ON-DEMAND MOBILE CRM APPLICATIONS FOR SOCIAL MARKETING

Business and Technology Perspective

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Abstract: Solutions for Customer Relationship Management (CRM) tend to evolve from the traditional passive recording of transactions between the Company and the Customer to agile optimized strategies for interaction and cooperation with the Customer. Despite considerable industry and research interest to the new ”social” CRM 2.0, the gap between the vision and the reality is still quite large. Use of handheld devices deserves special attention in this respect. Although it can boost sales, customer satisfaction and customer loyalty, the amount of research work and the number of mobile applications in this area is low. In this paper, we focus on design and implementation of mobile social CRM solutions, which make extensive use of collaboration technologies. By means of simple business use-case scenarios, we argue that good understanding of business objectives, business processes, and technology issues, together, is crucial for development of compelling social CRM applications.

1 MOBILE SOCIAL CRM

Nearly every business needs some kind of CRM solution, even if it is not a specialized CRM software system. Banks, Insurance Companies, e-Businesses, non-profit and Public Sector organizations - all focus on serving their customers.

A large CRM component is usually integral part of enterprise business-software landscapes. SAP, Oracle, Salesforce.com, and others are the established proprietary software vendors. Smaller companies also process information that is typical for CRM, such as leads, contacts, accounts, promotions, sales orders. In any case basic data management, activities tracking, and reporting functionality implies high maintenance costs. Especially costly is customer-acquisition support.

As the efficiency of traditional mass-marketing, such as TV, radio and direct mail, constantly decreases, companies face the need to review their CRM strategy. One promising cost-effective and otherwise strategically interesting approach is called Social CRM or CRM 2.0 (Band, 2008). Social CRM recognizes the fact that mass advertising is not appealing enough to customers and advocates more attentive and interactive approaches to foster customer relations. Due to the rise of the Internet and increased level of public knowledge, customers will rather actively search for information they need. They will leverage their social networks and trust to their friends and other customers like them. When making a choice to buy a product or service, they will ask opinions of members of their social network (Webber, 2007). Social CRM extends the collaborative CRM and focuses more on support of

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co-operation and customer-involvement aspects of customer relations.

With regard to CRM objectives, mobility brings a number of advantages. Due to the ubiquitous nature of the mobile communication (Virki, 2007), it is especially suitable for social marketing. Most often, consumers and sales agents wish to make decisions when they are away from their computers and have limited access to information directories. Leveraging broad availability of mobile devices can facilitate ease of relevant information access, advanced customer service, and field workers support (Sudan et al., 2007). In Section 4 we discuss how this eventually leads to CRM-effectiveness gains.

Mobile social marketing is a new concept, but its role rapidly becomes perceived as significant for CRM promotion and delivery strategies (Webber, 2007). We consider mobile social marketing a "must have" element of the future integrated CRM solutions. Possible concrete applications include managing social links on the mobile phone, receiving recommendations, consulting community opinions about products, tagging, rating, promoting, and ranking goods and services on the move. Retailers could get additional means to gather information about consumer preferences and forecast consumer needs. Advanced applications can take care of mobile access to a marketplace, where retailers and consumers search for products and services with the best quality-price ratio, place their orders directly in the back-end CRM system etc. The vast popularity of content-generation modes in the context of social networking web sites (Vaske, 2008) suggests support for mobile exchange of subjective information related to products and services. Software vendors already support some of these ideas, although the major business-acceptance breakthrough requires more time.

1.1 Market Overview

Jim Balsillie, co-CEO of RIM, Canadian wireless device company, says (Lomas, 2008) that the need to seamlessly integrate Web services and desktop applications onto handsets "is not a concept. This is a reality". He further mentions: "Once social networking becomes a B2B phenomenon – not unlike IM and texting – I believe every single social-networking user will want a data plan".

SAP and some other major vendors of CRM solutions closely follow the new developments. Recently, social-networking B2B approach has been chosen to drive adoption of SAP software by small and medium-sized businesses (Darrow, 2008). The influencers can get incentives for registering and closing leads in the company's CRM system.

