EU Regulation on Access Providers: Is there enough room for the accommodation of non-profit, self-sustainable networks?

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1. Introduction

1.1 Historical Background

The wireless home routers and access points, with their low cost, the relatively easy setup and their practicality with respect to replacing cable connections, have become increasingly popular during the past years. They have also raised the awareness of radio frequencies that are set to be freely operated without the need for licensing. Next step was the establishment of various free wireless access point (free Wi-Fi spots, Hotspots), through which hotels, airports, municipalities, libraries, coffee shops, restaurants etc., provide Internet access to the numerous mobile computer devises, that nowadays can utilize it. On a parallel basis, computer enthusiasts and community workers, some of them already involved into "*community informatics*[i]", joined radio amateurs and discovered that altogether, they can exploit the new digital capacity of radio frequencies, by using new compression and modulation protocols[ii] in order to transfer respectable amounts of digital data to long

distances and establish a new telecom infrastructure, the Wireless Community Networks (WCN).

1.2 Definitions

Wireless Community Networks, also called Open Networks may be defined as wireless[iii] networks with open access, maintained and operated by private persons, on a nonprofit basis, whereby the network recourses are shared with third users through the use of wireless mesh network routing protocols.[iv]

WCN have been also defined as "*public wireless access schemes, driven by community, commercial or municipal initiatives*[v]".

A wireless mesh network in contrary to an infrastructure mode network does not rely on the server – client model of communication, since every node is an independent aggregate of the mesh network.

The persons, who decide to become operators of a network node buy, set up, maintain, operate and share their bandwidth resources with the other participants, on their own costs and efforts.

2. Athens Wireless Metropolitan Network

2.1 The establishment of AWMN

The Athens Wireless Metropolitan Network (AWMN) is the largest, among quite a few, wireless communities in Greece. Its members describe it as "*a grassroots wireless community, taking advantage of new, state of the art wireless technologies, to connect people and services*"[vi].

First wireless links of AWMN have been established in the year 2002 in Athens Greece, quite at the same with similar movements worldwide[vii]. The idea of the initial establishment of AWMN, has been conceived due to, at that time, still poor penetration of broadband services in Greece[viii]. Since then the network has kept growing. In the beginning, it was composed of isolated "islets". Key point for the evolution of AWMN was surpassing some physical

obstacles (hills and mountains) in the Athens metropolitan area, linking these islets and creating a unified network. AWMN's growth rate kept increasing until 2006. The network continued to expand, albeit at a declining rate, reaching 2022 nodes, as of mid 2008. This is easily explained by the fact that what was originally one of the highlights of AWMN, i.e. inexpensive broadband connectivity, has by then generally become a commodity, with the drop in DSL prices. Still, the self-organizing spirit of WCNs, the opportunity to experiment with wireless technologies and the content and services available only to community members keep attracting new members[ix].

The network comprises 1120 backbone nodes (as of Aug, 2010) and more than 2900 client computers connect to it. More than 9,000 people have stated their intention to join AWMN in the near future.

2.2 The nodes

There are two types of nodes in AWMN. *Backbone nodes* are those upon which the backhaul of the network is built. They are considered more stable and reliable, forming the core of the network. Due to their reliability, they run routing software and provide services to the other nodes. They maintain two or more interfaces and they are interconnected with directional point-to-point links. At the same time, they may also function as *access points* providing connectivity to the rest of the nodes, i.e. the *clients*. Clients do not contribute to the routing process, being the "leaves" of the network. As of mid 2008, there were 515 active backbone and 1504 client nodes. It should be noticed that client connections are typically not ephemeral; clients are usually registered AWMN nodes and their links to APs are fixed. Each AWMN node is assigned a private IP address range. Routing is based on BGP (Border Gateway Protocol[x]), with each backbone node and its clients forming a single Autonomous System (AS).

2.3 The services

File sharing (via FTP or Bittorrent) tops the list of the most popular services among AWMN users. VoIP services, video streaming, game servers, websites, and web hosting are offered as well. Importantly, on some occasions, members share their fixed broadband connections with the community, so that Internet access is achieved through WCN-to-Internet proxies.

