

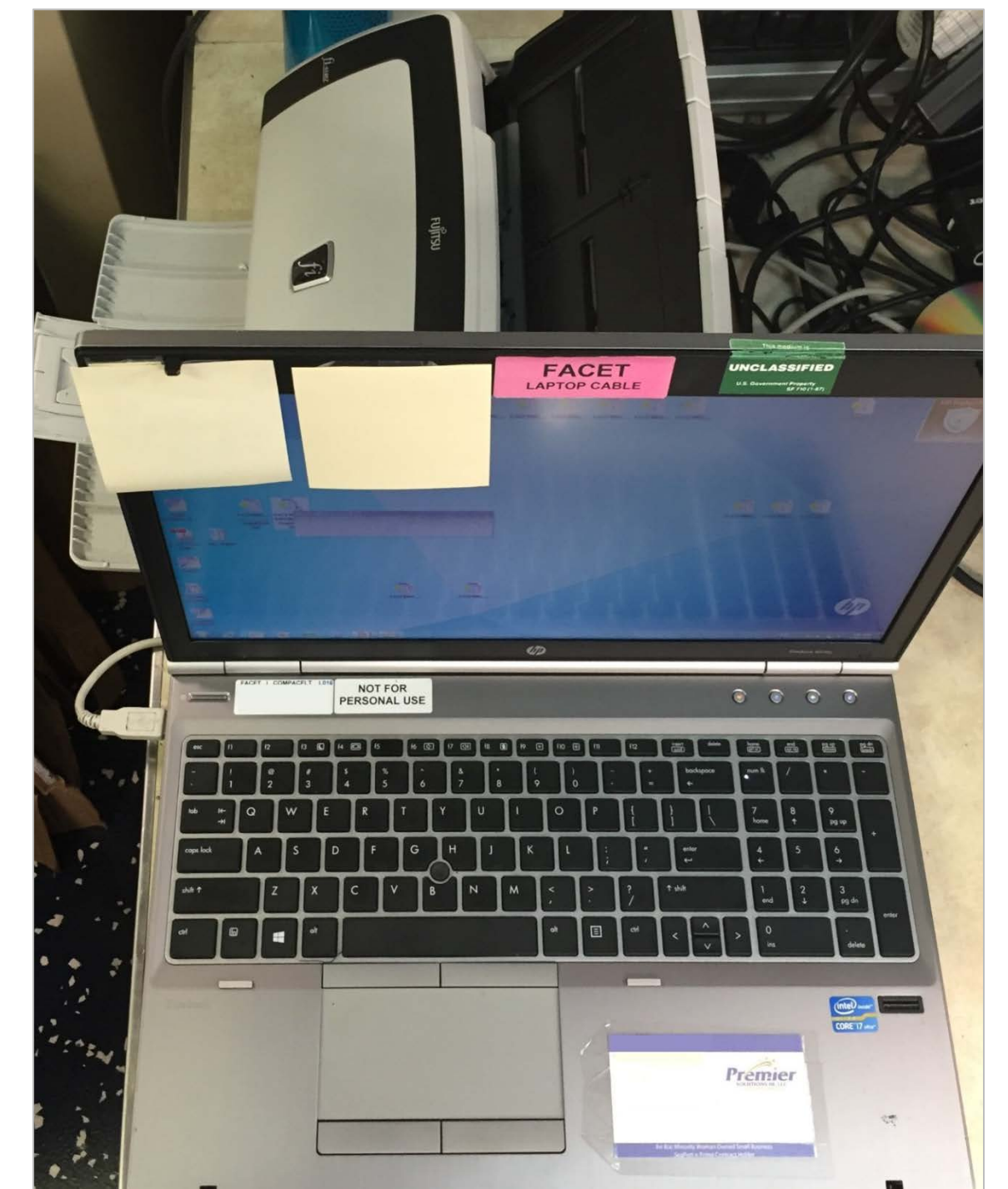
Lean Six Sigma Analysis of Shipboard Audit Readiness on a U.S. Navy destroyer



