



**NOAA NESDIS
CENTER for SATELLITE APPLICATIONS
and RESEARCH**

PEER REVIEW GUIDELINE

**PRG-8.2
GATE 4 REVIEW
PEER REVIEW GUIDELINE
Version 3.0**

NOAA NESDIS STAR

PEER REVIEW GUIDELINE PRG-8.2

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TITLE: Gate 4 Review Peer Review Guideline

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TITLE: PRG-8.2: GATE 4 REVIEW PEER REVIEW GUIDELINE VERSION 3.0

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LIST OF ACRONYMS

CDR	Critical Design Review
CDRR	Critical Design Review Report
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	Configuration Management
CREST	Cooperative Remote Sensing and Technology Center
DG	Document Guideline
DPP	Development Project Plan
EPG	Enterprise Process Group
EPL	Enterprise Product Lifecycle
G3RR	Gate 3 Review Report
G4D	Gate 4 Document
G4R	Gate 4 Review
G4RR	Gate 4 Review Report
IPT	Integrated Product Team
NESDIS	National Environmental Satellite, Data, and Information Service
NOAA	National Oceanic and Atmospheric Administration
OSDPD	Office of Satellite Data Processing and Distribution
PAR	Process Asset Repository
PBR	Project Baseline Report
PRG	Peer Review Guideline
PSR	Project Status Report
QA	Quality Assurance
SG	Stakeholder Guideline
SPSRB	Satellite Products and Services Review Board
STAR	Center for Satellite Applications and Research
TD	Training Document
TG	Task Guideline

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. Gate 4 Review (G4R) standards and guidelines are a part of this process improvement.

1.1. Objective

The objective of this Peer Review Guideline (PRG) is to provide STAR standards and guidelines for reviewing a project's compliance with requirements at a project G4R¹. This PRG defines standards and guidelines for participation on a G4R review team. It contains all information needed to prepare for, conduct, and close the G4R.

The intended users of this PRG are the G4R reviewers.

1.2. Overview

This PRG contains the following sections:

- Section 1.0 - Introduction
- Section 2.0 - References
- Section 3.0 - Preparing For The Review
- Section 4.0 - Conducting The Review
- Section 5.0 - Closing The Review

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

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2. REFERENCE DOCUMENTS

The reference documents for the G4R include the recommended and optional process assets (c.f. Section 3.4) and the G4R artifacts (c.f. Section 3.5).

3. PREPARING FOR THE REVIEW

This section is concerned with how the G4R review team is selected and how the review team members should prepare for the G4R.

3.1. Background – The STAR EPL Process

The G4R is a standard review that occurs at a well-defined stage in the STAR EPL process. It is important that the G4R reviewers understand this process well enough to be able to evaluate the project's status with respect to the G4R entry criteria, objectives and exit criteria.

The STAR EPL consists of 11 process steps that take a product from initial conception through development, operations, maintenance, and retirement. In this lifecycle, project stakeholders work together to enable a product to predictably mature as it progresses through the lifecycle steps.

The process steps are organized into nine project phases:

- Basic (step 1)
- Exploratory (steps 2 – 3)
- Plan (steps 4 – 5)
- Design (steps 6 – 8)
- Build (steps 9 – 11)

The implementation of the process steps can be tailored to be appropriate for the characteristics of a given project, but all steps must be followed to ensure that the products are developed from research to operations by a standard, repeatable process. Tailoring details for a given project should be documented in the project artifacts (c.f. Section 3.5).

The G4R reviewer is referred to the STAR EPL Process Guidelines (PG-1) and Appendix (PG-1.A) for a thorough treatment of the entire process.

The STAR EPL standards and process assets are managed by a STAR Enterprise Process Group (EPG). The EPG is responsible for maintaining the STAR EPL process standards, managing changes, and providing training and guidance to help stakeholders implement the standards. The G4R reviewers for a project are encouraged to contact the EPG with any questions or concerns as they prepare for and close the G4R. Use the following contact:

Ken Jensen
Ken.Jensen@noaa.gov

3.2. The Gate 4 Review

The G4R is a Design Phase Management Review that occurs during step 8 (Detailed Design) of the STAR EPL process.

The primary purpose of the G4R is to evaluate the project plan and project status at the completion of the Design Phase, to determine whether the project is ready to proceed to code and test data development. To achieve this purpose, the development team will produce project artifacts (c.f. Section 3.5) that should demonstrate readiness for requirements and design development to the satisfaction of the G4R reviewers.

In addition, the G4R should evaluate risks and proposed actions to mitigate risks.

3.3. Review Team

Responsibility for development will have previously been assigned to a STAR Division and a specific STAR Branch within the Division.

The G4R Review Lead is nominally the STAR Branch Chief. The Review Lead selects the G4R review team. It is recommended that the following guidelines be followed for selecting the team:

Personnel who are on the project development team are excluded from the review team. There are no exceptions to this rule. The review is intended to be a dialogue between the developers and the reviewers, with the reviewers providing an objective evaluation of the project's requirements. The membership of the project development team should be clearly documented in the project's Development Project Plan (DPP).

Include one or more representatives from STAR QA who are familiar with the project's QA history and the STAR EPL standards for QA, or can familiarize themselves quickly.

