

MASTER OF SCIENCE IN INFORMATION TECHNOLOGY MANAGEMENT

DEVELOPMENT OF AN INFORMATION SECURITY AWARENESS TRAINING PROGRAM FOR THE ROYAL SAUDI NAVAL FORCES (RSNF)

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The Royal Saudi Naval Forces (RSNF) are vulnerable to the same kinds of threats to its information infrastructure as the rest of the industrialized nations. As an officer in the RSNF, the author is familiar with the special information assurance needs and interests of this organization, and thus, is in a position to leverage a formal Information Technology Management (ITM) education to address these needs. The United States has played a prominent lead role in establishing many educational curricula in the area of information assurance (IA). Though the breadth and depth of educational curricula and resource materials (i.e., universities, certification programs, computer-based training, Web content, etc.) is impressive, the sheer volume can be overwhelming and intimidating to the novice. What is needed is a methodical survey of the main IA themes that are currently emphasized by the most prominent and respected institutions offering IA training and education. This survey needs to be cross-referenced to identify core areas, and any other didactic information (e.g., models, rules, best practices, etc.), that might prove useful in developing the final training product for the RSNF.

KEYWORDS: Awareness, Training, Information Technology, Information Assurance, Policy

EVALUATION OF POTENTIAL DECISION SUPPORT SYSTEM TOOL FOR BDF_HQ MANPOWER AND OPERATIONAL EQUIPMENT RESOURCE PLANNING

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This thesis explores the Bahrain Defense Force's (BDF) need for a decision support system in the area of analyzing, establishing, and maintaining the organizational structures of BDF units. It also identifies the BDF measures that must be taken to qualify a certain unit structure.

Subsequently, the thesis designs and develops a specific Decision Support System (DSS) prototype that can aid BDF decision makers' and planners' perspectives in this area. Creating this prototype has involved three different layers to be investigated: the data, the models, and the user interfaces. The data layer consists of a Microsoft Access™ database application that houses BDF Units, Manpower, Vehicles, Weapons, Salaries, and Jobs information. The model layer consists of two Microsoft Excel™ spreadsheets that contain Infantry Battalion and enhanced Armor Battalion HR optimization models. The UI layer consists of user controls, input/output forms, queries, reports, and visualization aids (i.e. charts and pivot tables). These interfaces were developed using MS Access capabilities. Consequently, the BDF_DSS is an integration of database and optimization technology using widely available desktop tools.

The general benefits of this DSS are reduced costs for data gathering, computation, and data presentation, and added value resulting from investigating more alternatives, doing more sophisticated analyses of alternatives, using better methods of comparing alternatives, and making quicker and better decisions.

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KEYWORDS: Decision Support System, Organizational Structures, Performance Metrics, Database Management System, Optimization Models, User Interface

FIELD LEVEL INFORMATION COLLABORATION DURING COMPLEX HUMANITARIAN EMERGENCIES AND PEACE OPERATIONS

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Multinational humanitarian and military efforts such as those seen in Somalia, Kosovo, and Afghanistan are known as Complex Humanitarian Emergencies. These types of emergencies are complex and difficult to operate in because they contain political, military, and humanitarian considerations. The various actors responding to a CHE can be divided into two distinct groups – military and civilian. Each of these groups needs the other to effectively respond to the crisis. Thus, communication, collaboration, and coordination are critical. Technology can play a significant role in enabling information sharing between the various participants during CHEs. This thesis documents the continued development of a collaborative, Information Technology-based, operation support system designed to facilitate information sharing at the field/tactical level during CHE and Peace Operations. The operational support system was designed in the context of a Tactical Humanitarian Relief Habitat and will undergo a technical evaluation in a simulated CHE/Peace Operations environment. The end state of this research will result in recommendations for continued development of the habitat designed, to be utilized in the Civil Military Operations Center of a CHE or Peace Operation.

