*Process*

# CONFIGURATION MANAGEMENT

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# 1 INTRODUCTION

## *1.1 Purpose*

The purpose of Process_Configuration Management is to establish and maintain the integrity of work products using configuration identification, configuration control, configuration status accounting, and configuration audits.

## *1.2 Application Scope*

This document applied to all software projects at FSOFT.

## *1.3 Definition*

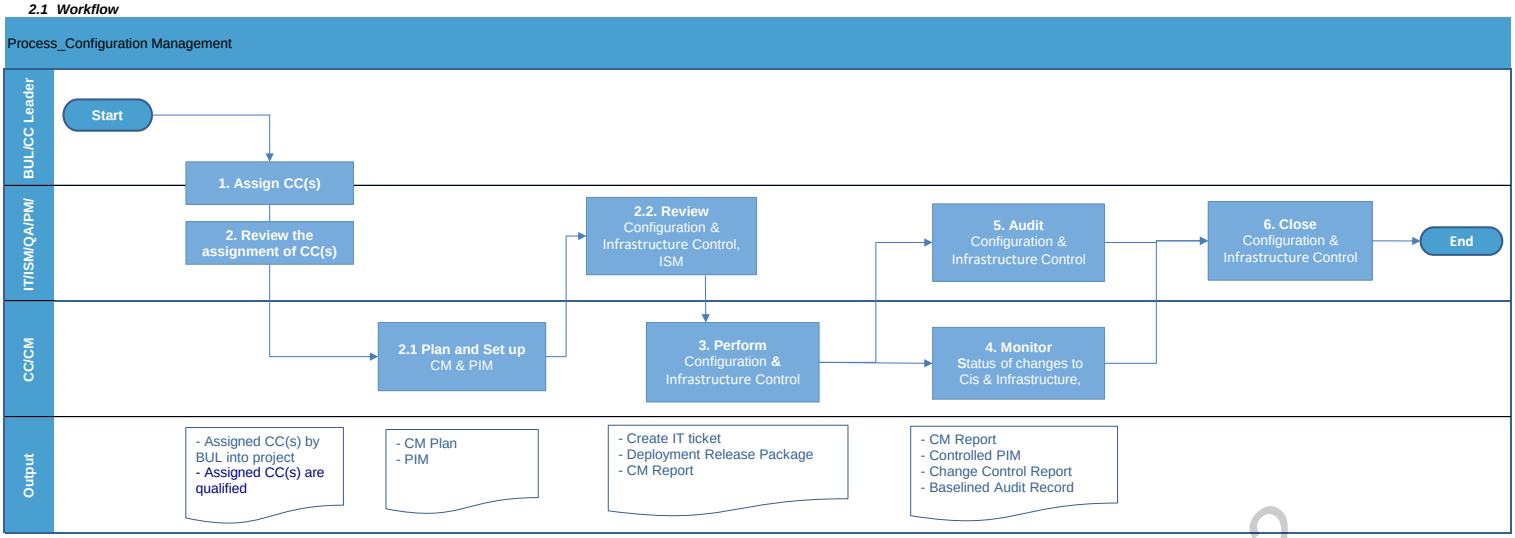
| No | Abbreviation/ Terminology | Explanation |
|---|---|---|
| 1 | CC | Configuration Controller |
| 2 | CCB | Change Control Board |
| 3 | CI | Configuration Item |
| 4 | CM | Configuration Management |
| 5 | CR | Change Request |
| 6 | CSCI | Computer Software Configuration Item |
| 7 | MM | Man-month |
| 8 | BUL | Business Unit Leader |
| 9 | PM | Project Manager |
| 10 | PTL | Project Technical Leader |
| 11 | QA | Quality Assurance Officer |
| 12 | SRS | Software Requirement Specification |
| 13 | SVN | Sub version Control System |
| 14 | VSS VM | Visual SourceSafe Version Manager |
| 15 | WO | Work Order |
| 16 | CICD (CI/CD) | CICD stands for The Continuous Integration and Continuous Delivery (CI/CD) is used in a general way to represent everything related to automation of the pipeline from where a developer adds his change to a central repository until that code ends up in production |
| 17 | SEPG | Software Engineering Process Group |
| 18 | NC | Non-Conformities |
| 19 | ISM | Information Security Management |
| 20 | IT | Information Technology |
| 21 | PIM | Project Infrastructure Management |
| 22 | Phase-connected projects | Phase-connected projects are projects that are undertaken to create products, services for a customer on the same development environment. |

## *1.4 Related Documents*

| No | Document Code | Document Name |
|---|---|---|
| 1 | 91e-BM/DE/HDCV/FSOFT | Template_CM Plan |
| 2 | 114e-BM/DE/HDCV/FSOFT | Template_CM Report |
| 3 | 27e-BM/HC/HDCV/FSOFT | Template_ Asset Destruction Report |
| 4 | 28e-BM/HC/HDCV/FSOFT | Template_ Asset Handover Note |
| 5 | 13e-CL/CL/HDCV/FSOFT | Checklist_Process Compliance Verification |
| 6 | 14e-CL/CL/HDCV/FSOFT | Checklist_Process Compliance Verification For Software Very Light Project |
| 7 | 12e-CL/CL/HDCV/FSOFT | Checklist_Process Compliance Verification For Software Light Project |
| 8 | 19e-CL/DE/HDCV/FSOFT | Checklist_Final Inspection |
| 9 | 210e-BM/DE/HDCV/FSOFT | Template_CICD Assessment & Resolution |
| 10 | 59e-QT/DE/HDCV/FSOFT | Process_CICD |
| 11 | 16e-BM/TT/HDCV/FSOFT | Template_Project Infrastructure Management |
| 12 | 26e-TC/DE/HDCV/FSOFT | Standand_Project Working Environment and Storage |
| 13 | 103e-CL/DE/HDCV/FSOFT | Checklist_CM Plan Review |
| 14 | 104e-CL/DE/HDCV/FSOFT | Checklist_Review Configuration Controller |

## 2 PROCESS

### *2.1 Workflow*




### *2.2 Process Description*

| No | Entry Criteria | Activity | Exit Criteria |
|---|---|---|---|
| 1 | Project Information<br>Customer requirement | Asssign a CC/CM or a group of Configuration Controllers into project.<br>The CC/CM must be independent from project. | An independently CC or<br>a group of independently assigned CCs is assigned into the project |
| 2 | Independently CC(s) is/are assigned into project | Review the assignment to qualify whether the assigned CC(s) | The assigned CC(s) are required to complete the CM training course or be certified/qualified by the IT department. |
| 3 | Project Information is transferred to CC<br>Project completed CICD Assessment | Plan and Setup CM & PIM | CM Plan and PIM are approved & oriented to project team member. |
| 4 | CM Plan and PIM are approved & oriented to project team member. | Perform Configuration & Infrastructure Control | CM Plan and Infrastructure Management are implemented and updated properly. |
| 5 | CM Plan and PIM are approved & oriented to project team member.<br>- Changes to CIs accepted by CCB/Authorized person. | Monitor status of changes to Cis & Infrastructure | CIs & changes to CIs status are monitored. |
| 6 | CM Plan and PIM are approved & oriented to project team member. | Audit Configuration & Infrastructure Control | Audit configuration control and Infrastructure Management are completed as planned. |
| 7 | Project is agreed to close | Close Configuration & Infrastructure Control | Related documents are kept |

### *2.3 Roles and Responsibilities*

| No | Role | Responsibilities |
|---|---|---|
| 1 | BUL/CC Leader | - Assign an independent CC or a group of independent CC(s) into project |
| 2 | IT/ISM/PM | - Review the assignment of CC(s)<br>- Review & approve CM Plan<br>- IT Join to review CM plan infrastructure with PIC in SLA<br>- ISM Join to review CM plan security with PIC in SLA<br>- Support CC(s) to complete responsibilities |
| 3 | Configuration Controller (CC) | - Planning for configuration management.<br>- Manage project infrastructure (PIM)<br>- Provide orientation in CM Plan to project team.<br>- Identify and manage configuration items (CIs).<br>- Perform project baseline.<br>- Control change of CIs and infrastructure.<br>- Control access right.<br>- PIC of external releasing.<br>- Track status of change to CIs, infrastructure. |
| 4 | Change Control Board (CCB) | CCB includes: SM, PM, PTL, Test leader, CC, Team Leads (if any).<br>Their responsibility is make decision on change request to Cis, infrastructure. Their approval for change request are mandatory to change the Cis, infrastructure. |
| 5 | QA | - Review CM plan & PIM<br>- Conduct Baseline Audit<br>- Review deleted project data and release/handover equipment/intangible assets when close project |

### *2.4 Work Products*

- CM Plan (refer to Template_CM Plan for details)
- Project Infrastructure Management (refer to Template_Project Infrastructure Management for detail)
- CM Report contains CI Identification Status Report; Change Control Report; Baseline Report (refer to Template_CM Report for details)
- Baseline Audit results (refer to sheet PCV\baseline for details)

### *2.5 Metrics*

| No | Metric Name | Formula | Unit | Storage | Frequency |
|---|---|---|---|---|---|
| 1 | Process Compliance Rate | = SUMPRODUCT(checked items, assessment results)/SUM(checked items).<br>Note: only include checked items with assessment results = 0, 50, 100. | % | Post Mortem report (in Project Workbook) | Post-mortem |

### *2.6 Records*

| No | Name of Record | Storage Modality | Duration (year) | Important Level | Location |
|---|---|---|---|---|---|
| 1 | CM Plan | S | 3 years | 3 years | Project Repository |
| 2 | PIM | S | 3 years | 3 years | Project Repository & IT Department Repository |
| 3 | CM Report | S | 3 years | 3 years | Project Repository |
| 4 | Baseline Audit Result | S | 3 years | 3 years | Project Repository |

