



# GO-CRM.SB: A Goal-Oriented Methodology for CRM Projects in Small Businesses

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## ABSTRACT

*The need to establish relations which lead to satisfaction for the customer and profitability for the company is felt not only in big companies, which have been conducting projects to this end for some time, but also in small businesses. Unlike a big company, a small business cannot undertake large-scale investment in projects of this kind. The main aim of this paper is to provide an overview of a methodology which, starting from the company's objectives in the field of CRM (Customer Relations Management), facilitates a rapid and effective insertion of technology into small businesses. This methodology, called GO-CRM.SB, is part of a broader application framework for an innovative CRM tool, easy to implement and maintain in a small business. This article sets out the requirements and the fundamental steps in the application of the methodology, leaving the description of case studies on this methodology to further papers and the details of how it is used to the GO-CRM.SB model manual (forthcoming).*

## INTRODUCTION AND BACKGROUND

Everyone agrees that knowledge of the customer is one of the main elements conferring a competitive advantage for companies attempting to consolidate a sense of loyalty in the customers acquired and trying to find new ones. This is true both in big companies, where attention to the customer has been a familiar concept for some time, and in small companies where reduced personnel working with more limited technologies still have to cope with a highly competitive market and a large number of customers with varied needs. Despite this, the information systems currently present in companies are still strongly oriented to operational needs and a purely vertical management control. Only now are projects starting to emerge which, even in small companies, aim to provide tools which support customer relations (CRM systems) [1][2].

In small companies then, the creation of a CRM system in most cases means intervening in a pre-existing information system, often inhomogeneous, with the objective of providing technological tools which, starting from a customer-centred informational platform, facilitate a new way of operating and function as motors of change [3].

In accordance with this, the framework, of which is GO-CRM.SB is a part, seeks to support the rapid and effective design and implementation of systems which gather information on the customer from various sources and from the various components of the information system in order to obtain an integrated tool for the knowledge and complete management of the customer (already acquired or potential) without the existing systems having to undergo excessive changes [1].

Aware that for the creation of CRM systems enormous advantages derive from the correct use of modern web technologies, and especially Internet, the framework in question supports the creation of CRM Web Based tools.

Other fundamental characteristics of the framework, and consequently of GO-CRM.SB, are its adaptability to the various and dynamic requirements of marketing strategies and its support for the functionalities of both operational CRM and analytical CRM [1].

Another important consideration is that the objectives of GO-CRM.SB cannot limit themselves to the development of a group of technological tools, but must be able to facilitate a change in the culture and the working practices of the company. Indeed, to speak of CRM projects also means making the company organization more "customer-centric", guiding the design of technologies which support this.

To obtain this goal, the starting point for GO-CRM.SB is the analysis and revision of the strategic customer-centric objectives so that the design of the technological tools reflects them. In other words, GO-CRM.SB is a "goal-oriented" methodology [4][5][6] in that it assigns a central role to the company objectives which guide the identification of the requirements and the creation of the software system to support the CRM strategy.

## REQUIREMENTS AND CHARACTERISTICS OF THE METHODOLOGY

It is highly unlikely that a small or medium-sized company is prepared to revolutionise its information system and its way of operating in a short time, nor is it realistic in a small business to conduct long and costly analyses; the risks would be too high and the resources needed too many. It is necessary therefore, to be able to design solutions which aim to maximize the results with the minimum impact and enable a possible subsequent expansion. In this sense the main requirements of the methodology proposed are the following:

- **Adaptability**  
For a small business to draw advantages from a CRM strategy, the project needs to take account of the particular business model and needs to be able to identify the implementation priorities so as to deploy the right level of resources and cope well with the initial economic and organizational impact. In the modelling phase therefore one cannot ignore the specific characteristics of the company. For example a company with many clients and many simple interactions will obviously not have the same needs as one with few clients and few but highly complex interactions. The methodology must be easy to adapt to the diverse types of business, marketing strategies and organizations. In a framework for the design and creation of CRM tools for the small business, nothing must be tied to tools and architecture that are complex and hard to maintain.
- **Ease of adoption**  
One of this modelling tool's priorities is the rapid and precise identification of the functional and informational needs of the specific company. By this is meant the minimum level of technological innovation and of change in the "modus operandi" necessary to kick-start a natural evolution towards the principle of customer centrality.

- Small business-oriented output  
The methodology must produce output which enables the commissioning company to easily grasp what the final system will be like.

