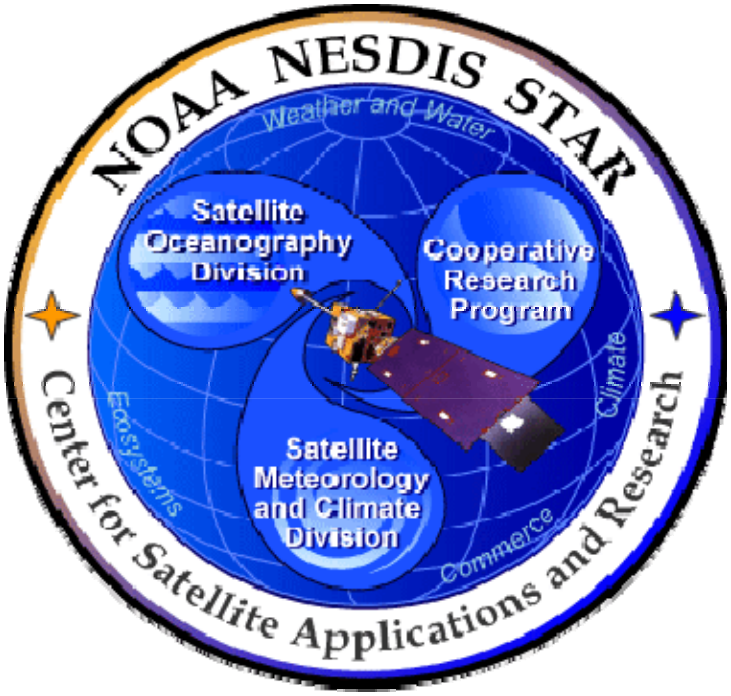

NOAA NESDIS
CENTER for SATELLITE APPLICATIONS and RESEARCH

DOCUMENT GUIDELINE

DG-6.4
PROJECT REQUIREMENTS DOCUMENT GUIDELINE
Version 3.0

TITLE: DG-6.4: PROJECT REQUIREMENTS DOCUMENT GUIDELINE VERSION 3.0

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PROJECT REQUIREMENTS DOCUMENT GUIDELINE
VERSION HISTORY SUMMARY

Version	Description	Revised Sections	Date
1.0	New Document Guideline (DG-9.1) by Ken Jensen (Raytheon Information Solutions)	New Document	12/29/2006
2.0	Revised by Ken Jensen (Raytheon Information Solutions) for version 2.	All	10/12/2007
3.0	Renamed DG-6.4 and revised by Ken Jensen (Raytheon Information Solutions) for version 3.	All	10/1/2009

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LIST OF ACRONYMS

CICS	Cooperative Institute for Climate Studies
CIMSS	Cooperative Institute for Meteorological Satellite Studies
CIOSS	Cooperative Institute for Oceanographic Satellite Studies
CIRA	Cooperative Institute for Research in the Atmosphere
CL	Check List
CLI	Check List Item
CM/DM	Configuration Management/Data Management
CREST	Cooperative Remote Sensing and Technology Center
DG	Document Guideline
DPP	Development Project Plan
EPL	Enterprise Product Lifecycle
G3D	Gate 3 Document
IPT	Integrated Product Team
NESDIS	National Environmental Satellite, Data, and Information Service
NOAA	National Oceanic and Atmospheric Administration
OCD	Operations Concept Document
PAR	Process Asset Repository
PBR	Project Baseline Report
PDR	Preliminary Design Review
PG	Process Guidelines
PRD	Project Requirements Document
PRG	Peer Review Guideline
PRR	Project Requirements Review
PSR	Project Status Report
RAD	Requirements Allocation Document
SG	Stakeholder Guideline
SOW	Statement Of Work

STAR	Center for Satellite Applications and Research
SWA	Software Architecture Document
TD	Training Document
TG	Task Guideline
VVP	Verification and Validation Plan

1. INTRODUCTION

The NOAA/NESDIS Center for Satellite Applications and Research (STAR) develops a diverse spectrum of complex, often interrelated, environmental algorithms and software systems. These systems are developed through extensive research programs, and transitioned from research to operations when a sufficient level of maturity and end-user acceptance is achieved. Progress is often iterative, with subsequent deliveries providing additional robustness and functionality. Development and deployment is distributed, involving STAR, the Cooperative Institutes (CICS, CIMSS, CIOSS, CIRA, CREST) distributed throughout the US, multiple support contractors, and NESDIS Operations.

