

Regulation of public WLAN services

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Abstract

The de-regulation of the 90s and technological convergence of media have changed the telecommunication industry. The role of the regulator is to support competition and to protect the customer. Public WLANs are gaining ground and the regulators are applying existing laws and provisions to them, Finland in the forefront.

Surprisingly the municipals have found themselves as operators because they have offered wireless access to the Internet in public places. The status of an operator brings obligations.

EU shows corporate driven Americans example of technology neutral regulation. As WLAN is a new technology, case-specific evaluation is often needed on state-level.

1 Introduction

Wireless Local Area Network (WLAN, also referred as Wi-Fi, mostly in the US) is the most prominent unlicensed wireless technology available today. In this paper I am presenting the role of the regulatory authority in case of public WLAN services. The focus is on Finland, how Finnish regulators apply EU laws. EU legislation is compared to American one. I also study authorities as an important stakeholder group and what are their motives and tools to regulate. I have used various papers, memos and theses as my background material in purpose of giving the reader a clear picture of the topic. A list of abbreviations is found in the last page.

2 WLAN overview

Institute of Electrical and Electronic Engineers (IEEE) 802.11 committee develops standards for wireless LANs. The series of numbers is used to differentiate between various technology families. The standards which are most used in commercialized products are 802.11b/g standards that operate in the 2,4GHz spectrum [8]. This is unlicensed spectrum. Below is presented a brief overlook of the technical aspects important to legislation.

2.1 WLAN Definition

WLAN is a data communication system that either extends or replaces wired LAN. WLAN uses radio frequency technology to transfer data over the air. Providing the functions and features of LAN reducing

the wired infrastructure it combines network connectivity with user mobility [9].

2.2 WLAN Service

The wireless broadband service is composed of several logically separate services that can be divided to four categories: Wireless access network service (L1/L2) (WLAN connection complying with IEEE standards, MAC addresses to terminal equipment); network layer connection (IP, L3) enabling telecommunication in a metropolitan area network; Internet access service (access to Internet provided by ISP); network access control which another service provider can be responsible for.

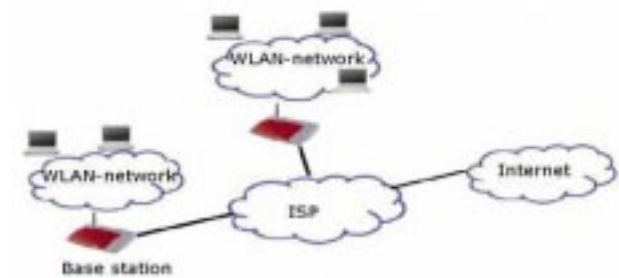


Figure 1 – an example of WLAN network

In figure 1 there is a principal WLAN service with different components [1].

2.3 WLAN usage

WLAN systems are implemented in three main types of venues: enterprise, public places and homes. In all of these places, an upper link, either fixed or wireless, connects the wireless access point to backbone network [9]. In this paper only public usage is considered with its legislative definition.

3 What is regulation?

Regulation can be defined: A written rule made by a government or another authority which is intended to control the way something is made or done [4]. Or: Regulation is the process of making rules which govern behavior [5]. Regulation exists in many forms: economic, health, safety, technologic. In this paper the focus is towards economic regulation.

Regulators have always been interested in the development of the telecommunications industry and infrastructure. In the past, the main role of the telecommunications regulation was in protecting customers from the monopoly power of vertically integrated operators [4]. The deregulation in the 90s changed the industry and the role of the regulators. The technological convergence on the other hand is bringing together the telecom, broadcasting, and information services regulation [3].

The main rationales behind regulation are: effective use of resources, competitive markets, customer rights, preventing abuses like monopolies and cartels, redistribution of wealth.

The regulators have a so called narrow window to guide business models – they can not make any drastic decisions which could affect the industry overnight. New business models may arise either accidentally or deliberately. Regulation may in the worst case seriously hinder business activities, if planned negligently [7].

