

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

TASK GUIDELINE

**TG-11
SYSTEM INTEGRATION AND TEST (STEP 11)
TASK GUIDELINES**

Version 3.0

NOAA NESDIS STAR

TASK GUIDELINE TG-11

Version: 3.0

Date: October 1, 2009

TITLE: System Integration and Test Task Guideline

Page 2 of 2

TITLE: TG-11: SYSTEM INTEGRATION AND TEST (STEP 11) 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	9
1.1. Objective.....	9
1.2. Version History	10
1.3. Overview.....	10
2. REFERENCE DOCUMENTS.....	11
2.1. Process Guidelines.....	11
2.2. Stakeholder Guidelines.....	12
2.3. Task Guidelines.....	13
2.4. Peer Review Guidelines	13
2.5. Review Check Lists	13
2.6. Document Guidelines	13
2.7. Training Documents	14
3. STAKEHOLDERS.....	16
4. REVIEWS	19
4.1. System Readiness Review	19
4.2. Gate 5 Review	22
5. PROJECT ARTIFACTS	24
6. TASK DESCRIPTION	28
6.1 Pre-Operational System Development Process	28
6.2 System Integration and Test Process Flow	30

NOAA NESDIS STAR

TASK GUIDELINE TG-11

Version: 3.0

Date: October 1, 2009

TITLE: System Integration and Test Task Guideline

Page 4 of 4

6.3	Expected BEGIN State	31
6.3.1	Task Inputs	32
6.3.2	Corrective Actions.....	33
6.3.2.1	Delta Gate 4 Review	33
6.4	Desired END State	34
6.4.1	Task Outputs	34
6.5	System Integration and Test Activities.....	35
6.5.1	Integrate System Components	36
6.5.2	Conduct System Test.....	36
6.5.3	Refine System	38
6.5.4	Prepare for SRR	38
6.5.5	Conduct SRR.....	40
6.5.6	Prepare Gate 5 Review.....	41
6.5.7	Conduct Gate 5 Review	42

LIST OF FIGURES

	<u>Page</u>
Figure 6.1 – Pre-Operational System Development Process	28
Figure 6.2 – Iterative (Spiral) Development of Pre-Operational System.....	29
Figure 6.3 – Step 11 Process Flow	30

LIST OF TABLES

	<u>Page</u>
Table 2.2.1 – Stakeholder Guidelines for Step 11	12
Table 2.6.1 – Document Guidelines for Step 11.....	14
Table 2.7.1 – Training Documents for Step 11	15
Table 5.1 – Step 11 Artifacts	24

LIST OF ACRONYMS

ATBD	Algorithm Theoretical Basis Document
BB	Baseline Build
CDD	Critical Design Document
CDR	Critical Design Review
CDRR	Critical Design Review Report
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
CTD	Code Test Document
CTR	Code Test Review
CTRR	Code Test Review Report
DDD	Detailed Design Document
DG	Document Guidelines
DM	Data Management
DPP	Development Project Plan
DPR	Development Project Report
EPG	Enterprise Process Group
EPL	Enterprise Product Lifecycle
EUM	External Users Manual
G2RR	Gate 2 Review Report
G3RR	Gate 3 Review Report

NOAA NESDIS STAR

TASK GUIDELINE TG-11

Version: 3.0

Date: October 1, 2009

TITLE: System Integration and Test Task Guideline

Page 7 of 7

G4D	Gate 4 Document
G4RR	Gate 4 Review Report
G5D	Gate 5 Document
G5RR	Gate 5 Review Report
IPT	Integrated Product Team
IUM	Internal Users Manual
MDD	Metadata Document
NESDIS	National Environmental Satellite, Data, and Information Service
NOAA	National Oceanic and Atmospheric Administration
OCD	Operations Concept Document
PAR	Process Asset Repository
PBR	Project Baseline Report
PDD	Preliminary Design Document
PDR	Preliminary Design Review
PDRR	Preliminary Design Review Report
PG	Process Guidelines
PP	Project Proposal
PRD	Project Requirements Document
PRG	Peer Review Guidelines
PRR	Project Requirements Review
PRRR	Project Requirements Review Report
PSR	Project Status Report
QA	Quality Assurance
R&D	Research & Development
RAD	Requirements Allocation Document
RAS	Requirements Allocation Sheet
RNM	Requirements/Needs Matrix
SG	Stakeholder Guideline
SPSRB	Satellite Products and Services Review Board
SRD	System Readiness Document

NOAA NESDIS STAR

TASK GUIDELINE TG-11

Version: 3.0

Date: October 1, 2009

TITLE: System Integration and Test Task Guideline

Page 8 of 8

SRR	System Readiness Review
SRRR	System Readiness Review Report
STAR	Center for Satellite Applications and Research
STP	System Test Plan
SWA	Software Architecture Document
TD	Training Document
TG	Task Guideline
TRD	Test Readiness Document
TRR	Test Readiness Review
TRRR	Test Readiness Review Report
UTP	Unit Test Plan
UTR	Unit Test Report
VVP	Verification and Validation Plan
VVR	Verification and Validation Report

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 - Development 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

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- 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-11) is to describe how to perform the standard tasks of STAR EPL process step 1, Basic Research.

The intended users of this TG are all participants in the STAR EPL process who are involved in performing the standard tasks of step n. 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-11. 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 - Reviews
- 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 11

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
SG-17	Technical Review Leads
SG-18	Technical Reviewers

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-11 (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 n, the relevant PRGs include:

- System Readiness Review Guidelines (PRG-11.1)
- Gate 5 Review Guidelines (PRG-11.2)

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 n, the relevant CLs include:

- System Readiness Review Check List (CL-11.1)
- Gate 5 Review Check List (CL-11.2)

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 11

ID	Document
DG-1.1	Algorithm Theoretical Basis Document (ATBD)
DG-5.1	Development Project Plan (DPP)
DG-5.2	Project Status Report (PSR)
DG-5.2.A	PSR Appendix
DG-5.4	Project Baseline Report (PBR)
DG-10.2	System Test Plan (STP)
DG-11.1	Internal Users Manual (IUM)
DG-11.2	External Users Manual (EUM)
DG-11.3	Metadata Document (MDD)
DG-11.4	Verification and Validation Report (VVR)
DG-11.5	System Readiness Document (SRD)
DG-11.5.A	SRD Appendix
DG-11.6	System Readiness Review Report (SRRR)
DG-11.7	Gate 5 Document (G5D)
DG-11.7.A	G5D Appendix
DG-11.8	Gate 5 Review Report (G5RR)
DG-11.9	Development Project Report (DPR)

2.7. Training Documents

Training Documents (TD) assist the stakeholders (c.f. Section 3) in performing the process tasks. By using the TDs, the stakeholders should be able to perform the tasks more effectively.

