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CRM as integration environment of the process organization

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In the paper attempts to identify the systemic aspects of the use of CRM tools for the integration of distributed processes organization. The overriding criterion for the applicability of CRM is to increase the efficiency of management the virtual organization. Presents the requirements and restrictions for the virtualization of access to technical resources, technology and information in the so-called. "Cloud" as a way to reduce costly IT investments especially in the SME-class organizations.

I. Introduction

MODERN organizations are increasingly seeking to "flatten" their structures and tends to expose processes as the objects of the organization. The dynamics of action is their immanent feature, the change is desired state. This business model requires access to adequate resources, both material and immaterial and most of all to the relevant information resources in their broad sense[1]. Network structures are increasingly dominates the hierarchical structures due to their flexibility and efficiency and also reliance on the time factor[2]. An integral element of managing a modern organization are the integrated management information systems, which require network architecture. That applies both to systems that support operational and strategic actions. The condition for the implementation of process structures is direct access to information about available own resources and resources of the potential partners with particular emphasis on the business needs and the real owner of the actions, means the customer. Due to that the process organization both on the input and output of each process should see the Client. Thus, CRM (Customer Relationship Management) systems are the real base of successful business. If to this assumptions we will add the world of potential clients and the possibility of direct access to them (in the net), then we draw near to the virtual model.

Information and knowledge about the potential and real client is a value itself. This information can include not only the actual needs, but also preferences that may be the basis for forecasting and planning of relevant business processes. Nowadays, more often the vendor is looking for the customers, following him to meet his needs. To implement so conceived model using of widely understood mobility is necessary. Mobility of the company and its employees changing approach to the processes occurring therein. These processes are designed to integrate their implementation, not only locally but also globally with the use of external resources. In the near future, no company will be able to effectively work autonomously and must learn how to make money together. The best “tomorrow’s companies” will be modular and available resources will be just a component of a wider structure determined by the value of the process. The market shows irreversibly trends to share knowledge and executive capabilities with external regulations. Among the major market players we hear more about cooperation than competition. Therefore, indispensable are tools allowing sharing information. This article attempts to identify the systemic aspects of the usage of CRM tools to virtualize the organization process in order to increase the effectiveness of management of mobile, spread and modular organizations.

II. CRM functionality

The customer relationship management system (CRM) is a package of tools and procedures relevant to managing contacts. Is used to build long-term and lasting relationships with customers that are valuable for both the company and the customer. However it should be noted, that CRM is not just a tool, but also part of the strategy and business philosophy, where the constant contact plus keeping the requirements and customer evaluations is a key value. Implementation of CRM changes the approach from the regular customer feedback to advanced business strategies, in which the client is an integral part of decision making process. To the proper functioning necessary is to provide a uniform system across all business processes across a distributed organization - from the beginning of the production, distribution and sales through service. Such a range of information enables preparing of relevant statistics used in creating the product portfolio.

[1] IRM (Information Resources Management according to O’Brien’s model)
[2] TBM (Time Based Management)

From the IT point of view we distinguish the following types of CRM systems:

- **operational**, which is a system supporting direct client-related activities such as sales, marketing, after-sales service, etc. The operating system allows CRM to interact with customers, as well as view at any time by the employees the database with information about co-operation with the customer. The system also records all the actions in the history of contact with the customer. These activities can be monitored in real time and replayed on demand.
- **analytical** is a set of tools to support analysis of customer behaviour based on information collected about them from other CRM modules (e.g. operational CRM). Thanks to the analytical CRM we can get selected and structured information about the effectiveness of marketing. One of the important feature is the ability to generate summaries of analytical and forecasting, which are important to support decision making process .
- **communication** (Contact Center) is a communication platform that supports direct communication with the customer. Its main features include automatic distribution of tasks and information such as automatic routing of incoming calls from customers to the appropriate employees of Call Center departments.
- **self-service**, which is the system to automate customer service, which does not require any action or entering information from employees of the organization. This type of CRM system supports the operation of the analytical CRM by collecting predefined and uniformly dimensionaled information (such as phones made by customers and to customers, exchanged e-mails, etc.).

CRM systems are now treated as integral parts of management support systems for both class OLAP[3] and OLTP[4] and DSS[5]. Nowadays, when companies put emphasis on the integration of business processes, CRM are fully integrated solutions, joining not only operational, analytical and communication functions, but also providing dedicated interface for direct interaction with the Integrated Management Information Systems (IMIS) implemented in the organization - for instance with ERP II. During its evolution IMIS covered in their scope more and more functional area, providing information support for further areas of the organization. Today, those systems ties the world of the consumer and the manufacturer / service provider. CRM systems also extends the models of functioning and are now an important part of the implementation strategy of the process organization as a tool to integrate and supports a distributed organization.

