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Roger Buehrer

*University of St. Gallen, roger.buehrer@unisg.ch*

Christian D. Mueller

*University of St. Gallen, christian.mueller@unisg.ch*

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# APPROACH TO OVERCOME EXISTING LIMITATIONS FOR CRM-IMPLEMENTATION

**Roger Buehrer**

**mcm**institute, University of St. Gallen  
Blumenbergplatz 9, 9000 St. Gallen, Switzerland  
Tel. +41 71 224 36 00 Fax +41 71 224 35 23  
Roger.Buehrer@unisg.ch

**Christian D. Mueller**

**mcm**institute, University of St. Gallen  
Blumenbergplatz 9, 9000 St. Gallen, Switzerland  
Tel. +41 71 224 34 16 Fax +41 71 224 35 23  
Christian.Mueller@unisg.ch

## ABSTRACT

*The following research report presents the results of studies on CRM solutions and proposes a new approach to overcome identified limitations of CRM implementations. This paper is based on work that has been carried out in a EU founded project on innovative solutions to improve the management of customer relationship and complements previous research of the **mcm**institute in this field. Derived from the identified research gap regarding failures of CRM a market study was carried out among CRM software producers and vendors. Hereby we differentiated in four different perspectives: business, process, functionality and infrastructure. The aim of this differentiation is to better locate the problems of today's CRM solutions for the different layers within a company. Our main conclusion is that business requirements of today's companies do not fit with the nowadays CRM solutions. Control, data sharing, multi-modal access, analysis and process flexibility are not supported sufficiently. Based on the research results a first approach for innovative CRM middleware is presented.*

## 1. INTRODUCTION

As the reports and studies of the large sales forecast companies have been stating in the begin of the year 2000, CRM is a big issue. IDC predicted in 2000 a market growth from \$4 billion in 2000 to \$11 billion by 2003. In the meantime the business world has recognized that CRM is not only a subject of choosing the right software. CRM is more. It is a concept that requires a new customer-centric business model which must be supported by a set of applications integrating the front and back office processes. In addition the culture of the company must set the customer in the centre [Magic 2000].

The CRM market has not yet reached maturity. CRM is not just provided by a software system, but by a complete organisational adjustment to the CRM philosophy. Software systems provide the tools to achieve that. Looking at the market, it is evident that the current breed of software systems address focused areas of the organisation's operation. This might be the customer service department or the sales department. No one package exist today that delivers organisation-wide CRM. Our proposed

concept for a CRM solution is not coming to replace all the various operational systems with a one-does-it-all system. It rather assists organisations to achieve full CRM objectives with the existing disparate software systems [Magic 2001].

What exactly is CRM? A lot of definitions on customer relationship exist in literature, e.g. [Homburg 1995], [Meyer/Oevermann 1995], [Peppers/Rogers 1999], [Belz 1998], [Bliemel/Eggert 1998], [Diller/Kusterer 1998], [Andersen et al. 1999], [ECCS 1999]. Harker has summarised in his paper 26 definitions of relationship marketing [Harker 1999]. We will apply the following definition: “*The Management of Customer Relationship in Business Media comprises the design, development and application of holistic concepts in order to manage relationships to economically valuable current or future customers*” [Koerner/Zimmermann 2000b]. In order to distinguish from traditional CRM perception we apply this definition as it represents the holistic view on the management of customer relationship [Koerner 2001].

In the meantime it is common sense that the implementation of CRM solutions offers several problems. To integrate CRM solutions companies have to implement software, have to adapt processes, have to educate the employees. A study which was carried out by Trend Research the second time in 2001, first time 2000, has interviewed 587 IT-managers of companies with more than 10 millions Euro annual turnover. The question: “*what are the hurdles of CRM-projects*”. 31 percent answered the integration (2000: 27 percent), 27 percent answered the optimisation of the business processes (2000: 32 percent) [Heinrich 2001]. As consequence of such results could be, that the vendors of CRM solutions offer simpler solutions, which are broken down in modules and allow to calculate IT investments and integration efforts more precisely.

### Research history

The results of this paper represent a long research history and numerous opportunities of practical validation. The theoretical concept of the Management of Customer Relationship in Business Media (MCR-BM) was first developed at the =**mcm**institute by Körner/Zimmermann in 1999. It was validated in the scientific community on several occasions [Körner/Zimmermann 1999], [Körner/Zimmermann 2000a], [Körner/Zimmermann 2000b]. The MCR-concept was then further elaborated in a PhD thesis of the =**mcm**institute [Körner 2001].

