

**NOAA NESDIS
CENTER for SATELLITE APPLICATIONS
and RESEARCH (STAR)**

TASK GUIDELINE

**TG-5
PROJECT PLAN (STEP 5)
TASK GUIDELINES**

Version 3.0

NOAA NESDIS STAR

TASK GUIDELINE TG-5

Version: 3.0

Date: October 1, 2009

TITLE: Project Plan (Step 5) Task Guideline

Page 2 of 2

TITLE: TG-5: PROJECT PLAN (STEP 5) TASK GUIDELINE VERSION 3.0

AUTHORS:

Ken Jensen (Raytheon Information Solutions)

VERSION HISTORY SUMMARY

Version	Description	Revised Sections	Date
1.0	No version 1		
2.0	No version 2		
3.0	New Task Guideline adapted from CMMI guidelines by Ken Jensen (Raytheon Information Solutions)	New Document	10/01/2009

TABLE OF CONTENTS

	<u>Page</u>
LIST OF FIGURES.....	5
LIST OF TABLES.....	5
LIST OF ACRONYMS.....	6
1. INTRODUCTION	8
1.1. Objective.....	8
1.2. Version History	9
1.3. Overview.....	9
2. REFERENCE DOCUMENTS.....	10
2.1. Process Guidelines.....	10
2.2. Stakeholder Guidelines.....	11
2.3. Task Guidelines.....	11
2.4. Peer Review Guidelines	12
2.5. Review Check Lists	12
2.6. Document Guidelines	12
3. STAKEHOLDERS.....	13
4. GATE 3 REVIEW	16
5. PROJECT ARTIFACTS	18
6. TASK DESCRIPTION	20
6.1 Project Plan Process Flow.....	20
6.2	Expected
BEGIN State	21
6.2.1 Task Inputs	22
6.2.2 Corrective Actions.....	22
6.3 Desired END State	22

NOAA NESDIS STAR

TASK GUIDELINE TG-5

Version: 3.0

Date: October 1, 2009

TITLE: Project Plan (Step 5) Task Guideline

Page 4 of 4

6.3.1	Task Outputs	23
6.4	Project Plan Activities	23
6.4.1	Produce Project Plan	24
6.4.1.1	Project Description	25
6.4.1.2	Process Definition	25
6.4.1.3	Task Description	27
6.4.1.4	Budget Description	28
6.4.1.5	Task Resources	29
6.4.2	Document Project Status	29
6.4.2.1	Stakeholder Involvement.....	30
6.4.2.2	Task Progress	30
6.4.2.3	Schedule	30
6.4.2.4	Budget.....	30
6.4.2.5	Risks	31
6.4.2.6	Task Resources	31
6.4.3	Prepare Gate 3 Review.....	31
6.4.4	Conduct Gate 3 Review	32

LIST OF FIGURES

	<u>Page</u>
Figure 6.1 – Step 5 Process Flow	20
Figure 6.2 – “Produce Project Plan” Process Flow.....	24

LIST OF TABLES

	<u>Page</u>
Table 2.2.1 – Stakeholder Guidelines for Step 5.....	11
Table 2.6.1 – Document Guidelines for Step 5.....	12
Table 5.1 – Step 5 Artifacts	18

LIST OF ACRONYMS

ATBD	Algorithm Theoretical Basis Document
BB	Baseline Build
CI	Cooperative Institute
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
CoRP	Cooperative Research Program
CM	Configuration Management
CMMI	Capability Maturity Model Integration
CREST	Cooperative Remote Sensing and Technology Center
DG	Document Guidelines
DM	Data Management
DPP	Development Project Plan
DPR	Development Project Report
EPG	Enterprise Process Group
EPL	Enterprise Product Lifecycle
IPT	Integrated Product Team
NESDIS	National Environmental Satellite, Data, and Information Service
NOAA	National Oceanic and Atmospheric Administration
PAR	Process Asset Repository
PBR	Project Baseline Report
PG	Process Guidelines
PRG	Peer Review Guidelines
PSR	Project Status Report
QA	Quality Assurance

NOAA NESDIS STAR

TASK GUIDELINE TG-5

Version: 3.0

Date: October 1, 2009

TITLE: Project Plan (Step 5) Task Guideline

Page 7 of 7

R&D	Research and Development
PP	Project Proposal
SG	Stakeholder Guideline
SPSRB	Satellite Products and Services Review Board
STAR	Center for Satellite Applications and Research
SWA	Software Architecture Document
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 (CICS¹, CIMSS², CIOSS³, CIRA⁴, CREST⁵) distributed throughout the US, multiple support contractors, and NESDIS Operations.

NESDIS/STAR is implementing an increased level of process maturity to support the development of these software systems from research to operations. This document is a Task Guideline (TG) for users of this process, which has been designated as the STAR Enterprise Product Lifecycle (EPL).

1.1. Objective

The STAR EPL is designed as a sequence of 11 process steps that take a product from initial conception through delivery to operations. These steps are:

- Step 1 - Basic Research (TG-1)
- Step 2 - Focused R & D (TG-2)
- Step 3 - Project Proposal (TG-3)
- Step 4 - Resource Identification (TG-4)
- **Step 5 - Project Plan (TG-5)**
- Step 6 - Project Requirements (TG-6)
- Step 7 - Preliminary Design (TG-7)
- Step 8 - Detailed Design (TG-8)

¹ Cooperative Institute for Climate Studies

² Cooperative Institute for Meteorological Satellite Studies

³ Cooperative Institute for Oceanographic Satellite Studies

⁴ Cooperative Institute for Research in the Atmosphere

⁵ Cooperative Remote Sensing and Technology Center

-
- Step 9 - Code & Test Data Development (TG-9)
 - Step 10 - Code Test And Refinement (TG-10)
 - Step 11 - System Integration and Test (TG-11)

The objective of this Task Guideline (TG-5) is to describe how to perform the standard tasks of STAR EPL process step 5, "Project Plan".

