

Making the Fun of Fishing Legal with Mobile Value Services

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Abstract

The future competitive advantages for a successful travel industry will most probably be built around effective mobile value services. Mobile value services are services which create customer value with the support of context-adapted mobile technology; this in turn is designed to expand the limits of the possible in the structure of everyday routines [the Braudel Rule]. Buying fishing permits for legal fishing in waters owned by somebody else may look as rather a trivial exercise; it has turned out not to be trivial if you are a foreigner and you do not know where to go looking for the permits and you decide that you want to go fishing on the spur of a moment. We have developed a mobile service called MobiFish that allows the user to buy a fishing permit anytime and anywhere just by using his mobile phone. We have shown that MobiFish actually is a mobile value service. It is being tested and introduced in the Aland Islands.

1. Introduction

Studies of the mobile services market in Finland through annual, random samples of 1300 consumers in the years 2002-2007 have convinced us that most of the services introduced have (i) not created much value for the consumers and (ii) been withdrawn from the market rather quickly (often before they even had a chance to start a growing demand curve) [12]. Thus, in this study we wanted to actually work out a mobile value service from the beginning and to both find out how it would build user value and to find out if it actually could be built and implemented on mobile phones.

Finland is commonly described as one of the most advanced markets for new mobile services. The world's first commercial GSM network was launched in Finland (1991), it was the first country in the world where mobile phones outnumbered fixed connections (1998), it was the first to launch WAP-services and it

was the first to licence 3G networks in Europe through a beauty contest (in March 1999). All the key mobile network operators operate GSM 900/1800 and UMTS networks; the market shares for mobile telecommunications are approximately 48% for Telia-Sonera, 35% for Elisa Communications and 15% for the others [3]. The Finnish market has reached a - at least temporary - stability after several years of tough competition on prices and as the penetration rate of mobile phones is around 100% the market for mobile phones is maturing. The same cannot be said about the market for mobile value services, which still appears to be an emerging market: in consumer studies with random samples [12] of 1000 consumers in the years 2002-2006 (the answering rates have been close to 50% each year) there are only three major services which have found a stable demand: SMS, ring tones and icons, and search services. We tested a total of 30 services - the same services each year - and 27 of them failed to generate much interest. The creation and introduction - and subsequent failure - of numerous mobile services have been costly experiments for the mobile network operators. The apparent reason for the failures is the technology push-driven business models. Thus we were motivated to try another approach - a customer-oriented approach with a sound business model. This approach means to find some real needs, to find out what would be a good way to satisfy these needs and then to design a mobile value service as an instrument for meeting these needs.

According to a recent article [14] less than half of all fishermen in Finland buy a fishing permit which means that a market with a yearly income of at least 5.5 million euros is lost.

There are people who like fishing, some of them are even rather keen on fishing as they regard themselves as skilful in catching fish (and keep on bragging about it). Fishing can be done only with a permit for the waters in which the action is going to take place; a permit needs to be bought in advance before it is known if the weather will permit any fishing at all

or if the fish will be in the “catching mood”. If the fisherman is a foreigner there are some difficulties in finding out where it is possible to get a permit; then the place may be closed at unexpected hours or the personnel is not speaking nor understanding any other language than the local dialect. Then a lot of fishing is done at the spur of the moment and without a permit, i.e. illegally. The consequences are sometimes dramatic: the owners of the fishing waters defend their rights somewhat violently; there may be an inspector out to check fishing permits, who will be quite willing to initiate heavy fines or to confiscate the rods and sometimes even the boat. There will be an abundance of unpleasant events.

The whole situation can, in fact, be handled in a very pleasant and efficient way for all parties concerned; there is now a mobile value service called MobiFish, which is a complete system for managing, selling and inspecting fishing permits for the registered fishing areas in the Aland archipelago. MobiFish was designed (i) to allow fishermen to buy a fishing permit anytime and anywhere, (ii) to make it easy for the owners of fishing waters to sell permits to their fishing areas, and (iii) to offer inspectors a quick and easy way to check a fishing permit for validity.

The first rather simple mobile fishing permit system in Finland was developed for the city of Oulu, Finland in 2003. The user could order a fishing permit by sending an SMS with his mobile phone and the permit was received as an SMS; the costs were charged to his phone bill. The fishing permit could be controlled by an inspector using a software application which allowed him to check the permit both on- and offline. The mobile fishing permit increased fishing permit sales over 50 percent in the City of Oulu [15].