4 Application of the legislation to public WLAN

Regulators face always challenges when new technologies are introduced. The legislation is always a little bit behind. The regulators need to define how they apply the existing laws to new technologies and businesses. Next I present the actions that Finnish Communications Regulatory Authority (FICORA) has taken in Finland. The role of EU is considered and the legislation in the US is presented and compared with the one in EU.

4.1 EU regulatory framework

EU does not impose specific legal provisions on public WLAN. It establishes a regulatory framework, illustrated in figure 2, and defines the tasks of National Regulatory Agencies (NRA). The telecommunications regulatory framework, adopted in March 2002, recognizes that much of telecommunications regulation exists as a means of addressing potential and actual abuses of market power. With that in mind, the EU attempts a comprehensive, technology neutral approach to regulation.



Figure 2 – EU regulatory framework [3]

The European Commission defines a series of relevant telecommunications markets, and provides a set of guidelines for determining the presence or absence of market power. Within each market the NRA determines whether one or more parties possess Significant Market Power (SMP). If SMP exists, the NRA will impose appropriate obligations. Basically EU seeks to move completely away from technology-specific and service-specific legislation [6].

Many countries have not considered the legal status of WLAN Networks because WLAN has not yet become sufficiently common. Some countries have dealt with the matter only from the viewpoint of frequencies and licenses. Most countries that have considered the matter further, share the opinion Finland has taken, presented hereinafter. For example, Spain, Italy, Switzerland, Turkey, Hungary and Estonia considered that service offered by a café or a hotel to its customers is not public telecommunications. On the other hand, there may be obligations imposed on service providers on the basis of other laws. For example in Italy, service providers must identify users on the basis of the anti-terrorism law.

4.2 Status in Finland

Finnish law defines WLAN services as follows: WLAN Network is a communications network. It means a system comprising cables and equipment joined to each other for the purpose of transmitting or distributing messages by wire, radio waves, optically or by other electromagnetic means. Provision of WLAN is thus network service, that is, provision of a communications network that an operator has in its ownership or for other reasons in its possession for the purposes of transmitting, distributing or providing messages. Transmission or provision of messages via a WLAN that a service provider has in its possession or has leased from a network operator is a communications service. Providers of network services and communications services are network operators and service operators, i.e. telecommunications operators.

The Communications Market act is also applicable to a non-profit network or communications service or to a service that is provided without compensation. Therefore, also a municipality or a school can be a telecommunications operator. Provision of the WLAN and the Internet access service via it is regarded as public telecommunications when it is offered to a set of users that is not subject to any prior restriction. The concept of public communications network and public telecommunications are related to technical quality requirements and to obligation to submit a notification on telecommunications [1].

It is not always easy to draw the line between a set of users that is subject to prior restriction and a set of users that is not subject to any prior restriction. Case specific evaluation is often needed. Some typical examples of public telecommunications for wireless broadband networks are: Wireless Internet connections corresponding to fixed ADSL and provided by means of WLAN; WLAN hotspots provided in public outdoor or indoor environments to a set of users that is not subject to prior restriction.

WLANs can also be offered to a set of users that is subject to prior restriction, but in this case the provided services are not public telecommunications. Usually, the restriction is made on the basis of a former customer relationship or membership of an organization. These cases include: WLAN connections offered by a company (e.g. hotel or a café) to its customers directly or after having acquired them through subcontracting; WLAN connections offered by a school to its students or personnel.

Technically, restriction of users can be done either with relevant coverage area restrictions or through access control methods, which means only authorized persons have access to the network.

4.2.1 Operators' responsibilities, security

An operator is regarded to practice public telecommunications when it provides a network service or a communications service to a set of users that is not subject to any prior restriction. Law separates providers of Internet access service, providers of a wireless access network and network layer, and providers of network access management. As said in 2.2, a wireless broadband service is composed of several logically separate services. The responsibilities are clear when these services are offered by the same provider.

A written notification of the intention to operate public telecommunication must be submitted to FICORA before the operations begin. If the operations are temporary in nature, aimed to a small audience or otherwise of minor significance, the notification duty does not apply.

