

## White Spaces. The last threat to US mobile operators?

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Google, leader of the White Spaces coalition, is doing a big lobby campaign to the American telecom regulator, the FCC (Federal Communication Commission) so unused analogue television frequencies are freed and used to deliver mobile broadband services.

The Mountain View company wants more dynamism in the broadband market thanks to mobile technologies that will lead to more access and to lower prices: a new impulse to the Internet and its business opportunities (for companies like Google itself).

The White Spaces Coalition wants these services to be available in February 2009, just after the digital switch-off in the US. Would this be possible? Until now, the devices submitted to the American Regulator (the FCC) were not successful: they would interfere with the TV Broadcasting signals.

Would it be a part of Google plans to become a company that could control all the different segments inside the mobile broadband market, including access?

From the debate between Google and the FCC about the White Spaces, we will revise the main questions about the company's strategy over Mobile broadband. In recent years, Google has developed, with more or less secrecy, new technologies related to the Internet access on mobile devices: for example Android (operating system for mobile terminals) or Google Secure Access (security system for public Wi-Fi networks).

This is a battle fought by the Internet companies to bring the open environment of the Internet and their business about segmented online advertisement to the Mobile broadband. This is about who is going to earn the largest part of the revenues for the new services when Internet will be fully available on the Mobile devices.

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*'Sometimes things are not awarded to the one that deserves them,  
but to the one who knows how to ask for them'*

*Arthur Schopenhauer*

## White Spaces

The 'White Spaces' are the unused analogue television frequencies in the bands used for broadcasting. They are called White because they are not attributed between bands used by the TV channels. The reason for this is to avoid interferences.

With the digital switchover mandate in February 2009, more bands are going to be freed and new opportunities will appear.

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Two problems arise:

- On one side, the technical difficulties that have not allowed yet the development of this technology (White Spaces detectors, etc...)
- On the other side, the complaints by TV networks because they fear the use of such portions of the spectrum could interfere with their signals.

Analogue television broadcasts, which operate between the 54 MHz and 698 MHz television frequencies (Channels 2 to 51 in the US) will be released after the digital switchover in February 2009. These portions are desired because its emissions are not so expensive as in other bands and they can be well received inside buildings. These frequencies are lower than those used for WiMax.

The White Spaces Coalition<sup>1</sup>, formed 2006 after the switchover announcement done by the US Senate consists of eight technology companies that plan to deliver high speed broadband internet access with these White Spaces.

These services are qualified as Wi-Fi 2.0: a mobile network with little regulation and cheap with quick download speeds.

February of 2009 is, also, the deadline that this Association wants for the deliver of these services. In this moment the FCC (US telecom regulator) should have tested the new devices and its technology and confirm that this does not cause any interference. This is not a minor question, according to the Wikipedia, in 2005 the spectrum value in the US was valued in 20.000 million Euros.

The reason behind the White Space Coalition is that all of these companies (equipment manufacturers and software developers) consider that they will have greater business opportunities with a cheaper broadband. In their arguments for the FCC, they signal that

less entry costs will lead to innovation in the broadband market.

The analogue broadcasting bands are not used in any city (in the case of Denver the space between the channels 10 and 11, and in between channels 21 and 30 is not used). However, in the rural zones there are more opportunities as there are less TV channels.

The coalition pretends to deliver 10 Mbit/s speeds and until 50 and 100 Mbit/s for some of the bands. The White Space Coalition has brought together strange allies like Google and Microsoft or HP and Dell.

Microsoft presented a device to the FCC tests last year. It was a failure.

The FCC Office of engineering and technology published a Report the 31th of June 2007 with the results of the first devices. The FCC concluded that the devices did not detect efficiently the TV signals. The FCC did not authorize its use and stated that more tests have to be done.

However, the 13th of August 2007, Microsoft sent a document to the FCC with a description of the meeting that it engineers and with the FCC ones the 9th and the 10th of August. According to them, the test done these days with a similar prototype and conditions (the devices detected DTT signals with -114 dBm thresholds with a 0% margin error).

In the presence of the FCC engineers, the Microsoft representatives examined the device used for prior tests to find the reasons of the failure. They discovered that the device's scanner was broken and could not find the empty spaces between bands.

Microsoft claimed that the FCC had a device in perfect conditions not used in the tests.

According to the Financial Times (Tuesday 25th, March 2008), Google sent a letter to the FCC, relative to the devices for the White Spaces in their lobby campaign to gain a bigger liberalisation of the spectrum to deliver mobile broadband. If the FCC answer was affirmative, then the devices could

<sup>1</sup> The White Spaces Coalition has similar members than the Wireless Innovation Alliance, promoting the same ideas. <http://www.wireless-innovationalliance.com>

### 1. Members of the White Spaces Coalition

- Dell
- Earthlink
- HP
- Intel
- Microsoft
- Philips
- Samsung
- Google

Wikipedia

be ready in 2009 according to according to Rick Whitt, Google representative.