For reasons of empirical evidence, validation of the concept was fourfold during our two year ECReM project. A market survey among software producers and among users of this software was conducted in order to identify the gap between products offered and actual user requirements. Furthermore we identified and analysed best practice cases of CRM-driven companies. Finally we had a look at the philosophies of consulting companies on Customer Relationship Management.

This combination of academic and practical validation of the MCR-concept over the years provides a sound knowledge on the issues of CRM and actual user needs. Together with our industry partners we conducted a user needs analysis and defined scope and functionality as well as user requirements for the development of a CRM middleware that shall overcome existing restrictions for CRM systems.

### Research approach

The research question of our 10 page online questionnaire derived from studies and reports on failures of CRM implementation [Zigner 2001], [Zanner/Bieringer 2001]. Questions were partly quantitative as well as qualitative. By our study we identified and clustered the gaps in implementation and management of CRM systems. Based on the current research gap we suggest a solution which reduces the problems identified. The primary aim of the research was to identify the most important obstacles in CRM implementation and the mismatch with the actual customer needs. Based on this information a first concept was developed and scope and functionalities of a new middleware were defined

[Buehrer/Mueller 2001a], [Buehrer/Mueller 2001b]. In order to validate this approach a prototype of the system will be built and tested among partner companies.

According to our research methodology a small empirical study was conducted together with partner companies from all over Europe. Participants of the study comprised 43 producers and vendors of CRM software, of whom 17 returned the entirely completed questionnaires [Algesheimer et al. 2001b]. We consider this return rate of 36 percent as sufficient to identify the commonness and differences of standard CRM software from a business, process, application and technology perspective. In doing so different views for evaluation were taken, according to the Business Media Framework in figure 1 [Schmid 1999]: *Community View*, *Process View*, *Functionality View* and *Infrastructure View*.

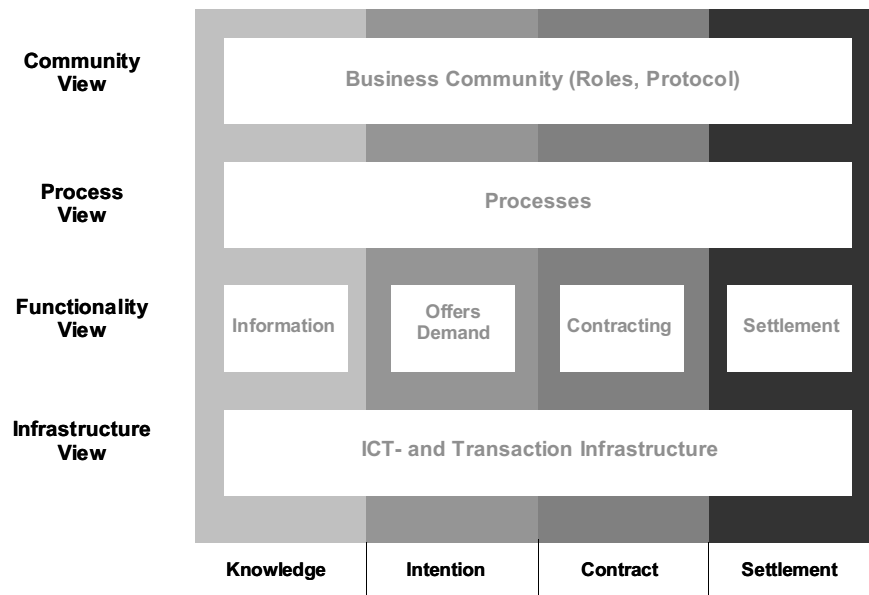


Figure 1: Business Media Framework [Schmid 1999]

Based on the data gathered for these views we draw first conclusions on why CRM fails in many cases. Furthermore they wanted to have a set of information that allow to provide the partner companies with business-, process- and technical requirements and information on scope and functionality of a software that should overcome existing obstacles of CRM. The aim is to then conduct a GAP analysis between CRM products offered and the customer's actual experiences and expectations towards these products.

## 2. RESEARCH RESULTS ON CURRENT STATE OF CRM

In the following we will outline the results of the CRM software vendor study [Algesheimer et al. 2001b].

### 2.1. Community View

This category analyses four main aspects: solution categories offered, business scope of the CRM solution, size of target companies for the CRM software and business sector predominantly served.

