Quality Manual
(NST)

Revision History

Ver. No.	Date	Amendments made	Prepared By	Approved by
1.0	28th May 08	Initial Baseline	Abhishek Rautela	Mr. Sudhir Saxena
2.0	27th June 09	Updated the Manual as per the CMMI level 5KPA's and ISO 9001:2008.	Abhishek Rautela	Mr. Sudhir Saxena
2.1	14th May 10	Updated the Appendices. Reviewed and made grammatical changes in quality manual	Neha Gupta	Mr. Sudhir Saxena
2.2	18th Oct 11	Updated the Appendix links III, IV & V.	Farhad Hasan	Mr. Gurinder Dua
2.3	23rd Jan 12	Update section Configuration Management and Administration section	Rahul Raj	Mr. Gurinder Dua
3.0	10th April 12	Exclusion of 7.6, Update in Testing process, Include Service Management Process, Application Support, Problem & Knowledge Management, Release Management	Rahul Raj	Mr. Gurinder Dua
3.1	30th Nov 12	Formatting and update CMMI Dev ver. Procurement Process	Rahul Raj	Ajay Kumar Zalpuri
3.2	25th June 13	Update appendix IV for document retention period	Rahul Raj	Ajay Kumar Zalpuri
3.3	12th Nov 13	Hyperlink all process in this document and change NST logo and 4.2.1 Structure of Quality Management System Documentation	Rahul Raj	Ajay Kumar Zalpuri
3.4	12th Dec 15	Update section 5.6.3, 6.21, 6.22, 6.23, 6.24 as per CMMI5. Update appendix II	Rahul Raj	Ajay Kumar Zalpuri
3.5	14th April 20	Update section Roles & Responsibilities and section 6.5 for reference process	Rahul Raj	Nand Kishore Avantsa

Table of Content

1. Introduction

Quality Manual of NST identifies a statement of the policies and objectives. It provides an overview of the Quality management System (QMS) and identifies the process associated with the quality system. It describes the organization and the roles, responsibilities and authorities of all the personnel. The Quality System has been developed to comply with CMMI Development version 1.3ML5 standards & ISO 9001:2008.

2. Company Profile

NST delivers both tactical and strategic IT solutions to support the demands of an ever-changing business environment. Operating out of Noida, the company employs a large team of highly skilled people who excel in providing high quality systems and support services to an extensive client base.

The QMS ensures best practices are employed in the development of high quality software applications and the efficient maintenance of large and complex software systems.

The services offered by NST India cover a wide range of offerings - from the management of complex projects, the development of state-of-the-art application systems and the provision of contract staffing.

3.0 Terms & Definitions

Abbreviations	**Definition**
QMS	Quality Management System
QL	Quality Lead
MRM	Management Review Meeting
NC	Non Conformance
PMP	Project Management Plan
PAL	Process Asset Library (**Ref**: QMS Intranet Site: http://192.168.0.80/qms/
CMMI	Capability Maturity Model
SEPG	Software Engineering Process Group
CORE Team	Technical Decision Making Team
PM	Project Manager
TL	Team Leader
PA	Process Area

4.0 Quality Management System

4.1 General Requirements (Ref to clause 4.1 of ISO 9001:2008)

NST Pvt. Ltd., has established, documented and implemented the Quality Management System (QMS) in accordance with the requirements of SW CMMI Dev ver1.3 ML5 standards & ISO 9001:2008 Quality Management System Standard.

The NST Quality Manual provides a definitive statement of the policy, objectives and operating principles for NST. It is applicable to the full range of NST professional, technical, development, training services. The Quality Manual provides an overview of the working of NST Quality management System. A detailed description of each of the processes is given in the respective Process documents. Constant monitoring, measurement & analysis of the Quality objectives are done in order to ensure continuous improvement.
Please refer to Appendix-III, Process Architecture Diagram for overview of QMS of NST Pvt. Ltd.

To facilitate implementation of the policies, two groups are being set up within the organization viz., SEPG & Core Team. The primary roles of the groups will be:

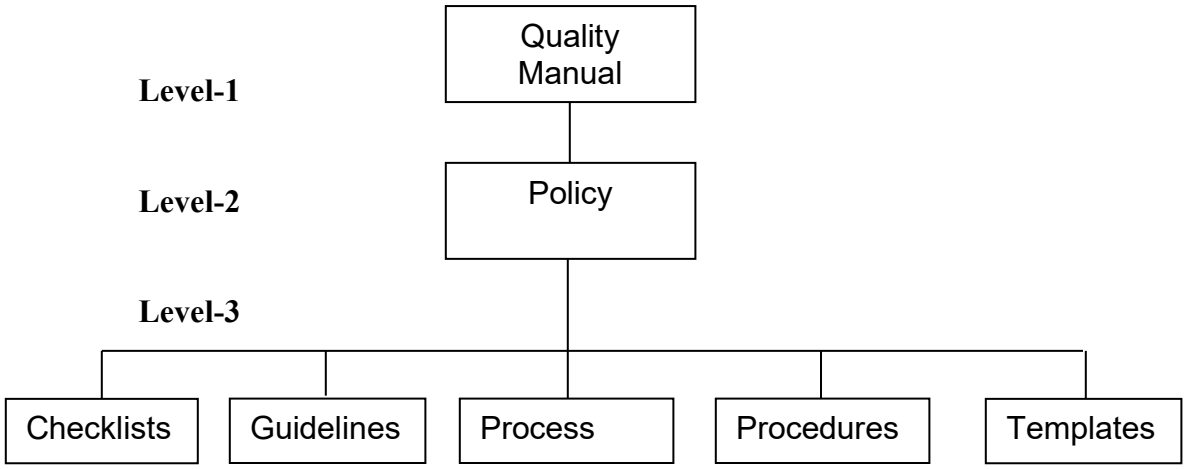
SEPG: - The SEPG is the group responsible to take strategic decisions pertaining to various QA initiatives across the organization. It also helps in planning/coordination of the process development & improvement activities. Senior Management being the part of the SEPG henceforth coordinates & tracks the progress of the related matters/action points. The performance indicators (Metrics) are discussed in detail. The group is responsible to ensure that the strategic decisions are implemented within the organization & monitor its progress closely. The process related strengths & weaknesses are identified & tracked. Adequate resources/inputs & funding are provided to SEPG by top management on event driven basis.

Core Team: - The Core team is the group responsible for taking Strategic decisions pertaining to Technical Issues. The group is responsible to ensure that the strategic decisions are implemented within the organization & monitor its progress closely. The strengths & weaknesses related to technical solutions are identified & tracked.

4.2 Documentation Requirements (Ref to clause 4.2 of ISO 9001:2008)

4.2.1 Structure of Quality Management System Documentation

Quality Management System (QMS) documentation is the basis for installation, operation and maintenance of a dynamic QMS at NST. Quality Management System Documentation consists of following set of documents.



QMS Documentation Structure

Level-1 (Quality Manual)

- Quality manual states the quality policy and describes the QMS of NST.
- It elaborates the organization structure, responsibility and authority of personnel and policies of the company regarding compliance of the requirements of SW CMMI Dev ver1.3 ML5 standards & ISO 9001: 2008 standard.
- The quality manual refers to the quality process documents for detail.

Level-2 (Quality Processes)

- The quality processes describes the logical sequence of functions and activities, addressing specific issues within quality system to demonstrate implementation of policies stated in the quality manual.
- The quality processes defines activities and tasks including the control points and defined responsibility.
- Quality processes make reference to relevant Standard, Guideline, Checklist, Templates for specific activity / task.