MobiFish is one of the applications developed within the project New Interactive Media (NIM) Aland which was initiated in September 2006 and is jointly funded by the European Regional Development Fund and the Aland Autonomy Government.

First, we will work through a brief state-of-the-art summary of mobile value services; then we will discuss the research focus and research questions as well as the methodology. We will then work through the design and building process for the service. The paper will conclude with a discussion of the design experience and the lessons learned on how to develop a mobile value service.

2. State-of-the-art

Jenson [8] openly criticized the mobile industry for adopting “default thinking”, which leads to failed consumer products and services. He illustrates this by

using an industry comment “MMS is an extension of SMS and therefore a natural progression for the industry”. What is missing here is that MMS is a much more complicated service to use and most users do not see enough added value over SMS to adopt MMS; what is needed is a value adding usage context. Mobile phones with wireless data capacity are another “inbred” design. Jenson claims that the industry looked backward and saw the web. So this led to the following equation: “the Web is hot, phones are hot, and therefore web + phone have got to be hotter”.

The basic challenge for GPRS, 3G and sets of promising new mobile services is to understand how and why people adopt or do not adopt mobile services. Jenson’s approach suggests that the industry aims and consumer needs do not match; consumers are not part of the design process for the content/use context. Technology development is often seen as the key in service adoption, but as Ankar and D’Incau [4] pointed out, more is needed. Carlsson et al [4] shows that the relationship between technology adoption and the adoption of mobile services based on that technology is asynchronous, i.e. the adoption processes are different – the adoption processes can even be explained from different conceptual frameworks. Also Sarkar and Wells [11] point out that there is missing a clear understanding of the motivations and circumstances which guide consumers to adopt and use mobile devices. As they realize that there cannot be any business applications unless there is (cf. Sarkar and Wells, 2003, p. 36) “widespread proliferation of wireless devices and related applications, there is a clear need to comprehend how and why individuals (potential m-commerce consumers) adopt such devices”. Knutsen [9] illustrates that even if research on culture, infrastructure, inter-firm collaboration and business models may shed light on the phenomenon; the basic recurring theme suggested for further research is the value of services for the user. The technologically advanced mobile phones have increased the possibilities of adopting new mobile services but are not actual drivers for the adoption nor do they explain why some services get adopted and others not. Mobile services development in Finland has actually slackened compared to many other countries and the optimistic and experimental mood five years ago – which explained the positive image of Finland conveyed by the first sentence - has changed to more conservative market operations. There are fewer risks taken with developing and launching new services. As an example, Finland was among the last countries to launch 3G-services in Western Europe (in 2004), although Finland was known as a pioneering country for mobile services in 2000-2002 [7,10]. The World Cellular Information Service reported in February

2006 that the fastest growth in mobile data services is found in Asia (Indonesia, Japan and Korea) and that Europe is lagging in producing value adding data services.

3. Research focus, research question and methodology

Our research focus is on mobile services and how these services should be designed in order to add value for the parties involved. The particular service is a fishing permit and the main parties are the fishermen, the landowners, i.e. the owners of the fishing area and the fishing permit inspectors. The overall goal for our research is to design and develop a mobile value service for visitors and tourists to the Aland Islands which will allow them to purchase a fishing permit for the fishing area of choice without going to the trouble of (i) finding out about local rules, (ii) identifying the owners of the fishing area and (iii) finding a place to buy a fishing permit (during opening hours which may be limited on occasion).

Our research question is fairly simple and straightforward: is it possible to design and develop a mobile system for purchasing fishing permits in a way that would create specific values for the fishermen, the landowners and the fishing permit inspectors? A secondary consideration is that the whole business process will probably be improved as a result of implementing the MobiFish. The methodology we have chosen for designing and developing the MobiFish system is an iterative, design science approach [6].

A mobile system for purchasing a fishing permit is an IT artefact when studied with the conceptual framework of design science. Iivari [6] – by quoting a number of authors – makes a distinction between base innovations, systems development innovations and services as IT artefacts. In this categorisation MobiFish is a service. In further elaboration of a typology of IT artefacts Iivari works out some interesting roles or functions for archetypes of IT applications: (i) to automate, (ii) to augment, (iii) to mediate, (iv) to informate, (v) to entertain, (vi) to artisticize and (vii) to accompany. Our initial goal is that MobiFish should fulfil the functions (i), (ii) and (iv) – at a later stage it may also fulfil (v). MobiFish will automate key parts of the process of purchasing a fishing permit (cf. (i)), it will augment the controlling of valid fishing permits (cf. (ii)) and it will inform both the fisherman and the fishing permit inspectors about the true status of the fishing permit (time, place, duration, cf. (iv)). At a later stage MobiFish may be integrated to a blogging system to allow the fisherman to brag about his catch (which will contribute to (v)).