In the solution categories it was differentiated in four classes of CRM tools serving different needs, whereas one CRM tool may serve two or more classes: complete CRM software suites, operational software (business operations management), analytical software (business performance management) and collaborative software (business collaboration management). The latter is the most common class stated, representing 60 percent of all answers. Operational CRM software represents 58 percent of the solutions offered and 53 percent inherit analytical capabilities. Interesting is that only 30 percent of the

respondents classified their own software as a CRM suite, that comprises operational, analytical and collaborative capabilities. These results may allow the assumption that many companies do not want to buy complete CRM suites but rather a CRM tool that fits into the company's current IT application landscape. A CRM system therefore still is considered to be merely an add-on to existing IT systems.

When being asked about the business scope of the CRM tool offered the focus was clearly set on business-to-business (67 percent) and business-to-consumer (65 percent) relationship management. Only 16 percent stated their software would be capable to support business-to-employee relationship management. From our perspective this reflects the traditional view of CRM among the respondents. Business-to-business solutions usually support the business processes with partner companies (e.g. ERP systems). Business-to-consumer solutions focus on the end-consumer. A business-to-employee CRM software would come near to a knowledge-management or groupware system that supports collaboration among employees within a company.

The average size of the companies served by the CRM vendors was split in three categories: small businesses with less or equal 50 users of the CRM tool, medium businesses with 51 to 499 users and large enterprises with 500 users or more. The latter were the dominant target group for software vendors (63 percent), followed by medium businesses (56 percent) and small businesses (16 percent). Considering the different needs of companies of these sizes, different solutions have to be offered as well. When evaluating CRM software for implementation the size of a company and thus organisation and structure play an important role.

Regarding the business sectors targeted by the CRM vendors one can see substantial changes here. Currently more than 30 percent of the vendors' customers are IT companies. Three years from now this is expected to drop to 9 percent. Almost the same development is predicted for the automotive industry, transportation, travel, media and utilities. On the other hand healthcare, chemical industry, pharmaceutical industry and metal are the least common customers at the moment. However, in these industries a substantial increase is predicted for the next three years. One therefore might be driven to the possibly wrong assumption that CRM software that has been designed and proved to be successful in one industry will be suitable for other industries as well. This may not be the case at all. Different industries inherit specific characteristics regarding, structures, organisation, customers and processes. Therefore not only size of the business but also industry for which the CRM tool had been developed is a crucial point to take into consideration when evaluating a CRM software.

## **2.2. Process View**

Following the perception that a sophisticated CRM solution should support the entire customer lifecycle [Bach/Österle 2000] we analysed whether the CRM tools offered support the four phases: knowledge, intention, contracting and settlement. More specific, the processes that were asked for comprise management of the knowledge phase, administration management, marketing management, customer service management, sales management, logistics management and field service management.

According to our survey the majority of CRM software providers offer basic functionalities for most of the sales and support related phases: knowledge, intention and contracting. However, settlement phase (e.g. contract management, online tracking, etc.) support was provided in the least cases. Here we identified a lack of process-spanning customer management for most of the software tools offered.

## **2.3 Functionality View**

Questions in the survey related to the functionality view provide a valuable overview of the different functions that support the processes in the process view. In order to do so, the functionality view is divided into three criteria: functionalities that support interaction between the company and its customers/ partners; analytical functionalities to support evaluation of the processes/ customers/ etc. and functionalities to access customer interaction and partner interaction data.

Especially functionalities for interaction support are well-established and a huge choice of interaction channels is provided and may be customised. What is crucial when offering various interaction channels is the capability of a CRM tool to support cross-channel communication (e.g. phone, email, fax, web, etc.) and the provision of interaction histories of a customer. Naturally this requires extensive integration of data from all interaction points in all phases of a customer lifecycle. However, data integration today still is the bottleneck of most CRM tools as these are stand-alone solutions implemented in one functional department (e.g. marketing).

Analytical capabilities of CRM solutions usually are rather poor. In general, Data Mining activities and sophisticated tools for analysis (e.g. to analyse quality of services/ products/ departments/ sales representatives/ etc.) are only offered by a few CRM solutions, whereas the analysis of customers (e.g. classification by monthly turnover, number of purchases, etc.) is offered by a vast majority. Again, this leads us to the assumption that difficulties for company-wide integration of customer related processes is the major lack of CRM solutions that have been implemented until now.

Access rights to customer and partner interaction data usually may be determined during configuration of the CRM system. The assignment of access rights to these data usually is provided on behalf of a customer's needs. Therefore it is less common to have predefined access rights for special user groups. However, these access rights may be assigned on all levels if needed. This should lead to transparency of the processes within one functional department or along a whole customer process – depending on depth of integration of the various systems.