Level-3 (Checklists, Guidelines, Policies & Procedures, Templates)

- It specifies the logical sequence of specific sub activity/subtask required at the operational level.
- Quality processes for carrying out verification activities related to projects/products refer checklists. When filled by authorized personnel they are referred to as quality record.

- Policies, Procedures and guidelines are prepared to provide specific information used in conjunction with quality procedures.

QMS Process Deviation

In case there is any need for deviation from the defined processes the same shall be recorded along with adequate justification by the Functional Head/Project Manager. The Quality Lead/ Director will then approve it. In case of deviations in project, the same is mentioned in Project Management Plan, duly approved by Quality Lead/ Authorized personnel. In case of any deviations in support function, SEPG approves the same & functional Head keeps adequate evidences.

Tailoring

In case some tailoring is required in Software Development Life Cycle (SDLC) or a template used, authorized personnel approves the same.

4.2.2 Quality Manual

Purpose of the Quality Manual

- To describe and implement an effective QMS.
- To communicate the quality policy and objectives of NST Pvt. Ltd.
- To describe the interaction between the processes of the QMS.
- To establish a documented system for auditing the QMS.
- To demonstrate compliance with Software Capability Maturity Model (CMMI) ver1.3, level 5 & ISO 9001:2008 Standard requirements.
- To describe responsibility & authority of management personnel.

Scope of the Quality Manual

The quality manual covers software development & maintenance of projects at NST Pvt. Ltd.

Function

- The Quality Manual is the definitive document for the Quality Management System in use at NST Private Limited. The quality policies set out in the Quality Manual are mandatory for all personnel of NST Private Limited.
- The manual is designed to fulfill the requirements for a documented Quality Management System as per Software Capability Maturity Model (CMMI) ver1.3& ISO 9001: 2008 standard.
- The manual is produced and maintained by the Quality Lead.
  All departmental heads are responsible to:
  - Ensure all the staff members are aware of the QMS.
  - Ensure the QMS is implemented and adhered to.
  - Maintain the QMS in light of quality reviews and audits.

Controls

- QL is responsible for issue and distribution of this document including its amendments.

- The quality manual is available to all management and staff in NST Private Limited. This is a controlled document and unauthorized alterations and copies are not allowed.

Feedback

Queries or comments on the contents of the quality manual or any aspect of the QMS should be directed to the QL.

4.2.3 Control of documents and Records

There are well-established processes to control and manage all documents that are used or referred during any project from contract phase to planning to execution phase including the quality system documentation. For QMS, Organizational Process Development and focus Process would be followed & for Projects Software Configuration management would be followed for Control of Documents.

This ensure that the organization / project team has the necessary ability to fulfill the desired objectives, the required processes and activities are adequately defined, the status of these activities is measured / monitored, and performance is regularly reviewed. In case of any new documents impacting engineering groups QL may discuss the impact of the same on event driven basis or during the SEPG meetings.

Top management in event driven basis & QA, SEPG constantly reviews the status of the documents & its performance. Necessary funding & resources are provided in order to ensure the documents address the business objectives of the organization.

The document control system ensures that

i. All documents are maintained as per the PR-08-SCM-Configuration Management Process.docx, directory structure of Process Asset Library (PAL).
ii. Pertinent documents are available as and when required to persons authorized to use them.
iii. In case some tailoring is required to be done in a project specific Software Development Life Cycle (SDLC) or specific template for a project the same is approved by SEPG for its adequacy & completeness.
iv. No confusion or other problems arise due to circulation of obsolete documents.
v. All document production/changes are properly reviewed and authorized by the SEPG prior to release.
vi. After making amendments in the document the affected groups are informed accordingly.

There is a section in all the processes ‘quality records’. This section is laid down to describe the way in which records used in the Quality Management system are maintained. This process ensures that:

i. Quality records shall be identified and maintained to demonstrate achievement of the required quality in every process.
ii. Quality Records are collected & reviewed, in order to ensure its adequacy & completeness.
iii. Quality records shall be stored for easy retrieval, as planned in PR-08-SCM-Configuration Management Process.docx
iv. Quality records are identified, controlled & made available.

All quality records are maintained as specified in the processes or project management plan

Control of Data

The Software Process Data Base will consist of the data on which basis the Metrics Reports are reviewed, compiled & analyzed by the SEPG... QA and the SEPG have full control over the data.

The data provided by concerned PMs/TLs/ Functional Heads is an extremely important asset for the organization since it helps measure and monitors the Key areas of the organization.

The project data will be used by the SEPG and the Senior Management / Project Managers to establish organizational baselines and set quantitative goals for project teams to follow.
Please refer to Appendix-IV, for list of QMS records with retention period.

5.0 Management Responsibility **(Ref clause 5 of ISO 9001:2008)**

5.1 Management Commitment

The commitment of the top management to the development and implementation of QMS at NST and continual improvement of its effectiveness is ensured by:

- Establishing the Quality Policy and Quality Objectives
- Ensuring that Quality Policy and Quality Objective are communicated and understood within the organization.
- Reviewing the Quality Policy and Quality Objective for continuing suitability.
- Ensuring availability of adequate resources.
- Conducting regular SEPG/ Core Team meetings

5.2 Customer Focus

The requirements of the customer including legal & regulatory requirements are discussed, documented and reviewed according to contract review process. The requirements are further elaborated to cover the implied as well as stated needs & documented according to Requirement Analysis process. The customer requirements/changes are also discussed and reviewed with the top management during Project review meetings according to Project, monitoring & control process. Customer feedback is also taken on a periodic basis, which forms the basis of further improvement.

References
- ✓ Review Process
- ✓ Requirement Analysis Process
- ✓ Project Planning & Project Monitoring & Control Process
- ✓ Customer Satisfaction Survey Template

5.3 Quality Policy

NST is committed to maintain **high quality standards** in **delivering timely** and **cost effective** solutions to our customers by **continual improvement** of our processes, instilling **quality consciousness** amongst all employees and recognizing the **confidentiality, integrity** and **availability** of information assets to relevant stakeholders including our customers.

This commitment is met by:

- Provide high quality services to our clients
- Continuous focus on employee satisfaction and competency development so as to reduce and stabilize employee attrition.
- Continual improvement of services to our internal & external customers.
- To secure its information assets and of its customers, NST shall deploy procedures to maintain confidentiality, integrity and availability of all information assets.
- To have year on year revenue increase while maintaining profitability

5.4 Management Review (Ref to clause 5.6 of ISO 9001:2008)

Clause 5.6.1 Management Review General

Regular Management reviews should be conducted in order to assess the effectiveness of the Quality Management System and to continually improve. The management review should be a formal analysis and review of the quality policy, quality objectives and quality management system performance which generates plans for corrective action, preventative action or opportunities for improvement all of which should be documented in the management review minutes.

Clause 5.6.2 Management Review Input

The first item on the management review agenda really should be a review of the Quality Policy to confirm it is pertinent to the quality management system and organization or if any changes are required. Similarly, the Quality Objectives should be reviewed and updated as necessary. There should be a review of the Management Structure and any changes and confirmation that there is adequate quality management system resource.

The meeting should cover the minutes and follow-up actions from previous review meetings and confirm actions to improve the quality management system as a result of the review have been completed.

