

NPR 7150.2A Requirements Mapping Matrix (Class D and NOT Safety Critical)

Requirement
<p>The Contractor shall develop the Software Configuration Plan as defined in Appendix A2, and submit the Software Configuration Plan Government for approval.</p>
<p>The Contractor shall implement, maintain, and execute the Software Configuration Management Plan.</p>
<p>The Contractor shall transform the requirements into a documented Software Design Description as defined in Appendix A3.</p>
<p>The Contractor shall implement the software design into software code.</p>
<p>The Contractor shall provide a Software Version Description as defined in Appendix A4 for each software delivery to the requestor or intended user. Guidance: A Software Version Description will be provided whenever software is created / modified to produce delivered code or data.</p>
<p>The Contractor shall establish a Software Test Plan as defined in Appendix A5.</p>
<p>The Contractor shall maintain a Software Test Plan (this includes updating the test plan bi-directional traceability to be consistent with changes to the Software Requirements Specification).</p>
<p>The Contractor shall perform software testing as defined in the Software Test Plan, and perform all acceptance activities documented in the Software Management Plan.</p>
<p>The Contractor shall deliver the completed software product(s) and/or data to the customer with appropriate documentation to support the operations and maintenance.</p> <p>- If the code is not a deliverable (i.e., only data or analysis is the deliverable or published), appropriate documentation to build, execute, and recreate the data or analysis shall be recorded and retained by the project.</p> <p>Guidance</p> <p>1: Build and execute instructions are required to be included in the Software Version Description (SVD), therefore the SVD can be used to fulfill this part of the requirement.</p> <p>2: The extent of documentation 'to support the operations and maintenance' will depend on the items delivered. For example, a delivered executable may require little or no 'build' documentation.</p> <p>3: Documentation can take the form of text, audiovisual instructions, interactive scripts, help files, man pages, embedded instructions (e.g. invoked by passing a 'help' argument to the software).</p>
<p>Appendix A: Software Documentation Requirements</p> <p>a. The Contractor shall complete sub-appendices of this Appendix as identified below.</p> <p>Guidance:</p> <ul style="list-style-type: none"> -The sub-appendices specify the required content of software documents. - Documents can be combined if required content is addressed. -If the software activities are part of a larger/parent project, content requirements in the appendices can be fulfilled by the parent projects documentation if they comply. <p>b. Text in black is required by NPR 7150.2A NASA Software Engineering Requirements. Text in gray is provided only as guidance or suggested content.</p>

Requirement

Appendix A1: Software Management Plan

Instructions:

-The Software Management Plan is a living document. Therefore, some of the plan's required content may not be known at the time of its initial release and approval. However, for unknown items, expected closure dates should be assigned and tracked.

-If some of the planned activities defined in the Software Management Plan are to be performed under contract, those items should be included as requirements in the contractual agreement.

The Software Management Plan (SMP) shall contain: a copy of the Compliance Matrix with this plan.

a. Compliance matrix. Include a copy of the Compliance Matrix with this plan.

b. WBS, Schedule, Effort, and Cost.

1. Document a list (e.g., Work breakdown structure) of:

(a) Software activities,

(b) Software products that will be produced, and appropriate documentation to be produced to support the operations and maintenance

Appropriate documentation will include Software Requirements Specification, Software Design Description, Software Test Plan, test inputs, test results and evaluations, and Software Version Description.

2. Document schedules associated with the activities, services, and deliverables that satisfies the following minimum conditions:

(a) Coordinates with the overall project schedule if the software is an element of a larger project and

(b) Documents milestones and delivery dates.

(c) For acquisitions, documents milestones at which the software supplier(s) progress will be reviewed by the project or point to the contractual agreement where they are defined.

Make the remaining items separate sections/items in the plan:

3. Document, an estimate of effort (include both civil servant and contractor effort) that covers the entire software lifecycle

4. *Document an estimate of special costs that covers the entire software lifecycle

Note: Special costs do not include labor and can include (but are not limited to) travel, training, and Off The Shelf (OTS) software or hardware purchases and installation fees. It does not include items provided to but not purchased by the project which may include developer workstations and software development tools.

c. Include here or provide the reference to the Software Configuration Management Plan as defined in Appendix A2.

Appendix A2: Software Configuration Management Plan

Instructions: Software Configuration Management Plan may be included in the Software Management Plan or rolled out as a separate document.

The Software Configuration Management Plan shall contain:

a. The project name.

b. Assigned responsibilities, and authority for the implementation of software configuration management on the project.

c. All functions and tasks required to manage the configuration of the software, including how the project will: identify the software configuration items (e.g., software documents, code, data, tools, models, scripts) and their versions to be controlled for the project, and track changes to software products.

d. Storage location of the software products and identification of any configuration management tools used.

Requirement
<p>e. Plan maintenance information, which identifies the activities and responsibilities necessary to keep the Software Configuration Management Plan up-to-date. This could be something as simple as stating: “Changes to the Software Configuration Management Plan will be submitted to and approved by the Software Manager.”</p>
<p>f. Define how the project will document and implement procedures for the storage, delivery, and release of deliverable software products.</p>
<p>Appendix A3: Software Design Description</p> <p>The Software Design Description shall include a design showing the following:</p>
<p>a. The decomposition into units,</p>
<p>b. The interrelationship between units,</p>
<p>c. Concept of execution (e.g., a description or diagram that explains how the units will interact during operation),</p>
<p>d. External interfaces (including I/O description).</p> <p>Also consider including the software design decisions (e.g., assumptions, limitations, and reliability related items/concerns or constraints).</p>
<p>Appendix A4: Software Version Description</p> <p>The Software Version Description (SVD) shall contain:</p>
<p>a. Software name and the version identifier to which this SVD applies, (e.g., Software X –Version 9.2, Software X-MM/DD/YY, Software X- Release 2).</p>
<p>b. Summary of updates/changes since the previous SVD, any open defects, and workarounds. This could be a high-level summary of the enhancements and fixes or the project’s current list of changes and defects and their status.</p>
<p>c. Instructions for building the executable software, including, for example, the instructions and data for compiling and linking and the procedures used for software recovery, software regeneration, testing, or modification.</p>
<p>Appendix A5: Software Test Plan</p> <p>The Software Test Plan shall include:</p>
<p>a. Describe how the project will record inputs, record and evaluate test results, document the evaluation, address and track defects to closure and describe where results and evaluations are retained (e.g., a test log, defect tracking system, or validation matrix),</p>
<p>b. Tests cases. For each test case identify the requirement(s) that the test case verifies and describe the actions necessary to verify the software against the requirement(s) Actions may include establishing initial conditions, entering inputs/issuing commands, and evaluating the output against expected results and criteria. Multiple test cases may be needed to verify a single requirement; and the test case order may need to be specified.</p>
<p>c. Test milestones.</p>