Table 2.7.1 lists the Training Documents that are relevant to this step.

TABLE 2.7.1 – Training Documents for Step 11

ID	Training Document
TD-11.1	FORTRAN Coding Standards
TD-11.1.A	Transition from Fortran 77 to Fortran 90
TD-11.2	C Coding Standards

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 11 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)
- Technical Review Lead (SG-17)
- Technical Reviewer (SG-18)

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.

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.

Technical Review Lead is responsible for leading the team of Technical Reviewers for one or more of the six Technical Reviews. The Technical Review Lead works with the Development Lead and the Technical Reviewers to ensure that the review is prepared for, conducted, and closed according to review standards.

TITLE: System Integration and Test Task Guideline

Page 18 of 18

Technical Reviewer is responsible for reviewing and approving project artifacts and project status at one or more of the six Technical Reviews. Technical Reviewers work with the Technical Review Lead to ensure that the review is prepared for, conducted, and closed according to review standards.

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.

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. REVIEWS

4.1. System Readiness Review

System Readiness Review (SRR) is the final Build Phase Technical Review prior to Gate 5. Its purpose is to determine whether the pre-operational product system satisfies its functional and performance requirements, and is ready for installation in the operations environment. Upon successful completion of SRR, preparations are made for a Gate 5 review of readiness for transition to operations.

Standard SRR objectives:

- Identify relevant stakeholders and document their involvement according to the project plan.
- Review the CTRR, identifying risks and actions to be addressed
- Review the system requirements, identifying requirements and requirements allocation changes since CTR.
- Review the system description, including external interfaces, software architecture and detailed design, identifying changes since CTR.
- Review and confirm the system readiness for operations and maintenance, based on the results of system testing and the availability of required code and operations documentation.
- Review and confirm the system readiness for users, based on the results of system testing and the availability of required user documentation.
- Identify and evaluate risks. Recommend risk mitigation activities.
- Review the status of all actions identified to mitigate risks. Make recommendations for open actions and new actions.

Standard SRR entry criteria:

- Entry # 1 - A Code Test Review Report (CTRR) has been written. The SRR reviewers have access to the current baseline version of the CTRR.
- Entry # 2 - A Development Project Plan (DPP) has been written. The SRR reviewers have access to the current baseline version of the DPP.

- Entry # 3 - An Operations Concept Document (OCD) has been written. The SRR reviewers have access to the current baseline version of the OCD.
- Entry # 4 - A Requirements Allocation Document (RAD) has been written. The SRR reviewers have access to the current baseline version of the RAD.
- Entry # 5 - An Algorithm Theoretical Basis Document (ATBD) has been written. The SRR reviewers have access to the current baseline version of the ATBD.
- Entry # 6 -A Software Architecture Document (SWA) has been written. The SRR reviewers have access to the current baseline version of the SWA.
- Entry # 7 - A Detailed Design Document (DDD) for each software unit has been written. The SRR reviewers have access to the current baseline version of the DDDs.
- Entry # 8 -An Internal Users Manual (IUM) has been written. The SRR reviewers have access to the current baseline version of the IUM.
- Entry # 9 - An External Users Manual (EUM) has been written. The SRR reviewers have access to the current baseline version of the EUM.
- Entry # 10 - A Metadata Document (MDD) has been written. The SRR reviewers have access to the current baseline version of the MDD.
- Entry # 11 - Pre-operational code units, external interfaces, ancillary data, and system test data have been integrated into a product processing system in the development test environment. The SRR reviewers have access to the product processing system.
- Entry # 12 – A Verification and Validation Plan (VVP) has been written. The SRR reviewers have access to the current baseline version of the VVP.
- Entry # 13 - A System Test Plan (STP) has been written. The SRR reviewers have access to the current baseline version of the STP.
- Entry # 14 - A Verification and Validation Report (VVR) has been written. The SRR reviewers have access to the current baseline version of the VVR.
- Entry # 15 - A System Readiness Document (SRD) has been written. The SRR reviewers have access to the current baseline version of the SRD.
- Entry # 16 - A Project Baseline Report (PBR) has been written. The SRR reviewers have access to the current baseline version of the PBR.

Standard SRR exit criteria:

- Exit # 1 - CTR "Conditional Pass" items have been satisfactorily disposed of.
- Exit # 2 - CTR "Defer" items have been satisfactorily disposed of.
- Exit # 3 - The project plan and DPP are satisfactory
- Exit # 4 - The requirements allocation and RAD are satisfactory.
- Exit # 5 - The algorithm and ATBD are satisfactory.
- Exit # 6 - The design documents (SWA and DDDs) are satisfactory.
- Exit # 7 - The metadata and MDD are satisfactory.
- Exit # 8 - The delivery procedures, tools, training, support services, and documentation available to the users are satisfactory.
- Exit # 9 - System test results and VVR are satisfactory.
- Exit # 10 - The project baseline and PBR are satisfactory.
- Exit # 11 - The SRRR documents updated status of project risks and actions. The risk status is acceptable.
- Exit # 12 - The integrated product processing system is ready for delivery to operations.

Refer to PRG-11.1 for a more detailed description of the SRR. The standard SRR entry criteria, exit criteria, and check list is documented in the process asset CL-11.1 (c.f. Section 2).

SRR 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 SRR.

4.2. Gate 5 Review

Gate 5 is the final review of the project status readiness before it is transitioned to operations, under the joint direction of STAR and SPSRB. Its purpose is to determine whether operations is ready to receive the pre-operational system from the developers. If a project passes Gate 5, the pre-operational system and all associated artifacts are delivered to operations.

Standard Gate 5 Review objectives:

- 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 transition to operations as planned.
- Determine whether a re-plan and a delta Gate 5 Review are needed.

Standard Gate 5 Review entry criteria:

- Entry # 1 - A Gate 4 Review Report (G4RR) has been written. The Gate 5 reviewers have access to the current baseline version of the G4RR.
- Entry # 2 - A System Readiness Review Report (SRRR) has been written. The Gate 5 reviewers have access to the current baseline version of the SRRR.
- Entry # 3 - A Development Project Plan (DPP) has been written. The Gate 5 reviewers have access to the current baseline version of the DPP.
- Entry # 4 - A Project Status Report (PSR) has been written. The Gate 5 reviewers have access to the current baseline version of the PSR.
- Entry # 5 - A Gate 5 Document (G5D) has been written. The Gate 5 reviewers have access to the current baseline version of the G5D.

