STATE TREASURER'S OFFICE

Debt Management System II

Quality Management Plan

Version 0.4

Project ID: #0950-019

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Approval Signatures

Quality Plan Acceptance

The undersigned acknowledge that they have reviewed the DMS II Quality Management Plan. The signatories also have an understanding of the purpose and content of this document and agree that the Quality Management Plan is sufficient to allow the project to move forward. The Project Manager is hereby authorized to apply organizational resources to project activities.

Name/Department Title	Signature	Project Role	Date
Tim Schaefer Deputy Treasurer		Executive Sponsor	8/21/15
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Jan Ross Chief Information Officer		Project Executive (Technical)	7.31.15
Maisha Dottery DMS II Project Manager		Project Manager	8/21/2015

Document Revision History

Revision Number	Date of Release	Author	Summary of Changes
0.1	06/15/2015	Lamont Dukes	Initial draft Plan created.
0.2	07/01/2015	Lamont Dukes	Initial Plan distributed to the project team for review and comment.
0.3	07/13/2015	Lamont Dukes	Incorporated the comments submitted by IV&V.
0.4	07/23/2015	Lamont Dukes	Incorporated the comments submitted by Project Executives.

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1 INTRODUCTION

The purpose of the Quality Management Plan (Plan) is to outline the following activities: define roles and responsibilities; provide reference documents and guidelines to perform the Quality Assurance (QA), provide the standards, practices and conventions used in carrying out QA, Quality Control (QC), and quality improvement activities for the Project; provide the tools, techniques, and methodologies to support QM activities and reporting. The Plan achieves the following objectives:

- Identifies the activities, processes, and procedures used to manage quality.
- Defines the quality management methodologies, best practices, roles and responsibilities, training and communication required throughout the life cycle of the Debt Management System (DMS II) Project.
- Ensures all project deliverables and artifacts conform to this plan.
- Defines the quality planning, Quality Assurance, Quality Control and quality improvement processes, and procedures.

It is often said that, "What gets measured gets done." Measurements communicate values and priorities to the DMS II Project. The DMS II Project Management Office (PMO) is responsible for managing quality throughout the project life cycle in all documents, deliverables, work products, processes, and procedures. IEEE 1061-2004 Standard for Software Quality Metrics Methodology provides a set of definitions and an overview of the framework for software quality metrics. This standard provides a methodology for establishing quality requirements by identifying, implementing, analyzing, and validating process/product software quality metrics. PMBOK and CA-PMM framework for QM govern all major processes for quality management. Other standards will also be used to monitor, control, and manage quality throughout all phases of the DMS II Project lifecycle.

Industry Standards and Best Practices follow the planning and execution of QM:

- California Project Management Methodology (CA-PMM)
- Project Management Body of Knowledge (PMBOK®)
- IEEE 730-2002 Standard for Quality Assurance Plan
- IEEE 1012-2012 Standard for Software Verification and Validation
- IEEE 1058-1998 Standard for Software Project Management Plans

- IEEE 1061-2004 Standard for Quality Metrics Methodology

The QM standards will be used to:

- Identify the specific traits that will be built into products and processes to meet quality requirements.
- Identify, define, and prioritize the quality requirements for DMS II Project.
- Evaluate whether quality requirements are being met.
- Recommend deliverable or phase entrance or exit criteria, as specified in DEDs or checklists.
- Respond to specific quality concerns from a previous phase.

The DMS II PMO is responsible for monitoring and controlling all QM Activities. The System Integrator (SI) is responsible for conducting QM activities consistent with the approved DMS II Project Plan. The SI has the following responsibilities related to QM:

- Provide the results of each quality process audit or quality product review through a Quality Assurance assessment report.
- Address deficiencies identified in quality process audits or quality product reviews and identify recommended process improvements or corrective action.
- Adhere to the DMS II Schedule Management Plan, the DMS II Quality Management Plan and integrate SI processes as appropriate.
- Conduct a Quarterly Management Review which includes:
    - Performance of conforming to contract requirements.
    - Performance of forecasting and controlling costs.
    - Adherence to schedule.
    - Commitment to customer satisfaction.
    - An overall quality assessment of deliverables.
    - An overall solution assessment of quality and what quality checks were performed.

Through Quality Product Reviews, Stage Gate Reviews, Periodic Inspections and Quality Process Audits, the DMS II PMO and Independent Verification and Validation (IV&V) will validate that the SI meets approved quality performance levels.

1.2 Scope

1.2.1 *In Scope*

The QM processes and deliverables will be managed throughout the full lifecycle of the DMS II Project. This document defines the roles and responsibilities, standards, methods, and reporting requirements that the DMS II Project will use. The QM methodology described in this plan shall apply to PMO processes and deliverables for the DMS II Project lifecycle. Quality is an iterative process that consists of:

- Identifying quality standards and measurements.
- Identifying metrics by which to measure the quality of the system or product.
- Establishing a quality standard and quality baselines for each defined metric.
- Monitoring and responding to the measurement results.
- Completion of periodic quality assessment reviews.
- Determining the appropriate actions to improve quality.
- Implementing quality improvement activities (audits, inspections, and walk-throughs).
- Conducting meetings between the DMS II PMO and participant groups to discuss the assessments and areas of non-conformance.
- Updating the Plan or processes, if necessary.

1.2.2 *Out of Scope*

. The following are a list of items considered out of scope for this Plan:

- The Plan does not cover the Maintenance and Operations (M&O) phase of the DMS II Project.
- The Plan does not include a process or procedure for source code audits or system performance audits of the SI activities. Source code audits and system performance audits are the responsibility of the SI and will be included as a contractual obligation. Once the SI delivers the audit results of the source code and system performance the DMS II PMO and IV&V will review the audit results, and if appropriate make recommendations for improvement for undesirable audit results.

- The Plan does not include Solution Quality, as this is primarily the responsibility of the SI. DMS II PMO, Information Technology Division (ITD) and IV&V manages the Solution Quality by monitoring compliance with standards, conducting acceptance testing to verify if the solution meets the State's documented requirements, and with inspection test QC activities. The SI will define Solution Quality once engaged and the SI will update this plan to integrate the solution QA and QC processes.

1.3 Document Development and Maintenance

During each phase of the project lifecycle the DMS II PMO will review and update this Plan. This Plan contains a revision history log that precedes the Table of Contents. When changes occur to the Plan, the version number will update to the next increment. The date, owner making the change, and change description will display in the revision history log of the document.

When the SI comes on board at the start of the Design, Development and Implementation (DD&I) phase, the SI will update this plan to integrate the SI's internal QA and QC processes as needed.

1.4 Assumptions and Constraints

1.4.1 *Assumptions*

Project Assumptions are those events and circumstances that are expected to occur during the project lifecycle for successful implementation and completion. Although assumptions are the driving force that determines project success, they are typically outside the total control of the project team. Project assumptions are accepted as true, often without any proof or demonstration. Listed below are assumptions specific to QM.

Table 1-4-1: Quality Management Assumptions

Assumption #	Description
1.	QM will follow PMBOK and California Project Management (CA-PMM) framework, along with representative IEEE standards.
2.	The Plan governs the Planning, Procurement, and DD&I Phase. This Plan does not address the M&O Phase.

1.4.2 *Constraints*

Project Constraints are any events or circumstances that may restrict, limit, or regulate a project. Just like assumptions, typical project constraints are outside the total control of the project team. Listed below are constraints specific to QM.

Table 1-4-2: Quality Management Constraints

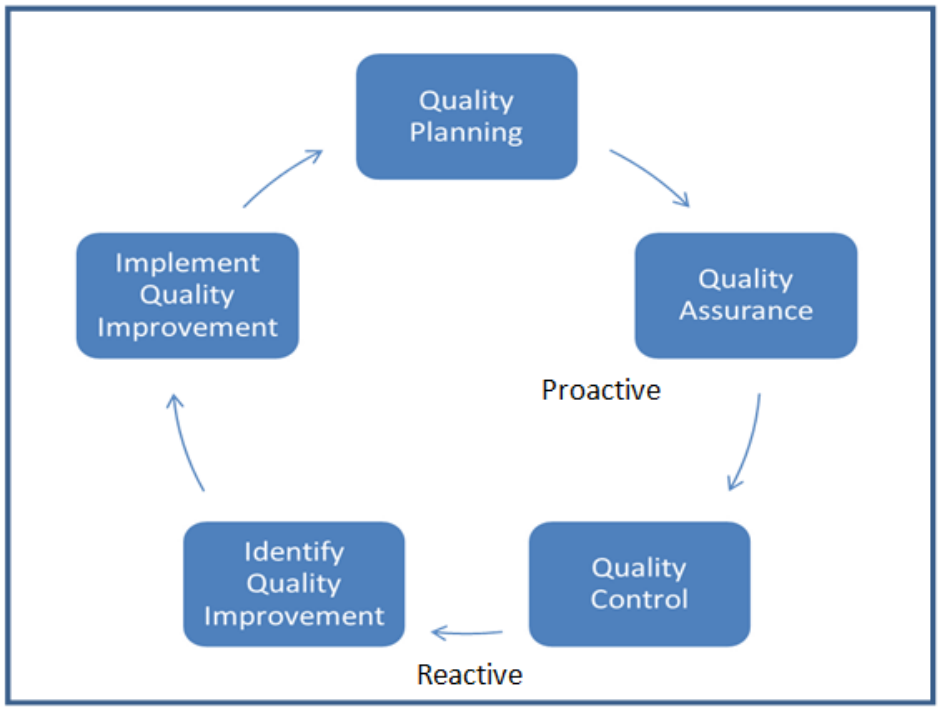
Constraint #	Description
1.	QM will not follow International Organization for Standardization (ISO) 9001:2008 International Standard for QM based on the maturity of the organization and the ability to implement the standard.
2.	The SI is responsible for the delivery of a QM plan that manages their internal quality processes and procedures and defines solution quality. The PMO Team will integrate the SI's Plan into this Plan to create an overarching QMP for DMS II.

2 PURPOSE OF QUALITY MANAGEMENT

The primary purpose of the Plan is to define how quality will be managed throughout the lifecycle of the DMS II Project in the following areas:

- **Quality Planning** – provides the documentation standards and framework for quality during the lifecycle of the DMS II Project. The DMS II Project Team and the Quality Manager will perform these activities.
- **Quality Assurance** – provides the necessary attention to detail for continuous improvement of activities and processes to achieve quality. The DMS II Project Team and the Quality Manager will perform these activities.
- **Quality Control** – a monitor and inspection process that ensures every deliverable and work product is measured, tested, and ensures results conform to quality standards. The DMS II Project Team, Quality Manager, Project Oversight, and the SI will plan and coordinate all quality activities.
- **Quality Improvement** – identifies quality improvement opportunities and implements corrective action or process improvement. The DMS II Project Team and the Quality Manager will coordinate and perform these activities with the SI.

Figure 1: Quality Management Cycle



3 METHODOLOGY

QM applies to deliverables, documents, work products, processes, and procedures. QC activities monitor and verify that project deliverables meet defined quality standards. QA activities monitor and verify that the processes used to manage and create the deliverables are followed effectively. Quality improvement activities seek to ensure that there is continuous improvement of quality processes and procedures and an ability to respond to corrective actions resulting from audits and reviews. QM consists of two key elements - QA and QC.

The DMS II Project QM Methodology has two essential principles:

1. Quality cannot be inspected into the system, it must be designed into the system: and

2. Quality will evolve and there will be a process of continuous improvement.

The Plan will establish QA, maintain QC, and enforce policies and procedures to meet the specific goals and objectives set forth for the DMS II Project. QM is not limited to system and

artifact quality, but also focuses on how to optimally achieve quality in every facet of the project. Quality Management consists of two key elements - QA and QC.

- **QM** provides the standards and measures framework through a series of audits and reviews to verify processes are followed, and the project is on track to deliver the desired results.
- **QC** refers to the day-to-day review of work products to verify compliance with standards, and identify and correct defects.
- **QA** refers to the individual assessment of deliverables and audit of processes to determine effectiveness and areas for improvement.