3.1 The context

The Aland Islands can be seen as a miniature society with its more than 6000 islands and 25000 inhabitants in the eastern part of the Baltic Sea between Sweden and Finland. Aland is a modern and technology-oriented society characterised by go-ahead spirit and creativity. The service sector and tourist commerce dominates the Aland economy and several IT-companies with an international business network are located on the islands. Thus, the Aland Islands should be an excellent test bed for developing and testing mobile value services for tourists and travellers.

Tourists interested in fishing have a variety of choices ranging from open sea fishing to bays and remote lakes. The fishing season lasts throughout the year and during winter when the lakes and bays are frozen, ice-fishing is possible.

The possibilities and rights to fish in Aland are governed by Aland's own fishing laws that differ from the laws in mainland Finland. The fishing licences are valid for only a certain fishing area or a certain group of fishing areas; fishing permits are usually sold locally by the owners of the fishing areas. In Aland there are 73 different fishing locations that require a fishing permit and 46 different places to buy the permits. Because most of the places only sell 1-3 different permits, going for a fishing holiday in Aland may prove to be more complicated than expected.

This is the context for which the mobile value service called MobiFish was developed.

4. System overview

For the fisherman the MobiFish system has three different interfaces: (i) a high-end / state-of-the-art version for users with newer phones that support Java MIDlets; (ii) one mid-range solution that consists of a web-page that can be used with most mid-range mobile phones with a browser and internet access, and (iii) a low-end version that will only need a phone capable of sending SMS messages. The low-end version will also need a paper-map with area numbers and instructions.

For the fisherman the service will provide an easy and convenient way of buying a fishing permit to the area he/she wants, either in advance or on the fly, when they are ready to start fishing. The system can also offer static and dynamic information about the different fishing areas. Static information can be entered by the owners of the fishing areas or the administrator of the system and can include a map of the area, accessibility, availability of boats and hiring of

fishing gear. Dynamic information can be generated from data collected by the system and can include for example the most popular, the least crowded or the closest in proximity within a certain price range.

For the owners of the fishing area the MobiFish provides an easy way to sell fishing permits and increased advertising for the fishing areas. In addition, they can get detailed statistics about the number of fishing permits for each area for different time periods. It is believed that this can help the owners to plan ahead for future seasons and to direct their marketing resources more effectively.

For the inspectors the system provides a quick and easy way to check a permit for validity. The inspectors can look at statistics about the amount of current permit holders for any given area they have access to and even print a list of all current valid permits. When out on the water, permits can be checked offline by examining the id code of the permit. This can be matched against the printout or decoded by an application installed on a mobile phone. The decoding can be done offline to verify that the permit is valid. In cases where the inspector suspects that the permit may be a duplicate or a forgery, the permit can be controlled online.

MobiFish is a complete system for managing, selling and inspecting fishing permits for the registered fishing areas in the Aland archipelago. The system aims to improve the accessibility of fishing permits to anglers and to improve the entire business process involved in selling fishing permits in this region.

5. Developing the prototypes

The first iterations in the system design was carried out through reasoned interaction with local experts on the (complex) permit system in Aland; the complexity comes from the fact that fishing waters are controlled by different types of owners with different rules for allowing visitors and tourists to fish in these waters. Thus the basically simple process of acquiring a fishing permit will not be that simple for the uninitiated.

The development started with a review of current systems and the current solution for the sales of fishing permits for the Aland area. The current system, a fishing map containing all the different fishing areas in Aland, was used as a basis for the development of the first prototypes. The fishing map was also used as the basis for the low-end SMS-based version of the MobiFish system.

The development of the MobiFish was an iterative process which followed the principles of agile software development (Figure 1). “The basic idea behind iterative enhancement is to develop a software system

incrementally, allowing the developer to take advantage of what was being learned during the development of earlier, incremental, deliverable versions of the system” [13].

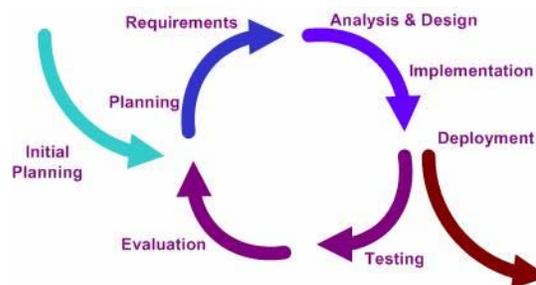


Figure 1. Iterative development model

It was decided to develop three different front ends to the mobile part of the system. A fourth front-end was developed for users accessing the system from a traditional computer via an internet connection. The latter was based on the same principles as the mobile version and used the same back-end, but utilized recent internet technology to provide increased usability and more options to the user.