## National auction for the 700 Mhz bandwidth, Auction 73

First part of this battle was the national auction for the 700 Mhz bandwidth, also known as Auction 73, which took place the 24th of January 2008. It was the first victory for Google and its lobby efforts as the regulator wanted the winner of each spectrum's segment to manage an open net to any kind of device.

The auction's conditions became a point of vigorous debate between telecommunications companies such as Verizon, AT&T and Google. The debate turned around the requirements to 'free access' that were specified in the second report, and in the FCC Order as rules for the auction. Nowadays these operators use technological measures to block external applications to their nets.

However this auction did not reached another of the Google's supposed goals, which was to stimulate the competition in order to decrease the prices of broadband in the United States.

The winners of this auction were AT&T and Verizon, which confirm their position in the market.

Google CEO Eric Schmidt had already warned telecommunications lobbies and regulators, that his company would bid for one of the licences in the auction for the 700Mhz spectrum, probably with the intention of becoming the fifth national mobile network in the United States. The company Mountain View offered a minimum bid of 4.600 million dollars.

The last transmission of the TV channels which use this spectrum will take place on the 17th of February 2009. The 700Mhz bands have usually been used for the emission of television in the channel UHF (52 to 69). The analogue turnoff will make these frequencies useless for the TV channels.

## Is Google a telecom operator?

Google's idea makes sense if we consider the following example. If Google was a car maker, in a world where most of the highways had a toll, his interest would be that there were more highways but cheaper.

We need to use the same logic to understand that if networks in the United States multiply, then more people would be connected at the same time and therefore his incomes for advertising would increase.

According to the blog Daily Wireless<sup>2</sup>, there are several reasons that would explain why is Google developing telecommunications networks in the United States.

According to Daily Wireless, the main evidence that Google is wide spreading a telecommunications network (known in the blogosphere as 'Googlenet') is that Google is buying a huge amount of fibre net in the United States, without making use of it (dark fibre). These nets from the nineties are inactive and are quite affordable. It is said that Google is probably buying this bandwidth to reduce its transmission costs. But, does Google need so much bandwidth? If Internet had a great expansion it would make sense, and if Google was planning on being an operator, it would also make sense.

<sup>2</sup> [www.dailywireless.com/features/8-signs-google-is-planning-to-build-a-wireless-network-031907](http://www.dailywireless.com/features/8-signs-google-is-planning-to-build-a-wireless-network-031907)

## 2. Is Google positioning itself as a service operator for bandwidth?

1. Google has purchased miles of fibre in the United States.
2. Google is investing on PLC (Power Line Connection)
3. Nowadays it is already an operator in the city of Mountain View, where it has its headquarters. It offers free wireless bandwidth.
4. It is developing a wireless network in San Francisco.
5. Google is one of the main lobbies for the net neutrality.
6. Google has developed the technology Google Secure Access to allow a secure access to public wireless networks.
7. Google's data centers are widespread in all the country and it is creating his own great network.
8. Google has a presence in all the Internet businesses, except for the access.

### Daily Wireless

Moreover, Google is wide spreading its data centres all over the country. The increase of its users could justify the centres, but we need to ask ourselves the reasons why these centres are in all the territory.

The Mountain View company has invested in BPL (Broadband over Power Line). Since 2005, Google has invested millions of dollars in Current Communications, a company that has pioneered this technology: a network already in place, this is complimentary and useful action to a hypothetical idea of crating a national network.

In any case, Google has already a few experiences as an electronic communications provider. In the city where the company has its headquarters, Mountain View, Google provides Wi-Fi: to maximize the overage and to diminish the cost of the deployment, Google installed the antennas in the street lighting posts. This is costly on a national

scale but at the same time it demonstrates that the company finds original solutions.

A second step would be the net to give free wireless connection to San Francisco. In 2004, the major from this city called for tender to local companies for a project consisting in giving free wireless connection. The bidder Google presented a project of 30 antennas per squared mile, that would allow 300Kbit/s speed. Google's wireless network is open and to solve possible security problems, Google has developed a technological solution known as Google Secure Access that creates a private virtual net while the user navigates the internet.

The debate on the net neutrality<sup>3</sup> (see 'opinion' ENTER March 2006) that Google has with companies like Verizon and Comcast is another aspect of this battle, and actually of the most important. The battle of the technological companies and the telecommunications ones concerns who is going to obtain the future incomes for the bandwidth.