III. CRM AS A COMPONENT IN DISTRIBUTED ORGANIZATION

IMIS which supports enterprise management processes are technologically and functionally modular structure, organized as a comprehensive information system that supports all areas of its business, from marketing, planning and supplying through the technical preparation of production and its control, distribution, sales, management of maintenance / service approach, financial work - accounting and human resource management [1]. This class of systems allows to control, analyse and decide at operational and strategic dimension. Thanks to comprehensive integration and implementation of X-engineering strategies using IMIS (Fig. 1) and based on analysis of customer relationship management and requirements for information management in an organization can dynamically respond to changes in the external and internal environment. With this level of integration territorially dispersed users have access to selected information resources of the organization (uniform database) and the possibility of groupware on electronic documents. This is possible due to access to public (global) or corporate IT infrastructure by providing them with wireless communication devices and remote access to tools and applications. This access is unlimited in time and space, while providing personalization and an appropriate level of selectivity depending on their user privileges [3]. Managers / Coordinators of higher levels can continuously monitor the work and results of operations of individual performers / actors processes.

To basic features of modern, active (interactive) IMIS systems first of all belongs the integration of distributed organization with information services and a uniform user interface.

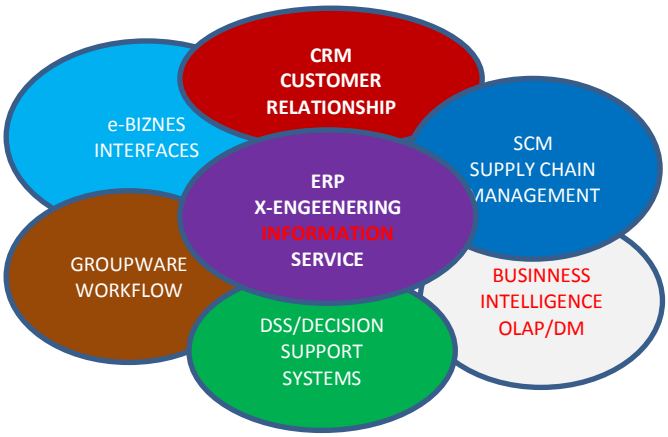

Fig 1. The integration of information services based on [1]

[3] On-Line-Transaction-Processing (Systems with current image of functioning organization)

[4] On-Line-Analizing-Processing (Analytical systems with historic (long duration) image function organization)

[5] Decision Support Systems (Systems with functions OLAP and data-mining/discovering of knowledge)

CRM systems in this group of information services makes a special value to the organization. This applies to different areas of support but in particular the direct relationship with BI[6] systems. In this way we get a comprehensive database tool to provide process organization, oriented on the exposure of the processes as the organizational object [2].

IV. CRM ENVIRONMENT AS AN INTEGRATION PLATFORM FOR MANAGEMENT PROCESSES

Management itself is a category of integrating the set of processes expressed by management functions. These processes are focused on the resources of the organization in order to achieve the objectives of the organization in an efficient and effective way [4]. Management functions such as planning and decision making (defining the mode of action), organization (coordinating activities and resources), management (people management), monitoring (observing and evaluating activities of the organization) and the standardization of separate processes - can be integrated through a the common information resources. Managing a distributed organization using remote technologies (Fig. 2) is a big challenge and can involve the risk [5] of losing real control over the processes in the company. This applies to both human resource management, as well as material resources and information. In case of remote work level of employee value is measured by its competence to act not by the formal procedure. Nevertheless, we must take into the consideration that the value and efficiency is directly related to the possibility of implementing the current and long-term monitoring of the achieved effects. Using the newest technology, also the remote work can be closely monitored. What is more important for the organization, it can entail information about contacts and work that was done and what actions were taken in the specific situations. Keeping records of such actions could be the basis for creation - regardless of the workers - a valuable knowledge base for the management of the organization.

From the process organizations point of view (with a large territorial dispersion of process implementers) recording should be treated as a function closely associated with the process of current activities monitoring and collection of transaction data. Thanks to intense internal and external communication through CRM tool we can achieve a complete picture of your business needs. This flexible and active communication with partners in the market, allows early respond to the risk of frequent fluctuations in the market. This allows both quick response to business needs of the customer (on-line we can change radically our sales strategy) and at the same time make it available to everyone. The basis of good planning is the ability to generate forecasts, for instance demand forecasts. Forecast accuracy - without a good database (record) in the OLTP systems and data warehouse (OLAP) - may be not satisfactory. Thus, CRM systems support the rapid flow of information during the implementation of planning process in different time horizons and facilitate dynamic (parametric) variants of solutions (proposals for planning). As already mentioned, the change is treated as an ability to adjust to the actual situation. CRM systems allow you then to dynamically respond to changes in the company as well as in its environment. One of the notable feature of such systems is their ability to quickly make changes in processes with immediate notification to all of interested parties, grouped in the internal or public network. In the CRM practically just by the configuration and changing business rules we can quickly change the sales strategy, sales offer, the target group sales or channels. Based on contacts results from one area of activity, by analogy, we can create sales in places or channels in which company so far has not functioned.