TITLE: System Integration and Test Task Guideline

Page 23 of 23

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

Standard Gate 5 Review exit criteria:

- Exit # 1 – SRR status and SRRR 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 delivery to operations

Refer to PRG-11.2 for a more detailed description of the Gate 5 Review. The standard Gate 5 Review entry criteria, exit criteria, and check list is documented in the process asset CL-11.2 (c.f. Section 2).

Gate 5 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 5 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 Configuration Management (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 11 are listed in Table 5.1.

TABLE 5.1 – Step 11 Artifacts

Artifact	Type	Review	Baseline Build
Development Project Plan v3.x	Document	SRR	3.4
Integrated Pre-Op Code	Code	SRR	3.4
System Test Data	Test Data	SRR	3.4
Internal Users Manual v1.0	Document	SRR	3.4
External Users Manual v1.0	Document	SRR	3.4
Metadata Document v1.0	Document	SRR	3.4
System Test Plan v1.1	Document	SRR	3.4
Verification and Validation Report v1.0	Report	SRR	3.4
Algorithm Theoretical Basis Document v2.2	Document	SRR	3.4
System Readiness Document	Presentation	SRR	3.4
Project Baseline Report v3.4	Report	SRR	3.4
System Readiness Review Report	Report	Gate 5	3.5
Project Status Report v3.0	Report	Gate 5	3.5
Gate 5 Document	Presentation	Gate 5	3.5

NOAA NESDIS STAR

TASK GUIDELINE TG-11

Version: 3.0

Date: October 1, 2009

TITLE: System Integration and Test Task Guideline

Page 25 of 25

Project Baseline Report v3.5	Report	Gate 5	3.5
Gate 5 Review Report	Report	SPSRB	3.6
Development Project Report	Report	EPG	3.6
Project Baseline Report v3.6	Report	Operations	3.6

Development Project Plan v3.x: 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. DPP v3.0 should have been produced in step 9 for the TRR, and may have been revised (v3.x) as a result of TRR and CTR actions. Refer to DG-5.1 for detailed DPP guidelines.

Integrated Pre-Operational Code: The Integrated Pre-Operational Code (PCOD v3.x) consists of all software components of the detailed design that was approved at the CDR (step 8), unit tested in step 10, integrated into an end-to-end pre-operational product processing system, and system tested.

System Test Data: System Test Data (PTEST v3.x) are the data files used for system testing of the Pre-Operational Code, including the input data and output data identified in the current baseline versions of the ATBD and SWA. These files may be revised and/or upgraded during unit testing and system testing.

Internal Users Manual v1.0: The Internal Users Manual (IUM) is intended for OSDPD/SAB analysts of a product processing system such as an interactive tool/GUI. The IUM provides information on the system that is necessary to ensure the effective and reliable operation of the application. Refer to DG-11.1 for detailed IUM guidelines.

External Users Manual v1.0: The External Users Manual (EUM) is intended for users of one or more of the products delivered by the system, including end users (customers) and testers (V&V teams). The EUM provides product users with information that will enable them to acquire the product, understand its features, and use the data. Refer to DG-11.2 for detailed EUM guidelines.

Metadata Document v1.0: The Metadata Document (MDD) provides information that addresses NESDIS (ISO) guidelines for data providers to describe the content, quality, condition and characteristics of data generated by the product application system. Refer to DG-11.3 for detailed MDD guidelines.

System Test Plan v1.1: The System Test Plan (STP) contains the plan for testing to ensure that the requirements specified for the product processing system are satisfied by the completed system (Verification) and that the final developed system will satisfy the users' needs and expectations (Validation). The purpose of the system test is to demonstrate, using verification and validation methods, system readiness for operations. STP v1.0 is produced for the Code Test Review (CTR). Typically, the STP is updated to v1.1 to reflect revisions to the plan that were made after the commencement of system testing. Refer to DG-10.2 for detailed STP guidelines.

Verification and Validation Report v1.0: The Verification and Validation Report (VVR) documents the results of unit testing and system testing to ensure that the requirements specified for the product processing system are satisfied by the completed system (Verification) and that the final developed system will satisfy the users' needs and expectations (Validation). Refer to DG-11.4 for detailed VVR guidelines.

Algorithm Theoretical Basis Document v2.2: The Algorithm Theoretical Basis Document (ATBD) provides a theoretical description (scientific and mathematical) of the algorithm that is used to create a product that meets user requirements. ATBD v2.2 is typically updated from the CDR version (v2.1), revising the performance estimates as a result of unit testing and system testing, consistent with the VVR. The purpose of ATBD v2.2 is to help demonstrate to the SRR reviewers that the algorithm is ready for transition to operations. Refer to DG-1.1 for detailed ATBD guidelines.

System Readiness Document: The System Readiness Document (SRD) consists of the presentation slides for the System Readiness Review (SRR). Refer to DG-11.5 and DG-11.5.A for detailed SRD guidelines.

Project Baseline Report v3.4: The Project Baseline Report (PBR v3.4) is the document that describes the status of the configuration items that comprise the project baseline at the SRR. Refer to DG-5.4 for detailed PBR guidelines.

Note that these artifacts are typically included in STAR Baseline Build (BB) 3.4. BB 3.4 provides the artifacts for the SRR. **STAR CM/DM** executes BB 3.4, in consultation with the developers of the BB 3.4 artifacts.

System Readiness Review Report: The SRR Report (SRRR) summarizes the SRR Reviewers' assessment of the readiness of the pre-operational system for installation in the operations environment, including identified risks and risk mitigation actions. Refer to DG-11.6 for detailed SRRR guidelines.

External Users Manual v1.1: The External Users Manual (EUM) is intended for users of one or more of the products delivered by the system, including end users (customers) and testers (V&V teams). The EUM provides product users with information that will enable them to acquire the product, understand its features, and use the data. EUM v1r1 adds the Product Development History after SRR, primarily the SRR Report and the closing of SRR actions. Refer to DG-11.2 for detailed EUM guidelines.