The intended users of this TG are all participants in the STAR EPL process who are involved in performing the standard tasks of step 5. Participants are referred to as STAR EPL stakeholders.

To determine whether or not they should be involved with this step, the readers of this TG should first determine what stakeholder roles apply to their participation in a STAR research-to-operations development project. Generic stakeholder roles are listed in Section 3 of this TG and discussed in Section 3.2 of the EPL Process Guideline (PG-1)⁶. PG-1 and this TG will direct stakeholders to Stakeholder Guidelines (SG) that are pertinent to their roles.

1.2. Version History

This is the first version of TG-5. It is identified as version 3.0 to align it with the release of the version 3.0 STAR EPL process assets.

1.3. Overview

This TG contains the following sections:

- Section 1.0 - Introduction
- Section 2.0 - References
- Section 3.0 - Stakeholders
- Section 4.0 - Gate 3 Review
- Section 5.0 - Project Artifacts
- Section 6.0 - Task Descriptions

⁶ It is recommended that potential STAR EPL stakeholders either review PG-1 prior to using this TG or use it as a reference while using this TG.

2. REFERENCE DOCUMENTS

All of the reference documents for the STAR EPL process are STAR EPL process assets that are accessible in a Process Asset Repository (PAR) on the STAR website.

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

Process assets include:

- Process Guidelines
- Stakeholder Guidelines
- Task Guidelines
- Peer Review Guidelines
- Review Check Lists
- Document Guidelines
- Training Documents

2.1. Process Guidelines

Process Guideline (PG) documents describe STAR's standard set of practices and guidelines for tailoring them to specific projects.

- STAR EPL Process Guidelines (PG-1)
- STAR EPL Process Guidelines Appendix (PG-1.A)
- STAR EPL Tailoring Guidelines (PG-2)

PG-1 and PG-1.A apply generally to each EPL step. Each stakeholder performing tasks during each step can benefit from a familiarity with these documents.

PG-2 is primarily useful for project planners and project plan reviewers during steps 4 and 5. It is also useful during steps 6-11 for project plan revision tasks.

2.2. Stakeholder Guidelines

A Stakeholder Guideline (SG) is a description of how to perform all STAR EPL standard tasks assigned to a given type of stakeholder. It should itemize the actions to be taken. It should contain appropriate standards, conventions, and (where appropriate) examples. It should point to the appropriate references and the required artifacts.

Stakeholder roles are identified in Section 3 of this TG. For each type of stakeholder, the appropriate SG provides that stakeholder with a complete description of the standard tasks for that stakeholder role, along with references to all appropriate process assets and project artifacts (c.f. Section 5 of this TG). This functions as a complement to the TGs (c.f. Section 2.3 of this TG), which provide a completion description of all stakeholder tasks for a specific process step.

Table 2.2.1 lists the Stakeholder Guidelines that are relevant to this step.

TABLE 2.2.1 – Stakeholder Guidelines for Step 5

ID	Stakeholder
SG-4	STAR CM/DM
SG-5	STAR Web Developers
SG-6	STAR Quality Assurance
SG-7	STAR Managers
SG-13	Development Leads
SG-14	Development Scientists
SG-15	Development Testers
SG-16	Development Programmers

2.3. Task Guidelines

A Task Guideline (TG) is a description of how to perform the tasks of a STAR EPL process step. It should itemize the actions to be taken. It should contain appropriate standards, conventions, and (where appropriate) examples. It should point to the appropriate references and the required artifacts. There is one Task Guideline for each step in the STAR EPL. The relevant TG for this step is TG-5 (this document).

2.4. Peer Review Guidelines

For each review (c.f. Section 4), there is a Peer Review Guideline (PRG) that describes the objectives of the review, the required artifacts, standards for reviewers, requirements for approval, and options other than approval. For step 5, the relevant PRGs include:

- Gate 3 Review Guidelines (PRG-5)

2.5. Review Check Lists

For each review (c.f. Section 4), there is a Review Check List (CL) that captures all the objectives for a review as a set of check list items. Each item in the check list should have a "Disposition" column that contains "Pass", "Conditional Pass", "Defer", "Waive", or "N/A" (Not Applicable). Each item will also have columns for Risk Assessment and for Actions generated. For step 5, the relevant CLs include:

- Gate 3 Review Check List (CL-5)

2.6. Document Guidelines

There is a Document Guideline (DG) for each standard STAR EPL document. Each DG includes a description of the purpose for the document, a standard document outline (table of contents), a brief description of each subsection in the outline, and an Appendix containing an example document.

Table 2.6.1 lists the Document Guidelines that are relevant to this step.

TABLE 2.6.1 – Document Guidelines for Step 5

ID	Document
DG-5.1	Development Project Plan (DPP)
DG-5.2	Project Status Report (PSR)
DG-5.2.A	PSR Appendix
DG-5.3	Gate 3 Document (G3D)
DG-5.3.A	G3D Appendix
DG-5.4	Project Baseline Report (PBR)
DG-5.5	Gate 3 Review Report (G3RR)

3. STAKEHOLDERS

The STAR Enterprise is comprised of a large number of organizations that participate and cooperate in the development and production of environmental satellite data products and services. Individual project teams are customarily composed of personnel from these organizations, supplemented by contractor personnel. These organizations and project teams are referred to as the STAR Enterprise stakeholders.

An overview of the stakeholder roles is provided in the STAR EPL Process Guidelines (PG-1, c.f. Section 2). A more detailed description can be found in the Stakeholder Guidelines (SGs, c.f. Section 2).

