Design of a Mobile, Context-Aware Sales Approach for Campaign-oriented Undertakings

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Abstract. *In recent years, many mobile services have been developed to use context-aware pieces of information. More or less systematically services with different context-aware peculiarities have been pushed to meet demands for certain audiences. Enterprises partly picked up those services for their campaign ambitions, without following a sufficient theoretical framework though.*

Such a framework is indispensable, since there exist various factors of influence which affect the choice for an appropriate consumer segmentation and market cultivation strategy.

In order to reach a decision in this regard different time- and place-sensitive mechanisms will be identified and evaluated in this paper in consideration of their business relevance for campaign undertakings. On the basis of an enterprise and consumer objective construct promising use cases for a context-aware sales approach will be drawn and different views of notice for an enterprise as well as exemplary application fields will be disclosed.

Keywords. Context-Aware Services, Mobile Campaigns

1 Introduction

A mobile phone offers nowadays by far more room of utilization, than mere calling. Due to a higher class of transmission technology relevant applications on the way are available and consequently secure not only flexibility, but also a saving of time and as a result a saving of personal costs. Extended offers of the mobile phone - Internet surfing, ckecking emails or paying goods and services for example – play a minor role so far indeed. With all multi-functionality every user calls the SMS as most important auxiliary function, followed by the contact directory and the wake-up function. In the face of all relevant mobile key performace indicators, over four billion people are using one or more mobile phones, the still rising future potential is evidently. Enterprises as well as consumers are demanded to evaluate and use their beneficial applications.

The industry continues to work on further technology solutions for mobile phones, in order to interlace with other contents more closely. TV recordings can be set over the mobile phone, even recommendations for a movie can be made and retrieved in times of Web 2.0. New functions in the B2B and the B2C penetrate the market as long as offers increase the value for the user - a skipper will not rely navigating a ship on his GPS on his mobile, a field representative, who has to look up a customer's address can highly benefit of such a service.

New technologies are tested in numerous individual laboratory environments for customer use, usability, technical maturity and acceptance, before the technology is transferred in a at least small product series. Merging from so far separated networks telephony, broadband Internet and television into a larger unit opens supplementary ranges of application, it is however still in its beginnings. It is for the majority of users unbroken indifferent, on which technological basis these services are supplied. Again those technical innovations have to be accepted from the consumer as an increase of an additional value.

With increasing saturation of the markets the economic science and practice strives for a business acting that preferences a significant level of individualization in customer offers. [1] In times of mobile communication this objective remains constant. [2] Successful offers for mobile phones show, as for example the "Mobile Me" program from

Apple that the personal composition of individual terminals seem to be a demand for the costumer by which profits can be obtained. In particular by the advancement of context-aware technologies, this individualization of consumer offers can be realized by the consideration of context information.

2 Objective formulation

Formulating an objective as a central guideline for an enterprise supports all kind of business acting. The system of objectives develops from over and subordinated goals, which are hierarchically developed, beginning with the objective of the company. At this juncture financial goals, profitability as well as market position goals are primarily rewarding for marketing. [3]

Campaign-oriented Undertakings are geared to the objectives of Mobile Marketing, which include the areas of winning consumers and sales, customer loyalty and service, branding and image, as well as market research and advertising studies. [4] Those target areas can be further operationalized:

Winning consumers and sales	Attract attention
	Winning new customer
	Winning prospective customer
	Cross-Selling
	Increase of the purchase volume
	Increase of the purchase frequency
Customer loyalty and service	Increase of recommendation willingness
	Structure of change barriers
	Improve customer service
	Increase of customer transparency
	Creation of auxiliary use
Branding and image	Increase awareness level
	Build up image
	Place emotional use
	Position label
	market investigation
Market research and advertising studies	market forecast
	Execution of market data
	Generating customer data
	Advertising effect measurement

Objective formulation enterprise

Nevertheless those areas frame the objective formulation for enterprises that strive for campaign-oriented undertakings. When defining a campaign, the goal has to be sufficient concise, including the content and the degree of the goal, a chronological horizon and a field of application.