Invite a representative from the intended operational organization (e.g. Office of Satellite Data Processing and Distribution - OSDPD). Consult with that organization's management for the selection of its representative. Ideally, this person will become the project's Operations Lead.

Invite one or more representatives from the Satellite Products and Services Review Board (SPSRB). The Review Lead should consult with SPSRB management for the selection of SPSRB representatives.

The review team members will provide a diversity of skills and experience that can be usefully applied to the various aspects of the review. This will be detailed in Section 4.

The Review Lead should meet with the review team as soon as possible to plan the review preparation, including the assignment and scheduling of review preparation tasks (e.g. selection and study of process assets, review of specific Gate 4 artifacts, delivery dates of G4R artifacts, and review of specific G4R artifacts) and should subsequently monitor progress against the review preparation plan.

3.4. Process Assets

STAR EPL process assets are a set of process guidelines, stakeholder guidelines, peer review guidelines, review check lists, task guidelines, document guidelines and training documents that define the enterprise standards and best practices. They are established and maintained under Configuration Management (CM) by an EPG under the direction of a Steering Committee. They are contained in a STAR Process Asset Repository (PAR) on the STAR website:

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

Process assets that are relevant for G4R preparation are briefly described in this section. There are separate subsections for recommended process assets and optional process assets.

The process assets described in this section should be available to the G4R reviewers in the STAR EPL PAR.

3.4.1 Recommended Process Assets

It is very important that the G4R reviewers be familiar with these process assets before conducting the G4R.

CL-8.2: Gate 4 Review Check List contains the standard G4R Check List Items (CLIs) that the G4R reviewers are required to complete, unless the list has been tailored for the specific project. Refer to the DPP to determine whether the G4R Check List has been tailored. In that case, use the tailored Check List in the DPP Appendix.

SG-18: Technical Reviewer Guidelines contains the stakeholder guidelines for Technical Review reviewers. The G4R reviewer will find general guidelines for conducting technical reviews. These complement the specific G4R guidelines contained in this PRG.

TG-8: Detailed Design Task Guideline contains the task guidelines for the “Detailed Design” step (8) of the STAR EPL process. The G4R reviewer will find guidelines for interaction between the G4R review team and other project stakeholders.

DG-8.5: Gate 4 Review Report Guidelines contains the standards and guidelines for writing the Gate 4 Review Report (G4RR, c.f. Section 5.3 of this PRG.). The G4R reviewers, who are responsible for writing this report, will find it highly useful to know the required report content in advance of the review, so they can ensure that the review content will provide them with the information they need for the report.

3.4.2 Optional Process Assets

The process assets designated as optional will be helpful to the G4R reviewers, but are not required. Typically, a G4R reviewer will refer to some of these, depending on the division of responsibilities within the review team.

DG-5.1: Development Project Plan Guideline contains standards and guidelines for the DPP. The DPP is a standard project artifact for the G4R (c.f. Section 3.5.2 of this PRG). The G4R reviewers who are responsible for ensuring that the project’s DPP complies with STAR standards should use DG-5.1 as a resource.

DG-5.2: Project Status Report Guideline contains standards and guidelines for the PSR. The PSR is a standard project artifact for the G4R (c.f. Section 3.5.3 of this PRG). The G4R reviewers who are responsible for ensuring that the project's PSR complies with STAR standards should use DG-5.2 as a resource.

DG-8.4: Gate 4 Document Guideline contains standards and guidelines for the G4D. The G4R reviewer can use this document to become familiar with the expected content and format of the review.

DG-8.4.A: Gate 4 Document Appendix Guideline contains Microsoft PowerPoint slide templates for the standard G4D slides. The G4R reviewer can use this document to become familiar with the expected content and format of the review.

DG-5.4: Project Baseline Report Guideline contains standards and guidelines for the Project Baseline Report (PBR). The PBR is a standard project artifact for the G4R (c.f. Section 3.5.4 of this PRG). The G4R reviewers who are responsible for ensuring that the project's PBR complies with STAR standards should use DG-5.4 as a resource.

PG-1: STAR EPL Process Guidelines provides a description of each process step, the roles and functions of stakeholders for each step, and the relevant process assets and artifacts for each step. The G4R reviewer who wishes to become thoroughly familiar with the process can use this document.

3.5. Project Artifacts

Project artifacts are a set of items that are produced by the appropriate stakeholders during the product life cycle to support the reviews. They are maintained under CM in a project artifact repository.

The following G4R artifacts should be established in the project artifact repository via Baseline Build 2.5:

- Gate 4 Document
- Development Project Plan v2
- Project Status Report v2
- Project Baseline Report v2
- Gate 3 Review Report
- Critical Design Review Report

The G4R artifacts should be available to the G4R reviewers at least one week in advance of the date scheduled for the G4R. The project plan for some projects may call for some or all of these artifacts to be available to the reviewers earlier than one week in advance of the G4R. Consult the DPP for this information. If an artifact is not available on schedule, contact the Development Lead to resolve any problems that may be caused by late access to the artifacts.

3.5.1 Gate 4 Document

The Gate 4 Document (G4D) consists of the G4R presentation slides. The G4D is described in detail in Section 4.2.