## 3 PROCEDURE

### 3.1 Assign CC

| No | Category | Task Step | Doer | Reviewer | Approver | Due Date | Frequency | Input | Output | Template/ Related Document | How to (Description) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CM | Assign the Configuration Controller (Called CC) into project. | BUL/CC Leader | N/A | N/A | N/A | N/A | Project Information<br>Customer requirement | Independently CC(s) is/are assigned into project | Tool : FI2.0/resource allocation | - Based on the project information & customer requirement, BUL assigns a CC or a group of CCs into project.<br>- The CC(s) must be independent from project<br>- PM allocate CC into project in FI2.0 |
| 2 | CM | Review the assignment of CC(s) | IT/ISM/QA/ PM | N/A | N/A | N/A | N/A | Review checklist | Independently CC(s) is/are assigned into project | Checklist_Review Configuration Controller | - PM/QA review the assignment to qualify whether the assigned CC(s):<br>+ Has been trained, passed the CC course and/or certified in configuration management and security<br>+ Understands requirements of customer related to configuration management and security (if posible)<br>+ Understand his role & responsibility<br>- For projects classified as Rank A, assigned CC must be fully reviewed by IT/ISM according to the "Checklist_Review Configuration Controller" checklist. For other projects, PM should review CC follow the checklist.<br>- For other projects, if assigned CC passed the CM course of FSOFT and holds a certificate related to configuration management, thus is considered qualified by default.<br>- Point out the risk if the assigned CC(s) is not qualified, and the CC(s) needs to cover for 1 month. During this period, the CC(s) is allowed to perform tasks related to CM on the system.<br>- Review result will be show on FI2.0. |

### 3.2 Plan and Set up CM & PIM

| No | Category | Task Step | Doer | Reviewer | Approver | Due Date | Frequency | Input | Output | Template/ Related Document | How to (Description) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CM | Study Project information, Project lifecycle, Project Infrastructure. | CC, Team | N/A | N/A | N/A | N/A | Project Information | CC understand project information | N/A | CC study all provided project information to prepare for planning CM, PIM.<br>CC share necessary project information to project team. |
| 2 | CM | Develop CM Plan and PIM | CC | IT/ISM/PM | BUL or CC/CM Manager delegate by BUL | N/A | N/A | - Project Information<br>- CICD Assessment and Resolution | - Drafted CM Plan<br>- Drafted PIM | - Template_CM Plan<br>- Checklist_CM Plan Review<br>- Template_CICD Assessment & Resolution<br>- Template_Project Infrastructure Management<br>- Sample_Project Infrastructure Management<br>- Standand_Project Working Environment and Storage | 1.To develop CM Plan and PIM, CC have to define all sections bellow:<br>- Customer's requirement for environment<br>- Project environment and infrastructure<br>- CM Level &CI Identification<br>- Naming convention & Version numbering<br>- Promotion Areas & Directory Structure<br>- Access Authority<br>- Set up CM Environment<br>- Backup Strategy<br>- Perform Configuration Control<br>- Manage CI and PIM Revision and Perform Project Baseline<br>- Control Configuration and Infrastructure Change<br>- Control Access Right<br>- External Release.<br><br>2. For details on the CM Plan, please refer to Appendix 1, Section 4.1, and use the Checklist_CM Plan Review for self-review before discussing with IT/ISM.<br>For PIM detail: refer to Appendix 4 Guideline_Project Infrastructure Management. |
| 3 | CM | ISM/IT review specific security required in CM Plan & PIM (if any) | ISM/IT | N/A | N/A | N/A | N/A | - Project Information<br>- Specific security requirements<br>- Drafted CM Plan<br>- Drafted PIM | Specific security requirement are reviewed and approved | - Template_CM Plan<br>- Template_Project Infrastructure Management<br>- Checklist_CM Plan Review | If project have any specific requirement about securily, internet connection, working environment…CC records in CM Plan/PIM/CM report/CIs List and get approval from ISM and IT |
| 4 | CM | Get CM Plan and PIM reviewed & approved | CC | QA, IT, ISM | PM | For Light and Very Light Process: 5 WDs from the Planned Start Date For Standard, Agile, Service: Must finish within 10 days after WO v1.0 is approved | N/A | - CM Plan<br>- CIs List in CM report<br>- PIM | - CM Plan review record<br>- Approved CM Plan<br>- Approved PIM<br>- CIs List in CM report are approved | - Checklist_CM Plan Review | |
| 5 | CM | Set up CM environment | CC & IT | N/A | N/A | N/A | N/A | - Approved CM Plan<br>- Approved PIM<br>- CIs List in CM report | CM Environment is setup | N/A | According section 4.1.5, Appendix 1.<br>CM environment includes the infrastructure used in developing work products, promotion areas and directory structures, and access authority, specific security needs (indicated and approved in PIM by IT).<br>The infrastructure includes hardware (servers, …), software (tools, …), and equipment. They are listed in sheet CI Identification in CM report and in PIM. If hardware and equipment are needed, CC can request the support from Administration for purchasing, managing and maintaining (refer Admin handbook in QMS for details if necessary). If software and network connection are needed, CC can request the support from IT to setup. The utilization of the servers which are used for different purpose (by now or in the past) as the file server of project is prohibited. All servers of project must be managed by IT.<br>Promotion areas, directory structures and access right should be setup as indicated in CM Plan and PIM.<br><br>In case project is phase-connected project, work with IT to keep resources and setting of the previous project. |
| 6 | CM | Provide orientation in CM plan and PIM to project teams | CC | N/A | N/A | N/A | N/A | - Approved CM Plan<br>- Approved PIM | Orientation Evidences | N/A | CC sharing necessary project information to project team. Make sure all team members understand CM rule.<br>In case project is phase-connected project and no change in CM settings or team members, skip this step. Or CC shares only changed contents to project team or the whole content to new members. |

### 3.3 Perform Configuration & Infrastructure Control

| No | Category | Task Step | Doer | Reviewer | Approver | Due Date | Frequency | Input | Output | Template/ Related Document | How to (Description) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CM | Manage PIM/CI revision and Perform Project Baseline | CC | QA | PM | Start-up baseline : within 10 working days after WO 1.0 is approved.<br>- Wrap-up baseline is conducted within 5 working days after the final release | - Start up baseline<br>- Wrap up baseline<br>- The maximum duration between 2 project baselines is 3 months.<br>- For any change of Project Infrastructure/access right | - CM Plan<br>- PIM<br>- As per Baseline schedule and when there is any change of information CIs/PIM | - Baseline Report<br>- Changed CIs are correctly made and maintained in the appropriate areas<br>- Relevant people are notified with the current Status of the changes | - Template_CM report<br>- Template_Project Infrastructure Management | - Check Status of all CIs, and the evidence that the CIs being baselined has passed the verification<br>- Update PIM and inform to IT<br>- Migrate CIs to Archive area<br>- Create Baseline Report<br>Refer to Appendix 1/section 4.1.8 |
| 2 | CM | Control Configuration and Infrastructure Change | CC | N/A | - CCB<br>- For minor changes: PTL | N/A | N/A | - CM Plan<br>- PIM<br>- Change request in Configuration, Infrastructure | - Control Change Report of CM Report and PIM<br>- Updated relevant section in Project Plan (Schedule, Cost…) | - Template_CM Plan<br>- Template_Project Infrastructure Management | - Receive events which are trigger for change. They could be either change request or defect record or enhancement requests to CIs<br>- Get analysis for CR and impact evaluation of CIs and effort, schedule, cost from CCB<br>- Get review and decision on the CR (Reject or Committed) from CCB<br>- Confirm implementation, verify , update PIM when necessary after the CI changes are implemented<br>- Migrate the Changed CIs to appropriate area<br>For more detail, refer to Appendix 1/section 4.1.9 and Guideline_Project Infrastructure Management |
| 3 | CM | Control Access right | CC | N/A | - PM<br>- ISM (if needed) | N/A | At least baseline point and project closure time | - CM Plan<br>- PIM<br>- Request change in access right | Access right is controlled | N/A | CC have to ensure that access right in project environment exactly with the access right for role (PM, SM, PTL....) and project staff list as planned. In case have some changes in role on staff list, CC have to update the access right as soon as possible.<br>Refer to Appendix 1/section 4.1.10 Control Access right<br>Refer to Template Project Infrastructure Management/Sheet member |
| 4 | CM | External release | CC, PM, Developer, QA | N/A | QAM | N/A | | - As per Release schedule or request to release<br>- Source codes or information CIs | - Final Inspection is checked<br>- Released Package<br>- Release Note | Checklist_Final Inspection | Here are required steps for a common external release to customer:<br>- CC gets the latest version of source codes or information CIs for the to-be-released package from server<br>- PM/Developer prepares Release Note<br>- CC migrates to-be-released information CIs to Release area<br>- QA performs Final inspection<br>- If Final inspection passed, the information CIs are released to customer<br>- CC archives the Release (if necessary) |

### 3.4 Monitor Status of changes to CIs & Infrastructure

| No | Category | Task Step | Doer | Reviewer | Approver | Due Date | Frequency | Input | Output | Template/ Related Document | How to (Description) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CM | Track status of Changes to CIs. | CC | PM<br>ISM | N/A | N/A | - Weekly<br>- and when the changed CIs | - CM Plan<br>- CR information<br>- PIM<br>- CCB decision<br>- CIs List | Change Control Report in CM Report | - Template_CM Report | 1.All information related to change control needs to be recorded in sheet Control Change Report of CM Report for a project.<br>Please see explanation of each column in the sheet to understand how to fill out the report when having any changes.<br>- Event Date: The date when an event occurs<br>- Event: Trigger for changes. It could be either defect reports or change requests or enhancement requests to CIs<br>- Action taken<br>- Affected in CIs: Name, Old Version (which version of CI is used to generate the New version of CI), New Version, State (In normal cases, it could be: Developed, Reviewed, UT Passed, IT Passed, ST Passed, Released, Cancelled)<br>2. The monitoring is required on those infrastructures that are assigned to the CC<br>3. The monitor should be done by weekly at least and//or when there are changed CI(s)<br>4. The monitor should be reported to PM, ISM |
| 2 | CM | Track status of those infrastructures under assignment by CC | CC | PM<br>ISM | N/A | N/A | - Weekly<br>- and when the changed Infrastructure | - CM Plan<br>- CR information<br>- CCB decision<br>- CIs List | PIM is implemented properly, updated if any infrastructure is changed | - Template_CM Report<br>- Template_Project Infrastructure Management | |

### 3.5 Audit Configuration & Infrastructure Control

| No | Category | Task Step | Doer | Reviewer | Approver | Due Date | Frequency | Input | Output | Template/ Related Document | How to (Description) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CM | Conduct Baseline Audit | QA | N/A | N/A | N/A | After every project baseline | CM Plan (baseline plan) | Baseline Audit Record | Checklist_Project Baseline Audit | Baseline audits are performed by QA right after the completion of project baselines to verify the correctness of the baseline. The goal of a baseline audit is to verify that al CIs have been correctly identified and moved to and from the baseline in a manner consistent with the CM Plan. Baseline audit will also enable to assess the effectiveness of the CM process at the projects. After an audit, a report is documented and made available to the PM and CC of the projects. The people will use the findings to identify and correct problems and inefficiencies in the CM process. The section 2.3 in CM Plan will list all standard baselines with their purpose, criteria and person in charge which are included in most of projects, although, some of them can be removed or added if necessary. |
| 2 | CM | Conduct Internal Audit: implement CM related work | Internal auditor | QA, QAM | N/A | N/A | N/A | CM Plan (As per internal audit schedule) | Internal audit records and/or lists of NCs | Checklist_Internal Audit for Project | Follow Process Internal Audit |
| 3 | CM | Conduct ISM Audit: performed as ISM 's plan | ISM | N/A | ISM Head | N/A | N/A | ISM Audit Plan | ISM audit records | Checklist_Information Security Internal Audit | |

