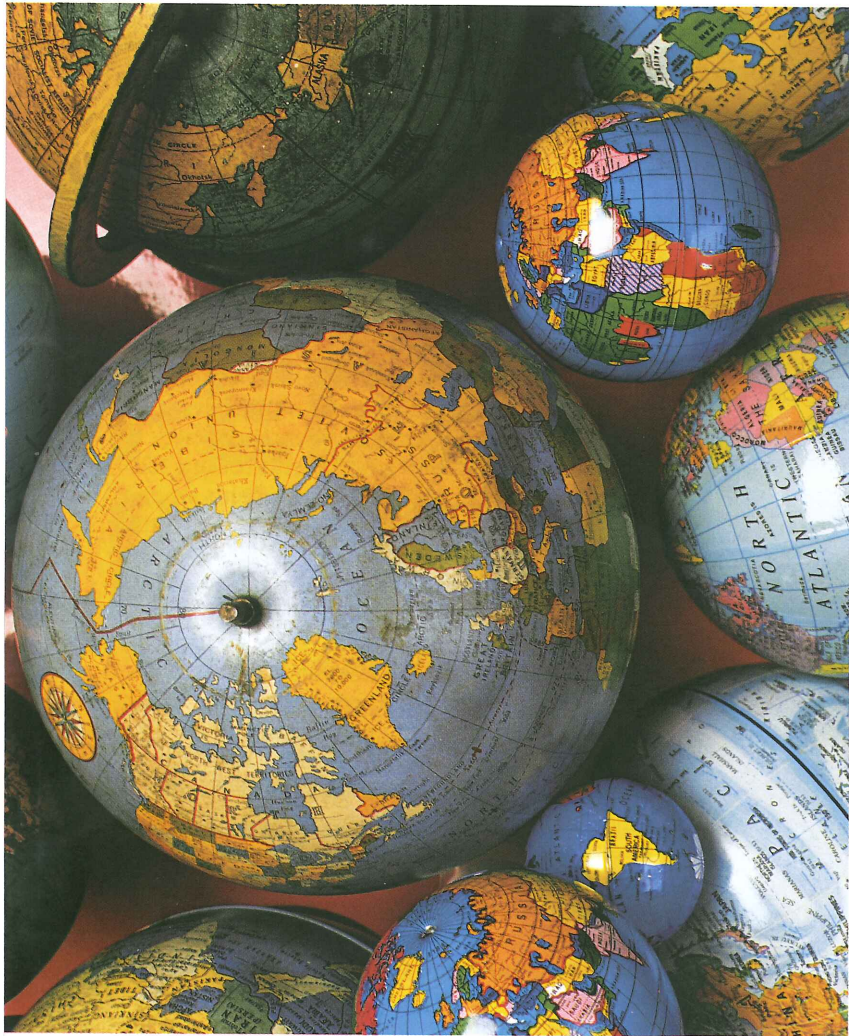
There is only so much agreement that is possible or acceptable. It is hard to imagine agreement on fundamental internet media issues by the United States and, say, Iran. So either one disagrees, or creates an unsatisfactory and unstable compromise.

Different policy approaches emerge. But this does not mean that countries or regions are disconnected from each other or that chaos reigns. Various mechanisms and arrangements are created to maintain connectivity and interoperability. Intermediaries emerge that provide translation and bridging across different protocols and sub-networks that interoperate in turn under different arrangements. This may reduce speeds (ie. throughputs) somewhat and technologists will be unhappy. But it also reduces friction among countries.

PERIL IN THE PROCESS

Some people concede the emerging differences but distinguish between a uniformity of norms and a uniformity of process. Countries could go their own ways, but subject to a single overall international decision process. It is not clear what this resolves. Lawyers know how hard it is to distinguish between substance and procedure, and how one can be used to affect the other. Process harmonisation affects results. For example, the procedural question of whether decisions are made by a majority vote of governments around the world or by a multi-stakeholder system that favours advanced economies would have substantive implications, which is why it is being fought over.

And it is not just about countries but also



◀ companies and technologies. ‘Centrifugalism’ – moving away from the centre – is not just due to politicians subverting cherished uniformity. Competing companies exert even more powerful divergence. Many network operators now use the Internet Protocol (IP) for their operations. One needs to differentiate networks running on IP from the public internet. Companies run IP networks for their own internal uses and to supply services to customers. By using IP they can use widely available hardware and software.

Similarly, telecoms and cable TV companies create IP-based networks that are outside the public internet. They have control over performance and quality. They can do things that they cannot do over the public internet system. They can charge for usage, differentiate, discriminate and block. In fact, the more the public internet becomes regulated as ‘neutral’, the more likely it is that for their own use, network providers will migrate their core traffic to private arrangements.

The next stage then is that these private IP platforms interconnect with each other, through commercial peer arrangements. This is not the public internet, as the network of networks: it’s the private internet of private internets.

In a way, this is not new. The internet was not born as a public and open system but as a private system of nonprofit and research-oriented networks from which commercial networks and users – ie. almost everyone without a PhD – were at first excluded.

“
The internet was not born as a public and open system but as a private system of nonprofit and research-oriented networks.
 ”

And the next stage is a divergence of technical specifications. Company A will do it differently than company B; industry coalition C will do it differently than industry coalition D. They will have special needs, or get a better price, or want to differentiate themselves competitively. A technical centrifugalism is inevitable. It is especially inevitable if it becomes readily possible to interoperate among different internet flavours.

To provide such interoperability across non-uniform protocols are intermediaries that supply ‘bridging as a service’. These intermediaries are likely to be some of the emerging cloud computing providers. They also bridge different legal and regulatory environments in that they create compliance and enforce it, either on the incoming or outgoing ends of content flows. In some cases it will be about privacy – or security, liability or morality – or any of the many other ways in which countries’ laws differ. Such sanitising by intermediaries is not a particularly desirable arrangement but it might be preferable to others, such as the highest restrictions becoming the default for many providers of information.