Upon evaluation of different possible payments options, it was decided that the main way of paying for permits should be by SMS. To make the system flexible and not dependent on GPRS/3G network cover, it was decided that the high-end Java version should also use SMS as the way of ordering, paying for and receiving the fishing permits.

To hinder abuse of the system (people ordering fishing permits to people who do not want them, but still are charged for them) the system was designed to require a confirmation message for all purchases. Privacy was supported by the possibility to make anonymous purchases (only identified by phone number) and by restricting the access to the database. To keep the reliability of the system at a high level, the system is designed so that updates and maintenance of the database are possible without any downtime.

As the MobiFish system is aimed at tourists and travellers, multi-language support was one of the initial requirements for the entire system. It was decided that the prototype should support four languages: Swedish, Finnish, English and German.

Another requirement that is central to the system is the selection of fishing areas. The fisherman needs to be able to select the area for which to purchase a fishing permit. The system also needs to support the most common durations of fishing permits: for 1, 3 and 7 days.

The system should support logical default values in case some selections are not made. An example of

this would be that, if no choice of duration is made, the system should default to a 1 day permit.

All permits that are ordered need to be confirmed by the user. This is done, not only to avoid abuse, but also to ensure that the user buys the permit for the correct area and the correct duration. It is also believed that, although this adds an extra step and increases the effort needed to purchase a permit, it will also add an increased feeling of security for the users as they will see what they are purchasing before they actually make the payment.

5.1 High-end sessions

Based on the requirements and the understanding of the features needed a conceptual design was made of the different parts of the system. For newer phones with Java support the fisherman can select the desired fishing area from an interactive map. The map can be zoomed in three different levels and panned in all directions. An arrow pointer is used to select the desired fishing area. Once an area is selected, the user can choose the duration of the permit for that fishing area. One of the three pre-defined durations must be selected. The user can also choose the starting date for the permit. When the selections have been made the order is sent to the system. Shortly after a confirmation message will arrive asking the user to confirm the purchase of the permit for the specified price. Upon confirmation of this message, the system will wait five minutes before the fishing permit is delivered to the user as an SMS messages.

An interesting feature has been added: as the pointer moves across the map, the GPS coordinates for the current position are shown on the screen in the lower left corner, just above the options menu. This can be used together with on-boat GPS systems to locate an area or to find out what area the fisherman is currently in. When the pointer moves over a fishing area it will be highlighted and can be selected by clicking on it.

Once a fishing area has been selected the user is presented with a selection screen for the desired duration of the fishing permit for this area. The desired option can be selected by clicking it or the user can select the desired starting date for the permit. This is done using standard numeric input. The inputted starting date is checked for validity and the field showing the expiration date is automatically updated when changes to duration or the starting date are done. When finished, the user will need to approve the sending of the order as an SMS message.

In the following we will show and explain the process of buying a fishing permit using the high-end solution (figure 2). A tourist using a smart phone with

support for Java MIDlets downloads the fishing permit system using the mobile web browser. The user installs and runs the application. The application checks the server for updates and downloads the latest version of the map and all information that is linked to it. Then through the interface the desired fishing area can be selected.

When the options screen is shown, the user selects the desired duration and starting date for the permit. The application generates an SMS order and the user acknowledges the application's request for permission to send the SMS. The information is sent to a third party SMS service provider which starts a new session for the user. The service provider forwards this information to the MobiFish system along with the session information, where the information is validated and a new fishing permit is registered in the database, but marked as unpaid. The system generates an SMS message containing the information about the permit, such as the name of the location and the validity period of the permit and sends this as an SMS to the user via the SMS service provider. The user confirms the order of the fishing permit by responding to the message. The SMS operator checks that the session is still valid and sends the billing information to the local network operator who in turn has a roaming agreement with the user's local operator who bills the tourist for the service. The local operator confirms the payment and the payment is forwarded to the MobiFish system along with the user confirmation for the current session.

