Import of Company Data Information into a Customer Relationship Management System

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Abstract. The paper describes how company data is best integrated to a Customer Relationship Management (CRM) system of a charity organization. The case organization is the Finnish Red Cross (FRC). FRC has a newly implemented CRM system, into which they want to import company data from an outside source. The study investigates how this kind of integration can be implemented effectively and what kinds of processes are needed to fulfill the business requirements from different parts of the case organization. In a literature review the concept of good and qualitative customer data is discussed. Then a definition of a company in the CRM system is proposed along with processes to maintain the company data quality. The proposed solution for the integration is tested with an actual implementation and finally the solutions are evaluated.

1 Introduction

Nowadays, every organization needs proper IT systems to operate effectively. For a charity organization, like the Finnish Red Cross (FRC), it is crucial to be able to reach as many individuals and organizations as possible. Well-defined processes and suitable tools help in managing the high amount of data required to reach these targets.

The charity organizations relie heavily on individuals donating their time and money, but there is also a growing trend in the business world to participate in some kind of charity activities. Examples of such activities are Corporate Citizenship Initiative of Accenture Finland [1] and Nokia Helping Hands [10]. The challenge for a charity organization is to target the right kind of partners and to keep an increasing amount of data consistent. This is why a Customer Relationship Management (CRM) system is needed. It is important to save all relevant information about the customers and have an unambiguous view to customers throughout the organization. This means that the quality of data is crucial. However, keeping the quality of the data high is especially challenging in a charity organization, which cannot afford to have an expensive support organization to maintain the data quality.

This study examines how these problems can be addressed by introducing an outside data source to improve the quality of the company data. The outside source is the contact service company Fonecta's database service Fonecta ProFinder that keeps records of contact information of organizations and individuals in Finland.

Background of the Study

This study is conducted as part of an information systems integration course at Helsinki University of Technology. The practical part of this study is an integration done for the FRC. The FRC had a need to import and organize the contact information of potential donors among companies in Finland in their recently deployed CRM system. This integration was given to students in an Information Systems Integration course at Helsinki University of Technology to implement.

In FRC's current CRM implementation the company data is manually entered by several persons across Finland, via a user interface. The data is mainly inherited from a previous system, and much of the data is not up to date. There is also a constant need for inserting new data into the system, as FRC gets more contacts to companies.

There is no agreed policy on how the company data is presented: the fields have been consolidated, but the usage policies are not in place to instruct the users on how to handle, for example, company hierarchies.

Furthermore, if one FRC district needs to create a company office for their specific need, there is no policy restricting this, even though such an action would make it very difficult to follow up the overall situation for that company.

Overall, ownership of the company data is shared between two teams: the campaign and collection team and the marketing team. In practice, there are no personnel to concentrate on only ensuring the quality of the data.

Objectives of the Study

FRC has identified a potential solution for maintaining the company data quality; to obtain the data from an outside source. FRC is using data fetched from contact service catalogue Fonecta ProFinder on temporary cases. Fonecta Pro Finder includes all the companies and their offices in Finland. Currently the case has only been to fetch the information and no actual integration to the CRM system has been done. The task on hand now is to plan and implement an integration that imports the contact data directly into the CRM system.

The objectives of this study is to evaluate the identified solution against best practices found in scientific literature, to implement the interface between FRC's CRM system and the Fonecta ProFinder Service, and to propose effective processes to maintain the quality of the data. In order to be able to define such processes, a definition of a company from FRC's perspective is needed. This definition is a selected collection of data items that logically represent a company in the CRM system.

Research Questions

The research problem for the assignment is to study how company data can be presented effectively and in the most usable way in a charity organization, especially the FRC. Another issue is to specify the best way to integrate information from an outside source into a CRM system.

Scope of the Study

The study will produce a proposal of the company data management process consisting of a creation process, a maintenance process and a deletion process.

Furthermore, to verify the integration solution, a proof-of-concept implementation of the required interface is implemented in a test environment set up at Helsinki University of Technology. This work includes setting up a development environment, designing the interface at the CRM system end and documenting it on the existing FRC design document templates. The code implementing the interface is delivered to FRC. The work done is reported in this report.

On the responsibility of FRC remains the actual deployment to production environment. This includes migrating the current content from the system so that new information coming from Fonecta ProFinder will not have duplicates. FRC will arrange the required training and communication to end-users. If FRC wants to implement company data visibility restrictions, it shall also be defined and implemented by them.

Methodology of the Study

The focus of the project is on solving a practical problem for the organization. Therefore, a design science [9] and a case-study [3] approach will be used to tackle the issues. These methodologies are problem solving oriented, and therefore provide good basis for the project work.

By using an iterative hands-on approach, starting with a simple, partial implementation, the project team's knowledge of the environment can be built in manageable steps. After all, the goal is to construct an interface to be used in practice, and this requires tests and practical experiences so that the best solution can be found.

However, in order to find the best possible solution and to be able to motivate and evaluate the choices made, a short literature study will be conducted. The literature study will mainly focus on finding

evaluation frameworks, tools and methods that can be useful in designing the solution for FRC and evaluating the design.

Structure of the Report

The report is organized as follows: general description of the case organization and the system in use is presented in section 2. A literature review on customer data management and customer data quality is illustrated in section 3. For the case in question, the focus is on company customers and not on individual customers. In section 4, the definition of a company in the CRM system, and the processes to maintain the company data quality for FRC, are illustrated. The FRC specific implementation work done is portrayed in section 5, and the whole work is evaluated against the findings of the literature study in section 6. The study is summarized in section 7.

