Project Number: 0-4505

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

RMC Number: 1

Developed By: Mike Murphy, Ph.D., P.E., (CST), Ahmed Eltahan (CST), and Ed Oshinski (AVN)

Project Statement Date: January 9, 2004

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| Project Monitoring Committee (PMC) (Project Advisors Optional) | |
| Duration (# of years): | 2 | Total Budget: | $ |
| Budget by year: | | First Year FY | $ |
| | | Second Year FY | $ |
| | | Additional FYs | $ |

Project Description: Recent studies have shown that approximately 42% of a typical organization’s ‘knowledge base’ resides in the minds of its employees. With increased turn-over, industry is exploring Knowledge Management Systems (KMS) methods to capture and retain knowledge before it ‘walks out the door’.

The primary benefits of a Knowledge Management System (KMS) are:

1. Provides an enhanced method for organizing existing corporate knowledge;
2. Enhances individual’s and organization’s ability to share knowledge;
3. Codifies thought processes; insights and methods;

The KM methodology can be thought of as an organized process to:

1. Identify corporate knowledge areas that need to be retained for future use;
2. Find employee’s who can contribute expertise via structured interviews;
3. Employ eliciting/implicit interviewing techniques to harvest knowledge and insights;
4. Organize the knowledge and information to support understanding;
5. Package the knowledge asset;
6. Share the knowledge asset with target users;
7. Evaluate and adapt the knowledge asset on an on-going basis.

Research to be Performed

The purpose of this research is to develop a Knowledge Management System that captures all the available information on pavement forensic studies available at TxDOT. The researcher will meet with TxDOT pavement engineers and forensic specialists to determine methodologies for capturing and sharing knowledge obtained during pavement projects and forensic investigations. The researcher will evaluate the state of the practice in Knowledge Management Systems and identify how KMS can be adapted to meet TxDOT’s needs.

The research will identify the sources of knowledge currently residing in TxDOT. Such sources should include but not be limited to: resident experts, TxDOT affiliate research institutions, research and project reports, and legacy databases.
The researcher will then define how to best capture this knowledge and integrate it in a user friendly accessible automated manner. Such automated methods should capture existing knowledge (knowledge bases) and allow the update of such a system periodically (interactive input interface, e.g., bulletin boards). The researcher will also identify the method of distribution of such a system, e.g., client server, web based, or CD application, etc.

It is envisioned that proper accomplishment of such tasks will require the mobilization of diverse specialties of expertise in addition to civil engineering. Such specialties could include, but may not be limited to: library science, information technology (IT), and marketing. The aforementioned specialties are listed only as examples, and the researcher should form a team that includes all the specialties that would ensure the success of the project’s tasks.

In the first phase of this project (year 1), the researchers will develop a prototype of a system that will demonstrate the capabilities and functionality of a KMS. This phase will be used as a feasibility study of the system. If the system is not feasible, the project will be terminated at the end of the first phase. It will be focused on one area of knowledge, concrete pavement forensic investigations, and should include demonstration models of all appropriate KMS capabilities. More narrowing of the scope of the prototype may be needed during the progress of the project.

Using the experience acquire in the first phase of the project, the researchers will develop the final KMS for all pavement forensic data in the second phase of this project (year 2).

The project will be funded in two separate phases. The second phase will be approved only if the first phase is successful. One research team will be selected to perform both phases.

**Deliverable Products And Reports:**

1. Perform a literature review and software product review of state of the practice in Knowledge Management System techniques.
2. Develop a recommendation for a KM approach that can address TxDOT’s needs regarding retaining, sharing, and updating knowledge gained from forensic investigations.
3. Deliver a prototype KM system focused on concrete pavement forensic investigation projects (Phase 1). The scope of the prototype may be narrowed further during the course of the project if needed.
4. Deliver the complete KMS for all pavements forensic data (Phase 2).
5. Develop report or reports that fully documents the research conducted in items 1 – 4 findings and recommendations.
6. Project Summary Report (PSR) of a maximum of 4 pages to summarize work, findings, recommendations, and conclusions.

**Implementation:**

The summary report should provide information to support a decision whether to move forward with implementation of the KM approach as identified in the summary report.

**Pre-Proposal Meeting:**

Yes  ☐ No

Thursday, February 26, 2004, 10:00 a.m. to 12:00 p.m. at 4000 Jackson Avenue, Bldg. 1, Austin, TX in the San Jacinto Conference Room, 3rd floor. Teleconferencing is available.

**Additional Information:**

- Proposals are required to be submitted in both hard copy (4 copies) and PDF format (1 PDF file per proposal). Both formats are used within TxDOT for evaluating the proposals and must contain identical information.
- The “Background and Significance” portion of the proposal should be limited to 10 pages.
- All proposals from researchers should be sent directly to your university’s Research Liaison for submission to RTI. The Research Liaison is TxDOT’s official contact with the university.

**Deadlines (for RTI use only):**

1. All individuals interested in proposing are encouraged to contact the PC/PD by February 17, 2004.
2. Proposals are due to RTI by 4:00 p.m. CST on Wednesday, March 24, 2004.