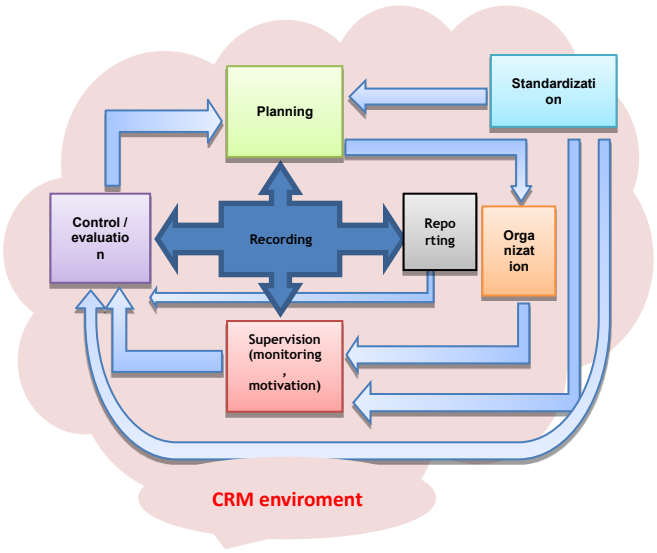

Fig 2. Model management with CRM tools

The processes of organizing the flow of information and physical resources are the result of the reliable of the action plans. Therefore, flexibility in making management decisions simplifies even the most complex business processes and working procedures. Allows you to respond quickly to shortages of resources by demonstrating congested one and shows these unused. CRM systems brings functionality to respond in on-line mode and make for instance changes in the dislocation of individual resources according to the map of business processes. The time from the decision to its rollout and implementation is reduced to a minimum. Additionally, CRM creates in the background a large base of knowledge about processes, customers, employees, goods and all types of relationships between them, which also gives a great ability to explore the implementers of processes in the environment of the organization (outsourcing) [3]. In the current monitoring is often used reporting function on the basis of information from systems class OLTP / OLAP. So you can generate reports on the realization of tasks by selected aspects / dimensions. CRM can provide reports on the economic

[6] Business Intelligence (Systems with functions DM (Data Mining))

results (efficiency, productivity, efficiency) and technical (reliability, quality). It is not insignificant the information about statistical scheduling reasons for the success, but also the causes of failures. We can on-line monitor the implementation of any business process, which is reflected in transactional databases.

In present process organizations, standardize becomes important and operate common standards by distributed entities that interact in the implementation of pre-defined processes. Thus standardization is a function that uses data stored in warehouses. Due to that historical picture of various business events and the whole processes allows multidimensional data analysis and generation of knowledge about the repeatability of selected occurrences or their concentration. This guide us to the simplification and standardization of certain processes, and developing norms for time, cost, or performance. At this point, we can already say that CRM systems are becoming a core component of DSS systems (Decision Support Systems).

V. Tools supporting deciding in CRM systems

CRM as an integral component IMIS (OLTP, OLAP - Figure 3) provides with the help of BI systems complex information, supports deciding at all levels of business management, or more generally in the planning and implementation of individual business processes. These are the applications based on the network interfaces that allow users to easily make selection of interesting data from one or more sources, and may involve multiple processes. The business intelligence applications includes: tools for on-line processing (OLAP), applications for statistics and applications to analyze the links between data (Data Mining), including correlation and cause-effect relationships, etc.

In BI systems can be identified among others:

- Decision support system (DSS), a tool that provides information and knowledge necessary for decision making in organizations by management. These tools use the technology of artificial intelligence, expert systems, operational modeling. The effect of these systems are all kinds of reports and statements that management receives the EIS.
- Executive Information Systems (EIS), which is often referred as a specialized form of DSS.

BI systems are using all types of analytical tools and provide access to information to support deciding based on fact tables, which are full view of selected process instead of preferred so far processes of intuition, experience and fragmentary information. By using tools such as OLAP, the system behaves differently than the typical (transactional) system OLTP. This difference has several aspects such as:

- Nature of the CPU load in data warehouse is different from the loads that occur in typical database systems recording transactions. The main purpose of the data warehouse is to browse large collections, joining multiple tables, sorting / selecting and aggregation, which is working on multidimensional data structures.
- Data warehouse provides reporting in various modes mainly ad-hoc mode, this means receiving reports, which can be defined to date.
- Data warehouse is open for changing institution's environment, and evolving business model (new processes) of the company could quite easily be reflected in the structures of the data warehouse.

