

broadbandvantage 

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Wi-Fi – the dash for locations  
*strategies for property owners*



# contents

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<b>management summary</b>	<b>3</b>
<b>introduction</b>	<b>3</b>
<b>Wi-Fi backgrounder</b>	<b>4</b>
<b>Wi-Fi business models</b>	<b>5</b>
<b>the economics of Wi-Fi</b>	<b>5</b>
<b>considerations for property companies</b>	
<b>audience</b>	<b>6</b>
<b>user behaviour</b>	<b>6</b>
<b>location</b>	<b>6</b>
<b>strategies for property companies</b>	
<b>do nothing</b>	<b>7</b>
<b>do it yourself</b>	<b>7</b>
<b>single service provider</b>	<b>7</b>
<b>multiple service providers</b>	<b>7</b>
<b>recommendations</b>	<b>8</b>

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Tom has an in-depth knowledge of the latest telecommunications and IT service developments. His interest in WiFi is fuelled by the rapid development of this exciting market sector and its potential to re-invigorate the Telecommunications industry.

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There is an opportunity for property companies, retailers and others with commercial properties under management to take advantage of the explosion in Wi-Fi services. This paper looks at the issues, the economics of Wi-Fi business models and the strategic options that property companies can take to make the most of the current boom in hotspot deployment.

The strategy recommended at this early stage of the market is to have arrangements with one or more service providers to get early mover advantages at low cost. Once the business model has matured, look at the economics of building your own metropolitan Wi-Fi infrastructure to take advantage of the aggregator business model, if it is delivering better margins.

## Introduction

Wi-Fi is a disruptive technology that will transform the way that people work and access information. It has the potential to either work alongside or replace both fixed broadband and 3rd-generation (3G) mobile services, so other service providers are treating it cautiously. Many

commentators see Wi-Fi as a substitute for the still-to-be-deployed 3G mobile technologies.

Also, a unique experiment in telecommunications provision, Wi-Fi is the first telecoms service that can be provided by anyone, company or individual, without a telecoms or radio licence. We are seeing Wi-Fi networks deployed in home and office private networks, for community networking and for public service networking. The mix of private and public capabilities means that usage is expanding fast. Most new laptops already come with a Wi-Fi card, new hand-held computers such as PDA's will come with Wi-Fi capability built in and completely new types of Wi-Fi enabled device are starting to appear.

Wi-Fi enables computer users to access the internet and IT services at high (broadband) speeds, without a physical connection. Another name for it is WLAN (short for Wireless LAN) because it uses a version of the Ethernet Local Area Network standard.

Besides private networking, a new generation of service providers is

looking to provide public access networks based on Wi-Fi technologies.

As Wi-Fi is essentially a short-range service, creating sufficient access points to allow their customers to easily access the network means that service providers need to use existing buildings, usually in busy locations. This presents an interesting opportunity to owners of property estates to benefit from this rollout; the best strategy for this depends on a number of factors, discussed in this paper.

# Wi-Fi backgrounder

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Wi-Fi is a radio-based networking technology, which uses a part of the radio spectrum that does not require licensing. Typically, laptop users buy a wireless LAN card that plugs into a port on their laptop and enables them to use nearby wireless access points. Wi-Fi works over short distances and provides connections at Ethernet speeds. The colloquial name for an area with wireless access is a 'hot-spot'.

Wi-Fi can be deployed privately in the home, in the office or publicly. It operates over ranges from a few tens of metres for home equipment, to up to several kilometres for a rooftop transmitter with a directional aerial.

The range can be extended by using passive aerials as repeaters. Famously, Pringles snack cans make great homemade aerials. Expect to see these scattered around rooftops in suburban streets as people take advantage of community networking opportunities. In the USA an enterprising individual has even used a simple passive repeater to get a 2Mbps signal round a small mountain!

With no wireless licences required, anyone can operate a hotspot. Home networks, used to network multiple computers wirelessly to a single broadband connection, are becoming popular. Businesses are also deploying internal wireless networks, and some service providers are using Wi-Fi to connect equipment such as internet kiosks or games machines. Poor security on these early networks allows anyone freely to use the broadband service, and this has led to the phenomenon of war chalking, where free-to-access hotspots have been marked on pavements for anyone to use.

There is nothing to stop community groups from operating heavily subsidised or free Wi-Fi services to anyone in range of such a network. In fact, these types of local services are already beginning to appear in rural areas where low-cost broadband services are not available, with neighbours collaborating to share a single higher-speed broadband connection.

It is now possible to combine Wi-Fi base stations with small GSM base stations to

provide coverage where the mobile operators cannot get planning permission for an aerial .

Finally, there are now services, such as Newbury Networks' Location-Enabled Network , which allow individual Wi-Fi users to be located to within a few metres. Expect to see various location-dependent solutions start to appear in airports, hotels and other public spaces.