Table 3-1: Quality Assurance versus Quality Control

	Quality Assurance	Quality Control
Definition	A set of activities for ensuring quality in the processes by which products are developed.	A set of activities for ensuring quality in products. The activities focus on identifying defects in the actual products produced.
Focus	**Proactive** → Aims to prevent defects with a focus on the process used to make the product. Determines compliance to project policies/procedures.	**Reactive** → Aims to identify (and correct) defects in the finished product. Measures specific project results against standards.
Goal	The goal is to improve development and test processes so that defects do not arise when the product is being developed.	The goal is to identify defects after a product is developed and before it's released.
How	Establish a good QM system and the assessment of its adequacy. Periodic conformance audits of the operations of the system.	Finding and eliminating sources of quality problems through tools and processes so that customer's requirements are continually met.
What	Prevention of quality problems through planned and systematic activities including documentation. Corrective or preventive action as a result of the audit.	The activities or techniques used to achieve and maintain the product quality, process and service. Defect repair and measurement of quality indicators.
Tools	• Standards and Metric Development • Checklists • Peer Reviews • Product Reviews	• Assessment of Metrics • Checklists • Process Audit • Stage Gate Audits • Testing Inspections

4 ROLES AND RESPONSIBILITIES

This section outlines the DMS II Roles and Responsibilities (R&R) for those involved in the QM process. A full list of all roles and responsibilities will be contained in the DMS II Project Human Resources Management Plan.

Table 4-1 Quality Management Stakeholder Matrix

STAKEHOLDER ROLE	RESPONSIBILITY
DMS II Project Team	- Identify, report, review and/or analyze project deliverables and/or work products, focusing on quality characteristics such as completeness, consistency, fitness of use, etc.
IPOC	- Provide independent oversight of quality issues and areas of non-conformance to CA-PMM and PMBOK. - Participate as needed in quality audits and quality reviews.
IV&V	- Provide independent oversight of quality issues and areas of non-conformance to IEEE, CA-PMM, and PMBOK. - Participate as needed in quality audits and quality reviews.
Project Manager (PM)	- Communicate quality (risks and issues) to internal and external stakeholders. - Communicate with project staff regularly to direct project activities and stay current on project quality status. - Communicate with EMT to report any quality related issues. - Participate in the establishment and oversight of the project's QM effort. - Develop and maintain project management plans. - Monitor milestones, activities, timelines, resources, budgets and critical path - Develop and track project metrics. - Oversee contractor activities. - Review contractor deliverables.
Technical Manager (PM or designee)	- Identify and escalate any critical project issues to the Project Manager. - Establish technical policies, processes, procedures and defined quality standards. - Execute technical policies, processes, procedures and ensure adherence to defined quality standards. - Communicate project status, quality (risks and issues) to the quality manager, PM, executives, program managers, and the IV&V vendor.
Quality Manager (Technical Manager or designee)	- Identify and escalate any critical project issues to the Project Manager and/or Technical Manager. - Identify Quality Standards and Metrics. - Provide QA inputs for developing project work products and ensuring that quality targets are defined for each deliverable and process. - Provide oversight of DMS II Project processes and procedures and provide evaluation reports related to standards compliance, process variances, and identifying process improvement opportunities. - Implement QA techniques to ensure the quality of the deliverables to be produced by the project. - Implement QC techniques to control the quality of the deliverables actually

STAKEHOLDER ROLE	RESPONSIBILITY
	produced by the project. - Identify quality deviations and improvement actions for implementation. - Record the level of quality achieved within various dashboard or communication channels. - Audit adherence to DMS II Project standards on a periodic basis. - Coordinate QM findings and mitigation strategies with IV&V and IPOC consultants. - Perform review of QM portions of contractor proposals/statements of work and provide recommendations. - Support industry Best Practices implementation. - Audit PMO processes and artifacts. - Maintain the QM Plan. - Collect and analyze project metrics. - Review system integrator processes and deliverables. - Work with the PMO to define and baseline all quality measures, metrics, and acceptance criteria in a QM Repository. - Review project deliverables and provide comments and recommendations. - Provide written reports related to standards compliance, identify process improvement opportunities, correctness, completeness, anomalies and recommendations. - Establish reporting standards that provide findings from quality measurements on a periodic basis identifying areas where business, technical, and/or management quality objectives are or are not being met, or where trends in quality are moving in or out of control limits. - Establish and maintain a repository for quality measurement and tracking. - Oversee the contractor QM Program to ensure quality objectives for the new system are satisfied, and pass quality reviews. - Oversee the PMO's quality program to ensure all quality objectives are satisfied. - Conduct testing inspections. - Support Requirements Traceability Planning.
System Integrator (SI)	- Work with the DMS II Project Quality Manager to integrate quality processes into the DMS II quality program. - Participate in quality reviews and audits. - Respond to quality review and audit findings as part of the quality improvement process. - Work with the project's technical lead and quality manager to keep them informed about quality related issues, QM, system testing, system change requests, problem reporting and project requirements and definition. - Audit SI internal PMO processes and artifacts. - Communicate with project's technical staff and project technical consultants on quality related issues. - Establish reporting standards that provide findings from quality measurements on a periodic basis identifying areas where business, technical, and/or management quality objectives are or are not being met, or where trends in quality are moving in or out of control limits. - Define testing acceptance criteria for performing unit, system and performance testing when products are delivered to the pre-production

STAKEHOLDER ROLE	RESPONSIBILITY
	environment as candidates for release to production. - Work to ensure that detailed testing is performed on all technical areas such as system and data interfaces, integration with external systems, data interfaces and automated workflow.
Test Team (TBD)	- Define testing acceptance criteria for performing acceptance testing when products are delivered to the pre-production environment as candidates for release to production. - Perform user acceptance testing on pre-production releases.

5 COMMUNICATION OF QUALITY ACTIVITIES

The DMS II PMO will use various meetings, reports and other documents to communicate the completion and results of quality activities as well to track the resolution of quality issues. The matrix identifies reports, and documents that may contain quality related data.

Table 5-1: Communication of Quality Activities and Issues

Report/Document	Description	Quality Specific	Internal/ Shared
Project Audit Scorecard	Used to communicate audit results and identify opportunities for improvement.	No	Internal
Deliverable Tracking Sheet	Used to communicate deliverable review deficiencies and track the correction of deficiencies or non-conformances.	Yes	Internal
QA Process Improvement Log	Used to capture process improvement items such as lessons learned, reported issues, defects, root cause analysis, and schedule delays.	No	Internal
Project Status Report (Monthly)	Used to communicate the status and completion of project activities. Combined with the SI Monthly Status Report.	No	Shared
Project Executive Status Report	Used to communicate the status and completion of project activities, status of key risk and issues, as well as schedule status and forecast. Combined with the SI Monthly Status Report.	No	Internal
IV&V Monthly Status Report	Used to report the completion, results, and trends related to quality activities performed by the QA team. Delivered to the State as part of the monthly status report or as a separate document.	Yes	Shared

6 METRICS AND MEASUREMENTS

The DMS II Quality Metrics are defined in the planning phase of the project. Once the quality metrics are defined, they are then measured throughout the duration of the project to track and assess the project's level of conformity to its established quality baselines.

Quality Metrics are an objective measure of the quality of a product or process. Quality Metrics use common language to assess progress about quality and will be used as the method to quantitatively assess the DMS II project's level of quality as project work efforts are executed and measured against the corresponding metric.

As project management documents and DD&I deliverables are approved, the DMS II PMO will begin to collect metrics and report on the metrics in one of several ways:

- Executive Dashboard on the DMS II Project Intranet Website
- Key Metrics presented at the Executive Management Team (EMT) and/or Bi-Weekly DMS II Project Status Meetings
- Detailed metrics communicated through the QM monthly status report (MSR).

The table below provides a sampling of the project metrics defined for the DMS II Project, by process area. The metric definition includes the measurement mechanism, who will be involved in reporting on the metric, and the threshold tolerance. The threshold tolerances listed below will be adjusted as more information is known.

Each metric, tolerance threshold, and measurement may be changed or refined once trend analysis information is captured. Throughout the project lifecycle, additional metrics may be developed in response to specific problem areas.

Table 6-1: List of Sample DMS II Metrics, Measurements and Threshold Tolerances

Process Area	Metric	Measurement	Reported By	Threshold Tolerance
Staffing Management	SI Key Staff Compliance	Total filled key staff positions / Total key staff positions.	DMS II Contract Manager	No more than 10% of the key positions are unfilled in the reporting period.
Change Control	Number of Opened Change Requests	Total new change requests created in the reporting period.	DMS II PMO	No tolerance threshold will be established for this metric. Rather, this metric will be reported on a weekly

Process Area	Metric	Measurement	Reported By	Threshold Tolerance
		(Within reporting period)		dashboard to leadership. Results could be used to analyze if excessive change requests were opened, indicating a lack of defined functionality in the application.
	Number of closed change requests	Total change requests rejected, deferred, or closed in the reporting period. (Within the reporting period).	DMS II PMO	No tolerance threshold will be established for this metric. Rather, this metric will be reported on a weekly dashboard to leadership. Results could be used to analyze if there are timeliness issues with closing out change requests, or if the volume of change requests is more than staffing can accommodate.
	Average age of active change requests	Total calendar days active for active change requests / number of active change requests.	DMS II PMO	No more than 30 days on High priority change requests, or 60 days on Medium priority change requests.
	CCB Process and Definition Timeline (Evaluates the time required to create, process and reach a disposition on each CR)	Time in days from CR Submission – Time for CR Disposition. Time in days to complete CR including analysis, review and discussion.	DMS II PMO	No longer than 5 days to process CR submissions. No longer than 5 business days to conduct impact analysis. A CCB decision should be made no more than 5 days following completion of the impact analysis.
Issues	Average aging of issues (Indicates responsiveness to project issues and average number of	Total calendar days active for active issues / number of active issues	DMS II Risk and Issue Manager	Once identified, new issues are documented and submitted to the Issue Manager no later than 5 business days.

Process Area	Metric	Measurement	Reported By	Threshold Tolerance
	open issues)			Entry into risk and issue log and issue analysis should take place by the Risk and Issue Manager no longer than 5 business days following the submission of an issue. If existing risks become issues, the analysis update should be complete within 5 business days. Candidate Issues should be presented to the Project Executives and reported on at the next Bi-Weekly meeting following submission. No open high risk or issues after 30 days and no open medium issues after 60 days.
	Trending Functional Area of Issues	Total number of all issues by Category of Functional Area	DMS II Issue Manager	No more than 20% volume in one functional area without an open process improvement activity.
Risk	Average Aging of Risks (Indicates responsiveness to project issues and average number of open issues)	Total calendar days active for active risks / number of active risks.	DMS II State Risk Manager	Once identified, new risks are documented and submitted to the Risk Manager no later than 5 business days. Entry into the risk log and a risk analysis should take place by the Risk Manager no longer than 5 business days following the submission of a risk. If existing risks become issues, the analysis update should be complete within 5

Process Area	Metric	Measurement	Reported By	Threshold Tolerance
				business days. Candidate risk will be presented to the Project Executive (Business) and Project Executive (Technical) on a weekly basis.
	Trending Functional Area of Risks	Total number of all risks by Category of Functional Area.	DMS II State Risk Manager	No more than 20% volume in one functional area without an open process improvement activity.
	Average Time to define Mitigation Steps or Owner	Total Days Risks were assigned but had no mitigation steps defined / Total Number of New Risks.	DMS II State Risk Manager	No accepted risks without mitigation steps following 2 business days of the acceptance of the risk. No accepted risks without an assigned owner following 5 business days of the Acceptance of the risk.
Schedule	Schedule Performance Index (SPI) (Tells you how efficiently you are actually progressing compared to the planned progress)	Earned Value (EV) / Planned Value (PV)).	DMS II Schedule Manager	SPI must be one or greater, or else less work is completed than the planned work. In other words, you are behind schedule.
	Actual Performance versus Planned Performance	Number of Planned Tasks with Baseline Finish Dates past 20 days / Total Number of Tasks in 30 day look ahead. (Within reporting period)	DMS II Schedule Manager	No more than 10% of planned tasks are outside of 20 days from the baseline finish date.
	Baseline Finish versus Actual Finish	Number of Planned Tasks that should have finished / Total Number of Tasks in	DMS II Schedule Manager	No more than 10% of planned tasks are late as per the baseline finish date