2   The Finnish Red Cross and their Customer Relationship Management System

The FRC is one of the largest civic organizations in Finland and its main purpose is to contribute to the life of individuals in our society that are in need. They have approximately 95 000 members and tens of thousands of active volunteers. About 70 000 organizations and private persons contribute regularly to FRC's business. The organization is divided into 12 districts and 550 local branches.

FRC's major functions are described below.
- Voluntary social services that aims on preventing different forms of social exclusion.
- Activity to encourage citizens to take care of their own psychological and physical well-being, to look after people close to them, to prevent accidents, and to acquire skills needed for coping in everyday life.
- First aid groups started by young people that practice regularly and are on duty e.g. in ski slopes and concerts.
- Emergency shelters in four major cities.
- Refugee activities of the Finnish Red Cross that focus on supporting the integration of immigrants and promoting tolerance.
- International aid - personnel, funds, and material - in response to appeals from the International Movement. [7]

In addition to these functions, there is a blood donation organization that functions as an independent entity within the Red Cross organization.

FRC took a major step in year 2006 and implemented a customer relationship management (CRM) system. The application covers all aspects of the organization and its services, namely: person and company information, charity contributions, local branch memberships and membership fees, local branch and district contact persons, and voluntary and First Aid training. The areas not covered include e. g. product marketing, international operations and refugee services.

The CRM system in use at FRC is the widely used tool called Siebel. The solution at FRC is a standalone system with the only integration being to the bank systems for managing direct debits of monthly donators and for receiving payments for membership fees and donations.

3   Customer Data: Management and Quality

Customer Relationship Management

The need for thought-through customer relationship management in organizations has during the last decade become obvious. Maintaining and driving a target-oriented customer–focused business is a way to achieve a competitive advantage. Traditionally, this has meant that the customers are segmented based on their characteristics and treated according to the rules specific for that segment. However, merely customer segmentation is not enough anymore. A more customer-centric orientation is what companies are targeting for. [4]

A CRM system is a tool to obtain customer-centric processes. Through a CRM system an organization can create a systematic storage and network of customer data that can be used in all divisions of the organization. Like with every other information technology system, the use of the CRM system will fail if it is not implemented with care and with strategies or plans as foundations. This applies to the customer data as well [8]. According to Stone et al. [12], many companies neglect the need for analysis of customer data and hence, fail in their CRM-projects.

Quality of Customer Data

The literature on customer data quality is closely linked to research on implementation of CRM-systems and general management of customer relationships. The key to successful customer relationship management seems to be a functioning customer data management. It is important for an organization to have some kind of a plan on how to manage, import, and update customer information [8]. One could say that simply collecting data for administrative purposes is actually no longer worthwhile since there are several IT-tools that make collected information usable in a larger extent than simple listings. So, if one is importing customer data into a CRM-system, one might as well make use of it in a greater extent than just as an address list.

According to Foss et al. [8], the quality of customer data can be evaluated with the help of nine determinants, which are presented in **Table 1**.

Completeness of the data refers to the percentage of relevant data that is included in the system in question.

Appropriateness on the other hand evaluates the relevancy of the data that is actually imported, i.e. the focus is on whether or not the data matches the need for information and the purpose of the business. Appropriateness needs to be investigated from two points-of-view: statically and dynamically. If the information is statically appropriate it gives wholesome information about the customer. If the information is dynamically appropriate it will help the organization to cope with future challenges such as new marketing strategies and acquiring of larger business areas.

Accuracy of data refers to whether or not the data collected, accurately describes the customer. Customer data is often used in groups of several customers, *grouping accuracy* is a measure of how accurately the data can be grouped into meaningful groups.

The determinant *access* is evaluated on the basis of how well the persons that need access to the information can access some particular information.

Confidence of customer data touches the question of how efficiently the data is used. The user must trust the information to be "business as usual" and be able to verify it with "sanity checks": then the information is relied on.

Currency is a measure of how up-to-date the data is.

It is also very important that the customer data is in accordance with *regulations and legal* stipulations. Therefore one determinant of data quality is indeed if the data in question follows such guidelines.

Meta-linking helps in the use of the data. If the data is properly meta-linked and named, then the grouping of the data is for example easier, and hence, the use of the data more purposeful.

The data to be imported into a system can be evaluated in several ways. In order to keep a good quality on the customer data all these determinants should be considered. The quality of data in this case will be assessed against these determinants in section 6.

In the end, customer data is something that is to be interpreted and perceived by humans and therefore it is important that the data is formed in a natural way [8]. The customer data cannot only be handled as strings and integers but need to be considered as a semantic whole as well. Higher-level models and business views have to be taken into consideration when determining the format for the data. Common knowledge is not to be neglected although dealing with information systems. What is furthermore important is that jargon and other common names is used in the extent that they are similarly interpreted in different branches of the organization.

Table 1. Determinants for evaluating the quality of customer data. (Adapted from [8])

Determinant	Explanation
Completeness	Completeness is the proportion of all possible relevant data sources and the coverage across all defined data fields that a company has integrated into its decision support and operational CRM processes.
Appropriateness	Appropriateness measures how far data match the business purposes for which they are collected and used.
Accuracy	Accuracy is the overall accuracy of the data associated with each customer record.
Grouping accuracy	Grouping is the accuracy with which a company can consolidate and match data from disparate sources.
Access	Access is the speed and accuracy with which a company can integrate its data and provide them in a usable form across all decision support and customer-facing applications, i.e. delivering the right data to the right person at the right time in the right format.
Confidence	An organization and users of data must be confident that the achieved quality of data is 'business as usual' and not the result of a special effort.
Currency	Currency refers to how old data are, i.e. when they were last captured or verified through checking or use.
Regulatory and legal compliance	These relate to areas such as privacy, data protection, national security, safety, human rights or competition. Specific laws and regulations apply to certain business sectors, and these are often complemented by documented or agreed practices.
Meta-linking	Meta-linking refers to how meta-data representing different data variables are combined to represent higher-level variables.

