CARUSO: Customer Care and Relationship Support Office*

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Abstract

Customer Relationship Management (CRM) is an inherent business strategy for companies big and small. The technology has reached a point where it is truly enabling the way enterprises manage their customer relationships. The goal of the EU funded project CARUSO is the design of a software toolkit that facilitates the building and maintaining of high quality business-to-business and business-to-customer relationships. CARUSO is designed to allow a multi-dimensional way of looking at markets, customers, suppliers, products, personnel, internal and external information, communication and action flow. This will be accomplished by the following core features: front-office application builder with customer care and marketing desk, basic technologies comprising a general communication server, intelligent information, document and contact access, unified messaging, and a customizable user interface. Emphasis will be put on exploiting existing tool packages as much as possible. The CARUSO toolkit is targeted at European Small and Medium Sized Enterprises (SME) and allows them to optimize their business operations to the mutual benefit of both the supplier and the consumer.

1 INTRODUCTION

Currently European SMEs are affected by major changes in global economics. In the US millions of jobs were lost in the 80ies which led to the metamorphosis from a product(ion) oriented to a service oriented market by which millions of new service jobs were created. A similar development is now going on in Europe.

It has been realized that gaining new customers is much more expensive than keeping the current customers. Companies are fighting for the same customers, but, at the same time, customers are finding that it is very easy to switch from one company to another. The financial impact of customers disloyalty can be immense. A recent Harvard University study reported that in many companies a five percent improvement in customer retention could increase profits by 85%. Therefore, it is no wonder that companies are searching for ways to reduce customer turnover. Recent surveys have also shown that poor service or inattention is the cause of 65% of customers leaves (VanLaeken 1999).

Thus, keeping customers or increasing their loyalty can be achieved by focusing on their needs. As a result, companies are trying to improve the quality of customer interaction and the service of customer requests, starting with the very first contact, and on throughout the sales process to the service and support provided after the initial sale or service.

Customer Relationship Management (CRM) is an inherent business strategy used to achieve this goal. This relatively new concept influences strategy, business processes, as well as information systems in many companies. CRM and a high quality supplier relationship are essential success factors in a highly competitive global marketplace.

In the past, business relationship management was both cost and time intensive. In particular SMEs, with naturally limited resources, were not in a position to carry out broad-scale marketing programs or administer their supplier relationships in a effective way. Now, technology has reached a point where it is truly enabling the way enterprises manage their business relationships.

The market trend is to cover the definition of CRM with a single integrated platform. Island solutions like customer care, support, and contact management cannot fulfill the CRM demands. For example, Siebel (Siebel 2000) bought Scopus Technologies to integrate customer service technology in their products. Other companies have signed co-operation agreements or developed modules, interfaces, respectively in joint efforts. Having their origin in backoffice applications such as accounting, purchasing, and production, Oracle (Oracle 2000), BAAN (Baan 2000), or SAP (SAP 2000) follow with their strategy this path to integrate the missing building blocks for customer relationship.

The EU-project CARUSO (Customer Care and Relationship Support Office) aims at providing European SMEs with a tool package that provides the flexibility of individually built applications tailored to their specific needs in the field of customer and supplier relationship management. It is also going to facilitate business strategies which will help to understand and anticipate the needs of an enterprise's current and potential customers. Another objective of CARUSO is to provide the

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technology that helps to grow customers into a position of equivalent partners who will pro-actively influence the life-cycle of goods and services including areas such as pre sales, marketing, post sales, and maintenance. Thus customers will gain a more direct influence on the nature and quality of products and services offered including the provision of all relevant information to them.

2 THE CRM CHALLENGE

The ultimate goal of CRM is to attract and retain customers and increase the profits. CRM is a complex process that requires, on one hand, a redesign of current business processes and, on the other hand, integrated IT support. The key factor is how well an organization manages its customer relationships from the first contact through the sales process, customer service, and ongoing customer retention activities.