Findings of internal and external quality management system audits should be reviewed and outstanding non-conformances as a result of internal and external quality management system audits discussed. The Management Representative should conduct a trends analysis of the results of internal and external audits to present to the meeting. The

management review team should also ensure that internal quality management system audits have been carried out as planned. Adverse trends such as an increased number of non-compliances should be identified, and corrective action proposed. The results of third-party quality management system audits should be thoroughly scrutinized as these represent and independent view of the organization.

The Quality Manager should present a trend analysis of Customer Complaints. This data should compare year on year performance especially when a product or service is seasonal. Volumes should be factored into the complaints analysis and so complaints should be presented taking this into consideration. Complaints are should also be categorize into critical and non-critical. Non-critical and total complaint analysis is useful for trends. Critical complaints should be closely analyzed to determine if there is a common cause and if effective corrective action has been taken.

Clause 5.6.3 Management Review Output

The Management Review outputs should include resource requirements corrective and preventative actions identified as a result of analysis of the quality management system review inputs, all of which should be clearly documented in the minutes.

There will also be opportunities for Improvement in quality management system effectiveness including product related customer requirements, change or elimination of non-productive elements, change or elimination of non-productive systems or procedures and supply of resource needed for improvement plans.

The results of the Management Review meetings should be documented in the minutes of the meeting and include a summary of all quality management system review inputs and outputs. The Management Representative should ensure the minutes of the Management Review meeting are distributed and effectively cascaded within the organization.

Explanation of Quality Policy

NST is committed to providing products and services in a timely and cost effective manner that consistently ensures high customer expectations.

Whenever NST provides products or services to a client, the client expects to receive exactly what he wants and when he wants it. There is no room in this business to have something brought back and fixed. The cost of bringing back the product and fixing it is enormous. NST must meet schedules and must do its business in a cost-effective manner so that NST can provide maximum value to our clients. It also states that various trainings would be provided for continual improvement of the processes and work area.

This commitment is met by:

Monitoring, improving, and following the processes

NST Private Limited shall follow the laid down processes for its development and support services. However, the processes will be continually monitored to evaluate their efficiency, adaptability, and ease of use. Also, the processes will have to be monitored on a continuous basis

to keep pace with the fast-changing Information technology scenario, worldwide. NST Private Limited should not land up with out of context processes. Based on this monitoring, the processes will be continually improved and after improvement, the processes will be deployed again. Once the improved processes are deployed, they will be followed in a true sense.

Valuing customer feedback
The customer is the ultimate judge of our quality. NST Private Limited must make it a point to ask its customers about the quality of the product and services. It should value their feedback carefully and try to incorporate them in processes, if necessary.

Quality policy is reviewed for continuing suitability during Management Review Meetings or SEPG Meetings.

Quality Objectives

In line with the Quality Policy, Quality Objectives are stated to measure the effectiveness of the process & product conformity according to the metrics defined in the Metrics Process. Ref to Quality Objectives NST-PO-01-IQP-Integarted Quality Policy

The metrics defined covers Project Management, Product Quality, and Quality Assurance, Trainings, Facilities management & customer satisfaction. These metrics provide measurement for timeliness of deliveries; cost effectiveness, product quality & customer expectations as mentioned in Quality Policy.

The metrics data is collected and analyzed according to the Metrics Process & the metrics report is discussed with top management in MRM/SEPG meetings at periodic interval & corrective and preventive actions are taken according to corrective & preventive action process.

Integrity of QMS

- The integrity of QMS in case of minor changes to the QMS is maintained by controlling changes to QMS documentation by following the Configuration Management process
- In case of major changes to QMS such as change in organizational structure, change in business line, scope of QMS, etc. these changes are discussed during the management review meeting or SEPG meetings.
- The changes of QMS are reviewed and approved by the Quality Lead (QL) before released for implementation.

Responsibility, Authority & Communication

Responsibility & Authority

The organizational setup of NST is shown in Appendix-V: Organization Chart.
The organization chart indicates department heads that have the responsibility and authority to ensure that work is managed, performed and verified in compliance with the requirements of QMS as defined in the quality manual. The organization operates through several groups. These groups are classified as:

1. Projects
2. Quality Assurance (QA)
3. Facilities (IT & Non-IT Admin Related)

4. HR & Training
5. Software Engineering Process Group

Responsibility & authority

Managing Director (MD)

Director is responsible to establish and maintain an organization that meets the business needs and quality objectives of NST Pvt. Ltd.

i. The MD is responsible for the overall policy, strategy, direction, and operation of NST Pvt. Ltd. He can delegate his responsibilities to suitable person in the organization.
ii. The MD is responsible for ensuring the effective operation of the Quality System/operations.
iii. The MD chairs the SEPG.
iv. Review the performance of the various groups and provide necessary guidance/support for improving the performance of the groups.
v. Authorized to take all decisions with any aspect of the operations of the company.

Management Representative

Management Representative is the point of contact between the management and the employees. The QA lead shall be responsible for the MR related activities

i. MR represents NST Pvt. Ltd. in all External opportunities i.e. during external audits, presentations, seminars etc.
ii. MR represents/ declares/ publishes the Managements decisions and policies to the employees.
iii. MR participates in various reviews & meetings requiring Management's participation.

IT Operations Head /Delivery Manager

i. All projects/deliveries are completed as per effort & schedule targets set by the organization & agreed with the client.
ii. Project ends within the scheduled budget.
iii. Clarification of queries raised by Onsite/Client related to working methodology of NST.
iv. Manpower and resource requirements are met for all the projects which include activities related to requirement management, project management, configuration management, quality assurance, software product engineering, and inter-group coordination. Technical reviews, quantitative process management and software quality management.
v. Adequate technical & non-technical training are provided to the Project Team Members for carrying out activities related requirement management, project management, configuration management, quality assurance, software product engineering, inter-group coordination. Technical reviews, quantitative process management and software quality management.
vi. Ensuring projects are delivered as per the processes, as defined in QMS & agreed with onsite/client.
vii. Authorized to take decisions in terms of Delivery of the projects.

Project Manager/Team Leaders

i. The day-to-day running of the project is proceeding according to plan.
ii. The project meets its targets for delivery and quality.
iii. Perform quantitative measurement that includes control chart, I-MR chart, What-if analysis etc. at project level after base lining the PPM.
iv. The correct resources and workload requirements are scheduled.
v. The activities are properly prioritized and that the critical tasks are identified.

vi. There is a continuous review of the project and revision of the plan as required for meeting the overall objectives.
vii. A plan is constructed for each project that defines the required stages, activities, and tasks and how these will be scheduled to meet the time scales.
viii. All project plans will define key milestones to ensure that the project remains in control.
ix. All project documentation is updated and maintained as required to meet the agreed upon schedule.
x. All members of the project teamwork in a cohesive manner.
xi. Authorized to resolve/ raise issues related to projects & project team members such as leave requests etc.
xii.

QA Manager

i. Ensure the implementation of quality management system in line with the requirements of ISO 9001:2008 and Software CMMI level 5ver. 1.3
ii. Responsible for defining and maintaining the Quality Management System for the organization.
iii. Controls Quality Management System documentation and the changes made to it.
iv. Planning and execution of the training program in quality.
v. Internal & External audit planning and execution.
vi. Management Review meeting is scheduled and conducted as planned.
vii. Conduction of SEPG meeting.
viii. Publishing the Organizational Metric Report
ix. Authorized to take decisions related to process changes & updating in the QMS.
x. Publish PPM at organization level.