4 Company Data for FRC

Business needs for company data within FRC

The FRC is in a situation where the CRM-system has already been taken into use in 2006, and most of the basic data has been imported from the previous system. The users of the company data within FRC are the campaign team (1), the marketing team (2), the communications team (3), First Aid course sales within FRC district organizations (4), and other persons within district organizations (5). The stakeholders are not clearly defined though, and the responsibilities are shared amongst different parts of the organization. [6]

Only national campaigns and nationwide marketing are run by the headquarter teams. These teams have bought the data related to all Finnish companies when they have had the need for it. Sometimes this has been done without knowing that other teams have acquired the same information recently. There has been no common system to report such activities. This has lead to the possibility that same companies are contacted by several different FRC-teams in a short period of time. This has happened especially when also considering the actions of the districts and local branches of FRC. [6]

There exists a very limited coordination of the procedure of how to contact companies within the whole FRC-organization; headquarters and district offices. The general rule is that district offices can do business with the companies and the offices of the companies within their area in any way they choose. Districts tend to be quite protective of their cooperation with the companies and the local offices in their region. This has implications on determining about the visibility restrictions of company data that is to be imported into the CRM system. The same implication might arise from the perspective of usability of the CRM system, as there are some 300 000 companies and local offices in Finland. [6]

However, there are wishes from the marketing and especially from First Aid course sales, that a holistic view should be available of the companies and their branches. For example, it should be possible to see what kind of a First Aid courses have been held for Nokia Group all over the country. From the system perspective, this would require that there exists some sort of linking between the different levels of company contact information. In practice, aggregating data in this way would also require some specific reports or features implemented into the system. In the Siebel CRM system, it is possible to enter

information also about the organizational structure, but as the already implemented system of FRC does not include this information, the information is not available. [6]

As a result of the limited resource-situation of a charity organization, one business requirement is that the data maintenance of the CRM system should be very cost efficient and require minimal human resources. [6]

Definition of a company

To avoid problems that come from differences in organizational culture between different parts of the organization, definitions and operating rules for the information in the system should be created and deployed throughout the organization.

The options found by the authors for modeling company data in CRM system are as follows:

- only the legal companies
- headquarters and the local offices
- three layer hierarchy: group, company and office levels

There are challenges and benefits in each approach, which are considered below in Table 2. The assumption is that the system has pre-built one-level company view, with the ability to link companies to each other in the manner where a company can have a single parent company. The contact persons are assumed to inherit the address information from the company.

Table 2. Different options to enter company data into CRM system with discussion of benefits and challenges

Option	Benefits	Challenges
Legal companies	• Easy to understand the meaning of the company and find the correct company entry within the system • The group hierarchies are easily implemented as links between companies as a company can have only one parent company • Easy to link contact persons into right company and no maintenance work to be done when contact person moves to a different location within the company	• Sending post to a correct address as requires either that only one address is saved to the system or that there are several addresses available for one company • How to aggregate the data on the group level and separate it from the information related to the parent company of the whole group • Restricting the data visibility between different regions within one company
Headquarters and local offices	• Easy to understand the meaning of the company entry in the system • Group hierarchy is implemented as links between headquarters • Easy to attach a contact person to the correct address	• Difficult to differentiate between headquarters and local offices • Also differentiation between local offices and subsidiary companies is difficult • If the transactional data is aggregated to headquarter level: which data is related only to headquarter, to the whole company or to the whole group • Maintenance work required when a contact person changes jobs within the company
Three layer hierarchy consisting of group, company and office layers are implemented to the GUI of the system	• Identifying different hierarchy levels and aggregated transactional data is easy • Easy to attach contact persons to office level	• Difficult to implement hierarchy levels in the system • Requires maintenance if contact person is moving within the company

In the case of FRC, the business requirement of minimal support and possible data restriction requirements make the option of having headquarters and local offices the preferred option. This recommendation is also supported by the fact that this is the information format provided by Fonecta ProFinder.

Current company data consist of company name, the address, membership and magazine subscription information. Contact persons are defined in the similar manner than consumers would be, but they are linked to a company rather than to a FRC branch and they are not within the scope of this study. In the implementation of the company features, pre-built GUI and features are used, so the mapping of the information and the name of the field name in GUI might be challenging. The field names and the explanation of the content are given in table 3 together with the information whether the data will be imported from Fonecta ProFinder.

It must be noticed, that FRC uses standard Siebel GUI for Accounts, which means that the titles of the fields are somewhat misleading at times. Also mandatory fields are dictated by Siebel.

Table 3. Data fields used by FRC in Siebel related to company data.