Stakeholders who have a role during step 5 include:

- STAR CM/DM (SG-4)
- STAR Web Developer (SG-5)
- STAR QA (SG-6)
- STAR Manager (SG-7)
- Development Lead (SG-13)
- Development Scientist (SG-14)
- Development Tester (SG-15)
- Development Programmer (SG-16)

STAR CM/DM is the Configuration Management (CM) and Data Management (DM) group for the STAR organization. CM/DM is responsible for establishing and maintaining project baselines for code, test data, documentation, and reports. CM/DM works with each Development Lead to ensure that project artifacts are maintained in accordance with STAR standards. CM/DM works with Operations CM/DM on the transition of the project baseline from pre-operational development to operations.

STAR Web Developer is responsible for maintenance of the STAR web pages. The Web Developer works with STAR CM/DM to ensure that all project baseline items are posted to the appropriate project artifact repository in a timely fashion. The Web Developer works with the STAR EPG and STAR CM/DM to ensure that all STAR EPL process assets are posted to the PAR, and to ensure that all process measures are posted to the STAR Measurement Repository.

NOAA NESDIS STAR

TASK GUIDELINE TG-5

Version: 3.0

Date: October 1, 2009

TITLE: Project Plan (Step 5) Task Guideline

Page 14 of 14

STAR QA is the quality assurance (QA) group for the STAR organization. QA is responsible for ensuring that each project's tailored process meets STAR EPL process standards and ensuring that each project meets its process requirements during its pre-operational development phases. QA works with the STAR EPG to ensure effective implementation of the process throughout the organization.

STAR Management includes the STAR Division Chiefs and Branch Chiefs. Management is responsible for management oversight of all STAR projects.

Development Lead is nominally a STAR scientist who leads a project's development efforts after a Project Proposal (PP) has been approved. The Development Lead is typically identified in the PP and is often the same person who was the Research Lead. The Development Lead works with STAR Management to tailor the STAR EPL process to the project and leads the project's development efforts during the Design and Build phases as the lead of the Integrated Product Team (IPT).

Development Scientist is nominally a STAR scientist who has been assigned by the Development Lead to one or more of the tasks of reviewing the technical content of project proposals, maturing a research algorithm into an operational algorithm, developing project requirements, supporting product design, coding and testing, and providing product validation and science maintenance.

Development Tester is any person located at a research organization who has been assigned by the Development Lead to one or more of the tasks of identifying pre-operational test data, acquiring and integrating the test data into the pre-operational product processing system, creating pre-operational unit and system test plans, executing unit and system tests, and analyzing and reporting test results for review.

Development Programmer is a programmer who has been assigned by the Development Lead to one or more of the tasks of preliminary design and detailed design of pre-operational code, writing pre-operational code, integrating code into a pre-operational system, and supporting Development Testers in testing pre-operational code.

Stakeholder satisfaction is a critical component of the process. The intention is for the process to be more of a benefit than a burden to stakeholders. If stakeholders are not satisfied that this is the case, the process will require improvement.

NOAA NESDIS STAR

TASK GUIDELINE TG-5

Version: 3.0

Date: October 1, 2009

TITLE: Project Plan (Step 5) Task Guideline

Page 15 of 15

Stakeholders are strongly encouraged to provide feedback to the EPG. Comments and suggestions for improvement of the process architecture, assets, artifacts and tools are always welcome. Stakeholders can provide feedback by contacting:

Ken.Jensen@noaa.gov

4. GATE 3 REVIEW

Gate 3 is a STAR review of the project's readiness for development. Its purpose is to determine whether the development plan is feasible, the identified resources are available, and the identified risks are manageable. If a project passes Gate 3, the project proceeds to the Design phase.

Standard Gate 3 Review objectives:

- Identify relevant stakeholders and their planned involvement according to the project plan.
- Review the planned work tasks and Work Breakdown Structure (WBS)
- Review the planned project lifecycle
- Review the planned review objectives, entry criteria, exit criteria, and check lists
- Review the planned work products and project artifacts
- Review the Integrated Master Plan (IMP) and Integrated Master Schedule (IMS)
- Review the expected costs and funding
- Provide an initial assessment of project risks

Standard Gate 3 Review entry criteria:

- Entry # 1 - A Development Project Plan (DPP) has been written. The Gate 3 reviewers have access to the current baseline version of the DPP.
- Entry # 2 - A Project Status Report (PSR) has been written. The Gate 3 reviewers have access to the current baseline version of the PSR.
- Entry # 3 - A Gate 3 Document (G3D) has been written. The Gate 3 reviewers have access to the current baseline version of the G3D.
- Entry # 4 - A Project Baseline Report (PBR) has been written. The Gate 3 reviewers have access to the current baseline version of the PBR.

Standard Gate 3 Review exit criteria:

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

Refer to PRG-5 for a more detailed description of the Gate 3 Review. The standard Gate 3 Review Check List Items (CLI) are documented in the process asset CL-5 (c.f. Section 2).

Gate 3 Review objectives, entry criteria, exit criteria, and check list may be tailored. Tailoring guidelines are provided in the process asset PG-2 (c.f. Section 2). Refer to the Development Project Plan (DPP) Section 5 to determine whether there has been any project-specific tailoring for the Gate 3 Review.

5. PROJECT ARTIFACTS

Project Artifacts are a set of items that must be produced by the appropriate stakeholders during the product life cycle to support the reviews. They are established and maintained under CM by an Enterprise Process Group (EPG) under the direction of a Steering Committee.

The project artifacts are maintained in a project artifact repository. This is a complete set of configuration-managed artifacts developed by each project in accordance with STAR standards. When a project artifact has been approved at a Technical Review or Gate Review, it is placed in the project artifact repository under CM.

Project artifacts that are recommended for development during step 5 are listed in Table 5.1.