Operators' position is quite clear. Companies like Google do business in their nets and thank you to their investment. According to John Thorne, an executive of Verizon said that Google is like a person obtaining free food. He argued that operators spend a lot of money in building nets in which Internet companies make money.

If Internet was regulated contrary to the net neutrality, services like Google's would be restricted. This is the reason why the company from Mountain View has participated in lobby campaigns with the FCC and the Senate. If there was this regulation, which is not very probable, then a solution for Google would be to give directly access.

## ...from now on Android

There have been rumours telling that Google was developing since December 2006 its own terminal for mobile phones, also known in Internet as GPhone (like the iPhone from

<sup>3</sup> <http://www.enter.es/enter/mybox/cms//532>

Apple). However this rumour has not been confirmed.

What we know for sure is Google's interest in having his applications available in the mobile phones, which would bring his advertising a step further in its segmentation. For the moment, Google has presented last year Android, an operative system for the mobile phones and he is working with mobile operators and manufacturers in order to have available in their device Google Maps and Gmail.

Android is the operative system for mobile phones from Google and the Open Handset Alliance. Based on Linux, he is in competition with Palm Os or Windows Mobile. It allows developers to write in Java Code from software libraries developed by Google, but it does not allow developing programs from a native code.

The announcement of the platform Android took place in November 5th 2007, with the collaboration of the Open Handset Alliance, a consortium of 34 technological and telecommunications companies, to develop mobile phones standards. During 2008, the Android platform would be available under the license of Open Source from Apache.

Android has caused some critics concerning the very little documentation attached to the software development kit. Moreover the operative system is not completely open, as Google and the Open Handset Alliance are owners of some of its parts.

In September 2007, the Information Week established a list of the patents that Google has registered in the mobile phone area that makes us wonder if in Google's future plans there is still some place for the Gphone.

## Conclusion

If Google has already started to bid for regulator's licenses and it is already thinking about introducing its services on the mobile phones devices, it is not senseless to conclude that Google may become a company that offers access to the final user of bandwidth.

If Google had the wireless spectre and launched his own mobile network, it would stop having trade agreements with AT&T and the others, and it would be in direct competition with them.

What seems is that Google wants to eliminate the maximum of his intermediaries. Why

### 3. Google patents in Mobile Telephony

- [U.S. Patent 6,785,566](#): *Cellular Telephone Case*
- [U.S. Patent 6,982,945](#): *Baseband Direct Sequence Spread Spectrum Transceiver*
- [U.S. Patent 6,829,289](#): *Application of a Pseudo-randomly Shuffled Hadamard Function in a Wireless CDMA System*
- [US patent application 20070067329](#): *Overloaded Communication Session*
- [US patent application 20070159522](#): *Image-based Contextual Advertisement Method and Branded Barcodes*
- [US patent application 20060004627](#): *Advertisements for Devices with Call Functionality Such as Mobile Phones*
- [US patent application 20050185060](#): *Image Base Inquiry System for Search Engines for Mobile Telephones with Integrated Cameras*
- [US patent application 20070066364](#): *Customized Data Retrieval Applications for Mobile Devices Providing Interpretation of Markup Language Data*

paying to have access to your own content in other mobile networks when you can promote your content from your own network?

With the possibility of integrating Internet in the mobile devices, it seems that the moment of a bigger convergence has arrived, understanding the term like the possibility of getting the same services in different technologies and networks. A particularity of this market is that the mobile devices have a close environment for the applications selected by each operator, whereas Internet is an open environment.

Once the Internet would be integrated in the mobile devices in a satisfactory way (something asked by the users) mobile operators would not be able to close so easily their networks. With the Internet, the obligation of contracting the services with a telecommunications operator in order to have access would disappear.

In the future, part of the business will be the access to the network and the services offered in that network.

Voice telephony represents less each year in the mobile operators revenues: the consumer pays more for the different services that can be financed by advertisements.

If the revenues are coming more and more from data services, are the operators going to concentrate only the provision of the access to other companies services?

If Google and Yahoo make money in these networks it does not appear as reasonable that the mobile operators will limit themselves to provide access to these networks. In a recent interview Orange President complained that these companies are making money thank to their investments.

It is likely that the operators will try to catch some of these revenues and vice versa.

The game is who is going to be get the biggest portion of the revenues from the new services and the advertisements.

According to Blair Levin, former official of the FCC: 'The technology companies want to have a dominant position over the value chain of mobile broadband.'

However, the operators are going to fight. All of these aspects: devices, 700Mhz auctions, and the debate over net neutrality are battles of the same war between technological companies and telecom operators.