

# Can advertising based earnings logic become a basis for future mobile business models?

Olli Immonen<sup>1</sup>, Luca Galli<sup>2</sup>, Timber Haaker<sup>3</sup>, Ulla Killström<sup>4</sup>, Olli Pitkänen<sup>5</sup>, Mark de Reuver<sup>6</sup>

<sup>1</sup>Nokia, olli.immonen@nokia.com,

<sup>2</sup>NEOS, luca.galli@neosgroup.it,

<sup>3</sup>Telematica Instituut, timber.haaker@telin.nl,

<sup>4</sup>Elisa Corporation, ulla.killstrom@elisa.fi,

<sup>5</sup>HIIT, olli.pitkanen@hiit.fi,

<sup>6</sup>Delft University of Technology, G.A.deReuver@tbm.tudelft.nl

**Abstract**— Users' willingness to pay for new mobile services is questionable. This paper gives an overview of opportunities and challenges related to advertising based business models for mobile services from user acceptance, earnings logic, technology and regulatory point of view. It presents the roles involved in an advertisement based business model.

**Index Terms**—Mobile advertising, business models, mobile services

## I. INTRODUCTION

MobiLife Integrated Project, part of the Wireless World Initiative (WWI) in IST-FP6 [1], aims to bring advances in mobile applications and services within the reach of users in their everyday life by innovating and deploying new applications and services based on the evolving capabilities of the 3G systems and beyond.

Consumers are showing interest in new mobile services but their willingness to pay is rather low. Costs of services are among other aspects (e.g. usability, usefulness) regarded to be responsible for acceptance problems of mobile services. To obtain higher revenues with mobile data new revenue sources therefore have to be identified. Mobile advertising, where advertising companies pay to get advertising messages to recipients is a promising approach for new revenue streams. Several consumer trials and surveys have shown that advertising is acceptable to consumers if certain conditions are met. Conditions include easy opt-in and opt-out possibilities. Most consumers would accept advertisements in exchange for some compensation, e.g. free services, targeted offers that they perceive as relevant [2].

Mobile advertising coupled with mobile information and entertainment services is a developing area. Notable examples are Google Mobile [2] and iAnywhere's AvantGo '05 [4]. The latter is a free mobile content service for smartphones and PDAs that lets you synchronize mobile versions (called "channels") of websites to your smartphone or PDA. The application may also be used as browser to access sites on the move. AvantGo offers thousands of channels from leading brands in news, weather, sports and more. Interesting here is that AvantGo '05 is a free download. iAnywhere pays its bills by selling ads.

Mobile advertising provides interesting opportunities for advertisers and service providers as individualised and customer-oriented marketing becomes more and more the desired form of interaction with the customer [5]. Compared to traditional mass-media advertising and mobile advertising has several advantages. It allows for interactivity, better targeting of specific user groups, personalised and context-aware offers, and the possibility of immediate transaction. Finally, the effectiveness of a campaign can be better measured.

Existing studies on mobile advertising have discussed user acceptance (e.g. [6]), technical solutions (e.g. [7]) and business aspects (e.g. [8]). The objective of this paper is to give an overview of opportunities and challenges for advertising based business models for mobile services such as those developed within the MobiLife project. Special attention is given to regulatory issues including user privacy, anti-spam protection and adequacy of information. The opportunities and challenges are derived from literature and market study, field evaluations of MobiLife applications and a series of 20 expert interviews with academics, industry representatives and practitioners from three leading

European countries with respect to mobile service provisioning (Finland, Italy, and the Netherlands). Case examples from the MobiLife project show how advertising can be applied in mobile services, while user evaluations of these cases indicate how it is perceived by the users. An illustrative advertising based business model from the MobiLife project is presented to show how these types of services can be used as a basis for business models.

## II. A FRAMEWORK FOR MODELLING THE BUSINESS

Business models have become a trendy concept. The background and also the reasons behind the sudden interest are in the Internet business.

The business model concept has a fragmented nature in the academically oriented literature and thus it remains more or less under-conceptualized (e.g. [9], [10], [11], [12]). However, the notion of a business model is frequently applied in the information and communication technologies (ICT) literature. A good business model can be regarded as essential for every company. In MobiLife project we have identified a conceptual framework that identifies the key components of a business model [13].

The main motivation for choosing a component based approach comes from the strategy literature (e.g. [14]). Strategy defines the meaning and direction for the company and thus also for the business model. A business model is a tool to make sure that the different parts of the strategy implementation fit together. The applications and services designed in the Mobilife project provided us material for deeper understanding and clarification of how the components interact with each other. The components included in our framework: user/customer, products/offering services, earnings logic, resources, suppliers, organization and processes.

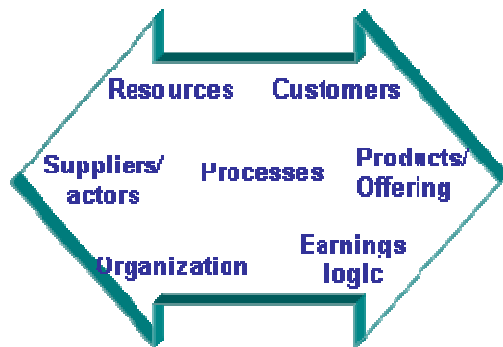


Figure 1. Business model framework

In this business model framework *the user component* focuses on user needs and expectations as well as the definition of required product performance. Four different aspects (personalisation, context-awareness, group awareness, trust and privacy) are the features of new applications and services in *products and services component*. The challenge of a service promise and how to define it is regarded as important. The familiar revenue

models are considered in the *earnings logic component* as well as the need for performance metrics. Advertising based revenue sources are regarded as one possibility.