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Abstract

Over the last six years, the Department of the Defense (DOD) and Department of the Navy (DON) have ramped up efforts toward achieving financial audit readiness by dedicating additional resources and implementing new process changes in support of the DOD Financial Improvement Audit Readiness (FIAR) program. Despite increased emphasis on ensuring key supporting documentation availability during an audit, the DON still has issues regarding poor quality document submissions from lower-level units, which would ultimately lead to poor audit results. This project attempts to identify and improve upon root causes of quality defects in audit-related key supporting documentation onboard U.S. ships in the Pacific Surface Fleet using a Lean Six Sigma analysis. The recommendations provided in this study augment improvement processes currently in progress, and are sequenced to build momentum before addressing higher-risk priorities. The objective of this research is to develop a case study for use by DON FIAR that examines audit-related areas of improvement and the implementation of additional process changes at the unit level. The case study is meant to spur discussion on how the DON can benefit from Lean Six Sigma analysis to improve quality and mitigate the risk of audit failure.



FACET System

Methods

This research utilized the Lean Six Sigma methodology of Define, Measure, Analyze, Improve, and Control (DMAIC):

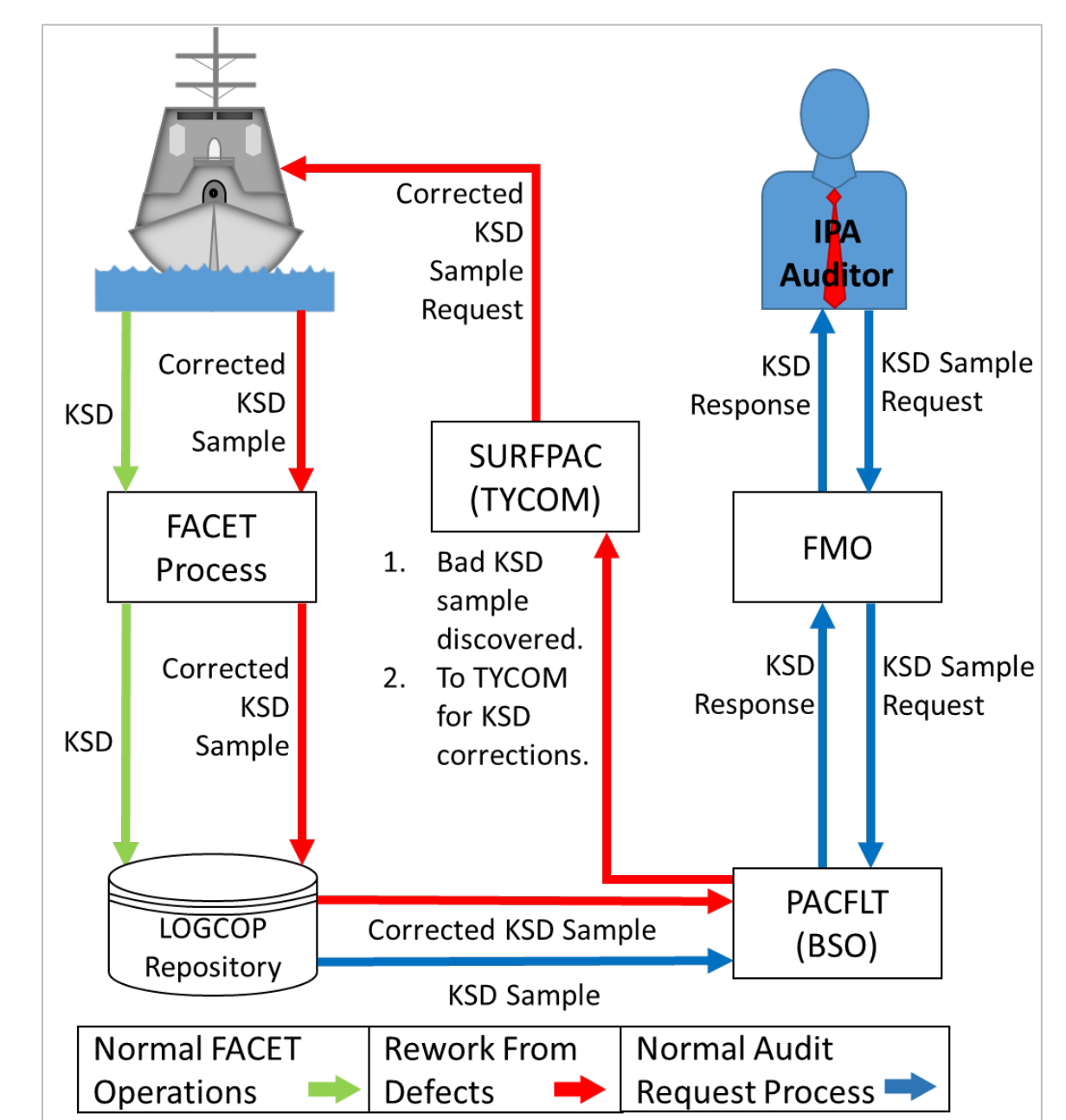
Define: Researchers captured the voice of the customer, scope of the project, schedule of events, and supporting organization. Tools that were utilized in this phase were the project charter, suppliers-inputs-processes-outputs-customers table, and plan of actions and milestones.

