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Object : Response to the European Commission's questionnaire on Net neutrality.

As a European citizen, I am concerned about preserving my rights in the digital era. Furthermore, as an engineer, and Ph.D candidate[1], I am interested into the potential of innovation with the Internet, and what it is to become with the upcoming " Internet of Things ", and want to make sure the open, decentralized and neutral nature of the Internet is maintained for everyone to benefit of research and business opportunities it can bring. Also, as software author and contributor to Free Software projects, like the Haiku[2] operating system, I already witnessed too many threats to Free Software, from Digital Rights Management[3] to software patents, and hope to avoid seeing new ones emerge.

I grew up when computers became available to the general public, and began using the Internet when it once already was threatened in its neutrality by service providers pushing for their own rebranded version of web browsers leading to their portal as homepage (AOL), and installed their own dialup software taking over the operating system's (Wanadoo) and poorly documenting connection details required for people not using the only officially supported operating system. Then DSL came, with it's own not entirely neutral version known as ADSL, the A meaning assymetrical, meaning the subscriber peer, although logically considered equal by the network protocols was actually influenced into being more a receiver than a producer of content. Now ISP " boxes " mostly replaced generic DSL modems for the job, bringing in new services but also new concerns about the user's control of them. Still, at least for wired access, Internet is still mostly considered neutral, and this property must be kept because it is an integral part of Internet's identity and goal. Mobile access today offered by phone carriers is obviously already violating net neutrality, with offers coined as " unlimited internet " which have nothing unlimited and even worse, nothing from Internet since they block all but a few protocols and ports[4]. Also, despite commendable goals, some recent or upcoming laws threaten Internet as a medium for free expression, as with the French HADOPI bill and the LOPPSI one being currently examined in parliament. Filtering as proposed by those bills is a breach in Net neutrality, both ethically and due to induced false positives.

The Internet has no future if it looses its founding properties, like open protocols, decentralized architecture, open access, and of course, network neutrality. The Internet of Things becoming a reality through IPv6 and its low-power sensor network adaptation 6LoWPAN again demonstrates how network neutrality and open protocols allow smart objects from different vendors to interoperate, while proprietary protocols and managed private networks failed to federate the domotic and building management actors despite being pushed for decades.

In addition to the following answers to your questions, I fully support *La Quadrature du Net*'s position on the subject[5], as with many other people.

1 At *Laboratoire Informatique de Grenoble* http://www.liglab.fr/
and *Laboratoire de Conception et d'Intégration des Systèmes* http://lcis.grenoble-inp.fr/
2 http://www.haiku-os.org/
3 Also punned Digital Restriction Management
4 cf. in French http://blog.fdn.fr/post/2010/03/22/Pourquoi-l%E2%80%99Internet-mobile-n%E2%80%99est-PAS-Internet
5 https://www.laquadrature.net/files/LQDN-20100928-ReponseNetNeutralityQuestionnaire.pdf

Question 1: Is there currently a problem of net neutrality and the openness of the internet in Europe? If so, illustrate with concrete examples. Where are the bottlenecks, if any? Is the problem such that it cannot be solved by the existing degree of competition in fixed and mobile access markets?

Yes. Throttling bandwidth-intensive protocols, often under the pretext that they are used for illegal file swapping while they are only tools and are also used for legitimate purposes, instead of making necessary investments to accomodate traffic growth, is an obvious violation. Along with port and protocol filtering they deter users ability to choose their way of using the network, distort fair competition, and even induce preference of suboptimal protocols for some tasks over those designed specifically but blocked by ISPs. This also artificially creates multiple market spaces that will discriminate users based on their financial power and undermine the efforts engaged by the EU to end the digital divide. Furthermore, those throttling policies, are becoming implemented by Deep Packet Inspection techniques which also violate user's right to online privacy.

Question 2: How might problems arise in future? Could these emerge in other parts of the internet value chain? What would the causes be?

ISPs already impair network neutrality on mobile accesses, and company concentration on this sector might induce them into applying this neutrality distortion to wired access also instead of correcting the mobile one.