### 3.6 Close Configuration & Infrastructure Control

| No | Category | Task Step | Doer | Reviewer | Approver | Due Date | Frequency | Input | Output | Template/ Related Document | How to (Description) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | CM | Delete project data | CC | QA | PM | N/A | In the end of project | PM/CC request all members to delete all project configuration items (technical documents, source code, scripts,...) from workstations and from any other servers | Review record | - Checklist_Process Compliance Verification For Full Lifecycle Development<br>- Checklist_Process Compliance Verification | - CC requests and ensures all members delete project data in their clients and servers. QA verify by using Checklist PCV<br>- CC get approval of PM to close this task with evidence.<br><br>In case project is phase-connected project, do this steps if there are members that leave the next phase. Otherwise, skip this step.<br>**Note**: Evidence of project data deletion can be provided to customers in the following ways:<br>1. Use the tool and delete project data according to the customer's requested method and send evidence to the customer.<br>2. Delete project data according to Fsoft's process and send evidence to the customer.<br>3. PM/BUL confirms with the customer that IT has deleted the project data. |
| 2 | CM | Release or handover equipment/intangible assets of customer (if any) | CC | QA | PM | N/A | In the end of project | Request for release or hand over equipment | Equipment is released/ handover as required | - Template_Asset Destruction Report<br>- Template_Asset Handover Note<br>- Guideline_Physical Asset Management<br>- Process_Customer Asset Management | - Refer to Appendix 2. Project asset management guideline<br>- Release or handover equipment/intangible (if any)<br>- CC get approval of PM to close this task with evidence.<br><br>In case project is phase-connected project, do this step if there is change in equipments/intangible. Otherwises, skip this step. |
| 3 | Other | SEPG.ACC request IT archive project folder | SEPG.ACC | N/A | N/A | N/A | In the end of project | The Project is agreed by SEPG.ACC to close after SEPG.ACC confirms data. | Call-log is sent to IT | FSoft Portal | - SEPG.ACC sends Call-log to request IT archive project folder<br>+ PM gets approval for retain project environment, storage and access rights up on demand (by default project environment, storage and access rights will be closed)<br>+ From DM to retain environment and storage and transfer to next project, in case next phase project of current project is opened and need to re-use development project environment of current project.<br>+ From authorized people (BUL, ISM, Customer representative/ AM/ DM) with information about reason, expire date for keeping access right,... in others case<br>+ In case the project does not have a DM, it will be replaced by a BUL. |
| 4 | Other | IT archive project repository | IT | N/A | N/A | N/A | In the end of project | Call-log | - Project repository is archived<br>- Access right is revoked<br>- Connection is expired<br>- Evidence is sent to SEPG ACC | - IT archives project repository , revokes access right of all members, expires network connections, and sends evidences to SEPG. ACC.<br><br>Achived data is legacy versions of project resources, intended for reference when necessary after project closure.<br>It is not used for development, testing, or running the product in a live environment.<br>It could be used to rebuild the full enviroment for development, testing,...production environment.<br><br>These datas include :<br>- project record (proposals, schedules,...)<br>- project engineering input and output ( requirements, designs, source code, test case,...)<br>- project releases |

# 4 APPENDIX 1 - CONFIGURATION MANAGEMENT GUIDELINE

This part will guide how to implement CM group of activities that must be performed in support of the CM mechanisms. There are 4 groups of activities:

- Planning - identifying those items that need to be under CM (known As Configuration items), defining locations to store them, access rights, procedures for change Control and Baseline, and other necessary rules.
- Performing Control - maintaining CI versions, storing CIs in proper locations, and making changes properly, releasing products
- Monitoring and Auditing - tracking Status of changes and Auditing baselines
- Closing - archiving project folders and clearing project information then finishing all Closing procedures related to ISMS

**4.1 CM Planning**

The CC or the PM does the CM planning only when the project has been started and the operating environment and requirements specifications are clearly documented. The key task of CM planning is developing CM Plan, after the project information and lifecycle is well understood. Other tasks of CM planning have already described in section 1.4. The main activities of developing CM plan include the following:
- Customer's requirement for environment
- Project environment and infrastructure
- Identify CIs to be put under independent CM change control. A special kind of CIs is infrastructure including software (tools, OS,...), hardware (servers, …) and equipment..
- Customer's requirement for environment
- Project environment and infrastructure
- Define a naming convention and version numbering rules for the CIs to uniquely identify those.
- Define procedures to baseline the CIs and identify project baselines schedule
- Define the directory structure and promotion areas needed to store CIs and baselines for CM.
- Define access rights for team members.
- Define change control procedures.
- Identify and define the responsibility and authority of the CC or Configuration Control Board (CCB), especially the server admin in case project team has own server computer and the asset management officer in case project team needs to manage customer assets.
- Define backup and archival procedures.

The output of this phase is the CM plan (see Template_CM Plan for more details)

**4.1.1 CM Level &CI Identification**

CM level is used to identify level of CM change control procedure applied to projects. There are Configuration item (CI) and Non-configuration items (Non-CI) in CM level
Configuration Items (CI): Important documents/outputs that need to be reviewed, approved, version change management and audits. Examples include source code, requirement document, design,..

**Non Configuration Items (Non-CI)**: An item which use for tracking purpose and will not apply change control procedure. Examples include review records, project reports, emails, meeting minutes, status tracking records, etc.

CIs can be divided in to some main categories: **information, infrastructures.**

**Information Configuration Item (CI)** is a unique identifiable work product that is considered as critical to defining properties of the final work product of projects. Therefore, any change to the CI may have some effects upon the properties of the final work product.

**Infrastructure** consists of CIs used in creating and describing work products which related hardware, software, equipment, network connections for Development, Test and Deployment environments.

| | CI type | | Detailed (Description & sample) |
|---|---|---|---|
| CI items | Information CI | Project Management documents | Proposal, estimation, work orders (internal or external), project plan, CM plan, Communication plan, change control reports, post-mortem reports, Acceptance Note, CSS |
| | | Requirement | Requirement analysis records, URD, SRS, RM sheet, requirement change records |
| | | Design | Architectural design, Detail design, Screen design, Design Plan |
| | | Coding | Source code, coding plan, integration plan, CICD Assessment and Resolution document |
| | | Testing | Test plan, Test design/Test viewpoint, Test cases, Test data, Test scripts |
| | | Deployment | User manuals, Release note, System description |
| | | Other work products that are delivered to customer | Other work products that are delivered to customer |
| | | Customer supplied items, purchased items and other items | Development tools, database/ application/web servers, documentation tools and operating systems, critical hardware |
| | | Standards, which are created by projects or customers | Coding standard, Design standard, Design Templates, Test case form |
| | Infrastructure CI | Infrastructure | - **Hardware** includes database/ application/web servers, mainframes, desktop PCs, laptops, and other critical hardware.<br>- **Software** includes application software, middleware, operating systems, development tools, documentation tools and utilities either owned by or licensed to FPT Software or customer supplied.<br>- **Equipment and Internet Connections:** Equipment include communication equipment (modems routers, switches, telephone exchanges, fax machines, answering machines), storage devices (USB storage, HDD, tapes and disks) and other technical equipment (printer, photocopy machine, power supplies, air-conditioning units, token card).<br>- **Service:** Internet connection, VPN connection Site to site, VPN connection Client to site, Git connection. |
| Non-CI items | **Non - CI type** | | **Detailed (Description & sample)** |
| | FSOFT's standard, handbook, Process… | | No need baseline, controlled by SEPG |
| | Meeting minutes record, email, risk/issues log,… | | No need version and changing |
| | Defect list, Review records, coding summary reports. | | No need version and changing, there are the samples only, if it must deliver to customer then define as CI |

There are 3 CM levels

**Baseline Level** : Items put under this CM level is Configuration Items (CI) that have change version when compare with first version and need baseline

**Control level:** Items put under this CM level is Configuration Items (CI) that haven't change version when compare with first version, no need baseline

**Non-CI Level:** Items put under this CM level are those which are record and not going under change control.

**4.1.2 Naming convention & Version numbering**

To facilitate proper identification of CIs, the naming conventions and version numbering schema for CIs are established in CM Plan. When a CI is changed, the old item is not replaced with the new copy; instead, the old copy is maintained and a new one is created. This approach results in multiple versions of an item, so policies for version number assignment are needed. If a CM tool is being used, sometimes the tool handles the version numbering. Otherwise, it must be explicitly handled in the projects. For specific projects, naming convention and version numbering schema are left to the PM. In order to do that, PMs could use the guideline given below but the name can be customized according to the requirements from customer and characteristics of the project

*4.1.2.1 For Documents*

- Document CIs are assigned unique identifiers that identify project code, CI name and (If appropriate) CI component with which They are associated, along with the current version number. the identifier consists of four parts separated by (_) in the format:

**Project code_CI Name_CI Component_current version number**

- Document CIs that are project-specific, but not are associated with a project component use a three-part identifier composed of project code and CI name along with the current version number. for example:

**Project code_CI Name_current version number**

- Document CIs that are not project-specific (not specific only to the project), such as policies, process descriptions and guidelines or customer supplied, purchased items are identified with their original identifier.
- The convention of the version is maintained as numeric identifier with three components as following:

<major>.<minor>.[<draft_status>]

Where

<major> is the major version number and it changes when the core architecture changes
<minor> is the minor version number and it changes when the existing content changes but the overall structure and flow of the item remains the same.
<draft_status> determines whether the current version of the document is draft version.