In recent years, call centers have gained popularity as being cost-effective and efficient. Organizations are now realizing the critical importance of every customer contact and the potential of the call center for customer relationship management strategies. The proper application of call centers can improve the overall quality of customer interaction while streamlining customer requests and orders. In addition, call centers are nowadays increasingly responsible for business interactions that are being conducted through alternative emerging communications channels, such as e-mail, internet, fax, voice mail, pager, etc.

One of the most urgent challenge facing call centers today is the fact that it is becoming increasingly difficult and costly to recruit, train, and retain qualified call center agents. Technology is a key to help reduce the learning time and costs of call center employees. Moreover, technology can help inexperienced representatives deliver much better customer service.

Another important issue is equipping agents with the necessary empowerment and competence to allow him or her making proper decisions without unnecessary call escalation. Call escalations are usually very time and resource consuming and decrease the customer satisfaction (Cusack 1998); therefore it is desirable to avoid them as much as possible. One way to achieve this is implementing some form of unified agent desktop application to give call center agents the information they need to respond quickly and accurately to customer questions and requests. Another, more important way, is to integrate the agent desktop system with knowledge-bases and back office systems as well as with the company's business strategies. This will help save time, for example, by automatically retrieving customer account information from the corporate database and displaying it on an agent's desktop.

A growing number of call centers are also considering the use of sales configuration to help automate the sales process. These are often provided by rule-based engines which help to translate customer needs into sales opportunities and, at the same time, simplify the selling of complex products and services. By the means of sales configuration technology, companies can rapidly roll out new campaigns. This technology also allows inexperienced agents and even new hires to present very complex products and services and to interact with the company workflows.

All the technical means can not and should not eliminate the personal relationship with the customers. The ability for call center agents to view the information about the customer can help maintain a more personal interaction. Current script generators enable call center agents to create personalized, one-to-one correspondence based upon the customer's profile and information gathered during the contact so that the company presents one face to the customer (Schmid and Bach 2000).

Another emerging challenge is the fact that call centers must be able to address multiple contact channels including phone, fax, postal services, internet, e-mail, voice mail, etc. In fact, many call centers are developing into multimedia communication centers within the next year. Companies are integrating their call centers with their Web pages to enable customers to help themselves as well as to schedule callbacks or initiate on-line chat sessions with customer service representatives. This allows customers to use the way they prefer to contact and interact with companies. Therefore, organizations are looking for unified messaging solutions to help manage the flow of interactions across the various communication channels.

One of the key aspects of CRM is that it is centered around the customer and not around the departments of the company. Usually this implies that the business processes that are needed for dealing with a customer cross the boundary of single departments or business units. It is crucial that business workflows in a call center can be integrated with the back office workflows, and that the workflows can be modified appropriately if needed. Workflow automation software allows for directing and monitoring work that goes outside of the call center to assure completion or tracking progress. This helps reduces fulfillment time of new product orders and allows call center agents to be better informed of the current status of a customer request.

To effectively deal with customers, a CRM system needs to store customer profile information in addition to a complete customer contact history, including any documentation that is associated with the customer. This can increase revenues through improved cross-selling and up-selling capabilities, and, moreover, they help companies improve their understanding of buying patterns and customer preferences as well as the targeting of their marketing efforts (Berry and Linoff 2000).

However, maintaining this information can pose considerable problems because usually this information is spread throughout the different IT systems of an organization, and it exists in a range of formats. Further, to be effective, it is important that only the information necessary to deal with the customer's current issue is retrieved, while unnecessary information is suppressed.

The American market research company AMR Research estimates the total size of the world-wide CRM market at more than $2.5 billion in 1998, and growing at more than 50% a year. This does not include software from vendors who incorporate CRM functions in their core products. The major players in the CRM market segment are Siebel, Vantive, Clarify, Point, Applix (APPLIX 2000), Corepoint, and IMA (cf. (MSI 2000)). Remedy offers a solution for call centers with very powerful workflow engine (Remedy 1999). Newcomers from the USA originating from internet based applications, like Pivotal, Firebond, Upshot, and Vignette, try to break into the CRM market segment now. The market leader in CRM, following AMR, is Siebel Systems founded only a few years ago. Siebel is the largest player in the market, a position they have achieved by focusing on large accounts and not on SMEs. Siebel's deals are typically in the millions of dollars. Its closest competitor is Vantive; the two have about 25% of the market.