NESDIS/STAR is implementing an increased level of process maturity to support the exchange of these software systems from one location or platform to another. The Project Requirements Document (PRD), a Microsoft PowerPoint file, is one component of this process.

1.1. Objective

The objective of this Document Guideline (DG) is to provide STAR standards for the PRD. The intended users of this DG are the personnel assigned by the Project Lead to the task of creating a PRD for the project.

1.2. The Project Requirements Document

The PRD is the presentation document for a project's Project Requirements Review (PRR)[1]. The PRR is an important milestone of each project's product lifecycle.

The PRD should build on the Gate 3 Document (G3D), identifying basic and derived requirements, analyzing requirements, planning requirements tracking and validation, providing a preliminary requirements allocation, and updating the status of risks and actions from the Gate 3 Review. It should accomplish the following objectives:

- Identify relevant stakeholders and document their involvement according to the project plan.
- Describe the customer/user needs and expectations
- Identify the basic and derived requirements

[1] Refer to the STAR EPL Process Guidelines (PG-1 and PG-1.A) for a description of the STAR EPL gates and reviews.

- » Analyze the requirements to establish the basis for solutions and design
- » Establish quality assurance plans for the requirements, including traceability, tracking and validation
- » Establish an initial allocation of requirements to product components and system components of the preliminary system architecture
- » Identify and evaluate risks. Provide risk mitigation plans.
- » Document the closing of all action items since the Gate 3 Review. Make recommendations for open actions and new actions.

The intended target audience is the PRR reviewers. Typically, the PRD is prepared by the project's development team under the direction of the Project Lead.

The PRD should be developed as a Microsoft PowerPoint document. Upon approval, the approved version of the PRD may be converted to an Adobe pdf file for storage in the project artifact repository.

1.3. Background

This DG defines standards and guidelines for producing a PRD. It contains all information needed for a project's development team to produce a PRD that enables the PRR reviewers to confirm that the project is in compliance with all PRR requirements.

1.4. Benefits

A PRD developed in accordance with the standards in this DG enables the PRR reviewers to confirm that the project is in compliance with all PRR requirements. It is therefore a requirement that a PRD be developed in accordance with the guidelines in this document before obtaining PRR approval. The PRD will be reviewed at the PRR to determine whether a project proceeds to the Preliminary Design step of the Design phase of the STAR Enterprise Product Lifecycle (EPL)[2].

[2] A description of the STAR EPL can be found in STAR EPL process asset PG-1 (c.f. Section 2 of this document).

1.5. Overview

This DG contains the following sections:

Section 1.0	-	Introduction
Section 2.0	-	References
Section 3.0	-	Standard Sections
Section 4.0	-	Section Guidelines
Appendix A	-	Template File

2. REFERENCE DOCUMENTS

Project Requirements Document Guideline Appendix is a STAR EPL process asset (DG-6.4.A) that is intended to be an Appendix to DG-6.4 (this document). It contains Microsoft PowerPoint slide templates for the PRD slides described in DG-6.4. This document will be available to approved users in a STAR EPL process asset repository (PAR).

PSR: Project Status Report Appendix is an artifact for the PRR. It should include the identified project risks and actions associated with these risks. This information will be useful for the PRD developer in completing Section 8 of the PRD. This document will be available to approved users in a project artifact repository.

DPP: Development Project Plan is an artifact for the PRR. It should include the project plan, schedule, and resources, identify stakeholders, identify PRR entry and exit criteria, provide the PRR Check List Items (CLI), and provide an initial description of the customer/user's concept of operations from which requirements are to be derived. This information will be useful for the PRD developer in completing Sections 1, 2 and 3 of the PRD. This document will be available to approved users in a project artifact repository.

OCD: Operations Concept Document is an artifact for the PRR. It contains the timeline scenarios for product operation and user interaction for the project algorithm. This information will be useful for the PRD developer in completing Section 3 of the PRD. This document will be available to approved users in a project artifact repository. This version of the OCD may be developed in parallel with the PRD. In that case, the PRD developers should be in contact with the OCD v1r0 developers to ensure that its content is captured in the PRD.

RAD: Requirements Allocation Document is an artifact for the PRR. It contains the basic and derived requirements for the work products and the initial allocation of the requirements to system components and product components. This information will be useful for the PRD developer in completing Sections 4 - 7 of the PRD. This document will be available to approved users in a project artifact repository. This version of the Requirements Allocation Document (RAD) may be developed in parallel with the PRD. In that case, the PRD developers should be in contact with the RAD v1r0 developers to ensure that its content is captured in the PRD.