Project Status Report v3.0: The Project Status Report (PSR) is used to manage and control the execution of the project. PSR v3.0, a Gate 5 Review artifact, reports the post-SRR status of the project tasks, work products, cost, schedule, and risks. Refer to DG-5.2 and DG-5.2.A for detailed PSR guidelines.

Gate 5 Document: The Gate 5 Document (G5D) consists of the presentation slides for the Gate 5 Review. Refer to DG-11.7 and DG-11.7.A for detailed G5D guidelines.

Project Baseline Report v3.5: When the SRRR, EUM v1.1, PSR v3.0 and G5D are completed, they are added to the baseline for BB 3.5. The PBR is updated to v 3.5 to include the addition of the SRRR, PSR and G5D, as well as any SRR artifacts that are revised as the result of SRR actions. BB 3.5 provides the artifacts for the Gate 5 Review. **STAR CM/DM** executes BB 3.5, in consultation with the developers of the BB 3.5 artifacts.

Gate 5 Review Report: The Gate 5 Review Report (G5RR) summarizes the Gate 5 Reviewers' assessment of the project status, including identified risks, risk mitigation actions, and status of readiness to transition the pre-operational system to operations. Refer to DG-11.8 for detailed G5RR guidelines.

Development Project Report: The Development Project Report (DPR) provides the development team's assessment of their experience in implementing the project, including lessons learned and recommendations for process improvement. Refer to DG-11.9 for detailed DPR guidelines.

Project Baseline Report v3.6: When the G5RR and DPR are completed, they are added to the baseline for BB 3.6. The PBR is updated to v3.6 to include the addition of the G5RR and DPR, as well as any Gate 5 Review artifacts that are revised as the result of Gate 5 Review actions. BB3.6, the final Development baseline, is stored in the project artifact repository for the benefit of the STAR organization (STAR EPG) and future STAR projects.

6. TASK DESCRIPTION

6.1 Pre-Operational System Development Process

Pre-operational system development is an iterative process that occurs throughout the Build phase of the product lifecycle. This phase includes three steps that produce an integrated product processing system through an iterative (spiral) development of code, test data and test plans.

- Code & Test Data Development (step 9 of the STAR EPL)
- Code Test & Refinement (step 10 of the STAR EPL)
- **System Integration & Test (step 11 of the STAR EPL)**

Figure 6.1 illustrates the pre-operational system development process, with step 11 highlighted.

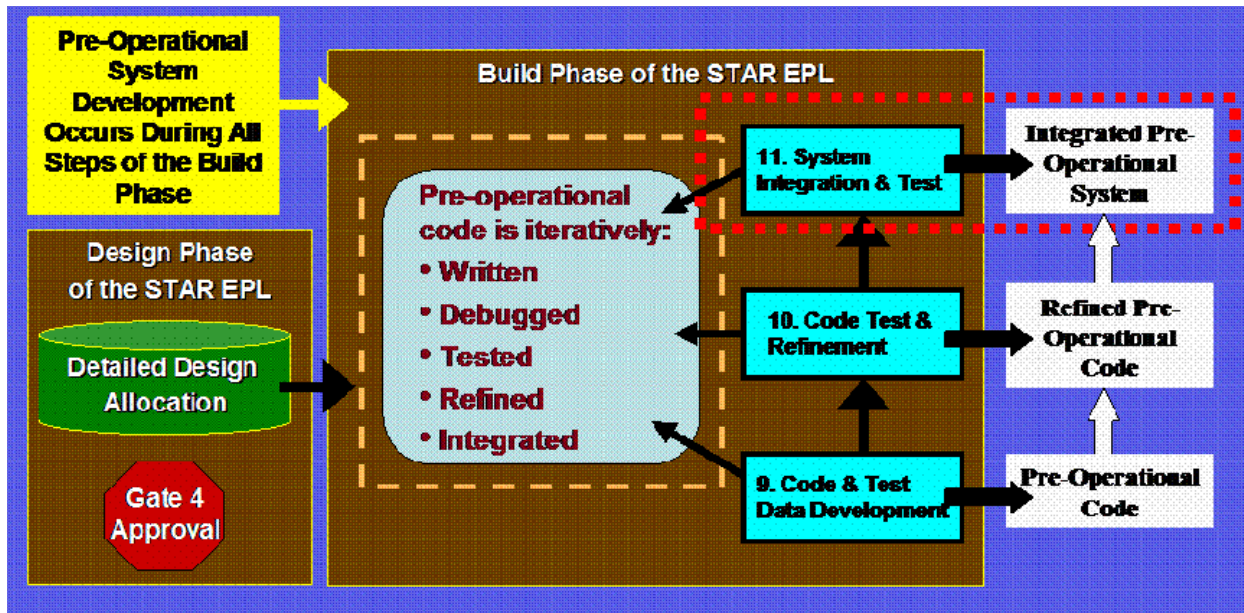


Figure 6.1 – Pre-Operational System Development Process

As Figure 6.1 shows, the objective of steps 9 and 10 is to produce refined pre-operational code. Pre-operational code (step 9) consists of the system components in the detailed design (software units and sub-units). Refined pre-operational code (step 10) has been unit

tested, refined, and debugged until it passes all of the unit tests, and is ready for integration into a pre-operational system during step 11.

The process of producing a complete pre-operational product processing system involves writing, debugging, testing, refining, and integrating the code. Because these functions affect each other, the process is inherently iterative. Figure 6.2 illustrates this.