Field	Explanation of the content	Imported from Fonecta	Specific rules applied to import
Account	Official name of a company or organization.	Yes	FRC local branches and districts are not imported.
Site	Name of the office, or for a local FRC branch, name of the District.	Yes	Text HQ entered for Headquarters.
Parent Account Name	Name of the parent company. In case of FRC branch, a link to the district.	Yes	
Parent Account Site	Name of the office	Yes	
Address	Street address. There can be several addresses attached to one company, but this feature is not used in FRC.	Yes	Visiting address is the primary address, postal address secondary.
City	Postal office	Yes	Need to be deducted from post office list.
Zip Code	Postal office number	Yes	
Country	Country if other than Finland. In case of Finland, the value is left empty.	No	Not imported as Fonecta Finder has only Finnish companies.
Telephone	The telephone number for the company	Yes	The format is transformed to international format.
Account type	FRC Membership type or FRC Local Branch	No	
Status	Whether the organization is member, active for other reasons or inactive. For a FRC local branch, value can also be "Under Watch"	No	If the status is active, it will be changed to inactive. If the company is already inactive, no action is taken. If the company is a member, a separate log file is written.
Url	The website of the organization	Yes	
Alias	The email address of the organization	Yes	
DUNS	VAT number (Y-tunnus)	Yes	
Global ultimate DUNS	The bank account for a FRC local branch. Not used for other types of organizations.	No	
CSN	Customer number	No	
Currency	The currency used when dealing with the customer. Euro for all.	No	
Expertise	Number of employees	Yes	
Turnover	Turn over category.	Yes	
SIC code	SicCode is based on Official Industrial TOL 2002 category. This is linked to Industry name, see	Yes	A link is created based on the SIC.

	below	
Industry	Each Company has minimum of one Business Area Defined. SicCode is based on Official Industrial TOL 2002 category.	Yes
Region	FRC District from a pick list. No real link to the district information.	Yes
Integration Id	Id in the old system. To be the integration id to Fonecta ProFinder.	Yes
Reference Date	Date when last membership fee was paid. For FRC local branch, date when the branch was founded.	No
Shipping Info	Year when joined as a member. For FRC local branch, date when the branch was accepted into FRC.	No
Shipping terms	What kind of a subscriber the organization is to FRC magazine.	No
Preferred Carrier	Whether the subscriber wants to have Finnish or Swedish version of the magazine.	No
Reference	Whether the organization wants to receive marketing information from FRC or not.	No

The "Region" row also has the following note in the rightmost column: Information is picked from the list based on the postal codes attached to District.

Company Data Maintenance Processes

The philosophy behind the company data maintenance processes is simple, except for FRC organization, the master of the basic company data will be Fonecta ProFinder. The FRC districts and local branches will be updated manually on the yearly basis when the districts and branches define their positions of trust.

In practice this would mean that no employee should create a new company in the system. There should furthermore be no need to update company names or addresses. Even currently, deletions of companies are forbidden in order not to change the history of FRC's relationship with customers. However, as putting these restrictions into practice within the system would require implementation work; the processes are left on the instructional level.

So each time there is a change in Fonecta ProFinder, the change is imported into the system. The only exception to this rule is when there are status changes to organizations that are marked as members: for those a separate log file is created, so that the administrator can decide what to do with that information.

Notice that the interface will not make any deletions, but these are done manually by the administrator on the selected time and the actual deletions should be made only to companies marked as inactive.

The processes are portrayed in figures 1 and 2.

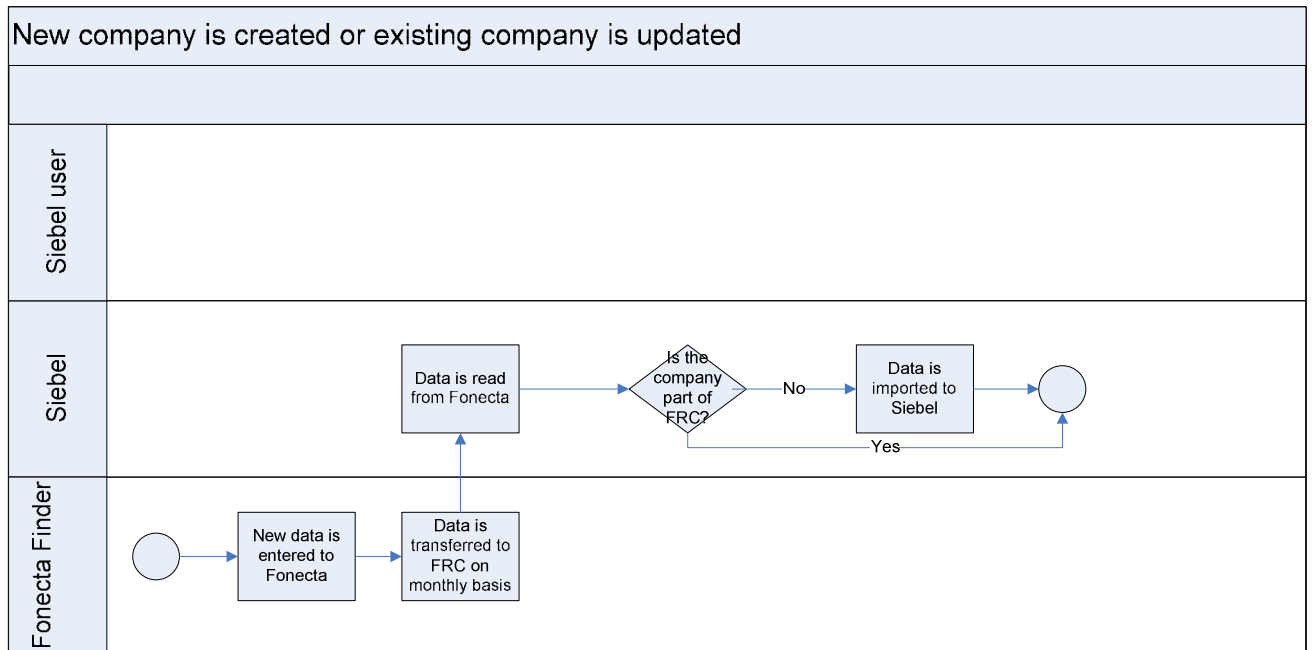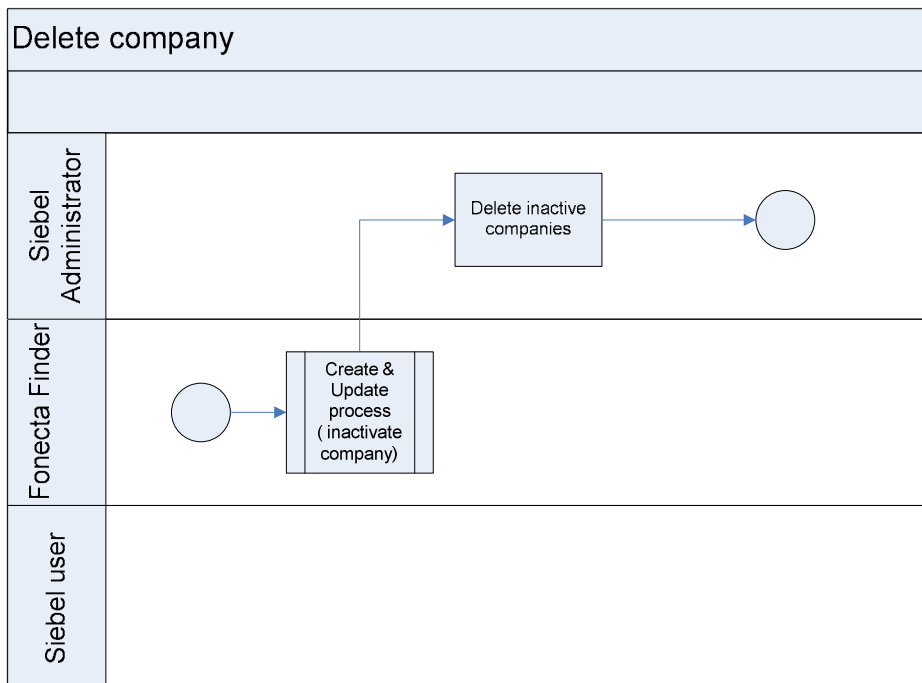**Fig. 1. Create and update process for company information**

