Chapter 44
Applying Semantic Web Technologies to Meet the Relevant Challenge of Customer Relationship Management for the U.S. Academic Libraries in the 21st Century Using 121 e–Agent Framework

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ABSTRACT

This chapter proposed a conceptual model, the 121 e-Agent Framework, for customer relationship management (CRM) in academic libraries. The set of Semantic Web standards and technologies proposed here will enable the participating U.S. academic libraries to reach out to their user communities through systematic customer group identification, differentiation, interaction, and customization by building a linked data layer that is deeply interwoven into Semantic Web space. In this space, social networking and collaboration meets the Semantic Web infrastructure with trust management, in addition to existing and future Web collections and services provided by the participating academic libraries in the U.S.

The main contributions of the chapter are 1) defining relevance challenge of CRM for U.S. academic libraries in the 21st century and applying social Semantic Web technologies to address the relevance challenge of CRM using 121 e-Agent framework in the Web as an infrastructure; 2) binding OLTP, OLAP,

and Online Ontological Processing to social Semantic Web applications in CRM; 3) adding trust management to the linked data layer with a touch of tagging, categorizing, query log analysis, and social ranking as part of the underlying structure for distributed customer data filtering on the Web in CRM applications; 4) making the approach extensible to address relevance challenge of CRM in other fields.

INTRODUCTION

Customer relationship management (CRM) is defined as a strategy that "Uses proven methodologies and e-business technologies to help companies to identify, select, acquire, develop, and retain profitable customers, building the lasting relationships that are key to long-term financial success" (Gee Multimedia, 2010). When applied to the library profession, it is about developing a strategy that uses a combination of methodologies, computer programs, and Internet capabilities for patron relationship management.

This strategy involves identifying and retaining patrons, including supporters from a library learning community, best matching their research interests and needs with relevant collections and services, measuring user satisfaction, developing long-term friends of the library, and more. The adoption of best practice and deployment of appropriate technologies such as 121 e-Agent framework are key components in successful CRM implementation. In the last decade, academic libraries began to view their patrons as customers (Wilson, 2008). Therefore, the terms "patrons" and "customers" are used interchangeably in this chapter as they both refer to the library clientele.

RELEVANCE CHALLENGES OF U.S. ACADEMIC LIBRARIES DEFINED

Academic libraries are very concerned with CRM, especially in meeting patrons' information needs. In a recent report from OCLC Research, Michalko, Malpas, and Arcobio surveyed 15 directors from the member libraries of the Association of Research Libraries (the ARL) in the United States,

and identified 26 risks in 5 categories. "Reducing sense of library relevance from below, above, and within" is the primary risk chosen by the directors (Michalko, Malpas, & Arcolio, 2010).

This is largely due to the fact that libraries are no longer the sole provider of free information resources on college campuses in the U.S. Other factors contributing to library relevant challenges are:

- Users assuming that the availability of online alternatives and other resources such as those provided by Google or Amazon, would satisfy their research needs;
- Inefficient communication of a library's value proposition in value-added research process, and its impact on the growth of a nation's economy which is increasingly dependent on knowledge and knowledge-based skills in information age of the 21st century;
- Unable to adjust fast enough to keep up with the changing technologies and users' needs;
- Unable to develop a collection development strategy to address the changing nature of recorded human knowledge and its management;
- Relying on an old infrastructure and success metrics to answer the emerging needs of diverse users;
- Strategic planning by the library is not aligned with the institution's goals and objectives;
- Due diligence and sustainability assessment of local or third party services and initiatives is not completed, tracked or analyzed;

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