Design and Implementation of a Model for Integrating Microsoft xRM with GIS

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ABSTRACT

Relations management systems are capable of retaining a wide domain of information associated with the various aspects of a business sales and follow-up activities, keep all events that happen on daily basis, issue reports, track the staff performance of sale, and lastly keep the good relationship with the client. With the development of relations management solutions; there are some gaps which have appeared and adversely affected the performance of these kinds of solutions and their ability to assist in the decision-making in the right time and place. These solutions will fall to determine the geographical locations and extract the geographical information and metadata for specific goals. There is an urgent need to solve these problems and gaps by creating new ways based on the achievements and developments in the infrastructure of modern information technology and harness these ways to collect, enter, process, analyze, view, and extract the geographic information and metadata for specific goals then schedule them an appropriate format to be sent accordingly. The research paper provides a framework that can be used for integrating xRM (relations management systems) with integrated GIS systems. It is expected that the incorporation of this model would facilitate the process of information flow between these systems, resulting in fast decision-making techniques.

Keywords: GIS system, xRM based integrated GIS system, Relations management systems

1. INTRODUCTION

It has been observed in the recent past, that organizations are expressing their interests in the deployment of integrated GIS systems with the aim of gaining a deeper insight in to their business systems. However, the incorporation of such integrated systems need to be aligned with the existing LOB applications, such that the activities of the core applications that are utilized in the day to day operational activities of the organization. According to (Payne and Frow, 2006) "CRM has become more and more important over the last decade due to the emerging global markets". Furthermore xRM as an enterprise system is a single unified system which integrates all data and processes of an enterprise in order to fulfill their essential business goals. GIS application users hardly use those applications, and they still look to use simple applications in order to access location information and geospatial data visualization which are as easy to use as web map applications.

Through this research work, the authors have tried to identify several problems that result from using the CRM and GIS as stand-alone systems and will enhance a new technology [Hybrid] by design and implement a "**Framework Model for integrating xRM with GIS**" designed mainly for the business world and based on a real practical experience in the ERP, xRM environment. Finally, such model is important to save time, effort, cost and helps decision maker to deliver business capabilities quickly and at a lower cost.

1.1 Objectives

The primary objectives of this research paper are focuses on the advantages of using Hybrid xRM & GIS technology to increase the efficiency of the work, the speed of achieving the task of is providing a new model of xRM that focus on integration with GIS in order to achieve benefits of shared platform and resources and to improve customer satisfaction by maximizing profits for global companies.

2. RELATED WORK

This model about creating a new idea of a hybrid system that integrates the xRM & a GIS model, which allowed the end users to determine the exact location of a customer where ever in the world, the model decrease the time, cost, and effort on the company client at the same time as well. From our literature survey we can summarize some of the related work as follows:

2.1 E-xRM in Jordan Aviation (JATE) Airlines

JATE e-xRM model can be conceptualized as a system that is made up of components, linkages amongst the components, and dynamics-that takes advantage of the properties of the Internet to make money. It takes advantage of the properties of the Internet in the way it builds each of the components-value, scope, revenue sources, pricing, connected activities, implementation, capabilities and sustainability- and crafts the linkages among these components.

The problem is that JATE e-xRM suites alone can't provide a complete view of the customer. (Makeen, Eng 2010) A common error is underestimating the degree to which every facet of the enterprise needs to be involved in the process and integrated into the customer relationship. xRM involves front- and back-office business processes that require accurate and easily accessible data. Access to poorly integrated front- and back office processes and a lack of quality in the underlying data within foundation applications will lead to ineffective customer service and a resulting erosion of customer loyalty.

2.2 Using GIS for Petra International Hotel Al aqaba

Petra International Hotel Al aqaba is one of the most well known tourist destinations in Jordan. It is a well known fact that the prices of hotel rooms room vary to a great extent depending on the season: when the rents go up in the peak tourist seasons, it becomes nearly impossible for the common people to afford them [12]. On the other hand, the prices of these vary rooms go down significantly during the off seasons.

"Petra International Hotel Al aqaba does not pronounce their customers during the peak seasons: thus, it becomes difficult for the customers to get to know the exact prices of the rooms during the turbulence of the peak season" [13]. The management of this facility is reluctant to utilize information technology based applications to   provide the customers with such situations, as it has been observed that most of customers lack the computer proficiency required to access such data. Besides this,   accessing such information would require the users to login into the website of the hotel, which in turn might result in the leakage of personal information of the users [14]. Such being the situation, the management of the organization has reported that the hotel is facing losses.