CRM systems by their integration of functional-information and technological allows to dynamically support the management of distributed organizations. Those organizations thanks to access to information about various resources are transformed into virtual organizations, which abolishing the geographical barriers. Access to information and various services on the platform "Cloud" computing makes each organization actor / participant of predefined processes. Arises value-added chain, which maximization is a function of competence (often expressed by the effectiveness of actions) actors / implementers of such processes.

VI. Technological conditions and service oriented architecture

The most important feature of technologically sophisticated CRM systems is their ability to integrate. Essential to this is SOA (Service Oriented Architecture), which allows the integration of "everything" and by "all" [6] (Fig. 3). With this approach, the greatest emphasis is placed on defining the services that could operate independently of each other and having a defined interface that provides implemented functionality called API[7]. The interface also defines how each service works - ignore and hiding the way of implementation or technologies what is irrelevant to the customer. These services are provided to all who speaks WebService language through a telecommunications network, particularly through the Internet. In order to provide easy access, this has to be web application.

An employee from anywhere using basically every tool (with a Web browser with Internet access) can do their business, use required for that information resources and manage the organization. New sales processes, marketing campaigns, modifications to existing procedures are performed on-line for all users, whom the process applies. These systems are often implemented in so-called "Cloud", so with the use of information and communications (ICT) virtual infrastructure. Also in the "cloud" services of those systems are available.

Complemented by integration layer (e.g. for systems not using the APIs) there are different types of files sharing servers (e.g. ftp) or the integration databases. An essential element of all CRM systems are transactional, central database maintained in the OLTP systems. The purpose of these databases is to collect all the operational information,

[7] Application Programming Interface

not only regarding made transactions, made contacts, realized customer requests, but also about the whole process in all its phases. To respond effectively on inflows events to the databases, in order to define the rules of business uses, to promote sales in the best possible time and to make management decisions - it is necessary to analyze the data collected by unified metadata. Hence the need to on-line access to the analytical databases (data warehouse) using functions of OLAP systems and reports of multidimensional business analysis according to access rights. It is a form of security guarantees and distribution them according to agreed and assigned to user competence. In organizations which require in the access to their full infrastructure greater security (intranet) solution is Terminal Services. In this case on the mobile device, workstation or tablet - the physical data are not maintained.

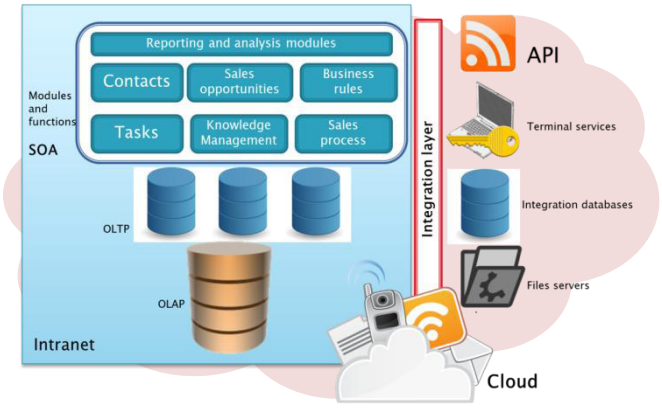

Fig 3. Functional-technological architecture of CRM

The implementation process of such solutions exposes possibility of implementing the various modules and components as an independent functions. Each has its own integration layer API. With this approach, we can manage the organization by enabling functions at the level of module, task, or a method. Presented above basic properties of the virtually available technical, technological and information resources indicates possibility of reducing in our organization rather expensive IT investments. This shows the possibility of virtualization our company with a purpose to integrate in the wider business processes and information services. "Cloud" becomes a service which integrates on the different levels access to professional business applications. Especially companies class SME gets a chance to eliminate the exclusion from the area of modern information technology (including CRM systems) by the access to ICT infrastructure and related services according to the actual value of the service, dynamically scalable by the needs of any organization (including a distributed and process organization).

VII. Conclusion

Properly integrated, implemented and used CRM allows gain efficient working organization, able to act effectively despite the distraction. It provides an additional sales channels (such as call centers, telemarketing, kiosks, customer service remote centers or e-commerce - often cheaper to maintain). All sales channels (even those not belonging to the organization) are based on the offer widely visible in the whole network with the possibility of the full interaction [3]. Managers of each organization - especially the managers of complex business processes - should use CRM systems as base of objectivated knowledge about the processes taking place in their distributed enterprise. It also means the possibility of a dedicated sharing information with the individual implementers / actors in the process. In addition, thanks to SOA architecture it is possible dynamical, efficient integration with the external environment, what is an important source of additional information for the managers. This class systems provides actual analysis of "what happens" and not what "had happened". They allow in the on-line mode to respond on changing business conditions, and distribute changes or even an entirely new decisions to all stakeholders using the mechanisms of incremental database replication. Using BI and OLAP class tools - directly integrated with the functions of CRM - decisions are made based on facts and not the guessing, premonition or experience.

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