**For example:**
Initial version is 0.1 then if there is any change after that the version become 0.2, 0.3, … then approval version is 1.0.
If there is any change after approval, version 1.0 become 1.0.1, 1.0.2, then become the approval version in two following cases:
The first case is that the core architecture of item changes, the major number is promoted:
1.0.5 -> 2.0
1.4.5 -> 2.0
The second case is that the existing content changes, the minor number is promoted:
1.0.5 -> 1.1
1.4.5 -> 1.5

*4.1.2.2 For Source Code*
The naming convention for each Source CIs is defined by the project team. Software executable and support files are generally identified by name and version number, such
For Example:
The initial version of the first release is 1.0.0.130204 and the first release after 5 hot fix is 1.0.1.130315

**4.1.3 Promotion Areas & Directory Structure**
Promotion areas are set up to maintain the states of Information CIs. All items in a certain state should reside in the corresponding directory for that state. For example when the state of a program changes the program will be moved from the directory of the old state to the one of the new state.
If a CM tool is available, however, the directory structure needed for managing the states of CIs depends on the tool. During CM planning phase, the directory structure employed for managing the states must be set in CM plan in accordance with the requirements of the CM tool, if any.
Promotion areas apply only for the Information CIs. Information items that are not controlled -for example, testing results, review results, messages and so on—are omitted; they are stored in their respective directories in the uncontrolled area.

Promotion areas are designated in projects must satisfy the following goals:
- To provide simple backup, allowing the project team to ensure that project data at any given time can be protected from loss of files due to the hardware or software failure of an individual's machine.
- To provide a clean environment where developers can obtain code developed by others and be assured that the code will be free of unit level or compile errors.
- To provide clean, controlled builds for Testing groups. We may need to reproduce these builds as Testing groups may often need to demonstrate errors and fixes in subsequent versions.
- To provide clean, stable releases of the project. These releases may often require patch fixes as uncaught errors are reported from the field.
- As standard, where an item kept when it is being developed is given in the Develop Area. If the item is to be reviewed, it is moved to For Review area, and then Release Area where it goes after it is approved. The table below describes standard promotion areas of a project. However, some other promotion areas should be added or removed if one project needs more or less states of CIs.

For Source code and document management

| No | Area | Purpose |
|---|---|---|
| 1 | Develop Area | Area for different user to store his/her owned items. He/she freely add and update files in this area |
| 2 | Review Area | Area to store items that have been compiled properly and successfully unit tested or self-reviewed. The items are ready for Integration and for Test/Review |
| | | Project team get to be-tested/reviewed items from this area |
| 3 | CICD Area | Just applicable for Source items. |
| | | To store items passed self-review and be ready for review by CICD tools. |
| 4 | Test Area | Just applicable for Source items. |
| | | Versions in this level are used to conduct independent System/Integration Testing and represent candidate versions for release |
| 5 | Release Area | This level includes actual released versions of the project. The versions here are created from the Test/Review versions that were accepted by the release authority |
| | | Users get the most recent items for their usage from this area |
| 6 | Archive Area | To archive all released versions of each CI at the last baseline points |

For Data management of AI

| No | Area | Purpose |
|---|---|---|
| 1 | Collect Data Area | Area for users to collect and store raw data from various sources (sensors, files, APIs, etc.) |
| 2 | Pre-process Data Area | Area to store data that has been cleaned, transformed, normalized, or had missing/noisy values handled |
| 3 | Label Data Area | Area to store data that has been labeled or annotated |
| 4 | Training Data Area | Area to store data split for model training |
| 5 | Validation Data Area | Area to store data split for model validation |
| 6 | Testing Data Area | Area to store data split for testing |

Promotion Area is not only reflected in physical storage but also be represented logically via labelling and naming convention. For example: to distinguish state of CIs, the naming convention could be set Document Name_Version number_State (Developing, Ready for Review, Ready for Test, Baselined, etc.)

Promotion Area could be customized by projects to fit their own need, but the areas Develop, Test (applicable for projects that have separated and independent Testers), and Release are mandatory to be separated, could not be merged with each other. If SVN is used for project, Archive area can be removed because SVN provides its own backup mechanism. Review Area in some kinds project can be combined with Development Area or Release Area according to characteristics of project.

**4.1.4 Access Authority**
CM requires that access to some items in some states remain restricted. For example, the developers' access and right to modify a program in the baseline must be limited. CM Plan must therefore specify the access rights of the project team (PM, CC, Developers, Testers, and QA, etc.) in various project directories and promotion areas. It is recommended to grant Full access right to Release and Archive areas to limited people to ensure the security of the work products after releases. In normal case, only PM, CC and PTL have Full right to those areas.

**4.1.5 Set up CM Environment**
CM environment includes the infrastructure used in developing work products, promotion areas and directory structures, and access authority, specific security needs (indicated and approved in CM Plan by ISM).
The infrastructure includes hardware (servers, …), software (tools, …), and equipment. They are listed in Template_Project Infrastructure Management and sheet CI Identification in CM report. If hardware and equipment are needed, CC can request the support from Administration for purchasing, managing and maintaining (refer Admin handbook in QMS for details if necessary). If software and network connection are needed, CC can request the support from IT to setup by updating the Project Infrastructure Management (PIM). The utilization of the servers which are used for different purpose (by now or in the past) as the file server of project is prohibited. All servers of project must be managed by IT.
Promotion areas, directory structures and access right should be setup as indicated in CM Plan.

**4.1.6 Backup Strategy**
If project uses file servers of FSOFT, do not need to describe its own backup strategy because IT will back-up by default (refer to Guideline_Backup List for details). If project uses their own servers or other tools, it needs to describe backup strategy following the table in section 2.8 of Template_CM Plan.
CCs need to understand some terms and rules as the following when they define the backup strategy for their project. The item to be back-up can be source codes, documents, project assets. Backup Type can be Full back-up where the full item will be backup or Incremental backup where only change/new will be backup. The source codes and documents need to be full back-up at least once a week or once every 2 weeks with one incremental weekly. The project assets need to be full back-up at least once a week.

**4.1.7 Perform Configuration Control**
Configuration control activities are undertaken during the execution phase of the project. Purposes of these activities are to manage revisions of CIs and to manage the change requests that must be implemented.

#### 4.1.8 Manage CI Revision and Perform Project Baseline

Project Baseline is comprised of a specific released version of each CIs and it captures an approved snapshot of the project and its CIs at that given point in time. Duration between the 2 concurrent baselines shall not be longer than 3 months. The 2 project baselines are the mandatory requirements for projects: Start-up baseline and Wrap-up baseline. Start-up baseline must be conducted within 10 working days after WO 1.0 is approved. Wrap-up baseline is conducted within 5 working days after the final release is sent to customer. Final release is the final product sent to customer after fixing bugs and comments from UAT or user acceptance review. It is mandatory requirement that version of all CI at Start-up baseline and Wrap-up baseline to be archived in separate folders in Archive area, particular for Infrastructure CSCI and the CIs maintained physically, such as devices, equipment, etc., because of its huge storage required or impossibility to baseline and archive, it is recommended to only capture status of the CIs at the baseline point and their location address "where could we get the CI" in Baseline Report.
The procedure of CI Baseline is defined in CM Plan to guide how to baseline CIs. The detail schedule for baseline also is defined in CM Plan. All information describing the current status of CIs and CI revisions will be recorded in Sheet Baseline Report of CM report.

An information CI is considered to be baselined when it is in any state in which others can use it.
- Document CIs are baselined after the first version is reviewed and approved for release.
- Source CIs are baselined after the first version reviewed and unit tested
- Customer supplied CIs are baselined at the first time they are received by the project.

Once CIs are baselined, it cannot be modified, even by the original author, without proper authorization, because others may be using it. To make an approved change, the person in charge must check the item out of controlled areas. Checking out essentially implies making a copy of the item without destroying the earlier version, and making a note that the item has been checked out.
An item is modified after it has been checked out. Then the new version is moved to Review area to ensure that the changed item is suitable before it is checked back in Test, and then Release areas. When an item is checked back into Test, Release areas, the older copy is not destroyed; instead, a new version is created. Often, only the CC or the person assigned by PM can check items in those areas. This limitation makes it possible to roll back the changes if the need arises.
Each CI will have an associated Record of Change (RoC) which will be used to track changes to the CI. Any change, no matter how minor, made to that CI must be recorded in the RoC. The RoC will be started when the CI is firstly baselined.
All these tasks - checking in, checking out, version maintenance, and creation of RoC - can be handled through the use of proper CM tools. Various tools are available that perform many aspects of this CM library function: VSS, CVS, Sub versions, etc.

#### 4.1.9 Control Configuration and Infrastructure Change

The infrastructure used in the projects are defined in CM Plan, such as servers, equipment, network connections … and it is controlled by updating sheet CI Identification of CM Report during the time of project life.
The configuration change control process applied to baselined CI and requirement changes. It means that the CIs that are still under development, except for requirement changes requested in new projects, are excluded.
CI change request is an item that someone has submitted to the change control system that describes a software problem, a requested enhancement, a proposed change in requirements for a product under development.

The following activities are part of implementing a CR:
- Upon receipt of a CR, the CCB chair will assigns people to evaluate the CR and the analysis result will be recorded upon which the CCB will have based its decision.
- The CCB decides whether the requested change should be made at this time, at some point in the future, or not at all. Input should be solicited from others potentially affected by the change before making the decision.
- If the change was accepted, the CCB chair will identify the appropriate change resolution activities and will assign the persons in charge to perform the modifications to different CIs as tasks to members of the team.
- The PM negotiates any necessary changes in project commitments with affected stakeholders, and then updates the project plans, task lists, and schedules to reflect the impact of the change on project work remaining to be done. The Project Manager revises any task dependencies as necessary.
- To implement a change, the CIs are checked out so as to make these changes. After the changes are made, the changed CI can be viewed as a new CI that must go through different states (representing the life cycle of the program) before it can become part of the final in-operation system. Once all changed CIs and their associated documents reach the baseline (after following their life cycle), the change is considered to be fully implemented. CIs are checked out and taken though their lifecycle to perform the change. The person in charge to notify any other affected parties if corresponding changes need to be made.
- The CCB will be notified immediately when the actual change has been completed. The CR will be closed and copies distributed to relevant people.

For the minor changes that do not affect multiple CIs, the approval authority is delegated to the PTL who is responsible for the CIs. Once the proposed change is submitted to the PTL, the PTL will evaluate the request. If the request only involves the minor changes, then PTL will authorize the changes and document the decision. To make changes, the PM/PTL will identify the person in charge. The CR process will be used to request and approve the changes but no CR form will be required.

For the changes due to requirement change requests, which may necessitate that many CIs be changed, are tracked through Requirement Change Management mechanism.
All information related to change control needs to be recorded in sheet Control Change Report of CM Report for a project. Please see explanation of each column in the sheet to understand how to fill out the report when having any changes.

