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Fact Sheet

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DESIGN REVIEW AND CHECKING SYSTEM (DrChecks))

The Problem

The U.S. Army Corps of Engineers manages design and construction activities for Army and Air Force and many other federal and other agencies. Given the high turnover of experienced personnel throughout the Architect/ Engineer/ Contractor (A/E/C) community, the capture, evaluation, and use of organizational knowledge such as lessons learned, success stories, and good work practices are essential if the quality of Corps products is to continue to be high.

Past experience has shown that proprietary, stand-alone systems to capture and use lessons learned are too expensive to maintain over time. An integrated approach that uses commercially available software is needed. The intersection of the process whereby organizational knowledge can be captured and evaluated, and the process of design and Biddability, Constructabilty, and Operability (BCO) reviews provides one of the best points at which to develop an integrated method.

In developing this capability, issues that need to be addressed include: the requirement to match the type of review conducted with the nature of the project under design; the need for flexibility in defining how organizational knowledge is to be captured, reviewed, and reused; an investigation of communication techniques that would be as useful across town as they would be around the globe; the need for system security; the high cost of operating and maintaining current automated systems; the need to reduce the burden imposed on users who are forced to constantly upgrade and re-learn software systems; and the requirement to provide appropriate reference materials to personnel as needed.

The Technology

The U.S. Army Construction Engineering Research Laboratory (CERL) has developed a prototype computer system that supports the capture and use of organizational experience in the context of the design review process. The World Wide Web provides the communications backbone of the Design Review and Checking System (DrChecks). Users access DrChecks using commercially developed, free web browser software. Project participants without a permanent web connection can use commercial services for under $20 per month.

The hardware and software to operate a local DrChecks server are also very inexpensive commercial products. These products are: either Microsoft's or Netscape's commercial grade web server system; the Cold Fusion web-database query software; and Microsoft Access database. The total cost of the DrChecks system for most offices will be under $600. The use of such simple and inexpensive commercial software also means that personnel with limited software engineering knowledge can make local modifications to the system as needed.

Benefits/Savings

Given the increasing turnover within the Corps and other members of the A/E/C community the need to capture and use lessons learned, success stories, and other important organizational experience is critical to providing a quality product. Current unrealized costs from a simple design review may reach 5% of the

overall construction budget. The application of on-line organizational experience should double those customer savings. Customer satisfaction should also increase as the criteria used by various customers are documented in success stories and lessons learned.

An even more important aspect of DrChecks is that the system can bring project stakeholders together to produce the best possible design given the variety of constraints that make each project unique. Finally, the overall cost of the design review features of DrChecks could be significantly less than the cost of currently used methods and technology.

Status

DrChecks is the latest in a series of CERL products to enhance design quality. The detailed requirements for DrChecks were developed by the Design Review Tools Steering Committee in FY 96 and FY 97. The committee includes persons from across the Corps who conduct or manage design reviews, as well as those who develop design review products and set regional or national Corps policy regarding design reviews.

Users from within and outside the Corps in FY97 tested DrChecks. Based on those tests the system revisions were implemented. DrChecks was approved by HQUSACE as a standard Corps of Engineers Automated Information System in May 98. Training and presentation materials from the Nov 98 workshop are provided on-line.

Currently, CERL is operating DrChecks project sites for the Huntington, Seattle, Louisville, and Alaska Districts. The DrChecks will be installed at the Far East District Office in Sep 99. CERL support for DrChecks sites includes web server management, daily and weekly server backups, a toll-free support telephone number, and a technical support bulletin board for a per project fee. Delivery of DrChecks to individual offices can be arranged depending on the specific requirements for a given office.

Point of Contact

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