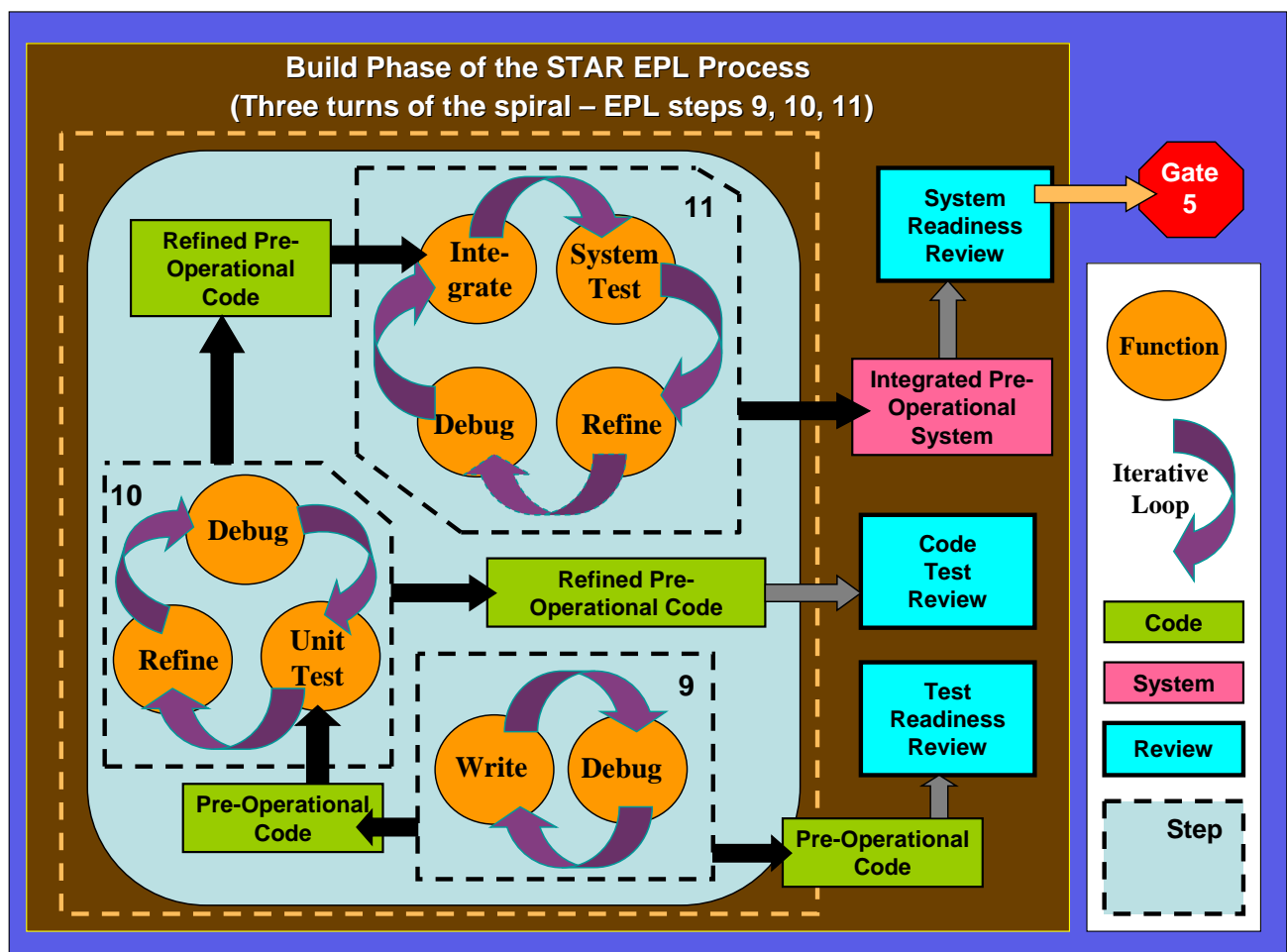


Figure 6.2 – Iterative (Spiral) Development of Pre-Operational System

Step 11 is a continuation of the pre-operational system development that was started in step 9 and continued in step 10. The details of these steps are described in TG-9 and TG-10 respectively. This is illustrated in Figure 6.2 as the output from step 9 is pre-operational

code that is input to the Unit Test function of step 10, and the output from step 10 is refined pre-operational code that has been iteratively unit tested, refined, and debugged until it passes all unit tests, and is input to the System Integration function of step 11.

6.2 System Integration and Test Process Flow

Figure 6.3 shows the process flow for step 11.