New business models for Wi-Fi deployment appear all the time. They break down into three primary types:

- Enthusiast networks – otherwise known as guerrilla networks, these are home-based enthusiasts who have loosely banded together to provide free access
- Micro-carriers – private organisations (retail outlets or hotels) that charge for access to their metropolitan networks, such as Starbucks.
- Network operators – public or private organisations that are building networks. These either wholesale their capacity to other providers on an unbranded basis (The Cloud) or sell their capacity directly (BT Openzone, Eurospot)

A fourth category, established in the USA but not yet in Europe, is the wireless aggregator. The aggregators combine the coverage of many micro-carriers and enthusiasts into a single heterogeneous network. In the USA Boingo Wireless is the main aggregator.

Early business models were seriously flawed and several of these companies ceased trading in the USA, including MobileStar and Airwave. Most of these

failed to build the subscriber numbers required, partly because the number of locations they operated at was limited. Joltage, an aggregator that concentrated on the enthusiasts, has just gone out of business for the same reason.

Pricing models currently range from free access to around one pound per hour for prepaid hotspot service with the big service providers. Unlimited access for a month is £85 with BT's OpenZone.

The biggest need of the network operators now is to build their location coverage. The more locations, the more customers they will attract and the bigger their revenues.

## The economics of Wi-Fi

Wi-Fi is no respecter of boundaries or property rights. You can sit in a coffee shop in Manhattan and pick up five or six Wi-Fi signals – the one provided by the coffee shop, perhaps one from the competing coffee-shop across the road, a couple from the business up the street that failed to properly secure its internal network, one from the flat next door's free guerrilla Wi-Fi service and so on. Gatespeed Broadband in San Jose, California, is even targeting coffee shops with its own services from nearby

locations – getting a free ride on the back of the advertised Wi-Fi hotspot, without having to share revenues. This means that there is no direct relationship between where you get your Wi-Fi service and who sold you access – the coffee shop is not necessarily paid for the time you spent online, just for the coffee you drank.

So, unless you are the only property within some distance, expect competition. OK, the coffee shop can insulate the inside of their building with tin-foil wallpaper, but this might just reduce their coffee sales rather than increase their network sales.

This coverage overlap will drive some of the current operators out of business. If they don't have sufficient coverage, no one will pay for access to their service. If they can't have exclusive coverage in popular spots, then the winners will be those with one or more of:

- The best coverage (and 'the best' doesn't mean 'the most' – Wi-Fi provision, like retail, is about location, location, and location)
- The best services
- The lowest prices

The market will segment along these lines. The lowest price is already established as free (the guerrilla networks), but these will not be able to afford to add valuable services such as switching voice traffic to the public telephone network. Companies will bulk buy from service providers that allow their road warriors to securely access their corporate network – so they will be looking for coverage, track record, security and reliability. More demanding users will be looking for the best services, including, in the future, access to real-time streaming video content, as well as coverage.

If the Wi-Fi industry follows the path that similar capacity-based industries have taken - and I see no reason why it shouldn't, and many reasons why it may be faster than normal - many of the current industry players will either consolidate or disappear. This represents a potential problem for the location owner – existing service could be cut off (particularly vulnerable would be the connection to the internet) and it will be expensive to replace, with no guarantees of any incremental commercial benefits.

# considerations for property companies

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## Audience

Are you in a business or in an area where the public meet, rest, wait or take shelter? If so, you have potential for a hotspot.

If you have isolated office locations with no public areas nearby but wish to provide wireless access to your tenants, then one of the European companies using the American BLEC (Business Local Exchange Carrier) business model such as Intellispace will be more appropriate.

## User Behaviour

Consider your typical coffee shop. The normal time that someone will take to enjoy a coffee and a seat is probably between ten and twenty minutes. If you have customers staying an hour to use their PC while buying just one coffee, they could be taking up space that customers buying coffee could be using. Unfortunately, the profit margin on a coffee is much greater than that on Wi-Fi access. Perhaps the customer just doesn't want to leave or switch off their laptop to get another coffee?

Many fast food restaurants have the same issue. MacDonalds is considering Wi-Fi access, but most commentators believe that customers will find it difficult to sit in a MacDonalds restaurant for more than 20 minutes. Another consideration is that if mobiles can be a turn-off in restaurants, laptops will be too.

Giving customers access to Wi-Fi will change their behaviour, so appropriate charging and careful consideration of the impact on your business is necessary.

## Location

The success of each service provider will depend partly on their ability to secure sufficient hotspots in the right places. Each operator has their own strategy for acquiring hotspot locations, with varying degrees of success. Only with enough hotspots for their subscribers to access will a service provider generate enough revenue to succeed. The most attractive hotspots will be locations where people spend time while resting, waiting or in meetings. This means hotels, motorway service stations, airport lounges, buildings adjacent to public spaces etc.

