Architecture of Customer Knowledge Management System Based on Online Reviews

Zhao Dan

Southwest University for Nationalities, Chengdu, P.R. China, 610041

(E-mail:zd324@126.com)

Abstract: Customer knowledge management is the effective way of advanced information technology on customer knowledge acquisition, sharing, application and innovation. The paper analyzes the deficiencies of existing knowledge management system. With SOA and the technical characteristics of ontology, the function goal of online reviews customer knowledge management system is made based on the theory, methodology and technology; implementation steps of a system are proposed based on the life cycle. Researching of online reviews of customer knowledge management system provided a theoretical base of support for smooth implementation of knowledge management.

Keywords: E-commerce; Online reviews; SOA; Customer knowledge management

1 Introduction

Customer knowledge management system not only provides businesses with customer knowledge platform's collection and analysis, but also provides a new business strategy and methods. It can help businesses take full advantage of client resources, expand into new markets and business channels, improve customer satisfaction and enhance their profitability, so that enterprises in the fierce competition based and sustainable development in the long-term.

Online reviews of customer knowledge management system provide a new platform for management services innovation. With the platform can provide user requirements, application of new ideas and new technologies to improve and change the existing service processes and service offerings, improve quality and efficiency of existing services and expand the scope of services, update services and add new services projects to create new value for customers, and ultimately formation competitive advantage. B2C e-commerce enterprises to better understand consumer online reviews and define customer demand, by continuously find the potential market, thus maintaining continuous innovation.

2 Knowledge Management System

Knowledge management system and customer knowledge management systems are built on the basis of information technology and network applications, and achieve through the application of network. The system is composed from the collection, processing, storage, dissemination and sharing the process. But there are some differences between both of them. More knowledge resources comes from Knowledge management system, more oriented to the whole enterprise; and customer knowledge management is much for specific customers, so there are great differences between both the application of information technology and development strategies.

Currently, industry and academia implemented some useful exploration to knowledge management system theory and methods. The typical knowledge management system architecture which was provided by business: IBM Lotus knowledge management system and Microsoft knowledge management system.

Although the research on knowledge management system has achieved some results, but the existing knowledge management system still has some disadvantages: It's difficult to make a clear definition of knowledge, because many kinds of Knowledge and sources, knowledge management system model framework are lack of uniform standards. Many of the features of knowledge management system is data warehousing, document management, and did not give full play to its value in knowledge management.

Current knowledge management systems are often ignored integration with existing information systems of enterprise. In general, the knowledge management system in close contact with traditional information systems, both support each other. But now the lack of the knowledge management system and information system of interaction and support, such as relevant business data, and relevant information related to coordination of services and knowledge processing.

. Focus on information technology, ignoring the external environment. In the process of building

knowledge management systems, too much emphasis on application of information technology and ignore the external environment linkages, in particular, support the organization's business systems, so that the knowledge management system cannot be built effectively realistic.

Lack of the knowledge management system will construct and correct understanding about implementation. Mistakenly believe that knowledge management systems and other software systems can easily build and implement; the lack of a systematic, integrated process and methods of guidance, will lead to failure of system construction.

3 Service Oriented Architecture

Service-oriented architecture (SOA) Gartner put forward the concept in the mid-90s in the 20th century. For semantic purposes, SOA is same as process-oriented and object-oriented, is a mode of system set up in development, a system and ideology. SOA use service as the basic unit to construct IT framework. From a technical perspective, SOA is a highly abstract, loosely coupled, coarse-grained IT architecture; from a business perspective, SOA is a core concept of service reuse and interoperability between services, it can be a variety of IT companies' effective integration of resources into standards-based services in order to achieve convenient application. Enterprises need to quickly build and application integration, there has been a contradiction between enterprises development and enterprise IT support capacity. SOA is the best solution to solve these major contradictions. A high degree of flexibility and a close business relationship are two important factors to the success of SOA.