The means to create value are defined in the *resources component* and this definition is highly related to the other components of the business model. New technologies provide new business possibilities for traditional as well as for quite new actors. The changes in traditional roles and the need of dynamism are described in *suppliers/actors component*. Inter-organizational collaboration between different architectural specifications, *architecture component*, as well as the *processes component* bind the different activity chains and different information flows together.

The components of a business model do not operate in isolation. Choices in them have to be balanced with the company strategy and with each other. As a result, alterations in one component have impact on the definition of the other components. In this paper, we explore the challenges of earnings logic, describe the characteristics of advertising as part of the earnings logic and what this mean to the definition of the other business model components.

## III. CHALLENGES OF EARNINGS LOGIC

The earnings logic component of the business model spells out how organizations create revenues. The revenue model lays-out the process by which a company actually makes money by specifying how it is going to charge for the services provided. In case of advertising based revenue models it is not the end-user that is charged but the party providing the advertisements.

Most experts interviewed during MobiLife expert interviews see that users are not willing to pay for mobile services except for some exceptional cases, e.g.

*“If you ask if there is a way to transfer an existing service to mobile and start charging it, that I don’t believe in. It is because usage habits come from the internet leading, not mobile services leading. [...] There should be some evident fair added value that it would be charged in mobile internet if it is free in the regular internet.”*

That is why most of the experts consider advertising as an important revenue source:

*“Internet business model is simple and could be applicable here, too.”*

Contextual advertising combined with information or entertainment services is one form of sponsored mobile services. The contextual aspect may be a combination of context parameters like location or time-of-day and personal preferences stored in a personal profile. In other occasions the sponsoring may result in a branded mobile service, e.g. sponsored by a local authority or commercial party, without carrying actual advertisements. For example a mobile instant messenger sponsored by Coca Cola in Germany called the ‘Coke Fridge Messenger’, see [www.cokefridge.de](http://www.cokefridge.de). Local authorities may sponsor

community services that benefit the well-being of citizens or that make their area more attractive, e.g. as a tourist location.

Other models may exist in which a mobile customer relationship is sponsored between a consumer and a department store, resulting in a free-of-charge service for consumers if the consumer meets a specific profile [5].

In the market place it is still unknown how revenue models of future (context aware) mobile services will look like [15]. For example for television services on the mobile device, a debate is going on whether a monthly subscription fee should be charged or an advertising based model is more viable. Jonason [16] argues that the previously accepted pricing structure for mobile services, based on charging per megabyte, is insufficient for the introduction of wireless broadband (3G) services. They draw this conclusion from an extensive consumer survey regarding consumers' willingness to pay for a large number of mobile Internet services. Charging per megabyte would make some services too inexpensive to generate sufficient revenue, whereas others would be too expensive to create any demand. Pricing of services therefore need to be taken at a service-specific level to generate satisfactory profits in 3G and 3G+. The basis upon which each service is charged is likely to vary over services.

A successful Internet company like Google is primarily based on contextual advertisements based on given search terms. A contextual advertisement revenue model may also be the most appropriate revenue model for a mobile service offering which offers suggestions on how to spend leisure time, taking into account personal profiles and explicit preferences, availability and other relevant context information of the users. By matching the profile and status information of users with the available services, end users are able to easily enjoy the most appropriate content services (e.g., an interesting exposition in a nearby museum, mobile content, concert, movie) in a given context. However, in order to get enough revenue based on advertisements, a service may need a large customer base. Of course such advertising will only work if sufficient relevant context and personal information can actually be reliably gathered, interpreted and used against acceptable costs.

Yunos et al. [16] identify several revenue generating strategies for wireless service providers using wireless advertising.

The *diversified* revenue model seeks to increase content quality and create a compelling offering that draws and retains paying subscribers. Next to subscription fees, this model can generate revenue either through placement fees or by receiving a share of advertising revenues and m-commerce fees. It can also subsidize the cost of either acquiring content or discounting consumer service fees. This revenue model is e.g. used by Vindigo ([www.vindigo.com](http://www.vindigo.com)).

In the *media-dependent* revenue model revenues come wholly from advertising and m-commerce revenues generated over the wireless service provider's distribution channel. The media sales may be outsourced, in which case the sales and m-commerce are the responsibility of the

media partner, or in-house, in which case the wireless provider extends its function towards media sales as well. This latter model is e.g. used by AvantGo.

#### IV. DOES REGULATION ENABLE THE BUSINESS MODEL?

Privacy concerns with mobile business in general are high, as mobile devices are personal and are always with the user. Mobile advertising involves the risk of mobile spam [18]. Given the costs of mobile traffic the problem will not have the large scale as e-mail spam, but mobile spam is also more intrusive and it requires more effort to delete messages. Two mechanisms are important in anti-spam regulation: opt-in and opt-out. In case of opt-in the user has to give his consent that he wants to receive the messages before the messages are sent to him. In case of opt-out messages may be sent to the user until the moment he states that he is not willing to receive them.