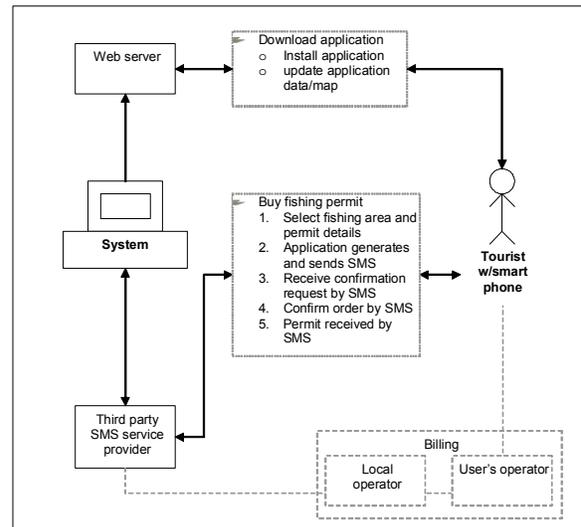


Figure 2. Buying a fishing permit (high-end)

The MobiFish system marks the permit as paid in the database and generates a fishing permit for the requested area and duration. To ensure that other us-

ers do not take advantage of the system by ordering only when they fear an inspection, the MobiFish system waits for five minutes before forwarding the generated permit. The permit is sent to the third party SMS service provider which in turn forwards the permit as an SMS to the user.

5.2 Low-end sessions

The low-end interface uses only standard SMS messaging, a paper map of all the fishing areas and instructions on how to order a permit. Purchasing a permit is done by sending an SMS, containing a specified language specific keyword (e.g. fish, fisk or kala) along with numeric codes for the area and the duration of the permit, to the number specified on the map. The permit is then received as an SMS message and the cost of the permit is billed to the user's mobile account.

In the following we will show and explain the process of buying a fishing permit using the low-end solution (figure 3).

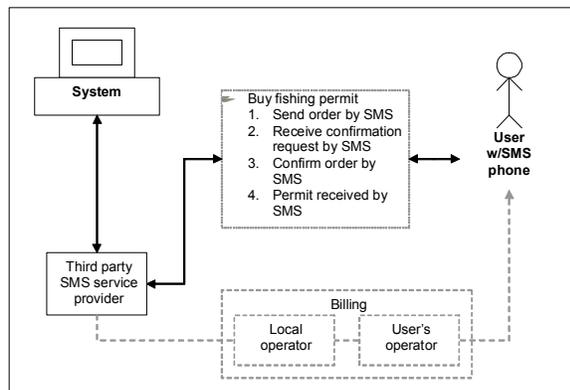


Figure 3. Buying a fishing permit (low-end)

A user with a mobile phone with SMS support wants to buy a fishing permit using the MobiFish system. The user locates the desired fishing area on the paper map which was acquired through the tourist association or one of the many tourist locations in Aland. The tourist sends an SMS to the system, containing the keyword “fish” in one of the supported languages, followed by the ID code for the fishing area and a code for the desired duration of the fishing permit. The information is sent to the third party SMS service provider which starts a new session for the user. The service provider forwards this information to the MobiFish system along with the session information where the information is validated and a new fishing permit is registered in the database, but marked as unpaid. The system generates an SMS

message containing the information about the permit, such as the name of the location and the validity period of the permit and sends this as an SMS to the user via the SMS service provider. The user confirms the order of the fishing permit by responding to the message. The SMS operator checks that the session is still valid and sends the billing information to the local network operator who in turn has a roaming agreement with the user's local operator who bills the tourist for the service. The local operator confirms the payment and the payment confirmation is forwarded to the MobiFish system along with the user confirmation for the current session. The MobiFish system marks the permit as paid in the database and generates a fishing permit for the requested area and duration. Also this version of the system waits for five minutes before forwarding the generated permit.

5.3 The control application

The system also features a control application for the inspectors of the fishing permits. This system has two modes of checking the permits: offline and online. Each permit has a unique permit ID. The first 6-7 characters identify the area, the duration, the start date and if the permit is valid with multiple rods. The last two characters are used to uniquely identify the permit in case there are several permits with the same area, duration etc. With offline checking, only the first 6-7 characters are decoded to find the area, duration, start date and end date. The system checks that today's date falls within the validity period of the permit to determine the validity of the permit. Offline checking can be done quickly and easily without any communication with the system and even without any network cover at all.

If the inspector suspects that two people are using the same permit (forwarded or computer-made) or that a permit has been tampered with, the inspector can use the online version where a connection is made with the database to check that the permit is actually valid. In the following we will show and explain the process (figure 4).