In accordance with these requirements the main characteristics of this methodology are the following:

- Goal oriented  
Using this methodology, the designer directs his or her efforts firstly to the correct identification of the company objectives (strategic goals) and consequently to those of the software system (system goals). It is a method which starts with the identification and classification, immediately and efficiently, of the company's goals, and then translates these into system objectives [10] and concludes by selecting the functionalities which are most suited to trigger the change. Change which must lead to all the activities and all the relevant reserves of information being redesigned around the customer, all of which must be consistent with the characteristics and the aims of the specific commissioning company. Importance is laid therefore, above all on "why" create given computer tools, while the "what" and the "how" are developed as a consequence. This is the most important characteristic for GO-CRM.SB .
- Supports step-by-step implementation  
For a small to medium-sized company it can be particularly important to set up the system in separate steps and at different times.  
The methodology supports this approach thanks to the classification of the goals, subsequent to their identification, which produces a hierarchy of priorities of the functionalities to be created. The subsequent development steps will also benefit from the evaluation of the results obtained via the creation of the initial nucleus of functionalities.
- Pattern  
To facilitate the use of and to obtain results quickly, the methodology includes the use in many of its phases of patterns of reference. In this way the designer in GO-CRM.SB has at his disposal a set of patterns that may be personalized to a high degree that cover most of the typical needs of a CRM system for the small to medium-sized business. The patterns are mainly of three types:
  - Goal Patterns, a set of objectives which the designer, depending on the particular type of business, can present to the company's managers in the initial meetings;
  - Functional Patterns (the most important), a set of ready-made functions that may be personalized to a high degree which already reflect the system objectives and cover most of the functional needs in CRM terms of small to medium-sized businesses;
  - Data Patterns, a data reference model which already includes a set of entities (user, contact, customer and product) and attributes of special interest which can be extended/reduced or completely modified.

Using GO-CRM.SB's patterns, the designer already has at his or her disposal an initial set of possible objectives, a flexible and expandable data model and a set of functionalities that may be personalized. In this way the time required for design and implementation are minimized and the solution is guaranteed a certain completeness and robustness without having to design everything *ex-novo*.

- Reuse of existing tools and standards  
At every phase it is also possible to use consolidated tools and standards without necessarily having to use those proposed by the methodology itself. Thus, for example if one intends to redesign the data model it is possible to use standard techniques and tools for this type of problem.  
Thanks to the above-mentioned characteristics the CRM systems design methodology in question is easily adapted to the different business models of the small company and, what is more, makes

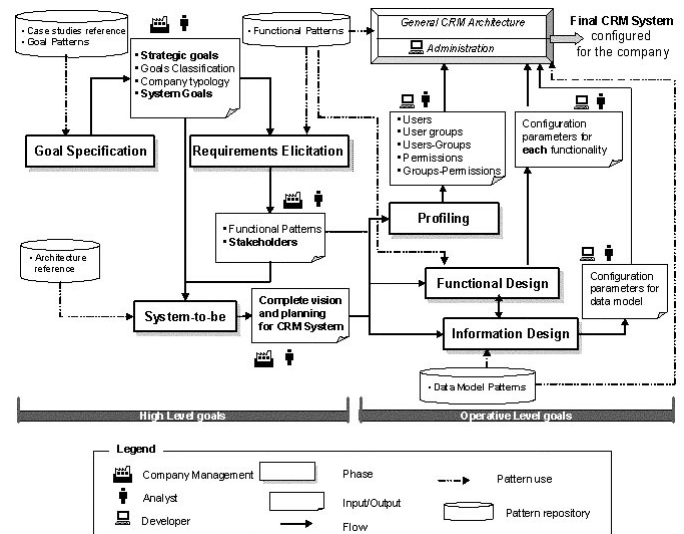
it possible to obtain rapid and economical solutions which include the personalization of objectives and tried-and-tested functionalities, assuring a good ROI [7].

**THE PHASES OF THE METHODOLOGY**

The methodology is structured in series of phases, where designers with different skills cooperate in the creation of the final system. The schema of execution for these phases is shown in figure 1. Each phase is characterized by a series of structured inputs, by tools of varying complexity which are used for the fulfilment of the phase, and by structured outputs, some of which are intended for the commissioning company.