PBR: Project Baseline Report is an artifact for the PRR. It provides a listing of all items in the project's baseline. This information will be useful for the PRD developer in providing

pointers to the project artifacts. This document will be available to approved users in a project artifact repository. This version of the Project Baseline Report (PBR) will include all of the other PRR artifacts, and therefore should be the last PRR artifact to be finalized. The PRD developer should be in contact with the PBR developer to obtain the correct pointers to the project artifacts prior to the finalization of PBR v1r2.

VVP: Verification and Validation Plan is an artifact for the PRR. It describes the work products to be verified and validated, the requirements for each selected work product and the verification and validation methods for each selected work product. This information will be useful for the PRD developer in completing Section 6 of the PRD. This document will be available to approved users in a project artifact repository. This version of the Verification and Validation Plan (VVP) may be developed in parallel with the PRD. In that case, the PRD developers should be in contact with the VVP v1r0 developers to ensure that its content is captured in the PRD.

All of the following references are STAR EPL process assets that are accessible in a STAR EPL Process Asset Repository (PAR) on the STAR web site:

http://www.star.nesdis.noaa.gov/star/EPL_index.php.

PG-1: STAR EPL Process Guideline provides the definitive description of the standard set of processes of the STAR EPL.

PG-1.A: STAR EPL Process Guideline Appendix, an appendix to PG-1, is a Microsoft Excel file that contains the STAR EPL process matrix (Stakeholder/Process Step matrix), listings of the process assets and standard artifacts, descriptions of process gates and reviews, and descriptions of stakeholder roles and functions.

PRG-6: Project Requirements Review Guidelines are the guidelines for the PRR. It is useful for the PRD developers to understand what the reviewers will expect when reviewing the PRD.

SG-13: STAR EPL Development Lead Guidelines provides a description of standard tasks for Development Leads, including development of the PRD.

SG-14: STAR EPL Development Scientist Guidelines provides a description of standard tasks for Development Scientists, including development of the PRD.

SG-15: STAR EPL Development Tester Guidelines provides a description of standard tasks for Development Testers, including development of the PRD.

SG-16: STAR EPL Development Programmer Guidelines provides a description of standard tasks for Development Programmers, including development of the PRD.

TG-6: STAR EPL Project Requirements Task Guidelines provides a description of standard tasks for process step 6, during which the PRD is developed.

TD-9: Project Requirements is a STAR EPL TD that provides a description of recommended procedures for requirements identification, analysis, allocation, quality assurance, documentation and management.

3. STANDARD SECTIONS

The PRD slides are organized into sections. The standards sections are:

1.0 INTRODUCTION
- 1.1 PRR Guidelines and Check List
- 1.2 PRR Report
- 1.3 PRR Entry Criteria
- 1.4 PRR Exit Criteria
- 1.5 Review Objectives
- 1.6 Review Outline

2.0 PROJECT PLAN
- 2.1 Development Project Plan
- 2.2 Project Objectives
- 2.3 Project Stakeholders
- 2.4 Project Timeline
- 2.5 Changes to Project Plan
- 2.6 Stakeholder Involvement

3.0 OPERATIONS CONCEPT
- 3.1 Operations Concept Overview
- 3.2 Customer/User Concept of Operations
- 3.3 Customer/User Needs
- 3.4 Customer/User Expectations
- 3.5 Operational Scenario

4.0 REQUIREMENTS IDENTIFICATION
- 4.1 Requirements Development Process
- 4.2 Requirements Identification

4. SECTION GUIDELINES

This section contains the STAR guidelines for each section of the PRD. PRD developers will benefit greatly from using the slide templates contained in the "STAR_DG-6.4.A_PRD_v3r0.ppt" file, hereafter referred to as DG-6.4.A. DG-6.4.A is considered to be an Appendix to this document.

Note that the slides in DG-6.4.A include figures, tables, and bulleted text. All figures, tables and bulleted text should be adopted as they appear in these slides, except for text between delimiters, like this:

<Text>

Text between delimiters consists of guidelines. The PRD developer should replace this text with appropriate text, as suggested by the guidelines.

4.1. Slide Master

It is recommended, but not required, that PRD developers use the Slide Master from DG-6.4.A as the Slide Master for the PRD. A development team may wish to tailor its Slide Master. For example, a different slide background color that has been established as a "team color" may be used. Whether or not the Slide Master is tailored, the slide master shall include the STAR logo in the upper left corner of the slide, following the Slide Master in DG-6.4.A. The STAR logo should be identical to the Picture on the cover page of this document. Another example of tailoring is to add organization logos to the upper right corner of the slide, if the development team is non-STAR (e.g. a Cooperative Institute or Contractor). The Slide Master for DG-6.4.A includes the Raytheon logo as an example. This should be replaced by the appropriate logos, or no logo if the development team consists of STAR personnel.

