MASTER OF SCIENCE
IN
INFORMATION TECHNOLOGY MANAGEMENT

THE EFFECTS OF CHINA ENTERING THE WORLD TRADE ORGANIZATION ON THE UNITED STATES' WIRELESS TELECOMMUNICATION INDUSTRY

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This thesis investigates the effects of China entering the World Trade Organization on the United States' wireless telecommunication industry. This thesis explores whether the American wireless telecom industry will benefit from China's accession into the WTO. The working hypothesis of the thesis is that American wireless telecom companies will receive far-reaching economic benefit from China's entry into the WTO. Additionally, this thesis explores the effects the entry in the WTO will have on China's telecom policy toward allowing foreign companies to own and operate parts of the wireless telecom network.

KEYWORDS: People's Republic of China, Wireless, Telecom, United States, 3G, CDMA, GSM, TD-SCDMA, China Mobile, China Unicom, China Telecom, China Netcom, MII, Telecommunications, China, WTO, World Trade Organization, Personal Access System, BREW

FORCENET ENGAGEMENT PACKS: "OPERATIONALIZING" FORCENET TO DELIVER TOMORROW'S NAVAL NETWORK-CENTRIC COMBAT REACH CAPABILITIES TODAY

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In response to the CNO's tasking to examine *Sea Supremacy* within the context of SEA POWER 21, SSG XXII proposed the concept of FORCEnet Engagement Packs (FnEPs). The FnEPs concept represents the operational construct for FORCEnet and demonstrates the power of FORCEnet by integrating a specific set of joint sensors, platforms, weapons, warriors, networks, and command and control systems, for the purpose of performing mission-specific engagements. Initial pack asset allocation and constitution will be based on a specific threat or mission: however, the capability to dynamically re-configure and re-allocate assets "on the fly," to reconstitute a new pack, will enable cross-mission engagement capabilities. Integrating the six FORCEnet factors must focus on five critical functions termed "Combat Reach Capabilities (CRCs)." These include: Integrated Fire Control (IFC), Automated Battle Management Aids (ABMAs), Composite Tracking (CT), Composite Combat Identification (CCID), and Common/Single Integrated Pictures (CP). FnEPs achieves fully integrated joint capabilities focused on the engagement chain, and represents a revolutionary transformation in Naval operations complimentary to FORCEnet, SEA POWER 21, and *Sea Supremacy*.

This thesis has two goals. First, an analysis is conducted to better understand the FnEPs concept, including the myriad of technical, organizational, and programmatic requirements for its implementation. Second, a roadmap is proposed for the continued development and "institutionalization" of the FnEPs concept.

KEYWORDS: C^2, C^4ISR, Command and Control, Engagement Chain, FnEPs, FORCEnet, FORCEnet Engagement Packs, NCW, Network-Centric Warfare, SEA POWER 21, *Sea Supremacy*, SSG, SSG XXI, SSG XXII, Strategic Studies Group

A SURVEY AND SECURITY STRENGTH CLASSIFICATION OF PKI CERTIFICATE REVOCATION MANAGEMENT IMPLEMENTATIONS

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In this thesis, all currently operational, proposed, and theoretically possible methods of certificate revocation are defined. The role of certificate revocation within the larger scheme of PKI is examined and the mandates upon the Department of Defense from the Certification Practices Statement (CPS) and Certificate Policy (CP) are examined. A "best case" model for revocation is suggested. The security attributes affecting certificate revocation are examined: from these attributes a set of metrics are defined for the purpose of measuring the security-relevant strengths and weaknesses of all plausible methods of certificate revocation. Each method is examined and ranked according to security strength. Conclusions regarding certificate revocation use within the Department of Defense are made and further study within the field is suggested.

KEYWORDS: PKI, X.509, OCSP, NOVOMODO, SCVP, CRL, Certificate Revocation, Security, DoD, Certificate Policy, Certification Practices Statement

REENGINEERING HUMAN PERFORMANCE AND FATIGUE RESEARCH THROUGH USE OF PHYSIOLOGICAL MONITORING DEVICES, WEB-BASED AND MOBILE DEVICE DATA COLLECTION METHODS, AND INTEGRATED DATA STORAGE TECHNIQUES

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In the field of human research, particularly in operational environments, data collection techniques are difficult. Researchers often focus their efforts on the data analysis and overlook the shortcomings of their data collection and storage methodologies. In order to demonstrate effective data collection and storage methodology in a representative human research process, the process used by human fatigue and performance researchers at the Human Systems Integration Lab at the Naval Postgraduate School (NPS) served as a Proof of Concept for this thesis. Most recent studies conducted at NPS provided a model of the current process. The Knowledge Value Added (KVA) methodology was used as a tool of comparison of the current process to the reengineered process. Information technologies, including wireless physiological monitoring devices, web-based and mobile device data collection methods, and integrated data storage techniques, were incorporated in the reengineering effort. The data storage process included the design of a standard relational database format allowing research teams to easily access their data. This repository also enables data to be archived for future use (e.g., meta-analyses). To demonstrate the reengineered process in an operational environment, a field fatigue study was conducted at the Naval Officer Indoctrination School (OIS) in Newport, Rhode Island.

KEYWORDS: Data Collection Methodology, Mobile Devices, Relational Database, Human Performance, Sleep, Fatigue, Sleep Deprivation, Actigraphy, ARES