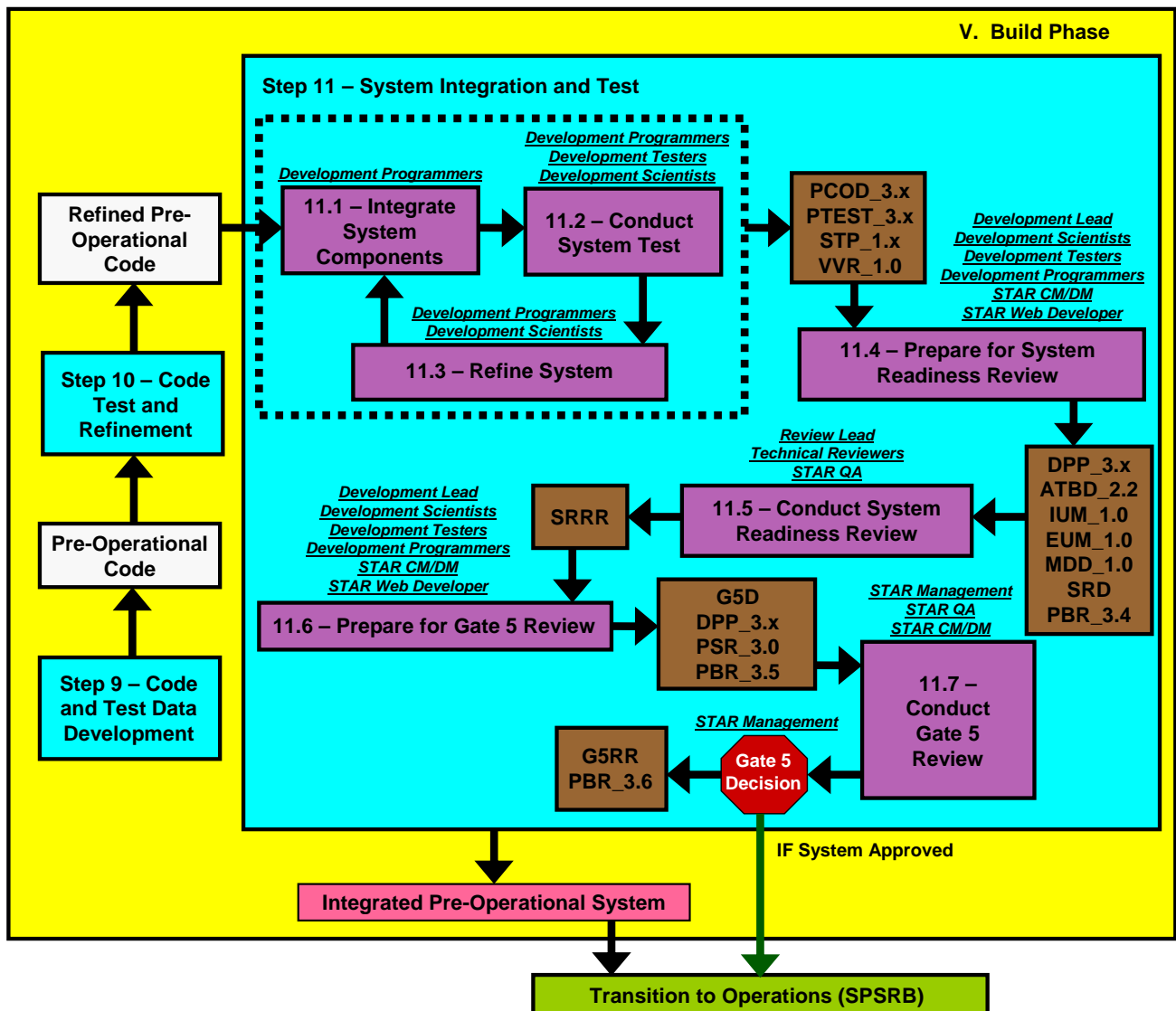


Figure 6.3 – Step 11 Process Flow

Note that processes 11.1, 11.2, and 11.3 are enclosed by a common dashed border. This is to indicate that the processes are iterative, as explained in Sections 6.1, 6.5.1, 6.5.2, and 6.5.3.

6.3 Expected BEGIN State

- REQUIRED: Pre-operational code has been refined and debugged as necessary until it passes all unit tests.
- REQUIRED: Unit test results have been documented in a report.
- REQUIRED: A plan for system testing has been developed. The plan ensures that the system test will address all system requirements and product requirements.
- REQUIRED: All data required for implementation of the system test plan has been acquired or developed, and is available in the designated test environment.
- REQUIRED: A CTR has been conducted
- REQUIRED: CTR reviewers have approved the project to proceed to the System Integration and Test step, and have documented this approval in the Code Test Review Report (CTRR).
- REQUIRED: Baseline Build (BB) 3.3 has placed the following items in the project artifact repository:
 - Refined pre-operational code
 - System test data
 - DPP, including Appendices
 - RAD, including Appendices
 - VVP
 - ATBD
 - SWA
 - DDD
 - UTP
 - UTR
 - STP
 - Code Test Document (CTD)
 - CTRR
- EXPECTED: BB 3.3 has placed the following items in the project artifact repository:

- R&D code
- R&D test data
- Project Proposal (PP)
- Gate 2 Review Report (G2RR)
- Gate 3 Review Report (G3RR)
- Operations Concept Document (OCD)
- Project Requirements Document (PRD)
- Project Requirements Review Report (PRRR)
- Preliminary Design Document (PDD)
- Preliminary Design Review Report (PDRR)
- Critical Design Document (CDD)
- Critical Design Review Report (CDRR)
- Gate 4 Document (G4D)
- Gate 4 Review Report (G4RR)
- Test Readiness Document (TRD)
- Test Readiness Review Report (TRRR)
- Project Status Report (PSR), including Appendix
- REQUIRED: PBR_3.3 documents the status of the BB 3.3 project baseline

6.3.1 Task Inputs

Task inputs consist of the following BB 3.3 items:

- Refined pre-operational code (PCOD_2.x)
- Refined pre-operational test data (PTEST_2.x)
- SWA_2.3
- DDD_1.2
- UTP_1.1
- UTR_1.0
- STP_1.0
- DPP_3.x
- RAD_1.4

- Requirements/Needs Matrix (RNM)
- Requirements Allocation Sheet (RAS)
- VVP_1.4
- CTD
- CTRR
- PSR_2.x Appendix
- PBR_3.3

6.3.2 Corrective Actions

The CTRR will document any actions that are needed to reduce risk during step 11. Usually, these actions should be closed before the SRR.

Additional corrective actions are typically generated during step 11, to mitigate project risks that are identified during code test and refinement. Project risks and risk mitigation actions should be identified in the PSR Appendix.

The needed corrective actions may require revisions to the project plan, typically by the addition of sub-tasks and revisions to the task schedule. The **Development Lead** should determine whether these revisions are manageable or are so significant that a re-plan is needed. If necessary, the **Development Lead** should consult STAR Management on the advisability of a re-plan. Re-planning is expected to be a rare event, but it may occur if the project requirements have added significant scope or if unexpected technical issues have been discovered.

6.3.2.1 Delta Gate 4 Review

If it is determined that a re-plan is needed, the **Development Lead** should consult STAR Management to determine whether there should be a delta Gate 4 Review. This determination should depend upon whether the re-plan will significantly affect the pre-operational system. . If not, consideration of the re-plan may be deferred to the Gate 5 Review. If so, a delta Gate 4 Review should be prepared for and conducted in the same manner as the normal Gate 4 Review. Refer to the step 8 Task Guideline (TG-8) and the Gate 4 Peer Review Guideline (PRG-8.2) for guidance. Following approval of the re-plan, the project can return to its step 11 activities under the new plan.

6.4 Desired END State

- The Detailed Design Allocation of the requirements that identifies product and system components down to the Sub-Unit-Layer, and traces each component to one or more requirement, has been verified.
- The functionality of all system components in the detailed design (software units and sub-units) has been implemented in pre-operational code that meets coding standards.
- Unit testing of the code has ensured that all required code functionality and code outputs have been satisfied.
- The code and system test data have been integrated into a complete pre-operational product processing system.
- The pre-operational system has been refined and debugged as necessary until it satisfies all system requirements and product requirements, as determined by system testing.
- System test results have been documented in a report.
- All required documentation has been produced.
- The project plan has been updated as necessary
- Project status, including project risks and actions, has been updated
- An SRR of the project plan, system test results, and supporting documentation has been conducted
- An SRRR has been written. The SRRR approves the readiness of the product processing system and supporting documentation to be delivered to operations.
- A Gate 5 Review of project status has been conducted.
- A Gate 5 Review Report (G5RR) has been written. The G5RR approves the project for transition to operations.
- Baseline Build 3.6 has placed the required items in the project artifact repository
- PBR_3.6 documents the status of the BB 3.6 project baseline

6.4.1 Task Outputs

Task outputs consist of the following BB 3.6 items:

- Integrated Pre-Operational Code
- System Test Data
- DPP_3.x
- ATBD_2.2
- STP_1.1
- IUM_1.0
- EUM_1.0
- MDD_1.0
- SRD
- SRRR
- PSR_3.0
- G5D
- G5RR
- PBR_3.6

6.5 System Integration and Test Activities

Step 11 activities include:

- 1) Integrate system components
- 2) Conduct system test
- 3) Refine system
- 4) Prepare for SRR
- 5) Conduct SRR
- 6) Prepare for Gate 5 Review
- 7) Conduct Gate 5 Review

6.5.1 Integrate System Components

The pre-operational system is produced by integrating the system components that have passed unit testing into a complete end-to-end product processing system. This should be done in the system test environment that was designated in the system test plan.