4.2. Title Slide

The first slide shall be a Title Slide, labeled "Title Slide" [3] in DG-6.4.A. The Title Slide shall include the Project and/or Product Name[4] and the Preparer's Names and Organizations.

[3] The slide templates in DG-6.4.A are labeled in text boxes located in one of the lower corners of each slide.

[4] In the slide templates, unspecified (generic) fields are indicated by the <generic name> convention. The PRD developer should fill these in with the appropriate information specific to the project's PRR.

4.3. Review Agenda Slide

The second slide shall be a *Review Agenda* Slide, labeled ”Review Agenda Slide” in DG-6.4.A. The Review Agenda Slide shall list each section of the presentation, the scheduled time interval for the presentation of the section, and the name of the presenter(s) for that section. It is not required that the locations of the Break and Lunch periods be exactly where they are indicated in this slide. The development team should tailor its schedule to fit the contents of each section. If the scope of a project’s PRR requires a review that extends for more than one day, each day’s agenda should be presented on separate slides, as shown on slides labeled “Review Agenda Slide Alternative – Day 1” and “Review Agenda Slide Alternative – Day 2” in DG-6.4.A.

4.4. Section 1 – Introduction

The PRD shall include an Introduction Section. This section shall include:

- A setup slide, labeled “Section 1 Setup Slide”) in DG-6.4.A. This slide is a bulleted list of all 9 sections, with Section 1 highlighted, as shown.

- A Section Title slide, labeled “Slide 1.0” in DG-6.4.A.

- Section 1.1: *PRR Guidelines and Check List*, labeled “Section 1.1 Alternative 1” and “Section 1.1 Alternative 2” in DG-6.4.A. This section provides the reviewers with pointers to the PRR Peer Review Guideline (PRG-6) and PRR Check List that they will need to prepare for and dispose of the review. Use Alternative 1 or Alternative 2, depending on whether the standard PRR Check List (CL-6) is to be used (Alternative 1) or a tailored Check List has been documented in the DPP (Alternative 2).

- Section 1.2: *PRR Report*, labeled “Section 1.2” in DG-6.4.A. This section provides the reviewers with pointers to the PRR Report Document Guidelines (DG-6.5) that they will need to produce the PRR Report.

- Section 1.3: *PRR Entry Criteria*, labeled “Section 1.3” in DG-6.4.A. This section lists the PRR entry criteria. Present as bullets. Use multiple slides as necessary for clarity.

- Section 1.3 of DG-6.4.A shows the standard STAR EPL entry criteria for the PRR. These should be used if the standard PRR entry criteria, documented in STAR EPL Check List CL-6, are used. If the entry criteria for a particular project have been tailored, revise these slides as necessary to capture the tailored entry criteria. Refer to the DPP Appendix C to determine this.
- If applicable, list PRR entry criteria that are non-standard (added or revised from the standard set of entry criteria in STAR EPL Check List CL-6), explain the deviation, provide a rationale, and assess the risk, usually by reference to a risk # to be discussed in Section 8. Follow the instructions in Section 1.3 of DG-6.4.A.
- If applicable, list any standard entry criteria that have been waived for this PRR, provide a rationale, and assess the risk, usually by reference to a risk # to be discussed in Section 8. Follow the instructions in Section 1.3 of DG-6.4.A.

- Section 1.4: *PRR Exit Criteria*, labeled “Section 1.4” in DG-6.4.A. Present as bullets. Use multiple slides as necessary for clarity.
  - Section 1.4 of DG-6.4.A shows the standard STAR EPL exit criteria for the PRR. These should be used if the standard PRR exit criteria, documented in STAR EPL Check List CL-6, are used. If the exit criteria for a particular project have been tailored, revise these slides as necessary to capture the tailored exit criteria. Refer to the DPP Appendix C to determine this.
  - If applicable, list PRR exit criteria that are non-standard (added or revised from the standard set of exit criteria in STAR EPL Check List CL-6), explain the deviation, provide a rationale, and assess the risk, usually by reference to a risk # to be discussed in Section 8. Follow the instructions in Section 1.4 of DG-6.4.A.
  - If applicable, list any standard exit criteria that have been waived for this PRR, provide a rationale, and assess the risk, usually by reference to a risk # to be discussed in Section 8. Follow the instructions in Section 1.4 of DG-6.4.A.