Administrator-Office

i. Coordination with all Non-IT vendors for facilities management.
ii. Making all Non-IT purchases.
iii. Managing the transportation for employees.
iv. Resolution of complaints related with any above-mentioned areas.
v. Managing all outbound & inbound travels i.e. Tickets, Hotel booking, Visa Logistic arrangement.

System and Network Admin

i. That preventive and corrective maintenance of all hardware is carried out.
ii. That monitoring of Internet/Email, Username/password, Network System performance
iii. Disaster recovery planning
iv. Maintains backups and exercise recoveries periodically.
v. That a library of all the software available is maintained.
vi. That hardware and software resources requirement is evaluated and allocated.
vii. Authorized to provide/ remove access to various team members on the network as per requirement.

Head-HR

i. Personnel files are set up and maintained for all NST Pvt. Ltd. employees.

ii. Recruiting, hiring, and terminating of employees are conducted according to the rules of NST Pvt. Ltd.
iii. All employees are made aware of their roles, responsibilities, as per rules of organization.
iv. All personnel maintain the highest standards of workmanship and professionalism.
v. Appropriate action is taken when an employee has any problem concerned with the work.
vi. Induction Training is provided to all new employees.
vii. Training is conducted on a planned basis to update employees with the latest technologies/happenings, as and when required for successful implementation of projects.

PMO-

- Resource Allocation through IQMS.
- Weekly Portfolio Report
- Weekly Resource allocation Report
- Creation of Project (PIN) and Project Charter in IQMS
- Monthly Billing Report
- Monthly Cost Center Report
- Support to Project Managers for IQMS related work

Internal Communication

Channel for internal communication are established within the organization at different levels, such as:

- Team briefings & meetings
- Email & company's web sites
- Employee suggestion schemes
- Notice Board.

The communication regarding the effectiveness of the quality management system is done by means of:

- Software Engineering Process Group (SEPG) Meetings
- Project Review meetings
- Internal Quality Audit (IQA) Reports
- Actions taken on non-conformities

Management Review

Management reviews the quality system during the SEPG Meeting.

The effectiveness of the QMS and changes to the QMS are reviewed during the Management Review Meeting (SEPG). Progress in accordance with strategy and mission objectives, the Quality policy and Quality objectives are reviewed once in 6 months for their continued suitability, adequacy and effectiveness.

Review Input

- Agenda Items
- Review of previous meetings MOM

Review Output

The output from the management review includes any decisions and actions related to the points covered during the MRM (SEPG) meeting.

The records of Minutes of Management Review Meeting (SEPG), circulates to all concerned and tracks the action points to closure.

References

- ✓ Quality Management System Manual
- ✓ Integrated Quality policy
- ✓ Minutes of MRM(SEPG)

6.0 NST processes

6.1 Business development

Most of the projects with NST are assigned by SVAM International (Parent Company) for development & execution. If required, a team is sent to USA/Client office for technical/operational study & a review of capabilities/Issues/Risks is done upon the go ahead from the customers in the form of contract/final proposal/Statement of work/Verbal Request/Email. The same is applicable to Projects/Sub projects allocated to NST by SVAM International.

A Contract is reviewed in detail. The representative from senior management prepares a Review Report and the risks are identified. Senior Management may approve or reject a contract based on the Review Report.

On acceptance of the project, the senior management identifies a Project Manager and the Project Initiation Document is raised. Project Initiation Document acts as a green signal for starting the project. The changes to the user requirements are handled according to the configuration management process.

Related Processes

- ✓ Configuration Management Process
- ✓ Project Planning & Project Monitoring & Control Process
- ✓ Review Process

ISO 9001:2008 Clause Reference: 4.0, 5.0, 7.0

CMMI Ver. 1.3 PA Reference:

- ✓ Requirements Management
- ✓ Requirements Development
- ✓ Configuration Management Process
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Decision analysis and resolution process
- ✓ Risk Management Guidelines

6.2 Project Management

Software Project Management is significantly the most important task in the entire lifecycle of a project as effective project management is the basis for successful execution of all project activities. Project Management encompasses all the activities of planning and executing a project

taking into consideration project risks and constraints and successfully overcoming them to deliver a product as per user requirements. It is an umbrella activity carried out right from the start till the closure of the project.

Software Project Management comprises of the following processes:

- ✓ Project Planning & Project Monitoring & Control Process

Related Processes

- ✓ Contract Review Checklist
- ✓ Training Process
- ✓ Project Planning & Project Monitoring & Control Process
- ✓ Metrics Process
- ✓ Internal Quality Audit Process
- ✓ Program Development & Modification Processes
- ✓ Corrective and preventive action process

ISO 9001:2008 Clause Reference: 4.0, 5.0, 6.0, 7.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Requirements Management
- ✓ Project Planning and Project Monitoring and Control
- ✓ Integrated Project Management
- ✓ Process and Product Quality Assurance
- ✓ Organization Definition and Focus Process
- ✓ Organizational Training
- ✓ Configuration Management Process
- ✓ Risk Management Guidelines
- ✓ Decision Analysis and Resolution
- ✓ Control Effectiveness Measurement Process

6.3 Software Requirements Analysis

During the Analysis phase the requirements of the client are gathered on the basis of the input documents as provided by the client and documented in SRS template or a client specified template. The document is sent back to Client for necessary reviews & comments are incorporated as suggested. The SRS forms the basis for the design, development, testing and implementation activities in the project life cycle. Further activities of the SDLC will start only after the formal acceptance of the SRS by the client. Traceability in the project lifecycle phases starts with the Analysis phase, i.e. all specified requirements in the SRS are mapped to the Design Document to ensure that the requirements are exactly traced.
In case of enhancement/maintenance projects the inputs are studies in details before providing the SRS or equivalent.
Software Requirement Analysis activities start once the Project Management Plan is baselined. All user requirements as defined in the Contract are analyzed and covered during the preparation of the SRS.

Related Processes

- ✓ Software Requirement Specification Checklist
- ✓ Contract Review Checklist
- ✓ Software Configuration Management

- ✓ Project Planning & Project Monitoring & Control Process
- ✓ Review Process

ISO 9001:2008 Clause References: 4.0, 5.0, 7.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Software Requirement Specifications
- ✓ Configuration Management Process
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Requirements Development
- ✓ Verification

6.4 Software Design

During the Design Phase the detailed architectural plan of the system is designed. The detailed system requirements collected during the Analysis phase are studied and transformed into the technical design, architecture, Technical Specification or equivalent document.

All design activities described above start only after the SRS or equivalent is baselined. In some of the cases requirement specification & software design can be combined & can act as an input for further development.

A System Design Document template is available in the QMS and this is used for all relevant projects in NST. However, based on specific client requirements the Design template may be tailored.

The Design may be developed with the help of a Designing tool that takes care of all/specified building blocks of the design phase. The application of the tool, if used in the project is planned and documented in the PMP by the Project Manager. The PM is responsible to update the Requirement Traceability matrix is updated before moving on to the next phase.

Related Processes

- ✓ Design Guidelines
- ✓ Software Requirement Specifications
- ✓ Software Configuration Management
- ✓ Project Planning & Project Monitoring & Control Process
- ✓ Review Process
- ✓ Decision Analysis & Resolution Process

ISO 9001: 2008 Clause Reference: 4.0, 7.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Configuration Management
- ✓ Project Planning
- ✓ Technical Solution
- ✓ Verification
- ✓ Decision analysis and resolution

6.5 Programming/Coding

The coding process comprises of the construction of code based on design/Technical Specification or equivalent. The objective behind the coding process is to develop an easily understandable, readable, testable, reliable and modifiable code.