The CRM market in Europe is still immature. Outside of large corporations little has been done, and even there the market is scarcely beyond its infancy. New companies have started to move in which indicates that the market has reached the critical growth phase. These companies include SalesLogix, Onyx, Pivotal, Firebond, Upshot, and Vignette. Their CRM systems mostly evolved from existing contact management systems and internet based applications for small- to medium-sized businesses. One problem with these systems is that they address the needs of the US market rather than the needs of European companies.

A lot of the currently offered software packages fulfill only part of the CRM demands. SFA (Sales Force Automation) is the predecessor of CRM. They focus on sales and marketing application, primarily for the sales force (help desk, complaint management, telemarketing are gradually also offered by these packages. There are several players at the moment like Siebel, Remedy, Scopus, Heat, Clarify, Vantive, Point, Cincom, and many others.

Usually the costs for adapting CRM software to the business processes of a company is much bigger than the costs of the software itself. This is the reason why currently the major players address the Fortune 500 enterprises only. The software packages represent a major investment. For example, a Clarify solution is a million project and only suited for a minimum of 50-100 agents. On the other hand, in particular newly funded small companies require highly integrated and powerful instruments to establish a solid customer base.

3 PROJECT OBJECTIVES

Building and ensuring high quality of supplier consumer relationships is the prime objective of this project by means of a Customer Care and Relationship Support Office (CARUSO). CARUSO provides management and control tools to monitor and improve European SMEs relationship to customers.

The goal of CARUSO is the generation of a software tool-kit that facilitates the building of highly scalable front office applications to maintain high quality consumer-supplier relationships. Emphasis will be put on exploiting and integrating existing tool packages as much as possible.

The installation of many CRM systems is very expensive because specialists are needed to adapt the core system to the needs of the company. This makes the use of CRM less suitable for SMEs. CARUSO addresses this problem by providing an easy to use application builder, which allows the rapid generation of front office applications tailored to the individual requirements of a company. A script developer is integrated into the application builder to provide conversation scripts to aid and guide the agent. The script developer offers immediate modification options to respond to, for instance, specific campaign requirements.

Since many of the relevant data dealing with customers are spread among the IT systems of a company, CARUSO provides interfaces to the company's Enterprise Resource Planning (ERP) systems and other installed software applications, and provides interface options for the most common used data bases. In particular interfaces to back office systems allows the design of front office applications that provide a unified access to the back office functionality. This is achieved by representing databases, ERP systems, and back office applications as software components using standard middleware technologies like CORBA, COM/DCOM, or Enterprise Java Beans (EJB).

To protect the companies investment into their Private Branch Exchange (PBX) systems, CARUSO makes use of the installed basis of the PBX by providing a Computer Telephone Integration (CTI) module which is compatible to nearly all available European PBX systems, offering in addition the functionality of Interactive Voice Responder (IVR), and Voice-Mail-Server as well as Power-Dialer.

Another aspect targeted by CARUSO is the integration of different communication channels, like phone, e-mail, fax, web, etc. in a Unified Messaging System, which allows consistent communication with the customers in a variety of ways.

CARUSO provides adaptation of front office functions based on customer profile and contact history by means of a dynamic graphical user interface (GUI), and skill-based call distribution taking into account the agent's tasks and expertise. This allows a more efficient interaction with the customer by providing the help desk agent with only the functionality needed to resolve the customer's issue. Further, the interaction will be guided using information about solutions to frequently occurring problems stored in a knowledge base.

