

# Public WLAN services -

Low profitability but potential strategic value?

## Introduction

An increasing fraction of companies in North America, Asia and Europe are using Wireless LAN (WLAN) as an integral part of their office IT infrastructure. The global WLAN equipment market grew around 70 percent in 2002, with revenues reaching \$2.1 billion according to Gartner Dataquest. This translates to 15.5 million shipped units in 2002.

There is no doubt that office and home WLANs are a success when looking at the above figures. What is questionable is if there exists a business opportunity for public WLAN services, i.e. deploying WLANs in public hotspots enabling Internet access.

Already today there exists a number of Internet Service Providers (ISPs) and Mobile Network Operators (MNOs) that exploit public WLAN service business models. The one thing they have in common is that none of them have been able to report profits from their WLAN business.

One problem is that the large installed base of WLAN equipment alone is used as a key indicator for a large and profitable market for public WLAN services. That is a simplification. The devices are necessary but not sufficient. In this whitepaper customer value and needs, together with an assessment of market structure, will form an alternative view on this emerging market.

As Northstream's main customers are MNOs this whitepaper will identify and analyse key factors for public WLAN services from their perspective.

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### About Northstream:

Northstream provides strategic technology and business advice to the global wireless industry. Northstream has assembled a multinational team with some of the world's best experts and analysts on wireless communication business and technology.

Northstream's list of clients include several of the world's leading operators and system suppliers, e.g. Vodafone, AT&T, NTT DoCoMo, Orange, Sonera, Telia, Mitsubishi, Ericsson, Nokia and Microsoft, as well as some of the leading investment banks and financial institutions. Northstream is established in Stockholm (Sweden), Sophia Antipolis (France), and Tokyo (Japan).

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### **Customer value**

In marketing, concepts like "target market", "delivered customer value" and "customer needs" are central. The success of an offer lies in the customer's experienced value. It follows that the size and behaviour of the segment that values the service must be understood. The reason being: a) to define the target market and b) to assess the value of this market. It is Northstream's belief that although the target market for public WLAN services has been defined, the need for, or the value of, the service is not well understood.

At large, public WLAN services are typically targeted at corporate travellers accessing corporate information and e-mail while travelling. The mobility pattern (nomadic behaviour) of these user groups is relatively predictable and therefore manageable in terms of coverage in so-called "hotspots". Such hotspots are defined as places with an expected high density of business people such as hotels and various transportation hubs.

However, a high density of travelling business people does not necessarily translate into high demand for public wireless Internet access. The target market for public WLAN services could be described as an unknown sub-set of the business segment in the mobile industry. What is unclear is the demand pattern of that sub-set for the service, which makes it challenging to estimate the market size in terms of data volume, minute usage or other indicators per user and time.

Successful take off for a public WLAN service requires that the target market has an underlying desire to expand their geographical working environment. Based on early experience from public WLAN operations combined with analysis of basic criteria for working environments, Northstream believes that many of the intended "hotspots" will most likely fail. The customer value to have access to Internet from e.g. a coffee shop is experienced as low within the target market today.

In addition, it is necessary to acknowledge the inherent limitations of service usability. Wireless Internet access will rarely be spontaneous outside the office, as it requires dedication, knowledge of coverage as well as an available device. When these pre-requisites are fulfilled the user must: find a suitable seating at the hotspot; boot the device; edit the network settings in some instances; and finally (in most cases) purchase the temporary credentials that enable access. This process is too cumbersome in most usage-locations to be worth the effort.

The total delivered customer value must be greater than the total customer cost (money, time and energy) at any given location and time. When applying this simple marketing rule on typical public WLAN locations and usage-scenarios, it seems evident that value will more often exceed cost in the cases where business people stay for longer periods of time. This includes to a certain extent hotels, conference centres and transportation hubs, but it excludes coffee shops and most other "public places".

It should be evident that numerous questions with regard to target markets for public WLAN services need to be investigated. Both the size and value of the potential market are unknown and also uncertain.

***Competitive advantage built on technical issues***

Public WLANs are multi-user networks deployed at different geographical locations. WLAN is merely a radio interface standard and to offer a complete service other system elements are needed. The systems employed to implement the networks and services are hence of great importance.

These systems are neither following a specific standard nor are they mature. The shortcomings of systems and standards are areas where to find differentiation opportunities.

The main technical weak points of public WLANs today are covered under roaming, billing, security and mobility issues.

As the public WLAN service is a hotspot service and as it has been marketed towards travelling businessmen to a large extent, roaming solutions and agreements are important for the success. The service offerings employing one time accounts have an advantage compared to solutions based on subscriptions in this context, as there is no need for roaming in those cases. One-time accounts are sold to the end user at the same place that the service will be used. This means that roaming to other networks does not provide any substantial customer value and hence will not be offered.

The roaming problem for subscription-based solutions has one legal/commercial aspect and one technical that relate to billing. The billing systems need to be able to understand a wide variety of billing formats, as there exist no standard. The problem becomes worse for Public WLAN services, as there will exist many more potential roaming partners, than for traditional mobile services. A further technical consideration is how automatic is the roaming mechanism for the user. In GSM a roaming operation does not involve any user interaction. The few existing roaming possibilities for public WLAN today force the user to edit the settings of the WLAN PC card and change the username. It is far from a one-click solution.