3. Guifi.net

3.1 The establishment of Guifi.net

According to the webpage of the project commons4eu[xi], Guifi.net is a free, open and neutral, mostly wireless telecommunications community network. It started in Catalonia in 2004 and it is, at the time of writing, probably the largest wireless community network in the world. The network is self-organized and operated by the users using unlicensed wireless links and open optical fibre links. The nodes of the network are contributed by individuals, companies and administrations that freely connect to a true open network of telecommunications and extend the network. Nodes join the network following the self-provision system since the whole structure is explicitly open to facilitate understanding how it is structured, the links, so everyone can create new sections as required. The network is supported by the guifi.net foundation, which was established in July 2008 in order to provide legal entity to the guifi.net community and preserve its spirit. The foundation, on behalf of the guifi.net community, has obtained the following awards and recognitions: member of the European Network of Living Labs (2008), Award finalist IGC City of Knowledge Internet Global Congress (2007) and National Telecommunications of the Government of Catalonia (2007). The foundation has been registered as an official Telecom operator. In 2009 it became a RIPE-NCC member and joined the Catalan Internet Exchange Point (CATNIX). In 2010 it extended its Internet link up to 1 Gb which is distributed to the WiFi network through a fibre backbone. Currently it is a partner of two ongoing EU projects, FIRE/CONFINE and CIP/Commons4EU.

3.2 The nodes

Guifi.net has got, over 25.300 registered nodes[xii], of which more than 16.000 are operational, providing about 18.300 links and 28,400 Km of links and over 300 servers connected to the network (March 2012). The majority of these nodes are located in Catalonia and the Valencian Community, in Spain, but the network is growing in other parts of the world.

3.3. *Fiber from the Farms – FFTF*

Recently Guifi.net decided to start linking its network nodes not only wirelessly anymore, but also by fiber optic deployment. In the year 2009 Guifi.net started the project Fiber From The Farms – FFTF, which aims in deploying fiber optics among network nodes set up in agricultural farms in the rural areas of the state. The project, described as a "bottom up broadband initiative", has been reported to be a success both in practical terms and in revolutionizing - once more - the broadband access architecture[xiii].

4. EU Law Principles of Access Providers Regulation and WCN nodes

4.1 Access Providers and Network Operators in the EU are regulated within the regulatory framework for electronic communications networks and services, which is in force since 2002 and has been revised in 2009. That is the known five directives: the Framework Directive[xiv], the Authorisation Directive[xv], the Access and Interconnection Directive[xvi] and the Universal Service Directive[xvii] as well as the Directive on privacy and electronic communications[xviii]. Important are also, among others, the BEREC Regulation[xix], the Citizens' Rights Directive[xx], the Better Regulation Directive[xxi] and last but not least the Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector.

By studying the EU legal framework, it becomes apparent that the starting point for the regulators has been that of a commercial enterprise acting as an Access Provider and Network Operator offering network and internet access on charge and consumers - clients who pay to use that access services in order to connect to the Internet. The Access Provider will establish and maintain its infrastructure and last mile network on its costs and will interconnect it through negotiated peering agreements to other networks, operated usually by other commercial Access Providers.

Wireless Community Networks (WCN) dramatically reverse that fundamental dipole: Clients establish their own nodes, interconnect with other clients – nodes, create their own Network and become Access Providers and Network Operators themselves.