Recently (Oracle, 2008), Oracle announced Mobile Sales Assistant for company's CRM on Demand solution that"changes the face of mobile CRM". It features user collaboration with colleagues and customers, push-based architecture for Blackberry®, one-click-away account information and customer contact information, and more for $30 per user per month.

During the iPhone™ Software Development Kit announcement, March 6th 2008, Salesforce.com demonstrated its ability to bring its innovative CRM on-demand services onto the iPhone platform and to provide new level user experience. Social mobile CRM applications are to be expected soon.

Microsoft has only recently entered into the CRM market with Microsoft Dynamics CRM 3.0. Their Mobile CRM solution works only on the Windows Mobile Pocket PC devices. For now, it provides salespeople with up-to-date information about their accounts and contacts, and helps them manage sales opportunities and track sales-related activities.

Arvato Mobile offers a set of advanced building blocks for mobile CRM. They provide for engaging user experience including games, send-a-friend, sponsored pop ups, communication via SMS, MMS and more. The tool set both aims at "customer-club" for customers and supports statistical data aggregation for CRM.

Kintera Inc. recently launched Kintera Sphere™ v8.0, company's new social CRM system for non-profit organizations, providing a total view of the constituent's relationship with the organization (CRM Today, 2008). The company claims to have considered factors such as enhanced trust, sense of belonging, instant gratification, emotional release, and sense of social impact. These features are definitely interesting for mobile applications too.

In the light of described mobile social CRM developments, the question remains – when and how will new solutions actually enable sales professionals to better understand and address their customers' needs, anytime and anywhere. As companies move from products to solutions, the technology imperative is to enhance the business acumen and insight of the front line, which has not been the traditional goal of CRM. The business condition precedents to business-acceptance of innovative CRM solutions have to be understood in the first place see Sections 2 and 4. The challenges for "technology enablement" leading to effective

selling supported by CRM will be presented in Section 3. Our view is based on own applied research in the mobile CRM area described in Section 4 and summarized in Section 5.

2 YET ANOTHER CRM WITH MOBILITY SUPPORT?

Mobile access to back-end CRM systems is not new (Sadeh, 2002). In what respect are mobile social applications different? In our opinion, the answer can be found between the lines of the previous Section – it is the challenge to better meet business objectives by means of supporting and influencing complex human interactions. The idea is that customer and partners feedback, or ability to collaborate, and not so much stiff internal processes, drive customer relations, marketing and sales. Dynamically changing customer relations and the need to often review company's self-perception in the market add to the overall complexity.

There is no one good solution, but poorly serviceable solutions are easily made. As the businesses remain sceptical, solution designers look for ways to control the complexity. In a nutshell, two approaches are under consideration by researchers and practitioners. The first becomes increasingly accepted and advocates use of general-purpose collaboration-support tools like Email, push-alerts, Instant Messaging, chat, mashups etc. alongside the company's CRM processes. While there is nothing wrong with this approach, care is needed to decide whether it is appropriate. The costs of putting a solution into operation and maintenance costs can easily exceed the expected benefits (Galdy, 2008).

The second approach is to adapt and extend existing business processes. In (Band, 2007), the authors suggest the following four steps to build compelling CRM applications: 1) define and quantify business goals; 2) formulate CRM strategies and tactics; 3) establish appropriate CRM measures; 4) link CRM goals, strategies, and metrics. Forrester advocates another four-step strategy called POST (Bernoff, 2007): P) review the Social Technographics Profile (decide what is possible, customers are divided into groups like Creators and Inactives); O) pick an objective; S) choose a strategy; T) select and deploy appropriate technologies and measure results.

We argue that both approaches have advantages for mobile social CRM, but undervalue the intrinsically unstructured nature of customer interactions. The first approach needs dedicated control mechanisms to canalize and manage customer relations. The second approach contradicts with the idea of lightweight intuitive support for customer and partners interactions. Due to the formalization requirement, the processes can easily become incomprehensible or inflexible. We have chosen a mixed approach, which avoids undue quantification and specification of desired interactions, but puts strong emphasis on thought-out, informal, early and iteratively adaptable specification of the desired mobile social CRM solution.