For inspection of permits offline, the user shows the SMS message containing the permit to the inspector. The inspector enters the permit code into his MobiFish control application on a mobile phone; the application decodes the permit code and compares the expiry date with the current date. The application shows if the permit is valid or not, the area it is valid for and the expiry date of the permit.

For inspection of permits online, the user shows the SMS message containing the permit to the inspector. The inspector enters the permit code into the control application on a mobile phone; the application

sends the permit code to the MobiFish system which checks the validity of the permit ID in the database. The system returns the permit information to the inspection application and the applications shows if the permit is valid or not, the area it is valid for and the expiry date of the permit.

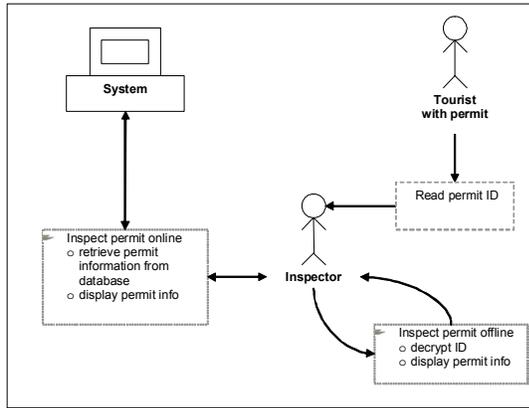


Figure 4. Inspection of permits

5.4 Added value for the land owners

Adoption of the system by the land owners has been a concern throughout the development of the system as the system depends on the commitment of most of the land owners to provide a comprehensive cover of all the fishing areas in Aland. Using the information available in the system to provide added value for the land owners was therefore considered important to the success of the project. An online statistics site was therefore developed to report on the sales of permits, which allows the owner to view statistics about all sales of permits for the relevant fishing areas. It was also proposed that the statistics site should provide the owners with an interface to submit requests for changes to the areas that they control. All such changes need to be approved by the system administrator, who in turn incorporates them into the system, either immediately for information that does not directly influence the system or pricing, or in the next release of the system. This process is illustrated in figure 5 with an explanation of the process.

It was decided that the land owners should not have direct access to make such changes as this will require the users of the Java application to continuously download and update their version of the system to keep up to date with the changes. Another reason is that the SMS version of the system relies on a paper map that will most likely not be updated more than once per year. Continuous updates by land own-

ers would then result in an increasingly inaccurate map.

The system also has a back-office module for the administrators of the system. This part of the system needs to be easy enough to be used without much instruction and flexible enough to be used with other fishing areas and most kinds of maps. The administrator needs to be able to upload a map of fishing areas (e.g. Aland) using the application. The application also features an interface for scaling and optimizing the uploaded map for each of the different zoom-levels. Furthermore, the user can draw fishing areas onto the map and register relevant information for each of the areas. Each fishing area should have an ID, a name and a price category.

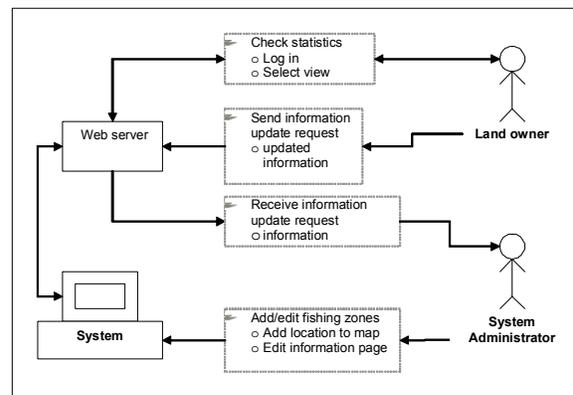


Figure 5. Landowner's information

All land owners who are part of the MobiFish system can at any time check the current status of sales of fishing permits for their area(s). The land owner navigates to the MobiFish web-site using a standard desktop HTML-browser and selects the option to log in as a land owner. After supplying a valid username and password, the land owner is taken to the land owner site. The land owner chooses the type of statistics to display and the system presents the statistics in a graphical format. Similar operations can be used to update information about the fishing areas controlled by the land owners.

The administrator can update all information about prices, price categories, the map, the location of fishing areas and the information about fishing areas from the back-end editor. Once a new area has been added, the administrator can register information about this area. To remove an area from the system, the administrator selects the area in the editor and deletes it.

In summary, the operations of the system turned out to be simple and straight forward and will not require advanced knowledge on the part of the administrator.

6. Technical system design

A set of flow charts and data flow diagrams were designed to illustrate how the MobiFish system is working. The diagrams illustrate the more concrete flow of data between the user and the different parts of the system. We will first explain the flow of events in the case of a simple order of one permit, from any of the front-ends of the system after which we will illustrate the navigation flow in the application (figure 6).

