

# MOBILE APPLICATIONS IN THE GERMAN HEALTH INSURANCE SYSTEM TO IMPROVE THE MARKET POSITION

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**Abstract:** Mobile end devices and applications play a growing role in business processes, especially in industry, commerce and service. But even in different branches, which are significant for their high intensity in competition – for example the German health insurance system – first preparations are taken to create an interface for the customer and thus advantages in competition. In many cases these projects are not included in the context of corporate strategy. This “paper” shows on the basis of a specific project with the health insurer IKK-Direkt, how mobile applications in the health sector can be introduced, so that technical restrictions are regarded and additional benefits to the customer are offered, consequently achieving a higher competitive position for the company.

## 1 INTRODUCTION

Technological advancements in mobile communication enable new ways of doing business (mobile business) (Stafford, 2003). In (Lehner, 2003) mobile business is defined as the application of mobile technologies to improve or extend business processes and open new market segments. Schierholz et al. characterized interdependencies between the strategic premises and the processes selected for being supported by mobile technology (Schierholz, 2005).

The German health insurance sector is strictly regulated by legislation. The basis for the benefits of the health insurance system is the Sozialgesetzbuch V (SGB V), part of the social code of law. The Sozialgesetzbuch V obliges all German compulsory health insurance companies to an identical catalogue of benefits, so called *Regelleistungen*. These benefits include for example medical treatments, preventive treatments and therapeutic measures and cover 95% of the overall benefits of the compulsory health insurance companies. (Polixea, 2006)

Because of this widely identical catalogue, a differentiation to other competitors through special offers for benefits is only possible in a limited extent. Concurrently, the income structure of the health insurance companies is being unified by

legislation. The possibility of the companies to define the premium rate independently and thus passing on cost benefits to their customers through a lower premium rate is vanquished by the introduction of the unified premium as part of the health reformation 2009. Consequently, companies try to differentiate themselves from their competition by offering additional services that are outside of the actual catalogue of benefits, for example online portals in which customers can change their address without bureaucratic complexity.

This paper will introduce an approach to how potential and actual customers can be given additional benefit by the use of mobile applications and thus increasing the competitive position of the health insurance company.

Furthermore, possibilities are presented on how the mobile internet can be implemented in the workflow of a health insurance company and which mobile services are recommendable for health insurance companies. Hence, the structure of the paper is as follows: At first, the specialties of the German health insurance system are outlined, since these set the regulative framework that has to be followed by the business strategies of the health insurance companies. Subsequently, a general overview of the current use of mobile services in the

health sector will be given. On this basis a concept for the development of mobile services is drafted and technical possibilities for the implementation of the concept are elucidated.

This publication shows a portfolio of potential mobile services for health insurance companies and their integration into a general concept.

## **2 THE GERMAN HEALTH INSURANCE SYSTEM**

The compulsory health insurance system was introduced 1883 in Germany as the first social insurance in Europe and is alongside the pension, accident, nursing and unemployment insurance a part of the German social security system. Today, almost 85% of German citizens in Germany are members of the compulsory health system (German Federal Health Monitor, 2007).

Up to an annually adjusted income limit (in 2008 the limit was set at a yearly income of 48.150 €), every employee is a member of a compulsory health insurance (The Press and Information Office of the German Federal Government, 2007). About 218 compulsory health insurances existed in Germany by the beginning of 2008 (Haufe, 2008). Employees who earn more than the income limit three years in consequence can select between compulsory or private health insurance (§6 SGB V). Self-employed can become a voluntary member in one of the insurances mentioned above. Pensioners, unemployed, apprentices and students are under certain circumstances bound in an obligatory membership in a compulsory health insurance.

The premium rates for the health insurance are paid by employees and employers in equal shares. For unemployed family members (spouse/ children), no additional rates have to be paid (family insurance) (German Ministry of Health, 2008)

## **3 ABOUT THE PROJECT**

The vision of the presented project is the location and time independent use of health insurance benefits by members. By providing a mobile interface and mobile applications the insurer offers customers and potential customers additional benefits which leads to a rise in member satisfaction and offers the final incentive for new contracts.

