



Project Summary

Texas Department of Transportation

0-4505: Develop a Knowledge Management System for TxDOT Pavement-Related Corporate Knowledge

Background

The Texas Department of Transportation (TxDOT) experienced serious losses of expertise on October 1, 1993, and September 1, 2003, when legislated retirement incentives were offered. A total of almost 2,000 of the agency's most experienced employees left employment on those two dates alone. While those two dates were particularly devastating to TxDOT corporate knowledge, the agency loses hundreds of career employees each and every year. The need for a method of capturing and organizing corporate knowledge, particularly that knowledge gained by employees through years of experience, was recognized by TxDOT.

Forensic pavement analysis is a core function of every department of transportation. Excellence in this technical area allows selection of proper and cost-effective pavement rehabilitation options, with potential annual benefits to the department easily measuring in the millions of dollars. This was the technical focus area selected by TxDOT for development of the agency's initial formal knowledge management system (KMS).

Just prior to the initiation of this research project, TxDOT selected a proprietary software package for its learning content management system. The selected software product is designed to store and manage both an agency's training program and its corporate knowledge, thereby providing support to both training efforts and general agency operations. TxDOT has implemented the procured software and calls the system i-Way, housed on TxDOT's Intranet site. The research team was asked to utilize functionalities of i-Way to build a formal KMS for TxDOT, supplying it with state-of-the-art knowledge and information regarding pavement forensics.

What the Researchers Did

During the initial phase of this project the research team developed the KMS approach to be used within the department's software and then collected rigid pavement forensics information to be made available within the new system. Collected categories of information included books, newsletters, videos, demonstrations, technical papers, software, web sites, databases, manuals, and legacy knowledge interview segments. The second and last phase of this project identified, collected, and processed flexible pavement forensics information in these same categories. Over the course of this project a total of more than 500 information items were prepared, with metadata, for loading into TxDOT's KMS database. Glossaries were developed for both rigid pavement and flexible pavement forensic-related terms. These glossaries were used to properly and consistently associate key words with the information documents being stored.

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The best information sources and databases identified by the research team were placed into Top Reference Collection and Analysis Tools and Databases categories when they were loaded to allow ready access by KMS users. To allow even more precise information retrieval by experienced users, an acronym system was developed and also placed in the metadata. Finally, to best serve the range of needs in this broad community of practice, separate team rooms were created for pavement technology experts and users with broader technical backgrounds. Use of the team room discussion boards was planned to encourage knowledge flow and sharing on a daily basis.

Perhaps the most valuable aspect of this project was the development and use of an interview knowledge capture process. A total of 44 interviews were taken with individuals particularly experienced in rigid pavement and flexible pavement forensic activities. Many of these interviews were conducted with retired TxDOT employees. More than 200 legacy knowledge documents were developed from these interviews and were placed into TxDOT's new KMS. TxDOT users can now access the KMS from their Crossroads (Intranet) home page. Users simply click on the *i-Way* link and then the *i-Way network login*. Once logged in, users click on the *i-Way Search* sign (on the map), then type "KMS start" in the *Key Words* field.

What They Found

Individuals who were interviewed expressed that they found the interview process enjoyable. Retired employees were often outspoken in that regard. Virtually all former employees welcomed the opportunity to share what they had learned over the years, leaving it as a written legacy.

The use of a structured set of questions for the interview was essential to efficiently capture knowledge from those interviewed. The clarity and focus of these questions, provided in advance to those to be interviewed, were the most important factors in obtaining the desired, valuable information. As the structured interview process was successful in capturing large quantities of knowledge in interviews usually lasting an hour or less, it provided an efficient and economical means of capturing corporate knowledge which was not otherwise available in written form.

What This Means

Tremendous immediate and long-term dividends appear obtainable by expanding department use of this project's findings and products. There are several ways that the department can capitalize on the developed knowledge capture and management methods, thereby gaining these benefits. The KMS plan developed for TxDOT is designed to readily expand and include additional technical and managerial areas of corporate knowledge. Therefore, additional areas of knowledge may be developed and incorporated at any time. The interview knowledge capture method developed during this project offers a particularly valuable opportunity for TxDOT, as it could be used to stem corporate knowledge losses in key knowledge areas when senior, experienced personnel leave department employment. This method could be implemented independently from other KMS expansion efforts.

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