Within the European Union and Switzerland for mobile advertising an opt-in regime is required, unless there was a previously existing relationship between the user and the advertiser. In the latter case the user should be allowed to opt-out at the first contact. Legal sanctions are set by member states in the European Union, and in Switzerland these are both civil and penal sanctions. Within the USA for mobile advertising an opt-out regime is required. The USA has both criminal and civil penalties for mobile spam.

Also, not only opt-in and opt-out rules, but the data protection law as a whole is most important in relation to advertising based mobile business, since personalized advertisements require the processing of personal data [19]. The data protection law defines the legal framework in which businesses are allowed to – for example - collect, record, organize, store, adapt, retrieve, use, disclose, and combine people's personal data [20],[21]. In general, it is acceptable to process customers' personal data for advertising purposes, but only in accordance with law. The end-user has, for instance, a right to get information about the data undergoing processing and request to correct the data.

The regulations that are implied by governments are of course not the only way for businesses to choose their consent regimes. It is probably beneficial for advertising agencies to respect user privacy, because once users are displeased by the advertisements, they may be lost as potential customers for the advertisers that are hard to win back.

Issues relating to marketing and unfair competition law, such as comparative and misleading advertising, are important also in relation to mobile business models. Also, the various consumer protection rules must be always considered when directing advertisements to consumers. Consumer protection legislation namely governs advertising aimed at consumers, including e-commerce and telemarketing campaigns.

The law stipulates, what information must be given to customers. For example, the European Directive on electronic commerce [22] states that in connection with an information society service, the customer must have access

to specific and considerable amounts of information. When the end-user accesses the service with a desktop computer and the web, providing this information is not an issue as long as the service provider is aware of these requirements. However, with small mobile devices, it can be difficult to provide all the information that the law requires.

The law also limits the available marketing tools. For example, lotteries are strictly regulated in many countries, and they are totally illegal in some others. In addition, the law also restricts the advertising of certain products and services, like alcoholic beverages, tobacco products, and sexual services. These rules are quite different even in different EU member states – not to mention countries outside the Union. It is quite difficult, sometimes even impossible, to limit the geographical area to which mobile advertisements spread. Therefore, an advertisement that is perfectly legal in the country where it has been sent from can be illegal, even criminal, in the country where it is received. The advertiser may break the law or commit a crime unwillingly in another country, if one is not careful with these regulations.

## V. TECHNOLOGY FOR MOBILE ADVERTISING

Technical enablers for mobile advertising include enablers for triggering the advertisement, enablers for transmitting the advertisement and enablers for displaying the advertisement to the user.

Triggering the advertisement can be based on a CRM system that has information about users' preferences: buying habits etc. This makes it possible to provide relevant personalized advertising to existing customers. Various information services, like mobile search applications, can be used for triggering advertisement also for new customers.

Context information and especially location is very important for delivering the advertisement the right time. Enablers for location tracking include cellular network based, WiFi based, Bluetooth proximity based location, GPS and RFID [23]. These technologies differ in achieved accuracy and complexity in deployment in terms of required hardware and software support in terminals and network, and business models. E.g. cellular network based location supports the accuracy comparable to cell distance. It works with no extra features in terminals or the network but requires that the cellular operator is involved in providing the location information. Bluetooth positioning requires that the advertising system provider invests in setting up a network of Bluetooth sensors.

Enablers for transmitting the advertisements include SMS, GPRS and 3G (used as a bearer for e.g. information applications), WiFi and Bluetooth. Also relevant are higher level transmission enablers like MMS, WAP Push and mobile email, and special content types like ring tones and mobile coupons. The difference is in transmission speed and cost. Pricing model for data traffic (GPRS/3G) has influence advertising: if data pricing would be flat rate, it is quite different than if the user or the advertising provider needs to pay for transmitting the advertisement.

Enablers for displaying advertising include the terminal

hardware (like relatively large high resolution colour display) and UI software. The UI software in a basic case includes SMS and mobile email applications. The obvious drawback of SMS is intrusiveness for the user. More sophisticated ways for displaying the advertisements and supporting relevant user interaction include mobile browser, RSS, media players, interactive media broadcast applications, mobile TV and special information service applications.

There is a reason to believe that technical development such as larger screen size, shorter download times and intelligent software such as using user profiles and context (such as location information) can make mobile advertising more attractive [23]. Also, as one expert interview participant points out, advertising can utilize cross-media solutions.

MobiLife developed several applications for utilizing personalization and context and thus being examples for a mobile advertising application.

## VI. USER ACCEPTANCE

### Background

Studies indicate that a large part of consumers have negative attitudes towards receiving SMS based mobile ads [24]. Still, there are several factors contributing to willingness of accepting mobile advertisements [25]:

- Choice: users should be able to decide whether to receive messages ('opt-in')
- Control: users can bypass messages easily or decide to stop receiving them ('opt-out')
- Customization: users should be able to filter the messages received
- Benefit: users should get something back in a form of tangible benefits (as in electronic coupons), entertainment or relevant information.

Mobile advertising is considered as acceptable as TV and radio advertising if it is delivered by a trusted source [23]. Thus, users are willing to give their permission only to organizations they trust.

### User perspective as seen in MobiLife

MobiLife is structured on the basis of an iterative, user-centric approach. Each development step is followed by a cycle of user research; findings are fed back in the design and development activity.