New company is created or existing company is updated

Siebel user	
Siebel	Data is read from Fonecta → Is the company part of FRC? → No → Data is imported to Siebel ○ (Yes)
Fonecta Finder	○ → New data is entered to Fonecta → Data is transferred to FRC on monthly basis

Fig. 2. Delete process for inactive companies

Delete company

Siebel Administrator	Delete inactive companies → ○
Fonecta Finder	○ → Create & Update process (inactivate company)
Siebel user	

5   Importing Company Data into the CRM system

Characteristics of good Enterprise Information Systems

An efficient enterprise information system, for example a CRM system, is logically based on one comprehensive database [5, 2]. The system manages the organization's data, and allows different users access to this data.

One of the most important characteristics of the system is the ability to keep the data consistent in case of changes [5]. This means that changes in some data should automatically be reflected in any related data. Thus increasing the efficiency of the system and reducing the number of errors that occur in manual work.

Another characteristic for a good system is modularity [5]. Modularity allows the system to be tailored to suit the organization's needs. Furthermore, modularity enables easier maintenance and development as changes and updates in one module will not affect other modules significantly.

Ultimately, as the systems are becoming increasingly complex, the design and customization of the user interface is becoming more and more important [2]. In order for the users to be able to use the system efficiently, and to obtain the most value from the system, the user interface should be intuitive and easy to use.

Overview of the Solution

There are two main ways of implementing an interface to Siebel system: batch based and online interfaces. For online interfaces, there exists several methods provided by Siebel, but for the company data integration, a batch interface was selected as an implementation method. The reasons behind this decision were twofold.

Firstly, the amount of information is high, as there are more than 300 000 companies in Finland. Therefore, changes to the information are likely to be in the order of several thousand changes per month. The batch based integration is the most effective way of importing large amounts of data into Siebel.

Secondly, there is no need for a very frequent updating of the information. Rather, monthly updates of the company data are enough to fulfill the needs of FRC. Fonecta ProFinder can provide updated contact information files when needed.

Concluding, online integration would inflict additional load on the system for minimal gain. Using the batch based solution performance is better and the solution itself is less complex.

Implementation Environment

For the implementation, a test environment was constructed. The test environment consisted of two PC workstations with Windows Server 2003 Enterprise Edition installed. One of the workstations was dedicated to be an SQL server with MS SQL Server 2000 Enterprise Edition installed. On the other workstation, Siebel CRM 7.8 with a Finnish language pack was installed. The product choices were based on the systems that are in use at FRC in order to avoid incompatibilities due to system dependencies in the solution.

**The Integration of Fonecta ProFinder Service and the Siebel CRM system**

The overall integration process is pictured in figure 3. The process is executed as follows. First, a comma separated text file is acquired from the Fonecta ProFinder Service. The data content of the text file from Fonecta is presented in table 4 in the Appendix.

In order to import external data into the Siebel database, the data must first be inserted into intermediary tables called Enterprise Integration Manager tables, or EIM tables [11]. To load data into the EIM tables, any database utility can be used. A tool called Data Transformation Services, DTS was chosen as it is

included in the MS SQL Server 2000. DTS can be used to access, transfer and manipulate data from various of sources, including text files.

To populate the EIM tables, a DTS package was created. The DTS package and the overall integration process is illustrated in figure 3. The package defines a process, where the text file is the data source and the EIM_ACCOUNTS table is the destination. Furthermore, it defines the mappings between the columns in the text file and the EIM_ACCOUNTS table. These mappings are presented in table 4. EIM requires that certain fields must be populated in every EIM table with unique identifiers (e.g. a running number) or special content (e.g. FOR_IMPORT). To satisfy this requirement, the text file must be parsed so that additional columns are added. However, the parsing was not implemented due to time considerations.