Development Programmers prepare the system test environment, in accordance with the system test plan. The system test environment should replicate the planned operational environment as closely as possible.

Development Programmers should perform the system integration. This is typically done by creating scripts that link the units in an order that follows the software architecture. This is usually a straightforward process, since each individual unit has already been built into its unit test configuration. System integration then entails the linking of the unit test configurations by scripts that ensure the proper interfaces between the units and with external data sources and data sinks. The composition of the integrated pre-operational system should include all control files, scripts, pre-operational code modules, test data sets, utilities, and libraries needed to run the product processing system

Note that the system integration function is iterative with system testing (Section 6.5.2) and refinement (Section 6.5.3). If system testing uncovers problems that require refinement of the code, test data, and/or scripts, these will have to be re-integrated and re-tested.

6.5.2 Conduct System Test

Development Programmers build the system test configuration, in accordance with the system test plan. The system test configuration includes all items that will be used in the system test, including control files, scripts, code modules, test data sets, utilities, libraries, etc. If the full functionality of the system will be tested in the system test, the system test configuration will consist of the entire integrated pre-operational system (Section 6.5.1).

If there is a specific reason not to test the full functionality of the system in the system test, **Development Programmers** will build a system test configuration that is a subset of the complete system.

It is recommended that diagnostic code be used to facilitate the verification of functionality and outputs. Diagnostic code may be added to control files and scripts to verify their functionality. Diagnostic code will typically be added to the unit code during step 9. If this is

done, two versions of the unit code will have been created. The first version will contain the diagnostic code. The second version, with all diagnostic code stripped out, is the baseline integrated pre-operational system.

In that case, the system test configuration should include both versions. The version with diagnostic code should be run first, with all diagnostic messages and outputs captured for verification. This provides a complete verification of functionality and performance. Then, the baseline version should be run. Verification of the baseline system is then achieved by confirming that its outputs are identical to the outputs from the version with diagnostic code. The test sequence should include this final verification step.

Development Testers run the system test, assisted by **Development Programmers**. **Development Scientists** assist in evaluating the system test results. Examine the system test output, including runtime messages, diagnostic messages and the content of intermediate and output data files.

Runtime messages are messages written by the operating system to a runtime log file or other designated output source (e.g., a monitor connected to the computer from which the program execution command has been entered). These may occur if the code is written to generate such messages as a way to test functionality.

Diagnostic messages are messages written to a runtime log file or other designated output source (e.g., a monitor connected to the computer from which the program execution command has been entered). The nominal purpose of a diagnostic message is to report a functional result (e.g., 'subroutine X called') or the quantitative value of an input, intermediate, or output variable (e.g., 'X(50) = 7').

Data files include the output data sets that are designed to be produced by the system. In addition, a diagnostic program may write intermediate data sets to diagnostic files.

If the system test output does not satisfy all success criteria, iteratively refine and debug the code, test data, and/or scripts (c.f. Section 6.5.3), and repeat system integration (Section 6.5.1) and system testing until success criteria are satisfied. When success criteria are satisfied, document the results in the VVR, following guidelines in DG-11.4.

Development Testers lead in the development of the VVR. **Development Programmers** and **Development Scientists** assist with the VVR. The purpose of VVR v1r0 is to document the results of system testing to ensure that the requirements specified for the product processing system are satisfied by the completed system (Verification) and that the final developed system will satisfy the users' needs and expectations (Validation).

6.5.3 Refine System

Development Programmers iteratively refine, debug and re-test the integrated pre-operational system as needed, based on the system test results. Code refinements should conform to coding standards provided in TD-11.1 (FORTRAN code) and TD-11.2 (C code).

Development Testers refine the system test data as necessary until the system test requirements are satisfied. **Development Scientists** assist in refining the system test data. The STP is revised to account for changes to the system test plan since the CTR. STP v1r1 updates and refines the test data description, test methods, test sequences and test risks, based on any refinement of the code and test data that has occurred during step 11.

Note that the refine system function is iterative with system integration (Section 6.5.1) and system testing (Section 6.5.2). If system testing uncovers problems that require refinement of the code, test data, and/or scripts, these will have to be re-integrated and re-tested until all system test requirements are satisfied. At that point, refinement of the system is completed.

6.5.4 Prepare for SRR

The SRR review lead (**Technical Review Lead**) and review team (**Technical Reviewers**) should have been selected during steps 5, 6, 7, 8, 9, or 10, and listed in the DPP. If this selection was not completed in step 10, the **STAR Branch Chief**, in consultation with the **Development Lead**, should make this selection as soon as possible during step 11.

The DPP should be updated to address any changes to the project plan since the CTR. The **Development Lead** updates the DPP to version 3.x, with assistance from the **Development Scientists**, **Development Testers**, and **Development Programmers**.

Development Programmers produce IUM v1r0. The IUM is intended for OSDPD/SAB analysts of a product processing system such as an interactive tool/GUI. The IUM provides information on the system that is necessary to ensure the effective and reliable operation of the application. Refer to DG-11.1 for detailed IUM guidelines.

Development Scientists produce EUM v1r0, assisted by **Development Testers** and **Development Programmers**. The EUM is intended for users of one or more of the products delivered by the system, including end users (customers) and testers (V&V teams). The EUM provides product users with information that will enable them to acquire

the product, understand its features, and use the data. Refer to DG-11.2 for detailed EUM guidelines.

Development Programmers produce MDD v1r0, following guidelines in DG-11.4. The MDD addresses NESDIS (ISO) guidelines for data providers to describe the content, quality, condition and characteristics of data generated by the product application system. Refer to DG-11.3 for detailed MDD guidelines.

Development Scientists upgrade the ATBD to produce ATBD v2r2, following guidelines in DG-1.1. ATBD v2r2 upgrades performance estimates based on unit testing and system testing to demonstrate to product users that the integrated pre-operational system satisfies all requirements for transition to operations.

The **Development Lead** leads the preparation of the SRR presentation. The SRR slide package is the System Readiness Document (SRD). The SRD is prepared by the **Development Lead, Development Scientists, Development Testers, and Development Programmers**, in accordance with SRD guidelines DG-11.5. DG-11.5.A provides SRD slide templates that can be adapted for the project's SRD. The SRD developers should examine the DPP to determine whether the SRR objectives, entry criteria, exit criteria and/or CLI have been tailored. If so, the SRD slide templates must be adapted to accommodate the tailoring. The SRD developers should use the project's CTD as a source for SRD slides, as many CTD slides can be re-used or adapted.