Scenarios → Mock-ups → Probes → Prototypes

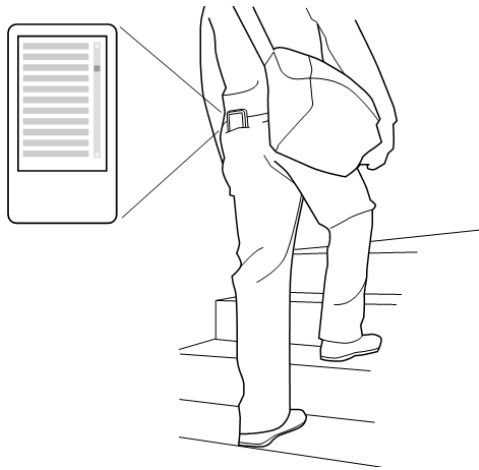
Accordingly, MobiLife initially investigated users' interest in advanced mobile and wireless applications and services with a round of scenario evaluation. Then mock-ups representing more targeted applications and services ideas were developed and evaluated again with end-users in a different setting. At the end, semi-functional probes and functional prototypes have been tested first in the laboratory

and then in real-life extended trials. In the following paragraphs we review these findings.

### Scenario evaluation

A set of two to four scenarios was shown to end-users. Since one of the project main objectives is to develop innovations to improve users' daily life, scenarios were discussed with families in Italy and Finland in their usual context.

Here the focus is on a specific category of tasks and behaviors represented in the scenarios, the one called "interaction with commercial services". In fact, MobiLife scenarios included e.g. the idea that walking around the city a user would receive promotional messages tailored both to his physical and social context.



*Before Dinner party: Olivia's boyfriend Maurice is walking around the town and keeps receiving information regarding nearby locations and shops that provide objects that appear on his to-buy list. The information is provided discreetly, in a kind of 'silent push' manner, because there is still plenty of time to buy the flowers. At some point, Maurice notices that there is a flower shop that is open within a reasonable distance. He starts to head for the shop, but meets some friends on the way, and stops to talk with them. He continues walking after a while. He passes by a bus stop, and the system produces a warning about lack of time and suggests that he takes a bus and buys the flowers at the end destination, where there is another open store nearby.*

In short, users get information about available products and services that suit their actual situation and the system maintains information about the users' personal preferences.

Coming to users feedbacks, interaction with commercial services was generally seen as something that already exists today. Mobile situations presented in the scenarios reminded the participants of personal experiences with internet shopping, WAP-based service finders or even traditional media such as travel books or window shopping.

A lot of the described interactions included suggestions made by the system. The idea of utilising user profiles or

preferences to suggest services in the vicinity of the user resulted in different assessments by the participants.

Some participants seemed to be willing to accept plenty of personalised "push" with even more advanced techniques, such as virtual images of the user wearing the clothes sold in the nearby shops.

In contrast, some users strongly rejected these ideas. Criticism was based either on general unease with the fact of being monitored at all, or on some negative experiences of analogous systems. For example, it was suspected that despite all the intelligence of the system, the idea could likely result in unfit suggestions and spam, since there will always be some commercial players who want to manipulate the ranking of the items.

It was also noted that location-aware commercial services could be misused for criminal purposes. Security issues were thought to be especially important if users' location, profile, preferences, shopping lists and financial status were displayed to actors in the vicinity of the user. Hiding information from people other than trusted parties was commented as a partial solution at best. For example, if a downtown department store is trusted as an organisation, this would not mean that all its employees are also trusted.

Intelligent and adaptive systems face the dilemma that the more appropriate inferences they make about users' wants and needs, the more out of control users will feel. Users want to make decisions themselves.

Even when the users' actions are strongly influenced, they should be made to feel they are in control.

*"I prefer choosing CDs by myself"*

It was also suspected that device-centered interaction with commercial services would lead to alienation from the real world, physically and socially.

*"I don't want the machine to suggest anything to me: I like human relations"*

On the basis of this first round of user evaluations, MobiLife experts agreed on a number of early design guidelines that seem relevant for mobile advertising at a general level:

1. The user needs to be in control of whether they do or don't receive "pushed" information (proactive suggestions made by the system, e.g. location and/or context based alerts or profile-related offers).
  - a. It is recommended to offer filtering by interests as well as simple on/off.
  - b. The preferences related to pushed information are likely to depend on the user's context.
2. Trust towards commercial services should not be automatically extended to all the people involved with that brand; users should be in control of fine-grained trust choices (if they want to).
  - a. Users could trust a specific brand but not necessarily all the staff employed in a certain retail shop of that brand.
3. Users should be in control of who has access to

information about their interaction with commercial services.

- a. Provide logs and views that allow the users to know what information is being shared with the commercial services, or gets to see their preferences or profiles.
4. Provide easy means to secure the device in case of theft or loss.
5. Design for the interpersonal dimension of commercial services (e.g. still consider the enjoyment - or just the practical need! - of talking to a salesperson).
6. Specific practical advantages allowed by the mobile/wireless usage situation should be provided.
  - a. E-ticket example: whatever you purchased should be directly usable from the device.

### Mock-up and prototype evaluation

This paragraph presents the results of MobiLife mock-ups and prototypes evaluation, consisting of a set of user tests and trials conducted in spring 2005 (mock-up evaluation) and in summer 2006 (final prototype evaluations). Here we only present those results that are relevant to mobile advertising.