#### 4.1.10 Control Access Right

During the execution of the project, access right to the project is granted and managed according to the CM Plan.
Access right of non-project team members (ex: auditor, external reviewer, etc.) must be get permission of PM and granted in the pre-defined duration, then revoked at expiry date by CC. It must be recorded in CM Plan including at least account name, access right and expiry date. As soon as a member is out of the project, his or her access right is revoked by CC also.
The access right is reviewed frequently and update, if necessary by CC and audited by QA at least baseline point and project closure time.
After project asset is approved by QA at project closure time, QA. Accounting informs to IT Department to revoke the access right of all project team members. If someone has a request for data reference, audit, etc., he or she must get the approval of authorized person, normally Group Leader or Division Leader, and then send the request to IT Department. IT Department is responsible for implementing such kind of requests.

#### 4.1.11 External Release

Here are required steps for a common external release to customer:
- CC gets the latest version of source codes or information CIs for the to-be-released package from server
- PM/Developer prepares Release Note
- CC migrates to-be-released information CIs to Release area
- QA performs Final inspection
- If Final inspection passed, the information CIs are released to customer
- CC archives the Release (if necessary)

The process of external release can be customized by adding more steps and providing detail guideline for each step if necessary.

### 4.2 Monitor & Audit Configuration Status

Configuration status monitoring is to maintain a status record of all CIs in projects, thus providing traceability of all changes to the projects. Proper configuration status monitoring answers the following questions:
- What changes have been made to the CIs and when were they made?
- What components were affected by this change?

It is important to accurately represent the status of each CI because CI status-related mistakes can lead to problems. For example, if a program has not been unit tested but is moved to the status "ready for release," it can cause problems. Similarly, if the system fails to reflect the fact that a program has been checked out from the baseline to implement a change, the software might be delivered without the change.
Thus, regular monitoring of the configuration status information will enable projects to identify trends and potential problems in the products. Then, projects must record and maintain status of CIs & their changes in CM Report regularly.

Baseline audits are performed by QA right after the completion of project baselines to verify the correctness of the baseline. The goal of a baseline audit is to verify that all CIs have been correctly identified and moved to and from the baseline in a manner consistent with the CM Plan. Baseline audit will also enable to assess the effectiveness of the CM process at the projects. After an audit, a report is documented and made available to the PM and CC of the projects. The people will use the findings to identify and correct problems and inefficiencies in the CM process. The section 2.3 in CM Plan will list all standard baselines with their purpose, criteria and person in charge which are included in most of projects, although, some of them can be removed or added if necessary.

# 5 APPENDIX 2 - PROJECT ASSET MANAGEMENT GUIDELINE

### 5.1. Asset Management Overview

In a project, there are 2 roles responsible for managing project assets. CC is for managing software and information assets (including Customer's supplied items) and Physical assets management officer is for physical assets. PM is a physical asset management officer by default if there is no specific assignment for this task in the project organization. (Refer to Asset Management Guideline for the terminology).
Asset return time; Preservation method, etc. are identified (if needed) when receiving the customer assets.
The physical assets are placed into a physically secure storage area. The software and information assets are managed on company server by CC.

For Customer's physical assets used to develop the project, Assets Handover Note must be available and informed to Asset Management Officer of Departments. Asset Management Officer of Departments is in charge of updating the Asset inventory.
Borrowing-returning project assets is tracked and controlled frequently at least at baseline point and project closure time.
In case returning assets is requested, at project closure time or due-date of returning assets, the assets will be returned to the owner of assets with a handover note and asset management officer of Departments must be informed.

### 5.2. Asset storage and transmission

Sharing the work-related information to others entity outside the project team without prior permission of PM is forbidden.
Encryption is mandatory everywhere, every time as delivery of "Top secret" information
The "Confidential" information is also encrypted when sending via email. The password setup is recommended when the information is stored on the server folder.
At project baselines, information asset is ensured to be stored properly on the appropriate area storage as defined in CM plan when the project starts.

At project closure time, the project data is ensured to be stored properly on the company sever, and totally removed from the private storage such as team members' computers, storage devices, etc.
For the information supplied by customer or the deliverables sent to customer, if a removal/ deletion request by customer is available, a list of to-be-deleted items and a deletion method are defined. Disposal note and disposal evidence must be documented.

### 5.3 Return/Destroy asset

In case of company assets, refer to "Asset return process" or "Asset transfer process" of "Guideline Physical Asset Management"
In case of customer assets, refer to "Preservation process" or "Destruction/Handover/ Return/Re-export process" of " Process Customer Asset Management"

# 6 APPENDIX 3 CM TOOLS

Some popular CM tools are described in the following table.

| No | Name | Type | Description |
|---|---|---|---|
| 1 | Git | Free | Git is a distributed version control system used to track and manage changes in source code during software development. It allows multiple people to collaborate on a project, records the history of modifications, and makes it easy to restore or compare previous versions. |
| 2 | CVS (Concurrent Version Systems) | Free | It extends RCS to control concurrent editing of sources by several users working on releases built from a hierarchical set of directories. CVS is available for download from ftp://ftp.cvshome.org/pub/. A user WWW site is available at http://www.loria.fr/~molli/cvs-index.html |
| 3 | SVN (Subversion) | Free | In addition to including all current CVS features, it provides versioning of directories, file renames, and file meta-data and it supports symbolic links. Commits are atomic; revision numbers are per-commit, not per-file. For more information, see their Web site at: http://subversion.tigris.org/. The on-line book may be found at: http://svnbook.red-bean.com/. |
| 4 | RCS (Revision Control System) | | RCS baselines the most recent version and keeps deltas for earlier ones, making new development faster. |
| | | | RCS still requires scripts to make life easier on the developer. RCS is available via anonymous FTP from ftp://prep.ai.mit.edu/pub/gnu/rcs/ |
| 5 | VSS (Visual SourceSafe) | Free | The Microsoft System Journal (May, 1993) named SourceSafe as the best Windows based configuration management tool. The SourceSafe label command can be used to take a snapshot of the entire project, assign that version a name. The operation is rapid, even if there are 2000 programs in the project. SourceSafe integrates with Visual Studio which automates check-in/check-out of code as developers work with files. Several mid and high end defect-tracking tools integrate with SourceSafe. A supplier WWW site is available at http://msdn.microsoft.com/ssafe/ |
| 6 | Voodoo | Free | Voodoo is a version management tool for the management of projects in which files are created in numerous versions. Since Voodoo is capable of managing arbitrary files, the program can be employed for more than just the organization of software projects in a narrow sense (program development). |
| | | | Voodoo allows both variant and revision control, and it manage not only variants and revisions of single files, but of a whole software project (multi files, multi users, multi variants, access rights, etc.…). The tool offers a graphical user interface. |
| | | | A light version of Voodoo is being distributed on a low cost shareware basis. The current version is available from the vendor's ftp-server at: ftp.swe.uni-linz.ac.at in /pub/voodoo. The full (commercial) version of Voodoo is being distributed world-wide by UNI Software Plus. |
| | | | A supplier WWW site is available at http://www.unisoft.co.at/products/voodooserver.html |

## 7 GUIDELINE_PROJECT INFRASTRUCTURE MANAGEMENT

**1. Overall Guidance:**
For the sheets with noted that "This Sheet will be filled by IT Staff", IT staff works with Project to fill information.
For "General Information" sheet: PM fills in the white blank cells