Researchers are thus of the opinion that the implementation of xRM based integrated GIS system would be helpful in optimizing the process of sharing information with the customers: thus it would increase the rate at which rooms are booked at the in Petra International Hotel Al aqaba [15].

3. DESIGN AND IMPLEMENTATION THE MODEL

3.1. Data flow diagram with separate layers:

The data flow diagram is created in order to showing the overall process flow with several layers of data and connection to databases [16]. The layers are identified as the presentation layer, logic layer, business layer; data access layer, data layer, and GEO web services.
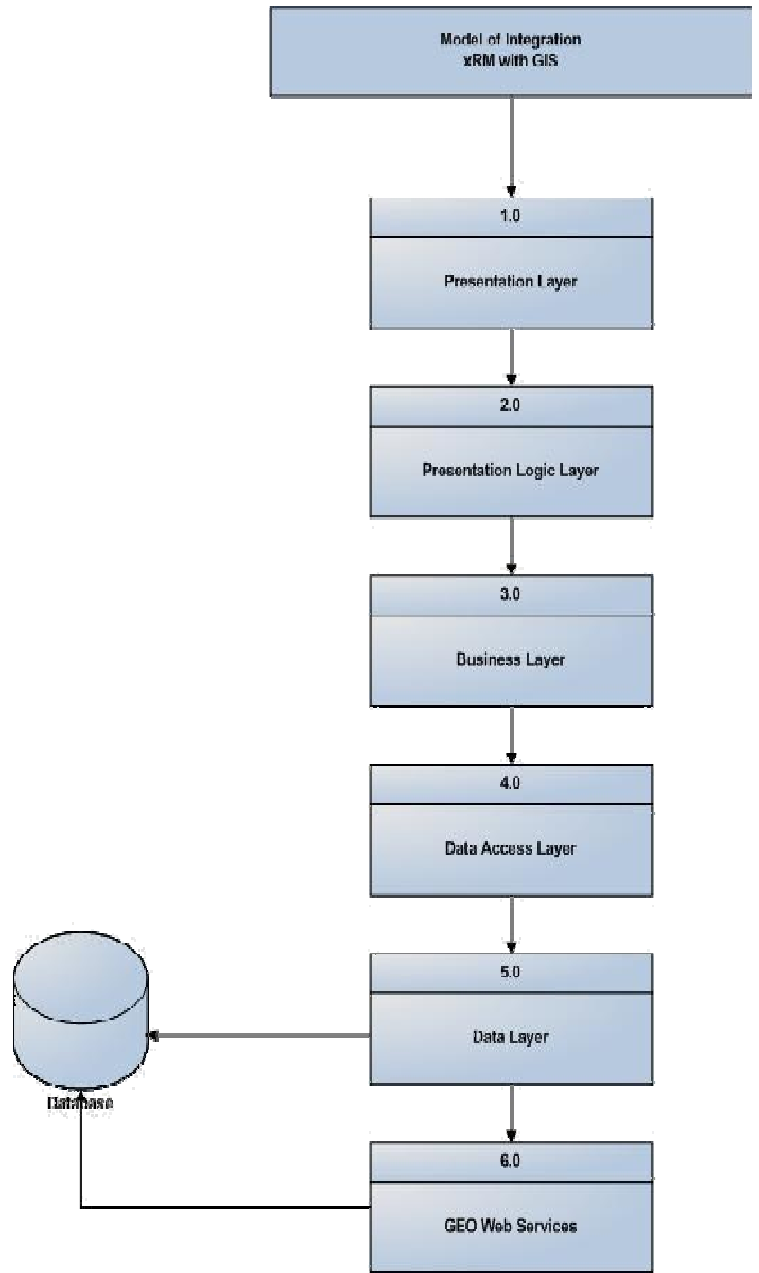

Figure 1: Data flow diagram

Presentation layer: The presentation layer is implemented with Visual Basic .NET interfaces and ASP.NET enabled with GIS web services. The presentation layer code runs on the client machine in the internet browsers in form of java applets. Figure 2 demonstrates how easy it will be for the salesman to fill the information in the presentation layer and how the presentation layer will automatically lead him/her to the needed location through the GIS web service.