In addition, the CARUSO toolkit has the following crucial features:

- full support for workflow, document, and contact management
- web interface for the help desk agent which allows rapid dissemination of adapted or new front office applications, and a similar interface to the one used by the help desk agent can be used for the customer (self help)

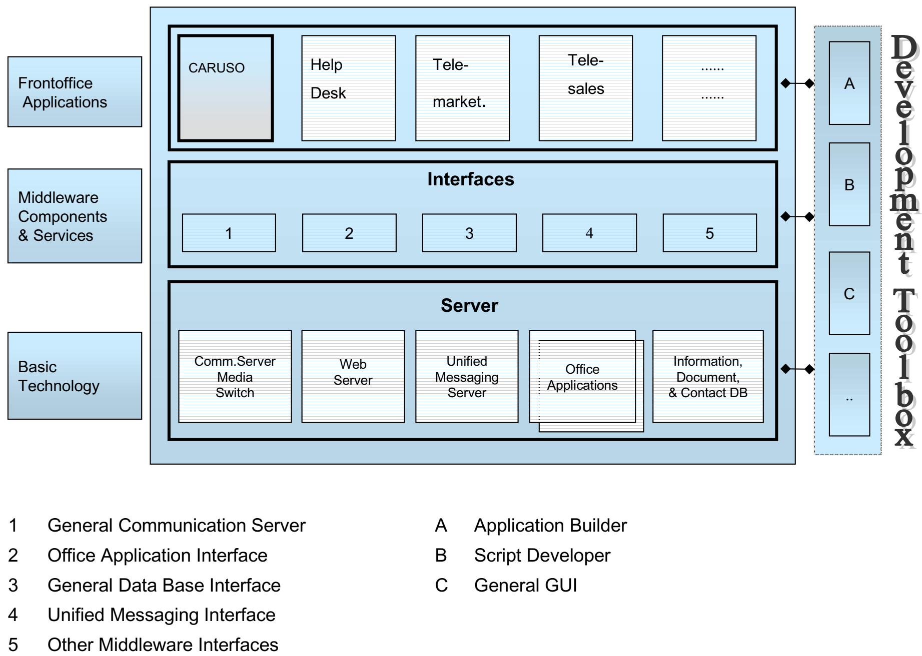

Figure 1: CARUSO Architecture

- a solution that is geared to European standards and requirements rather than US', in particular multilingual support
- a management information and control system that allows to monitor customer satisfaction and the effectiveness of the CRM processes, and provides data mining functions to identify customer behavior patterns.

4 THE ARCHITECTURE OF CARUSO

The architecture of CARUSO consists of three layers: the front-office layer, the middleware layer, and the basic technologies layer (cf. Fig. 1). The front-office layer contains the front-office applications which are designed and customized by using the tools of the development toolbox. The development toolbox contains, among others, the application builder and the script developer.

The basic technology layer consists of a general communication server; office applications; information, document, and contact databases; and a unified messaging server. The communication server manages various communication media (e.g. telephone, text, data, fax, e-mail, WWW, video), and is prepared not only for Voice over the internet protocol (IP), but also for IP call center functionality.

The task of the middleware layer is the integration of the communication services with the other basic technology components and the front-office applications. The middleware layer provides a uniform access to customer data and history stored in the various databases of an enterprise, like contact databases and ERP systems. CORBA, EJB, and COM/DCOM are used for the middleware components and services.

The component based approach together with the development toolbox makes it possible to extend CARUSO with new interfaces to basic technologies and allows the generation of customer care applications tailored to the individual enterprise requirements. Further, it is possible to start with only a few components and add new components as needed.

The overall design of CARUSO follows an iterative object-oriented approach based on the Unified Modeling Language (UML) (Booch et al. 1999) and the Unified Process (Jacobson et al. 1999). Within the last few years the UML has become the standard notation for object oriented modeling. The UML is a diagrammatic notation for modeling object-oriented software systems. Class, component, and deployment diagrams model the static aspect of software systems, while Use Case, interaction, and activity diagrams are used to model the dynamic aspects.

The UML can be used with any object-oriented software development method; it itself does not constitute a development method. For CARUSO we have chosen the Unified Process.