TABLE 5.1 – Step 5 Artifacts

Artifact	Type	Review	Baseline Build
Development Project Plan v1.0	Document	Gate 3	1.0
Project Status Report v1.0	Report	Gate 3	1.0
Project Status Report Appendix v1.0	Report	Gate 3	1.0
Gate 3 Document	Presentation	Gate 3	1.0
Project Baseline Report v1.0	Report	Gate 3	1.0
Gate 3 Review Report	Report	Gate 4	1.1
Project Baseline Report v1.1	Report	None	1.1

Development Project Plan v1.0: The Development Project Plan (DPP) 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. Refer to DG-5.1 for detailed DPP guidelines.

Project Status Report v1.0: The Project Status Report (PSR) is used to manage and control the execution of the project. It complements the DPP by noting the current status of the project tasks, work products, cost, and schedule. Refer to DG-5.2 for detailed PSR guidelines.

NOAA NESDIS STAR

TASK GUIDELINE TG-5

Version: 3.0

Date: October 1, 2009

TITLE: Project Plan (Step 5) Task Guideline

Page 19 of 19

Project Status Report Appendix v1.0: The PSR Appendix is a Microsoft Excel workbook that provides the current status of project risks and risk mitigation actions. Refer to DG-5.2.A for detailed PSR Appendix guidelines.

Gate 3 Document: The Gate 3 Document (G3D) consists of the presentation slides for the Gate 3 Review. Refer to DG-5.3 and DG-5.3.A for detailed G3D guidelines.

Project Baseline Report v1.0: The Project Baseline Report (PBR) is the document that describes the status of the configuration items that comprise the project baseline. Refer to DG-5.4 for detailed PBR guidelines.

Note that these artifacts are typically included in the first STAR Baseline Build (BB 1.0). BB 1.0 provides the artifacts for the STAR/SPSRB Gate 3 Review. **STAR CM/DM** executes BB 1.0, in consultation with the developers of the BB 1.0 artifacts.

Gate 3 Review Report: The Gate 3 Review Report (G3RR) summarizes the Gate 3 Reviewers' assessment of the project plan and project status, including identified risks, risk mitigation actions, and status of readiness to proceed to the Design phase. Refer to DG-5.5 for detailed G3RR guidelines.

Project Baseline Report v1.1: When the G3RR is completed, it is added to the baseline for BB 1.1. The PBR is updated to v 1.1 to include the addition of the G3RR as well as any Gate 3 Review artifacts that are revised as the result of Gate 3 Review actions.

6. TASK DESCRIPTION

6.1 Project Plan Process Flow

Figure 6.1 shows the process flow for step 5.