Public WLAN services are concerned in regard to protection of privacy provisions. An operator must be

able to detect traffic that endangers the information security or availability of the communications service. An operator must resolve the events by for example MAC filtering. Information security provisions of telecommunications operators depend on the size and service offered. An operator must provide the user with information related to security issues and combating the threats. A telecommunications operator providing Internet accesses is responsible for monitoring the events in its own network in order to detect malicious traffic, and save and store detailed log information on any processing of identification data.

An operator must take care of physical protection of the network and ensure power supply for equipment in a communications network. Basic requirements are needed to place communications network components so that unauthorized access is prevented [1].

4.3 Regulation in the US

In the US the legal and regulatory framework is very different than in EU. The latest revision of the Telecommunications Act of 1934, of 1996, separates telecommunication services from information services. The Act defines an information service as "the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunication system or the management of a telecommunication service." It underpins the US deregulatory policy toward the Internet. The Internet should be viewed as an enhanced service, and that the Internet consequently should not itself be subject to significant regulation.

In the US regulators seem to lack authority and the people tend to trust the companies more than the government – at least when compared to Europe. The American attitude to large companies has always been somewhat ambivalent – they worry about the power of large corporations wield, and yet at the same time they appreciate the potential benefits associated with the economies of scale and the scope that they command. It is not held to be a problem for a firm to possess market power; rather the abuse of the market power is problematic [6].

FCC has limited power to collect confidential information and it lacks the ability to protect that information. Although regulation in the U.S. is multilevel with federal, state and municipal bodies, the FCC has taken a position that the Internet is interstate.

There's a huge interest in WLAN in the US and they are cautious to introduce any laws that might jeopardize the growth of the wireless network infrastructure. On the other hand the Americans are increasingly concerned about cyber-security. They have noticed that the nature

of connection is very different from traditional LAN – people can appear and disappear from sight. As they are opening up an additional 255 megahertz of spectrum in the 5-gigahertz band, the biggest concern is whether or not it could affect military radars [2].

Table 1, Regulation comparison the US vs. EU [3]

EU	U.S.
Technology- and service-neutral regulation. Convergence	Detailed silos.
Centralized responsibility for law creation and decentralized for law enforcement	No separation between them two
Defines the <i>process</i> for reaching outcomes	Laws and regulation contain specific regulatory <i>outcomes</i>
People trust governments	People trust corporations

Neither the US nor EU has taken public WLAN networks into deeper consideration. In the table 1 there is few major differences that affect the way regulation is applied generally.

5 Conclusions

WLAN networks have just recently become popular and it is evident that the regulators have not yet considered the issue widely. The regulators are on the other hand facing tremendous challenges as the media is converging – it is a tough job to keep up with it. Considering the monopolistic history of telecommunications the task is even more difficult.

In Finland municipals have just recently started to bear a stamp of an operator. The obligations that being an operator brings, is supposedly keeping the rate of adopting public WLANs low. The concerns of malicious traffic are distinct.

In my opinion the load should be taken off from the shoulders of the operators with small measures to accelerate the growth of public hot-spots. You should make a clear distinction between public and not public telecommunications services and impose differentiated provisions to them. The case is that public WLANs are mostly offered by non-profit organizations and municipals who does not have the same resources as corporations.

The difference between EU and the U.S. is interesting. The legislative hierarchy seems to more efficient in EU than in U.S. In EU the adoption of public WLAN is very different from county to another, depending for example

demographic figures. In this light the separation of law creating and law enforcement seems very justified.

It seems that public WLAN networks are more popular in the US, than in EU region. This on the other hand is clearly linked to the loose control of the US government, the reins are on corporations. Hence, if we in Europe seek to raise the popularity of public WLAN services, should we change the legislation fundamentally?

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Abbreviations

FCC	Federal Communications Commission
FICORA	Finnish Communications Regulatory Authority
IEEE	Institute of Electrical and Electronics Engineers
IP	Internet Protocol
ISP	Internet Service Provider
L1	Layer 1 (in OSI model, physical layer)
L2	Layer 2 (in OSI model, transmission layer)
L3	Layer 3 (in OSI model, network layer)
LAN	Local Area Network
MAC	Medium Access Control

Wi-Fi Wireless Fidelity