3.5.2 Development Project Plan

The Development Project Plan (DPP) v2 documents the plan for the development, testing, review, and transition to operations for the project, including stakeholders, tasks, work breakdown structure (WBS), schedule and resources. It contains the project objectives, tasks, milestones, stakeholders, and schedule. This information will be useful for the G4R reviewer in reviewing Section 2 of the G4D, and will be needed by the review team for determining a review preparation schedule (c.f. Section 3.7 of this PRG).

The DPP includes the G4R review objectives, which may or may not be tailored from the standard STAR EPL objectives for a G4R (c.f. Section 4.1 of this PRG). This information will be useful for the G4R reviewer in reviewing Section 1 of the G4D.

The DPP includes the G4R review entry criteria, which may or may not be tailored from the standard STAR EPL entry criteria for a G4R (c.f. Section 3.6 of this PRG). This information will be useful for the G4R reviewer in reviewing Section 1 of the G4D.

The DPP includes the G4R review exit criteria, which may or may not be tailored from the standard STAR EPL exit criteria for a G4R (c.f. Section 5.1 of this PRG). This information will be useful for the G4R reviewer in reviewing Section 1 of the G4D.

3.5.3 Project Status Report

The Project Status Report (PSR) v2 includes the development team's assessment of the current status of stakeholder involvement, technical progress, milestones, schedule, and

budget. A PSR Appendix describes the status of project risks and associated risk mitigation actions. The PSR will be useful for the G4R reviewer in reviewing Section 3 of the G4D.

3.5.4 Project Baseline Report

The Project Baseline Report (PBR) v2.5 includes the change history, approval status, and location of every Configuration Item in the project's baseline for Baseline Build 2.5. This information will be useful for the G4R reviewer in reviewing Section 4 of the G4D.

3.5.5 Gate 3 Review Report

The Gate 3 Review Report (G3RR) is the report of the Gate 3 Reviewers. This information will be useful for the G4R reviewer in reviewing Section 1 of the G4D.

3.5.6 Critical Design Review Report

The Critical Design Review Report (CDRR) is the report of the CDR Reviewers. This information will be useful for the G4R reviewer in reviewing Section 1 of the G4D.

3.6. Entry Criteria

The G4R reviewers should ensure that all G4R entry criteria have been met before commencing the review. The G4R entry criteria should have been documented in the Development Project Plan (DPP). Note that entry criteria may be tailored from the standard STAR EPL set of G4R entry criteria. In that case, the DPP should provide a rationale for deviations from the standard set.

The standard STAR EPL set of G4R entry criteria, listed in the standard G4R check list (CL-8.2), includes:

- Entry # 1 - A Gate 3 Review Report (G3RR) has been written. The Gate 4 reviewers have access to the current baseline version of the G3RR.
- Entry # 2 - A Critical Design Review Report (CDRR) has been written. The Gate 4 reviewers have access to the current baseline version of the CDRR.
- Entry # 3 - A Development Project Plan (DPP) has been written. The Gate 4 reviewers have access to the current baseline version of the DPP.

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- Entry # 4 - A Project Status Report (PSR) has been written. The Gate 4 reviewers have access to the current baseline version of the PSR.
 - Entry # 5 - A Gate 4 Document (G4D) has been written. The Gate 4 reviewers have access to the current baseline version of the G4D.
 - Entry # 6 - A Project Baseline Report (PBR) has been written. The Gate 4 reviewers have access to the current baseline version of the PBR.

The standard set of entry criteria calls for the availability of the standard set of project artifacts without reference to the quality of these artifacts. Assessment of the quality of the artifacts is the main business of the G4R itself.

It is the responsibility of both the development team and the review team to ensure that G4R entry criteria have been met prior to the G4R. The G4R Review Lead and the Development Lead should be in communication during the entire step 8 process to identify and resolve issues affecting the G4R entry criteria well in advance of the scheduled G4R date.

3.7. Review Team Preparation

The sequence of steps that should be taken by the G4R review team in preparing for the G4R is as follows:

- The STAR Branch Chief selects the Review Lead
- The Review Lead selects the Review Team, following the guidelines in Section 3.3 of this PRG.
- The Review team meets to plan review preparation. The initial meeting should accomplish the following:
 - Assemble the necessary review tasks and assign them to review team members. These tasks include:
 - Review PRG-8.2 (this document), focusing on the sections that pertain to the areas you have been assigned to review. All team members should do this.