The **Development Lead**, assisted by the **Development Scientists, Development Testers, and Development Programmers**, updates the status of the project risks and associated risk mitigation actions for inclusion in the SRD. Risk management guidelines can be found in PG-1.

The **Development Lead** determines which members of the development team will present the SRD sections. These presenters should be noted in Section Title slides. See DG-11.5.A for examples.

STAR CM/DM inserts the standard BB 3.4 items in the baseline, and updates the Project Baseline Report (PBR) to version 3.4, in accordance with PBR guidelines DG-5.4.

The **Development Lead** informs the **STAR Web Developer** that the SRR artifacts are ready for posting on the STAR EPL website. The **STAR Web Developer** works with **STAR CM/DM** to acquire the project baseline items and post them on the website.

Once these are posted the **STAR Web Developer** informs the **Development Lead**, who then informs the **Technical Review Lead** that the SRR artifacts are available for review. The **Technical Review Lead** then informs all review team members that the artifacts are available to them.

The **Technical Review Lead** and **Technical Reviewers** may at their discretion 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 reviewer concerns.

6.5.5 Conduct SRR

The SRR consists of the presentation of the integrated pre-operational product processing system and supporting documentation 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 the reviewers (**Technical Review Lead and Technical Reviewers**).

The **Technical Review Lead** and the **Technical Reviewers** conduct the SRR to determine whether the integrated pre-operational system has satisfied system test success criteria and is ready for delivery to operations. Reviewers should be familiar with the SRR guidelines (PRG-11.1) and check list (CL-11.1).

The SRR reviewers complete a System Readiness Review Report (SRRR), following guidelines in DG-11.6. The SRRR will include the reviewers' assessment of the status of the SRR artifacts, the project risks, and associated risk mitigation actions, and an Appendix that consists of the reviewers' disposition of each SRR CLI.

On the basis of its disposition of the SRR CLI, the **Technical Review Lead** and the **Technical Reviewers** determine whether the project is ready for delivery to operations. If not, the SRRR should direct the **Development Lead** to revise the SRR artifacts through specified actions. These actions may include a new assessment of revised SRR artifacts at a delta review.

If a delta SRR is required, the **Development Lead** and support team upgrade the SRR artifacts as requested by the SRR reviewers and present them at a delta SRR. This is repeated until the **Technical Reviewers** pass the project to the Gate 5 Review.

STAR QA verifies that the SRR was conducted in accordance with STAR EPL standards.

6.5.6 Prepare Gate 5 Review

Once the project passes its SRR, it is referred to the Gate 5 Review. **STAR Management** selects a Gate 5 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 5 Review guidelines (PRG-11.2) and Check List (CL-11.2). The Gate 5 Review team should be documented in the DPP.

Development Lead updates the PSR to version 3.0, assisted by **Development Scientists**, **Development Testers**, and **Development Programmers**. Version 3 of the PSR, along with its Appendix, documents the status of project tasks, cost, schedule, risks, and actions at the conclusion of the Build phase. Refer to PSR guidelines in DG-5.2 and DG-5.2.A.

The **Development Lead** leads the preparation of the Gate 5 Review presentation. The presentation slide package is the Gate 5 Document (G5D). The G5D is prepared by the **Development Lead**, **Development Scientists**, **Development Testers**, and **Development Programmers**, in accordance with G5D guidelines DG-11.7. DG-11.7.A provides G5D slide templates that can be adapted for the project's G5D. The G5D developers should examine the DPP to determine whether the Gate 5 Review objectives, entry criteria, exit criteria and/or CLI have been tailored. If so, the G5D slide templates must be adapted to accommodate the tailoring.

The **Development Lead** determines which members of the development team will present the G5D sections. These presenters should be noted in Section Title slides. See DG-11.7.A for examples.

STAR CM/DM updates the project baseline via BB 3.5, and updates the Project Baseline Report (PBR) to version 3.5, in accordance with PBR guidelines DG-5.4. BB 3.5 will include all post-SRR revisions to the SRR artifacts, the SRRR, G5D, PSR_3.0, and PBR_3.5.

Development Lead informs the **STAR Web Developer** that the Gate 5 Review artifacts are ready for posting in the project artifact repository on the STAR EPL website. The **STAR Web Developer** works with **STAR CM/DM** to acquire the project baseline items and post them on the website.

Once these are posted the **STAR Web Developer** informs the **Development Lead**, who then informs **STAR Management** that the Gate 5 Review artifacts are available for its

assessment. Review artifacts should be available at least 1 week in advance of the review, though this interval may be tailored.

STAR Management may at its discretion 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.

6.5.7 Conduct Gate 5 Review

The “System Integration and Test” step culminates with a Gate 5 Review.

The Gate 5 Review consists of the presentation of the project plan and project status at the conclusion of the Build phase 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 the reviewers (**STAR Management**).

On the basis of the Gate 5 Review, **STAR Management** determines whether the project can be delivered to operations, based on information in the SRRR, DPP and PSR. If not, recommendations are made for correcting deficiencies. Deficiencies can be technical, based on the SRRR and PSR Appendix, or cost/schedule, based on the DPP and PSR. This process is iterated until the Gate 5 Reviewers are satisfied with the technical, cost and schedule status of the project.

STAR QA verifies that the Gate 5 Review was conducted in accordance with STAR EPL standards.

This step culminates with the Gate 5 Review Report (G5RR), written by the **Gate 5 Reviewers**. Guidelines for this report will be found in DG-11.8. The final version of the G5RR should include approval for the project to be delivered to operations.

STAR CM/DM updates the project baseline via BB 3.6, and updates the Project Baseline Report (PBR) to version 3.6, in accordance with PBR guidelines DG-5.4. BB 3.6 will include all BB 3.5 items plus any post-Gate 5 revisions to the DPP and PSR, the G5RR, and PBR_3.6. BB 3.6 is the final planned baseline build of the development stage of the project. It should include the final approved version of each item to be delivered to operations.

TITLE: System Integration and Test Task Guideline

Page 43 of 43

Each stakeholder who performed activities during step 11 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). The **Development Lead** should refer to DG-11.9 and SG-13 for guidelines

END OF DOCUMENT