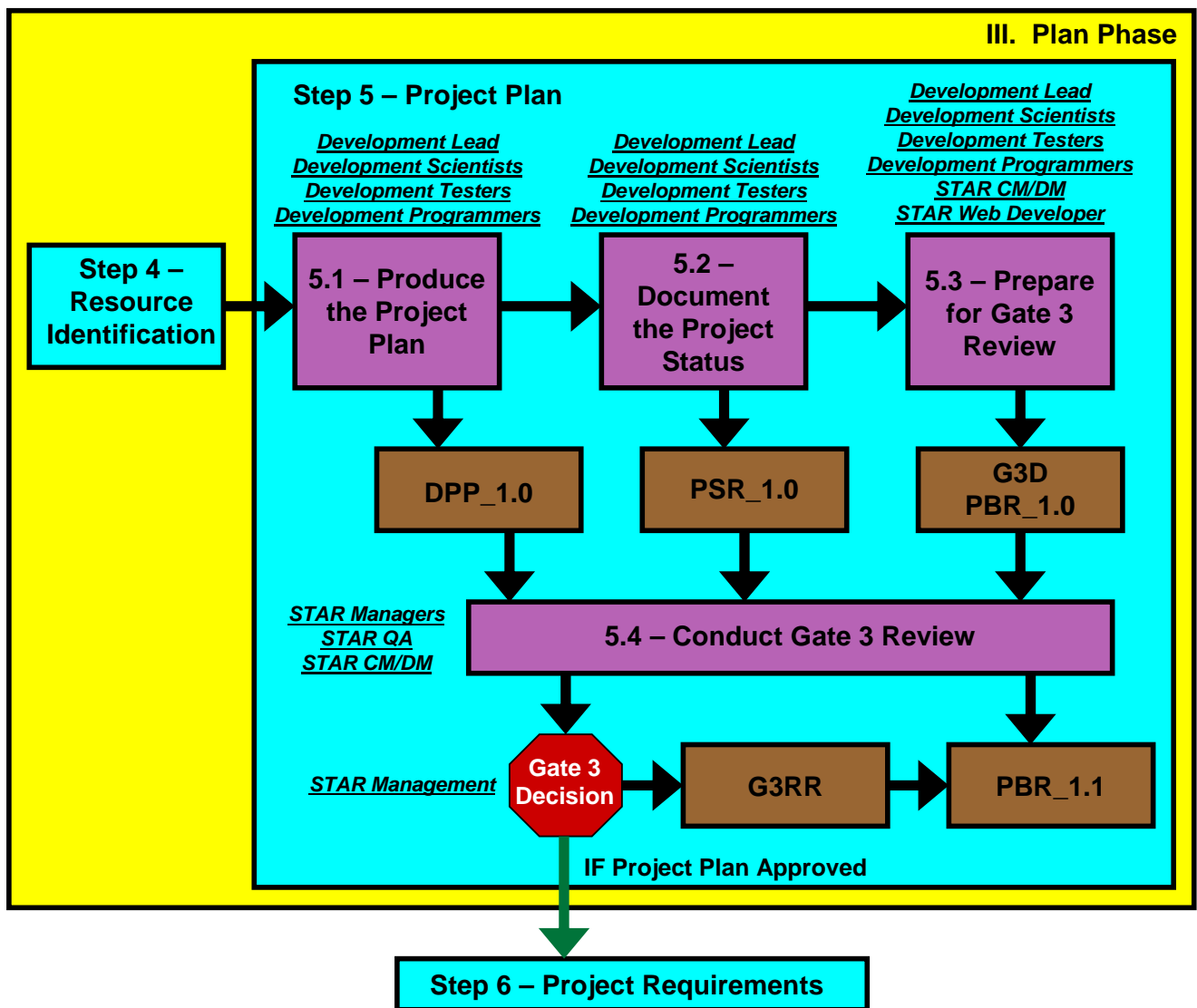


Figure 6.1 – Step 5 Process Flow

6.2 Expected BEGIN State

- REQUIRED: A project proposal (PP) that includes a User Request has been reviewed at a Gate 2 Review
- REQUIRED: The project has been approved for development by SPSRB and STAR.
- REQUIRED: A STAR Division and Branch has been selected to implement Development, and a Development Lead has been identified.
- REQUIRED: Required and available resources (hardware, software, personnel, and training) have been identified.
- REQUIRED: An SPSRB Project Plan that identifies these resources has been written.
- EXPECTED: The research algorithm has been matured and documented in Algorithm Theoretical Basis Document (ATBD) v1r1.
- EXPECTED: A software architecture has been matured and documented in Software Architecture Document (SWA) v1r1.
- EXPECTED: Research and Development (R&D) code has been written.
- EXPECTED: R&D code has been run with research test data to produce proxy data products.
- EXPECTED: R&D code test results are documented in ATBD v1r1.

The **Development Lead** should confirm that the REQUIRED items of the expected BEGIN state are in place at the commencement of step 5. If there are deficiencies, actions must be taken to correct this.

The **Development Lead** should determine whether there are any missing EXPECTED items. If so, risk should be assessed and actions assigned as deemed necessary to correct this. Corrective actions on the EXPECTED items are at the discretion of the **Development Lead**, and may be performed during step 5 or later, but the **Development Lead** should consider that the Gate 3 Review of project status may determine that missing EXPECTED items must be produced prior to Gate 3 Review approval.

6.2.1 Task Inputs

- Algorithm Theoretical Basis Document v1.1
- Software Architecture Document v1.1
- R&D Code
- R&D Test Data
- Project Proposal
- Gate 2 Review Report
- SPSRB Project Plan

6.2.2 Corrective Actions

The G2RR will document any actions that are needed to reduce risk during step 5. Usually, these actions should be closed before the Gate 3 Review.

Additional corrective actions are typically generated during step 5, to mitigate project risks that are identified during DPP development. Project risks and risk mitigation actions should be identified in the PSR Appendix. At this step in the product lifecycle, the needed corrective actions should be manageable within the project plan.

6.3 Desired END State

- Project objectives and concept of operations have been derived from user/customer needs and expectations
- Project stakeholders have been identified
- The project's process has been defined, by tailoring the STAR EPL set of standard processes. The defined process includes the project lifecycle steps, project reviews, review artifacts, work products, and Baseline Builds (BB).
- The planned work has been organized into an Integrated Master Plan (IMP) and Integrated Master Schedule (IMS).
- Expected project costs and cost schedule have been identified
- Project risks have been identified and assessed

- Risk mitigation actions have been identified
- The initial version of the DPP has been written
- Project status has been documented in the initial version of the PSR
- Risks and actions have been documented in an Appendix to the PSR
- A Gate 3 Review of the project plan and project status has been conducted
- A Gate 3 Review Report (G3RR) has been written, approving the project for the Design phase.
- Baseline Build 1.1 has placed the required items in the project artifact repository
- PBR_1.1 documents the status of the BB 1.1 project baseline

6.3.1 Task Outputs

Task outputs consist of the following BB 1.1 items:

- Development Project Plan (DPP_1.0)
- Project Status Report (PSR_1.0)
- Project Risks and Actions (PSR_1.0 Appendix)
- Gate 3 Document (G3D)
- Gate 3 Review Report (G3RR)
- Project Baseline Report (PBR_1.1)

6.4 Project Plan Activities

Step 5 activities include:

- 1) Produce the project plan
- 2) Document the project status
- 3) Prepare for Gate 3 Review
- 4) Conduct Gate 3 Review

6.4.1 Produce Project Plan

The **Development Lead** oversees the preparation of a DPP. The DPP is a required artifact for the Gate 3 Review. **Development Scientists, Development Testers, Development Programmers,** and **STAR QA** assist the **Development Lead** in the DPP preparation. The process flow for producing the project plan is shown in Figure 6.2.