**2. Detail Guidance:**

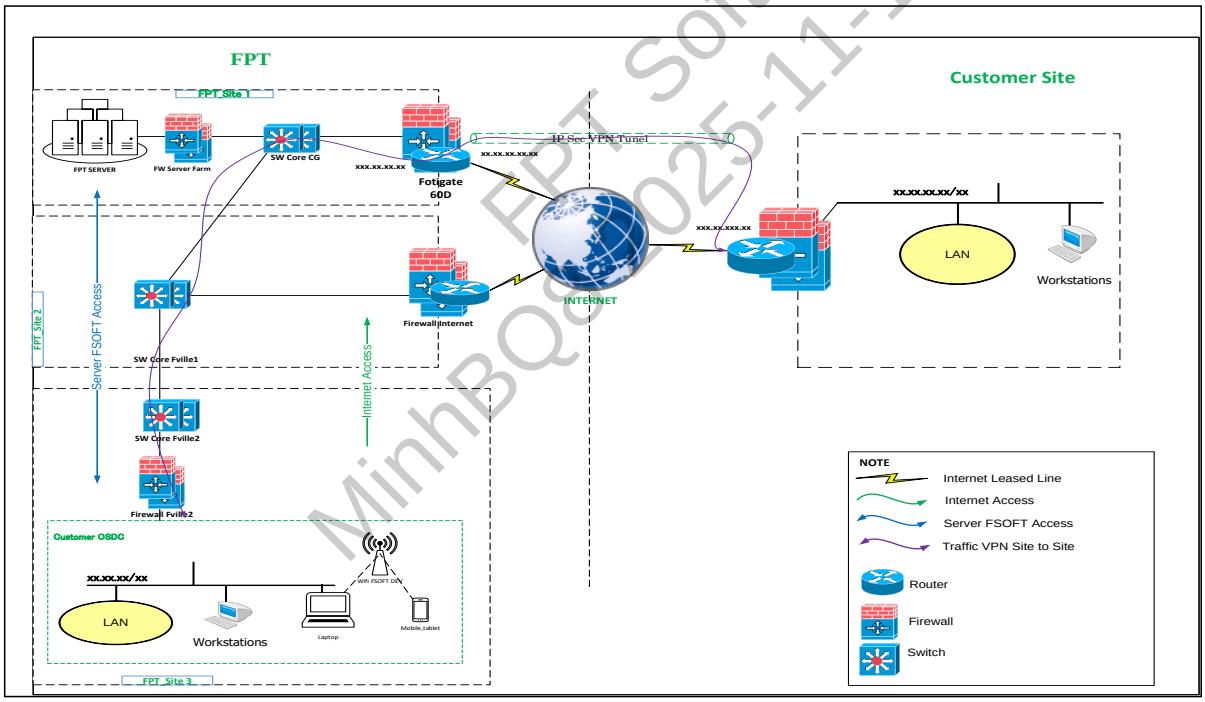
| No. | Sheet Name | Column Name / Row Name | Description | How to Get This Information? | PIC |
|---|---|---|---|---|---|
| 1 | General Information | Project Category | Project basic information such as project code, start date, end date, BUL/Vice BUL, PM, QA,.. | Project code: refer to Jira<br>Project Key: refer to Jira<br>Manager: BUL/ViceBUL<br>PM: project manager<br>Comtor: project comtor<br>CC: Configuration Controller<br>QA: Project QA<br>ISM: specific IMS member of project<br>IT: Dedicated IT of project<br>Start date: Project Start Date on Jira (dd/mmm/yy)<br>End date: Project End date on Jira (dd/mmm/yy)<br>Document Code: Document code of CM Plan/project Workbook<br>Customer: Customer<br>Location: Project work place (building, floor, area)<br>Full Department: example FSO.HO.IT.HCM<br>Group mail: main group mail of project | PM |
| | | Log Category | Not Required | Audit: log AD Audit<br>Access: Endpoint, server login, logout<br>Internet: Firewall, proxy access log<br>Security: AV, DLP, Ivanti | IT |
| | | Security Category | The security information that the project uses | Security - Standard: According to security degree of project and customer request, Project Manager chooses on of the value "Standard"/"Medium"/"Advance". Refer QMS2.0 for Standard/Medium/Advance degree<br>Security - Member: linked from "Member" sheet<br>Security - Area: Is project use security area/ODC (not required)<br>Security - USB: Is USB available for all project members<br>Security - Access right: Does project use Fsoft Fileserver/SVN/Git | PM |
| | | Network Category | Shows the network information that the project uses | Network - Work from home: Does project work from home mass?<br>Network - Special Connection: The special links that project registers to access<br>Network - Subnet: linked from subnet sheet<br>Network - Connectivity: Standard bandwidth allocated per user, defaulted 0.1 Mb/s/user. If project has the other requirement, PM/CC work with IT to change the Standard bandwidth. PM choose "Yes"/"No" in column D<br>Network - Bandwidth:<br>Network - WAN Connectivity: Fsoft internal bandwidth<br>Network - WAN Bandwidth: stick "Yes" for projects that use Fsoft Internet only<br>Network - VPN to Fsoft: Does project provide Customer any VPN account to access to Fsoft network<br>Network - VPN Site2Site: Does project use VPN from Fsoft's sites to Customer network ?<br>Network - VPN to Customer Site: Does project have VPN account to access Customer's network ? | PM |
| | | Infrastructure Category | Number of Server used in project | Number of Server built and used by Project, PM just need to choose "Yes" or "No" in column D | PM |
| | | Office365 Category | Information about using Office365 in Project | SharePoint: Does Project use SharePoint ? (Refer CM Plan Document or Project Workbook/CM Plan sheet)<br>Onedrive: Does Project use Public Onedrive (account@fpt-software.vn) to transfer data with Customer ? (Refer CM Plan Document or Project Workbook/CM Plan sheet) | PM |
| | | Application Category | Information about application used in project | Tool: Tools of Fsoft<br>CI/CD: Does Project use CI/CD provided by Fsoft<br>Data leak: N/A | PM |
| | | Service Desk Category | Information about OS, software used in project | OS: The Operating Systems used in Project (Windows, Linux, MacOS...) Refer to CM Plan/project Workbook<br>Software: List of software used in Project (Refer CM Plan/project Workbook). Refer sheet Appendix. PM fills "No" in case project doesn't use FSOFT infrastructure. | PM |
| 2 | Record of Change | | Information about history Change of this file | Ever Change of this file | PM |
| 3 | Member | Role | The Roles in Project | -PM export the member list from Jira.<br>- Add more Role (value in the combo box) by updating the role list in "Appendix" Sheet | PM |
| | | Full Name | Fill fully First Name/Last Name and department<br>Ex: Nguyen Van A (FHN.JITS) | Fill the Full name and Unit. Example: Nguyen Anh Hao (IT.HN) | PM |
| | | Account | Fill Account of All members in Project | Account of every member | PM |
| | | Email | Email of every member | Email of every member | PM |
| 4 | Computer | Account | Account owner of PC/VDI | Apply for PC/Laptop/VDI/Thin Client that connect to LAN of project | PM |
| | | MAC Address | Mac Address of PC/Laptop | LAN MAC address: Open CMD and run the command "ipconfig /all" | PM |
| | | Computer Name | The name of Computer | Open CMD and run the command "hostname" | PM |
| | | Bar Code | Bar Code of device | - Refer to the information on property stamps, under bar Code. Ex: CA-00008888<br>- For VDI remote: use CA code of physical PC or code of CA Client, laptop.<br>- For VDI desktop: not required | PM |
| | | Asset code | Asset code | On Property stamp (Maybe asset code not available) | PM |
| | | Wifi | The information shows that if the device uses FPT Software Wifi or not | Does the Computer use Fsoft Wifi | PM |
| | | USB | The information shows that if the device uses USB or not | Is the USB port open ? | PM |
| | | Type | The Type of device | - Computer: PC/Laptop/mac/VDI<br>- Computer name: On Win 10: Open the Control Panel > System and Security > System<br>- VM: using VDI information<br>- Thinclient: using thinclient configuration (OS,…), | PM |
| | | Hardware Configuration | The configuration of device | The device configuration on property stamps/provided VDI configuration<br>PM select from the list | PM |
| | | OS | Operating system: Windows/Linux/macOS and the version | PM select from the list, select "Other" in special case | PM |

| No. | Sheet Name | Column Name / Row Name | Description | How to Get This Information? | PIC |
|---|---|---|---|---|---|
| | | Provider | On-Premises or On-Cloud | Select the value: "On-Premises" or "On-Cloud"<br>For VDI on public cloud system: select "On-Cloud"<br>For physical PC: select "On-Premises" | PM |
| | | Purpose | The purpose of device using | Development, Testing, Management, Support… | PM |
| 5 | Topo | All | Topology that project connect to.<br>This information is filled by IT Staff | Refer to "Appendix 5" sheet | IT |
| 6 | Area | All | The area used for project | Refer CM Plan / Project Workbook | PM |
| 7 | BCP | All | Business Continue Plan | Fill the information of Members WFH / On campus / Working on shift | PM |
| 8 | Cloud | All | The cloud Information used in Project | Cloud that Project uses, such as Azure, AWS, Google cloud (Refer CM Plan / Plan/project Workbook) | PM |
| 9 | Subnet | All | Information about VLAN of project | Fill the information: ODC or Open site.<br>PIC is the Approver for Member to join Project's VLAN | IT |
| 10 | VPN to Customer Site | All | Information about VPN that project using a tool to access to Customer network | PM list the Accounts provided to access to Customer's network<br>IT check the Internet Firewall Rules VPN Client Tools | PM |
| 11 | VPN to Fsoft | All | Information about VPN that Fsoft provide Customer an account to access to Fsoft network | Fill in:<br>- By Domain: Protocol / Port, Purpose<br>- or By Destination IP: Protocol, Port, Purpose | PM |
| 12 | VPN Siste2Site | All | Information about access right via VPN Site to Site to Customer network | Destination IP, Port, Purpose | IT |
| 13 | Account | All | Account that FSOFT provide Customer | PM fill the status:<br>- "active": newly provided<br>- "reactive": had used in the past and now use again<br>- "keep": in use and continue using | PM |
| 14 | Email Policy | All | Email Policy in project | PM list and check on it-up.fsoft.com.vn to verify if User belong to any special Policy Group | PM |
| 15 | Block | All | IT staff fills this information. This sheet is blocked, PM cannot edit it. | IT.Network to provide | IT |
| 16 | Internet | All | IT staff fills this information. This sheet is blocked, PM cannot edit it. | IT.Network to provide | IT |
| 17 | Wifi | All | Detail information about using wifi in project | PM list, request IT.Network to provide, fill list of Member using FPT Software wifi (including on Laptop) | PM |
| 18 | Server | All | Information about server used in project | - Security log: log the Log in / Account, and Time<br>- Access log: log the actions of copy data, create/delete file, create folder<br>- Publishing: Is the Server accessible from Internet.<br>- Monitor: Does Server notify to PIC whenever problem happen | PM |
| 19 | Special Connection | All | Information about special connection used in project | PM list the special connection that require Approval by Customer, Adding MAC and Providing account. | PM |
| 20 | Internet Access | All | Information about internet access in project | PM lists out the Internet Firewall Rules and Proxy Group Policies. PM can request IT.Network to provide information. | PM |
| 21 | Software | All | Information about software installed in devices in project | - PM list and ask IT the information from nac*.fsoft.com.vn, and verify again be MAC/Account<br>- Software: List of Software installed for working. | PM |
| 22 | Tool | All | Information about Tool, web-service that no need to install, used in project | Tool is considered as: Web service that is not required to install on Computer | PM |
| 23 | Access Right | All | Information of access rights to the project's assets (such as servers, GIT, SVN,…) | PM list. IT can refer the CM Plan from Project<br>PM can copy and paste the CM Plan, not necessarily in format of ICMP. Then IT will convert the contents to format of ICMP. | PM |
| 24 | Backup | All | This information is included in "Back up Server" in project.<br>IT staff fills this information | IT will fill this information<br>PM can:<br>- Use Project's backup server<br>- or Request IT to perform backup on IT's backup server | IT |
| 25 | Equipment | All | Information about devices using in project | Information of the devices and equipment used in project<br>Example: TV set, polycom device, test device that connect to Fsoft LAN | PM |
| 26 | Appendix | All | This sheet include data that referred to get information for the other sheets. This sheet is hidden. | - Actual information of Project. Information of OS that Project use. Can delete the unused or add more.<br>- Column "Role in project" is the same as column "Role" at sheet Member (PM can copy from sheet Member and remove the duplicates).<br>- Column OS: PM can remove or add. This column has a link Data Validation to Sheet General Information, in order to show quickly the list of OS used in Project. | PM |