We recognize that most important aspects of the social CRM are: 1) efficient cooperation with customers and partners; 2) efficient collaboration between CRM and non-CRM employees within the company; 3) supporting and enlarging existing relationships among customers and 4) shifting focus from the sales volume to better customer experience, compare also (Paterson, 2005). In fact, most mobile CRM solutions fail to address some or all of these issues. In our opinion, this is because of the mentioned complexity and practical difficulty of involving business analysts, technical experts, scientists, field workers, and customers early enough in the solution design.

We believe that transparent and flexible design principles constitute the best way to gradually accumulate expertise of the many people contributing to a compelling CRM solution. We follow an approach, where the following three steps are being largely addressed in parallel: 1) define and understand business objectives (market research, defining specific CRM measures, customer group focus etc. can be part of this step, but general understanding of implications of the business objectives is more important); 2) choose business processes (in the first place, we identify use-case scenarios to focus on); 3) address technology issues This step is indispensable especially for mobile solutions. The architectural framework described in the next Section facilitates reuse of components, but some redesign and customisation are still necessary, depending on the desired business processes. Next, we proceed with step 3) and then exemplify steps 1) and 2).

3 TECHNOLOGY PERSPECTIVE: APPLICATION DESIGN

When designing mobile extensions to the Enterprise CRM applications, one must be careful to distinguish traditional software applications and specific functionality in a mobile-enterprise software context. It is impossible to deploy the entire business-software system onto a mobile device. The challenge is to transmit only the relevant business information and implement software functionality required for selected processes.

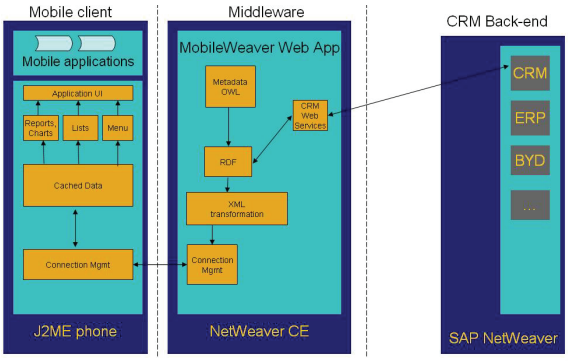

Figure 1: Architecture overview.

The known limitations of mobile devices are: connectivity, processing power, usability, security concerns, and memory requirements, but mobile devices also have some advantages, such as multi-modal input and high level of availability. All these considerations have to be taken into account. For social mobile CRM applications, there are additional requirements due to on-demand support of often changing customer interaction patterns.

With our business application framework (Natchetoi et al., 2008), we have implemented Mobile CRM client as a Java midlet and native Objective-C application for iPhone. In our solution, neither the business logic nor the user interface forms are hard-coded in the client application. Instead, the client application partially implements interpreters of open industry standards like SOAP, RDF, OWL and XForms. The application logic and user interface can be easily modified or augmented at low cost, since we are using standard formats and collaboration concepts such as mashups from the Web 2.0 tool set, see (Natchetoi et al., 2007) for details on our mobile business-oriented browser. For an example, user experience can be enhanced by adding XForms accessing back-end Business Objects exposed through SOA Web Services.

To lighten the application, only subsets of the mentioned standards are used. For example, a very limited version of the full BPEL interpreter is implemented on the mobile device, which enables basic composition of the workflow scenarios using local and remote services (Hirsh et al., 2006).

The components overview of our architecture is presented in Figure 1. In our Framework, the CRM business-data objects are being serialized, compressed and transmitted to the client side in the form of a compressed RDF messages. The information is stored in the local Persistent Data Store, also in the compressed RDF format, making it possible to store a significantly larger number of business objects as compared to a traditional file system or relational database. The Framework enables Web service calls and pro-active download of data required later on in the asynchronous business process. The client application uses the locally stored data to support off-line work.