- Section 1.5: *Review Objectives*, labeled “Section 1.5” in DG-6.4.A, should provide a clear presentation of the Review Objectives. These should include STAR EPL standard objectives for a PRR, and may include project-unique objectives at the discretion of the development team. Refer to the DPP to determine this. The review objectives should correspond to the major sections of the review (c.f. Section 3 of this DG). Match the main bullets of this slide to the main sections. One level of sub-

bullets can be used at the discretion of the development team. These would add some high-level descriptive information.

- Section 1.6: *Review Outline*, labeled “Section 1.6” in DG-6.4.A, should contain a listing of each main section of the presentation, comparable to the Standard Sections shown in Section 3 of this DG.

4.5. Section 2 – Development Project Plan

The PRD shall include a Development Project Plan Section. This section shall include:

- A setup slide, labeled “Section 2 Setup Slide”) in DG-6.4.A. This slide is a bulleted list of all 9 sections, with Section 2 highlighted, as shown.

- A Section Title slide, labeled “Slide 2.0” in DG-6.4.A.

- Section 2.1: *Development Project Plan*, labeled “Section 2.1” in DG-6.4.A, introduces the Development Project Plan (DPP), a standard STAR EPL artifact for the PRR. Provide a pointer to the project’s DPP and to the DPP Document Guideline (DG-5.1).

- Section 2.2: *Project Objectives*, labeled “Section 2.2” in DG-6.4.A. These should be derived from customer needs and expectations and should have been captured in the project’s Statement of Work (SOW). Match the main bullets of this slide to the main sections of the SOW. One level of sub-bullets can be used at the discretion of the development team. These would add some high-level information typically derived from the explanatory text in each section of the SOW.

- Section 2.3: *Project Stakeholders*, labeled “Section 2.3” in DG-6.4.A. Identify relevant stakeholder roles and personnel. Each distinct stakeholder role should be listed as a main bullet. Stakeholder roles are identified in the “Stakeholders” sheet of STAR EPL process asset PG-1.A. Stakeholders should be named when known. There may be more than one name for a stakeholder role. Unspecified stakeholders should be identified by role with a TBD. The ensemble of roles and named personnel constitutes the Integrated Product Team (IPT). Sub-bullets can be used to add a high-level description of the tasks expected for a given stakeholder. The level of detail of these descriptions is at the discretion of the development team, but should be sufficient to give the reviewers a good sense of the IPT. The development team

may prefer to present the stakeholder information as a table. See “Section 2.3 – Table Alternative” of DG-6.4.A as an example. A project organization chart is recommended. This chart should include all stakeholders that have been identified in this section. See “Section 2.3 – Option” of DG-6.4.A as an example.

- Section 2.4: *Project Timeline*, labeled “Section 2.4” in DG-6.4.A, should include a listing of project milestones. Milestones should include the project reviews (with the PRR highlighted) and associated review dates. The STAR EPL standard reviews are shown in Section 1.4 of DG-6.4.A. Refer to the DPP for the project-specific reviews. Milestones may also include key deliveries (e.g. pre-operational code). Show the project plan as an object or objects taken from a Microsoft Project file of the project plan. Use superimposed text boxes to highlight notable accomplishments leading up to PRR. Note the PRR milestone. Section 2.4 of DG-6.4.A provides examples. Use more than one slide if necessary to make the objects visually presentable. For example, the project timeline could be partitioned into the major STAR EPL phases. The slide labeled “Section 2.4 – Timeline Partition” in DG-6.4.A shows an example.

- Section 2.5: *Changes To Project Plan*, labeled “Section 2.5” in DG-6.4.A. Describe any changes to the project plan – objectives, stakeholders, tasks, schedule and milestones – that have occurred since the Gate 3 Review. Use multiple slides as necessary for clarity. If there have been no changes, state this.

- Section 2.6: *Stakeholder Involvement*, labeled “Section 2.6” in DG-6.4.A. Document the involvement of the stakeholders according to the project plan. Use a bullet for each type of stakeholder. Sub-bullets should describe the involvement in a way that shows the project plan is being followed. Section 2.6 of DG-6.4.A shows examples.

4.6. Section 3 – Operations Concept

The PRD shall include an Operations Concept Section. Most of the content for this section should be obtained directly from OCD v1r0. This section shall include:

- A setup slide, labeled “Section 3 Setup Slide”) in DG-6.4.A. This slide is a bulleted list of all 9 sections, with Section 3 highlighted, as shown.