Also, with the advent of the Internet of Things, this issues will not impact how we access and share information, but also how we interact with the physical world, for example how building conditions like temperature and light are managed, and how we authenticate and identify ourselves remotely to alter those management policies. These issues concern both the design of those future networks (with or without fair competition for sensor nodes choice due to lack of interoperability from vendors also controlling gateways at the network access points) and their use (people not being able to pre-heat their office remotely because his ISP doesn't allow access to its competitor's network).

Question 3: Is the regulatory framework capable of dealing with the issues identified, including in relation to monitoring/assessment and subsequent enforcement?

While the Internet emerged in an academic world where hacker's ethics (hackers are not the same as pirates ![1]) and open democratic entities guided its design and wrote what should be considered its Constitution and common law (IETF Request For Comments, including the RFC 1855[1] also known as Netiquette), the current huge commercial entities taking part in the Internet as it is today already bend network neutrality like gravity bends space as described by the relativity theory. They should not be allowed to become black holes preventing packets to move freely over the cyberspace like photons do in real space.

The issues raised concerning the Internet of Things will require strict regulations to stop vendors from creating monopolies preventing innovative usage to emerge and equal access to these new opportunities.

Question 4: To what extent is traffic management necessary from an operators' point of view? How is it carried out in practice? What technologies are used to carry out such traffic management?

Traffic management is required for the sustainability of the Internet itself, and so is Quality of Service. However those are not opposed to network neutrality. They are both required to ensure network neutrality. Neutrality is broken when those policies are not implemented for the benefit

1 cf. in french: http://www.framablog.org/index.php/post/2010/09/02/hacker-vs-cracker
2 http://tools.ietf.org/html/rfc1855

of all and every user but for the benefit of only a part of them commanding their application. Quality of Service is actually supported by the Internet Protocol itself, but is defined as being assigned by the user sending the packet, and respected without interference by the network operators. Network operators' job is not to dictate who should get the best quality, but to make sure everyone gets the quality they ask for depending on their usage pattern and to the best effort possible on the network. As such, network operators should limit their modulation of the network flow to the resolution of unforseeable and temporary congestions and security threats, with due transparency and user information and consent. It is not acceptable for an ISP to block incoming smtp traffic even to prevent spam relaying if the user is not informed and proposed the option to waive the blockade. Even then, it would be best to inform user that they can activate this filter themselves if they wish so.

Question 6: Should the principles governing traffic management be the same for fixed and mobile networks?

Internet has been thought and designed to actually get past the topological differences between disparate networks, and form it into an single entity. Disregarding funding principle of the Internet like network neutrality on some of its access entry points negates the Internet itself. Practical concerns on the finite bandwidth available on mobile networks due to physics require to accomodate for methods which in this context can be considered Quality of Service management, like bandwidth throtting which there would allow more user to access the network instead of rejecting connections due to starving resources, however other measures like selective port blocking should never be accepted because they do not benefit all users but actually infringe on their rights of using the network as they wish, including for expressing their rights to freedom of speech.

Question 15: Besides the traffic management issues discussed above, are there any other concerns affecting freedom of expression, media pluralism and cultural diversity on the internet? If so, what further measures would be needed to safeguard those values?

As said in the introduction, some of the efforts to apply real life principles to the Internet in member states laws without really understanding the difference of the virtual world pose serious threats to citizen rights as an Internet user, including freedom of expression. Such laws include the French HADOPI bill, which in addition to being counter-productive infringes people's right to presumption of innocence, fair trials, and (online) privacy. The currently negociated ACTA treaty that the European parliament opposed through the Written Declaration 12 also raises concerns in this area.

Repeated attempts to legalize software patents in the EU not only threatens Free Software authors like me and the european independance on the software market, but also would make it possible for companies to take control over the open protocols used throughout the Internet by suing over competing implementations of those protocols, and denying Internet access to people not using an operating system they support.

The emergence of " cloud computing " should also be studied to make sure the property of data from users of those services is not taken away from them, and that these service providers do respect network neutrality.

Conclusion : Internet has become what we know thanks to its open and neutral nature, fostering innovation and ensuring fair access. We now must step forward to ensure this remains to allow further evolutions like the Internet of Things, where the physical and virtual world will merge and become a single space where fundamental rights are guaranteed.

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