Fig. 3. The overall integration process.
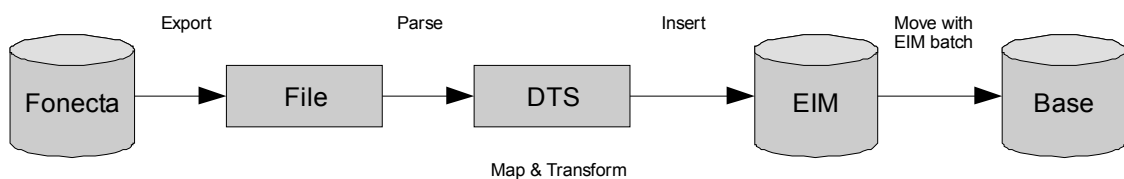
After the successful import of data into the EIM tables, an EIM import process can be run. The EIM process is a batch job that inserts the data from the EIM tables into the Siebel Base tables in the database. The EIM process is configured in a configuration file, or ifb file. The ifb file specifies the process to be run and the appropriate parameters that are used. When the EIM process has been executed appropriately and finished without errors, the data has successfully been integrated from Fonecta ProFinder into the Siebel CRM system.

The EIM process can handle three types of commands: insert, update and delete. For insert to work, it is critical that all required parameters are entered into the interface tables for processing. Siebel has several mandatory parameters, which are unfortunately not very clearly documented. The delete and update processes require that the data item in question can be identified and thus updated or deleted. The update works also in the way that if no corresponding value is found, a new value is inserted, and this is not always the behavior that was looked after, but the insertion took place because of the flawed data.

If several data items which are of one-to-many relationship between the Siebel company base table and the target table, this information is imported several times to EIM interface tables for creation of all the relationships. For example, if both visiting and mailing address are available for one company, these are imported to EIM interface table as two separate lines. Of course, only the first row needs to contain all the other detailed data.

We were not able to implement the EIM process fully. We managed to populate the EIM tables, but there are still some unresolved issues with the EIM batch job. These relate to unclear dependencies between several Siebel EIM and Base tables, and possibly also to the order in which some fields are populated.

6   Evaluation of the FRC Solution

The solution is evaluated on two levels. First, the quality of the data is evaluated using the framework presented in chapter 3. Secondly the technical solution for the proof-of-concept integration is discussed and analyzed.

Evaluation of the data quality

To evaluate our solution, we use the nine determinants of data quality, identified in chapter 3. The idea is to assess which of the determinants are the most important from the point-of-view of the case in question, and to analyze how well our solution maps to those determinants.

Completeness of the basic company information available from Fonecta ProFinder provides a good starting point for FRC. They will have a complete list of Finnish companies available for them, and are able to amend the data with the membership details.

The big question about completeness is whether the business rules can be identified for company contact persons, so that Fonecta ProFinder could be used to bring those into the use of marketing as well. The contact person import should be tied to the person's job title in order to reach valid decision makers from the companies.

Also product purchases are still not covered in the CRM system after Fonecta ProFinder migration. This prevents the users to find out already existing customers, and thus reducing possibilities to make re/up-selling to them.

Appropriateness of the basic company data from Fonecta Finder can be considered good as it can be used by marketing and campaign teams. The data contains the industry codes, turnover and employee classes as well as the regional information, and FRC amends the data with the internal information about the donations. The result set of data can well be used as a basis of fundamental segmentation of the target groups for the different types of campaigns.

Accuracy of the basic company information is sure to improve with the Fonecta ProFinder integration as FRC is getting professionally maintained basic data instead of using a hazardous, manual update process for an incomplete data set. In the future, names and addresses of companies can be trusted more if the process is run on regular basis. This would also reduce the postal costs as number of returns is likely to decrease.

Grouping accuracy is a bit of a question mark as the business requirements were in contradiction regarding this determinant: aggregated information about the companies was requested, but there were no resources to maintain this information as it is not readily available from Fonecta ProFinder. However, the selected option for importing only office level information does not prevent FRC from aggregating data to the company level by using some reporting tool. Unfortunately, Siebel does not offer this functionality out-of-the-box with the licenses purchased by FRC.

Access to the information is available for each user of FRC Siebel as soon as the data has been imported to Siebel. Whether this is a preferable option from the usability perspective or from the data security perspective is left for FRC to evaluate as the question was out-of-scope for this study. Also, the data is not sent to other FRC applications like to the finance systems, which will rely on old manual update processes.

Confidence to current Siebel implementation within FRC is quite questionable as the openness of the system has revealed the inner workings of the old system to a wider audience and there has been several implementation errors in the system, as well as challenges in accessing Siebel because of the IT infrastructure. The company data, coming from an outside source, should improve the quality of the data, thus improving the overall confidence to system.

Currency depends on how often the integration batch job is run, and thus this support function forms a critical component of the data quality in general.

Regulatory and legal compliance are based on the Finnish laws, as the data is not transferred across Finnish borders. The laws set little restrictions on saving company related data. FRC is even serving its company customers by saving the information to Siebel if the company does not want to have marketing information from FRC. This is not a common place practice in Finland.

Meta-linking is not used within FRC company data except manually: when a company pays a membership fee, an administrator add the membership information manually to company data. Reporting for different purposes is done case by case for majority of the times.

In general, we evaluate that the integration with Fonecta Finder will improve the data quality for the basic company data, as long as the interface is run on regular intervals.