- A Section Title slide, labeled “Slide 3.0” in DG-6.4.A.

- Section 3.1: *Operations Concept Overview*, labeled “Section 3.1” in DG-6.4.A. Present an overview of what the operations concept is. Use the DG-6.4.A Section 3.1 slide templates as is, without tailoring. Introduce the Operations Concept Document (OCD).

- Section 3.2: *Customer/User Concept Of Operations,* labeled “Section 3.2 – Alternative 1” or “Section 3.2 – Alternative 2” of DG-6.4.A, should present the customer/user’s concept of operations. Alternative 1 should be used if the customer/user has provided the development team with a Concept of Operations; otherwise, use Alternative 2. Use multiple slides as necessary for clarity.

- Section 3.3: *Customer/User Needs*, labeled “Section 3.3” in DG-6.4.A. Explain why the products are being produced. Itemize customer/user needs. Refer to a customer ConOps document, if one exists. If a customer ConOps does not exist, explain how customer/user needs were determined. Use text, figures, tables from the OCD. Use multiple slides as necessary for clarity.

- Section 3.4: *Customer/User Expectations*, labeled “Section 3.4” in DG-6.4.A. Explain how the products will be used, Itemize customer/user expectations. Refer to a customer ConOps document, if one exists. If a customer ConOps does not exist, explain how customer/user expectations were determined. Use text, figures, tables from the OCD. Use multiple slides as necessary for clarity.

- Section 3.5: *Operational Scenario*, labeled “Section 3.5” in DG-6.4.A. Explain how the products should be produced. Describe the production environments that are available for the product lifecycle, including development, transition, operations and delivery. Describe production scenarios, consistent with the level of detail in the customer's concept of operations, the production environment constraints, and operator needs and expectations. Use text, figures, tables from the OCD. Use multiple slides as necessary for clarity.

4.7. Section 4 – Requirements Identification

The PRD shall include a Requirements Identification Section. This section shall include:

- A setup slide, labeled “Section 4 Setup Slide”) in DG-6.4.A. This slide is a bulleted list of all 9 sections, with Section 4 highlighted, as shown.

- A Section Title slide, labeled “Slide 4.0” in DG-6.4.A.

- Section 4.1: *Requirements Development Process*, labeled “Section 4.1” in DG-6.4.A. These slides illustrate the iterative development of the requirements during the Design phase of the STAR EPL process (“Section 4.1 - Figure 1” and “Section 4.2 – Figure 2” of DG-6.4.A), thereby providing a context for the remainder of the PRR. It is recommended that the presenter use the graphic depiction of the iterative (spiral) development of requirements and requirements allocation. Note the similarity to the figure in Section 7.1 of DG-6.4.A. The essence of “Section 4.1 - Figure 2” is that the development of Solutions, Design, Requirements, and Requirements Allocation occurs iteratively in a closed loop with continual feedback between the four. The placement of the four components of the Design phase is meant to show that Requirements drive the Solutions and Design, which in turn develop the Requirements Allocation (Section 7). The connection between Requirements Allocation and Requirements is caused by the need to maintain consistency between the two components. The Solutions and Design are primitive at this step in the STAR EPL, and will be developed during preliminary design for Preliminary Design Review (PDR) and detailed design for Critical Design Review (CDR). . Introduce the Requirements Allocation Document (RAD) and provide a pointer to the project RAD.

- Section 4.2: *Requirements Identification*, labeled “Section 4.2” in DG-6.4.A. Describe the characterization of requirements. Provide an overview of the process of Requirements Identification, explaining how the requirements are identified and characterized. Use the guidelines from STAR EPL Training Document TD-9. Then, describe each basic requirement and its derived requirements. Follow the instructions in Section 4.2 of DG-6.4.A. Introduce and explain the Requirements/Needs Matrix. It is recommended that the Requirements/Needs matrix be illustrated as it appears in RAD v1r0. If the matrix is too large to be effectively illustrated (this will happen if there are a large number of basic requirements and/or a large number of customer needs), provide a reference to the figure or figures in RAD v1r0 where the matrix is illustrated.

4.8. Section 5 – Requirements Analysis

The PRD shall include a Requirements Analysis Section. This section shall include:

- A setup slide, labeled “Section 5 Setup Slide”) in DG-6.4.A. This slide is a bulleted list of all 9 sections, with Section 5 highlighted, as shown.

- A Section Title slide, labeled “Slide 5.0” in DG-6.4.A.