## 2.4 Infrastructure View

The results of the survey covering the infrastructure view provide an overview on important technical specifications for software and processes. Aspects that were asked for comprise CRM architecture, sovereignty of data, scalability of software, support of user interfaces, support of operating system as well as interfaces to databases and IT systems.

Answers regarding CRM architectures were sub classified in standalone CRM systems (23 percent), Front office add-on's (47 percent) and ERP add-on's (40 percent). According to our definition a standalone system is a solution that runs autonomously in one department, for example a call centre in the marketing department. Front office solutions comprise software such as Microsoft Office, that offer databases and evaluation capabilities. ERP add-on's are tightly integrated back office solutions, such as some sales force automation systems accessing data of the ERP system.

For the sovereignty of data respondents stated that 23 percent of the CRM data are stored in the ERP system, whereas customer data is stored in CRM systems in 19 percent of the cases. The rest is stored fairly dispersed in different systems. The origin of data is basically split into two sources: ERP master data on customer, suppliers, stocks, etc. and operational data gathered during the processes (number of purchases, value of purchases, interaction history, service requests, etc.). However, the latter are stored in various systems that are not linked with each other. This makes scalability difficult for most of the CRM solutions as only 35 percent of the respondents confirmed their CRM solutions were easily scalable. Regarding operating systems that are supported more than 74 percent run on a Windows NT/2000 platform. Around 40 percent also support Unix and HP-UX as operating systems. For Linux this is the case in almost 20 percent.

In CRM especially data are important from the operational and the analytical perspective. The interoperability of various databases is crucial to support the exchange of data between different IT applications. The more databases are supported the less redundant keeping of data will be for a company. According to the survey Microsoft's SQL Server leads the field with 70 percent of the CRM tools supporting this database. Oracle is with 65 percent very common as well. Sybase (37 percent), Informix (30 percent) and IBM DB/2 (28 percent) represent the middle field.

For a seamless interoperability of IT systems IT-system interfaces are very important to build process-spanning CRM solutions. In general, at least one interface is provided in 81 percent of the cases. ERP interfaces are supported by 53 percent of the CRM software producers with SAP R/3 and Oracle as the

dominant standards. Interfaces for analytical tools to conduct sophisticated analysis of operational and analytical data is available in 65 percent of the cases. However, more than half of these solutions offer self-developed analytical toolkits. The provision of interfaces for project and workgroup management systems in CRM solutions is less common with only 47 percent. Considering the importance of CRM and the necessity to distribute and publish shared knowledge on customers from statistical analysis we value these figures as rather unsatisfying for customers of CRM solutions.

## 2.5 Conclusion

As already mentioned CRM has developed from a mere Sales Force Automation application to a mind-setting within a company: it has become a whole perception and part of company's customer centric strategy with new needs arising regarding integration and management of customer processes [Fournier et al. 1998]. With the data from 17 CRM software vendors, which represents a return rate of 36%, the results of the study provide a good overview of the capabilities of existing CRM software [Algesheimer et al. 2001b]. They help to identify obstacles that have to be overcome when implementing a broader, customer centric CRM strategy. To summarise the results, there are several points to consider when implementing CRM solutions and that are not supported by most of the CRM solutions analysed:

*Community View:* CRM is a company-spanning strategy and long-term project with continuous improvement (feed-back loop) and joint efforts of departments that interact with the customers. CRM is implemented for the customer, not for the company. However, a company should be aware for what industry and what size of company a CRM solution was developed initially. Not always may successful CRM solutions in one industry or company be suitable for other industries and companies [Gächter/Galli 2001].

*Process View:* Customer processes do not fit in traditional functional organisations of companies. Therefore process flexibility and data integration are some of the most important issues for a successful CRM implementation. For operational and analytical CRM various types of data (e.g. customer master/ -interaction data, process data, ERP data, etc.) have to be made available to the different CRM systems (e.g. sales force automation, marketing, customer support, etc.) in order to log the entire customer lifecycle and provide relevant information in order to improve processes and quality of service [Algesheimer et al. 2001a].

*Functionality View:* The CRM solutions offered in most of the cases cover needs that relate to specific functional requirements (e.g. campaign management for the marketing department, order management in the sales department, etc.). However, these are predominantly stand alone solutions that bear the problem of dispersed data storage. Furthermore a lack of analytical capabilities of the tools offered was identified. Considering these two factors that hinder the seamless coverage of customer processes across departments especially sophisticated measurement, analysis and control of these processes is not possible. In addition, most of the companies have a set of different incompatible applications, individually purchased by different departments.

