MASTER OF SCIENCE
IN
COMPUTER SCIENCE

A CASE STUDY OF THE CONTRACT CLOSEOUT PROCESS AT DEFENSE CONTRACT MANAGEMENT COMMAND (DCMC) LOCKHEED MARTIN (LM) MISSILES AND SPACE

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The primary purpose of this thesis is to provide a case analysis of the contract closeout process at DCMC Lockheed Martin (LM). The contract closeout policies and procedures at DCMC Headquarters are analyzed to develop a basis of comparison for DCMC LM. Secondary objectives include analysis of factors affecting untimely contract closeout, both DCMC-wide and at DCMC LM, and comparison of metrics results to analyze DCMC LM's progress in contract closeout. The current DCMC LM initiatives leading to increased contract closeout efficiency are discussed, and alternative closeout metrics are investigated. Finally, recommendations are made on the applicability of the DCMC LM initiatives to other organizations throughout DCMC.

DoD TECHNOLOGY AREA: Manpower, Personnel, and Training

KEYWORDS: Contract Closeout, DCMC, Canceling Funds, Metrics, Overhead Negotiations

ANALYSIS OF JAVA DISTRIBUTED ARCHITECTURES IN DESIGNING AND IMPLEMENTING A CLIENT/SERVER DATABASE SYSTEM

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Having timely and accurate information is essential for effective management practices and optimization of limited resources. Information is scattered throughout organizations and must be easily accessible. A new solution is needed for effective and efficient management of data in today's distributed client/server environment.

Java is destined to become a language for distributed computing. Java Development Kit (JDK) comes with a broad range of classes for network and database programming. Java Database Connectivity (JDBC) is one such class for providing client/server database access. There are many different approaches in using JDBC, ranging from low level socket programming, to a more abstract middleware approach. This thesis will analyze three different approaches: Sockets, Remote Method Invocation (RMI) and Commercial Middleware servers.

Among the three approaches this thesis examined, database access through RMI is the most viable approach because it uses an effective distributed object model. RMI abstracts the communication interface to the level of a procedure call. Instead of working directly with sockets, programmers can invoke a remote procedure as if it resided locally.

DoD KEY TECHNOLOGY AREA: Computing and Software

KEYWORDS: Database, JDBC, Java, RMI, Socket

FNMOC MODEL VERIFICATION SYSTEM

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Fleet Numerical Meteorology and Oceanography Center (FNMOC) forecasts the atmospheric environment and weather using several meteorological and oceanographic models. These models' forecasting abilities are verified by comparing the model forecast against the observational data and model's analysis. Currently, some models are verified by several inconsistent, maintenance-intense, non-standardized, and hard-to-use model verification systems designed for a particular model. Some models are not verified because there is no model verification system.

This thesis demonstrates the concept of a single model verification system for all FNMOC models to eliminate the inconsistencies and redundancies. The single model verification system standardizes the model verifications and provides the ability to verify those models which are currently unverified. The prototype used a GUI and web browsers to display the model verification statistics. The prototype demonstrates that convenient access to the model verification statistics could aid FNMOC users in evaluating the forecast models' performance.

This thesis identifies and documents the user specified verification requirements for several models and implements the most immediate requirements. A complete quantitative model verification system for all FNMOC models will be implemented incrementally, as all the requirements are identified.

DoD KEY TECHNOLOGY AREA: Computing and Software

KEYWORDS: Software Engineering, Prototype, Model Verification