- Review the project's G4R check list. This will be available as a DPP Appendix or, if there has been no tailoring, as the process asset CL-8.2. Note CLIs, focusing on the sections that pertain to the areas you have been assigned to review. Refer to these CLIs when reviewing the project artifacts. All team members should do this.
- Review the project plan and DPP. Guidelines for the DPP review are in Section 4.2.2 of this PRG.
- Review the project status and PSR. Guidelines for the PSR review are in Section 4.2.3 of this PRG.
- Review the project's quality assurance (QA) plan and baseline of configuration items. Guidelines are in Section 4.2.4 of this PRG.
- Begin to identify contacts with the development team and with other stakeholders. Assign the relevant contacts to the review team members, based on their assigned tasks.
- Draw up an initial draft review preparation schedule. The initial schedule should include all of the identified tasks, with resource loading based on the task assignments. One task on the draft schedule should be to refine and finalize the schedule, in consultation with the identified stakeholders.
- Identify contacts with the development team and with other stakeholders, using the DPP to identify the relevant stakeholders. Assign the relevant contacts to the review team members, based on their assigned tasks.
- Determine the time, place, frequency, required attendees and optional attendees of G4R review team meetings.
 - The time should be based on the convenience to the review team.
 - The place usually should be at the site of the Review Lead. For cases where a majority of the required attendees are located at a different site than the Review Lead, this site can be selected as an alternative place. The selected site should have the infrastructure for hosting video and/or teleconferencing for off-site attendees.
 - The frequency should be determined by the project timeline, the size of the project, and the size of the review team. Short project timelines large-size projects and large review teams typically require more frequent review team meetings. Also, decide whether G4R review team meetings will be held on a regular basis or on an "as needed" basis. It is recommended that meetings initially be held on a regular basis until it is determined that "as needed" meetings will suffice.

- The required attendees should be determined by the Review Lead on a meeting-by-meeting basis, depending on the meeting's agenda and current issues. Usually, all review team members are required attendees, though some may be designated as optional attendees for a meeting whose agenda and issues are not relevant to their role and responsibilities. The Review Lead may designate members of the development IPT as invited attendees for a meeting whose agenda and issues will benefit from their involvement.
- Review preparation plan is iterated, finalized, communicated to stakeholders.
- The review preparation schedule and risks are finalized, in consultation with the relevant stakeholders. The schedule should include a schedule of deliveries of project artifacts, drawn up in consultation with the Development Lead. It is recommended that informal deliveries of project artifacts in draft condition be included in the schedule. It should be understood that informally delivered "as is" draft artifacts are solely for the purpose of helping the reviewers prepare for the review and are not reviewable items. Reviewers are encouraged to provide feedback to the development team to assist them in improving the artifacts prior to their final pre-review delivery.
- The schedule for closing the review is finalized. This involves the writing and delivery of a G4R Report (G4RR, c.f. Section 5.3 of this PRG).
- Review Lead communicates the proposed review schedule and risks to project management (e.g., STAR Division Chief) and to the Development Lead.
- Review Lead communicates requests for deliveries to the Development Lead, according to the review preparation schedule.
- Review tasks and schedule are finalized, in consultation with project management, and are folded into the DPP.
- Review team members, and relevant stakeholders identified on the review preparation schedule, work their assigned tasks according to the schedule.
- Review Lead monitors the status of the review preparation schedule and risks, and communicates issues to program management and the Development Lead. Review Lead, Development Lead, and program management collaborate in resolving any issues that arise. If necessary, the project plan may be modified to accommodate the resolution of issues.

4. CONDUCTING THE REVIEW

4.1. Review Objectives

The G4R objectives should be established in the DPP. Nominally, these will be the STAR EPL standard objectives for a G4R. The G4R objectives may be tailored for a specific project, in which case the DPP should document the tailored objectives. If there is no tailoring, it is sufficient for the DPP to state that the standard objectives apply, and note that these are specified in this PRG, as follows:

The STAR EPL standard objectives for a G4R are:

- Review the implementation of the Integrated Master Plan (IMP) and Integrated Master Schedule (IMS)
- Review the technical status and risks of the project
- Review the cost status and risks of the project
- Review the schedule status and risks of the project
- Determine whether corrective actions are needed to allow the project to proceed to the Build phase as planned
- Determine whether a re-plan and a delta Gate 4 Review are needed.

4.2. The Gate 4 Document

The Gate 4 Document (G4D), a Microsoft PowerPoint file, is the presentation document for a project's G4R. This document should be made available to the G4R reviewers in the project artifact repository.

The G4D should accomplish the G4R objectives stated in Section 4.1 of this PRG.

The intended target audience is the G4R reviewers. Typically, the G4D is prepared by the project's development team under the direction of the Development Lead.

The G4D presentation slides are organized into five sections. These sections, described in DG-8.4 and illustrated in DG-8.4.A., are:

- Introduction
- Development Project Plan
- Development Project Status
- Project Baseline
- Summary and Conclusions

A description of these sections is provided in the following five subsections, taken from the G4D Document Guidelines (DG-8.4), for the benefit of G4R Reviewers who have been assigned the task of reviewing the corresponding G4D section.

4.2.1 Section 1 – Introduction

The G4D shall include an Introduction Section. This section should be organized as follows:

1.0 INTRODUCTION

- 1.1 G4R Guidelines and Check List
- 1.2 G4R Report
- 1.3 G3R Report
- 1.4 CDR Report
- 1.5 G4R Entry Criteria
- 1.6 G4R Exit Criteria
- 1.7 Review Objectives

- **Section 1.1: G4R Guidelines and Check List**
 - This section should provide pointers to the G4R Peer Review Guidelines (PRG-8.2, this document) and G4R Check List (CL-8.2).

- **Section 1.2: G4R Report**
 - This section should provide a pointer to the G4R Report Document Guidelines (DG-8.5).