*Infrastructure View:* The majority of the CRM solutions represent front-office and ERP add-on's. The offers of entire CRM suits are less common. From our perspective and based on the results for the functionality view, this shows that a dispersed IT application landscape exists in most of the companies and an entire CRM solution for all departments is the exception. The operating systems supported by these solutions are dominated by Windows NT/2000. However, other standards such as Unix and HP-UX are supported as well. Database access helps to reduce redundant data keeping. Here again, the dominant standard is provided by Microsoft, followed by Oracle, Sybase, Informix and IBM. Interfaces to various IT applications are crucial in order to implement a customer-process spanning solution that allows to log interaction and gather all relevant data necessary for continuous improvement. Overall, in 81 percent of the cases interfaces are provided for other applications. Interfaces to ERP systems such as SAP R/3 and Oracle are supported by more than half of the CRM solutions. Interfaces for analytical tools are provided in 67 percent of the cases, of which half of these

represent proprietary solutions. The integration of knowledge management and workgroup tools is supported in least of the cases.

To conclude, a company has to consider two basic aspects for successful CRM implementation: First, it has to build up a strong perception of CRM and form a customer centric strategy. Today, this is usually the case for most of the companies. However, most of the CRM software solutions offered and the existing IT application landscape of a company provide obstacles for setting in place these innovative strategies [Zanner/Bieringer 2001], [Buehrer et al. 2001]. The results of the survey strongly support this assumption.

Based on these insights a new CRM middleware was developed in order to provide a solution that maintains a company's flexibility and at the same time drives integration of data and processes in order to technically implement each company's individual CRM strategy.

### 3. SUGGESTED ARCHITECTURE OF A CRM MIDDLEWARE

We propose to use middleware for CRM applications as an interface which allows to connect the different existing information systems. In contemplating the CRM issue, one must bear in mind that CRM is not only software [Zigner 2001]. Rather, it is a philosophy of an organisation, a high level strategy, opposed to field level tactics, which has to include the culture of the company. To integrate CRM successfully, the management must commit to the CRM philosophy [Zanner/Bieringer 2001].

#### 3.1. Objectives

The suggested middleware for CRM applications will have two main objectives [Zigner 2001].

1. The **external objective**: to satisfy customer requests.
2. The **internal objective**: to maintain an enterprise wide CRM database.

Fulfilment of these two clear objectives should result in satisfied customers on one hand, and a structured mechanism to track, handle and satisfy these requests, on the other hand.

The suggested solution is addressing the following problems identified as stumbling block preventing organisations from achieving full CRM:

1. **Control** – As the organisation is employing several operational systems, it is very difficult to track a customer interaction across the boundaries of the individual operation systems.
2. **Data Sharing** – Each operational system has its own proprietary data storage and usually does not easily share it with other systems. Therefore, information about a customer is fragmented and it is difficult to obtain a full picture of the customer by a decision maker.
3. **Multi-modal access** – With the advent of the Internet and electronic commerce, the traditional entry point into an organisation (used to be telephone and fax) are changing. There is a requirement for new and flexible means of communication to be introduced into organisations to allow an improved customer experience.
4. **Analysis** – Most of the disparate CRM systems suffer from poor analysis capabilities. Where the analysis capabilities are good they are limited to the information maintained by the specialised software, and does not provide organisation wide cover.
5. **Process flexibility** – CRM requires constant improvement of the customer experience. It means ever changing processes and flexibility. Organisations may require that their information intake and flow change with the changing market conditions. Existing CRM systems don't cater for that.



Our attempt to answer the above requirements is not by replacing the operational systems, but by supplementing them with:

1. **Control** – in the form of a ‘Big Brother’ like monitoring capability that logs the flow of events from one CRM subsystem to another and provides monitoring capabilities through a workflow system. The monitoring also provides alerts and escalation options to ensure that customer events do not get stuck within the organisation or fall between the cracks.
2. **Data Sharing** – by hooking into the data stores of the disparate systems and providing a global view of the customer.
3. **Multi-modal entry** – by providing new information intake facilities and directing them into the appropriate CRM sub-system.
4. **Analysis** – by providing state-of-the-art analysis capabilities of information from the disparate CRM sub-systems and the supplemental organisation wide information stored in the CRM database. The information also contains the full log of customer events flowing through the middleware.
5. **Process Flexibility** – the CRM operational engine is a process engine that is freely customisable by the organisation. Therefore, it can be amended by changing the information flow rules and processing rules as required by external business conditions.