Efficient connection to and data synchronisation with the back-end Enterprise system is very important for field workers. We use asynchronous, message-based communications for this, as they are a better fit in the mobile environment. The Smart Asynchronous Connection Manager (SACM) is a unified manager of asynchronous communications between and with mobile clients. The standard communication protocols supported by now are TCP/IP and SMS. We designed suitable API to asynchronously send messages from the client to the server, from the server to the client, and between the clients. The SACM does not explicitly distinguish clients and servers so that it also suitable for mobile Peer to Peer scenarios.

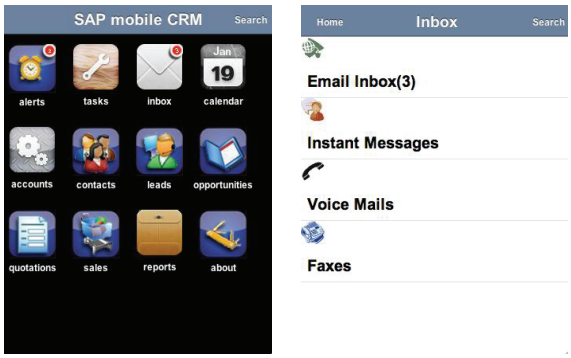

Figure 2: Sample screenshots.

Our Mobile CRM prototype based on the introduced Framework enables sales agents to establish interactions using comprehensive persistent knowledge about the constituents and provides a centralized way to persist and manage customer

relationships information. Mobile CRM workers can update business information, browse reports and invoke Web Services remotely. They can access the CRM application functionality both online and offline. The mobile CRM has been developed for iPhone (Finkle, 2007) and for J2ME-enabled phones using the same Framework.

Figure 3: Sample screenshots of the mobile CRM application.

The Framework enables simplified adaptation or extension of existing applications. Beyond the basic Contacts, Leads, Opportunities, and Sales Orders management, we implemented some collaboration Services supporting multi-channel communication of sales agents, in a way inspired by ECOSPACE project (http://www.ip-ecospace.org). For now, we support Email and Fax access, and Instant Messaging integrated into CRM-processes context. In the next Section we describe further functionality relevant to mobile social CRM, which we could support in the future.

4 BUSINESS PERSPECTIVE: ENABLEMENT OF SALES PEOPLE AND CUSTOMERS

Social CRM is essentially about interaction with customers. The sales people and the customers are the prominent interacting parties. It is therefore natural to support them in the first place. This simple assumption already sets priorities for the functionality and the needed technology. We herewith assume that interactions drive the development and customization of CRM applications.

There are still different kinds of customers, sales people and interactions. Traditional CRM solutions would establish order by suggesting "best practice" processes out of the box. This is not enough, though, in the world of ever more rapidly changing requirements and increasing customer expectations. As described in Section 2, we have to focus on specific business objectives, using selected business processes.

The corresponding decisions include understanding of company's actual or desired core business strengths and deriving strategic objectives for interaction with customers. The objectives have to be detailed by taking into account customer profiles, relevant market researches, anticipated trends etc. They can be focused on a particular customer segment, technology, measurable performance indicators etc. In any case, the decisions should lead to a carefully selected set of desired customer-interaction-support scenarios, which have to be continuously validated against the business objectives and provide for differentiation from the competitors.

To test and further develop our mobile CRM application and our mobile Framework, described in Section 2, we were looking for some innovative scenarios, which we could implement in the near future. It became clear that we needed to define a compelling set of objectives first. Let us consider an example.

Imagine a Service provider company. It has to face harsh competition. To survive the next drop in prices, the company decides to save on traditional marketing and to leverage the knowledge of loyal customers about the company's quality services. The management wants customer retention to be addressed more; hopes to be able to provide added value especially for new customers; and strives to differentiate the company from the competition. To achieve their plans, the management considers the following use-case scenarios.