The coding process can start once the Design document; Technical Specification or equivalent is Baselined. For all Maintenance projects of NST, the coding process can initiate on the investigation of a Change Request for Maintenance Projects being approved.

The Coding Guideline document in NST's PAL and other Language Specific Programming standards containing the guidelines for various program features like data, naming conventions, comments, structural blocks and exceptions handling are referred to while development of code. Client specified guidelines could also be referred for the same.

Related Processes

- ✓ Design Guidelines
- ✓ Software Configuration Management
- ✓ Review Process
- ✓ Software Life Cycle Process
- ✓ GD-02-Coding Standards and Best Programming Practices
- ✓ GD-23-Coding Standards and Best Practices for SQL Server
- ✓ GD-24-ACS-Angular Coding Standards and Best Programming

ISO 9001: 2008 Clause References: 4.0, 7.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Configuration Management
- ✓ Project Planning
- ✓ Technical Solution
- ✓ Verification
- ✓ Product Integration

6.6 Service Manager

An important aspect in the overall configuration of the Service Manager environment is providing access to the NST environment to perform operations. This in a controlled way, so End Users, Operators, Resolvers, Change Owners… can easily understand and perform their tasks in a controlled environment.

With Role based security scoping in NST there is the possibility to configure a controlled environment for different service roles. A NST role profile is a configuration set to define access to objects, views in the console, operations they can perform and members of the role (AD User/Group).

The different profiles for an implementation are specific and are something that needs to be defined upfront. The following example "runs" through the creation of the Mail incident resolver role.

Related Processes

- ✓ Only incidents from the "Email problem" category need to be visible for the role.
- ✓ User roles can be controlled with NST security group.

6.7 Application Support Lead

This role will require an individual with strong communication skills, technical skills, and application expertise and business experience. The role of the Lead Application Consultant is to manage the project implementation to meet the agreed upon requirements and timeframe. In order to be successful in this role, the role will have the following responsibilities:

Related Processes

- ✓ Approve all application consultants to be placed on the project team
- ✓ Provide overall and daily management and support to all application consultants assigned to the project
- ✓ Work with the Project Leader and Project Manager to learn and manage the implementation to meet the agreed upon project objectives
- ✓ Work with the users and other software publisher resources as required, and resolve queries and issues on an ad hoc basis
- ✓ Notify management of requirements for resources in order to provide sufficient lead times for resources to be made available
- ✓ Make timely decisions regarding the project priorities in order to minimize disruption on the project
- ✓ Overall responsibility for assuring the quality of work conducted by their representative consultants
- ✓ Attend all Implementation Project Status meetings

6.8 Problem and Knowledge Management

The competence and the innovation are connected together and belong to the area, in which the person's knowledge can be enriched. The production belongs though to the area in which the human can use best what he already knows .That is why in order to understand and recognize the innovation and the process, they need to function together and should be solidly attached to each other. The competence and the production on the other hand do not necessarily need this solid connection.

Related Processes

- ✓ The production (the search and the versatile usage of the optimal solutions), The competence (the business development of the employees with the help of on-line-education at the work place),
- ✓ The innovation (the search for new ideas and their development, the teamwork) and
- ✓ The ability to understand and recognize the process (ability to own and willingness to share the necessary information in the right moment leads to customer satisfaction).

6.9 Release Management

The **release management** process is a relatively new but rapidly growing discipline within software engineering of managing software releases.

As software systems, software development processes, and resources become more distributed, they invariably become more specialized and complex. Furthermore, software products (especially web applications) are typically in an ongoing cycle of development, testing, and release. Add to this an evolution and growing complexity of the platforms on which these systems run, and it becomes clear there are a lot of moving pieces that must fit together seamlessly to guarantee the success and long-term value of a product or project.

The need therefore exists for dedicated resources to oversee the integration and flow of development, testing, deployment, and support of these systems. Although project managers have done this in the past, they generally are more concerned with high-level, "grand design" aspects of a project or application, and so often do not have time to oversee some of the more technical or day-to-day aspects. Release managers (aka "RMs") address this need. They must have a general knowledge of every aspect of the software development process, various applicable operating systems and software application or platforms, as well as various business functions and perspectives.

Related Processes

- ✓ Release Notes

Some of the challenges facing a software release manager include the management of:

- Software defects
- Issues
- Risks
- Software change requests
- New development requests (additional features and functions)
- Deployment and packaging
- New development tasks

6.10 Testing

The objective of the software testing process is to execute a program or a set of programs to find its compliance to the design, Technical specification and systems requirements or equivalent. The Testing is carried out according to the testing guidelines. GD-04-TEST-Testing Guidelines

Testing activities comprise of Test Planning and Test Execution. Test Planning comprises of preparing Test Plans based on the Test Plan templates available in the PAL or a client specified template, which could be kept in central repository.

Each of the Testing Processes comprise of Test Planning, execution of the test cases, recording the test results, debugging cycle and revalidating the project artifact after the bug has been removed.

The defects identified in a product during the Testing Process are analyzed and Corrective / Preventive Actions are initiated. Preventive actions are initiated to prevent the occurrence of a problem whereas Corrective Actions are initiated to prevent their recurrence.

In case of Maintenance/support tasks after investigation of the Change Request the Unit test plan is created.

Related Processes

- ✓ Software Requirement Specifications
- ✓ Coding Standards and Best Programming Practices
- ✓ Coding Standard and Best Practices For SQL Server
- ✓ Design Guidelines
- ✓ Test Plan Template
- ✓ Test Case Template
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ UAT Sign off

ISO 9001: 2008 Clause Reference: 4.0, 5.0, 7.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Project Planning
- ✓ Product Integration
- ✓ Verification
- ✓ Validation

6.11 Review

In the life cycle of project, various documents are generated at different stages. Quality and standardization of such documents is very important and that is possible through structured review of the document. A Review Process in QMS has been designed to standardize effective review of project documents/code. It is a defined, structured, and disciplined method of finding defects in the documents/Code at any stage of software development or maintenance.

NST has adopted the following three Review methodologies in its Review Process: Structured Walkthrough, Desk Analysis and Peer Review. The review methodology for a project is identified by the PM in the PMP. The detailed steps for each of these procedures are explained in detail in the Review Process.

The Reviewers are identified before the review of the document.

Some of the major benefits of the Review Process are:

- Detecting and eliminating defects
- Providing process of prioritizing problem areas
- Accelerating convergence of project standards of quality
- Increasing the probability of right product
- Providing focused analysis for author(s) vs. serial complaints

The defects identified in a product during the Review Process are analyzed and Corrective / Preventive Actions are initiated. Preventive actions are initiated to prevent the occurrence of a problem whereas Corrective Actions are initiated to prevent their recurrence.

Related Processes

- ✓ Software Configuration Management
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Review Process
- ✓ Metrics Process
- ✓ Corrective & Preventive Action Process

ISO 9001: 2008 Clause Reference: 4.0, 7.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Verification

6.12 DAR-Decision Analysis & Resolution

There are certain situations which need Decision Making. These areas can utilize DAR for effective business decisions. Few situations (Examples) where DAR should/ can be used are under:

Business Decisions:
1. Personnel – hires, promotions, transfers, layoffs
2. Budget Prioritizations
3. Evaluate risks on acquisitions, divestitures, investments, IP
4. Outsource or not?