Figure 2: Presentation Layer

Figure 3, Access through PC/Laptop

Presentation Logic layer: The layer is between the business layer and presentation layer, generally the web application developed in HTML or XML are the instances of presentation logic layer. This layer is responsible for data transferring between thee business and presentation layers [17]. In case of cell phones, PC, laptops, tablet computers; this layer keeps the presentation layer active for usage as shown in figures 3, 4, and 5.
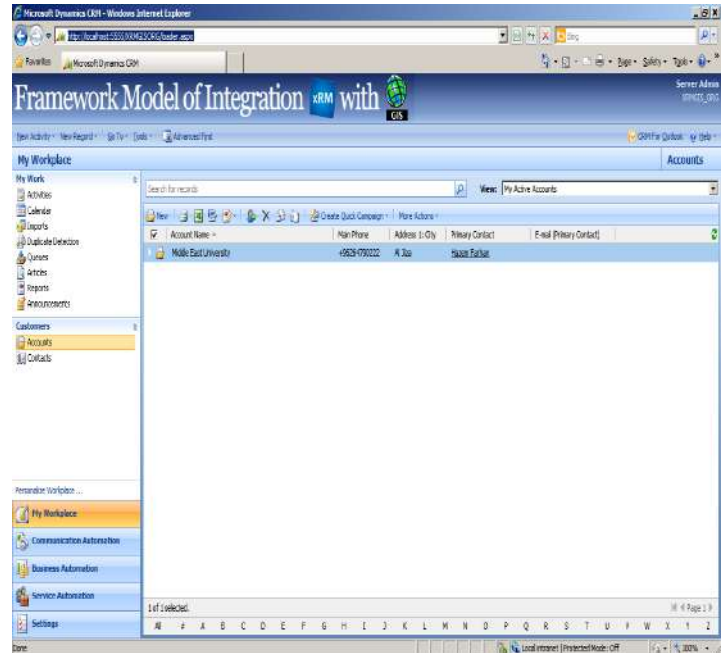

Figure 4, Access through PDA

Data access layer: The data access layer is for keeping the entire persistent data abstract from the user and databases [18]. The data access layer incorporates the communication between the proposed mode and the data layer. The layer is comprised with three items as query builder, query processor, and query plans.

Data layer: The layer is persistent with data and the storage is optimized with indexing and other manipulation. The popular data management process includes the three-layer architecture with each layer managing data from layers, sending responses to the data access requests and manipulation of the available models.

Geo Web Services: The purpose of the web service is to locate the GIS to the end-users exactly [19]. The APIs require exact location, and return the location to the xRM model for manipulating the maps from xRM model. The data layer is implemented with hosting all the servers within the GIS systems.

3.2 Architecture of integration model

Now the integration architecture is included for the better understanding of the several components. The components are identified as integration services and extensibility process in the proposed model