4.1 Set of Scenarios 1

The company needs ways to communicate to its loyal customers. Those customers are presumably rather busy and sceptical about advertisements. Therefore, for most scenarios described below, traditional communication channels through mail, email, and telephone would be considered annoying and would be too inefficient. The company decides to go for frank short conversations with rather obvious added value for the customer, and sees handheld devices to be best suited for this.

One option would be to cooperate with a mobile carrier and provide mobile services, including the ability to send SMS or other kinds of messages to the customers. Another option would be to provide

mobile applications for download. Also it is possible to cooperate with a handheld devices vendor. The last two options are much more flexible, compare below, and the corresponding applications would make use of the technical architecture described in the previous Section.

4.2 Set of Scenarios 2

The company is interested in most active, experienced, or otherwise influential persons among the customers. Determining such customers is to some extent similar to representing the customer base as a "social network". The company can make an educated guess that loyal customers or customers with high amount of orders are potentially valuable collaborators. To facilitate their retention and to test the guess, it offers the selected customers to forward a small gift to a person of their choice (but not themselves). The gift can be limited Internet domain contract, free SMS pack, credit points for some services, etc. The choice of gifts can be made more intelligent later, as the "social network" is growing. The customers have the choice not to store the delivery address at the company, since the mere act of forwarding is enough for the company's purposes.

As soon as the influential customers are known, one can offer them certain incentives and ask to recommend the services. The company offers to conduct a counselling interview. The influential customer suggests time and enters contact details of her friend. The company can reassure the influencer of its quality counselling, including comparisons with similar services offered by competitors.

4.3 Set of Scenarios 3

The company might need some user feedback on provided services. One idea would be to offer a downloadable game, which becomes activated after the customer has completed a short satisfaction survey. Playing the game, the customer may have the option to share her view on possible improvements for company's services. For specific services, it may be possible to review other users' feedback, and even to discuss them in a kind of forum, adapted for mobile use. Considering the technical reality of mobile users is facilitated by the appropriate technical design.

Especially new customers would benefit from sharing their problems-SMS in the forum. This service can be supplemented by an Internet based online community.

4.4 Set of Scenarios 4

Selected "premium" users can earn gifts, reputation, or even money by helping out in the scope of their experience. The company provides them with a mobile tool, which effectively counts them to the product support team. They receive and answer questions, concerns and ideas of other users, answer and forward them. They can exclusively send their own requests to the company's support team members. The application architecture described before would even allow certain direct changes in the back-end systems on their behalf. Multimodal input would facilitate simple upload of a picture, video, or voice explanation to the designated online space, possibly, after review of company's responsible employees. The interested other customers can be notified directly of this event. Next, the chat functionality facilitates communication. To achieve even more customer loyalty, additional services of social value like exchange of contact details or introduction of customers with similar profile to one another can be offered.

4.5 Set of Scenarios 5

Sales agents use back-end services directly on their mobile phones. They also benefit from the emerging social space. They can tap the experience of "premium" customers or ask them for references. The sales agents can exchange thoughts and business content through chat and other functionality, which is deployed on their mobile phones. As a side effect, the company can perpetuate discipline in using back-end CRM system and, through collaborative style of work it can uphold the sense of mission for sales agents. Similarly to customer feedback, sales agents can communicate their concerns directly to the sales-support team.

4.6 Advanced Scenarios

To strengthen its market position by means of key differentiators, the company plans to provide special kinds of services, based on its customer-base information. The company's customer profiles include information on their mutual relationships and joint activities. It is now possible to derive or extract information, which can be used for strategic decisions. The customers can be divided into segments; the adoption level of selected scenarios can be measured etc. Some of the corresponding analysis results should be available on the mobile

phones for sales agents. Our framework described before allows to rather easily extending applications to include reporting functionality.

Given the metadata about joined CRM activities, mathematical analysis of gathered data can be performed. For example, business classifications can be tested and improved by means of probabilistic methods like dynamic Bayesian networks (DBN) and dynamic conditional random fields (CRF) (Lafferty et al., 2001). Promotion scenarios and playing with what-if scenarios becomes possible.