Process Area	Metric	Measurement	Reported By	Threshold Tolerance
	Performance	30 day look ahead. (Within reporting period)		
SI Deliverables	Contractual Deliverable Timeliness (Determines compliance to scheduled milestones for deliverables)	Number of Deliverables Submitted on Time / Total Number of Deliverables. (Within reporting period).	DMS II Contract Manager SI Project Manager	No more than 10% of the total number of deliverables are submitted late for the reporting period.
	Deliverable Acceptance Rate (This is an indirect measure of project quality by measuring the percentage of deliverables accepted on time without delays to resolve material deficiencies)	Number of major Deficiencies / Total Number Deficiencies. (Within reporting period).	DMS II Contract Manager SI Project Manager	No more than 10% of the total number of deliverables are accepted later than planned for the reporting period. No more than 25% of the deficiencies identified in the deliverable reviews are categorized as major.
Internal Documents	Internal Document Timeliness (Determines compliance to scheduled milestones for documents)	Number of Documents Submitted on Time / Total Number of Documents. (Within reporting period).	DMS II Project Manager	No more than 10% pf the total number of deliverables are submitted late for the reporting period.
	Document Acceptance Rate (This is an indirect measure of project quality by measuring the percentage of documents accepted on time without delays to resolve material deficiencies)	Number of major Deficiencies / Total Number Deficiencies. (Within reporting period).	DMS II Project Manager	No more than 10% of the total number of documents are accepted later than planned for the reporting period. No more than 25% of the deficiencies identified in the document reviews are categorized as major.
Quality	Percent of compliant quality	Total compliant quality process audits	DMS II Quality	No Quality Process Audits

Process Area	Metric	Measurement	Reported By	Threshold Tolerance
Process Audit	process audits	/ Total quality process audits. (Within reporting period).	Manager	with an overall RED status.
Quality Product Reviews	Percent of compliant quality product reviews	Total compliant quality product reviews / Total quality product reviews. (Within reporting period).	DMS II Quality Manager	No Quality Product Review with an overall RED status.
Environment Metrics	Average calendar days late in deploying or updating environments (Indicates responsiveness to project issues and average number of open issues)	Number of calendar days late for environments with late deployments or updates / Number environments with late deployments or updates. (Within reporting period).	DMS II Technical Manager	100% of environments deployed or updated within the 5% of the target window.
Release and Deployment	Percent of requirements delivered with the Build	Number of requirements delivered with the Checkpoint or Quality Build / Number of requirements planned to be delivered with the Checkpoint or Quality Build. (Within reporting period).	DMS II Technical Manager	No tolerance threshold will be established for this metric. Rather, this metric will be reported on a weekly dashboard to leadership.
	Percent of system components delivered with the Build	Number of requirements delivered with the Checkpoint or Quality Build / Number of requirements planned to be delivered with the Checkpoint or	DMS II Technical Manager	No tolerance threshold will be established for this metric. Rather, this metric will be reported on a weekly dashboard to leadership.

Process Area	Metric	Measurement	Reported By	Threshold Tolerance
		Quality Build (Within reporting period)		
Test	Defect Growth (Measures the trend of open defects to determine if the team is resolving defects faster than new ones are raised)	Total number of new defects opened / Total number of defects. (Within reporting period).	DMS II Test Manager	No tolerance threshold will be established for this metric. Rather, this metric will be reported on a weekly dashboard to leadership. Could be used to analyze if we are opening up defects faster than we are closing them, indicating a lack of stability in the application.
	Defect Aging (Measures the ability to resolve defects in a timely fashion)	Total calendar days active for active defects / number of active defects. (Within reporting period).	DMS II Test Manager	95 percent of severity one defects are resolved on time, within four business days after identification.
	Number and severity of Defects (Identifies trends in the number and severity of defects)	Number of defects by severity in the last reporting period) / (total number of defects this reporting period - total number of defects last reporting period). (Within reporting period).	DMS II Test Manager	No tolerance threshold will be established for this metric. Rather, this metric will be reported on a weekly dashboard to leadership.
	Defect Resolution Percentage (Indicates ability to remediate issues with open defects in a timely manner)	Number of defects by severity resolved on time this reporting period - number of defects by severity resolved on time last reporting period / number of resolved defects by	DMS II Test Manager	**To be Determined**

Process Area	Metric	Measurement	Reported By	Threshold Tolerance
		severity this reporting period - number of resolved defects by severity last reporting period) * 100. (Within reporting period).		
	Number of Test Scripts and Defects (Gives the count and status of test scripts by test case and number of defects by script are execute)	Management can determine system coverage of the requirements by test scripts and the level of system quality based on defects compared to scripts.	DMS II Test Manager	No tolerance threshold will be established for this metric. Rather, this metric will be reported on a weekly dashboard to leadership.
	Percentage of Defects Re-Opened (indicates quality of defect resolution)	Number of fixed defects that were reopened this reporting period – number of fixed defects that were reopened last reporting period / number of fixed defects this reporting period - number of fixed defects last reporting period) * 100. (Within reporting period).	DMS II Test Manager	**To be Determined**

7 MEASURE QUALITY

Measuring the quality of a deliverable is the process of performing QA and conducting QC activities to assess the actual level of quality of each deliverable and process undertaken within the project.

QA will be performed by:

- Observation of Project Processes
- Defining Product Checklist
- Conducting Peer Reviews
- Conducting Quality Product Reviews

7.1 Perform Quality Assurance

QA is defined as "the preventative steps taken to increase the likelihood of delivering a deliverable and achieving the quality targets set". QA techniques are often undertaken at a summarized level of the project by an external project resource. Examples of QA tools and techniques include:

- Observation of project processes
- Product Review checklists
- Referencing historical data to understand areas where quality issues are likely to occur
- Reiterating the quality standards to be met to clarify the level of quality required
- Recruiting skilled staff to produce the deliverables and undertake the processes
- Conducting Peer Reviews and Quality Product Reviews to provide confidence in the quality of the project artifacts.
- Performing formal Change Control to minimize the likely number of quality issues

QA is a set of activities for ensuring quality in the processes by which products are developed. The focus is to prevent deficiencies through planned and systematic activities in a proactive approach. QA determines compliance to project policies and procedures with the ultimate goal of QA to build quality into the product or service, rather than testing it in later.

7.1.1 Observation of Project Processes

QA activities are conducted on going by the DMS II Project through the observation and participation of project activities:

- Bi-Weekly Project Status Meetings

- Weekly EMTMeetings
- Monthly Meetings with Project Oversight
- Weekly Schedule Review Meetings
- Monthly Risk and Issue Meetings
- Ad Hoc Deliverable Review walk-throughs
- Weekly Change Control meetings

Risks, issues, action items and decisions are reviewed to determine if there are touch-points to quality activities. Status of upcoming deliverable or document submissions will trigger the scheduling of a Product Review or Process Audit. As the project progresses into the DD&I phase, additional meetings will be added to future revisions, as needed. The DMS II Quality Manager and Project Team Members monitor these activities to help ensure that they are providing the expected project quality. If issues are observed, changes may be recommended to metrics, report formats or methods, or processes/procedures. The PMO will also amend its effectiveness by conducting periodic assessments of the PMO processes, procedures, and practices.

7.1.2 Define Product Checklist

Whenever appropriate, prior to conducting quality product reviews, the Quality Manager will develop a Quality Product Review checklist which will document the specific criteria used to evaluate the document or deliverable. The checklists provides structure and consistency in quality product reviews, and provides the project team with advanced information on the specific areas that will be subject to review. Refer to **Appendix B: Quality Management Checklists** for a sample of a Quality checklist to be used in performing Quality Product Reviews.

A timeline for completion of all quality process checklists is located in **Section 8: Implement the Quality Process**.

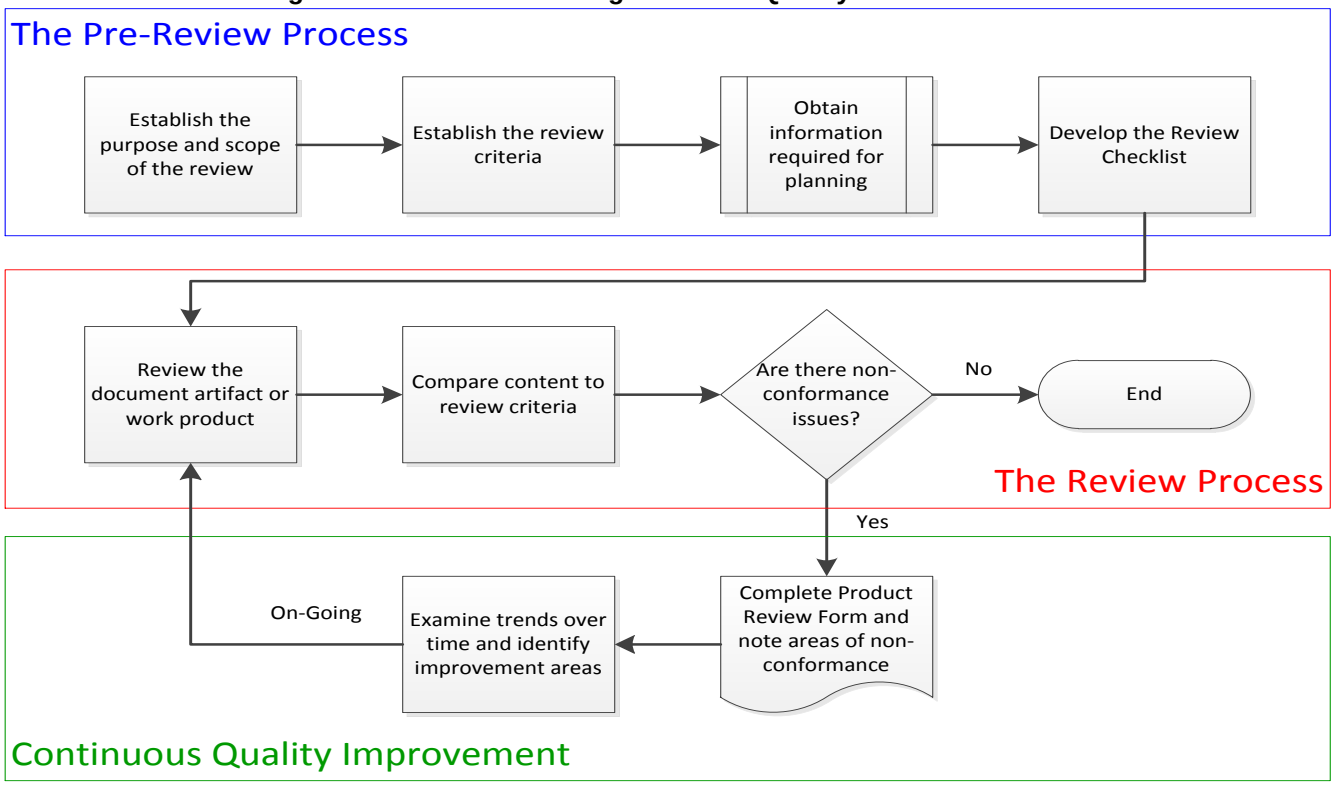
7.1.3 Conduct Peer Reviews

Peer reviews are informal document or process execution reviews conducted by a group of peers that are knowledgeable and skilled in the subject matter at hand. Peer reviews offer an opportunity for early feedback and constructive criticism before going through the formal review process. Peer reviews are optional, but recommended.

7.1.4 Conduct Quality Review

Quality Reviews include the processes required for reviewing key product documents and deliverables, how quality will be assessed, timing of reviews, what resources are needed, and designing review procedures. The Quality Manager is a consistent review member of all internal document reviews, which are governed by the DMS II Project Document Management Plan. The Quality Manager is also a consistent review member of all external deliverable reviews, which are governed by the DMS II Project Deliverables Management Plan.

Figure 2: The Workflow Diagram of the Quality Review Process



Quality Reviews focus on seven primary areas when assessing the quality of a draft document or deliverable:

1. **Conformance to Standards.** Identify the standards a deliverable was held accountable to; and identify any areas where the deliverable did not meet these standards.

2. **Consistency of Content within the Deliverable Itself.** Identify any areas within a deliverable that have conflicting and/or contradictory information and make recommendations, as appropriate, to resolve the inconsistencies. Ensure internal consistency within the document.