- **Section 1.3: G3R Report**
 - Confirm that a pointer to the G3R Report (G3RR) is provided.
 - Confirm that a pointer to the G3RR Document Guidelines (DG-5.5) is provided.
 - Confirm that the status of risks and risk mitigation actions reported in the G3RR is summarized
 - Confirm that the G3RR includes an Appendix that contains the completed check list for the Gate 3 Review

- **Section 1.4: CDR Report**
 - Confirm that a pointer to the CDR Report is provided.
 - Confirm that a pointer to the CDRR Document Guidelines (DG-8.3) is provided.
 - Confirm that the status of risks and risk mitigation actions reported in the CDR Report is summarized

- **Section 1.5: G4R Entry Criteria**
 - Confirm that the entry criteria (c.f. Section 3.6 of this PRG) listed in this section are complete and correct. The G4R entry criteria should be documented in the CDR Report.
 - Look for examples where the entry criteria listed in this section differ from the set that was established at the Gate 3 Review, as documented in the Gate 3 Review Report (G3RR). For these examples, the G4D should provide a convincing rationale for deviations, including tailored entry criteria and waived entry criteria. The G4R reviewers must approve any deviations. It is the responsibility of the Development Lead to consult with the G4R reviewers well enough in advance of the review to obtain reviewer buy-in for the deviation. If approved, the modified entry criteria should be documented in the G4RR with the modifications and rationale explicitly noted.
 - Confirm that each G4R entry criteria item is satisfied. Use the G4R artifacts as references for deciding on the status of each entry criteria item.

- **Section 1.6: G4R Exit Criteria**

- Confirm that the exit criteria (c.f. Section 5.1 of this PRG) listed in this section are complete and correct. The G4R exit criteria should be documented in the CDR Report. Note that exit criteria may be tailored from the standard STAR EPL set of G4R exit criteria. In that case, the DPP should provide a rationale for deviations from the standard set.
- Look for examples where the exit criteria listed in this section differ from the set that was established at the Gate 3 Review, as documented in the G3RR. For these examples, the G4D should provide a convincing rationale for deviations, including tailored exit criteria and waived exit criteria. The G4R reviewers must approve any deviations. It is the responsibility of the Development Lead to consult with the G4R reviewers well enough in advance of the review to obtain reviewer buy-in for the deviation. If approved, the modified exit criteria should be documented in the G4RR with the modifications and rationale explicitly noted.
- For cases where advance reviewer buy-in for exit criteria deviations has not been obtained, the reviewers must decide whether the review should be delayed until the discrepancy is resolved or can continue with an action to resolve the discrepancy after the review.
- Confirm that each G4R exit criteria item is satisfied. Use the G4R artifacts as references for deciding on the status of each exit criteria item.

- **Section 1.7: Review Objectives**

- Ensure that the stated review objectives are satisfactory. Nominally, these objectives will be the STAR EPL standard objectives for a G4R. The standard objectives capture the standard sections of the review (c.f. Section 3).
- Tailoring of review objectives is permissible. If the development team wishes to drop standard objectives or add other objectives, it is the responsibility of the Development Lead to consult with the G4R reviewers well enough in advance of the review to obtain reviewer buy-in for deviations. In that case, the G4D should note all deviations and note any impacts on exit criteria. Impacts on exit criteria will be common, since the standard objectives are designed to meet the standard exit criteria.

4.2.2 Section 2 – Project Plan

The G4D shall include a “Development Project Plan” Section. Most of the content for this section should be obtained directly from DPP v2. This section should be organized as follows:

2.0 DEVELOPMENT PROJECT PLAN

2.1 Development Project Plan

2.2 Project Objectives

2.3 Project Stakeholders

2.4 Statement of Work

2.5 Project Lifecycle

2.6 Technical

2.7 Integrated Master Plan

2.8 Integrated Master Schedule

2.9 Budget

- **Section 2.1: Development Project Plan**

- The DPP is a standard artifact for the G4R. The G4D should provide a pointer to the DPP and the DPP Guidelines (DG-5.1). Access to this document is part of the G4R entry criteria. If the G4R reviewer cannot obtain access to the DPP by using this pointer, and cannot otherwise obtain access to the current baseline version of the DPP, the reviewer should notify an appropriate person (e.g. Review Lead, Development Lead, Program Manager, STAR Web Developer) to obtain access.

- **Section 2.2: Project Objectives**

- Confirm that changes to the project objectives and user’s concept of operations since the Gate 3 Review are identified.
- Confirm that a rationale for each change is provided.

- **Section 2.3: Project Stakeholders**

- Confirm that changes to the project stakeholders since the Gate 3 Review are described. Stakeholders include suppliers, developers, operators, users, reviewers, management, and support.
- Confirm that a rationale for each change is provided.

- **Section 2.4: Statement of Work**
 - Confirm that changes to the work tasks, Work Breakdown Structure (WBS), and/or deliverable items since the Gate 3 Review are identified. Deliverable items include items to be received from suppliers and items to be provided to customers and end users.
 - Confirm that a rationale for each change is provided.

- **Section 2.5: Project Lifecycle**
 - Confirm that changes to the project's development lifecycle steps since the Gate 3 Review are described.
 - Confirm that a table is provided that summarizes the current tailored lifecycle.
 - Confirm that a rationale for each change is provided.
 - Confirm that changes to review objectives, entry criteria, and/or exit criteria since the Gate 3 Review are described. Confirm that a rationale for each change is provided.
 - Confirm that changes to review check lists since the Gate 3 Review are described.