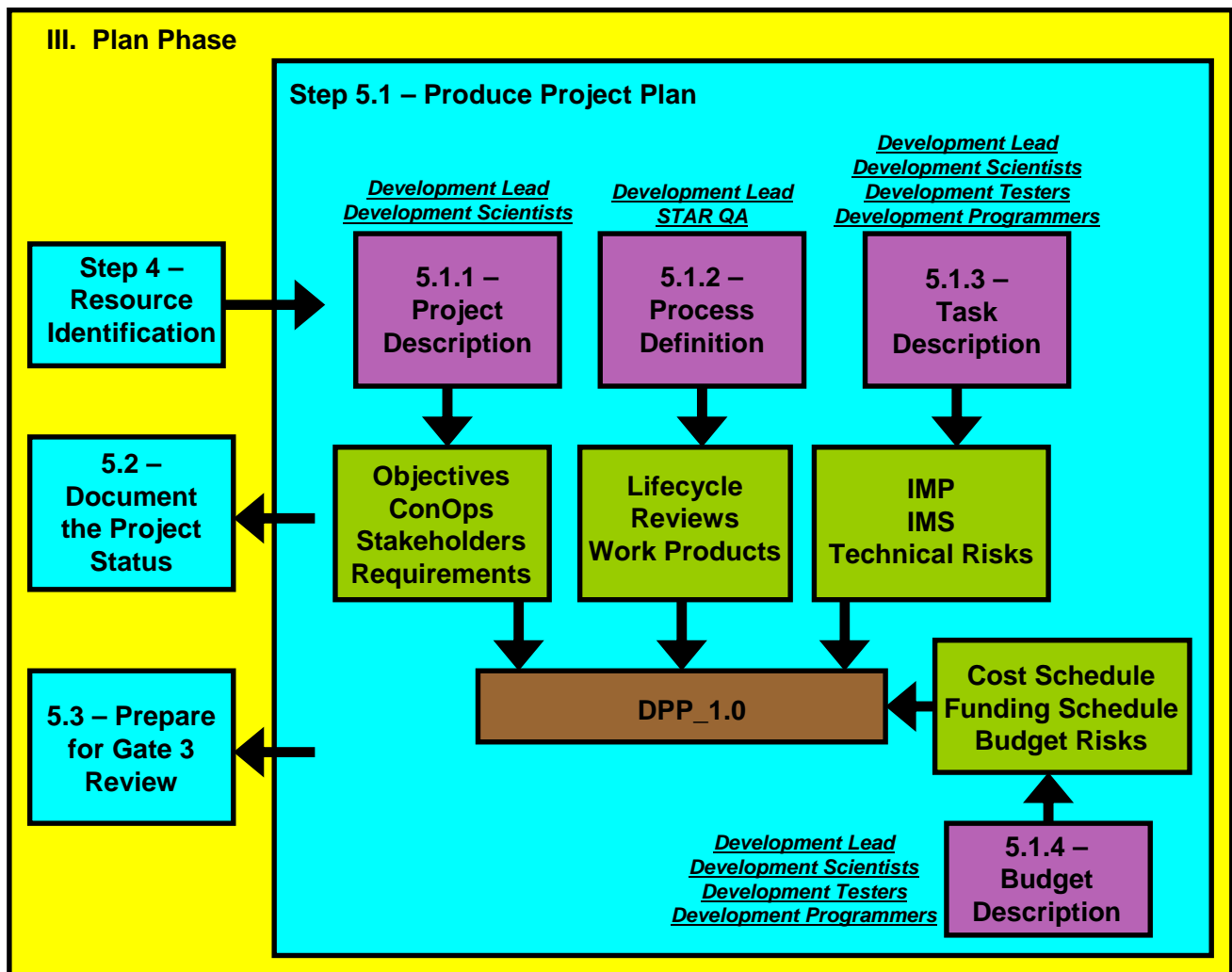


Figure 6.2 – “Produce Project Plan” Process Flow

Step 5.1 activities include:

- 1) Project description
- 2) Process definition
- 3) Task description
- 4) Budget description

6.4.1.1 Project Description

The **Development Lead** provides the project description, with assistance from **Development Scientists**.

The project description should include project objectives, derived from user needs and expectations. The SPSRB Project Plan and the PP should contain this information.

Provide an initial description of the customer/user's concept of operations (ConOps) from which requirements will be derived. If a customer ConOps document exists, use it as a reference. Review the ATBD, which may contain this information. Consult with the Research phase stakeholders and with PUSH users to ensure that ConOps information is adequately captured in the DPP.

Identify project stakeholders. For each stakeholder, note the rationale for their involvement, their roles and their responsibilities. Consult with the stakeholders throughout step 5 to ensure that they understand their planned involvement in the development phases. Secure stakeholder commitment to the plan.

Provide an initial description of project requirements. At this step of the lifecycle, requirements are primarily basic product requirements. These should be derived from customer/user documents (User Request, ConOps). The PP and the SPSRB Project Plan should have captured these. Consult with the customers and users to ensure that basic product requirements are adequately captured in the DPP.

6.4.1.2 Process Definition

The **Development Lead** provides the process definition, with assistance from **STAR QA**.

The project's process is defined by tailoring the STAR EPL set of standard processes.

The defined process begins with the project lifecycle steps. The standard process includes 11 steps that take a product from initial conception through delivery to operations (c.f. Section 1). Steps 1-4 should have already occurred. The **Development Lead** should examine the project status at the commencement of step 5 to determine whether the step 5 BEGIN state (c.f. Section 6.2) is acceptable, and assign corrective actions as needed to backfill the steps 1-4 practices.

The standard project reviews for steps 5-11 are an important component of the defined process. The standard process defines review objectives, entry criteria, exit criteria, and CLI. These are documented in the process assets (PRGs and CLs). **Development Lead** should consult with **STAR QA** to determine if the reviews should be tailored. Possible tailoring includes:

- Combining reviews. This can save time and money, for projects under tight budget and/or schedule constraints. This introduces risk, as each review is designed so that the accomplishment of the review objectives helps to lower risk factors for the next review. The balance of cost/schedule savings with risks is something that depends on the unique characteristics of each project. Refer to the process tailoring guidelines (PG-2) for help in achieving this balance.
- Modifying review objectives. This will occur if reviews are combined, as the combined review must meet combined objectives. This is a relatively benign modification. Greater care should be taken when considering the deletion of review objectives. Risk must be carefully assessed and a rationale for incurring such a risk must be clear and convincing.
- Waiving review artifacts. This can also save time and money, but will also introduce risk. The balance of cost/schedule savings with risks is something that depends on the unique characteristics of each project. Refer to the process tailoring guidelines (PG-2) for help in achieving this balance.
- Revising entry criteria, exit criteria, and CLIs. These are customarily revised to accommodate the tailoring of review objectives and review artifacts. It is important to ensure that the tailored review objectives will be met if these revisions are made.