The first of these is the “MobiLife Multimedia Infotainer”. The mock-up presented a news functionality that took advantage of multimodal capabilities. This means showing content in different, multimodal ways, depending on available devices. Devices available in mock-up were: cell phone and TV (emulated on PC). The user had full control of them and could switch from one of them to another at any moment. Devices were synchronised, so that an action performed on one of them affected another (e.g. the user could switch a presentation from a mobile device to a TV, and the news displayed on it will be coherent to the last ones seen on mobile).

With regard to this application, all the people expected the service not to be free. When asked, they also said that they might be willing to get advertising if the price will be lower because of that. The condition for this is that advertising must be adaptable according to user's own interests. Age had an impact:

- younger users would accept to receive any type of advertising to have the service for free;
- middle-age people would not accept advertising.

A second case is about the “Context Aware Interpersonal Communicator”, an application that supports light-hearted, effortless interpersonal communication and aims at helping people to stay in touch and maintain peripheral awareness of each other. It aims as well at promoting emotional communication by simulating real-time face-to-face situation as closely as possible. Furthermore, it allow the exchange of context information between a person and his contacts (friends, family, colleagues) to induce awareness of each other's situation and allow the optimization of multimodal communication modalities.

According to the majority of interviewees, the Interpersonal Communicator should be free of charge. If they would have to pay something for it, they won't

probably use it because it won't replace SMS e-mail, phone calls or any other existing communication mean. The fees can be replaced by advertising, that they would be actually ready to accept (but with no more than 3-5 messages a day). If this happens, then they might be willing to try this application.

All the people said that they would expect the service not to be free. In details:

- younger users would accept to receive any type of advertising to have it for free (say e.g. with no more than 4 SMS a day);
- middle-age people would accept advertising only at the beginning and at the end of communication session.

The following cases are actually those in which advertising may be even more relevant, as the applications involved are focused on context based content delivery and grouping mechanisms that seem to fit pretty well with related promotional messages. In fact, the “Time Gems” and the “Tourist Info-system” rely on context-awareness and group management capabilities to provide end users with profile-based recommendations about leisure time, either at home or when travelling. The test consisted of two focus groups held in Turin, Italy.

The “Time Gems” application is useful for finding an activity to perform in a given timeframe (e.g. waiting unexpectedly a train for half an hour or for next Sunday afternoon). When the user has some spare time he or she can set up an activity for him/herself and/or join a group in some activity based on the users context information and choices. Activities are suggested based on the user and group preferences, the group time frame - how long does the activity take - and the group disposition - when has the group time for the activity.



Figure 2. The TimeGems application

Users stated that they expect that this service would not be accessible for free and that some advertising and marketing agreements would be obvious, given the nature of the service.

Middle-age subjects seemed to have a clearer understanding of the possible pros and cons of an advertising-based model. Some of them said that they would still use a free-advertising sponsored service, assuming that in a case like this the offers would only come from advertisers; in the case that the service would be premium, they would expect an editorial approach and just some

advertising content.

The “Time Gems” allows also shedding some light on user worries about the possible blurring between proper editorial content and advertising.

Other applications, namely the “Bus stop” and the “Augmented scheduler and reminder” prompted quite homogenous users’ reaction on the potential role of advertising.

The Bus Stop connects to the mobile device of the user and provides travel related information. Based on historical records of previous bus trips, schedules as well as the time and location, the system offers the user some suggestions where to go, a detailed map plan and price list, plus a selection of other alternative means of transportation (taxi, subway). The mock-up shows how a context change (location, preference, target, time of the day, environment, presence...) triggers a process, which at the end leads to an offering of a list of most suitable and available services. The offered list of services is tailored to the current situation and the personal preferences (collected either implicitly or explicitly) of the individual user.

The “Context Augmented Scheduler and Reminder” enhances the classic functions of existing Scheduler and Reminder applications using context information such as location or situation (e.g. the reminder is delivered according to its relevance in a specific situation). The system utilizes schedulers, to-do lists and location information to notify and help the user in managing his life. It also focuses on group communication by presenting task sharing among group members.

Both groups stated that they would not expect to get this service for free, with many subjects adding that the cost should be low.

As for the Bus stop, all of the younger users said that they would accept to receive advertising to have the service for free, while the elderly people would not accept advertising as they find it annoying. With regard to the “Augmented scheduler and reminder”, younger users again were the ones that said to be ready to accept advertising for having the service for free.



Figure 3. The default screen of FamilyMap’s Nokia 9500 version, showing nearby points of interest. In the screen, one such note has been opened for closer inspection.

The “FamilyMap” application concept is intended to provide geographic information for families with babies. It will help families to solve practical problems (e.g. find a suitable place for changing diapers) and help them to find locations where they can take care of their babies or spend some time in a relaxed way. In the application evaluation, the researchers included the delivery of commercial notes so that the users’ attitude towards advertising-supported

models could be investigated as well.

The commercial notes that the FamilyMap displayed in the trial were gathered from the internet and from the daily newspapers. The notes that were created based on the internet information were locations of different stores, child care services in the shopping malls and commercial events. From the newspapers the researchers collected advertisements and posted them to the FamilyMap. Commercial events were also advertised in the same way as public events.

The advertisements received mixed reactions. According to interviews they were not seen interesting as the users were accustomed to check the offers from the newspapers. On the other hand the commercial advertisements in the FamilyMap application were harmless and one of them actually caused one user to go and buy the item. The commercial content was seen most useful in an unfamiliar environment.