- **Section 2.6: Technical**
 - Confirm that changes to the project requirements since the Gate 3 Review are described. These include process requirements, product requirements, environment requirements, and staffing requirements. Confirm that a rationale for each change is provided.
 - Confirm that changes to the technical constraints since the Gate 3 Review are described. Confirm that a rationale for each change is provided.
 - Confirm that changes to the major tasks since the Gate 3 Review are described. Confirm that a rationale for each change is provided.
 - Confirm that changes to the planned work products since the Gate 3 Review are described. Confirm that a rationale for each change is provided.
 - Confirm that changes to the needed resources since the Gate 3 Review are described. Confirm that a rationale for each change is provided.

- **Section 2.7: Integrated Master Plan.** The Integrated Master Plan (IMP) organizes the project lifecycle into a sequence of activities (process steps, tasks, reviews) that provide the roadmap for meeting project requirements.

- Confirm that project milestones and dates are listed in the G4D, consistent with the IMP.
- Confirm that changes to the milestones and dates since the Gate 3 Review are described. Confirm that a rationale for each change is provided.
- Confirm that changes to the IMP since the Gate 3 Review are described. This includes added tasks, deleted tasks, and changes to predecessor tasks, initiating criteria, sub-tasks, work products, accomplishment criteria, and reviews for which the task's work products will be artifacts. Confirm that a rationale for each change is provided.
- Confirm that changes to the stakeholder commitment to the IMP since the Gate 3 Review are described. Confirm that a rationale for each change is provided.
- **Section 2.8: Integrated Master Schedule**
 - Confirm that the IMP tasks and milestones have been satisfactorily mapped to a calendar-based Integrated Master Schedule (IMS).
 - Confirm that the G5D illustrates the task/milestone schedule for each of the development phases (Plan, Design, and Build).
 - Confirm that changes to the IMS since the Gate 4 Review are described. Confirm that a rationale for each change is provided.
- **Section 2.9: Budget**
 - Confirm that changes to the cost schedule since the Gate 4 Review are described. The cost schedule may change due to actual costs during the Build Phase that differed from previous estimates. Confirm that a rationale for each change is provided.
 - Confirm that changes to the funding schedule since the Gate 4 Review are described. Confirm that a rationale for each change is provided.
 - Confirm that changes to the cost margin schedule since the Gate 4 Review are described. The cost margin is the difference between the approved funding schedule and the cost schedule. Confirm that a rationale for each change is provided.
 - Confirm that the plan for earned value management is consistently and satisfactorily presented in the DPP and G5D. Earned value is the planned (i.e., budgeted) cost for the work that has been accomplished. Earned value management is the process of monitoring a project's accrual of earned value to ensure that project expenditures are producing the expected quantity and quality of work products.

- **Section 2.10: Risks**

- Confirm that the G4D lists the risks to the successful execution of the project plan, consistent with the list in the DPP.

4.2.3 Section 3 – Development Project Status

The G4D shall include a “Development Project Status” Section. Most of the content for this section should be obtained directly from PSR v2. This section should be organized as follows:

3.0 DEVELOPMENT PROJECT STATUS

- 3.1 Project Status Report
- 3.2 Stakeholder Involvement
- 3.3 Project Lifecycle Status
- 3.4 Technical Status
- 3.5 IMP Status
- 3.6 Budget Status
- 3.7 Status of Project Risks

- **Section 3.1: Project Status Report**

- The PSR is a standard artifact for the G4R. The G4D should provide a pointer to the PSR. Access to this document is part of the G4R entry criteria.
- Confirm that the G4D introduces the PSR and provides pointers to the current baseline version of the PSR, PSR Appendix, and PSR Document Guidelines (DG-5.2 and DG-5.2.A).
- If the G4R reviewer cannot obtain access to the PSR and DGs by using these pointers, and cannot otherwise obtain access to the current baseline version of these documents, the reviewer should notify an appropriate person (e.g. Review Lead, Development Lead, Program Manager, STAR Web Developer) to obtain access.

- **Section 3.2: Stakeholder Involvement**
 - The G4D should describe how the stakeholders are involved in the project, compared with their planned involvement.
 - Confirm that stakeholders are involved in the project as planned, or that the G4D and PSR Appendix capture any issues with stakeholder involvement as project risks.
 - Confirm that stakeholder agreements are sufficient to ensure commitment and involvement, or that the G4D and PSR Appendix capture any issues with stakeholder agreements as project risks.

- **Section 3.3: Project Lifecycle Status**
 - Confirm that the project has compensated for missing lifecycle steps according to plan, or that the G4D and PSR Appendix capture any issues with lifecycle implementation as project risks.
 - Confirm that project reviews have been conducted as planned, or that the G4D and PSR Appendix capture any issues with reviews as project risks.

- **Section 3.4: Technical Status**
 - Confirm that the G4D and PSR satisfactorily report the status of the identified project requirements, including process, product, environment, and staffing requirements. Confirm that requirements are being met on schedule, or that the G4D and PSR Appendix capture any issues with requirements as project risks.
 - Confirm that the G4D and PSR satisfactorily report the status of the identified work products. Confirm that work products are being produced on schedule, or that the G4D and PSR Appendix capture any issues with the work products as project risks.
 - Confirm that the G4D and PSR satisfactorily report the status of the needed resources and training. Confirm that resources and training are being provided on schedule, or that the G4D and PSR Appendix capture any issues with the resources and training as project risks.
 - Confirm that risks to the successful technical execution of the project have been identified and are being mitigated on schedule.