- Section 5.1: *Requirements Analysis*, labeled “Section 5.1” in DG-6.4.A. This section describes the results of the analysis of the requirements. For each basic requirement and its derived requirements:
    - Note any relevant analysis that was performed during the Project Planning phase, primarily with respect to NESDIS mission and strategic plan. This should be reflected in the DPP.
    - Provide a technical analysis. The customer requirements may be expressed in the customer’s terms and may be non-technical descriptions. The product requirements are the expression of these requirements in technical terms that can be used for design decisions.
    - Provide a functional analysis. Functional analysis is the description of what the product is intended to do. The definition of functionality can include actions, sequence, inputs, outputs, or other information that communicates the manner in which the product will be used.
    - Provide a quantitative analysis, if it is a performance requirement. Performance requirements must be specific and quantitative. Analysis should strike a balance between customer needs and expectations, whether quantitative or qualitative, and anticipated constraints. Consider cost, schedule and technical constraints.
    - Note potential effects of the requirements on the project plan
    - Identify and evaluate project risks generated by the requirements

4.9. Section 6 – Requirements Quality Assurance

The PRD shall include a Requirements Quality Assurance Section. This section shall include:

- A setup slide, labeled “Section 6 Setup Slide”) in DG-6.4.A. This slide is a bulleted list of all 9 sections, with Section 6 highlighted, as shown.

- A Section Title slide, labeled “Slide 6.0” in DG-6.4.A.

- Section 6.1: *Requirements Traceability*, labeled “Section 6.1” in DG-6.4.A. Provide an overview of Requirements Traceability. It is recommended that the Requirements

Traceability matrix be illustrated as it appears in RAD v1r0. If the matrix is too large to be effectively illustrated (this will happen if there are a large number of basic requirements and/or a large number of customer needs), provide a reference to the figure or figures in RAD v1r0 where the matrix is illustrated.

- Section 6.2: *Requirements Tracking*, labeled “Section 6.2” in DG-6.4.A. Explain the purpose of requirements tracking. Describe the project’s plan for tracking requirements. Demonstrate that STAR standards, as documented in TD-9, will be followed. Explain any project-unique tailoring of standard requirements tracking practices. Identify project stakeholders who will play a role in requirements tracking and how they will do this.

- Section 6.3: *Requirements Validation*, labeled “Section 6.3” in DG-6.4.A. Explain the purpose of requirements validation. Introduce the Verification and Validation Plan (VVP) and provide a pointer to the project VVP. Describe the project’s plan for continuing and completing requirements validation as the requirements allocation is updated during preliminary design and detailed design, as documented in the project’s VVP v1r0. Demonstrate that STAR standards, as documented in TD-9, will be followed. Explain any project-unique tailoring of standard requirements validation practices. Identify project stakeholders who will play a role in requirements validation and how they will do this.

- Section 6.4: *Configuration Management*, labeled “Section 6.4” in DG-6.4.A. This section describes the Configuration Management (CM) of the requirements and their allocated functions and work products, including CM tools, CM stakeholders and the PBR.
    - Explain the concepts of CM as they apply to Requirements Quality Assurance.
    - Describe the CM tools that are in use for the project. This information should be in the project DPP
    - Identify the CM stakeholders for the project and verify their commitment to the plan for CM of requirements and requirements documentation. CM/DM personnel assigned to the project should be identified in the DPP.
    - Introduce the Project Baseline Report (PBR) and provide a pointer to the project PBR v2r0.

4.10. Section 7 – Requirements Allocation

The PRD shall include a Requirements Allocation Section. This section shall include:

- A setup slide, labeled “Section 7 Setup Slide”) in DG-6.4.A. This slide is a bulleted list of all 9 sections, with Section 7 highlighted, as shown.

- A Section Title slide, labeled “Slide 7.0” in DG-6.4.A.

- Section 7.1: *Requirements Allocation Overview*, labeled “Section 7.1” in DG-6.4.A. Explain how the requirements allocation is developed during the Design phase of the STAR EPL process, It is recommended that the presenter use the graphic depiction of the iterative (spiral) development of requirements and requirements allocation, as shown in “Section 7.1 – Figure 1” in DG-6.4.A. Note the similarity to “Section 4.1 – Figure 2” in DG-6.4.A. The essence of “Section 7.1 – Figure 1” is that the development of Solutions, Design, Requirements, and Requirements Allocation occurs iteratively in a closed loop with continual feedback between the four. The placement of the four components of design development is meant to show that Requirements (Section 4) drive the Solutions and Design, which in turn develop the Requirements Allocation (Section 7). The connection between Requirements Allocation and Requirements is caused by the need to maintain consistency between the two components. The Solutions and Design are primitive at this step in the STAR EPL, and will be developed during preliminary design for PDR and detailed design for CDR.

