

Chapter VIII

Architecting Knowledge Management Systems

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ABSTRACT

Organizations need well-architected systems for knowledge management (KM). This chapter begins with a review of approaches adopted by organizations for developing KM solutions. It defines a set of components that can form the building blocks for developing a knowledge management system. The relevance of the principles of Service-Oriented Architecture (SOA) to KM solutions is explained. It presents the architecture of a generic knowledge management system based on the components defined and the principles of SOA. It then discusses the patterns for implementing the architecture, followed by maturity levels of knowledge management systems.

INTRODUCTION

Knowledge management (KM) is a practice for managing the intellectual assets of an organization. A successful knowledge management program increases employee productivity by providing systems that not only allow for information access and sharing of explicit knowledge, but also

enable expression of tacit knowledge in the minds of the people through collaboration. Organizations that successfully implement knowledge management programs have well-architected systems supported by good training and cultural change management practices to ensure that the systems are leveraged fully for improved productivity and competitive edge (Calwell, 2004).

KNOWLEDGE MANAGEMENT SOLUTIONS

Most organizations keen on implementing effective knowledge management solutions begin with a systematic process of defining KM requirements. A knowledge management team is formed with clearly defined objectives. The different approaches adopted by organizations in architecting and implementing KM solutions are as follows.

Evolutionary Approach

Many organizations architect solutions in an evolutionary manner. A KM initiative is launched as part of an existing enterprise portal, and other systems in the enterprise are extended to meet KM goals.

Product-Based Approach

The key aspect of this approach is to base the solution on products available from vendors or from open source. The different products that are needed to meet the KM objectives are identified, and the solution is architected based on customization of products.

Hybrid Approach

In this approach, while existing systems are extended wherever appropriate, suitable products are also identified and customized to meet the KM objectives of the organization.

COMPONENTS OF KNOWLEDGE MANAGEMENT SYSTEMS

While the knowledge management solutions discussed above address certain requirements, they provide very few insights into components that

could form the basis of a KM system independent of technology.

As knowledge management is a practice and not a technology concept (Rasmus, 2003), it becomes necessary to consider architectures for KM systems that are independent of technologies and are based on generic components that can be implemented using a variety of technologies and products.

A detailed study of requirements identified by practitioners and researchers, and a review of KM systems implemented in organizations revealed that generic components could be identified that could form the basis of the architecture of a KM system. The generic components identified are as follows:

- **Aggregator**
- **Segregator**
- **Publisher**
- **Explorer**
- **Collaborator**
- **orchestrator**
- **Storage & network**

These components will be collectively referred to as ASPECTS of KM systems.

Figure 1 shows the components of the KM system. Each of the components shown in the figure has been defined to meet a specific requirement of the system.

The aggregator component accesses data in a number of sources of the organization and creates index information in the storage & network component.

The segregator component maintains taxonomy of knowledge topics and classifies the indexed information created by the aggregator component based on the categories defined for the enterprise.

The publisher component exposes the explicit knowledge created by the aggregator and segregator components through different mechanisms such as enterprise portals, newsletters, and train-

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