- **Section 3.5: IMP Status**

- Confirm that the G4D and PSR satisfactorily report the status of achieving project milestones. Confirm that milestones are being achieved on schedule, or that the G4D and PSR Appendix capture any failure to achieve milestones as project risks.
- Confirm that the G4D and PSR satisfactorily report the status of progress on the IMP major tasks. Confirm that tasks are being performed on schedule, or that the G4D and PSR Appendix capture any technical and/or schedule issues with task performance as project risks.
- Confirm that the G4D and PSR satisfactorily report the status of progress on the deliverable items. Confirm that items are being received on schedule, or that the G4D and PSR Appendix capture any technical and/or schedule issues with deliverable items as project risks.
- Confirm that significant deviations from the schedule have been identified and the status of corrective actions documented.
- Confirm that the project's schedule performance and Schedule Performance Index (SPI) are satisfactory

- **Section 3.6: Budget Status**

- Confirm that the G4D and PSR satisfactorily report the status of the cost schedule. Confirm that costs are being incurred as planned, or that the G4D and PSR Appendix capture any significant deviations as project risks.
- Confirm that the project's cost performance and Cost Performance Index (CPI) are satisfactory
- Confirm that the G4D and PSR compare the actual funding schedule to the actual cost schedule to derive the actual cost margin
- Confirm that the G4D and PSR satisfactorily report the status of the funding schedule. Confirm that funding is being provided as planned, or that the G4D and PSR Appendix capture any significant deviations as project risks.
- Confirm that the G4D and PSR satisfactorily report the status of the project's earned value. Confirm that earned value indices are within an acceptable range, or that the G4D and PSR Appendix capture any significant deviations as project risks.
- Confirm that budget risks are being mitigated on schedule

- **Section 3.7: Status of Project Risks**

- Confirm that the G4D explains the STAR EPL Risk Management system
- Confirm that the G5D explains how corrective actions to mitigate project risks will be determined, implemented, and reviewed
- Confirm that the G5D explains the circumstances under which a re-plan or a delta review will be required
- Confirm that the G4D and PSR Appendix satisfactorily summarize the status of project technical risks and risk mitigation actions. Technical risks include risks associated with stakeholder involvement, process compliance, the quality of work products, needed resources, and training. Each risk should be reported as follows:
 - Risk Statement – the description of the risk
 - Assessment – the results from analysis of the risk. The assessment should include quantitative evaluation of Severity and Likelihood of Occurrence
 - Mitigation – the plan to mitigate the risk
 - Actions to implement the mitigation plan. Each action should be reported as follows:
 - Action statement
 - Closure Criteria
 - Closure Plan
 - Status – status of the action, with respect to the closure plan
- Confirm that the G4D and PSR Appendix satisfactorily summarize the status of project schedule risks and risk mitigation actions. Schedule risks are risks that result in the project being behind schedule, independent of technical factors. Schedule risks include delays in expected deliveries from suppliers, disruptions in stakeholder involvement due to illness or contract issues, and delays in predecessor tasks due to non-technical factors. Schedule risks should be reported in the same way as technical risks.
- Confirm that the G4D and PSR Appendix satisfactorily summarize the status of project budget risks and risk mitigation actions. Budget risks are risks that impact the ability of the project to pay for the needed resources. Budget risks include disruptions in the planned funding schedule, unexpected need for additional resources, and unexpected cost of planned resources independent

of technical and schedule factors. Budget risks should be reported in the same way as technical risks and schedule risks.

- Confirm that the G4D and PSR Appendix provide a summary of project risks. Ensure that project risks are sufficiently manageable for the project to proceed to the Build phase. If this is not the case, re-planning and a delta Gate 4 Review may be needed.

4.2.4 Section 4 – Project Baseline

The G4D shall include a "Project Baseline" Section. The purpose of this section is to describe how the project baseline has been established and will be maintained throughout the development lifecycle.

This section should be organized as follows:

4.0 PROJECT BASELINE

4.1 Development Baseline

4.2 Project Baseline Report

- **Section 4.1: Development Baseline.** The project's development baseline consists of every tangible item that is produced during the development stage of the product lifecycle. Typically, these are the work products identified in the project plan.
 - Confirm that the G4D explains the concept of a development baseline.
 - Confirm that the G4D explains the concept of Baseline Builds (BB).
 - Confirm that the G4D lists the contents of BB 2.5.
 - Confirm that the G4D explains how the development baseline will be maintained.
- **Section 4.2: Project Baseline Report.** The project's baseline and change history are documented in the PBR.
 - Confirm that the G4D introduces the PBR and provides a pointer to PBR v2r5, a G4R artifact. Access to this document is part of the G4R entry criteria. If the G4R reviewer cannot obtain access to the PBR by using this pointer, and cannot otherwise obtain access to the current baseline version of the PBR, the reviewer should notify an appropriate person (e.g. Review Lead,

Development Lead, Program Manager, STAR Web Developer) to obtain access.