Mandatory prerequisite for the strategic positioning of mobile services in the health sector is the adjustment of the technical affinity of the target group of (potential) customers.

In the considered project the target group consists of employed people aged between 20 and 50 years with a higher education. This group is, based on their age, featured with good health and, based on their higher education, in a good financial status. The technical ability to reasonably use the mobile interface with a mobile device permits the application of such an interface.

## **4 AN APPROACH TO IMPLEMENT A MOBILE WEB PRESENCE FOR A HEALTH INSURANCE COMPANY**

### **4.1 Mobile Services in the German Health Sector**

Currently there are three compulsory health insurance companies in Germany that possess a mobile web presence. These mobile portals differ considerably in extent and offered services.

Health insurance company No. 1 that operates its portal for a longer time already, uses a commercial product (CMS) for operation that covers the adaptation of the web pages for the variety of display solutions of different devices. Navigation works very fast and easy. Different services like a search for pharmacies, physicians or provider for medical devices and disposables are offered. These services are realised in cooperation with several commercial service provider. The use of images is widely avoided.

A second health insurance company offers a mobile web presence which includes only static/ regional content. Navigation is slower, due to larger images and long texts. No mobile services are offered. The technical adaptation is covered by the same product that is used by the first described company.

Health insurance company No. 3 brought their portal online during the period of the project (December 2007). Information about the technical background is unknown. The provided mobile services and the navigation are similar to the presence of the first described company, while the use of images is increased. Although this results in

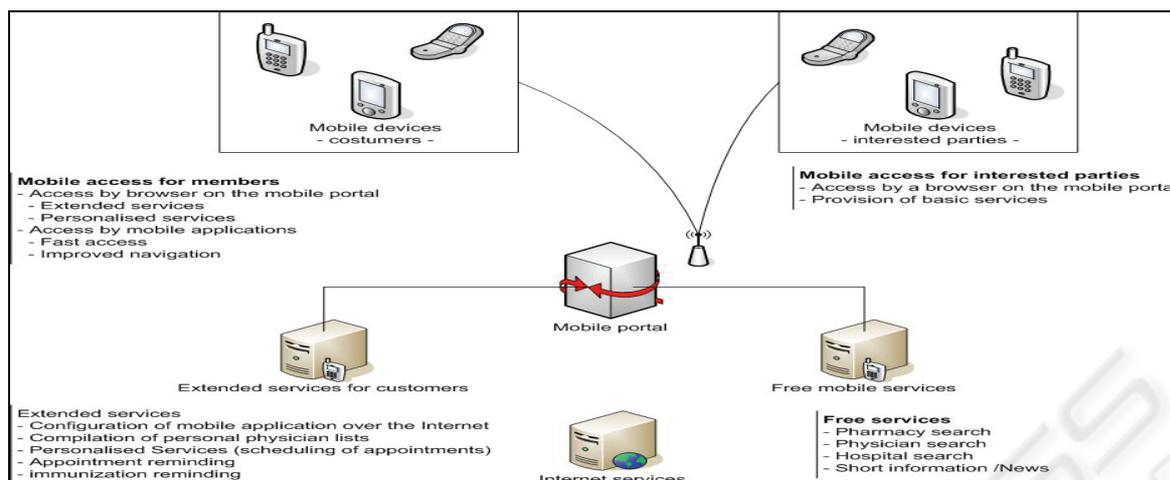


Figure 1: Application environment.

improved clarity, it raises the data traffic and thus is slowing the page reproduction.

In other branches mobile web presences are far more advanced. For example big mobile portals provide several services as news, navigation or address search. Furthermore, special mobile solutions are offered, e. g. mobile online banking, by several banking institutes.

#### 4.2 Draft of a Mobile Solution for a Health Insurance Company

The development of a three-step realisation plan is based on the classification of mobile services into an application environment and a realisable implementation in several steps in practice.