Technical Decisions:
1. Architectures
2. Products, features (cost-benefit, build/buy)
3. Designs, platforms
4. Process tailoring (including life cycle selection)
5. Technical Solutions
6. Testing approaches

The Project Manager assigns an issue requiring a structured decision. For example, during the initiation and planning phase for the project, a risk analysis can be used to define issues/problems that have high risk and impact to the project success. The project manager documents the issue as a risk, develops cost and schedule estimates for the analysis process, identifies the analysis team facilitator and members, and initiates the analysis at the scheduled time.

Related Processes

- ✓ Decision Analysis & Resolution Process

CMMI Ver. 1.3 PA Reference:

- ✓ DAR

6.13 Risk Management

This is to provide a guideline to the project managers for planning, assessing (identifying and analyzing) risk areas, developing risk handling options, monitoring risks and documenting the overall risk management process

The Risk Management Process comprises of 4 main processes

1) Risk Planning: This sub process comprises of developing an organized, comprehensive and interactive strategies and methods for identifying and tracking risk areas, developing risk handling plans, performing continuous risk assessments to determine how risks have changed and assigning adequate resources. This also includes the detailed documentation of each item as mentioned above.

For this plan, relevant portion of the Project Management Plan template will be used. If required, separate document may also exist.

2) Risk Assessment: This comprises of two or more sub processes as described below:

   a. Risk Identification: This target to identify all the risks associated with the work along with their critical parameters. The more critical a risk is, the greater will be the impact on the project.

   b. Risk Analysis: This is the process of examining each identified risk area or process to refine the description of the risk, isolating the cause and determining the effects. It includes risk rating and prioritization in which risk events are determined. The risks can be rated and prioritized in terms of their probability of occurrence, severity of consequence and relationship to other risk areas or processes.

3) Risk Handling: This sub process identifies, evaluates, selects and implements options in order to set risk at acceptable levels, given project constraints and objectives. This includes the specifics on what should be accomplished, who is responsible and associated cost and schedule.

4) Risk Monitoring: This sub process systematically tracks and evaluates the performance of risk handling actions against established metrics throughout the acquisition process and develops further risk handling options as appropriate.

Related Processes

- ✓ Risk Management Guidelines

CMMI Ver. 1.3 PA Reference:

- ✓ RSKM

6.14 Configuration Management

Configuration Management is management of change in a project. The purpose of Configuration Management is to establish and maintain the integrity of the products of the software project throughout its life cycle. Thus the Configuration Management Process ensures that the quality of a product is not sacrificed by any change activity.

Software consists of an environment together with collection of items like programs, data, and documents that undergo change. These items which are liable to change, affect, the quality of the software. These are monitored through configuration management and are known as configuration items. The Configuration Management Process involves identifying such items, systematically controlling change to them, and maintaining the integrity and traceability of the configuration throughout the lifecycle of the project.

Baseline is the current set of items, which have been reviewed and approved. Changes to the baseline and the release of software products from the baseline are controlled via the change control and configuration auditing functions of Configuration Management.

The Configuration Process also defines the Configuration Status Accounting mechanism to maintain a continuous record of the status of all baselined items so that there is clear communication of SCM activities and contents of S/w baselines to all associated people.

To perform all these activities a Configuration Management Plan is prepared during Project Planning and a Configuration Manager/Controller is identified. If required, a Software Change Control Board (SCCB) is also identified and this board approves all change requests requiring effort beyond a predefined limit.

Non-conforming products are handled by the Configuration Management process. Non-conforming CIs / Product are stored in a defined directory other than baseline directory. Customer supplied product is maintained by the configuration management process.

Related Processes

- ✓ Software Configuration Management
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Metrics Process

ISO 9001:2008 Clause Reference: 4.0, 7.0, 8.0

Software CMMI Ver. 1.3 PA Reference:

- ✓ Requirements Management
- ✓ Project Planning
- ✓ Configuration Management

6.15 Training

The objective of the Training Process is to develop the skills and knowledge of individuals so that they perform their roles with efficiency and effectiveness. The rapidly changing business environments and technology change in the IT area demands for effective training at all times.

The requirements for training may be in Development Technologies, Hardware/Software Tools, behavioral training, project management, training in industry trends, innovations and developments in business scenario, induction training to new recruits, QMS awareness programs and other trainings to support organizational goals like attaining the business targets, cost reduction, adoption of new technology etc.

The Training Process starts with the identification of training needs and then developing or procuring training to address the identified needs. The process is divided into three sub-processes – Training Planning, Training Execution and Training Evaluation.

The Training Planning Process aims at identification of the training needs of the company based on the recruitment plan and project plans of the various projects. The Training Plan is made on the basis of the training needs identified by the Senior Management, the project managers, the functional heads or any other individual who identifies the need of the training. QMS trainings are identified for all new recruits.

During the Training Execution Process, the arrangements for the training are made; the training is conducted and delivered. The trainees for a certain project are identified by the respective group heads. The status of the trainings is periodically reviewed.

The Training Evaluation Process includes the analysis of the feedback received from the participants after the training. Suggestions given by the candidates are analyzed and used for future training courses. The post training activities like update of the skills database and evaluate effectiveness of trainings are also done within the process.

Related Processes

- ✓ Training Process
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Metrics Process
- ✓ Post Training Evaluation Form

ISO 9001: 2008 Clause Reference: 4.0, 6.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Organizational Training

6.16 Administration Process (IT & Non-IT)

Administration (Facilities) deals with the planning, monitoring and maintenance of the facilities required for the software development activities of the company. And describe Physical security which designed to deny access to unauthorized personnel (including attackers or even accidental intruders) from physically accessing a building, facility, resource, or stored information. Physical security can be as simple as a locked door or as elaborate as multiple layers of barriers, security guards and guardhouse placement and monitor through security cameras. For Physical security camera recording are to be retained fortnightly.

The IT administration include server, personal computers, peripherals, networking, Internet and intranet, uninterrupted power supply, fire extinguishers, software packages & tools and other support equipment's. All customer-supplied products like software tool, package, and instruments are properly identified with suitable indicators. System and Network Admin/Project manager is responsible for maintaining and ensuring correct usage of these tools / software. In case of any loss of customer-supplied product, the customer will be informed, and suitable corrective and preventive action will be taken.

The Non IT administration includes Library Management, Building, workspace & other associated facilities, Transport & Communication facilities & other work environment related facilities.

Preventive Maintenance deals with planning and monitoring the maintenance of the hardware, software and facilities items under the scope of the Administration. Activities are performed.

The Corrective & Preventive Actions are taken as and when a Non – Conformance is identified, and it is tracked as per the closure dates. The SEPG performs analysis of the corrective actions periodically.

The Systems Administration Process takes care of activities such as user management, system resource management, Internet access control, system performance monitoring, and virus vaccine update. The entry to this process may be due to any one of the following reasons: when a new user has to be added /deleted, any request for new equipment/services, request for additional disk space, new virus update is released and mail related requests are received. A system layout of the servers, PCs, printers etc. are available with the IT Admin Group.

The Backup and Disaster Recovery Process defines the planning and execution of the backup procedure for the various servers and the process to be followed as contingency measures in case of a disaster. The backup & verification schedules are prepared and the activities for these processes are followed as per the schedule by the IT Administration. The frequency for the backup and recovery of various project data is as per the Project Management Plan of individual projects.