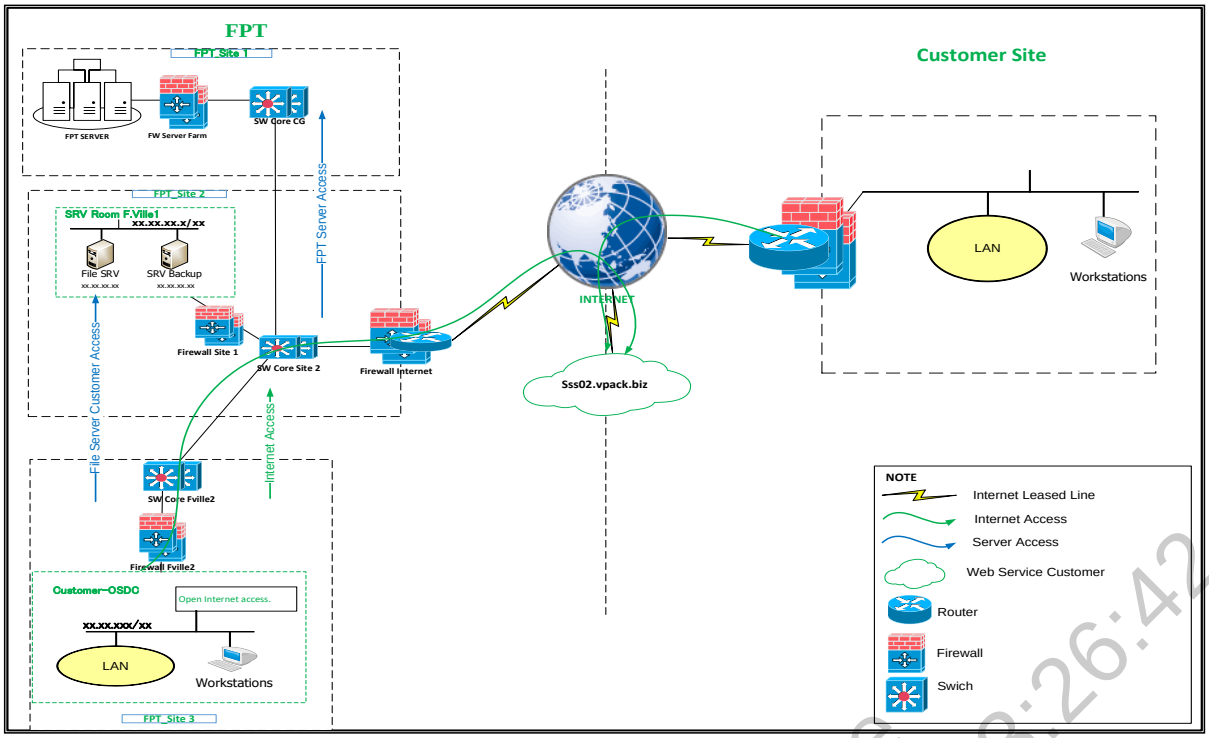
# 8 GUIDELINE_TOPOLOGY

| # | Step | STEPS | Example |
|---|---|---|---|
| 1 | Step #1 | Check all access rights and connection of project at the sheet: Subnet, VPN, Email Policy, wifi, server, Internet access, Special Connection, | Topology 1 |
| 2 | Step #2 | At Project working area, describe the information: Subnet Lan; PC Workstations; devices that join Dev/Test wifi. In case project has private server, the server shall be described in project area. | Topology 1 |
| 3 | Step #3 | Describe the LAN that passes through Firewall ODC Site to reach SW Core Site, firewall internet, router.<br>Describe all sites that the internet access passes though before reaching to the aggregate site or Customer Site | Topology 1 |
| 4 | Step #4 | Internet leased line should be described whether it is going through Proxy Server or Internet Firewall or both. | Topology 1;<br>Topology 3 |
| 5 | Step #5 | In case Customer Information is not available, describe the LAN, PC Workstations, FW and Router internet.<br>In case project does not access to Customer Site, no need to describe Customer Site. | Topology 1;<br>Topology 2 |
| 6 | Step #6 | In case project uses Customer VM, describe Customer VM IP. | Topology 3; |
| 7 | Step #7 | Traffic VPN S2S should describe internal GW IP and Public GW IP at Fsoft site and GW IP at Customer site. For detail information, refer to https://insight.fsoft.com.vn/conf/display/IT/List+Tunnel+VPN+S2S | Topology 1 |
| 8 | Step #8 | In case of project uses Cloud, describe clearly the accessed path. Customer Web service is also a Cloud. | Topology 2;<br>Topology 3 |
| 9 | Step #9 | Customer internet leased line should be described in detail. Ex: Topology 3/Proj OSDC zone 1 -> Proj OSDC Zone 2 -> HCM Customer Vnmese Site -> Customer Site. | Topology 3 |
| 10 | Step #10 | Project Server needs to be described detail IP; Computer name and the Site that Server is set up. | Topology 2 |
| 11 | All | All Topologies need to be consistent about icons and internet access colors. | All |