The first step of the plan consists of a basic implementation and provision of mobile services through a mobile portal. In this step, a basic introduction of the company is included, as well as the presentation of the advantages this company for customers and potential customers. This static content is extended by the basic features of the information system (pharmacy/ physician search) and a news portal, which presents the current news of the health insurance in a mobile format. Already included in this step is the support by a CMS, to provide the editors with a tool to easily maintain the web presence. The provision of step 1 is targeted at customers of the company and those who have been adverted to the mobile website. Personalising the services with a login is not a feature of this phase.

The information systems as well as additional services (appointment reminding) that are only

provided to members serve as a basis for the second step. Therefore, a possibility has to be created to personalize the portal through a personal login which can be activated by the company. With this offer, an additional benefit for members will be achieved. Simultaneously, the second step is based on the services and offers of the previous step. Furthermore, these services are accessible for all user groups free of charge.

Step three describes the next extension: Advantages for members are extended and by the use of a Java-application dealing with the different services is enhanced. Through this, a faster and more comfortable handling of the services is achieved. By installing a local application on the mobile device, access to further interesting features becomes possible. As an example, "location based services" enable locating the approximate location of the mobile device through cell phone antennas. This could be hence the basis for the information system.

After the implementation of these services, a foundation stone for an extensive mobile portal should be created.

#### 4.3 Content Management Systems Requirements for Mobile Services

The requirements of a content management system (CMS) for mobile devices orientate themselves on the technical restrictions which are inherent in mobile devices. These are:

- smaller displays
- less arithmetic performance
- less storage capacity (Caus, 2007:16)
- smaller and/or reduced controls.

The appropriate CMS must provide solutions to comply with these exemplarily specified requirements or work against them.

The simplest solution to fulfil these requirements would be the setup of an independent mobile platform which would be suitable for most mobile terminals. In this case, complex images, diagrams, animations or style sheets would not be used. A further possibility is the use of separate style sheets that enables the mobile device to load the particular mobile style sheet (handheld) and thus to form the web page for mobile devices. Through the use of the command “display:none” in the style sheet, the device is given the possibility not to load images and content in general. However, in praxis this approach was not approved. Frequently this indication is ignored by the mobile device and the conventional screen style sheet is loaded.

The most mature solution at present is the use of multi template output, or generic template output. The page is then adapted to the respective device at run-time.

The correct recognition whether and which mobile device requests the page is a needed requirement.

Three possibilities exist for the recognition:

- Recognition by the user agent included in the mobile browser smaller displays
- Recognition of the mobile device through the URI to the UAProf of the mobile device which is sent by the device included in the request of the page
- By user decision

The recommendation is the combination of several possibilities, enabling the user to choose between a specially modified page for mobile devices or the conventional page. The CMS recognises the mobile device by user agent or UAProf and provided a modified page for mobile devices. In this page, it offers the user the change to the conventional web page.

Common to all solutions, the XHTML mobile profile (XHMTL MP) should be supported. XHTML MP is a superset of the XHTML basis standard that defines the requirements for pages to adapt to mobile devices.

#### 4.4 Selection of Possible CMS

In the study for the health insurance company four CMSs were taken into closer consideration.

##### 4.4.1 eWeb

eWeb is a closed source system by the eCONNEX AG and is already in use in the company. Choosing eWeb would save training costs and avoid media breaks. However, multi template output is not featured by the product which is to be rated as a disadvantage. Therefore, other CMSs were taken into closer consideration.

##### 4.4.2 Typo3

Typo3 is an advanced content management system on open source basis. In the internet community, it is widely used and due to its ability of workflow automation, user rights assignment and the multi site management it is also used by professionals. Because of the popularity of Typo3, extensions for the recognition of mobile devices already exist. A disadvantage is the enormous training effort for customizing.

##### 4.4.3 Joomla

The CMS Joomla is due to its easy handling very popular. Possibilities to recognise mobile devices already exist. However, the range of features does not match up to the professionalism of Typo3.