Within one release cycle, the Unified Process distinguishes 4 phases: inception, elaboration, construction, and transition. The goal of the inception phase is to establish the business case, the goal of the elaboration phase is a project plan and a sound architecture, the goal of the

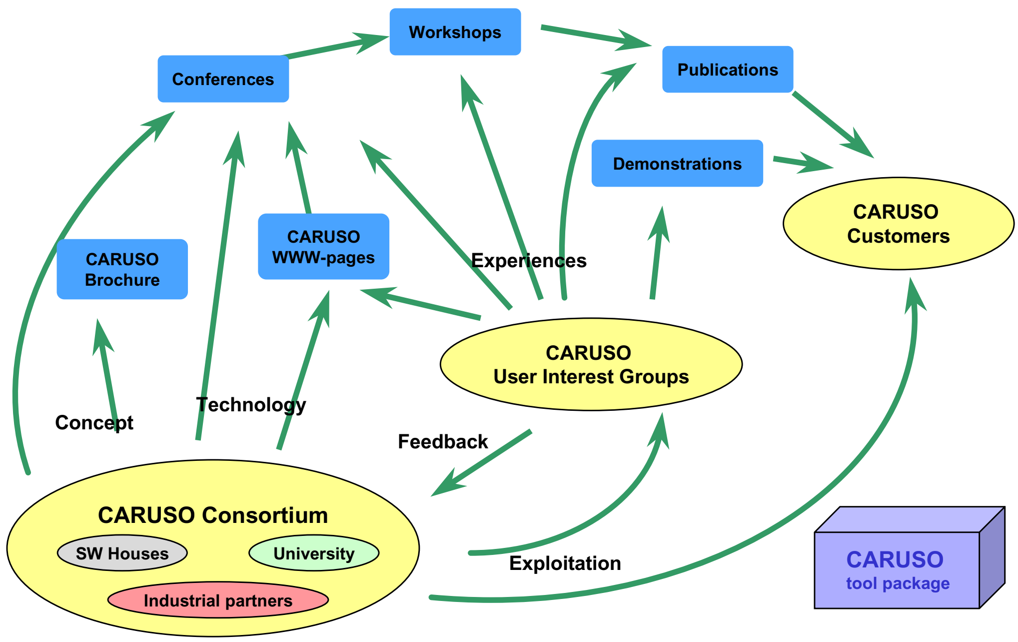

Figure 2: Dissemination

construction phase is the final system, and the goal of the transition phase is to deliver the system to its end users. Within each of the 4 phases the basic workflows business modeling, requirements, analysis and design, implementation, test, and deployment are executed, possibly several times.

The advantage of this approach is that at the end of each iteration the result is a running system which allows for immediate feedback. Immediate feedback is important because it is very hard, if possible at all, to gain a relatively precise and complete specification of a system as complex as a CRM system in one big step. Only by testing successive versions of the system, missing and inappropriate functionality can be discovered.

5 CONCLUSIONS

In this paper we have given an overview of the EU-funded project CARUSO. The project is pursued by a group of companies that cover the role of end user, technology provider, software developers, and methodology provider.

The role of the end user is played by REMU who wants to apply CARUSO to maintain relations with its customers. REMU is a Dutch energy provider that supplies electricity, gas, and heating.

DataCall Systeme GmbH is a software house with sites in Munich, Münster and Paris. The key competence of DataCall is the integration of different communication media into information systems in order to facilitate work processes at multi media workstations.

SFI, a Portuguese software company, is specialized in high-performance application development, creating tailor-made software solutions.

The Institut für Informatik of the University of Munich acts in the project as the methodology provider which develops the overall architecture and controls the technical design.

The CARUSO project started in the beginning of 2000 and is scheduled for a period of 2 years. In the moment of writing the project has completed the inception phase and is in the middle of the elaboration phase. We are currently working on a prototype showing the key features of CARUSO.

Among presentations and demonstrations on tradeshows, distributing press releases and publishing best practice reports, an user interest group will be used to exploit and disseminate the results of the project (cf. Fig. 2). The group will consist of industrial and institutional partners who will use and test CARUSO. After completion of the final tool, these partners will provide an adequate reference as a basis for the further dissemination of the results. The initial user interest group will consist of SMEs from Europe. It is planned to enlarge this group towards the final prototype phase to build the basis for an early and effective dissemination.

More information on CARUSO can be found on its web site `caruso.isd.pt`.

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