3. **Consistency with Other Project Documentation.** Identify project documents that are referenced in the deliverable being reviewed; or where the deliverable being reviewed references other documents. Ensure external consistency across the project library.

4. **Material Deficiencies.** Provide a summary of the types and severity of deficiencies (minor and major) errors found within a specific deliverable and note the impact these errors have on the ability of the document to transmit its intended purpose. General grammar and spelling errors should not be addressed. Review of deficiencies should focus on content issues that have a negative impact on the quality of the deliverable if not addressed.

5. **Completeness.** Identify any areas where the deliverable seems incomplete. A deliverable may be incomplete due to missing expected content, may not fully contain material that the standard called for, may have been written at too high a level, etc.

6. **Fitness of Use.** Provide a summary of whether the deliverable satisfies its intended purpose/use.

7. **Traceability.** Ensure that the document being reviewed maps to all products of the DD&I phase including requirements, test cases, design models, training manuals, help text, etc., where appropriate.

Quality Reviews will be conducted for all first distributions and subsequent revisions to the following internal documents and external deliverables over the life cycle of the DMS project:

Table 7-1-4: Types of Quality Reviews

Type of Review	Interval	Conducted By
Internal DMS II Documents		
Governance Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Change Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Configuration Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Requirements Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Human Resource Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team

Type of Review	Interval	Conducted By
Procurement Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Contract Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Cost Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Deliverable Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Document Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Schedule Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Communication Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Stakeholder Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
External SI Deliverables		
Project Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Cost Estimation Methodology Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Schedule Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Staff Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Quality Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Requirements Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Software Development Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Master Test Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Data Conversion Test Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Performance Test Plan	As per Project Schedule	Quality Manager / Assigned Review Team
End-to-End Test Plan	As per Project Schedule	Quality Manager / Assigned Review Team
User Acceptance Test Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Interface Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Data Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Service Level Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team

Type of Review	Interval	Conducted By
Data Availability Plan	As per Project Schedule	Quality Manager / Assigned Review Team
IT Service Continuity Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
System Security Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Knowledge Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Service Asset and Configuration Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Release Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Training Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Data Conversion Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Organization Change Management (OCM) Plan	As per Project Schedule	Quality Manager / Assigned Review Team
IT Service Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Transition Management Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Transition-Out Plan	As per Project Schedule	Quality Manager / Assigned Review Team
Design Description Documents	As per Project Schedule	Quality Manager / Assigned Review Team

7.2 Conduct Quality Control

QC is defined as "the curative steps taken to identify the quality of the actual deliverable delivered and eliminate any variances from the quality targets set". To simplify, QC is used to verify that the deliverables are of acceptable quality and that they are complete and correct. QC is closely related to QA, and involves monitoring project metrics, deliverables, work products and processes to help ensure compliance with quality standards.

QC techniques are often undertaken at a detailed level of the project by an internal project resource. Examples include:

- Process Audit Checklists
- Measure Quality Metrics
- Quality Process Audits

- Stage-Gate Reviews
- Testing Inspection
- Requirements Traceability

QC is a set of activities for ensuring quality in products. The activities for QC focuses on identifying defects in the actual products produced. It aims to identify and correct defects in the finished product in a reactive manner by measuring specific project results against standards.

7.2.1 Process Audit Checklists

Whenever appropriate, prior to conducting quality process audits, the Quality Manager will develop a Quality Process Audit checklist which will document the specific criteria used to evaluate the process. The checklists provide structure and consistency in quality process audits, and provides the project team with advanced information on the specific areas that will be subject to review.

- Refer to **Appendix B: Quality Management Checklist** for a sample of a Quality checklist to be used in performing Quality Process Audit.
- Refer to **Appendix B - Part G: Project Audit & Review Checklist** for a reference of a detailed checklist to be used in performing an Audit & Review of the Project.
- Refer to **Appendix B - Part H: Process Verification Audit Checklist (PVAC)** for a sample of a Quality checklist to be used in performing Process Verification Audit.

Effective control of the DMS II Project requires the review of how work is performed, evaluation of the process, and initiation of corrective action, where needed. Audits are used to confirm that work is progressing in accordance with defined processes, defined procedures, and high-quality work products to meets STO's expectations.

Reviewing the end-product quality, audits of in-progress deliverables identify quality and process compliance issues early in deliverable development – thereby reduce possible rework. These audits verify that project processes are executed as planned.

Based on the audit score, the periodic PVAC is repeated periodically (monthly, quarterly, bi-annually, or yearly) for as long as the process is running. Processes that run the length of the project such as Change Request Management, Requirements Management, Scope, R&R, and Deliverables Management are well suited to this type of audit.

Audit Logs are the tools used during Periodic Audits to review and measure the individual processes. An example of a PVAC can be found in **Appendix B – Part H**.

7.2.2 Measure Quality Metrics

After project metrics are defined, monitoring quality metrics against performance targets is an integral part of QC activities. A quality metric is an operational definition that describes, in very specific terms, a project or product attribute and how the QC process will measure it.

Metrics will be measured in the following ways:

- Review of risks, issues and action items in a relational database tool.
- Review of document repository in the shared network folder and SharePoint.
- Review of Change Control Items and Configuration Items in the designated tool.
- Review and observation of project and technical processes.
- Review and observation of testing results.
- Review of project status in various project status meetings.

The data gathered in the above areas will be compared against the metric measurement, criteria and threshold tolerance to determine if the metric data gathered is within acceptable limits. The results will be documented in the following manner:

- Results will be logged to a quality spreadsheet to track all quality activities.
- Trends of not meeting acceptable levels over time will be reviewed to determine potential for process improvement activities.
- Graphs, charts, and other graphical tools will be developed to report on the metrics results and share with the project team.
- The Quality Manager will provide a status of all quality activities in the monthly MSR for enterprise quality services and include the attachment for the quality log.
- The Quality Manager will develop a Metrics Dashboard that can be customized to fit specific audiences and communication methods. The dashboard will display the results of the metrics measurements and any available trending.

Where appropriate, process improvement activities will be initiated on major areas of non-conformance. Any changes that result from these activities will be run through the Change Management process.

7.2.3 Quality Process Audits

A Quality Process Audit is a systematic investigation of a specific process or procedural area. Quality Process Audits are used as an approach to determine whether project activities comply with the project's quality policies, processes, and/or procedure, if the process is effective and efficient, and whether the appropriate controls are being applied. Quality Process Audits are typically performed at defined project intervals and are geared toward determining if project quality complies with the quality metrics and measures defined in the Plan.

The main task of Quality Process Audits is to judge how effective the DMS II QM program is at identifying and reducing process mistakes and to provide guidance for improving QA efforts. Quality Process Audits focus on Compliance, Efficiency and Effectiveness criteria:

- Compliance
    - After observing execution of process, is it in compliance with the documented Plan? Is it in compliance with the project or Plan standards (OTech, PMBOK, IEEE, ITIL, etc.)?
    - If it is out of compliance, should the process be amended or should the Plan be amended?
    - Verify that processes and procedures are developed, communicated, implemented, monitored, and complete.
- Efficiency
    - Can we perform this task or activity in a more effective manner?
    - Have we eliminated all duplicative tasks or manual efforts, where appropriate?
    - What is positive about the current process? Alternatively, what process areas need improvement? Could we perform this task differently?
    - Is this process still needed?
- Effectiveness

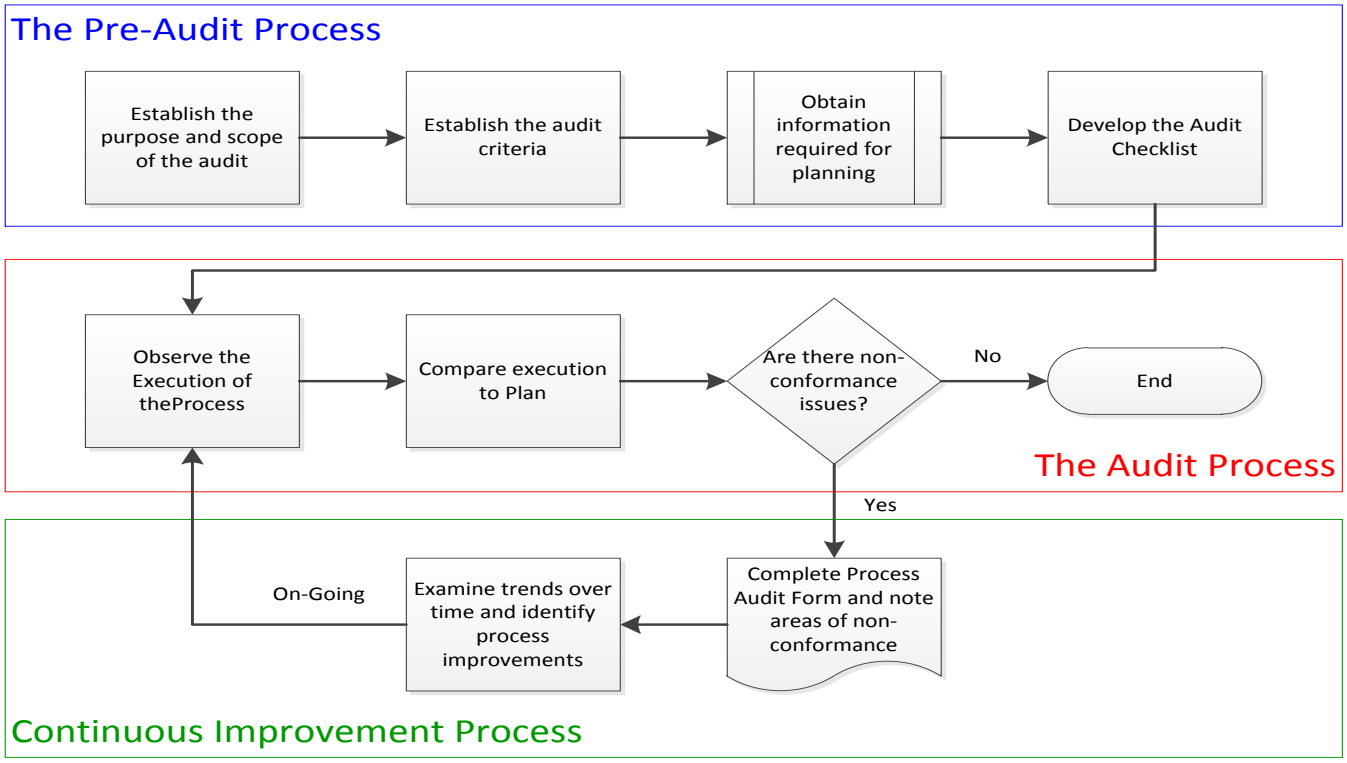
Are best practices and metrics employed to identify issues, progress, performance, etc.?

- Do we know what our customer's expectations are regarding this process?

- Are we meeting our customer's expectations consistently?
- Are we positioned to meet our customer's future needs?

Refer to **Appendix C – Part B: Quality Process Audit Form** for a template of the Quality Process Audit Form. For every Quality Process Audit conducted, the Quality Manager will complete this form and store the final copy in the appropriate document library.

Figure 3: The workflow for performing a Quality Process Audit



7.2.3.2 Internal Process Audits

Internal Quality Process Audits will be performed continuously during Planning & Procurement and DD&I for each major internal DMS II process area. Project audits are scheduled for monthly intervals or based on the PMO resource availability. Other audits may be added as needed in the future.

Table 7-2-3-2: Internal Process Audits

Type of Audit	Interval	Conducted By
Risk and Issue Management	As per project schedule	DMS II PMO
Schedule Management	As per project schedule	DMS II PMO
Change and Configuration Management	As per project schedule	DMS II PMO
Governance	As per project schedule	DMS II PMO
Contract Management	As per project schedule	DMS II PMO
Document Management and Deliverable Management	As per project schedule	DMS II PMO

7.2.3.3 External Process Audits

External Quality Process Audits will be performed every six months for each major external DMS II process area at the following defined project intervals. Other audits may be added as needed in the future.

Note: Intervals will be defined once the SI schedule has been baselined.