##### 4.4.4 Wap2Go

Wap2Go is an extension of the CMS PHPNuke. With the goal of providing content of PHP Nuke sites for mobile users, Wap2Go creates an advanced impression. For example the format of images (PNG, JPG, GIF) can be selected or deactivated. However, several unsettled issues exist, therefore a professional use would be problematic. It is not - known whether device recognition is featured. Also the source code is only developed and maintained by one single developer which is to be seen as a risk.

##### 4.4.5 Recommendation

The authors recommend a further examination of Typo3, especially the training effort. If this effort is acceptable for the company, the use of Typo3 for the mobile web presence is recommended. The decision is mainly based on the presence of device recognition and multi site management.

Once the training for the open source system is successfully accomplished, a second step could be the migration of the existing web presence from eWeb to Typo3.

## 4.5 Prototype

Accompanying this study a prototype was produced in which the obtained findings were put into practice and which represents the first stage of the development plan.

The main topics are general information, recent news, pursuing services like specialised search engines and the possibility to order further informative documents.

Potential Clients are mainly interested in information about the health insurance, its services and its fees. Therefore these points are represented in the prototype on the first two positions. If the information that can be found following these two points is not sufficient, users can find phone numbers, e-mail addresses and postal addresses to contact the company directly by following the menu item "Contact". The users then can select the medium they prefer most.



Figure 2: Prototype.

To keep a mobile internet portal interesting for potential and existing customers, it is important to offer additional benefit. In case of this prototype, this target shall be reached by news and the possibility to search for physicians and pharmacies in the surrounding area. The prototype only uses static HTML pages to show how the search machines will work. In the final version, the information entered by the user will be sent to a web service offered by a service provider that sends a response with the addresses of the relevant physicians and pharmacies.

During the project, requests to some potential service providers were sent to request the conditions for using their web services. Unfortunately, the service providers reacted either very late or not at all, so it was impossible to create a prototype that uses web services.

The search engines should be able to work with two different kinds of geographic information: the

postal code or a combination of a street and a town. Generally, the user has one of these available or is able to obtain them.

A further possibility is to combine all three fields because in bigger towns a street name may occur more than once. In this case, the combination of the postal code, the street name and the town will provide better results.

The layout of a mobile internet portal has to be very simple, clear and should be reduced to the most important points. The homepage should not begin to scroll on most of the common devices. Complicated colour schemes and alignments should be used very carefully, because every mobile device has its own browser and every browser shows the page somewhat differently. The corporate design would possibly be displayed in a warped manner if the design of the page is too difficult to render.

Important for the prototype is the position of the logo which is displayed on every page and the possibility to access the "Impressum", a mandatory legal page in Germany, from each page.

## 4.6 Summary and Outlook

This paper gives an outline summary of the German health insurance system and the current application of mobile solutions in this industry. Furthermore, an approach is described how a statutory health insurance company can implement a mobile interface for (prospective) customers and how such a concept can be realised.

Due to the current technical progress the development of mobile services will proceed rapidly in medium-term. Most new mobile phone models are equipped with large displays. With these mobile phones, it is possible to navigate on web pages without larger visual problems (e.g. iPhone). If this trend carries on and the resolution sizes of mobile displays and processing speeds continue to increase, the question is whether special offers on mobile websites, that provide more than contact information, are necessary. The only "bottleneck" is perhaps data traffic and costs for mobile data exchange (Caus, 2007:32). However, data speed is increasing more and more while the prices keep on falling. In addition, unlimited data traffic plans become more common.

Also the improvement of content management systems in managing content for mobile use is making progress.

In concern with the development and integration of content for mobile users, the question of the core

competence of the health insurance company arises. Certainly, the core competence does not lie in services like a pharmacy or physician search. For this reason, a self-developed implementation should not be aimed for. In fact, a health insurance company should focus on a collection of services that are rather embedded into or linked from the website of the company. In this field, the company collects a range of health-related services that can be interesting for (potential) customers. Thus it is the aim that members and potential members will start their search for information in the health area at the health insurance company's website. With the help of personalised services, members can gain additional benefit and potential members are being given a reason to join.

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