Summing up, users seemed not surprised at all at the perspective of advertising supported services, but did not have equally welcoming reactions. If young users considered usually this an opportunity to get the services for free, older ones shared more concerns and sometimes stated that this benefit would not balance the hassle of promotions. Obviously all the features, other than advertising, of MobiLife applications and services played a role in determining the overall user opinion, but still it seems possible to identify the general trend outlined above.

It is also worth pointing out that advertisements or commercial information should not be seen only as a way of financing usage of mobile services (that would be then about something else than the ads presented aside). Advertisements - especially if they relate to things in the vicinity of the user - can also be seen as one kind of added value content within the system. This conclusion is in line with an expert comment at MobiLife expert interviews:

*“The end user needs to experience mobile advertisement as a service. It is always a service and even advertising must bring some added value to the user.”*

Ads can also aggregate use of other features of the location-aware systems they are part of. Commercial and public information messages, even when they are not immediately useful, may encourage and assist users in getting familiar with the system, creating new content and interacting with it and with the other users [26].

## VII. CUSTOMER PERSPECTIVE: IS THE ADVERTISER INTERESTED IN USING MOBILE MEDIA?

A role of special interest is that of the advertiser, as most advertisers are currently not involved in mobile business. Besides advertisers that simply want to give information about their services and products, we feel that event media publishers, public agencies, organizers and ticketing agencies could especially benefit from this business model.

Mobile advertising may be used to create brand awareness, to generate leads, or to provide customized

offers.

In comparison with other media, click-through and conversion-rates are higher than typical Web banner ads. Consumers interact with synchronized content in their "downtime" providing exclusive attention [16]. According to studies, SMS has a response rate of 15%, followed by email (1-6%) and direct mail (1-5%) [28]. Experiences from campaigns also show that m-advertisements are remembered well: in a mobile advertising campaign, close to 80% of the test users reported remembering the advertisement after 15 days [6].

A survey among advertisers [27] identifies most important drivers for developing mobile advertising

- personalized medium
- users are able to 'opt-in'
- 'call to action', i.e. immediate response is possible
- location specific
- interactive profiling

It is clear however that applying mobile advertising requires a different way of thinking from the advertisers than they are used to now. Salo & Tähtinen [29] carried out an experiment to see whether advertisers would fully recognize the benefits of this new channel. These assumed that mobile advertising allows advertisers to target individuals instead of groups, and makes personal, interactive and context aware advertising possible. But in the experiment with mobile advertising they found that advertisers still have to learn how to take full advantage of the possibilities of mobile advertising. Features such as context awareness were only used by advertisers as far as they were used to do so with other media, and advertisers in the experiment did not use personalization features at all.

### VIII. ROLES IN A BUSINESS MODEL WITH ADVERTISING

Crucial in our component based approach is that changes in one component (in this paper the earnings logic) impact other components. This is also the case for the organizational aspects of the business model, i.e. the Suppliers/Actors and Organization components in our business model framework. In order to assess the feasibility of advertisement based earnings logic in mobile business models, we need to explore how the value net and the governance used in the net have to be altered.

Mobile advertising requires conducting a wide range of activities. For example, Salo et al [30] find four types of activities from interviews with experts in the field. The first is campaign management, including the advertiser's activities, consultancy to the advertiser, the overall planning of the campaign, and selling of media space. Second, content creation is required, including the provisioning of the raw advertisements, the content itself, and packaging of the content. Third, permission management has to be conducted, involving controlling databases of potential receivers of the ads, requesting and receiving permission and creating opt-in lists. And as a fourth activity type, the ads have to be sent to the end users.

These activities can be related to (new) roles in the value

net. Komulainen et al. [31] suggest the roles needed to offer mobile advertisements include the application provider who delivers the software system that is needed for the service, the advertiser who delivers the mobile advertisements, the mobile network operator who offers access to the mobile network to allow the delivery of the advertisements, the mobile service provider who gives advertisers access to the advertising software system, the end user who receives the advertisements, and the infrastructure provider who provides the network infrastructure needed to run the service. As we consider the advertisements as part of a larger service offering, we complement this list of roles with the 'regular' content providers in the value network, and – in case the user still has to pay a reduced fee for the content – a payment system provider.

The advertisements sent to the end users are not static but context aware, requiring an additional set of resources and capabilities. Some roles required to offer location aware services are suggested by Maitland et al. [32]: the user positioning provider, who delivers the location information, the GIS provider, who offers the Geographical Information System services such as maps, proximity calculations and routing information, and the geo-coding provider, who adds x,y coordinates to the (advertisement) content.

In sum, we consider the following roles to be most essential in an advertising based mobile business model.

- The **end user** is the mobile user who receives the advertisement. The user receives value from the service provider, as the service provider provides the service offering to him. The user also receives value from the network provider, as this party offers network connectivity to him.
- The **advertiser** invests directly or indirectly in the service to promote its products and services and provides advertisement content to the service.
- The **service provider / content aggregator** composes the service for the end user. This party packages content from content providers and advertisers, matches the content to the personal profile of the user, and delivers it to the user. The service provider is a structural partner, as this role is specific for the service and cannot be substituted easily.
- The **content provider** provides content other than advertisements that is included in the service offering. As this content will be specific for the service but can be obtained from various content providers, this is a contributing partner.
- The **application provider** provides the application that the service provider needs to offer the service. The application will be specific for the service, but as there are various parties capable of doing this, this is a contributing partner.
- The **network provider** offers connectivity that enables the service provider to deliver the service to the end user.
- The **context provider** provides information about the context of the mobile user to the service provider, such as location information.
- The **GIS provider** provides geographical services to

the service provider that are needed to map the location of the user to the advertisement content. These services could be provisioning of maps, proximity calculations or adding coordinates to the advertisement content.