4.2 *Need for Registration - The "Malaga Wi-Fi" Case*

In the year 2007 the mayor of the City of Malaga in Spain, decided to go wireless and offer free wireless internet access to the entire city population and the city's visitors[xxii]. In the summer of 2008 the backbone nodes and the access points have been set up and the network started its operation. The Spanish NRA[xxiii] CMT[xxiv] decided in February 2010[xxv] and confirmed its decision in May 2010[xxvi] to impose a fine of 300.000 € to the City of Malaga, since the latter by "beginning to operate a public electronic communications network "based on the use of public radio through commonly used frequencies (RLAN-WIFI) ", and the service provider of Internet access, the City had committed a very serious offense under section 53 of the Law of Telecommunications[xxvii], since Article 6.2 of the Law requires the submission to the CMT's "official notification" of the activity before one undertakes it, overcoming thus the conditions set by the Commission. The City Council, according to the first resolution sanctioning of the CMT, did not make the required notification. To have done would have had to pay the general rate of operators defined in Article 56.2 of the Law, which also failed. Therefore, the resolution sanctioning the CMT February 2010 intimated the City to pay that fee and to carry out the notification of the service hoped for. The CMT Informed the Council that if he did not do so automatically inscribe in the register of operators of networks and electronic communications services, which he did in May 2010 as the Consistory had implemented the system in 2007 and was acting as an Internet provider since August 2008[xxviii]. The Spanish Supreme Court dismissed the appeal of the City of Malaga against the CMT decision as reported in June 2012.

Should the obligation to register by the national NRA be interpreted as extending over WCN nodes, then the next question arising is: who shall register? The option to oblige each and every person operating a private node to undergo registration proceedings is not reasonable and not efficient – WCN nodes operate on a best effort principle. Viewing the independent WCN nodes as pure and plain network operators (and not as Access Providers) would exclude them from the obligation to register, but could invoke specific unpleasant implications with respect to their liability (see below).

4.3 *The liability of WCN nodes as intermediaries for third network users - the "Sommer unseres Lebens[xxix]" case.*

In the "*Sommer unseres Lebens*" case the German Federal Court of Justice had to decide whether someone who was evidently not at home when he allegedly shared a copyrighted file was liable for the copyright infringement committed via his Wlan internet connection. The Court held that private persons that operate a Wlan have to have a sufficiently secure password defined as one that is individual and sufficiently long, and have to obey the security standards at the time of purchase.

The liability of Access Providers acting as Internet intermediaries[xxx] being one of the today's crucial legal issues in the IT law discussion is dealt with by EU law through the Directive 2000/31 on Electronic Commerce[xxxi]. According to Article 12 of the Directive, liability of an internet intermediary is excluded in cases where an information society service is offered. Traditional Access Providers and Network Operators have been clearly classified as offering an information society service, but what about WCN private nodes? Both the "*Sommer unseres Lebens*" case and even the more recent German case law[xxxii] demonstrate that a person operating a node offering to third persons access to internet, may be held liable for privacy, copyright and other infringement, conducted by them over that access, unless his/her node will be clearly classified as offering an information society service, that is unless qualifies for Access Provider. Further, the German court decision openly bans the offer of free internet access and demands the active implementation of security measurements on Wi-Fi routers.

Recently two of the main coalition parties at the local government of the City of Berlin applied[xxxiii] to the local parliament for clarification and legislative action with respect to the liability of the city wireless access infrastructure as an Internet Intermediary, asking expressly to qualify the municipality as an Access Provider.

4.4 *Further potential obstacles*

There are numerous other areas that may pose practical or legal obstacles to the establishment, operation, development and maintenance of WCN networks, among others: the Data Retention Directive[xxxiv], national restrictions on antennas and / or fiber optic deployment, the lack of interest from the EU administration, etc.

4.4.1 The scope of the Data Retention Directive is to establish legal provisions concerning public communications providers in order for

the traffic and location data (necessary to identify a user) to be stored for at least 6 month to a maximum period of 24 months. The purpose of users' stored data is when criminal investigations, detection and prosecution of serious crimes require access to users' traffic data, the communication service provider has to make it available[xxxv].

It is obvious, that a WCN node owner lacks both the technical capacity and the economic power to attend the Directive's obligations.

Initially, the Data Retention Directive was drafted[xxxvi] to expressly exclude non- profit access services but the final text has picked a different wording. Even like that, the directive has been interpreted[xxxvii] as covering only commercial services offered usually against payment. Providers of free services are not subject to data retention. It remains to be seen though, if national legislations will respect that view, or not.