The "social network" data can be enriched with data shared on the social sites like MySpace or Facebook. Then, also cross-selling opportunities and more broad marketing can be pursued. Mathematical analysis can identify potential new customers.

4.7 Implications of Scenarios Use

The general message of this Section is to focus on customer and sales-agent needs as much as possible, and at the same time to achieve the company's objectives. Through more focused approach, flooding customers with irrelevant advertisements becomes superfluous. The described scenarios show how customer retention, market penetration, decision support, and powerful reporting can be achieved. Establishing relevant social processes would push the limitations of the traditional CRM applications far into the area of more educated Social CRM, with Mobility providing added value.

4.8 Experimental Evaluation

We are in the evaluation phase of the approach, presented in the paper. It is difficult to evaluate such characteristics as user's trust quantitatively. We have tested our Mobile CRM client prototype with users from 11 different industries. Most of them have ranked the Social Marketing and Collaboration elements of the prototype as "somehow useful" and "very useful".

In order to verify our ideas on Social Web-based Marketing approach we have also implemented a Web portal targeting the young people, students and young families living in Moscow. The portal, funded by the Moscow Government with highly dynamic content provides various information services to the citizens. The advantage of taking Social approach for building this portal is obvious because it is targeting different categories of users, living in the same city and often linked to each other.

The portal informs citizens about municipal programs as well as helps them to get education, find job, plan entertainment and receive consulting support from the social aid experts. The portal is a complex proprietary CRM system, treating citizens as clients, served by the municipal Government. It includes multiple elements of collaboration, smart content classification and auto-actualization. The content addressed to the different categories of the users passes through the actualization engine that is based on linguistics structure-based classification approach to direct content to the appropriate group of the users. (Ponomarev 2004) The feedback, collected from the users is processed in order to improve auto-actualization procedure in iterative way.

The results of three-year long experiments of using Social approach for this portal have been collected in order to evaluate the efficiency of the taken approach. However, the efficiency of such solution is difficult to express in numbers, because the goal of such Social portal is not the sales volumes but rather the trust and satisfaction of the users. The results of the customer satisfaction surveys, taken by the users during the period of two years indicate a strong positive shift in the "brand" loyalty and customer satisfaction. (Ponomarev 2005)

However, we are still looking into the different approaches to quantify user's satisfaction and trust. We are also looking forward to implement mobile access to the Social portal for youth and make this feature available to all users.

5 SUMMARY

Mobile social CRM is a new concept that promises more focused, rewarding, engaging and powerful way to build long-lasting customer relationships. Use of Web 2.0 collaboration technologies can provide major benefits. These benefits come at a cost of more responsible application design. The CRM applications have to become agile with regards to the needed functionality. Mobility support is especially technically demanding.

Furthermore, regardless of the available technical expertise, the usefulness of applications has to be derived from thought-out business requirements. A formalisation of suitable business requirements for less structured collaboration and communication processes is difficult by definition. To circumvent this issue, we suggest following loosely defined steps suitable for unstructured nature of pervasive interactions in social CRM. In short, these steps define business objectives, business processes and enabling technology.

Grounded decisions on the overall business objectives, in the first place lead to requirements for a draft technical architecture with flexibility for the unstructured organic growth processes in mind. One has to consider expertise from relevant vertical divisions of the company, identify use-case scenarios in as many details as possible, consult potential users, and particularly take care of community support, make decisions on the scope of the scenarios to support, adjust the technical design to ensure adaptability with respect to the scenarios and provide the software lifecycle support. Many steps can be taken in parallel, but they all require continuous exchange between the stakeholders, and are best elaborated gradually. Transparent simple design principles constitute the best way to gradually accumulate expertise of the many people contributing to a compelling CRM solution.

In this paper, we exemplified the mentioned points. We considered scenarios to support proliferation of business for a Service provider. Due to flexible technical design, our prototype mobile CRM application can be extended to support many of the business scenarios at a very low cost. We outlined the important technical decisions.

We also discussed provision of advanced back-end functionality, such as analysing community structure and producing powerful reports. Such advanced functionalities can serve as a key differentiator from the competition.

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