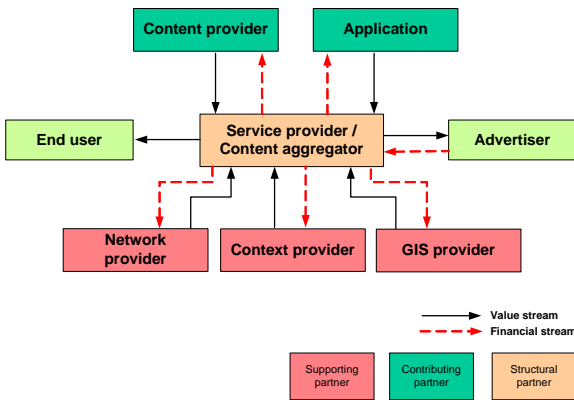


Figure 4. Roles and their relations in an advertisement based business model.

Figure 4 visualizes these roles and their relations. The figure distinguishes structural partners, who provide essential and non-substitutable assets to the value web; contributing partners, who provide assets specific to the value web but that can easily be substituted; and supporting partners, who provide essential assets to the value network but whose assets are used in other services as well. This figure also shows the value and financial streams involved.

To make the business model and the proposed value network, proper governance mechanisms have to be in place. We see governance here as the mechanisms that are used to coordinate, safeguard and adapt the activities of the legally independent actors comprising the value net [33].

Because of its central position in the network, we expect that the service provider will play an important role in organizing the collective activities. The service provider acts as an intermediary between content providers, advertisers, the application provider, network providers and (potential) customers, and has to create and manage relationship with the diverse group of content providers and advertisers and has to intelligently market their services to the end users of the network. Possibly, this role will also involve the highest risk, as the service provider needs to reach two critical masses to make the service work: it needs to acquire a sufficient number of customers to provide value to the advertisers, and it needs to mobilize a sufficient number of advertisers to have a viable service. When the service provider fulfils this role effectively, he may ultimately gain power over the other roles in the network and become the nodal actor in the value net.

So, the role of service provider will probably be crucial to the success of the business model, as the actor fulfilling this role will be practically in charge of the net. Interestingly, it remains still to be seen which party will be the service provider. In theory, this could be a network provider, an Internet start-up company or an established company that

already has experience with targeted advertising like Google. The role can also be fulfilled by a large advertising agency, but only if they have a sufficient volume of advertising content to distribute.

## IX. CONCLUSIONS

Our findings indicate that there are opportunities and challenges related to each of the components of a mobile advertising based business model:

Technologies such as context-awareness, personalization and adaptive UI can be demonstrated to enable advertising solutions; however applying those technologies effectively in practice remains a challenge.

Users' acceptance of mobile advertising is influenced by the possibility to make it useful and enjoyable, in addition to its commercial dimension and despite the fact that previous attitudes might be different (e.g. younger users were more open towards ads). This could be a promising direction especially if advertising is about products and services that are close to the users' physical or social vicinity; users then might have a chance to comment or even modify the advertising message. In doing so, they would be driven by their own and other users' interests, but the result could be an increased advertising effectiveness.

Earnings logic development requires a sufficient user base of the service and that sufficient relevant context and personal information can be reliably gathered, interpreted and used against acceptable costs. Revenues can come wholly or partly from advertising.

Advertising based earnings logic implies the entry of the advertiser in the value network, and to some extent changes the roles of other players. Because of its central role in the value network, the service provider is expected to fulfill a crucial role in setting up the service and governing the activities in the value network. It is yet to be seen which party is most suited to fulfill this vital role.

Regulation sets rules related to different aspects of mobile advertising, namely anti-spam (opt-in, opt-out mechanisms), user data protection, marketing, unfair competition and consumer protection, and sets limits to available marketing tools and advertising of certain products and services. With small mobile devices it may be difficult to provide all information required by the law to be present in an information society service. Another challenge is to limit or adjust advertising according to different rules in various countries.

## ACKNOWLEDGMENT

The work has been performed in the framework of the IST project IST-2004-511607 MobiLife, which is partly funded by the European Union. The authors would like to acknowledge Antti Salovaara and Esko Kurvinen (Helsinki Institute of Information Technology) for providing input regarding MobiLife user evaluations.