- Goal Specification  
This phase consists of three sub-phases: identification, organization and classification of the goals. This phase starts with the identification of the company's strategic customer-centric goals [10] (for example ensuring customer loyalty, personalizing communication, predicting the expectations of the customers, increasing customer satisfaction), while detailing the lower-level objectives down to a level of detail which provides a vision of the company and of its aims that is complete but concise. The next step consists of organizing these strategic objectives so as to obtain the software system objectives (identify the customers, classify the customers, complete the channels of contact, identify targets, ...) which are closer to the requirements of the CRM system itself [6]. Finally, a classification of these objectives in order of importance will provide the basis for an understanding of the incremental steps which will lead to the final system.  
In this phase, the model includes the use, as a first reference, of a set of strategic objectives and relative mapping onto system objectives, as well as a few pre-prepared questionnaires which can help the designer to identify:
  - the high-level goals, with an index of priority.
  - the type of small to medium-sized business in terms of dimensions, business model, strategic relations with customers, suppliers, partners and other subjects, an index of how "customer centric" they are.
  - analogies with case studies already treated.
 The output of this phase consists of a document which describes and justifies the system objectives and classifies them in terms of importance. It is also a good idea in this phase to highlight the association between strategic goals and one or more system goals.
- Requirements Elicitation  
This phase inherits many of the concepts of the analogous phase in W2000, considering that the CRM system to be obtained is Web

Figure 1: GO-CRM.SB's phases



based and the aim of W2000 is precisely to support the design and the development of Web Applications [8][9]. In particular, it formalizes, via the use of W2000-based diagrams, the system goals identified earlier. This activity is joined by the more fundamental one of associating the functionalities and any personalizations which make it possible to achieve the set system goals [6]. This activity translates into the following sub-steps:

- Association of Functional Patterns with system objectives.
- Selection, together with the company management, of the functionalities to be implemented.
- Identification of the functionalities covered by the functional patterns and if necessary those to be reengineered or developed ex novo.

This phase concludes with the definitive formalization of the stakeholders of the application, by analogy to the W2000 concept. By stakeholders is meant the users who have an interest in pursuing objectives via the system, either directly (because they are the final users of the CRM application, for example call centre operators) or indirectly (not using the CRM application directly, for example the head of the sales office).

- System-to-be

In this phase, depending on the goals established previously, the stakeholders identified and the current situation of the company, the designer works on what will be the complete architecture in support of the system CRM, the objectives to be pursued, the functionalities, the generic user profiles, the software modules, and any necessary modifications to existing systems. In other words this step provides the overall technological vision which will support the CRM processes and defines the system expansion plans to be adopted in any subsequent.

These first three phases of the methodology are strongly orientated to the high-level management of the project and their aim is to identify all the architecture and all the functionalities of the technological system which must support the CRM processes. The output of these three phases is easily comprehensible to the company management even in the absence of specific knowledge of IT.

Considering the strong use of patterns these three phases produce an output which is instantly useable for the personalization of the system of reference which implements the final CRM solution, which is the specific task of the subsequent phases of the methodology. This approach satisfies the requirement of having output that the company management finds easily comprehensible and solutions that are simple to implement and render operational (it is only a question of personalizing an existing macro system in a structured and guided way).

The next three phases, described below, serve to personalize the CRM system ("General CRM architecture" fig. 1) in accordance with the needs of the company as defined in the first three phases, leading to the final CRM.

- Profiling

Starting with the identified stakeholders, this phase has the objective of detailing the user profiles to be created within the architecture of the final CRM system. The profiling principle chosen is based on the concept of the user and the group he or she belongs to. The phases then, are the following

- Census of the users
- Census of the groups, conceptually linked to the roles which the users can play in the CRM system (for example call centre operator, sales executive)
- Census of the "permissions" which are equivalent to the various sub-functionalities (for example access in reading mode to the customer file) present in the CRM system or to the modules/resources created ad hoc (for example links to an external procedure)
- Links from the permissions to the groups
- Links from users to the groups; in this way it is possible to establish what the users can and cannot do
- Links, in exceptional cases, of particular permissions to particular users.

Considering that the functionalities, and thus the permissions, are linked to the goals, it is possible at the end of this phase to proceed to a goal-oriented verification of the profiling achieved. In other words it is possible to establish which goals the users can achieve via the CRM system depending on the functionalities at their disposal.

The architecture is also designed to support the assignment of one salesman to each customer.

- Functional Design

This phase has the task of activating the functionalities which meet the system objectives to be achieved. Specifically, an ad hoc methodology enables the specific personalization of each functionality. In the personalization of the CRM system this is perhaps the most complex and longest phase. The functional patterns managed in the current version of the methodology and the architectural platform are:

- Dashboard (for the creation and distribution of the customer file, product file, contact file, etc., and in general the macro subject file, a concept defined subsequently)
- User Desktop
- Multi-channel Campaign Management
- Tableau de Bord
- Customer Targeting
- Communication and Collaboration (Messaging, Customer Chat, FAQ, Forum)
- Schedule for user appointment and commercial deadline
- Commercial Events Manager

The specific methodologies for each functional component include, amongst other things, personalization on the basis of the profiles and the use of all channels to contact the customer which the framework [1] allows (FAX, email, SMS, IVR, Call Centre, Web Banner, etc.)