The IT Admin Process handles the software packages, tools and accessories being archived and managed in the library. They can be issued to the users for installing on their systems. The version numbers, user manuals and the number licenses owned by the company is also recorded for each software.

Issues reported by individual project representatives that are not resolved by IT/Non-IT admin group are discussed with top management during specified support meetings. The appropriate actions are taken accordingly.

Related Processes

- ✓ Back up Policy
- ✓ Infrastructure Process
- ✓ Internet & Electronic Messaging Usage Policy

ISO 9001: 2008 Clause References: 4.0, 6.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Integrated Project Management

6.17 Purchasing/ Procurement

The Procurement Process lays down the procedures of the procurement in the organization. It establishes systematic procedures for the Procurement function in order to ensure acquiring of the right material and service at the right time, at the right price. The Procurement Process is supplemented by following processes: SLC Process.

Purchase of hardware/software is done as per the purchase plan or due to a resource request being raised. The Purchase Plan is reviewed by Director.

The Vendor Development identifies the vendors for supply of different kinds of materials/ services. The performance of the approved vendors is reviewed quantitatively every quarter by the reviewing authority.

The Receipt & Inspection defines the modalities of the delivery of material/ service by the vendors, acceptance or rejection of the delivered material/service, and finally the certification of payment issued to Finance department by the approving authority. However, if the customer supplies the items for a project then such items received by the respective Project Head will undergo Receipt and Inspection Process only. These items will be marked to identify that these are customer-supplied items.

Related Processes

- ✓ Procurement Process
- ✓ Vendor List
- ✓ Vendor Evaluation Matrix

ISO 9001:2008 Clause References: 6.0, 7.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Supplier Agreement Management
- ✓ Decision Analysis and Resolution

6.18 Software Quality Assurance & Process Development & Improvement

The objective of the Software Quality Assurance process is to provide management with appropriate visibility into processes and products of the software projects and other support groups.

Each project has a SQA representative for the project. At the project level QA plan may be a part of project management plan

Related Processes

- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Quality Assurance Process

ISO 9001:2008 Clause References: 4.0, 5.0, 6.0, 7.0 and 8.0

Software CMMI Ver. 1.3 PA Reference:

- ✓ Process and Product Quality Assurance
- ✓ Organizational Process Focus
- ✓ Organizational Process Definition
- ✓ Measurement and Analysis

6.19 Metrics

NST's Metrics Process is designed with the objective of quantitatively controlling process performance as well as ascertaining the quality of the software products being developed. Metrication is extremely important for objective management. The SEPG performs the metrication activities in NST.

Metrics activities in NST are planned both at the organization level as well as at the project level. At the Organization level, goals for process performance and product quality are set. At the project level, metrication activities are planned by the PM at the time of planning for the project. This involves the identification of metrics to be used for the project, the methodology of data collection, setting responsibilities for collection of data for specified metrics, frequency of collection, the goals and control limits for each metric etc.

Metrication activities start with data collection. Data for process performance of project and support groups as well as product quality are collected. Data is collected from timesheets, schedule, test results, defects log, training records, change requests, audit results etc.

A list of metrics is provided in the Metrics Process with the definition of all metrics used in the organization. These definitions are used to generate metrics for the projects and other support groups using the Metrication Tool designed at the organization level.

The SEPG performs analysis of the computed metrics at defined interval. The analysis involves ensuring that the process performance and product quality are within acceptable limits.

Metrics analysis is used for continual improvement of NST's processes and the products. The senior management of the organization sets organization goals for metrics. Project goals may be set using the organization goals. Once the organization achieves the required level, set by the existing goals, new goals can be set for further improvement.

Related Processes

- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Metrics Process

ISO 9001:2008 Clause Reference: 5.0, 6.0, 7.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Project Monitoring and Control
- ✓ Integrated Project Management
- ✓ Measurement and Analysis

6.20 Continual Improvement & Corrective/Preventive Action

NST continually improve the effectiveness of the quality management system by:

- The metrics is collected; analyzed and appropriate action is taken to continually improve the effectiveness of the quality system.
- Metrics targets are being set for projects & support groups; performance of each core group is measured with respect to the target in the Metrics Plan.
- Internal Quality Audits are conducted across the organization at periodic intervals.
- Weak areas are identified; corrective & preventive actions are planned & implemented accordingly.
- SEPG meetings are held periodically.

During the life cycle of a project, various defects in processes/products are reported. The customer can also report defects in the form of customer complaints. Defects are logged in review records, test records, Internal audit reports and in customer complaint register. Process related defects are reviewed by the Quality Lead/SEPG. The Project Manager reviews project related defects. Root cause analysis of the defects is done. Potential causes of defects are identified and preventive/corrective actions accordingly taken. Preventive actions are initiated to prevent the occurrence of a problem whereas Corrective Actions are initiated to prevent their recurrence. Records of corrective/ preventive actions taken are maintained.

Related Processes

- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Metrics Process
- ✓ Quality Assurance Process
- ✓ Review Process
- ✓ Corrective & Preventive Action Process

ISO 9001:2008 Clause References: 4.0, 5.0, 7.0 and 8.0

CMMI Ver. 1.3 PA Reference:

- ✓ Software Project Planning
- ✓ Measurement and analysis
- ✓ Integrated project management
- ✓ Process and product Quality Assurance
- ✓ Organizational Process Focus
- ✓ Organizational Process Definition
- ✓ Verification
- ✓ Validation

6.21 Organization process performance

The scope of this process covers the organizational level analysis on different processes and process measures selected based on the organizational objectives. It also covers what to collect, and how to collect the data, basis and frequency of collecting the data for Organizational wide analysis. This process also covers the steps/method for analysis, type of control charts and their calculations

- ✓ Organizational Process Performance
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Metrics Process

- ✓ Guidelines for PCB and PPM

6.22 Quantitative Project Management Process

The scope of this process is to establish and maintain a quantitative understanding of the performance of the organization's set of standard processes and also to quantitatively manage the project's defined process to achieve the project's established quality and process-performance objectives

- ✓ Quantitative Project Management Process
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Metrics Process
- ✓ Guidelines for PCB and PPM

6.23 Organizational Performance Management

Organizational Performance Management focuses on actively managing the performance of the organization to achieve the desired business goals. The organization's business performance is managed using statistical and other quantitative techniques to understand process performance shortfalls, and to identify areas for process improvement

- ✓ Organizational Performance Management
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Metrics Process
- ✓ Guidelines for PCB and PPM

6.24 Causal Analysis & Resolution

This procedure defines the methodology of identifying and analyzing the causes of defects and other problems during the execution of the projects and taking suitable actions to correct those type of defects and problems to prevent them from recurring.

- ✓ Organizational Performance Management
- ✓ Project Planning and Project Monitoring and Control Process
- ✓ Metrics Process
- ✓ Guidelines for PCB and PPM

7.0 Exclusions to ISO 9001:2008, Section 7

All parts of sections 4, 5, 6 and 8 of ISO 9001 apply in their entirety to all organizations, and there are no circumstances under which an organization may claim exclusion to any parts of these sections. Exclusions to parts of section 7 can be considered, but this is only permissible where the requirement does not apply to the organization (refer to clause 1.2 of ISO 9001).

That is, if the organization has no **Control of monitoring and measuring equipment**, there is no **Control of monitoring and measuring equipment** to be controlled or audited, so it is permissible to exclude clause 7.6 from the scope of certification.