Figure 5, Access through Cell-Phone

Business layer: The layers deals with business objects, rues and controls the flow of the overall system. The primary task of this layer is to maintain all the operations between the xRM and GIS. The layer automatically differentiates the proposed model as well with stability and suitability. Figure 6 shows how does the business layer manage the requests and returns the value to the above layer.
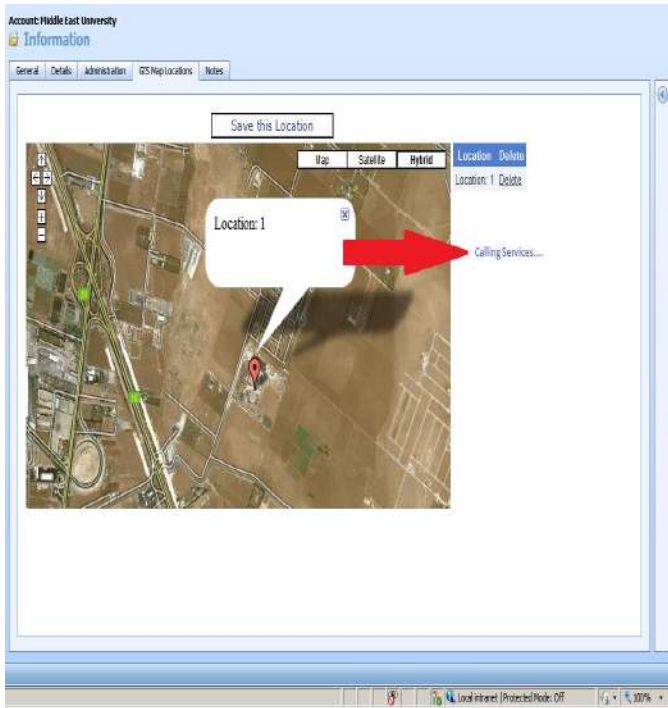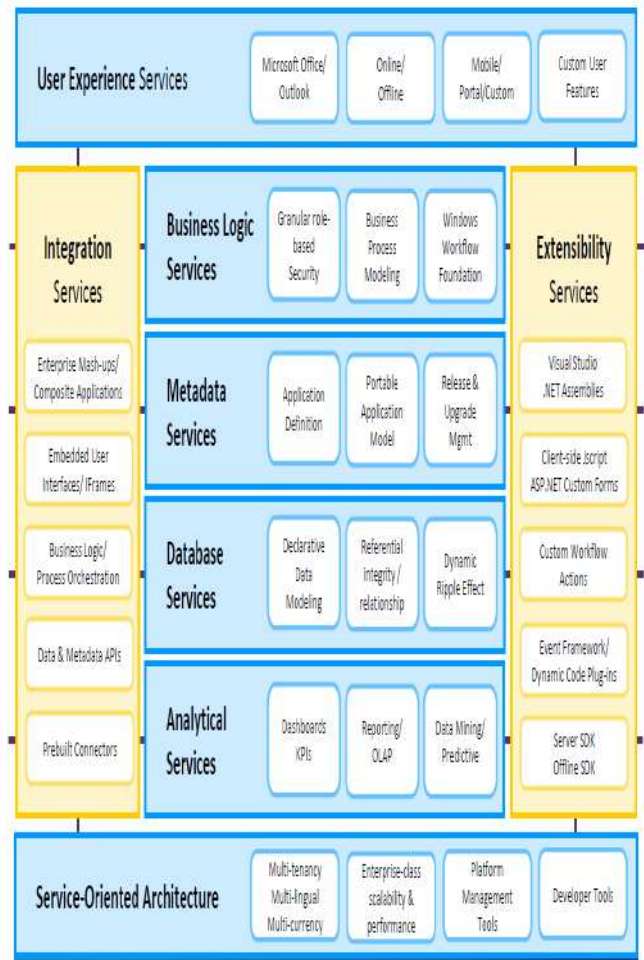

Figure 6: Business Layer

Figure 7 Architecture of integration model

Customer experience is the internal and subjective response customers have to any direct or indirect contact with a company. Direct contact generally occurs in the course of purchase, use, and service and is usually initiated by the customer. Indirect contact most often involves unplanned encounters with representations of a company's products, services, or brands and takes the form of word-of-mouth recommendations or criticisms, advertising, news reports, reviews, and so forth.

The integration of GIS with xRM mainly in the field support area may have enormous value for field technicians, service managers and customers to improve their working conditions and relations. Commercial xRM systems have little direct support for GIS, which must be coupled and have limited interaction. The technological tendency goes in favor of interoperation with standard geo-information geo-processing services that may be provided by third parts. GIS and telecommunication communities are glimpsing a big future for GIS and they have promoted strong standardization initiatives for specialized services, some of them will be directly provided by telecommunication operators. These services will ease and make cheaper the incorporation of GIS in xRM systems.

The benefits of SOA are identified as xRM applications require information from GIS and solutions are entirely based on each vendor. The functionality of the customers is based on the web with contacting over phone [20]. In this part, the major components are identified as SQL server databases, web services, systems services, query processors, and better plug-ins for flexibility. The server is important for creating domain-specific objects and xRM sections [21]. The section includes the capturing, storage, management, and analysis of the data in GIS systems. The platform identification is business-specific as well with logic and general constraints of domains .The server platform is specific with business logic and improvement with application building blocks and related objects of implementation logics.

4.CONCLUSION

The conclusion of the study incorporates the further modifications in the business layer of xRM application. Regardless of the business aspirants, the business should consider the Application Knowledge Framework ability with tools, infrastructures, and business value. The xRM is included with framework of LOB applications rapid delivery and common hardware, software, licenses, IT resources, and economic scale and skills for IT investments value elevation. The xRM can be more functional rather than being a customized business application. The technology should have the potential of enabling the solutions with improving the overall performance of the business, profound advantages, and cultivation of long-term tactics of client relationships. The solution builders are unable to perform the purpose as well with existing high stakes of risk, issues, and problems.

The xRM integrated GIS system will improve the user providing greater knowledge and trust to the clients for the organization with geographical data and useful relationship data for managing the frameworks. From the experience in large projects for international companies and government agencies, it has become an urgent need to use the systems that don't only store only normal data, but also geographic information, which make the user able to get the full picture about the client as much as possible.

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