An order is sent from the user to the payment system. The payment system receives the order and creates a new session for this user and the current order. Information about the session and the order is then forwarded to the MobiFish system. The MobiFish system checks that the format and the keywords of the order are correct. If something is wrong, an error message is returned to the payment service, which in turn sends an error message to the user. If the format and all keywords are satisfactory, the MobiFish system retrieves the price from the database and sends this along with the session info to the payment provider. A message is then sent to the user from the payment provider asking the user to confirm the purchase of a permit for the given price.

Confirmation of the purchase is done by the user by sending a message to the payment service. The message is received and the payment system checks if a session is still valid for the current user. If the user cannot be matched with an active session, an error message is sent to the user. Otherwise the confirmation of the payment is forwarded to the MobiFish system, which in turn updates the permit order and generates the text for the permit. The permit is then forwarded to the payment service which sends the fishing permit to the user.

The flow chart depicted in Figure 6 illustrates the navigation flow in the application. Rectangles illustrate the different screens in the application; trapezoids illustrate manual user actions (right angled trapezoid illustrates user input); diamonds illustrate conditions while parallelograms illustrate output data. The following paragraph will give a brief description of the action flow in ordering a fishing permit.

When the application starts a splash screen is displayed. By waiting for 5 seconds, pressing any of the soft keys, the action key or any numeric key, the user is taken to the map interface. From here the user can zoom in and out of the map interface and pan in all directions. The user also has access to the help screen and the about screen from the options menu in the map interface. The user selects an area by clicking on

it and is subsequently taken to the screen displaying the options for a permit for the selected area. Here, the user can change the duration and the starting date of the permit. Users can also change their minds and cancel the current permit. They will then be taken back to the map interface. If a user chooses to continue and order the permit, the user will be asked by the operating system to approve the sending of the order as an SMS message. Upon confirmation the SMS order is sent. If a user refuses the sending of the message, the user will be taken back to the previous page.

The complete system consists of several integrated parts. On the user-end there are three different front ends allowing the user to select an area for which to purchase a fishing permit. In the prototype all orders are done using SMS and so, the data flow will be the same from an order is sent to a fishing permit is received for all the different front ends of the system.

The user communicates with the payment service through any of the front ends by sending the permit order as an SMS message. The SMS payment service provider retrieves the price of the selected permit from the MobiFish system through an IP (internet) connection. The MobiFish system receives the request and stores it in the database using a query language (SQL).

Relevant information, such as language, name of the area and price, is then retrieved from the database using SQL queries. The information retrieved from the queries is then formatted and forwarded to the SMS payment service provider through the IP connection. The payment service provider sends the confirmation message to the user as an SMS message and the user replies to this message, also using an SMS message. Upon confirmation, the SMS payment service provider charges the agreed amount to the user and sends a confirmation of the payment to the MobiFish system through the IP connection. The MobiFish system updates the database with the new information, using SQL. Next, the system queries the database for the information stored in the previously received order and generates a fishing permit based on this. The fishing permit is formatted to fit the SMS format and sent to the payment service provider through the IP connection. Finally, the payment service provider forwards the permit as an SMS message to the user who receives and stores the permit in the inbox of the mobile phone.