4.4.2. National regulation on installation and mounting of antennas, fundamental equipment for WCNs, may also present a serious constraint on the development of community wireless networks. Greece, for example, introduced recently[xxxviii] for the first time an obligation for small antennas operating in the unlicensed radio range of 2,4 and 5,5 Ghz to register by the national NRA[xxxix].

4.4.3. The European Commission in its Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector[xl] lists seven markets but community wireless networks are absent[xli]. That is an important indication of EU administration not including WCN's in its consultations and planning.

5. Conclusions

5.1 In the final report[xlii] to the European Commission "*Perspectives on the value of shared spectrum access*" the clear finding is that EU radio spectrum policy ought to move forward towards shared spectrum access whereby new types of network operation with sharing in the public space (public and user defined / operated networks) and the regulatory

support for bandwidth, more light licensing, exploitation of white spaces for wireless broadband, shall be introduced.

5.2 WCN's could participate to bring into life the initial targets of informational society: the widest possible spread of digital divide[1].

5.3 EU law does not appear to be hostile to the development of non-profit self-sustainable community networks, yet existing uncertainty in important areas of EU and national telecommunication law can impose obstacles and constraints. It is yet to be decided upon if WCN nodes are plain network operators or eligible for Access Providers, if they need to register at the NRA, if they are liable for infringements conducted by persons connected to their node and if they need to retain data or not. Moreover, EU administration should bring into its focus the technical and social capacities of WCN's and the social and economic benefit that may occur by their operation and development.

Literature

1. **Fotios Elianos, Georgia Plakia, Pantelis Fragoudis, George Polyzos**, **Mobile Multimedia Laboratory, Department of Informatics, Athens University of Economics and Business**, *Structure and Evolution of a Large-Scale Wireless Community Network*. In the Internet: http://mm.aueb.gr/publications/2009-WOWMOM-WCN.pdf

2. **Reto Mantz,** *Rechtsfragen offener Netze, Rechtliche Gestaltung und Haftung des Access Providers im zugangsoffener (Funk-)Netz**ten***, Universitätsverlag Karlsruhe, 2008.**

3. **Gaved, Mark (2011).** *An investigation into grassroots initiated networked communities as a means of addressing the digital divide.* **PhD thesis, The Open University**, http://oro.open.ac.uk/29696/1/gaved-2011-ORO.pdf

4. **Ian Walden (editor),** *Telecommunication Law and Regulation***, Oxford University Press,**

5. **G.N. Yannopoulos**, *The Liability of Internet Intermediaries*, **Nomiki Vivliothiki, Athens**, 2012

[i] — a technology strategy or discipline which links economic and social development efforts at the community level with emerging opportunities in such areas as electronic commerce, community and civic networks and

[1] Gaved, Mark (2011). An investigation into grassroots initiated networked communities as a means of addressing the digital divide. PhD thesis, The Open University, http://oro.open.ac.uk/29696/1/gaved-2011-ORO.pdf

telecentres, electronic democracy and on-line participation, self-help and virtual health communities, advocacy, cultural enhancement, and others (Gurstein 2000b, p.)

[ii] The currently under development IEEE 802.11ac protocol plans to enable multi-station WLAN throughput of at least 1 gigabit per second and a maximum single link throughput of at least 500 megabits per second (500 Mbit/s). http://www.ieee802.org/11/Reports/802.11_Timelines.htm, http://mentor.ieee.org/802.11/dcn/10/11-10-1361-03-00ac-proposed-tgac-draft-amendment.docx

[iii] The initiative FFTF of Guifi.net made already the wireless part obsolete.

[iv] Reto Mantz, *Rechtsfragen Offener Netze*, Universitätsverlag Karlsruhe, p. 83 f.

[v] Fotios Elianos, Georgia Plakia, Pantelis Fragoudis, George Polyzos, *Structure and Evolution of a Large-Scale Wireless Community Network*.