Measure: Direct observation and personnel interviews were two techniques used to collect qualitative and quantitative data, which enabled researchers to measure and map current audit readiness performance on board one guided-missile destroyer. Tools that were utilized in this phase were process flow charts, time study sheets, and questionnaire forms.

Analyze: The information used in the measurement phase was used to determine the cause-and-effect relationship between audit document quality and causal factors. These causal factors were investigated to establish the severity, occurrence, and detection of failures in order to prioritize potential improvements. Tools that were utilized in this phase were fishbone diagrams and failure mode and effects analysis.

Improve: Researchers identified a comprehensive set of recommendations that, when taken into action, will greatly improve key supporting documentation quality as well document upload functionality to reduce the risk of audit failure. Improvements were ranked by level of risk with consideration to quick fixes that can build momentum for audit process improvement.

Control: Due to the nature of this case study, researchers also made recommendations to assist with controlling the continued improvement process.

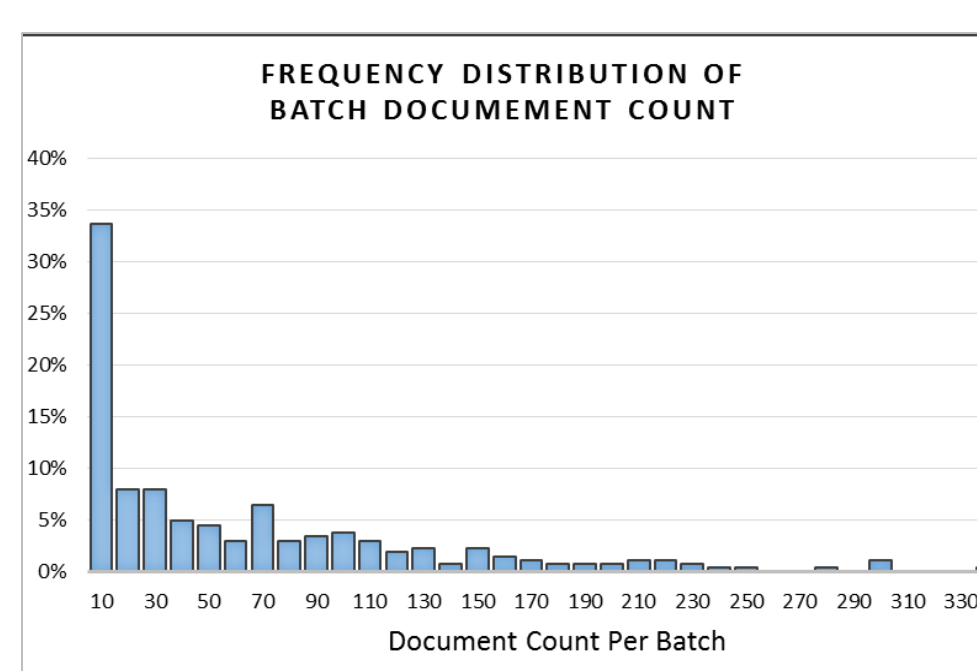


MILSTRIP Shipboard
Audit Process

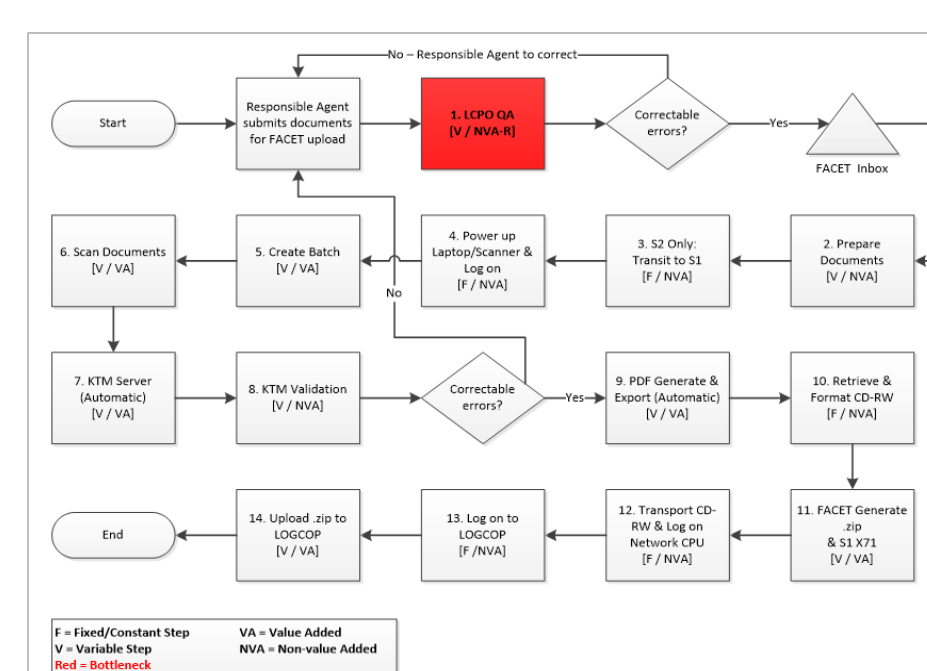
Results

The current process in place on board the Surface Fleet has been a tremendous step in the right direction for DON audit readiness. The IT system in place capable of recording key supporting documentation into a "cloud" network which can be retrieved at higher level echelons for audit-related responses without directly requesting documents from the ships. An audit could, in theory, go unnoticed at the unit level while Budget Submitting Offices respond as required to auditor requests.