Others of interest will be office buildings where external users share the Wi-Fi capacity with building tenants.

The quality of the WiFi experience depends on the back-haul bandwidth – the size of the physical circuit connecting a hotspot to the internet. Although the user can connect to the hotspot at LAN speeds, their speed of connection to the internet is restricted to that of the back-haul circuit. Most coffee shop Wi-Fi deployment is using relatively low-bandwidth connections such as ADSL, just 2Mbps as against the hotspot's 11Mbps or 54Mbps. Even worse, the user shares the back-haul bandwidth with all other users of the hotspot.

Not only does this cause problems for individual networks, it fixes a level of cost for the network provider. Large numbers of 2Mbps ADSL circuits are many times more expensive than the equivalent of the total bandwidth as one fixed circuit.

This plays to the strengths of the bigger hotels and property chains, where taller buildings can provide wider coverage

and deliver a higher level of service to a larger number of users at a lower cost per user. Relationship management costs will also be lower.

Most of the service providers are offering significant benefits for joining their network of hotspots. These include free networking for, say, a hotel's administration; no contribution to the capital or running costs; and revenues from sales of bandwidth. The more that a service provider gives away, the more users it will need to pay for it, so again companies that are early movers, that provide access to the right types and numbers of user as well as the right facilities to make them want to use the service, will benefit the most.

# strategies for property companies

The main strategic options for property companies are:

1. do nothing
2. build it yourself
3. select a single Wi-Fi provider partner
4. select several Wi-Fi provider partners

## Do Nothing

Do nothing is definitely an option, but you risk being left behind. Your competitors will get significant first-mover benefits from being able to offer additional services to their customers, ranging from increased business traffic to a share of the usage revenue.

## Do it Yourself

Wi-Fi deployment at a reasonable-sized hotel will cost somewhere in the region of £80-£100 per room. For office property owners the costs are dependent on tenancy conversions to the new infrastructure. For retailers, the costs vary dependent upon coverage, but a small Wi-Fi installation to cover a coffee area can cost around £3000 - all plus networking costs, of course.

Do it yourself may take a long time to pay for itself until usage increases. Apart from the capital cost, if your Wi-Fi service does not form part of a recognised national network it will be more difficult to sell capacity. There are currently no network aggregators operating in the UK to create a market for your capacity.

Worse, if a customer can receive a recognised national network's signal while on your premises, why would they pay to use yours?

In the longer term however, DIY may well offer better margins from the aggregators than you will get from the service providers.

## Single Service Provider

Tying up with a major service provider confers several benefits:

- Reduced or no capital outlay or management overhead
- Access to a large hotspot network
- Possibly a share of revenues and/or free internal networking

- For a property management company, a revenue stream from services to tenants
- For a retailer, increased footfall
- For a hotel chain, better services in rooms and public areas, reduced pressure on the phone lines. In addition many business conference organisers now stipulate Wi-Fi capability as a condition

Some service providers are offering considerable benefits for companies willing to host their hotspots. For instance, Swisscom's Eurospot will offer free networking and a margin on service sales for prime locations.

## Multiple Service Providers

Promiscuity may be your best policy if you depend on the network for your own networking or for critical customer services. Having several service providers at your location insulates you from the inevitable failures and consolidations in the early market.

It is impossible to tell which of the current business models will survive, which will be absorbed into others and

which will fail completely. You could be left with no networking in the worst case, and with no alternative to building your own infrastructure. It may make sense to avoid a single source route and take advantage of several of the free installations currently on offer.

The density of suitable locations around your properties, the height of your property (and therefore reach), the type of end-user – drop-in or fixed and the density of users in the area will all determine your attractiveness as a location. If you own the only suitable property for some distance around with access to a large number of potential subscribers, then whatever happens to your supplier, replacement offers will remain good.

# recommendations

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For property-owning companies such as hotels, retail chains, local and national government bodies, now is a good time to act. To secure sufficient properties for their network the Wi-Fi providers are making offers that will not be repeated once their coverage has reached completion.

The recommendations from the above analysis are in two parts.

1. Let the service providers take the initial risk. Sign up with a national or European operator, get the infrastructure installed for low cost and get the early-adopter benefits of having Wi-Fi. If you rely on the network, exclusivity is not a good idea – sign up with more than one operator.
2. Once the Wi-Fi market has stabilised and you have established the overall value to your business of providing Wi-Fi services, look at the economics of:
  - Building your own Wi-Fi infrastructure

- Selling hotspot services via the aggregator model

By this time equipment costs will have reduced and there will be more value-added services ready for users. This route is likely to be most beneficial for the biggest buildings in well-used areas and reasonably large metropolitan networks, such as property estates.

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