KEYWORDS: Peer-to-Peer Network, Client-Server Network, Wireless Network, Collaborative Environment, Collaborative Tools, Multi-Agent Architecture, Complex Humanitarian Emergency, Knowledge Portal, Information Sharing, Coordination, Non-Governmental Organizations, International Organizations, Relief Operations, Peace Operations, Peace Keeping

INCREASING THE CAPACITY OF A KNOWLEDGE INTENSIVE PROCESS THROUGH THE USE OF PROCESS REENGINEERING AND KNOWLEDGE-VALUE ADDED

METHODOLOGIES

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In the increasingly dynamic environment of information technology, it has become imperative that organizations continue to seek ways to effectively capture and measure knowledge in order to survive. With the emergence of a global economy and information networks, the knowledge creating capacity within organizations has grown tremendously. As a result, organizations are now shifting their focus to management of the knowledge used in executing processes and producing products. As demand for quality

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products and services continues to grow, companies must now find ways to effectively manage knowledge intensive processes in order to increase overall process capacity. Through business process reengineering and the KVA methodology, this thesis will seek to identify ways in which the performance of knowledge assets can be measured and make recommendations to improve the capacity of knowledge intensive processes, better enabling organizations to meet increased demand.

KEYWORDS: Information Assurance, Knowledge Value Added, KVA, Business Process Reengineering, BPR, Network Assessment, Knowledge Management, Knowledge Intensive Processes, Measuring Knowledge, Computer Network Vulnerability Team

AN OPTIMIZATION OF THE BASIC SCHOOL MILITARY OCCUPATIONAL SKILL ASSIGNMENT PROCESS

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The reduction of attrition in the junior officer ranks has presented a constant challenge to manpower planners. The desire of an officer to remain on active duty is influenced by his or her satisfaction with their military occupational skill. The assignment of MOS's to Marine lieutenants has essentially remained unchanged for the past 30 years.

This thesis presents an interdisciplinary solution to the problem of assigning Military Occupational Skills to lieutenants at The Basic School. The thesis captures the requirements analysis, testing, implementation, operation, and maintenance of two-tier decision support system architecture. This thesis presents an alternative business process centered on "MyMOS." MyMOS is a web-based decision support system for use by the lieutenants and staff of The Basic School. This thesis incorporates the use of commercial-off-the-shelf linear programming tools to present and compare an alternative to the existing heuristic assignment methods. The results of this research found that by utilizing optimization techniques, the number of lieutenants who did not receive one of their first five choices could be decreased by an average of 66% and the average choice number assigned could be reduced from 2.9 to 2.1. The incorporation of ecommerce technology increased the return on knowledge associated with the MOS education process and presented the lieutenants with a consistent and familiar interface.

KEYWORDS: Optimization, Linear Programming, Database, Web Enabled, Internet, MOS, Marine Corps

USING COMMERCIAL-OFF-THE-SHELF SPEECH RECOGNITION SOFTWARE FOR CONNING U.S. WARSHIPS

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The U.S. Navy's Transformation Roadmap is leading the fleet in a smaller, faster, and more technologically advanced direction. Smaller platforms and reduced manpower resources create opportunities to fill important positions, including ship-handling control, with technology.

This thesis investigates the feasibility of using commercial-off-the-shelf (COTS) speech recognition software (SRS) for conning a Navy ship. Dragon NaturallySpeaking Version 6.0 software and a SHURE wireless microphone were selected for this study. An experiment, with a limited number of subjects, was

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conducted at the Marine Safety International, San Diego, California ship-handling simulation facility. It measured the software error rate during conning operations. Data analysis sought to determine the types and significant causes of error. Analysis includes factors such as iteration number, subject, scenario, setting, and ambient noise. Their significance provides key insights for future experimentation.

The selected COTS technology for this study proved promising, overcoming irregularities particular to conning, but the software vocabulary and grammar were problematic. The use of SRS for conning ships merits additional research, using a limited lexicon and a modified grammar which supports conning commands. Cooperative research between the Navy and industry could produce the “Helmsman” of the future.

KEYWORDS: Speech Recognition, Voice Recognition, Ship Maneuvers, Conning Commands, Seamanship, Ship Handling, Commercial-off-the-Shelf Software, Dragon NaturallySpeaking Professional Version 6.0, Automatic Speech Recognition