Table 7-2-3-3: External Process Audits

Type of Audit	Interval	Conducted By
Requirements Management	As per project schedule	SI Requirements Manager
Software Development	As per project schedule	SI Development Manager
Quality Management	As per project schedule	SI Quality Manager
Project Management	As per project schedule	SI Quality Manager
Test Management	As per project schedule	SI Quality Manager
Data Conversion	As per project schedule	SI Quality Manager
Training	As per project schedule	SI Quality Manager
Implementation	As per project schedule	SI Quality Manager
Service Level Management	As per project schedule	SI Quality Manager

7.2.4 Stage-Gate Reviews

The end of each DD&I Phase represents a Phase Milestone. Each phase will have Phase Exit Criteria and conditions that must be met before the SI may begin work on the next phase. The Quality Manager will conduct Stage Gate Audits as part of the readiness for the phase exit criteria, providing a systematic investigation of specific products and processes from each project phase. Stage Gate Audits will use the results of previous Quality Process Audits and Quality Review Audits from the same project phase as a basis for determining whether project deliverables and work products meet the criteria established for that phase of the project.

QC Checkpoints will be used for the Stage Gate Audits in DD&I phase and will be coordinated through phase gate exit criteria as specified in the RFO requirements, whereby the deliverables that are considered for acceptance at that phase gate are included in the Stage Gate Audit.

Table 7-2-4: Stage Gate Reviews

Type	Phase	Checkpoint at end of phase
DD&I	Initiation	Quality Gate Audit_DD&I_01
	Solution Development	Quality Gate Audit_DD&I_02
	End-to-End Testing	Quality Gate Audit_DD&I_03
	UAT, Data Conversion and Pilot	Quality Gate Audit_DD&I_04
	Pilot	Quality Gate Audit_DD&I_05
	Statewide Rollout	Quality Gate Audit_DD&I_06
	System Acceptance	Quality Gate Audit_DD&I_07
M&O	**M&O Checkpoints have not yet been developed**	

The results of the Stage Gate Audits, together with the set of project deliverables for the phase, should satisfy the stated quality standards and requirements, and obtain proper management approvals before proceeding to the next phase or further project activities.

See **Appendix C – Part C: Stage Gate Audit Form** for a sample audit form.

7.2.5 Testing Inspection

Solution testing is an integral component of the QC process. The Quality Manager and the Project Team will work closely with the STO and SI Test Managers to monitor all phases of testing, from unit test through user acceptance testing (UAT).

Note: Detailed procedures for testing quality will be developed at a later date in a future revision.

Quality testing activities include the following:

- Review test plans prior to the start of a testing phase and ensure that they address any feedback from oversight and the Project Team.
- Review test scripts prior to beginning test execution. Ensure that script coverage is sufficient and script quality is up to quality standards.
- Review the traceability between test scripts and requirements. Ensure that test scripts adequately cover all system requirements.
- Review defect logs and ensure that defects are addressed in a timely manner. Review the total inventory of defects as a gauge of overall solution quality.
- Verify that test documentation is sufficient, and ensure there is an audit trail proving that tests were executed as planned.
- Review communication processes around solution testing, particularly communications with departmental testers. Ensure that the Project is providing the necessary training and communication for successful departmental testing.

An inspection is an activity such as measuring, examining or testing one or more characteristics of a product or service, and comparing the results with specified requirements in order to establish whether conformity is achieved.

For the purposes of the DMS II Project, inspections will be used to measure and examine testing results (and defects) during the DD&I phase. An essential principle of QM is "the sooner we eliminate errors, the better".

It is important to note that Inspections are a way to remove defects at a lower cost, not a way to prevent defects from occurring. Many studies across all industries have demonstrated that there is a cost and time ratio for development → production → delivery of 1:10:100. It means each error will cost **10 times more** (in dollars and in time) to fix in production than it would to fix in development, and **100 times more** if the error actually reaches the customer. We need Inspections to remove software defects at reduced cost. Inspections enable us to remove defects early in the software life cycle, and it is always less expensive to remove defects earlier than later in the software life cycle.

While some testing will always be necessary, DMS II can reduce the costs of testing by reducing the volume of defects propagated to test. The idea is to use test to verify and validate functional correctness, not for defect removal and associated rework costs. We want to use test to prove the correctness of the DMS II application without the high cost of defect removal normally seen in test. Additionally we want to use test to avoid impacting the users with defective products.

The DMS II Quality Manager will be responsible for independent review of testing results, test scripts, test coverage, etc., but will work closely with the SI's Test Manager to coordinate activities, obtain test data, review findings, etc.

7.2.6 Requirements Traceability

Requirements traceability is concerned with documenting the life of a requirement and providing bi-directional traceability between various associated requirements. It enables users to find the origin of each requirement and track every change that was made to this requirement. Examples of traceability include:

- Approval FSR/SPR to Solicitation Document
- Solicitation Document to system requirements
- System requirements to software requirements
- Software requirements to high level design
- High level design to detailed design
- Detailed design to code
- Software requirement to test case

The DMS II PMO is responsible for conducting traceability on the DMS II requirements. The results will be communicated to the Quality Manager and the Project Team to determine the appropriate actions for areas of non-compliance.

Refer to the DMS II Requirements Management Plan for more information.

7.3 Improve Quality

A continual improvement process is an ongoing effort to improve products, services, or processes. These efforts can seek "incremental" improvement over time or "breakthrough" improvement all at once. Processes are constantly evaluated and improved in the light of their efficiency, effectiveness and flexibility.

After the actual level of quality has been established (through QA and QC), the deliverables produced and the processes executed should be compared to the quality standards that have been established and quality improvement actions should be implemented as necessary. The level of quality achieved and the preventative or corrective actions undertaken should be communicated to the Project Manager for consideration and the project plan and schedule adjusted accordingly if applicable.

7.3.1 Implement Quality Improvement Actions

PMBOK® defines quality as *"the degree to which a set of inherent characteristics fulfill requirements".* The discipline of QM complements project management with a focus on customer satisfaction, prevention of defects over inspection, management responsibility, and continuous improvement.

Practicing quality improvement begins with identifying a current process, procedure, or workflow within the DMS I system. Fully understanding what you have to work with is the first step in improvement. Although this step may seem obvious, many organizations that skip this

step spend unplanned time trying to fix a process only to discover that the process in question is not needed, or the process is so poorly integrated with the project that they must take a larger step backwards to look at the bigger picture.

7.3.1.1 Continuous Quality Improvement

The results from QA and QC activities should be assessed to determine the actual quality achieved. If the quality achieved does not meet the established quality standards, then quality improvement actions should be implemented. This process should continue until the quality of the deliverables and processes meet the quality standards initially defined. Questions to ask when considering an area for improvement:

- How many project staff does this specific process affect?
- How much time do project staff spend working within the constraints of the current process?
- What would we gain if we spent time working to improve this process? (Gains must be measurable, as in dollars, hours or other value metrics that are quantifiable.)
- What other teams / processes would be impacted by changes to the current process, and how?
- Would those impacts serve as impediments? If so, what mitigation steps could we take to lessen the impact?
- Is the amount of effort justified by the anticipated value of forming a new process?

Table 7-3-1-1 below provides an example of areas for process improvement that measure quality, assess quality deviations, and recommend improvements.

Table 7-3-1-1: Example of Measuring Improvements to Quality

Improve Quality				
Quality Level			**Quality Deviation**	**Improvement Recommendation**
L	M	H		
X			Critical errors experienced during Pilot installation	Reinstall code base to remove critical errors
	X		Go Live Readiness is not at an acceptable level in three counties	Work with each county to implement a corrective action plan to meet readiness levels for implementation
		X	Material deviations identified in SI data Conversion Test Results	Meet with the SI to identify areas on non-conformance, allow vendor xx days to remediate issues, and revisit test results in xx days.

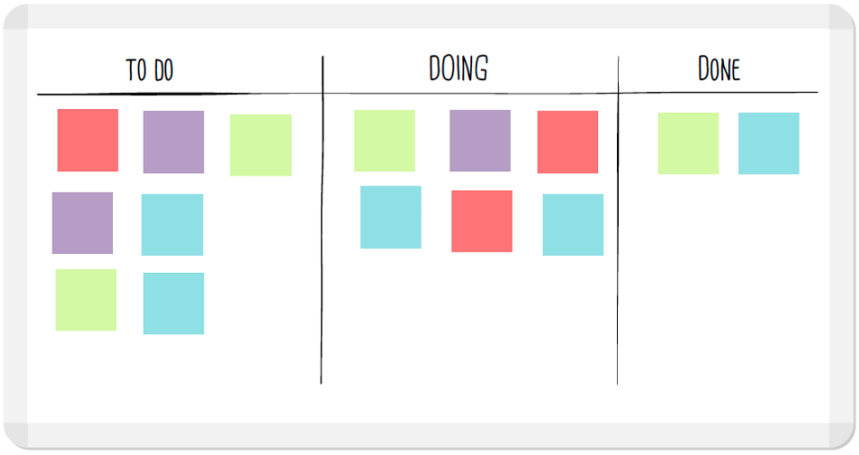
7.3.1.2 Quality Process Improvement High-Level Steps:

- Review the results of Quality Product Reviews, Quality Process Audits, Quality Stage Gate Audits, IPOC or IV&V reports to determine area for improvement based on non-conformance.
- Present potential process improvement areas to management and allow management to rank and prioritize the most important areas for improvement.

7.3.1.2 Example of a Quality Process Improvement Activity:

- Map out the existing process to clearly identify process steps. One method is the use of a project board with sticky notes that each represent a single piece of the process or action item and its current status – we need to do it, we are doing it now, it is done. Colors can represent functional areas or priority/severity.

Figure 4: – Process Map



- Identify areas of opportunity surrounding the mapped process, looking for process steps that can be streamlined, automated, etc. For example:
    a. Are there ways to reduce the time it takes to get something approved? Are there too many layers of governance?
    b. Are there unnecessary steps that are creating bottlenecks and/or causing people to wait?
    c. Is the process working, but people are not executing in compliance of the process? If so, would additional training be beneficial?
- Decide on a new process that requires process improvement action, outline the steps needed to implement the improvement, conduct the activities, and communicate the new process to everyone that is impacted.

7.3.1.3 Quality Targets:

Quality Targets should be measureable, meet product requirements, and agreed upon by the SI and stakeholders. Identify Quality Targets for each Quality Product Review and each Quality Process Audit focus area, identifying the process or document/deliverable in question. A Quality Target should identify:

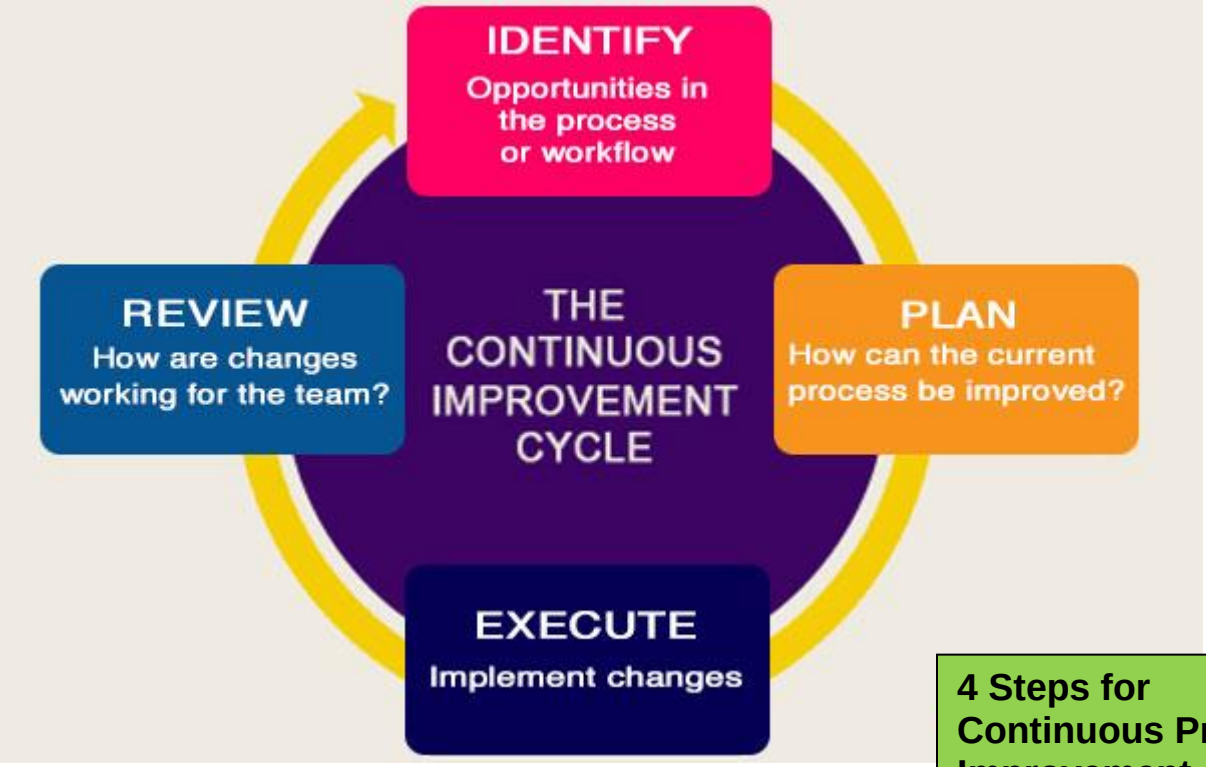
- Project Requirement that is governing the process or deliverable.
- Quality Standard(s) that are the foundation of the process or deliverable framework.
- Quality Criteria by which to measure quality.
- Quality Acceptance by which to approve conformance to quality criteria.