As WLAN was not intended for public services, the in-built encryption cannot be used. In addition there exists no standard for authentication and authorisation of the user today. The security is and probably will become increasingly important.

The current mobility issues for WLANs relate to both handover between hotspots (different Ethernets) and service handover to other access networks (e.g. GPRS). The latter is neither necessary nor important for the take-off of public WLAN services. The usage patterns for laptops, being the main WLAN device, do not include frequent seamless handover situations.

What would be more interesting for the end user is a solution where the users do not need to think about which access network to connect to. In other words support of a function performing automatic switching between the different access networks.

The above-mentioned issues are potential barriers for the take-off of public WLAN services. Turning them to opportunities calls for competence and resources. Comparing the core competencies and resources between a MNO and a pure Wireless Internet Service Provider (WISP) the MNO clearly has the best prerequisites to exploit these opportunities and build competitive advantage.

### **Assessment of market structure**

In order to understand the potential profitability of public WLAN services, the structure of the market must be analysed.

Some roles are necessary to define in this market. The actors can be categorised by being one of the following:

- Site supplier (organisation owning the hotspot area and rents it to a WISP);
- Pure WISP (service provider who offers public WLAN services as their only product);
- Single point WISP (business venue/site owner that offers public WLAN services as value add to other core services, for example a hotel, an airport, a coffee shop etc.);
- MNO WISP (traditional GSM/GPRS/3G mobile network operator offering public WLAN services and traditional mobile telecom services); or
- Bitpipe MNO (MNO that only offers GSM/GPRS/3G voice and data via an "open" network, i.e. low amount of own services).

The cost of the infrastructure is not huge. The main cost is operational and the bulk of this is the rental of transmission. To connect each hotspot to an E1/T1 may be costly. But the alternative using ADSL at speeds down to 256 Kbps limits the value of the service immensely.

Other costs are instalment, site rental, O&M, system software, physical servers and costs related to the setting up and running of the new organisation. Compared to other public communication networks the costs are low, thus lowering the barriers for entry in to the market.

With low barriers to entry, the market will experience many actors initially, and as the target market is very limited in size the risk for un-healthy price wars are high. An example is the situation in Stockholm, Sweden, where five actors have already been established. Even though Telia HomeRun lowered its prices by over 80% during 2002 the cheapest competitor in Stockholm currently offers a 24-hour subscription at half the price of Telia HomeRun's.

Limited range and unlicensed frequency band mean that the site suppliers fully control the areas that the WISPs want to cover. As the large amount of initial actors need the same sites, and there is no way (as of yet) to share them, it also follows that there will be a war over the best sites.

Another phenomenon that can be noted as likely to happen in the context of rivalry is the various types of actors offering public WLAN services do not compete on the same terms. The pure WISPs base their profitability solely on the public WLAN service, whereas a single point WISP (such as a hotel which offers the service only as value-add) or, for that matter, a MNO WISP depends on other service revenues. This will mean that a single point WISP or a MNO WISP can have completely different prices, and can tolerate project losses.

Turning old arguments upside-down can make an interesting point about substitute products. A low-price bitpipe 3G (WCDMA) MNO can offer 384 Kbps per user, compared to the Public WLAN service that can offer 4 Mbps to share (even though the connection to Internet limits the rate to around 2 Mbps in reality). The 3G MNO can offer the service anywhere – it is not restricted to hotspots. That will probably be sufficient for many users of mobile data and will thus limit the size of the target segments for public WLAN services.

### Conclusions

For any MNO the question of public WLAN services is, and has been, on the agenda for the last two years. Some operators monitor the development closely, some investigate its potential and others have even already deployed public WLAN services.

Northstream's reflections on public WLAN services that have been presented in this whitepaper can be concluded in one sentence:

*The size and value of the target market is uncertain and the instability of the market structure indicates a high probability for low profitability.*

The main reasons for this are the unknown demand pattern of the target market in combination with immature usability of the service and the instability of the market structure. The instability of the market structure derives from the low barriers to entry, the different objectives between the competitors and the very strong position of the site suppliers.

In addition it has been argued that the immature technology could be used for building competitive advantage for an MNO that has taken a decision to offer the service.

Still, many MNOs actually offer the service. The reason is simple: it can be argued that public WLAN services have strategic value for a MNO. The strategic value is based on the following arguments:

- The total usage of mobile Internet and wireless services will rise altogether if complementary services such as public WLAN is offered along the core mobile services;
- The 3G package is more attractive with public WLAN as a value-added service;
- Not having public WLAN while the competitors do can lead to loss of customers; and
- The extra service can be exploited in market communications.

None of the above arguments are written in stone. It all comes down to how the strategy is formulated and the fit to the existing strategy of the MNO. Northstream has both the experience and knowledge needed to help MNOs assess the strategic value, make the decision and create the strategy.

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