Development Lead should consult with **STAR QA** to determine if the standard set of work products should be tailored. The set of work products is closely related to the tailored set of review artifacts. If there are waived artifacts, the work products that contribute to or constitute the artifacts may also be waived. Consider the risk of waiving the work products

at the same time that the risk of waiving review artifacts is considered. Customarily, the standard set of work products is tailored by reduction, but there may be cases where work products that are not included in the standard set are selected for the project. Work products may be added either to respond directly to customer-derived basic requirements or to reduce risk. **Development Lead** should be alert to this possibility.

The standard process includes 16 Baseline Builds (BB) during steps 5-11. The contents of each build may be tailored to accommodate the tailored set of review artifacts and work products.

6.4.1.3 Task Description

The **Development Lead** provides the description of the tasks that have been identified to accomplish the defined process, with assistance from **Development Scientists**, **Development Testers**, and **Development Programmers**.

The task description begins with the listing of tasks that are identifiable from the point of view of customers and end users. High-level tasks from the user's point of view are typically oriented to creation, delivery and maintenance of products. They can also include validation of products. These should be obtainable from the PP and from customer requirements documents. These tasks are called the "work tasks", as they are typically the kind of tasks that are stated in a Statement of Work (SOW).

The work tasks should be translated into "major tasks". These are the highest-level tasks that will be included in the Integrated Master Plan (IMP) and entered into a Microsoft Project file. Examples of high level tasks: "Develop requirements", "Develop interfaces", "Develop software units".

Once the major tasks have been identified, they can be organized into the IMP. The IMP provides a detailed roadmap for meeting project requirements. For each major task:

- Identify the project objective, project requirement and/or SOW item that is satisfied, completely or partially, by the accomplishment of the task.
- Identify the stakeholders that are affected by the activity and those who have expertise that is needed to conduct the activity
- Identify predecessor tasks and successor tasks.
- Identify the criteria for initiating the task. Typically, this will consist of satisfying the accomplishment criteria for predecessor tasks.

- Identify subtasks, to the extent possible.
- Identify the task's work products
- Identify the criteria for task accomplishment
- Identify the review or reviews at which the task's accomplishment's will be verified

Create an Integrated Master Schedule (IMS) by mapping the IMP to a calendar-based schedule, based on the estimate of effort and available resources for each task and its sub-tasks. The IMS is used to track day-to-day progress and includes the continual assessment of the technical parameters required to support each IMP task/event.

The IMS should be in a separate file that is an Appendix to the DPP. It is very useful to translate the IMS into a resource-loaded schedule in a Microsoft Project file. This file should include all of the major tasks, subtasks and milestones that were identified in the IMP, with their identified linkages. An alternative to a Project file is a Microsoft Excel file that puts each task in a row on a spreadsheet and includes associated data (predecessor tasks, successor tasks, assigned stakeholders, start data, end date) in distinct columns. An Excel file can be more accessible, but lacks the project control features of a Project file.

Identify potential risks to the successful technical implementation of the tasks. For each identified risk, provide a plan for managing the risk. A detailed assessment of risks and risk mitigation actions will be provided in the Project Status Report (PSR) Appendix (c.f. Section 6.4.2).

6.4.1.4 Budget Description

The **Development Lead** provides the budget description, with assistance from **Development Scientists, Development Testers, and Development Programmers**.

The budget description includes the estimate of the costs that will be incurred during the implementation of the IMP, the cost schedule that is expected to correspond to the IMS, and the funding schedule that has been established or is expected. The costs are estimated by use of historical models and/or projections of the effort. In either case, the description of the tasks and the attributes of the defined work products are used as data to make the cost estimates. The cost schedule is determined by mapping the costs of the tasks and work products to the scheduled implementation of these tasks and work products. Refer to DG-5.1 for suggestions and guidelines.

The budget description also includes the expected schedule of funding. Identify the funding sources and the mechanisms for delivering the required funding in a timely manner. This information should be available from the SPSRB Project Plan. Ensure that all funding agreements between stakeholders are understood and documented. Compare the available funding schedule to the cost schedule. Identify the difference between the two. This difference (available funding minus the cost) is the “real cost margin”. Negative cost margins should be identified as a cost risk.

6.4.1.5 Task Resources

The DPP Document Guidelines (DG-5.1) are strongly recommended to the DPP writers. DG-5.1 provides the standard DPP Table of Contents and guidelines for each standard DPP section.

In addition to DG-5.1, the STAR PAR should include examples of DPPs from other projects. These will be very helpful to DPP writers who have not previously written a DPP.

DPP writers should also use the SPSRB Project Plan and the SPSRB User Request as resources for the DPP. These artifacts typically include information that can be adopted for the DPP.

6.4.2 Document Project Status

The **Development Lead** oversees the preparation of a PSR in accordance with PSR guidelines DG-5.2 and DG-5.2.A. The PSR is a required artifact for the Gate 3 Review. **Development Scientists, Development Testers, and Development Programmers** assist the **Development Lead** in the PSR preparation.

Project status includes:

- 1) Stakeholder Involvement
- 2) Task Progress
- 3) Schedule
- 4) Budget
- 5) Risks

6.4.2.1 Stakeholder Involvement

The planned involvement of the stakeholders should be documented in the DPP. The PSR should report the status of stakeholder involvement with respect to the plan. The **Development Lead** should communicate with each stakeholder who has a role in the current phase of the project to ensure that the stakeholders are involved as planned. **Development Lead** Identify instances of non-involvement, assess the impact of the non-involvement, and determine corrective actions.