- Confirm that the current status of the project baseline is correctly described by the PBR.

4.2.5 Section 5 – Summary and Conclusions

The G4D shall include a “Summary and Conclusions” Section. This section is organized as follows:

5.0 SUMMARY AND CONCLUSIONS

5.1 Review Objectives Status

5.2 Next Steps

5.3 Open Discussion

- **Section 9.1: Review Objectives Status**

- Confirm that all review objectives have been addressed by the G4D. Look for notable conclusions from each G4D section to be summarized here.

- **Section 9.2: Next Steps**

- Confirm that the G4D lists the recommendations of the development team for the next steps after the G4R, including preparation for Test Readiness Review and the Code and Test Data Development step (step 9) of the STAR EPL.

- **Section 9.3: Open Discussion**

- The G4D states here that the review is open for free discussion. Note: If the development team has prepared for 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.

5. CLOSING THE REVIEW

5.1. Exit Criteria

The G4R reviewers should ensure that all G4R exit criteria have been met before closing the review. The G4R exit criteria should be documented in the DPP. Note that exit criteria may be tailored from the standard STAR EPL set of G4R exit criteria. In that case, the DPP or PSR should provide a rationale for deviations from the standard set. The standard STAR EPL set of G4R exit criteria, listed in the standard G4R check list (CL-8.2), includes the following 7 items:

- Exit # 1 – CDR status and CDRR are satisfactory
- Exit # 2 - Project plan and DPP are satisfactory.
- Exit # 3 - Project status and PSR are satisfactory.
- Exit # 4 - Project baseline and PBR are satisfactory.
- Exit # 5 - Project risks are acceptable.
- Exit # 6 - Status of risk mitigation actions is acceptable
- Exit # 7 - Project is ready for the Build phase

The interpretation of the terms “satisfactory” and “acceptable” in the exit criteria is subjective. That is, an item is “satisfactory” or “acceptable” if the reviewers find it satisfactory or acceptable to them. The reviewers are encouraged to refer to the set of relevant process assets (c.f. Section 3.4 of this PRG) to assist them in determining what their criteria for “satisfactory” and “acceptable” should be.

5.2. G4R Check List

The G4R check list is an essential item that must be completed to close the review. It contains the CLIs that must be checked off by the G4R reviewers. Checking off a CLI involves recording one of the following dispositions for each item:

- Pass – The item is approved.
- Conditional Pass – The item is approved conditionally. The condition or conditions typically involve one or more specific actions that must be closed to pass the item. Conditional Pass items are typically reconsidered at a delta G4R.

- **Defer** – The item is deferred for consideration at a later review (e.g. Project Requirements Review), often with recommended actions to be addressed prior to that review.
- **Waive** – The item has been excused for this project’s lifecycle. It is expected that a rationale for waiving an item be provided in the G4RR.
- **Not Applicable (N/A)** – The item is not applicable to this project’s lifecycle. This disposition will only occur if the item was mistakenly included in the project’s G4R check list. The distinction between this disposition and the “Waive” disposition is that “Waive” items are applicable to the project’s lifecycle, though they have been excused for some reason.

In addition, the check list includes the following Columns to be filled in for each CLI:

- **Risk** – A risk evaluation pertaining to the item (e.g. Red/Yellow/Green/Blue or High/Medium/Low/None). An item with a risk evaluation of Medium or worse should generate at least one action. Low risk items may also generate actions, at the discretion of the reviewers.
- **Actions (Y/N)** – Note (Yes or No) whether there are open actions pertaining to this item.
- **Comments** – Include any explanatory comments (e.g. rationales for the designation of the item, rationales for the risk evaluation, description of open actions, identification of the review that should address the actions).

The G4R reviewers can use the standard check list provided in the G4R Check List spreadsheet (STAR EPL process asset CL-8.2) to record their disposition of the CLIs, if the check list for this project’s G4R has not been modified. If there has been a modification, the G4R reviewers should use a modified spreadsheet that includes the G4R CLIs that have been agreed to. The G4R CLIs that have been approved for a specific project should be included in the DPP.

Typically, each member of the review team is assigned a subset of the check list to check off, and some items may be assigned to more than one review team member. The Review Lead is responsible for collecting the finished check lists from each review team member, resolving conflicts between team members, and producing a unified check list with all items checked off. The G4RR (c.f. Section 5.3 of this PRG) typically includes a copy of this unified G4R check list.

5.3. G4R Report

The G4RR is the one project artifact that is the responsibility of the G4R review team. Responsibilities for writing parts of the G4RR should be assigned to review team members by the Review Lead. These should be agreed upon well in advance of the review, during review preparation meetings.

Standards and guidelines for the G4RR can be found in STAR EPL process asset DG-8.5 (Gate 4 Review Report Guidelines). The G4R review team should follow the standards and guidelines in DG-8.5, unless there are tailored standards and guidelines specific to this project. In that case, the DPP should either note the tailored standards and guidelines or should provide a reference to a document where these are noted.

The G4RR should be updated to record the closing of “Conditional Pass” and “Defer” items after the G4R. G4RR updates should include a change history. Details can be found in DG-8.5.

END OF DOCUMENT