The sample quality target for the Quality Product Review of the DMS II Schedule Management Plan (SMP) in example C which can be found in **Appendix A: Quality Target Definition Template** will illustrate the need to specify quality objectives clearly and concisely.

7.3.1.4 High-Level Example of Continuous Improvement:

When looking at how quality can be continuously improved, QM must include steps for identifying the opportunity, planning the improvement, executing the improvement and a continuous review of the improved quality standard or process.

Figure 5: – Steps for Continuous Improvement



The steps are further explained below:

- **Identify** – Through Product Reviews and Process Audits, identify opportunities in the products or processes of the project. Checkpoints include:
    - Identify the Project's key processes that need improvement.
    - Verify all Project Team members understand why the process was selected for improvement and its relationship to the Project.
    - Identify customer-defined critical success factors.
    - Develop a process flowchart.
    - Prioritize candidate processes.
    - Identify the process to improve.
    - Identify process owner, customers, suppliers, and stakeholders.
    - Identify customer requirements.
    - Establish indicators that will measure process performance.
    - Develop schedule for completing process improvement activities and leadership reviews.
- **Plan and Evaluate** – Assess the project's current level of quality, where that level needs to be, and then develop an effective and workable plan with specific targets for improving quality. Checkpoints include:
    - Determine how the current process can be improved by looking at areas of non-conformance in the Product Reviews and the Process Audits results.
    - Develop "as is" flowchart to task level.
    - Identify process measurement relevant to customers, then collect the data
    - Stratify the problem to a specific level for analysis.
    - Identify the most significant part of the problem.
    - Validate customer requirements against process capabilities.
    - Verify that the problem statement addresses the gap between the desired state and the actual state of the process.
    - Establish the target for improvement (use data).
    - Perform cause-and-effect analysis of the problem.
    - Analyze potential root causes.
    - Select the root cause that has the greatest probable impact.
    - Verify the root causes (use data).
- **Execute** – Implement the planned solution or change that correct the root causes. Checkpoints include:
    - Develop and evaluate possible actions.
    - Verify the actions are cost-beneficial.
    - Develop an action plan.
    - Test actions (if possible) before fully implementing them.
    - Get the cooperation and approval needed.
    - Implement the action plan.

- **Review** – Review and evaluate the results of the implemented change and its effect on project quality and ensure that there are no negative consequences. How are the changes working for the Project Team. Then act on what was learned from implementing and evaluating the planned changes and continue repeating the cycle until the project quality objectives have been achieved. Checkpoints include:
    - Confirm the indicator was the same one used to identify the process.
    - Determine if the action results met or exceeded the target.
    - Discuss why the target was or wasn't met.
    - If the target wasn't met, confirm additional actions.
    - Publish revised methods and procedures.
    - Conduct training on new processes.
    - Create periodic process review points.
    - Consider areas for replication.

7.3.1.5 Approach for Process Improvement

Over time and with close attention to the results of process audits, items are identified which lead to process improvement. Ideas for process improvement are also solicited from project team members who utilize the project processes. These items are captured in the DMS II Project Repository and discussed in meetings with the process owners. The desired outcome is implementation of the new ideas for improvement into existing processes or the creation of new and better processes.

7.3.1.6 Lessons Learned

The primary purpose of the Lessons Learned process is to share and use knowledge derived from a common activity to improve the outcome of future similar activities. This process seeks to promote the recurrence of desirable outcomes and prevent the recurrence of undesirable outcomes.

By collecting data from various participants of a selected release or activity via surveys and meeting sessions, the responses can be objectively discussed and improvement opportunities for each can be captured. The implementation of lessons learned improvements should lead to taking advantage of opportunities to improve the target activity, iteratively, to achieve the best possible result in the next release.

The below table describes the Lessons Learned process steps, process owner, participants, and documentation produced.

Table 7-2-1-6: Lessons Learned Process Steps (Examples)

Process Steps	Description	Owner	Participant(s)	Documentation
Determine Meeting Date	Meeting Date based on appropriate interval post go-live (generally 2-4 weeks unless additional time is required due to implementation problems or if the release is related to a quarterly or twice-yearly cycle)	DMS II PMO & SI PMO.		Meeting Invite on Calendar Meeting Agenda/Minutes
Develop Survey Questions to solicit input	Collaborate with Process Leads to develop questions for Survey Questionnaire	DMS II PMO & SI PMO.	DMS II PMO, SI PMO, and Process Leads.	Survey stored in DMS II Repository/Lessons Learned
Identify Meeting Participants	Participant list is drawn from Business Lead, Development Lead, Test Lead, Release Planning Meeting participants, Early Life Support Meeting Participants including Legal, External Communications and other FTB departments, as needed	DMS II PMO & SI PMO.	As identified	Meeting Agenda/Minutes stored in DSM II Repository/Lessons Learned
Send out Survey/Questionnaire to solicit input	Sample Survey Questions: 1. What worked well? What were the contributing factors? 2. What didn't work? What is the recommended solution? 3. What circumstances were not anticipated? What, if anything, can be done to anticipate them in the future?	DMS II PMO & SI PMO.	As identified	Survey/Questionnaire stored in DSM II Repository/Lessons Learned
Consolidate Survey Findings	Categorize Survey response data for Lessons Learned Meeting	DMS II PMO & SI PMO.		Stored in DSM II Repository/Lessons Learned
Send out Meeting Invitation & Agenda	Send Outlook meeting invitation at least 3 days prior to meeting	DMS II PMO & SI PMO.		Meeting Agenda/Minutes stored in DSM II Repository/Lessons Learned
Conduct Lessons Learned Meeting	Review consolidated findings; hold open discussion; assign action items	DMS II PMO & SI PMO.	All invitees	Stored in DSM II Repository/Lessons Learned

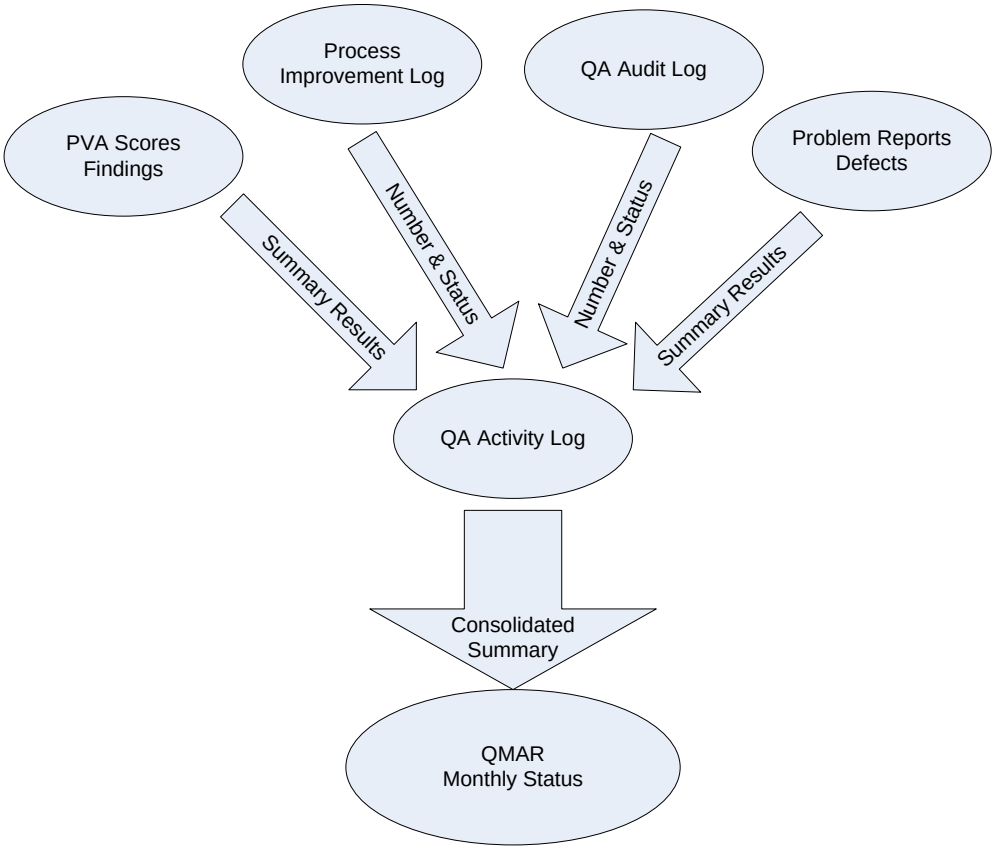
Process Steps	Description	Owner	Participant(s)	Documentation
Document meeting minutes	Capture and store meeting minutes	DMS II PMO & SI PMO.		Stored in DSM II Repository/Lessons Learned
Update Action Items List	Update Action Items List with Lessons Learned Meeting responses and findings, record owners and proposed completion dates for mitigation measures as discussed at meeting	DMS II PMO & SI PMO.		Stored in DSM II Repository/Lessons Learned
Follow up	Follow up with Action Item owners for status of mitigation measures, based on proposed completion dates	DMS II PMO & SI PMO.	QA Manager & PMO Manager.	Stored in DSM II Repository/Lessons Learned
Develop & Publish Top 5	Distribute Top 5 Lessons Learned PowerPoint presentation to participants and DSM II Project Managers	DMS II PMO & SI PMO.		Stored in DSM II Repository/Lessons Learned

The QA Team monitors the effectiveness of the implemented improvements as part of the ongoing effort.

7.3.2 Quality Reporting

The QA tools and techniques support testing activities, facilitate the creation of the Monthly Status Report, and produce QA records which are stored in the DSM II Repository. The following figure shows the role of each QA tool in providing information for the QA Reports.

Figure 6: QA Tools and Techniques



The details for each QA tool are presented in the table below:

Table 3-5-6: QA Tools Detail (Example)

QA Technique (Tool)	Purpose	Results	Location
Process Improvement Log (Excel)	This tool captures process improvement opportunities identified to the QA team by project team members. The tool also tracks the status of the opportunity.	Summarized metrics are copied from this log and used as inputs to the QM Activity Report (QMAR).	DSM II Project Repository: Quality/QA Logs/Process Improvement Log

QA Technique (Tool)	Purpose	Results	Location
Process Verification Audit Checklist (PVAC) (MS Excel)	This tool provides the structure for a periodic process verification audit report. It captures deviations and Non Conformances (NC) identified during the audit and contains the formulas to calculate an overall audit score.	A specialized scorecard is created for each process audited by the QA team. The audit score and summary results are inputs to the QA Activity Log. Individual deficiency and NC items are stored and tracked in the Audit Log.	DSM II Project Repository: Quality/05. Process Verification Audits
QA Audit Log (MS Excel)	This tool consolidates Deviations and NC from the individual PVACs and tracks their resolution progress and status.	The Audit Log is reviewed weekly by the QA team. Summarized metrics are copied from this log and used as inputs to Quality Activity Log.	DSM II Project Repository: Quality/QA Logs/Audit Log
QA Review Checklist (MS Excel)	This tool captures deficiencies found during deliverable reviews, the author's comments on each deficiency, and tracks the status of deficiency correction.	A checklist is created for each deliverable. The results of the review are presented on the form. Summarized review metrics are copied from the form and used as an input to the Quality Activity Log.	DSM II Project Repository: Quality/Planning/Project Deliverable Checklist/QA Review Checklists
QA Activity Log (MS Excel)	This tool captures the day-to-day activities of the QA team including information about and summarized results of: Reviews Completed, Audits Completed, Meetings Attended, and Processes Improved.	Provides summarized input from QA activities to the Monthly status reports and the QMAR.	DSM II Project Repository: Quality/Planning/QA Tasks/QA Activity Log

7.3.2.1 Report Level of Quality Achieve

Regardless of the quality outcome, it will be necessary to report the level of quality attained to the Project Manager for consideration. The Project Manager will need to understand the current level of quality of each deliverable and process and record the Quality Improvement Actions within the project plan.