SOA from the long-term development of the business needs, design enterprise IT architecture. SOA is a loosely coupled design when it compared with traditional tightly coupled software architecture. In SOA use a service to replace with other services no need considering the underlying implementation technology except the service interface. Each service and replacement of SOA is relatively simple, which could better adapt to business changes. SOA make full use of existing applications and databases about enterprises, through existing applications and data integration with the SOA, and all enterprise IT resources, and make them become part of the overall solution. This approach makes the enterprise IT architecture is faster and more effectively adapt to changing business needs.

In order to serve the enterprise better, SOA and enterprise establish a strong business relationship, which is the biggest difference with other types of IT architecture. SOA use serves as the basic unit to organize and integrate the IT resources of enterprises. Enterprises' actual business processes in any of the tasks can be realized in the SOA services. And SOA services are also closely linked in the enterprise business, which makes the company's business staff can participate in service creation, and according to their business needs to define new business service processes. Traditional information system development structure compares with SOA.

4 Architecture RCKMS

Service-oriented architecture used a service-oriented principle to achieve a closer relationship between business and support information systems. It is a structure that suitable corporate IT architecture construction. To resolve the problems of E-commerce businesses for the current environment and knowledge management system development, this paper combined with SOA to construction a reasonable online Reviews Customer Knowledge Management System (RCKMS) as a way of solution. Through RCKMS can construct system and achieve seamless and efficient integration for existing information systems and applications t, and provide a reference for enterprises' development and implementation.

RCKMS use the SOA model to integrate IT strategy support business, to achieve customer knowledge management, management, knowledge processing, and intelligent processing to integrate the decision-making, organizational of the strategic development plan for an integrated system. RCKMS architecture applied the approach to describe the organization processes, information systems, personal and organizational sub-unit, made the organization's core goals and strategic direction consistent. RCKMS architecture to provide support for the following tasks:
- Different levels of abstraction in the design and modeling;
- Separation of the specification and implementation;
- Build a flexible system;
- Ensure that it meets business needs;
- Analysis of the impact of changes to requirements;

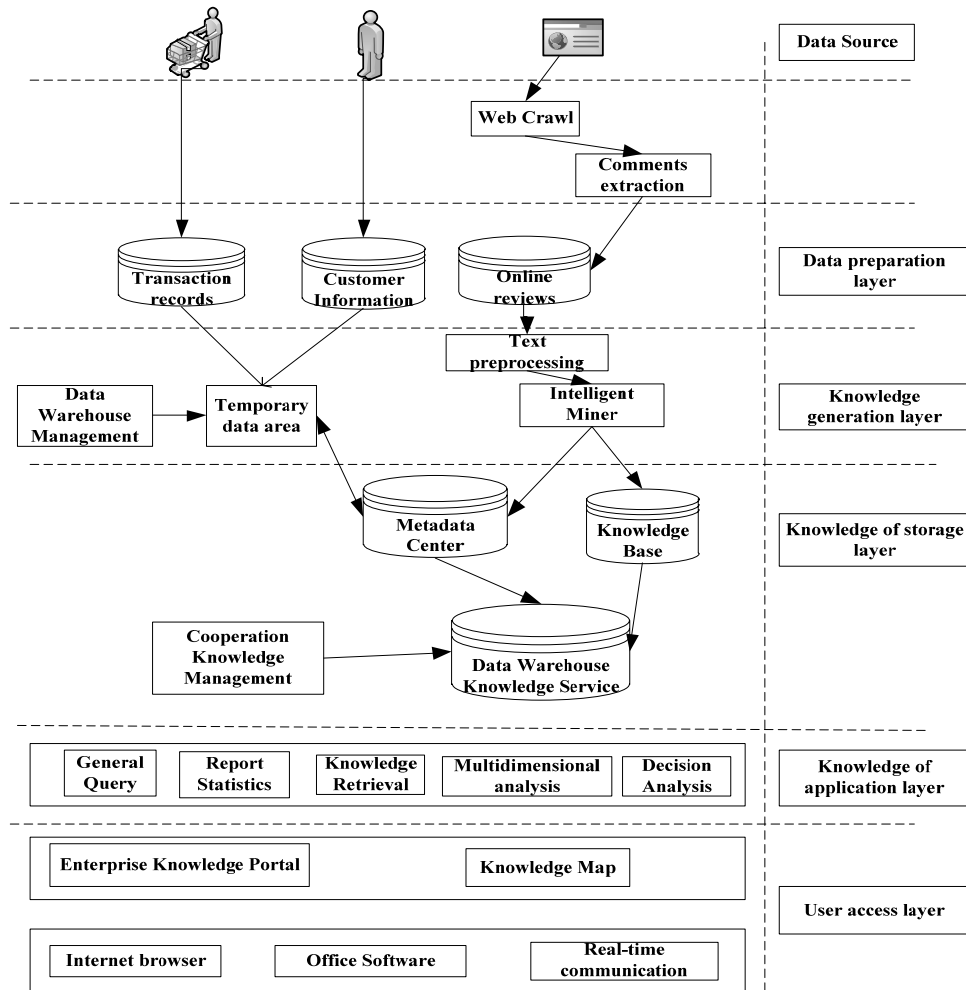● Ensure compliance with the relevant principles.