At least as important as the setting of the objectives of an enterprise is the definition of the added value for the addressee of a context-aware campaign. A success promising campaign has to be beneficial to all interaction partners. The benefit for the campaign receiver will be separated in this connection in motivators and hygiene factors, according to the two-factor theory. It states that there are certain factors that cause an added value for the addressee, while a separate set of factors do not cause positive satisfaction, though dissatisfaction results from their absence. [5]

Motivators	Information
	Entertainment
	Social added value
	Monetary added value
Hygiene factors	No sense of disruption when receiving message
	Interest synergy

Objective formulation campaign receiver

The definition of the objective formulation is of crucial importance, since apart from a concretization of a desired future condition, an orientation-, a control- and a motivation-function can be reached.

3 Spectrum of mechanics

Within the framework of a context-aware consideration a great number of application mechanics is conceivable:

- Positioning and navigation to supplier of certain services or products
- Retrieval of time- and place-sensitive pieces of information
- Establishment of an entertainment value due to the use of the current where about
- Time-controlled servicing based on user behavior
- Recording of movement coordinates
- Notification when certain persons/ products/entities are close
- Positioning and navigation to dedicated targets
- Blogging and sharing of user generated content
- Get to know people with congruent interests
- Case of emergency positioning
- Integration of location information in tweets
- Initiation and completion of economical transactions

Those application mechanics can be ranked according to their relevance for corporate campaign ambitions, for the degree of relevance of the time- and place-sensitive element in the overall service and their business relevance. Weighting these relevance criteria with 0.5, 0.2 and 0.3 four mechanics can be highlighted when setting up a rating frame for each mechanic. The rating frame ranges from 0 – not relevant to 3 – high relevance and has with 1 and 2 two further levels. Expert interviews had been held to determine factors for enterprises that work with customer loyalty in the B2C segment. The weighting factors may differ in other cases, depending on the focus and the environment of the enterprise.

	A	B	C	All
Weighting	50%	20%	30%	
Positioning and navigation to supplier of certain services or products	3	3	2	2,7
Time-controlled servicing based on user behavior	3	1	2	2,3
Retrieval of time- and place-sensitive pieces of information	2	3	2	2,2
Establishment of an entertainment value due to the use of the current where about	2	3	2	2,2
Recording of movement coordinates	2	3	1	1,9
Notification when certain persons/ products/entities are close	2	3	1	1,9
Positioning and navigation to dedicated targets	1	2	3	1,8
Blogging and sharing of user generated content	1	1	2	1,3
Get to know people with congruent interests	0	1	2	0,8
Integration of location information in tweets	0	2	1	0,7
Case of emergency positioning	0	3	0	0,6
Initiation and completion of economical transaction	0	1	0	0,2

A: relevance for corporate campaign ambitions
B: degree of relevance of the time- and place-sensitive element in the overall service
C: business relevance

Application mechanics

In a next step use cases on the basis of the four, in the matter of the given task relevant above-mentioned mechanics can be drawn.

4 Use Cases for context-sensitive Mobile Services

The following use cases focus furthermore on the use of a service platform, where tracked location data and further context time are processed and content or messages for delivery are administrated and automatically sent to devices to meet the predetermined criteria.

Relevant players for the use cases are

- Sender: Entity who strives to send a message or content to the user
- User: Person who is served with messages or content through his mobile device
- Service Platform: System in which content and messages are created and administrated for further transmissions; automatically processes input data (e.g. incoming message and data from user, matching user criteria to message criteria for determining valid time of transmission, content and channel for broadcasting)

4.1 Context-sensitive transmission of content or message

By using the service platform, the sender is creating a message ready for processing. The local area for transmission of the message and a time frame are added as parameters. Within the time frame, the position of the user is tracked and processed in the service platform. By matching user location data with area for message transmission, the service platform reacts to the user entering the predetermined area. As soon as the data coincides, the message is transmitted to the user's device.

4.2 Location-based personalization of the broadcasted message

The content of a text message that a user receives depends on the location. Within the service platform, various versions of a message are created by the sender and attached to a specific location. By tracking the location of the user, the message, corresponding to this location, is automatically selected and transmitted to the user's mobile device.

4.3 User-initiated, location-aware message

The user sends a text message to a short code number linked with the service platform, including the postal code, name of place or address of his current location.

The location data is processed in the service platform and an automated response message is transmitted, containing information linked to his location.

