

## **ELAG2004 Paper: The arrival of WiFi – can we expect new applications in libraries**

**Johan van Halm, Library Consultant, Amersfoort (NL)<sup>1</sup>.**

### **1 Introduction**

WiFi stands for Wireless Fidelity<sup>2</sup> and encompasses a worldwide (defacto) standard<sup>3</sup>, which allows high-speed wireless Internet transmitted via radio waves with speeds of Mbps, rather than Kbps.

The so-called hotspot or hub or WLAN<sup>4</sup> Access Point (WLAN hotspots) sends out a wireless signal to allow wireless devices access within a circle of 100 meter. WiFi costs are a fraction of the costs for glass fibre networks. Many issues, such as security, services and applications/hotspots, exploitation/access prices, are still under development and a variety of standard proposals have been made by major stakeholders, such as associations/groups of suppliers, operators and WiFi service centres.

Will WiFi be the nightmare for the UMTS<sup>5</sup>/3-G network providers, when WiFi may take over some of the potential services of these providers. WLAN's use TCP/IP for VoIP (Voice over IP using voice telephone via data networks) in competition with GSM, etc. A whole group of new companies and established chipmakers hardware providers and telecom companies<sup>6</sup> are trying to get a piece of the action. The newest laptop and desk top computers have WiFi receivers installed already. WiFi mobile phones are under development, but a major problem is the high energy consumption of the WiFi chips. The largest markets in Europe are the United Kingdom, Norway, Sweden and Germany. The German T-Mobile is WiFi market leader in the USA and will be that soon also in the Netherlands after taking over ViaWia. The Yankee Group expects 7.7 m business users in Europe in 2007.

### **2 Services and applications: hotspots**

Public hotspots are public locations, which WiFi access for Internet access, e-mail, mobile phones and access to (corporate) networks. See for hotspot locations worldwide:

[www.hotspot-locations.com](http://www.hotspot-locations.com).

For using a hotspot one needs a laptop computer or PDA with a WiFi-adaptor, for instance in the form of a PCMCIA card (see also paragraph 2). At present we find more than 5,000 public hotspots in the USA in places like airports, hotels, stations, etc. Companies, like HubHop, install and manage the (public) hotspot and exploits the network, which means, that hotspot hosts have no further dealings with the hotspot.

Examples of library applications are

1. ILL and loan/circulation services, for instance at the NIST Library, Gaithersburg, Md, USA
2. reference services

#### Examples of hotspots

---

<sup>1</sup> johanvanhalm@cs.com

<sup>2</sup> WiFi is certified by the WiFi Alliance

<sup>3</sup> 802.11X (a,b and g) wireless network IEEE standard and 802.16 WIMAX standard for high speed long distance access (MAN's or Metropolitan Access Networks)

802.11i or WiFi Protected Access (WPA) with encryption allowing faster access, but no pre-authentication will be possible

<sup>4</sup> WLAN = Wireless Local Area Network

<sup>5</sup> UMTS = Universal Mobile Telephone System

<sup>6</sup> KPN telecom has invested in the Dutch WiFi company Hubhop

1. Gateshead Central Library, UK via the People's Network
2. Hamburger Buecherhallen - HOeB (public libraries) and the University of applied Sciences (FH) offer jointly WiFi services<sup>7</sup>
3. ProBiblio mobile libraries (buses)
4. Oss public library is using HubHop for its hotspot, which offers simultaneous access to 15-50 users with a speed of 500 kbps. Gateshead Central Library
5. Starbucks<sup>8</sup>: more than 1,200 coffee shops in the USA have hotspots
6. Tilburg Public Library has a HubHop access point and users order access via telephone, credit card or via scratch cards
7. UK: in a GBP 60.000 pilot project 10 rural libraries are to install hotspots for internet access, thanks to a partnership between the MLA (Museums, Libraries & Archives Council), the DTI (Department of Trade and Industry) and the Countryside Agency

### 3 Exploitation and access prices

Cost elements are a fee for the hotspot operator, the costs for a DSL-supplier and eventually the fee for using certain information providers. Pay-as-you-go after consolidating all costs to the user can be made by credit card, PIN or by paying cash. The future: in a hotspot with a local account and a WiFi provider (middleman) will clear payments (credit cards, pre-paid, etc.), as the various networks will be coupled.

For instance Starbucks charges a user \$ 2.95 for 15 minutes access with a pay-as-you-go plan or \$ 30/month for a certain geographical area. HubHop in the Netherlands is planning 4,000 premium hotspots with advertising of location based content of restaurants (daily menus and special offers), Music Stores (Top10 listings and GPRS<sup>9</sup> access via an automatic switch after leaving the access point. Portal access is another option. New PDAs and Laptops have built in WiFi and users have to buy only temporary access from a WISP (wireless internet service provider).

In the Netherlands the OSS Public Library pays € 125/month to HubHop and revenues are split (60% to HubHop and 40% to the library) and the user registers via SMS and pays € 5/hour, € 15/week or € 25/month. A scratch card with an hour value of WiFi access can be bought for € 5.

As barriers for exploitation have been mentioned:

- High costs to the operator for customer management, notably with subscriptions which can be used at different locations. GSM providers may jump on this bandwagon by offering WiFi access (they have already extensive charging and billing systems in place) to their subscribers, which may log-in the same way for WiFi as for GRPS
- IP-addresses for GRPS are domain specific, so when a user goes from GRPS to WiFi access the IP-address has to be converted into an IP-address for WiFi access, which means an extra log-in and loss of the present session (future IPv6 direct routing may solve this problem, as well as VPN)
- Lack of "unified roaming": transferring an existing connection to another network/operator
- Lack of visibility and recognition at public places (no icon yet) and
- Security (hotspots are relatively unsafe for hackers).

<sup>7</sup> [www.hamburg-hotspot.de](http://www.hamburg-hotspot.de) or wolfgang.tiedke@buecherhallen.Hamburg.de

<sup>8</sup> costs to the user \$ 2.95 with a pay-as-you-go plan or \$ 30/month for a certain geographical area

<sup>9</sup> GPRS = General Packet Radio Service)

#### **4 Discussion**

How libraries and information providers are responding to this new opportunities (content licensing, access and access control, charging, authentication), what's the role of software suppliers (library/content management) and do we need new business models.

#### **5 Further information:**

- //internetnews.com/wireless/
- [www.bluetooth.com](http://www.bluetooth.com)
- [www.IEEE.org](http://www.IEEE.org)
- [www.wi-fi.org](http://www.wi-fi.org) (WiFi Association)
- [www.hotspot.nl](http://www.hotspot.nl)
- [www.news.com.com/1200-1120-](http://www.news.com.com/1200-1120-)
- [www.huphop.com](http://www.huphop.com) (06-28647649 Marcel van Eijndt)
- [www.oboss.nl](http://www.oboss.nl) (Oss Public Library)