Figure 1   RCKMS Architecture

System architecture from the past client/ server model, and gradually evolving into multi-layer structure or three layers of the various distributed computing model. RCKMS design service-oriented architecture, using multi-paradigm, covering a number of form modules and databases. RCKMS architecture shows in Figure 1.

4.1 Data preparation layer

RCKMS get the required data from different sources. Through the web crawl and web information extraction to achieve online access and collection of comments. When information insufficient and needs changes, the system automatically enters the data collection unit to obtain information and comments for establish adequate information.

4.2 Knowledge generation layer

It contains comments smart data mining module and the temporary area in a knowledge-generating layer. And knowledge-generating layer is produced according to different application requirements objectives of the business management needs of comments data to mining, analysis and sorting. Meet the different business applications for customer knowledge strategy needs, and policy components of assets, including business processes, organizational assets, business models and IT.

4.3 Knowledge of application layer

Users need application layer to access the system's various types of resource data. Application layer including: general query, report statistics, customer knowledge retrieval, multidimensional analysis, decision analysis. Each application implemented through a series of operations and internal unit. For

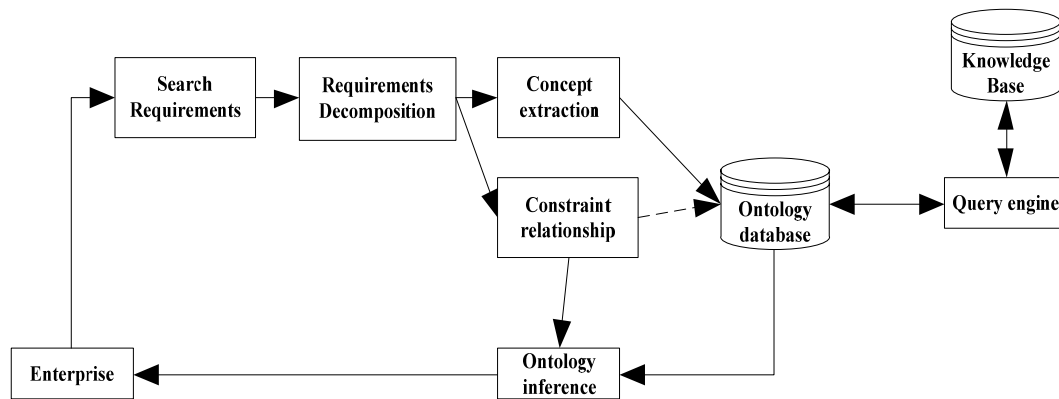example, the retrieval of the customer knowledge is shown in Figure 2.

Figure 2   Customer Knowledge Retrieval

4 4User access layer

It could provide enterprise knowledge portal, knowledge maps or other forms, and provide various departments of enterprises' access to support. Corporate use the tools are browsers, office software, real-time communication and other commonly used methods. It's facilitating to access and use different business sectors.

5 Conclusion

RCKMS needs integrate with enterprises of existing information systems to obtain sufficient resources to meet the application's data, and also better for different business units of enterprises to provide customer knowledge and meet business needs. RCKMS integration with other business systems: analysis takes into account the basic e-commerce enterprise information system structure and ownership of information; development and integration of the unified model; planning and reuse of corporate knowledge; and business synchronization applications.

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