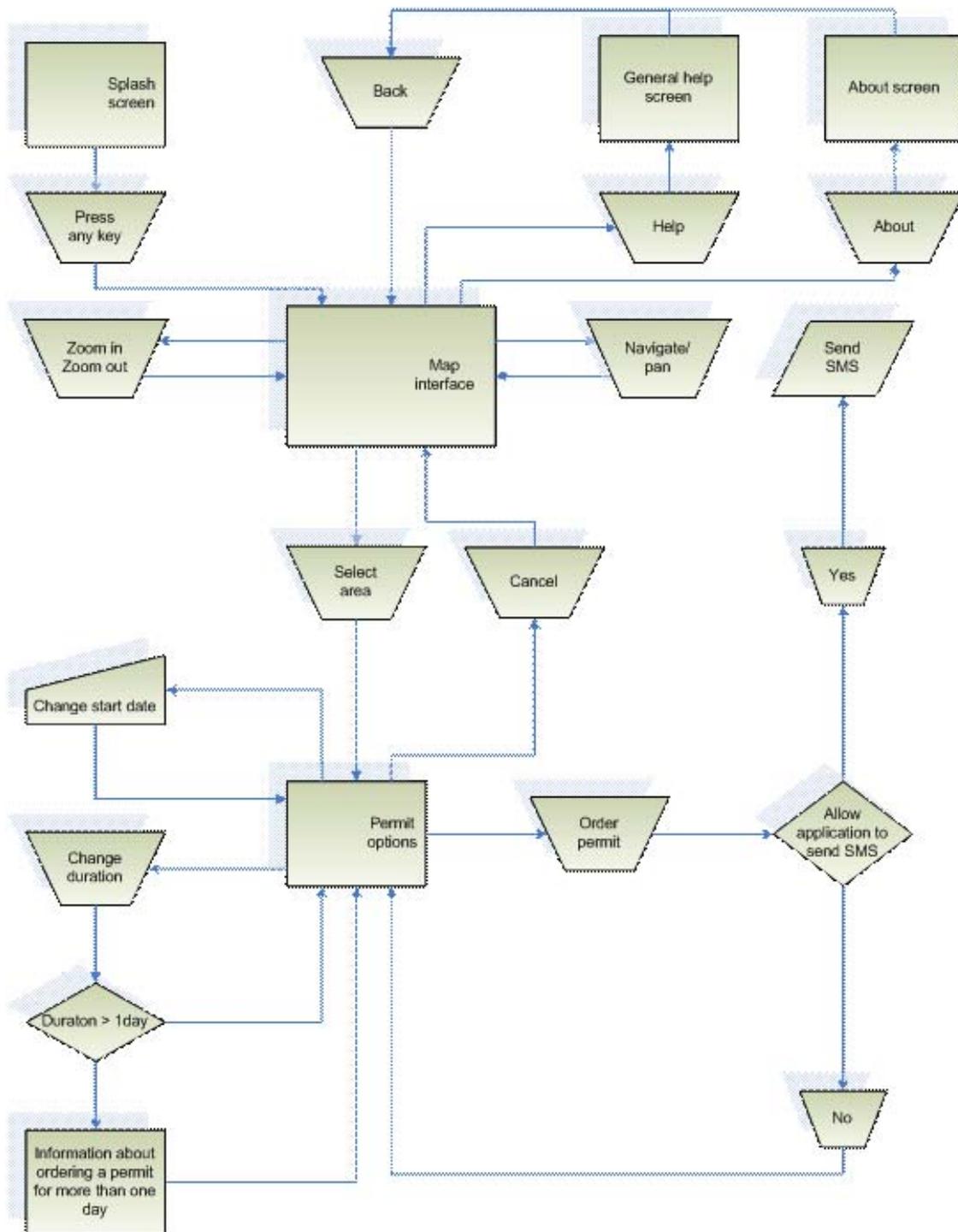


Figure 6. Action flow for the Java MIDlet

6. Discussion and Conclusions

In terms of the Braudel Rule (*mobile services will become customer value when they are expanding the limits of the possible in the structures of everyday life* [2]) MobiFish is a mobile value service. In the context and real life terms of the fishermen it offers helpful support in getting a fishing permit when the time and place is right and it is obvious that the fish is in the "catching mood". At the same time MobiFish simplifies a number of time consuming and difficult routines: as a tourist and first time visitor in the Aland Islands it is not self-evident that the fisherman will manage to get a valid fishing permit even if he tries his best and really wants to avoid illegal fishing. The MobiFish also simplifies the routines for the fishing permit inspector, who only will have to access the data from his mobile phone and who will be able to decide on the spot if the fisherman has a valid permit or not. The landowners will get simpler routines: the payments for the fishing permits will get credited to their accounts without any activities from their side, they will get statistics on the number of permits and they will learn about the fishing habits and the nationality of their customers without actually ever meeting with them or even seeing them. A usability test of the functionality of MobiFish was carried out in our usability laboratory in order to find any software problems and any problems with the functionality on various types of mobile phones. The results were very satisfactory and the system underwent a final finishing touch-up. It was then submitted for actual use and has over the summer 2007 been checked and tried by several companies which are going to bid for the rights to commercialise the MobiFish. No problems have been found so far and the companies both found and accepted the key innovations with the system. The final testing will be when we find out how actual users work with the core and basic functions of the service; this is a follow-up study we will put in effect in the Spring 2008.

If we return to the Braudel Rule the crucial point of success is when the mobile service becomes a freedom for the users and becomes part of their everyday routines, a part which is important and which makes life harder if it is missing. In terms of the Aland Islands, if returning tourists will ask about the MobiFish system the next year, we will have a first indication that the system has become a mobile value service.

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