### 3.2. Architecture

The system architecture is illustrated and described in detail in figure 2.

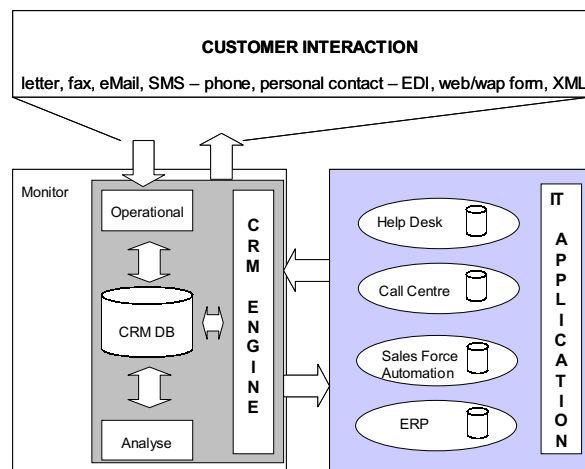


Figure 2: CRM concept [Zigner 2001]

#### *Customer interaction*

All the different incoming information are tracked by the system independent of the incoming channel. Each interaction produces data, that are stored as interaction documents in the engine. The CRM engine acts as a virtual funnel that collects all the interaction documents and takes responsibility for handling them, either in an automatic manner or in a manual way.

#### *CRM engine*

The input document transforms to an output document as soon as requests are completed. The system identifies and defines clear processes and work flow diagrams that are adjusted and specified to the organisation. The information that results from the customer requests is stored in a central CRM

database. If data is stored in other systems, the system provides transparency in order to maintain a unique view of the data. Using a robust real time analysis engine, the data stored in the CRM database is being explored very close to its collection. Using state-of-the-art techniques of real time Data Mining and Data Morphing, the system is able to detect failures, successes, trends, statistics and any other noticeable event. The reports produced by the analysis engine should serve for top management and marketing purposes, as well as assisting the self-learning process of the system. The goal is to configure the system to a level that most of the requests will be handled automatically. The monitor is the professional authority that is responsible for the smooth operation of the system. This person is also responsible for the definition of business processes of the organisation. The function of a monitor does not exist already, it has to be created. The further goal of such a position is to increase customer satisfaction and loyalty through better quality of processes and services. The investment made by the organisation to carry this cost should be paid back in a relatively short period of time.

#### *IT application*

The advantage of the proposed concept is that any existing IT application of a company - e.g. help desk, call centre, sales force automation, ERP etc. - may be linked with the CRM engine through an XML-based interface. This allows to integrate the dispersed data of stand-alone software. By doing so the function-spanning customer interaction processes are seamlessly linked for the first time. This advantage is a particular benefit for companies that do not want an entire CRM solution but only need to integrate their existing heterogeneous IT applications.

To conclude, the five problems identified – lack of control, little data sharing, no multi-modal access, insufficient analysis and unsatisfying process flexibility – successfully will be overcome by the proposed system architecture. IT integration allows not only to maintain one central mirror data base. The access to customer master, -interaction and analytical data enables analysis and control of the entire customer lifecycle. The sophisticated analytical capabilities provided by the solution can therefore be utilised to their full extend as operational integration and flexible integration of processes becomes possible on the company level.

## **4. FURTHER RESEARCH**

Given the insights on existing obstacles for CRM solutions derived from our market study the new concept presented shall enable to overcome the existing gap between the offered CRM solutions and the business requirements of companies' CRM strategies. To solve the five identified main problems a new middleware that integrates the existing heterogeneous application landscape of companies is in development. The flexible integration of data and processes allows implementation of sophisticated operational and analytical CRM strategies, that include company-spanning customer processes.

Based on the presented architecture the prototype will be built and tested by the consortium members and a business interest group. However, for the successful customer relationship management the companies must have concepts clearly defined and support of employees and management guaranteed. Furthermore successful CRM is also an issue of communication: internal and external. Therefore further research is necessary for non-technical implementation of the CRM philosophy in the target-groups' minds. The =*mcm*institute will heavily focus on these issues in it's future research.

ECReM as a CRM middleware only may be implemented by thoroughly defining workflows of a company. Further practical research is therefore necessary to identify the benefit of merging both, a Workflow Management System and the newly developed ECReM middleware.

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