- Information Design

In this phase the designer works on the data model which will support the CRM system. As with the "Requirements Elicitation" phase, this phase inherits and personalizes many of the concepts present in the analogous phase in W2000[9]. Specifically this phase sees the identification of the macro-subjects interested in the CRM system (a concept analogous to the entity-type in W2000) and moves on to the sections which compose these macro-subjects (analogous to the component in W2000) and the elementary data which characterize these sections. The source, refresh frequency, and any rules pertaining to power supply and weight must be defined for each elementary datum (in order to understand the importance and cost of obtaining the datum and eventually to manage the development of the ETL procedures). As with functional design, also in this phase the designer is already presented with a series of macro-subjects (customer, contact, initiative, product, user), sections and elementary data. This data pattern is completely integrated into the functionalities of the architecture and is easily personalized. If the project in question should not succeed in using this pattern it is possible to define a data model ex-novo (with traditional data model tools unconnected to GO-CRM.SB) and integrate it into the functionalities thanks to the presence in the methodology and in the architecture of a meta-schema which works with any database to establish a relation with the existing CRM functionalities.

## CONCLUSIONS

The aim of this paper is to provide an overview of GO-CRM.SB leaving the description of case studies to further papers. However it should be noted that in pilot cases of the GO-CRM.SB methodology, which are still in progress, the application has already had two main achievements:

- the immediate creation of an efficient dialogue between designer and commissioning company, which ensures motivation with respect to the project (understanding from the start what the

results are going to be) and accurate definition of the time and requirements for the implementation of the final system;

- short periods and modest resources (in terms of finance, personnel and tools) required for the creation of CRM systems in small businesses needing immediate results.

Besides honing the approach in practical conditions, the current efforts are directed to

- testing out many of the patterns (goal, functional and data model) on which much of the operational side of the methodology is based and which is what really enables the creation of a system of quality with reduced time and costs;
- defining in detail a GO-CRM.SB model manual which provides precise reference in the application of the model.

GO-CRM.SB, though aimed primarily at small businesses, has aspects which can be helpful in guiding CRM projects in big companies; projects which aim to follow a development step by step while not relying too heavily on the technological aspect, with big investment in big architecture, as opposed to organization and marketing.

## REFERENCES

- [1] Mangia, L. (2003) "Small businesses and CRM: an application framework for a light approach", IRMA2003, Philadelphia, USA
- [2] SIEBEL, "Driving Performance for Small and Medium-size Businesses with Customer Relationship Management", White Paper, February 2002
- [3] Kos, A. J., Sockel, H. H. and Louis K. Falk (2001). Customer Relationship Management Opportunities. Ohio CPA Journal, 60 (1)
- [4] Antón, Annie I. "Goal-Based Requirements Analysis" II IEEE International Conference on Requirements Engineering (ICRE '96), Colorado Springs, Colorado, pp. 136-144, 15-18 April 1996
- [5] Bolchini, D. and Paolini, P. "Capturing Web Application Requirements through Goal-Oriented Analysis" V Workshop de Engenharia de Requisitos, Valencia, Espanha, 11-12 Nov. 2002
- [6] Emmanuel Letier, Axel van Lamsweerde "Deriving operational software specifications from system goals" Proc. FSE'10: 10th ACM SIGSOFT Symp. on the Foundations of Software Engineering, Charleston, November 2002
- [7] Jutla, D., Craig, J. and Bodorik, P. : "Enabling and Measuring Electronic Customer Relationship Management Readiness" 34<sup>th</sup> Hawaii International Conference on System Sciences – 2001
- [8] V.Perrone, M. Maritati, P. Paolini, L. Baresi, F. Garzotto, L. Mainetti: "Hypermedia and Operation Design: Model, Notation and Tool Architecture". Official Deliverable D7 of the European Project UWA IST2000-25131.
- [9] Garzotto F., Paolini P., Baresi L., Valenti S., "W2000: UML and HDM Provide a Unified Framework for Designing Web Application", Dipartimento di Elettronica e Informazione, Politecnico di Milano, April 2000.
- [10] Mylopoulos J., Bolchini D., "From Task-Oriented to Goal-Oriented Web Requirements Analysis" IEEE Proc. 4<sup>th</sup> International Conference on Web Information System Engineering, Roma, December 2003

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