Knowledge Management System

Productivity Support for the Contemporary Office

The Problem

Today's business environment is characterized by the need for many individuals to collaborate using a wide range of information types. Projects need to be managed, often several at a time; documents have to be produced, distributed and then archived; relationships have to be initiated and then maintained with vendors, consultants and team members. All these activities require a range of supporting capabilities if they are to be efficiently accomplished. The difficulty lies in the fact that these activities and information types cross several information-processing boundaries.

Traditional database applications are good at storing and retrieving names, dates, phone numbers, and other information that can be categorized and organized in specific ways. This information is usually textual in nature and focuses on single "chunks" of information. On the other hand what are called "document management" applications are designed to store and retrieve whole documents (reports, presentations, manuals, letters and the like). They often provide support for the document creation *process* as well. In the most elaborate form they support workflows, version control and access to documents by organized groups of people.

But the reality of the modern office is that projects consist of both kinds of information, often connected in fluid and changing ways. Projects are staffed by a range of resources, both internal and external, with a diversity of skills and experience. Work product and deliverables span a wide range of document types, including reports, white papers, presentations and program evaluations. The staff members who worked on a project a year ago are often not available when a similar project comes along and the knowledge gained in the first engagement is not available for use in the second. Most companies end up using an organized hierarchical file system as a solution to these needs. Hardly much of an advance over paper filing cabinets and certainly far short of what ought to be possible with contemporary computer tools!

The Solution

In response to a range of client requirements like those noted above, KTI has developed a general-purpose Knowledge Management System (KMS) which combines the strengths of both the database and document management approaches. This computer-based knowledge management tool supports:

- Capture of organizational knowledge and information in a consistent and predictable manner.
- Access to that information and knowledge in a variety of ways.
- Facilitation of group work through improved information flow.
- Record and track work accomplished for future reference.
- Archive of research and background documents for easy access.
- Linking related information in a consistent and predictable manner.
- Automation of routine tasks, freeing staff for more productive activities.

KMS consists of two parts:

1. A relational database of keyword-oriented information.
2. A collection of documents, images, reports and other non-database information, tracked by the database, but maintained and edited in their "native" format.

KMS is searchable by both specific keywords (for example "productivity") and by "free text" ("Northwestern Canada"). Built from the ground up as an intranet application, KMS has a template-based HTML interface that allows for easy maintenance of both the database and the associated documents, as well as facilitating changes and upgrades to the interface appearance and functionality.

One of the major goals of the KMS project was to produce a system that can be used with a minimum of change to current working methods, to make a tool that could be fit into various office scenarios, rather than forcing staff to adopt radically new procedures in order to realize the benefits. Users can create and edit documents for inclusion in KMS with standard Microsoft Office 95/97 tools. Other document creation tools can also be used as appropriate.

Benefits

KTI's design has three core aspects, all intended to give the users the most functionality and flexibility, at the most reasonable cost, with the greatest degree of obsolescence protection possible. This is achieved by a combination of:

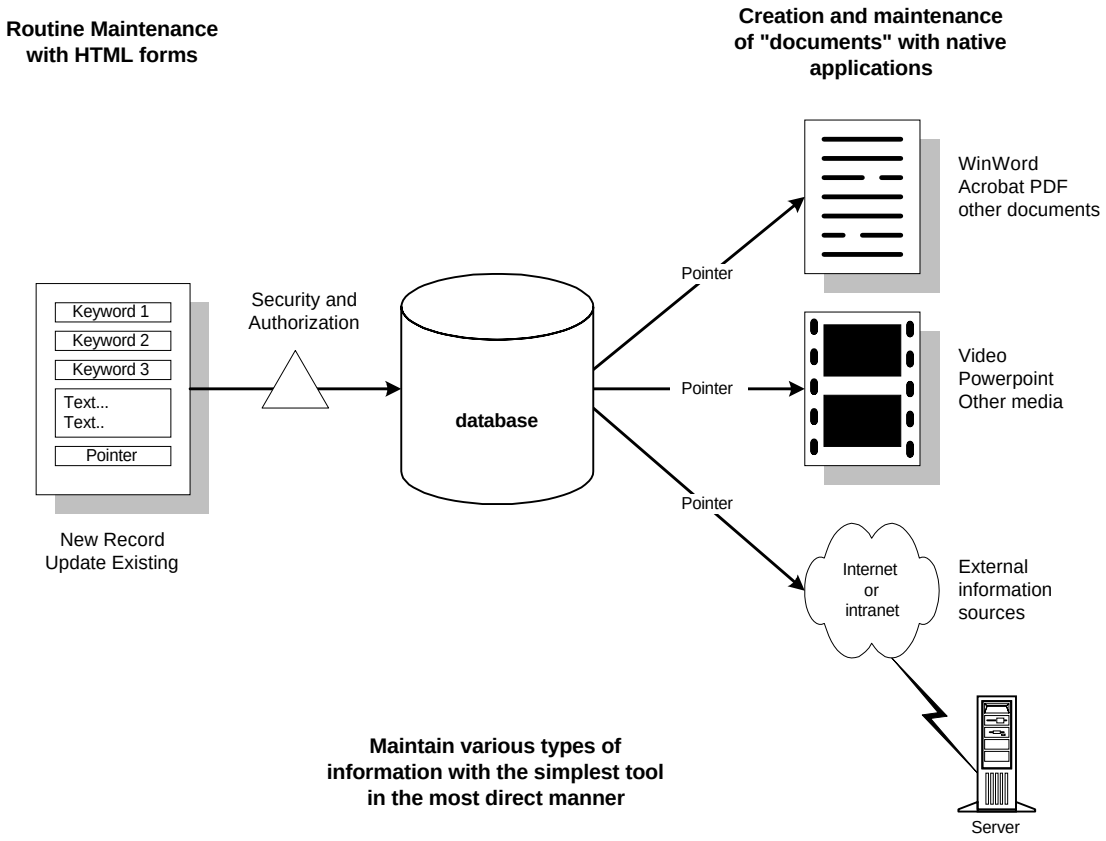
- Maximum use of well-tested Internet-based technologies, particularly “templated virtual pages” as the main user interface mechanism.
- The isolation of non-database-oriented material through “pointers” and the use of plug-in display engines.
- Careful segregation of maintenance functions, as appropriate to the user community’s needs and skills.

Daily use of KMS involves the use of HTML forms to submit specific queries to the database and/or browse that data interactively. In either case, the data, including simple text commentary, displays directly in the browser window. Additional material, no matter what kind of content (data type), be it Word documents, video, audio, PowerPoint slides, Excel spreadsheets, are all represented in the browser as a standard hypertext link. Clicking on that link calls the document into the browser window, with the application-specific plug-in handling the details of properly displaying that data.

A custom "helper application" was written for use with KMS which provides for tracking, editing and version control of the Office 95/97 documents. This helper application allows documents to be edited within the native application (i.e., Microsoft Excel), with file-locking to prevent multiple users from editing the same document at the same time. Documents can also be viewed in read-only mode for those cases where the integrity of the source document is important.

The now-common use of plug-in helper applications provides a common and transparent interface to a wide and continually-expanding range of data types. This gives KMS an almost infinite ability to incorporate new media types. KTI's experience indicates that this is a very important, potentially crucial, capability. This flexibility and extensibility protects the investment in KMS, as well as guaranteeing its continued usefulness into the future.

KMS is designed to be simple to use on a day-to-day basis. A high-level overview of the system is shown below.



KMS is not a "shrink-wrap" application. Rather it is a set of modules, tools and templates which is customized for a specific user environment. The major customization comes from an initial Business Requirements Analysis which is turned into a user interface which presents the system capabilities in a fashion that makes sense to a given business unit's existing procedures. In at least one case, the KMS-driven analysis resulted in significant changes to a customer's workflows, resulting in a streamlining which was embedded in and supported by the tool itself. While not a component of KMS, this analysis process can be of significant additional value to the implementing organization.

KMS has been implemented using Microsoft NT/IIS tools and requires no client-side Java/JavaScript applications. Any contemporary SQL database system can be used with KMS, allowing implementation in a range of corporate environments. Various free-text search engines can be used with KMS, including the Microsoft Index Server, Verity and Fulcrum products.