ISO 9001 Clause	Justification for exclusion
7.6 Control of monitoring and measuring equipment	Many service providers don't use measuring devices that require special controls (calibration in other words), as they don't produce anything with specific (for example) dimensional characteristics

Appendix-I

Process Mapping Details (ISO 9001:2008)

ISO 9001:2008 Clauses → Name Of Processes ↓	4.0	5.0	6.0	7.0	8.0
➢ Project Management Process	√	√	√	√	√
➢ Project Closure Process	√			√	√
➢ Estimation Process	√	√	√	√	
➢ Software Lifecycle Process	√	√		√	√
➢ Review Process	√			√	√
➢ Software Configuration Management Process	√			√	√
➢ Metrics Process		√	√	√	√
➢ Training Process	√		√		√
➢ IT Admin Related Process	√		√		√
➢ Procurement Process			√	√	√
➢ Disaster Recovery Plan	√		√	√	√
➢ Non-IT admin Related Process	√		√		√
➢ Process Development And Improvement Process	√	√		√	√
➢ SQA process	√	√	√	√	√
➢ Release Process				√	√
➢ H1B Process	√		√		

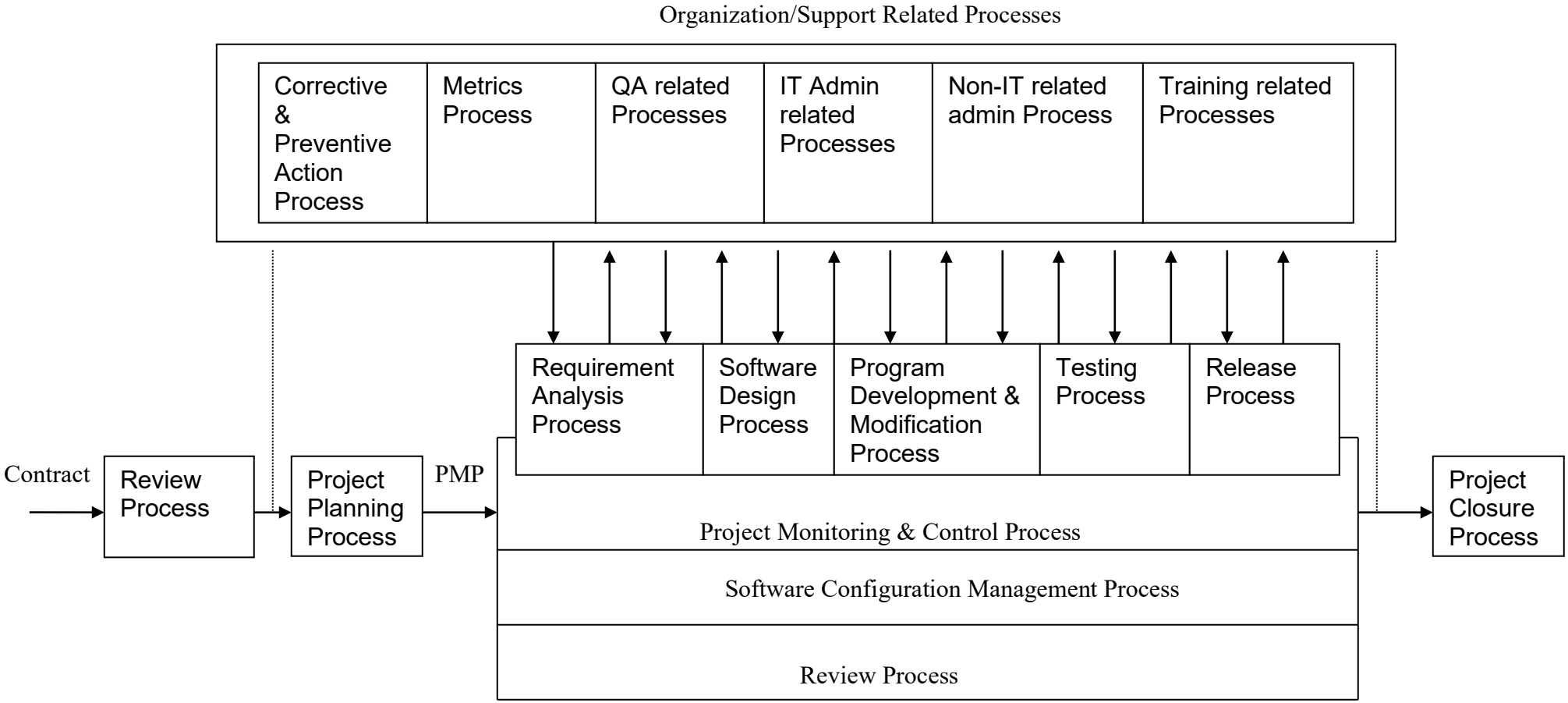
Appendix-II

Process Mapping Details (CMMI Level 5)

CMMI KPA → / Name Of Processes ↓	CMMI PAs																					
	PP	PMC	OPD	PPQA	RSKM	REQM	OPF	PI	MA	VER	VAL	SAM	DAR	OT	IPM	RD	TS	CM	OPP	OPM	QPM	CAR
➢ Review Process										√												
➢ Project Management Process	√	√			√								√		√				√	√	√	√
➢ Infrastructure												√										
➢ Client Engagement Process																						
➢ Software Life Cycle Process						√		√			√		√			√	√					
➢ Software Configuration Management Process																		√				
➢ Metrics Process									√													
➢ Training Process													√	√								
➢ Procurement Process												√	√									
➢ H1B Process												√										
➢ Decision Analysis and Resolution Process													√									
➢ Organization Definition and Focus Process			√				√															
➢ Quality Assurance process				√															√	√	√	√

Appendix-III

Process Architecture Document



Appendix-IV
QMS Records Retention Period List

S. No.	Record Name	Retention Period
	Projects Related	
1)	Software Requirement Specification	3 Year
2)	Requirements Traceability Matrix	3 Year
3)	Software Design Specification	3 Year
4)	Change Request Form	3 Year
5)	Client Project Status Report	3 Year
6)	Minutes of Meeting	3 Year
7)	Weekly Status Report	3 Year
8)	Project Management Plan	3 Year
9)	Test Case Template	3 Year
10)	Project Closure Report	3 Year
11)	Test Strategy	3 Year
12)	GO No GO checklist	3 Year
13)	Statement of Work	3 Year
14)	Release Notes	3 Year
15)	Document Review	3 Year
16)	Risk Register	3 Year
17)	Project Initiation Checklist	3 Year
18)	Effort-Estimation template	3 Year
19)	Kick Off Meeting	3 Year
20)	Client Survey Assessment Form	3 Year
21)	Test Plan Template	3 Year
22)	Test Progress Report	3 Year
23)	Purchase Order Form	3 Year
24)	Project Metric Database	3 Year
	Support Group Related	
25)	Training Attendance Sheet	2 Year
26)	Knowledge Transfer Form	2 Year
27)	Interview Feed Back Form	2 Year
28)	Non-Conformance Report	2 Year
29)	Audit Attendance Sheet	2 Year
30)	List of Trained Internal Auditors	2 Year
31)	SEPG Guidelines	2 Year
32)	Transport Policy	1 Year
33)	Antivirus Policy	6 Month
34)	MRM Guidelines	1 Year

Appendix-V

Organization Chart