And in any event, since there are economies of scale in compliance and in bridging, such intermediaries are certain to emerge. These kinds of cloud intermediaries will then be the glue that holds together the federated internet.

Most will be private, but some will be public and governmental. The ITU, too, could initiate such a cloud. And we should start thinking about how they can function, and how much market and gatekeeping power such intermediaries might have.

The emergence of such a system of interconnected private internet arrangements does not negate a public internet. On the contrary, the two arrangements supplement each other. If private

internet arrangements are too restrictive, costly or discriminatory, the public system provides a safety valve, and vice versa. This will prevent such a system from becoming a walled garden of walled gardens, which would be unacceptable. As Chris Yoo has pointed out (see

Intermedia, Vol 41 issue 2, 2013), the possibility that users and providers will exit from one arrangement to the other has a disciplining effect.

So far, the discussion has been why it is inevitable that the internet is fragmenting, and how to create bridging arrangements. But now I want to argue that such diversification is actually a good thing.

TECHNOLOGY HOLD-UP

Of course, uniformity and standardisation are helpful in some ways. There are operational reasons for technology, as well as scale and network effects of economics. But standardisation also reduces competition among technologies. Such competition creates innovation, even if it might be messy. In a

highly competitive world, where standards and protocols such as those of mobile or operating systems are upgraded at dizzying speed, the internet system is pretty static. No Moore's Law governs here.

And how would one even go about changing it? Probably this would be through the steering group of the Internet Engineering Task Force. This is a small group of 15 engineers, almost all employees of big companies. About half of these people (all men) are not Americans. If an innovator wants to make a change in internet protocols and the sacred text of the TCP/IP, one must go through this group. And this takes time, if it ever happens.

This is not a system of openness and discovery through competition. It's a system of a group of essentially internally self-appointed wise men. A brilliant new idea must be approved in an administrative system that might be purely on its merit, but might also balance the perspectives of the various major companies that sponsor the delegates. Would the two Huawei delegates easily approve a change that might disadvantage investments made by their company?

Why is this a good system? Perhaps it was so in the early years when the creation of critical mass was essential while economic interests were small. But today, doesn't this system inhibit innovation?

LESSONS FROM MOBILE

We can see some of these dynamics in the mobile industry. There are standards coalitions but no mandated uniformity. Without such divergence, the CDMA technology that is now prevalent would not have emerged. When it comes to smartphones, corporate strategies go in different directions and come up with competing products with rival operating systems. Yet they interoperated fairly readily through intermediate connection providers. Where problems exist, regulators are a safety net.

In mobile we have different coalitions emerging, centred around rival products, operating systems and proprietary app stores. Mobile operators, device makers and app stores operate with varying degrees of openness and interoperability. Voice can operate across platforms, but apps often cannot. There is much more control, segmentation and incompatibility than for the classic internet. We experience, as Chris Anderson (ex-editor in chief of Wired) has observed, the emergence of an apps-based system and the decline of the web-based system. There is a loss of some openness, for sure, but also a gain of innovation and accelerated connectivity. Smartphones and tablets are adding billions of people to the internet, broadly defined, and they connect through apps and less to the classic web.

As more activities take place on tablets and other mobile devices, why should it stop there? The same commercial logic of convenience, quality control and end-to-end responsibility could apply also to proprietary internets that are not mobile but fixed.

And so, what is now a uniform system would evolve into a more diverse system – a federation or



Instead of banging our heads against the wall trying to achieve a uniformity that satisfies nobody, we should find arrangements where different systems can co-exist.



confederation of interconnected systems that coexist. An internet of internets.

How does this conclusion affect the post-Dubai ITU debate? First, it would take many questions out of any type

of supranational governance. If standards need not be uniform, why fight over them? Or even more, why fight over who can set these unessential standards? This lowers the anxiety levels considerably and will keep high-tech countries and industries happy. Poor countries might fear that such a system will take away their ability to tax internet flows as a revenue source. But they would still be able to do so if they wish, individually and collectively. It is another question why they would want to do so and thereby burden access to free information and applications that have been enormously beneficial to their societies and economies.

In that system, what is the role of the ITU? 'Governance' becomes a high-flown term. There is no need for global policy. There is no need for global principles of pricing policies because that would be the jurisdiction of individual states or coalitions. At the ITU, it would be back to providing umbrellas for IT techies to propose technical recommendations, including on IP matters, which one can take or leave, without required harmonisation. In other words, when it comes to internet arrangements, the ITU would be more about International Telecommunications and less about the Union. So we should let the ITU do such technical recommendations, which will keep the developing world happy, provided anybody can ignore them, given that they are recommendations.

So everyone would be happy. Well not quite – not the Europeans. For them, the ideal arrangement is a situation where they are the arbiters on internet matters between America on the one hand, and China, Russia and the Arab states on the other. They would lose that leverage. And the other unhappy party would be the internet purists, who long for the golden days in which a bunch of computer scientists got together and changed the world. That system should be celebrated but not worshipped.

Seen in such a light, we have before us a creative opportunity rather than an intractable problem. Instead of banging our heads against the wall trying to achieve a uniformity that satisfies nobody, we should find arrangements where different systems can co-exist. That should be the international agenda for the next years.

We should think about a system of federated internets working together in some form of technological coexistence of interoperability. As its motto one could think of 'E pluribus unum'. Unfortunately, that one is already taken.

ELI NOAM is professor of economics and finance at Columbia Business School, New York, and director of the Columbia Institute for Tele-Information.