See **Appendix C – Part D: Quality Improvement Report** for an example of a Quality Improvement Report template.

8 IMPLEMENT THE QUALITY PROCESS

Once the Plan has gone through the review process and has been approved and baselined by the Executive Management Team, the project staff will start executing against the Plan in their daily activities.

All end-users must be trained on the QM processes and procedures – everyone on the DMS II Project is responsible for quality. The goal of this training is to help institutionalize the processes and procedures for QM into daily DMS II Project activities. The end-users of the QM process are defined as anyone on the project that:

- Develops, executes or reviews internal documents or processes
- Reviews or approves SI deliverables or processes
- Conducts or validates system testing activities

The following training tools will be developed in preparation for providing training to the end-users on the QM process:

- A Frequently Asked Question (FAQ) document for distribution to DMS II project team.
- High-level presentation conducted with the DMS II Project team at the Bi-Weekly DMS II Project meeting. This presentation will focus on the definition of each process area, roles and responsibilities, description of the quality documents, and an overview of the quality review and audit process.
- Detailed presentation conducted with quality end-users after Plan baseline. This presentation will focus on the detailed procedures for quality reviews and audits, an overview of the quality improvement program and a demonstration of quality metrics, criteria and measurements.

The Implementation of the QM Process will follow the phased steps below:

Table 8-1: Phased Implementation of Quality Management Processes

Phase	Step #	Description
1	1.	Identify quality standards and metrics.
	2.	Identify quality targets and criteria for internal Product Reviews. Develop review checklists for all internal documents that are being developed.
	3.	Conduct Internal Product Reviews and record independent results on the Quality Product Review Form and in the Quality Activity Log.

Phase	Step #	Description
	4.	Coordinate QM findings and mitigation strategies with IV&V and IPOC
	5.	Meet with process area SMEs to finalize metrics and criteria and determine communication channels for recording results.
2	1.	Identify quality targets and criteria for internal Process Audits. Develop Audit checklists for all internal processes that are being executed and will be observed.
	2.	Conduct Internal Process Audits and record independent results on the Quality Process Audit Form and in the Quality Activity Log.
	3.	Collect and analyze project metrics.
	4.	Develop a project dashboard and record the level of quality achieved within the project in various dashboards or other communication channels.
3	1.	Identify quality targets and criteria for external Product Reviews. Develop review checklists for all external deliverables that will be developed.
	2.	Identify quality targets and criteria for external Process Audits. Develop Audit checklists for all external processes that will be executed and observed.
4	1.	Conduct external Product Reviews and record independent results on the Quality Product Review Form and in the Quality Activity Log.
	2.	Conduct external Process Audits and record independent results on the Quality Process Audit Form and in the Quality Activity Log.
	3.	Conduct Stage Gate Audits and record independent results on the Quality Stage Gate Audit Form and in the Quality Activity Log.
	4.	Oversee SI QM Program.
	5.	Conduct Testing Inspections.

The timeframes for the implementation phases are listed below:

Table 8-2: Phased Implementation By Timeframe

Phase	Timeframe
1	Immediately following Quality Management Plan Baseline
2	3-6 months following Quality Management Plan Baseline
3	6-12 months following Quality Management Plan Baseline
4	30-90 days following SI start date

APPENDICES

APPENDIX A: QUALITY TARGET DEFINITION TEMPLATE

PART A: INTERNAL DOCUMENT QUALITY TARGETS

Internal Document Quality Target <Process or Document Name>			
Project Requirement	**Quality Standard**	**Quality Criteria**	**Quality Acceptance**
The DMS II Project shall conduct <process or document name> activities consistent with their <Process> Plan.	<Name of standard(s) or framework>	1. Evidence of conceptual overview with SMEs. 2. Plan is delivered on time. 3. DMS feedback and comments are incorporated into the Final version. 4. Process 1. 5. Process 2. 6. Process 3.	1. Conceptual Overview is accepted and approved. 2. Delivery of Plan meets baseline finish date. 3. Incorporation of comments meets baseline date. 4. Review/Audit team validates evidence of Process 1. 5. Review/Audit team validates evidence of Process 2. 6. Review/Audit team validates evidence of Process 3.

PART B: EXTERNAL DELIVERABLE QUALITY TARGETS

External Deliverable Quality Target <Process or Document Name>			
Project Requirement	**Quality Standard**	**Quality Criteria**	**Quality Acceptance**
The SI shall conduct <process or document name> activities consistent with their <Process> Deliverable.	<Name of standard(s) or framework>	1. Evidence of DED. 2. Plan is delivered on time. 3. DMS feedback and comments are incorporated into the Final version. 4. Process 1. 5. Process 2. 6. Process 3.	1. DED is accepted and approved. 2. Delivery of Plan meets baseline finish date. 3. Incorporation of comments meets baseline date. 4. Review/Audit team validates evidence of Process 1. 5. Review/Audit team validates evidence of Process 2. 6. Review/Audit team validates evidence of Process 3.

PART C: INTERNAL DOCUMENT QUALITY TARGET EXAMPLE

Quality Target			
Project Requirement	**Quality Standard**	**Quality Criteria**	**Quality Acceptance**
The SI shall conduct scheduling activities consistent with their SMP.	CA-PMM Schedule Management PMBOK Schedule Management	1. Evidence of DED. 2. Plan is delivered on time. 3. DMS feedback and comments are incorporated into the Final version. 4. Rolling wave technology. 5. Critical Path Methodology 6. Schedule Tool. 7. Resourced Master Schedule. 8. Time and Schedule Variance Report (TSVR).	1. DED is accepted and approved. 2. Delivery of Plan meets baseline finish date. 3. Incorporation of comments meets baseline date. 4. Review team validates evidence of rolling wave technology. 5. Review team validates evidence of critical path methodology. 6. Review team validates implementation of schedule tool. 7. Review team validates schedule is resourced. 8. Review team validates evidence of TSVR.

APPENDIX B: QUALITY MANAGEMENT CHECKLISTS EXAMPLES

PART A: GENERAL CHECKLIST

1. Is the content of the deliverable consistent with the required items as defined in the approved DED?
2. Does the document/deliverable meet general requirements (for example, statement of work) for all deliverables?
3. Does the document/deliverable meet all requirements (for example, statement of work) specific to this deliverable?
4. Was the document/deliverable developed per the appropriate or required standards (for example, Institute of Electrical and Electronics Engineers standards)?
5. If appropriate, is the deliverable content consistent with current DMS II Project documents and in compliance with the DMS Document Management Plan?
6. Is the document/deliverable content logically organized to enhance readability?
7. Is the document/deliverable content accurate and factual?
8. Is the document/deliverable written concisely, unambiguously, and "to-the-point" (for example, no superfluous information or marketing narrative)?
9. Is the document/deliverable comprehensive and complete in its coverage of the topic (for example, it is not missing any expected or required content)?
10. Is the document/deliverable written to the appropriate level of detail for the type of document it is (for example, a plan versus a procedural document)?
11. Are terminologies and acronyms defined and used consistently throughout the document/deliverable?
12. Is the document/deliverable content internally consistent (for example, no conflicting or contradictory information between document sections)?
13. Is the document/deliverable content externally consistent (for example, no conflicting or contradictory information between different documents)?
14. Does the document/deliverable include appropriate figures (for example, graphs and diagrams) and tables to explain complex concepts and increase overall readability?
15. Is the document/deliverable written with "one voice" (that is, does not appear to be written by multiple authors and in multiple writing styles)?
16. Is the document/deliverable free of distractions (for example, grammatical, formatting, or other cosmetic errors) that hinder readability and comprehension?

PART B: PROJECT MANAGEMENT

Quality Checklists will be established for all of the project management documents, deliverables and processes according to the timeframe indicated in **Section 8: Implement**

the Quality Process. The Quality Checklists can be customized to fit a Product Review or a Process Audit as needed. Below is an example of a Quality Checklist that could be used in the Product Review of the Requirements Management Plan or in a Process Audit of the execution of requirements management activities and processes.

PART C: REQUIREMENTS MANAGEMENT CHECKLIST

Requirements Management		
Standards	**Items to Review**	**Example Checklist**
• Department of Finance Oversight Framework • PMBOK and CA-PMM • IEE 830 – Standard for Software Requirements Specifications	• Requirements • FSR or SPR • RFP and SOW • Project artifacts which are tied to requirements (Requirements Management Plan, traceability, test scripts, design documentation. Etc.)	• Does the Plan conform to standards? • Is there adequate stakeholder participation for the vetting of requirements definition, changes and management? • Were the system requirements formally reviewed both the State and the business partners prior to initiating the design phase? • Do documented requirements exist for all critical components and areas, including technical, business, interfaces, performance, security and conversion requirements? • Do the requirements meet the standards of correctness, completeness, consistency, accuracy, and readability? • How are new requirements or changes to requirements identified? How are these validated by user groups and subject matter experts? • Is there requirements traceability process in place? • Are requirements management tracking tools and procedures in place? • Does an effective change control process exist for approving

Requirements Management		
Standards	**Items to Review**	**Example Checklist**
		modifications to the requirements? • Can the requirements be traced the appropriate components of the solution, as well as test scripts? • Does the traceability documentation describe the tool and/or mechanism to be used to capture traceability throughout the life cycle?

PART D: DD&I DELIVERABLES CHECKLIST

Prior to submission of each deliverable, the SI will develop a Deliverable Expectation Document (DED). STO must approve the DED before the development of the Plan can occur. Included in the DED are the scope of the plan and the acceptance criteria by which to measure the plan.

Specific acceptance criteria developed for each external Quality Product Review. The DMS II Deliverable Management Plan contains additional information on acceptance criteria. However, some general acceptance criteria for external Quality product Review include:

- Plan complies with approved Deliverable Expectation Document (DED).
- Plan complies with all appropriate standards as referenced in the SI SOW.
- Plan was reviewed by all assigned SMEs, review team and Quality manager for:
    - Conformance to standards
    - Internal Consistency
    - External Consistency
    - Material Deficiencies
    - Completes
    - Fitness of Use
    - Requirements Traceability (where applicable)
- Plan has no open major deficiencies.
- Plan has fewer than 10 minor deficiencies and a plan for remediating them in the next version.

- Relevant documentation updates.

PART E: SI TEST MANAGEMENT CHECKLIST CONSIDERATIONS

The SI is responsible for conducting test management activities consistent with the approved Master System Test Plan deliverable as described in the contract. The SI has the following quality responsibilities related to testing management:

- **Conduct regression testing** prior to promoting a Build or Release into a non-development environment.
- **Perform data conversion testing** consistent with the approved Data Conversion Test Plan.
- **Provide a Data Quality and Cleanup Report** for each "full-load" data conversion test conducted.
- **Conduct performance testing** in the Performance Test Environment, measure the system performance, and establish a baseline. Create a metrics consistent with the approved Performance Test Plan.
- **Conduct end-to-end testing** activities for a period of three months, or as mutually agreed between the Contractor and the DMS II PMO in writing, consistent with the approved End-to-End Test Plan.
- **Conduct User Acceptance** Testing for a period of 5 months, or as mutually agreed between the Contractor and the DMS II PMO, consistent with the accepted User Acceptance Test Plan.