Evaluation Company Data Maintenance Processes

The data maintenance processes drafted for FRC are very simple, and require minimal manual work. Small amount of manual work would mean that FRC can afford to have the data on a continuous approach to saving the data into their own system.

The biggest effort on keeping the data quality good with these simple processes is to teach the users not to enter a new company into the system if they just cannot find it. The better way is to ask for help and to find the root cause why the company or its office it is not in the system. Of course, a challenge to the users will be to select the correct office amongst several ones in the system and attach the data they have prepared to it.

FRC will be very dependent on the outside source of the data. However, Fonecta is not the only provider of company information, and also other providers can be used in case of a need. Of course the data content of another provider needs to be analyzed carefully before the data source is replaced, as the work is likely to need some data migration done before the actual change.

Also, if FRC wants to return to the old habit of maintaining the data themselves, there will be no limitations to do that. In such case, the recommendation would be to remove all non-critical companies from the system as the maintenance for those would cost too much for any single organization. The critical companies to keep in the system are the existing customers.

Evaluation of the technical solution

Technical solution was implemented for FRC based on the general Siebel implementation recommendations and the requirements from FRC. In this way, the fitting to the requirements of FRC should be good.

The main technical requirement was good performance and it can be obtained by using Siebel batch interface, namely the EIM tool. As EIM is based on the idea of using interface tables which can be populated via standard database utilities, the business rules to import data can be easily written on top of the interface tables, and if the data source or its format is to change, only the database utility part needs to be changed.

The fetch of the data from Fonecta was not in the scope of this study, but it can be implemented with e.g. secure-ftp, which has been used in FRC's other integration projects. Secure-ftp is not the most elegant way to transfer data, but it can be relatively easy to automate when regular runs of the interfaces are organized by FRC. However, more support personnel is needed to ensure the working of such transfer method and if the number of integrations is to grow, a proper middleware solution might come into question.

Technical implementation of the business rules on top of the interface tables was not finished as the amount of work required to set up the environment and study the details of EIM was more time consuming than expected. This risk was identified already in the early phases of the project when the deadlines were set.

Quite many of the fields available from Fonecta ProFinder were omitted because there were no places for them in Siebel GUI, and thus the values would not be reachable for an ordinary user. However, these values can be imported to the database and queried from there with standard database query tools if necessary.

7   Conclusions and future work

The basic company data, even though being a critical building block for any company, has not been a subject of detailed study. The focus has been mainly on how to integrate transactional data to the basic data, which is even more challenging task than just getting the names and addresses correct. But, without this basic building block of company data, any organization is likely to have challenges when combining data from different transactional systems in order to obtain a holistic view to customer companies. The basic company data can be easily attained from outside sources, but how well the data content and granularity fit to the business needs of the company, needs to be analyzed before a full scale integration implementation.

If the definition of the company differs between the outside source and the organization itself, no real migration of the data should take place before this issue is solved. This is also the case if the definition differs between two internal systems. If the set of master data items and the rules to maintain those have not been agreed upon, data quality is endangered by colliding maintenance operations. For example, if no clear master data owner has been agreed upon, the result might be two systems changing certain value over and over, which is definitely not the optimal state.

In this report we investigated how to define a company in a CRM system for FRC. Several different options were analyzed and the conclusion was to model the headquarters and the local offices. This option requires minimal support staff and it also fits nicely with the outside data source used in the case. We also proposed processes to maintain the data quality in the CRM system. These processes were designed to be as simple as possible with the outside data source as a master for the data. Furthermore, an effective way to integrate the CRM system with the outside data source was researched and tested with an implementation. Our solution was to use batch based integration, which was identified as the best choice for large data amounts.

For FRC, this integration work provides a basis to build upon the company data quality improvements. However, the existing data in FRC's Siebel needs to be cleaned up, and the regular runs from the Fonecta interface need to be organized. The personnel need to be informed about the change and possibly trained to locate the companies they wish to use for their own purposes. Clear rules how FRC headquarters and districts share the information need to be set up. If this requires setting up the visibility rules within Siebel, this work should start with careful analysis of the needs. This is because all the work done on the system is based on the assumption that all the information related to companies can be shared. Also, FRC needs to finalize the implementation of the data import into Siebel as the import process is not fully working. Also, the update and delete processes need to be implemented.

Regarding this work in the context of a university course assignment, it is worth noticing that Siebel is a very complicated system, and it takes quite a lot of time to learn how it works. Just to install the system can easily take between 20-30 hours for users with no previous experience. This should be taken into consideration when planning these kinds of projects. The best solution would be to provide a ready development environment, so that no extra time is wasted on solving installation issues. In our case approximately 25 hours were used to install and get the software running. There were also a similar amount of time used to test if the installation was successful and to understand how the system works. The time that was left to do the actual implementation was not enough and thus the integration was not fully implemented.

Generally the project work has provided a good learning experience for the team and it has provided a valuable set of practical skills. The company master data is an issue of debate in various large organizations, thus also providing a valuable knowledge and expertise to the team for future challenges and ways of solving the issues.