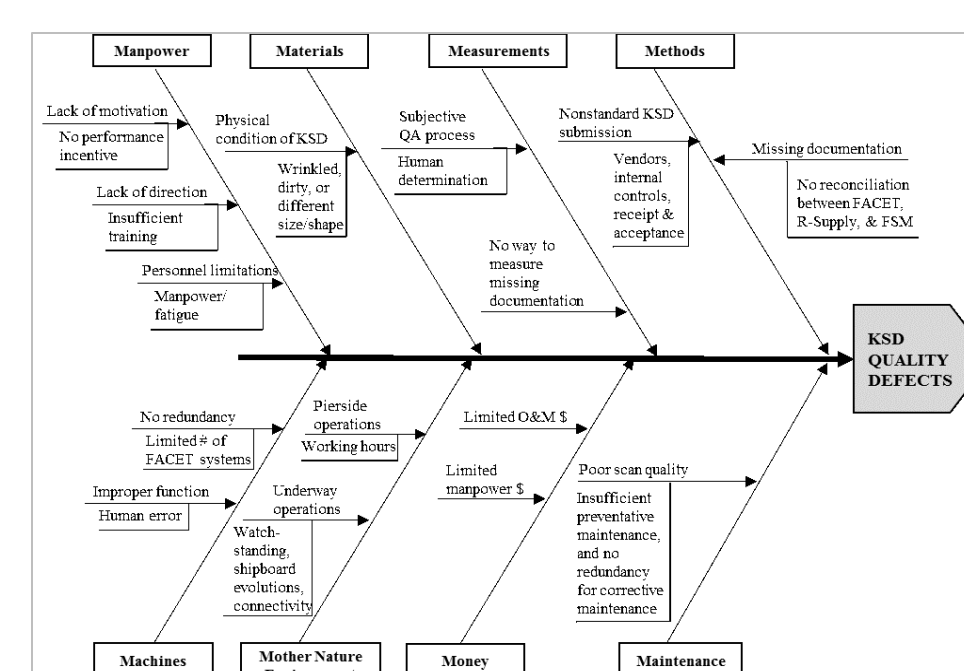
The short and long-range recommendations provided in this case study augment improvements that are currently under way by other DON organizations. Recommendations for follow-on research are provided to develop a deeper understanding of the audit readiness requirements on deploying naval units.



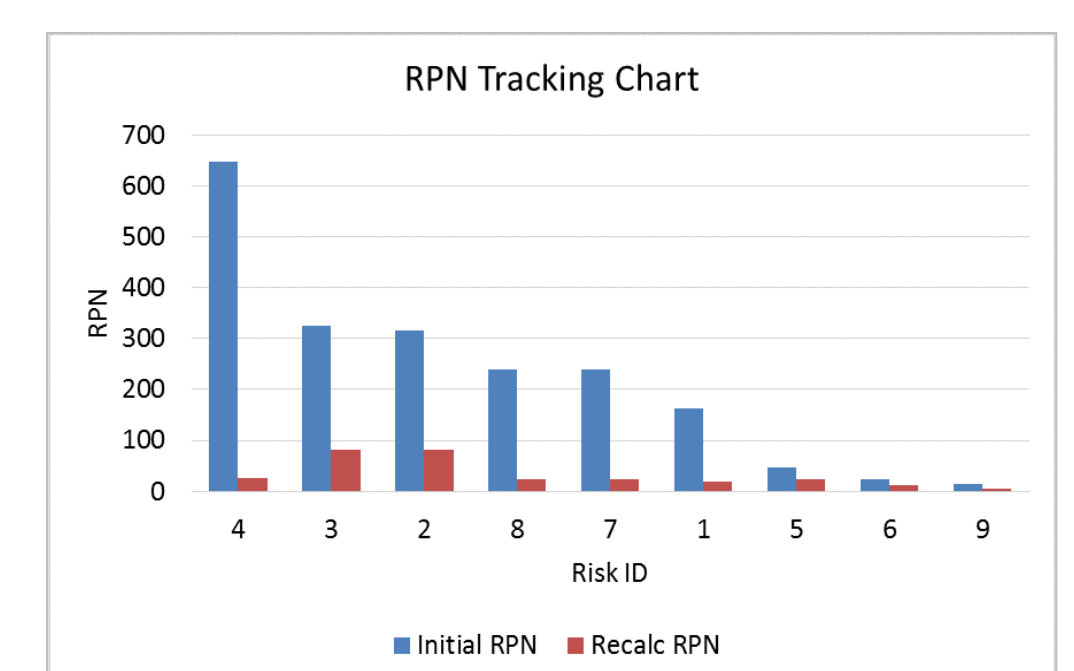
Frequency Distribution of KSDs per batch



Current State Map of FACET Process



Cause-and-effect Analysis of Quality Defects



Risk Priority Tracking of Improvement Recommendations