6.4.2.2 Task Progress

The PSR should report the status of task progress for each task that is documented in the DPP. The **Development Lead** should request task status from the **Development Scientists, Development Testers, and Development Programmers** on a regular basis. If task progress is falling behind schedule, determine what factors are responsible (e.g., unexpected technical difficulty, delays in predecessor tasks, non-involvement of stakeholders, training gaps). **Development Lead** should record updated task status in the Microsoft Project file and/or Microsoft Excel IMS file.

6.4.2.3 Schedule

The PSR should report the status of task progress with respect to the task schedule that is documented in the DPP. The **Development Lead** should record updated task progress against the task schedule in the Microsoft Project file and/or Microsoft Excel IMS file. If an EVMS is being used, determine the Schedule Performance Index (SPI). The **Development Lead** should ensure that any significant schedule delays are captured as schedule risks.

6.4.2.4 Budget

The PSR should report the status of cost expenditures with respect to the cost schedule that is documented in the DPP. The **Development Lead** should request cost expenditure data from program managers on a regular basis. If an EVMS is being used, determine the Cost Performance Index (CPI). The **Development Lead** should also ensure that project funds are being allocated according to the expected funding schedule that is documented in the DPP. Any significant deviations in cost and/or funding schedule should be captured as budget risks.

6.4.2.5 Risks

The PSR includes an Appendix that reports the current status of project risks and associated risk mitigation actions. The **Development Lead** has the primary responsibility for documenting this status. Risk status includes the identification of risks, quantitative risk assessment, identification of actions to mitigate the risks, action closure criteria, assignment of responsibility for closing the action, and an action closure plan. The **Development Lead** should request assistance from **Development Scientists**, **Development Testers**, and **Development Programmers**.

6.4.2.6 Task Resources

The PSR guidelines (DG-5.2 and DG-5.2.A) are strongly recommended to the PSR writers. DG-5.2 provides the standard PSR Table of Contents and guidelines for each standard PSR section. DG-5.2.A provides the guidelines for the PSR Appendix, which is a Microsoft Excel workbook that documents the status of project risks and risk mitigation actions.

In addition to DG-5.2 and DG-5.2.A, the STAR PAR should include examples of PSRs from other projects. These will be very helpful to PSR writers who have not previously written a PSR. Note that the final project PSR will reflect status at the completion of a project, when most issues have been resolved, most risks have been closed, and most actions have been completed. Examine the STAR PAR for examples of PSR versions that were produced for a Gate 3 Review. These are more indicative of what a PSR should look like at this stage of the project lifecycle.

PSR writers should also use the G2RR as a resource for the PSR Appendix. The G2RR typically documents risks and actions that are identified at the Gate 2 Review. The risks and actions identified in the PSR Appendix should be built from these.

6.4.3 Prepare Gate 3 Review

STAR Managers select a Gate 3 Review team, including a Review Lead. The Review Lead is nominally the Branch Chief, but an alternative lead can be selected by the Branch Chief in consultation with the Division Chief. Reviewers should be familiar with the Gate 3 Review guidelines (PRG-5) and Check List (CL-5). The Gate 3 Review team should be documented in the DPP (c.f. Section 6.4.1).

The **Development Lead** leads the preparation of the Gate 3 Review presentation. The presentation slide package is the Gate 3 Document (G3D). The G3D is prepared by the **Development Lead, Development Scientists, Development Testers, and Development Programmers**, in accordance with G3D guidelines DG-5.3. DG-5.3.A provides G3D slide templates that can be adapted for the project's G3D. The G3D developers should examine the DPP to determine whether the Gate 3 Review objectives, entry criteria, exit criteria and/or CLI have been tailored. If so, the G3D slide templates must be adapted to accommodate the tailoring.

The **Development Lead** determines which members of the development team will present the G3D sections. These presenters should be noted in Section Title slides. See DG-5.3.A for examples.

STAR CM/DM establishes a project baseline under CM for research-grade code, test data, and documentation, inserts the standard BB 1.0 items in the baseline, and initiates a Project Baseline Report (PBR_1.0), in accordance with PBR guidelines DG-5.4.

The **Development Lead** informs the **Gate 3 Reviewers** when the Gate 3 Review artifacts are available for their assessment. Review artifacts should be available at least 1 week in advance of the review, though this interval may be tailored.

STAR Managers are encouraged to examine the artifacts and communicate issues to the **Development Lead** prior to the review date, so that the artifacts and/or review presentation may be revised to respond to **STAR Management** concerns.

6.4.4 Conduct Gate 3 Review

The "Project Plan" step culminates with a Gate 3 Review.

The Gate 3 Review consists of the presentation of the project plan and project status by the development team (**Development Lead, Development Scientists, Development Testers, and Development Programmers**) and the disposition of the review CLI, including entry and exit criteria, by **STAR Managers** and other Gate 3 reviewers,

STAR QA verifies that the Gate 3 Review was conducted in accordance with STAR EPL standards.

NOAA NESDIS STAR

TASK GUIDELINE TG-5

Version: 3.0

Date: October 1, 2009

TITLE: Project Plan (Step 5) Task Guideline

Page 33 of 33

This step culminates with the Gate 3 Review Report (G3RR), written by the **Gate 3 Reviewers**. Guidelines for this report are provided in DG-5.5.

On the basis of the Gate 3 Review, **STAR Managers** determine whether the project is ready to proceed to the Design phase. If not, the G3RR should direct the Development Lead to revise the Gate 3 artifacts through specified actions.

Each stakeholder who performed activities during step 5 is encouraged to document an assessment of the experience in a personal record. This assessment should include: what was good, what was bad, what worked, what did not work, what can be improved, how it can be improved.

The **Development Lead** should remind the stakeholders to do this. At the conclusion of Development (step 11), the **Development Lead** will collect the final edited personal stakeholder records and incorporate them into a Development Project Report (DPR).

END OF DOCUMENT