## REFERENCES

- [1] MobiLife EU project IST-511607 ([www.ist-mobilife.org](http://www.ist-mobilife.org))
- [2] Petty, R.D., (2003). "Wireless advertising messaging: legal analysis and public policy issues", *Journal of public Policy & Marketing*, vol.22, no.1, pp. 71-82.
- [3] Google (2006), Press Center Announcement, April 7 ([www.google.com/press/annc/mobile\\_ads\\_jp.html](http://www.google.com/press/annc/mobile_ads_jp.html)), 14.11. 2006)
- [4] AvantGo (2006), (corp.avantgo.com/avantgo, 14.11. 2006)
- [5] Figge, S., and Schrott, G. (2003). "3G 'ad' Work – 3G's breakthrough with mobile advertising", Paper presented to: 8th International Workshop on Mobile Multimedia Communications (MoMuC 2003), October 6-8 2003, Muenchen, Germany.
- [6] Leppäniemi, M., Karjaluoto, H. (2005). "Factors influencing consumers' willingness to accept mobile advertising: a conceptual model", *Int. J Mobile Communications*, vol. 3, no. 3, 2005, pp. 197-213.
- [7] Toye, E., Sharp, R. Madhavapeddy A. and Scott, D. (2005). "Using smart phones to access site-specific services", *Pervasive Computing*, IEEE, Jan.-March 2005, Vol. 4, Issue 2, 60-66.
- [8] Facchetti A., Rangone A., Renga F.M. and Savoldelli A. (2005). "Mobile marketing: an analysis of key success factors and the European value chain", *Int. J. Management and Decision Making*, Vol. 6, No. 1.
- [9] Amit, R. and Zott, C. (2001). "Value creation in e-business", *Strategic Management Journal*, Vol 22 No. 6/7, 493-520.
- [10] Magretta J. (2002). "Why business models matter?", *Harvard Business Review*, Vol. 80 No. 5, 86-92
- [11] Hedman J. and Kalling T. (2003). "The business model concept: theoretical underpinnings and empirical illustrations", *European Journal of Information Systems*, 12, 49-59.
- [12] Bouwman, H. & E. van den Ham (2003). "Business models and eMetrics, a State of the art", In: B. Preissl, H. Bouwman & C. Steinfield (eds). *Elife after the Dot.com bust*. Berlin; Springer Verlag.
- [13] Killström, U., Virola, H., Galli, L., Immonen, O., Pitkänen, O., Kijl, B. (2006). "Business Models for New Mobile Services and Applications", IST-2004-511607 MobiLife D10 (D1.5) v1.0, Elisa, NEOS, Nokia, HUT, Telematica Instituut, January 2006.
- [14] Barney, J. (1991). "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17, 99-120.
- [15] Carlsson, C. (2006). "Special issue on mobile technology and services, *Electronic Commerce Research and Applications*", Vol. 5, Nr. 3,, 189-191
- [16] Jonason, A., Holma, B. (2002). "Pricing for profits on the mobile Internet", *Engineering Management Conference, IEMC '02*. 2002, IEEE International, Vol. 1, 73- 78
- [17] Yunos, H., Gao, J., Shim, S. (2003). "Wireless advertising's challenges and opportunities", *IEEE Computer*, Vol. 36, Nr. 5, 30-37.
- [18] Camponovo, G., & Cerutti, D. (2004). "The SPAM issue in mobile business: A comparative regulatory overview", paper presented at the Third International Conference on Mobile Business.
- [19] Pitkänen O. (2006): "Legal and Regulation Framework Specification: Competence within Mobile Families and Ad-hoc Communities", IST-2004-511607 MobiLife, D11 (D1.6) v1.0.
- [20] Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data.
- [21] Directive 2002/58/EC of The European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector.
- [22] Directive on electronic commerce (2000/31/EC).
- [23] Unni, R., Harmon, R. (2003). "Location-based services: models for strategy development in M-commerce", *Management of Engineering and Technology*, 20-24 July 2003, 416-424.
- [24] Tsang, M. M., S. C. Ho, and T. P. Liang (2004). "Consumer Attitudes Toward Mobile Advertising: An Empirical Study," *International Journal of Electronic Commerce*, Vol. 8, No. 3, 65-78, Spring 2004.
- [25] Nokia (2002). "New Nokia research shows consumers ready for m-marketing via mobile handsets", by HPI Research Group, Research Report, January–October 10, press release ([http://press.nokia.com/PR/200201/846567\\_5.html](http://press.nokia.com/PR/200201/846567_5.html)) 14.11. 2006).
- [26] Kurvinen E., Lehmuskallio H., Häyrynen A. (2006). "Mashing Up Mobile: Lessons from the Field", paper presented at WWRP Conference, November 2006, Heidelberg, Germany.
- [27] Innovative Interactive Mobile Advertising Platform (IMAP) Project (2002). "Analysis of user requirements", Research Report, September 17 (<http://www.imaproject.org/imaproject/hmain.jsp>).
- [28] Enpocket (2002). "Consumer preferences for SMS marketing in the UK", Research Report 1, August–November 12 (<http://www.enpocket.com>) 14.11. 2006).
- [29] Salo, J., Tähtinen J. (2005). "Retailer Use of Permission-Based Mobile Advertising", *Advances in Electronic Marketing*, Idea Publishing Group, PA.
- [30] Salo, J., Sutinen J., Tirri J., Karjaluoto H. (2005). "Strategic Net Of Mobile Advertising: A Study Of Actors And Activities", ANZMAC 2005 Conference, Perth, Western Australia.
- [31] Komulainen, H., Mainela, T., Sinisalo, J., Tähtinen, J. and Ulkuniemi, P. (2004). "Business Models in the Emerging Context of Mobile Advertising" eBRF, Tampere, Finland.
- [32] Maitland, C. F., Van De Kar, E. A. M., De Montalvo, U. W. and Bouwman, H. (2005). "Mobile information and entertainment services: business models and service networks", *International Journal of Management and Decision Making*, 6, 47-64.
- [33] Jones, C., Hesterly, W.S. and Borgatti, S.P. (1997). "A General Theory of Network Governance: Exchange Conditions and Social Mechanisms", *The Academy of Management Review*, 22, 911-945.