- Section 7.2: *Requirements Allocations*, labeled “Section 7.2” in DG-6.4.A. List each requirements allocation for each basic requirement and its derived requirements, using the format shown in Section 7.2 of DG-6.4.A. The allocations are expected to be primitive at this step of the STAR EPL.

4.11. Section 8 – Risks and Actions

The PRD shall include a Risks and Actions Section. This section shall include:

- A setup slide, labeled “Section 8 Setup Slide” in DG-6.4.A. This slide is a bulleted list of all 9 sections, with Section 8 highlighted, as shown.
- A Section Title slide, labeled “Slide 8.0” in DG-6.4.A.
- Section 8.1: *Gate 3 Risks and Actions*, labeled “Section 8.1” in DG-6.4.A.
    - A section introduction slide should note the number of risks that were identified at the Gate 3 Review and that were identified after the Gate 3 Review, as shown in Section 8.1 of DG-6.4.A. Provide a pointer to the Project Status Report (PSR) Appendix.
    - Report the status of the first risk identified at the Gate 3 Review, as shown in Section 8.1 of DG-6.4.A. Use as many slides as necessary for a clear presentation of the status of each risk.
    - Report the status of each completed action that is associated with the risk, as shown in Section 8.1 of DG-6.4.A.
    - Report the status of each open action that is associated with the risk, as shown in Section 8.1 of DG-6.4.A.
    - Repeat for each additional risk, as shown in Section 8.1 of DG-6.4.A.
- Section 8.2: *New Risks and Actions*, labeled “Section 8.2”) in DG-6.4.A.
    - Report the status of each risk that has been identified since the Gate 3 Review, as shown in Section 8.2 of DG-6.4.A. Use as many slides as necessary for a clear presentation of the status of each risk.
    - Report the status of each completed action that is associated with the risk, as shown in Section 8.2 of DG-6.4.A.
    - Report the status of each open action that is associated with the risk, as shown in Section 8.2 of DG-6.4.A.
    - Repeat for each additional risk, as shown in Section 8.2 of DG-6.4.A.

- Section 8.3: *Risk Summary*, labeled “Section 8.3” in DG-6.4.A.
    - Present a bulleted list of the risk statements for the risks that can be closed. Risks can be closed when all associated actions are closed or withdrawn. For each risk, list the associated actions that can be closed or withdrawn. Each of these should have been presented in Sections 8.1 or 8.2 as a completed or withdrawn action. Use multiple slides as necessary for clarity.
    - Present a bulleted list of the risk statements for the risks that are still open. For each risk, list the actions that must be closed to reduce the risk to an acceptable level, with closure plans and estimated closure dates.

4.12. Section 9 – Summary and Conclusions

The PRD shall include a Summary and Conclusions Section. This section shall include:

- A setup slide, labeled “Section 9 Setup Slide” in DG-6.4.A. This slide is a bulleted list of all 9 sections, with Section 9 highlighted, as shown.

- A Section Title slide, labeled “Slide 9.0” in DG-6.4.A.

- Section 9.1: *Review Objectives Status*, labeled “Section 9.1” in DG-6.4.A. This section explains how each review objective has been addressed. Follow the instructions in Section 9.1 of DG-6.4.A.

- Section 9.2: *Issues, Actions and Risks*, labeled “Section 9.2” in DG-6.4.A. List important issues, actions and risks that require attention. Use multiple slides as necessary for clarity. Use a major bullet for each item, with sub-bullets to note conclusions for that item.

- Section 9.3: *Next Step – Preliminary Design*, labeled “Section 9.3” in DG-6.4.A. List recommendations for the next step after the PRR. Follow the instructions in Section 9.1 of DG-6.4.A.

- Section 9.4: *Open Discussion*, labeled “Section 9.4” in DG-6.4.A. Announce that the review is open for free discussion. Note: If you have prepared and conducted the review in accordance with standards and if the reviewers have prepared for the review in accordance with standards, there should be no need for additional discussion.

APPENDIX A – TEMPLATE FILE

The slide templates that are referenced in this DG are available in the Microsoft PowerPoint file “STAR_DG-6.4.A_PRD_v3r0.ppt”. This file will be available to authorized users in the STAR EPL PAR.

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