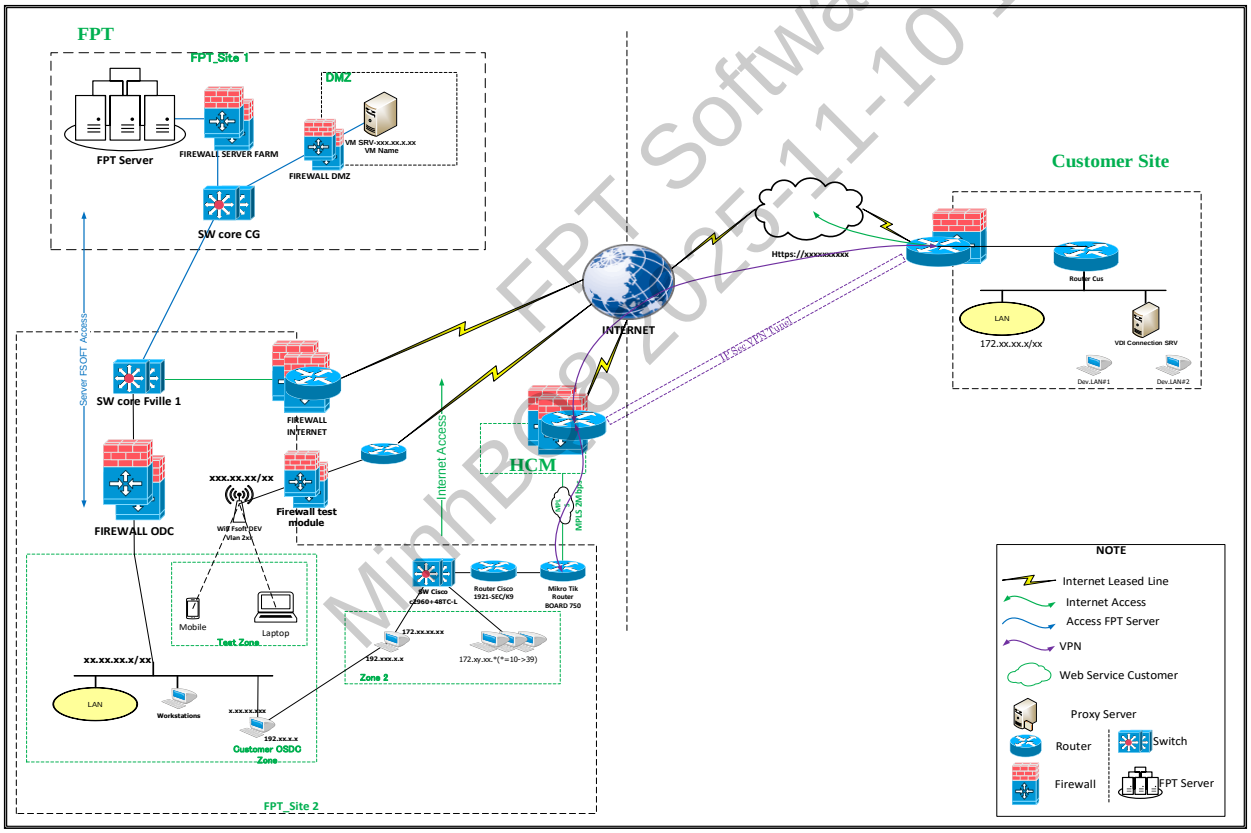
**Topology 1**



**Topology 2**




**Topology 3**



## 9 RECORD OF CHANGE

| No | Effective Date | Version | Change Description | Reason | Reviewer | Approver |
|---|---|---|---|---|---|---|
| 1 | 15-Nov-2008 | 1.0 | - Make clear CI definition & CI level<br>- Change Promotion Area<br>- Add new rule for Baseline Start up: 7 days after WO v1.0<br>- Add 2 new CSCI: Infrastructure & Process<br>- Add Security & Asset management rules: owners, providers, Security level | Fix Gap from CMMi-5 v1.2 & CMMi5 v1.2 requirement | AnhNV, QAs | PhuongNL |
| 2 | 5-Feb-2009 | 1.1 | 2.2.3 Perform Project Baseline: Change the time to perform: Startup baseline and Wrap-up baseline are conducted within 7 days when the WO v1.0 is released and Customer accepts the final product respectively | Follow comment of QAHCM | AnhNV | PhuongNL |
| 3 | 1-Aug-2009 | 1.2 | 2.2.4 Control Access Right: QA.Acc will have to inform IT Department to revoke the access right of all project team members after project asset is approved by QA at project closure time instead Project Manager as previous | To fit the actual need | HienTT | PhuongNL |
| 4 | 1-Sep-2009 | 1.3 | 2.1 Develop CM Plan: Update an activity in CM Plan development "Identify and define the responsibility and authority of the CC or Configuration Control Board (CCB), especially the server admin in case project team has own server computer" | Fix incident related to Virus | AnhNV, HienTT | PhuongNL |
| 5 | 15-Jan-2010 | 1.4 | - 1. Configuration Management Process ->1.3 Process Description -> Step 2 Perform Configuration Control->Perform Project Baseline: Update step Migrate CIs to Archive area is mandatory for Startup baseline and Wrap-up baseline<br>- 2. Configuration Management Guideline -> 2.2.3 Perform Project Baseline: Update guideline to archive version of all CI at Startup baseline and Wrap-up baseline in separate folders in Archive area | To make baseline activities in project is more effective | HaNT, ThanhNV | LienBH |
| 6 | 10-Nov-2012 | 1.5 | - 1.2 Purpose: Update purposes related to information security.<br>- 1.4 Process Description:<br>Configuration Control + Perform Step 2: Add new change management of the infrastructure (infrastructure ) .<br>+ Step 3 Monitor and Audit Configuration Status: Add new track changes in infrastructure.<br>+ Close Configuration Management Step 4: Add a new procedure ends a process of configuration management of the project.<br>- Roles and Responsibility 1.5: Add new responsibilities in assessing IT manager's configuration (Configuration Controller) of the project for the project required.<br>- Develop CM Plan 2.1: Add new steps identified infrastructure projects in the project right from the CM plan.<br>- 2.2 Perform Configuration Control = > Control 2.2.5 Infrastructure: Adding new requirements on infrastructure management. | Fix incident related to Information Security | QA | HoaNQ |
| 7 | 10-Aug-2013 | 1.6 | **1 CONFIGURATION MANAGEMENT PROCESS:**<br>-1.1 Definitions: Item "ADD, DDD, DEV, PP, SVM, TP, TC, URD"=>remove<br>Item "MM, SVN"=> Add new<br>- 1.2 Purpose: Update.<br>- 1.3 Workflow: Separate the activities of 2 roles QA Accounting and Project QA; add internal audit and ISM audit<br>- 1.4 Process Description: Add hyperlink for some activities to follow more easily; Combine "manage CIs revision" and "Perform project baseline" together; Combine configuration and Infrastructure Change; Mention "events" in Change Control Report here.<br>- 1.5 Roles and Responsibility:<br>+ Clarify the role CC and CCB with the size of project: "Depending on the team size and the size of the system under development, the CC's role may be a part-time or a full-time job (with the team size of development or maintenance projects >20 persons). If the size of project is larger 80 MM, the role of CC must be separated from other roles of the project (in other words PM cannot co-play the role CC in the big project)."<br>+ Clarify the IT skill of CC: "If the project needs specific IT skills which are not the standard IT skills for activities in IT SLA, CC needs to be verified by IT department."<br>+ The CM Plan must clearly define the roles and responsibility of the CC and CCB=> Add new<br>- 1.6 Work Product: CR Implementation Records=>Remove<br>**2 CONFIGURATION MANAGEMENT GUIDELINE:** Re-structure to consistent with the Process Description<br>- 2.1 Develop CM Plan=> Remove<br>- 2.1 CM Planning=> Add new<br>- 2.1.1 CM Level & CI Identification=> Remove<br>- 2.1.1 CI Identification=> Add new; Change the number of CSCIs from 5CSCIs to 7CSCIs.<br>- 2.1.2 Naming convention & Version numbering: Update the naming convention and add example<br>+ For Documents: Change "Version. Revision" to "<major>.<minor>.[<draft status>]"<br>+ For Source: Change "Version.revision.update" to "<major release>.<minor release>.<hot fix>.<revision number>"<br>- 2.1.5 Set up CM Environment; 2.1.6 Backup Strategy=> Add new<br>- 2.2 Perform Configuration Control:<br>+ 2.2.1 Manage CI Revision=> Remove; 2.2.1 Manage CI Revision and Perform Project Baseline=> Add new<br>+ 2.2.2 Control Configuration Change=> remove; 2.2.2 Control Configuration and Infrastructure Change=> Add new<br>+ 2.2.3 Perform Project Baseline; 2.2.5 Control Infrastructure=> Remove.<br>+ 2.2.4 External Release: Add new<br>- 2.4 CM tools: Add new<br>**4 VERSION MANAGEMENT TOOLS:** Remove | - Update according to the fact of CM in FSOFT<br>- Make CM process easier to understand and follow | QA | HoaNQ |
| 8 | 1-Jun-2015 | 1.7 | Convert day to working day:<br>- 1 day - > 1 working day; - 2 days - > 2 working days;<br>- 3 days - > 3 working days; - 4 days - > 4 working days;<br>- 5 days - > 5 working days; - 7 days - > 5 working days;<br>- 10 days - > 7 working days; - 15 days - > 10 working days;<br>- 20 days - > 15 working days; - 30 days - > 22 working days | Update to fit the process actual | QA, Ana | KhacDV, HyTQ |
| 9 | 20-Jun-2016 | 1.8 | '- Covert to new Process Description template<br>- 4.1.1 CM Level & CI Identification: Add more detail about CI level | To make consistent with the change of Template_Process Description<br>To fix comments of QAI from CMMi5-v1.3 assessment project | CMMi Coor team | HyTQ |
| 10 | 4-Aug-2016 | | Hotfix: make clear : CCB: Change Control Board | Follow suggestion from UyenNTM | DuongH | HyTQ |
| 11 | 13-Apr-2018 | 1.9 | - Covert to new template process description in excel format<br>- Update: Purpose of process, rewrite for more directly<br>- Rewrite role and responsibility for more clearly.<br>- Update Workflow with higher level visual than previous process<br>- Update content in Monitor status of changes to CIs and Audit Configuration Control activity<br>- Update content in Close Configuration Management activity | - To adapt with the new template process description.<br>- Try to get it Lean and Clear | CMMi Coreteam | HyTQ |
| 12 | 22-May-2018 | 2.0 | Update Related document in step Conduct Baseline Audit | Add documents related CM activities. | CMMi Coreteam | HyTQ |
| 13 | 25-Feb-2020 | 2.1 | Update concept CI and non-CI | Modify concept CI and non-CI at sheet Appendix 1, to fix comment of QAI from CMMi5-v2.0 | CMMi Coreteam | HuongNTL |
| 14 | 1-Apr-2020 | 2.2 | Update information related to CICD process to Process, Procedure, Appendix 1 (CM Level &CI Identification) | To apply CICD process | SEPG | HuongNTL |
| 15 | 5-Jun-2020 | 2.3 | - Appendix 1: Remove "Internet Connections" and add service content in Infrastructure CI of CI type | To innovate to manage VPN client-to-site (from customer to Fsoft) in project | ViPTQ<br>DungNQ7 | HuongNTL |
| 16 | 9-Oct-2020 | 2.4 | - Update about guideline of CM level at sheet Appendix 1 | To fix comments of QAI from CMMi5-v2.0 assessment project | CMMi Coreteam | HuongNTL |
| 17 | 12-Nov-2020 | 2.5 | Sheet "Table of Content": Add more "Appendix 4" and "Appendix 5"<br>'- Appendix 4: Add new sheet named "Appendix 4"<br>- Appendix 5: Add new sheet named "Appendix 5"<br>'Sheet "Introduction"<br>- 1.3 Definition: Add more Abbreviation/Terminology<br>- 1.4 Related Document: add more related document<br>'Sheet "Process" and Sheet "Procedure": Add more step relates to Project Infrastructure Management (PIM) | To make consistent with the change of PIM<br>To guide how to fill the Template_Project Infrastructure Management<br>To guide how to describe the project Infrastructure Topology<br>To make consistent with the change of PIM<br>To make consistent with the change of PIM | DungNQ7, MaiNTH | HuongNTL |

| No | Effective Date | Version | Change Description | Reason | Reviewer | Approver |
|---|---|---|---|---|---|---|
| 18 | 12-May-2021 | 2.6 | 1.Sheet Process:<br>- Workflow: Add step #1<br>- Process Description: Add step #1<br>- Role & Responsibilities: Add Role & Responsibilities of BUL, IT/ISM/QA/PM/Admin<br>- Metrics: Process Compliance Rate<br><br>2.Sheet Procedure:<br>- Procedure: Add new step # 3.1<br><br>- Step #3.3:<br>+ Update "How to" from "Analyze CR and evaluate impact CIs and effort, schedule, cost" into "Get analysis for CR and impact evaluation of CIs and effort, schedule, cost from CCB"<br>+ Update "How to" from "Review and give decision on the CR from CCB" into "Get review and decision on the CR from CCB)<br>+ Update "How to" from " Implement the CIs change & Update PIM and verify" into "Confirm implementation, verify , update PIM when necessary after the CI changes are implemented"<br><br>- Step #3.4:<br>+ Update from "Track status of Infrastructures" -> "Track status of those infrastructures under assignment by CC"<br>+ Add "How to": Monitor Status of changes to CIs & Infrastructure<br>++ required on those infrastructures that are assigned to the CC<br>++ should be done by weekly at least and//or when there are changed CI(s)<br>++ should be reported to PM, ISM<br><br>- Step 3.6<br>+ Add PM as approver for "Delete project data" by CC & update "How to"<br>+ Add PM as approver for "Release or handover equipment (if any)" by CC & update "How to" | To independently separate responsibilities of the Configuration Controller from project | KhacDV, CuongDD, HuongNTL, ViPTQ | KhacDV, HuongNTL |
| 19 | 13-Jul-2021 | 2.7 | 1.Sheet Process:<br>- Workflow: Add step #2.3 Review<br>Configuration & Infrastructure Control, ISM<br>Add ISM to step #5<br>- Role & Responsibilities: Remove QA role<br><br>2.Sheet Procedure:<br>- Procedure: Remove BUL in "approver" column, remove IT-ISM-QA-PM in "reviewer" column in No1<br>- Plan and Set up CM & PIM: Add BUL in "approver" column, remove IT-ISM-PM in "reviewer" column in No2 | To independently separate responsibilities of the Configuration Controller from project | KhacDV, CuongDD, HuongNTL, DongNQ | KhacDV, HuongNTL |
| 20 | 14-Nov-2022 | 2.8 | - Sheet Introduction:<br>Add definition of Phase-connected projects.<br>- Sheet Procedure:<br>Update How to (Description), steps that can be skipped or customized for phase-connected projects. | To save effort when opening and closing phase-connected projects. | ThamNT1, PhuongLT2 | HuongNTL |
| 21 | 18-Nov-2024 | 2.9 | Sheet Procedure: 3.6 Close Configuration & Infrastructure Control: Update Task Step:<br>+ Move Task Step: from: "SEPG.ACC request IT archive project folder - IT archive project folder - Delete project data - Release or handover equipment (if any)" to "Delete project data - Release or handover equipment (if any) - SEPG.ACC request IT archive project folder - IT archive project folder"<br>+ No.1: Delete project data: Update ReleatedDocument: Checklist PCV and Note: Evidence of project data deletion<br>+ No.2: Release or handover equipment (if any): Update Releated Document: Asset Management<br>- Sheet Appendix 2: Add new 5.3 Return/Destroy asset | To implement request related to the new Information Deletion control follow by ISO 27002:2022 | PhuongLT2, MaiNTH, NgaNTQ | HuongNTL |
| 22 | 3-Oct-2025 | 3.0 | -Sheet Process :<br>+ Add new review the assignment and QA responsibilities<br>+ Add CC Leader role<br>-Sheet Procedure :<br>Update Template/ Related Document and How to in this sheet:<br>+ Assign the Configuration Controller (Called CC) into project.<br>+ Review the assignment of CC(s)<br>+ Develop CM Plan and PIM<br><br>Update due date and How to in this sheet:<br>+ Get CM Plan and PIM reviewed & approved section<br><br>Update Frequency in this sheet:<br>+ Manage PIM/CI revision and Perform Project Baseline section<br><br>Update Output in this sheet:<br>+ Track status of Changes to Cis.<br><br>And other:<br>+ Release or handover equipment/intangible assets of customer (if any) : update Task Step and How to<br>+ SEPG.ACC request IT archive project folder : update How to<br>+ IT archive project repository : update Task Step, Output and How to<br><br>- Sheet Appendix 1:<br>+ 4.1.8 section: change duration from 2 months to 3 months<br>+ 4.1 CM Planning section: add customer's requirement and project environment<br>+ 4.1.3 Promotion Areas & Directory Structure section : add CICD and Data management of AI<br><br>- Sheet Appendix 3:<br>+ Add new git information | To strengthen configuration management | PhuongLT2, HungNT40, ThuDT7, NghiepTC, LuongNM3 | HuongNTL |