[vi] http://www.awmn.net, http://en.wikipedia.org/wiki/Athens_Wireless_Metropolitan_Network,

[vii] Among others: the Austrian FUNKFEUER: http://kupf.at/node/2790 , in Seattle USA, http://www.seattlewireless.net

[viii] Vasilis Kostakis, http://blog.p2pfoundation.net/v2/athens-wireless-metropolitan-network-commons-in-the-air/2008/10/27

[ix] Fotios Elianos, Georgia Plakia, Pantelis Fragoudis, George Polyzos, *Structure and Evolution of a Large-Scale Wireless Community Network*

[x] http://docwiki.cisco.com/wiki/Border_Gateway_Protocol

[xi] http://commonsforeurope.net/guifi-net/

[xii] http://guifi.net/en/guifi_zones

[xiii] http://ec.europa.eu/information_society/events/cf/dae1009/document.cfm?doc_id=15527

[xiv] Directive 2002/21/EC

[xv] Directive 2002/20/EC

[xvi] Directive 2002/19/EC

[xvii] Directive 2002/22/EC

[xviii] Directive 2002/58/EC

[xix] Regulation (EC) No 1211/2009

[xx] Directive 2009/136/EC

[xxi] Directive 2009/140/EC

[xxii] http://www.muniwireless.com/2008/06/30/malaga-spain-wants-wi-fi-access-for-visitors-everywhere-in-the-city/

[xxiii] NRA: National Regulatory Authority

[xxiv] CMT: Comisión del Mercado de las Telecomunicaciones http://www.cmt.es/

[xxv] http://www.cmt.es/c/document_library/get_file?uuid=6e6bd9b2-afc2-45dc-9fb2-af27ed7c8524&groupId=10138

[xxvi] http://www.cmt.es/c/document_library/get_file?uuid=a37753d9-f31d-458b-b2a5-bafe94818096&groupId=10138

[xxvii] The General Telecommunication Law of Spain 32/2003 http://www.boe.es/boe/dias/2003/11/04/pdfs/A38890-38924.pdf

[xxviii] http://www.elmundo.es/elmundo/2012/06/13/andalucia_malaga/1339614521.html

[xxix] Decision by the Federal Supreme Court (Bundesgerichtshof) of May 12, 2010 – Case No. I ZR 121/08 (Higher Regional Court Frankfurt), GRUR 2010, p. 633

[xxx] G.N. Yannopoulos, *The Liability of Internet Intermediaries*, Nomiki Vivliothiki, Athens, 2012

[xxxi] DIRECTIVE 2000/31/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2000 on certain legal aspects of information society services, in particular electronic commerce, in the Internal Market (Directive on electronic commerce)

[xxxii] LG Frankfurt a. M., Decision of 18.08.2010 - 2-6 S 19/09

[xxxiii] http://www.sven-kohlmeier.de/?p=1398

[xxxiv] DIRECTIVE 2006/24/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 March 2006 on the retention of data generated or processed in connection with the provision of publicly available electronic communications services or of public communications networks and amending Directive 2002/58/EC

[xxxv] Article 1 of the Data Retention Directive

[xxxvi] http://www.daten-speicherung.de/index.php/keine-vorratsdatenspeicherung-fuer-unentgeltliche-dienste/

[xxxvii] Answer of Mrs. Vivian Reding on behalf of the Commission: http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2009-4374&language=EN

[xxxviii] KYA 13913/319 (Gazette Number 862/B/20-3-2012)

[xxxix] www.eett.gr

[xl] Commission Recommendation of 17 December 2007 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services [Official Journal L 344 of 28.12.2007].

[xli] Konstantinos Ploubis, "*The Legal Framework of the Liberalization of the interconnection of alternative networks*", presentation in the 1st Congress of Electronic Communications – Alternative Networks Interconnection, organized by the Hellenic Ministry of Telecommunications in Athens, Greece on 24/4/2012, http://yme.awmn.net

[xlii] Simon Forge, Robert Horvitz and Colin Blackman, Perspectives on the value of shared spectrum access, Final Report to the European Commission.