8 References

1. Accenture Corporate Citizenship Review, www.accenture.com/NR/rdonlyres/C9476DFD-A10D-4711-A481-0FF69154449A/0/Accenture_CCReview.pdf
2. Ahn J.Y, Kim S. K., Han K. S., On the design concepts for CRM system, Industrial Management & Data Systems, volume 101, issue 5, p. 324 – 331, MCB UP Ltd (2003).
3. Benbasat, I., Goldstein, D., Mead, M. : The Case Research Strategy in Studies of Information Systems. MIS Quarterly~September 1987.
4. Bose, R.: Customer relationship management: key components for IT success. Industrial Management & Data Systems, vol. 102, p. 89 – 97. Emerald (2002).
5. Davenport Thomas H., Putting the Enterprise into the Enterprise System. Harvard Business School Publishing, 1998.
6. Discussions with Vesa Palmu, FRC, October-November 2007.
7. Finnish Red Cross, http://www.redcross.fi/en_GB/
8. Foss, B., Henderson, I., Johnson, P., Murray, D., Stone, M.: Managing the Quality and Completeness of Customer Data. . Journal of Database Marketing, volume 10, issue 2, p. 139-158. Henry Stewart Publications (2002).
9. Hevner et al. (2004): "Design research in Information Systems". MIS Quarterly Vol. 28 No. 1, pp. 75-105/March 2004.
10. Nokia Helping Hands, http://www.nokia.com/A4254333
11. Siebel Systems Inc., Siebel Enterprise Integration Manager Administration Guide, 2004
12. Stone, M., Foss, B., Henderson, I., Irwin, D., O'Donnell, J., Woodcock, N.: The quality of customer information management in customer life cycle management. Journal of Database Marketing, volume 10, issue 3, p. 240-254. Henry Stewart Publications (2003).

Appendix

Table 4. Data fields in the text file with corresponding EIM fields.

Fonecta Fields	EIM fields	Comments
Toimipaikan ID	OU_NUM	
Y-tunnus	DUNS_NUM	Available only for HQ, copied from HQ to other offices.
Tyyppi	LOC	Values are converted to the following: P=päätmp, S=sivutmp
Aakkostusnimi	-	Omitted.
Toimipaikan nimi	NAME	
Käyntiosoitteen lähiosoite	ADDR_ADDR	
Käyntiosoitteen postinumero	ADDR_ZIPCODE	
Käyntiosoitteen postitoimipaikka	ADDR_CITY	
Postitusosoitteen lähiosoite	ADDR_ADDR	Inserted in the second row for the company in question.
Postitusosoitteen postinumero	ADDR_ZIPCODE	Inserted in the second row for the company in question.
Postitusosoitteen postitoimipaikka	ADDR_CITY	Inserted in the second row for the company in question.
Kuntakoodi		Omitted
Kunnan_nimi		Omitted

Fonecta Fields	EIM fields	Comments
Puhelinnumero	MAIN_PH_NUM	
Telefaxnumero	MAIN_FAX_PH_NUM	
Liikevaihtoluokka		Still open question where this should be imported as there is no free fields in standard Siebel GUI in use within FRC.
Henkilökuntaluokka	EXPERTISE_CD	
Tuonti	-	Omitted.
Vienti	-	Omitted.
Perustamisvuosi	-	Omitted.
Päätmp ID	PAR_ACCNT_NAME, PAR_ACCNT_LOC	The data is filled to the columns based on the id of the parent.
Muutospvm	-	Omitted
Tilinpäätösvuosi	-	Omitted
Liikevaihto		Omitted
Tilikauden tulos		Omitted
Taseen loppusumma		Omitted
Markkinointinimi		Omitted
Kaupparekisteritunnus		Omitted
Emoyht_ID	PAR_ACCNT_NAME, PAR_ACCNT_LOC	The data is filled to the columns based on the id of the parent. Only if a headquarters of a daughter company.
WWW-osoite	URL	
Email-domain	ALIAS_NAME	
Seutukunnan_numero		Omitted
Seutukunnan_nimi		Omitted
Maakunnan_numero		Omitted
Maakunnan_nimi	-	Omitted
Tila		Omitted
Henkilön_ID		Omitted
Asematunnus		Omitted
Asemateksti		Omitted
Titteli		Omitted
Etunimet		Omitted
Sukunimi		Omitted
Sukupuoli		Omitted
Muutospvm		Omitted
Email		Omitted
Toimiala1		To be imported through a separate EIM table (EIM_ACCOUNT2) as a separate row.
Selite1		Omitted
Toimiala2		To be imported through a separate EIM table (EIM_ACCOUNT2) as a separate row.
Selite2		Omitted
Toimiala3		To be imported through a separate EIM table (EIM_ACCOUNT2) as a separate row.
Selite3		Omitted
Toimiala4		To be imported through a separate EIM table (EIM_ACCOUNT2) as a separate row.
Selite4		Omitted
Toimiala5		To be imported through a separate EIM table (EIM_ACCOUNT2) as a separate row.
Selite5		Omitted
Toimiala6		To be imported through a separate EIM table

Fonecta Fields	EIM fields	Comments
		(EIM_ACCOUNT2) as a separate row.
Selite6		Omitted
Toimiala7		To be imported through a separate EIM table (EIM_ACCOUNT2) as a separate row.
Selite7		Omitted
Toimiala8		To be imported through a separate EIM table (EIM_ACCOUNT2) as a separate row.
Selite8		Omitted
Toimiala9		To be imported through a separate EIM table (EIM_ACCOUNT2) as a separate row.
Selite9		Omitted
SalesLeads_ID		Omitted.
blc		Omitted.
LiiketulosPros		Omitted.
LvPerHenkilö		Omitted.
LvMuutosPros		Omitted.
Omavaraisuus		Omitted.
Yhtiömuoto		Omitted.
Rivinvaihto (CRLF)		Omitted.
	PARTY_TYPE_CD	value = "Organization"
	CUST_STAT_CD	value = "aktiivinen"
	REGION	FRC region is deducted from the postal code.
	BASE_CURCY_CD	constant value: EUR
	ROW_ID	a running number
	MS_IDENT	a running number
	IF_ROW_STAT	value = "FOR_IMPORT"
	IF_ROW_BATCH_NUM	a running number for every 1000 rows