4.4 2D-code or NFC-tag for context tracking

Placing a 2D-code or a Near Field Communication (NFC)-tag directly next to a product or a product shelf, the user can transmit his actual context (dealing with a certain product at the very moment) to the service platform. Depending on the used tag orcode and therefore the set up of the service platform, the user can

- take a picture of the code and send it via multimedia messaging service (MMS) to a short code number. The picture can be processed in the service platform by the built-in image recognition engine. The returned message or content is adjusted to the user's context.
- scan the 2D-code with a scanning application installed on the mobile device to get linked to a mobile website with product-specific content
- interact with his NFC-enabled handset with the NFC-tag placed at the product or product shelf. The NFC-ID is processed in the service platform and product-relevant information transmitted to the handset.

4.5 Providing location information by using image recognition

The user takes a picture of a building or a street sign for example and sends the message via MMS to a short code number. The picture is processed to the service platform, where the image recognition engine can determine the actual position of the user. The automated responded message includes the location data. Additional information like the next POS is added to the message.

4.6 Adapting information transmission to temporal habits of the user

The service platform tracks the point of time when the user reacts to a received message. The user is responding with a message, loading content or interacting at the POS. By profiling user reaction, the further transmission of messages is automatically adapted to the users preferred time, assuring the user is delivered with the message in a relevant context. Therefore to the message a time frame of validity has to be added to prevent out of date messages to be transmitted.

4.7 Selecting channels of transmission depending on user location and time

Tracking user location by an application running on the mobile device and tracking time within the service platform, the channel for transmitting a message is varied. By considering user habits, a message can be sent by e-mail in the case the user is in his office (considering location or time data). When the same user is located outside of the office, the preferred channel for message transmission is set to short message service (SMS) or MMS (depending on message/content type). Messages and content are administrated in the service platform and for every channel of transmission an adjusted version of the message or content has to be available.

4.8 Considering location and time data for recommendation systems

For a user-based recommendation system, profiles of users in a close geographic range are more weighted than those of users from a far location. Profiles from users with recent interactions with the system are more weighted than those who haven't interacted lately as well. Considering time and location for recommendation of venues, products or other kind of information will help a sender to deliver more accurate pieces of recommendation to the user. This approach is based on the assumption that profiles of users from that very same region incorporate specific local characteristics. Also profiles of users who interacted lately incorporate current trends.

4.9 Context-aware mobile coupons

The sender creates a coupon in the service platform. A call-to-action message is sent to a user group, mentioning time frame and location for

- redemption of the coupon
- obtaining the coupon

The distribution or redemption of the coupon is managed by a Bluetooth hotspot at the specific, pronounced location.
Alternatively, a winner of the coupon can be drawn from all users registering at the location within the time frame at the Bluetooth hotspot.

4.10 Creating user lists depending on location and time data

Enterprises automatically assign and remove users to user lists in a service platform, in regard to a location and time context, which is tracked interacting with the consumer. Users with pieces of interaction on a specific POS are assigned to the related user list. This enables the sender to target certain audiences with different messages, offers or content.

4.11 Driving users through a predetermined set of locations

This use case aims on user interaction on various locations in a playful manner. The user is guided through a set of locations, having to fulfill certain tasks at one location to get the coordinates for the next, similar to a paper chase. The tasks a user has to carry out can vary, from scanning a 2D-Code to responding to a question by a text message or by registering at a Bluetooth station. All the services are managed through the service platform and user interaction is tracked and can be reported.

4.12 User-determined time and location of message delivery

Giving the user the option to determine his preferred time and/or location for messages being transmitted to him, the delivery is adjusted to the user's preferred context. The user can state his preferences on a mobile website or by sending a SMS or e-mail with the preferred time and location, which are saved in his profile. The service platform adjusts the transmission of the message according to the user's preferences. To avoid messages being send when content isn't relevant for the user anymore, each message has to be given a time frame for transmission.

5 Morphologic Campaign characteristics

One of these drawn use cases, among others, can be used for a context-aware campaign, depending on certain characteristics a company is pushing up. Those characteristic values are collected within a morphologic frame, to provide a clearly arranged listing of possible advertising campaigns. The morphological framework hereby is a creativity procedure according to Zwicky that enables to visualize extensive settings in a definite surrounding.[6]

From a practical point of view, this general conspectus in dependence on Pousttchi/Wiedemann/ Dietmar [7] allows a structured categorization of characteristic values for advertising campaigns. Out of a diverse combination of these attributes many varying use cases can be drawn. Each enterprise that is planning to carry out an advertising campaign has to evaluate how crucial each characteristic value is for the intended campaign and what value fits whichever use case best. From a scientific point of view a descriptive model is visible that contains essential elements of a mobile marketing campaign which has to be addressed analyzing a previously shown campaign:

Parameter	Characteristic Values
Advertising Objective	Winning consumers and sales Customer loyality and service Branding and image Market research and advertising studies
Customer Benefit	Information Entertainment Social added value Monetary added value
Communication Technology	Mobile network WLAN Bluetooth NFC
Service Carrier	SMS MMS E-Mail 2D-Code Mobile Website Application
Cost	Premium charge Transmission charge None
Opt-in	Conventional Electronical Mobile Not required
Initiation	Pull Push Both
Degree of interactivity	Reactivity Interactivity None
Positioning	Manually Satellite-controlled Network-controlled None
Personalized Advertisement	Yes No
Client	Required Not required

Morphologic frame

In a first step, as shown at the objective formulation, benefits for each end of the campaign alignment have to be defined.

Mobile network, WLAN, NFC and Bluetooth can be reasonably used as a communication technology on the B2C market. The choice for an appropriate technology depends on the characteristic of the intended campaign. Hardware requirements, the circuitousness of the campaign and the audience, operating costs, ubiquity and accessibility and last but not least the kind of campaign affect the communication technology.

The options for service carriers are multifarious. SMS, MMS, e-mail, 2-D code, Mobile Website or an application are conceivable. An enterprise has to ponder, how they can reach their customers most

efficient. The customer is not allowed to feel any sense of disruption, when receiving the service. Not every audience demands this hygiene factor at the same level. Some customers gladly download a client, others are distracted by just receiving a message.

The parameter cost is negatively affected by the customer benefit "monetary added value", since a feasible benefit may turn inane. Transmission or premium charges arise, when the service receiver conducts a degree of interactivity by sending a SMS or downloading content. By executing a pure push service without using the interactivity-option no costs for the receivers are generated.

Considering the European legal basis for providing a mobile, location-based service to the user, an opt-in mechanism has to be set. The opt-in can either be made by conventional means like filling out and signing a paper form or by digital media like a web page, a mobile web page or a text message. In case of a 'pull service' no optin is required.

The service can be actively started by the user, called a 'pull service', or pushed to the user by the service platform respectively the sender, serving the user before he has done any action. The initiation of the service depends on the player who starts to take any action. In addition, services can be designed, where both players, the user and the service platform, independently have to perform a first step in order to start a service.

Looking at the level of interactivity, services can be described as interactive if more than two steps of operation between the user and the service platform are performed, or reactive, where one of the players responds to a first incoming transmission with a second step of operation. With a service starting and ending with just one transmission step from one of the players, no interactivity is aligned.

Providing a location-based service, one of the key factors is the knowledge of the position of the user. The simplest possibility of positioning the user is the manually entered transmission of the location data. The data can be transmitted by text message, by application or by a mobile website. As more and more mobile devices include GPS sensors, transmission of satellite-assisted, automatically provided positioning data becomes more common. A less accurate positioning method determines the location of the user through the infrastructure of a mobile network carrier, giving the cell of origin or the location measured by triangulation.

Having user data logged in the service platform, a personalization of the content or the messages transmitted can be considered. Messages can be personalized by including the user's name or further personal data.

A mobile application client may be required for taking advantage of built-in GPS-functionality of the mobile device , transmitting messages at no cost for the sender and giving advanced options for user tracking and profiling.

This framework is for the present just theoretical, since no service has been designed out of it; its functionality will be proven in line with a PhD thesis.

6 Future prospects

In a next step there is to find out, which characteristic values fit to what sort of campaign. Based on the structured morphological frame an enterprise should define the attributes that are important to them, followed by a recommendation based on these attributes to what kind of campaign to hang on to.

The development of the mobile phone to a central information-, communication- and entertainment-medium will be continued the next years. A considerably driver for this development is the growing dispersion of smartphones with high usability on the one side and the implementation of further technology steps like the "Near Field Communication" on the other side. [8] The increasing and cheaper transmission rates are in addition helpful that the field of possible cases for context-aware advertisements campaigns is arising. Thereupon enterprises have to know when to use what kind of use cases. Some of possible use cases are shown in this paper, furthermore enterprises are provided a framework of possible characteristical values for their intended campaign.

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