PART F: SOFTWARE DEVELOPMENT CHECKLIST

Software Development		
Standards	**Items to Review**	**Example Checklist**
• IEEE 828 – Configuration Management in Systems and Software Engineering • IEEE 1074 – Software Development Lifecycle • IEEE 1233: System Requirements	• Software development plans and standards • High level design documents • Detailed design documents • Functional and Technical requirements specifications • Software code	• Does the Plan conform to standards? • Is a formal system development methodology followed? • Does the system design reflect the requirements? • Are there processes defining how software will be developed including development methods, overall timeline for development, software product standards, and traceability? • Is there documentation of system wide design decisions, software item

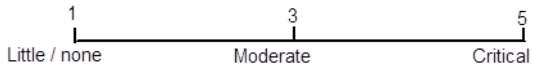
Software Development		
Standards	**Items to Review**	**Example Checklist**
Specifications • IEEE 1016 – Software Design Description • IEEE 828 – Configuration Management in Software and Systems Engineering	• Configuration management plans and processes • Unit test plans and results	components, architectural design, component detailed design, or unit testing processes? • Are there standards for code development? • Are there processes in place to ensure that all the terms and code concepts have been documented consistently? • Are there processes in place to ensure internal consistency between the source code components? • Are formal code reviews conducted? • Is there documentation of system capability requirements, data requirements, environment requirements, security requirements, and computer and hardware requirements? • Is there documentation of the database design including overall design decisions, database distribution, data integrity, business rules, synchronization, backup policies, storage and size requirements? • Is staff trained on the software technologies that are being used on the Project? • Are processes for release management of new development from coding and unit testing, to integration testing, to training, and production defined and followed?

PART G: PROJECT AUDIT & REVIEW CHECKLIST (EXAMPLE)

The following provides a detailed checklist to assist the DMS II PMO with reviewing the health of a project:

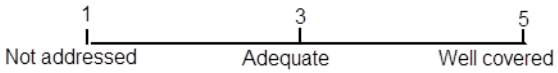
Relevance (at this time)

(How relevant is this attribute to this project or audit?)



Theory & Practice

(An indication of this attribute's strength or weakness)



Attribute	Relevance	Practice	Assessment
Project Planning			
Does the project have a formal Project Plan?			
Have all stakeholders been identified?			
Is a Stakeholder Management plan in place? Have project accountabilities & responsibilities been clearly defined?			
Have the scope, objectives, costs, benefits and impacts been communicated to all involved and/or impacted stakeholders and work groups?			
a) Have all involved stakeholders and work groups committed to the project? b) Have all necessary approvals been obtained?			
Has a project Communications Plan been developed?			
Are funding and staffing resource estimates sufficiently detailed and documented for use in planning and tracking the project?			
Does a documented project organizational policy & plan (i.e. governance model) exist?			
Have adequate resources been provided by management to ensure project success?			
Is current scope of the project substantially different than that originally defined in the approved project plan?			

Attribute	Relevance	Practice	Assessment
Has the approach and development strategy of the project been defined, documented and accepted by the appropriate stakeholders?			
Have project management standards and procedures been established and documented?			
Is there a Steering Committee in place?			
Is the Steering Committee active in project oversight?			
Are there procedures in place to effectively manage interdependencies with other projects / systems?			

PART H: PROCESS VERIFICATION AUDIT CHECKLIST (EXAMPLE)

Below is a sample of the first page of a, followed by a sample overall score of the completed audit.

Process Name: Risk Management										
Referenced Process Document: Risk Management Plan (RMP)										
Item	Process Steps	Reference	Evidence	Owner(s)	Participant(s)	Location	Date	Compliant?	Auditor Comments	Owner Response
1	Dev RMP	1.1.1	RMP	PMO	Manager	RMP	2015	Yes	On track	
2	Imp RMP	1.1.2	PIMRA	PMO	Manager	SharePoint	2016	No	Delayed	Agreed
3	Assign Risk Roles	1.1.3	Org Chart	PMO	Manager	Org Chart	2016	N/A	Next Steps	
4	Train Staff	1.1.4	Orientation	PMO	Manager	PFD Staff	2016	N/A	Update Task	Agreed

% Compliant Scoring Key 0-59 = RED 60-80 = YELLOW 81-100 = GREEN								**Number of Non-Compliant (NC) Tasks**		
92%	Total Tasks	Tasks Not Applicable (N/A)	Expected Number of Compliant Tasks	Non-Compliant Tasks (No)	Task Deviations (Dev)	Compliant Tasks (Yes)	Percent Compliant	Sev 1 = Risk	Sev 2 = Mitigate (CR/DCR)	Sev 3 = Minor PI
Process Audit Results	14	1	13	1	0	12	92%	0	1	0

APPENDIX C: QUALITY MANAGEMENT AUDIT / REVIEW ACTIVITIES OVERVIEW

An overview of all Quality Management Activities appears below:

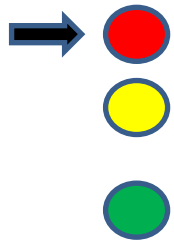
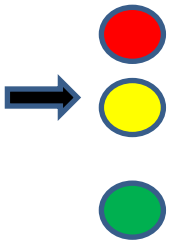
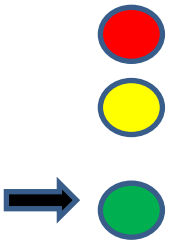
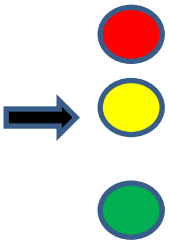
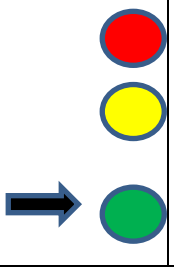
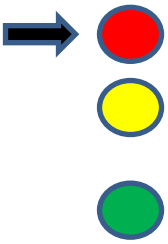
Quality Activity	Purpose	Frequency	Output
Develop Quality Targets	A Quality Planning Activity to identify project requirements, quality standards, quality criteria and quality acceptance for specific deliverables or processes	As per the Project Schedule	Quality Target Form
Develop Product Checklists	Documents the specific criteria used to evaluate each Deliverable	As per the Project Schedule	Quality Product Review Checklist
Peer Review	A QA Internal Review of documents and deliverables by the owner organization against defined standards.	As per the Project Schedule	Comment Log Matrix as defined in the CWS-Document Management Plan
Quality Product Review	A QA examination of project documents and deliverables to verify compliance to standards. Uses Quality Product Checklists as a guideline for compliance.	As per the Project Schedule	Quality Product Review Form
Develop Process Checklists	Documents the specific criteria used to evaluate each process	As per the Project Schedule	Quality Process Audit Checklist
Quality Process Audit	A QC examination of project management processes, high-level development processes, and day-to-day practices to verify compliance to project standards. Uses Quality Process Audit Checklists as a guidance for compliance.	See Internal Process Audit schedule See External Process Audit Schedule	Quality Process Audit Form
Stage Gate Audits	A QC checkpoint at the end of each DD&I phase to assess compliance to quality.	See schedule for Stage Gate Audits	Stage Gate Audit Form
Quality Metrics Assessment	A QC periodic review and presentation of metrics	To Be Determined	Metrics Dashboard

Quality Activity	Purpose	Frequency	Output
	measurements		
Process Improvements	Conduct review of project performance measures using quantitative project management techniques. Identify issues and determine and implement corrective actions. Identify root causes and opportunities for continuous process improvement.	As needed and determined by the results of Product Reviews and Process Audits	Quality Improvement Report

PART A: QUALITY PRODUCT REVIEW FORM

Section 1 - Introduction						
Type of Review	☐	Internal	☐	External		
Planned Date of Assessment						
Name of Document or Deliverable						
Process Area	☐	Risk and Issue	☐	Schedule	☐	Change
	☐	Configuration	☐	Contract	☐	Document
	☐	Requirement	☐	Scope	☐	Quality
	☐		☐		☐	
Purpose of Product Review						
Scope of Product Review						
Review Criteria						

Section 2 – Product Review Results	
Documentation Reviewed	•
Identification of Quality Targets	•

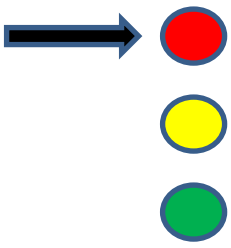
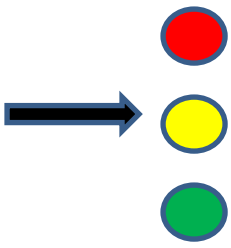
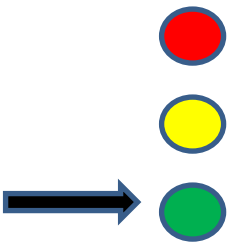
<table>
<tr><th colspan="7">Results of Review (refer to product checklist for more details)</th></tr>
<tr><td>Fitness of Use</td><td>Conformance to Standards</td><td>Internal Consistency</td><td>External Consistency</td><td>Material Deficiency</td><td colspan="2">Completeness</td></tr>
<tr><td>  </td><td>  </td><td>  </td><td>  </td><td>  </td><td colspan="2">  </td></tr>
<tr><td>Areas of Non-Conformance</td><td colspan="6">•</td></tr>
<tr><td rowspan="2">Trending</td><td colspan="3">Was Trending Evident between Reviews? If Yes, Explain below:</td><td>☐ Yes</td><td colspan="2">☐ No</td></tr>
<tr><td colspan="6"></td></tr>
<tr><td colspan="2">Product Improvement Recommendations</td><td colspan="5"></td></tr>
<tr><td colspan="2">Product Improvement Timeline</td><td colspan="5"></td></tr>
</table>

PART B: QUALITY PROCESS AUDIT FORM

Section 1 - Introduction						
Type of Audit	☐	Internal	☐	External		
Planned Date of Assessment						
Process Area	☐	Risk and Issue	☐	Schedule	☐	Change
	☐	Configuration	☐	Contract	☐	Document
	☐	Requirement	☐	SW Dev	☐	Quality
Purpose of Process Audit						
Scope of Process Audit						
Audit Criteria						

Section 2 – Process Audit Results	
Documentation Reviewed	•
Observation Techniques Used	•

Results of Audit (refer to process checklist for more details)

Compliance	Efficiency	Effectiveness
		

Areas of Non-	•

Conformance			
Trending	**Was Trending Evident between Audits? If Yes, Explain below:**	☐ Yes	☐ No
Process Improvement Recommendations			
Product Improvement TimeLine			

PART C: STAGE GATE AUDIT FORM

Section 1 - Introduction				
Phase of Stage Gate	☐	Initiation	☐	Solution Development
	☐	End-to-End Testing	☐	UAT, data Conversion and Pilot Readiness
	☐	Pilot	☐	Statewide Rollout
	☐	System Acceptance		
Planned Date of Assessment				
Pre-Defined Audit Criteria	☐	All Phase (and QB) activities, as defined in the SOW, have been completed	☐	All Project Milestones have been met in accordance with the MPS
	☐	All relevant SLA's have been met	☐	All applicable Quality Metrics are Green or Yellow
Deliverables that have been Accepted				
Deliverables that have been Rejected				
Scope of Stage Gate Audit				

Section 2 – Product Reviews Conducted							
Deliverable	**Areas of Non-Conformance**	**FoU**	**Stds**	**Int Cons**	**Ext Cons**	**Defects**	**Compl**
							

Section 3 – Process Audits Conducted

Process Area	Areas of Non-Conformance	Compliance	Efficiency	Effectiveness
				

Section 4 – Summary of Phase Gate

Overall Quality of Deliverables	Overall Quality of Processes	Demonstration of Continuous Process Improvements
		

Summary Assessment	•

Was Trending Evident between Stage Gates? If Yes, Explain below:	☐ Yes	☐ No

PART D: QUALITY IMPROVEMENT REPORT

Section 1 - Introduction						
Type of Improvement	☐	Internal	☐	External		
Process Improvement Identified			**Estimated date of Implementation**			
Impacted Process Area	☐	Risk and Issue	☐	Schedule	☐	Change
	☐	Configuration	☐	Governance	☐	Document
	☐	Requirements	☐	SW Dev	☐	Quality
Scope of Process Improvement						
Benefit of Process Improvement						
Impact of Process Improvement						

Section 2 – Process Improvement			
Step #	**Step Description**	**Step Owner**	**Status**
1			
2			
3			
4			
5			
Impacted Documentation or Work Products			
Training Staff			
Next Review Cycle for Process Area			
Comments			