

Subject: Job Requirements Documentation & Control	Effective Date: Dec. 19, 2014	Initiated by: Head, Office of Project Management
	Supersedes: Rev 1, Dated October 7, 2011	Approved: Director

Management System (Primary): 03.00 ENGINEERING (ENG)
Management System Owner: Associate Laboratory Director for Engineering and Infrastructure
Management Process: 03.06 Technical Project Management
Process Owner: Associate Laboratory Director for Engineering and Infrastructure
Sub-Process: 03.06.12 Scope Management, Planning, Definition, Verification, and Scope Change Control
Sub-Process Owner: Associate Laboratory Director for Engineering and Infrastructure; Head, Project Management
Subject Matter Expert: Head, Project Management

Applicability

This procedure applies to any activity at PPPL or for a Collaboration that requires established and formal documentation and control for project requirements as part of proper and consistent project management. This procedure does not cover cost estimating. For cost estimates and review see ENG-053 Job Cost Estimate Development and Review.

Introduction

At the inception of a project, the development and tracking of solid, approved requirements is imperative to ensure integrity in the project management process, especially if these requirements grow or change as the project develops. This procedure establishes criteria for usage of project management requirements documents called the General Requirements Document (GRD), the Systems Requirements Document (SRD), and the Systems Design Description (SDD). This procedure also establishes criteria for the use of Collaborations Agreements such as but not limited to a Memorandum of Understanding (MOU) for collaborations.

Collaborations can pose special challenges that emphasize project management requirements. Attachment 1 provides additional guidance for collaborative efforts for COGs and RLMs. Care must be taken to include all appropriate stakeholders in chartering, requirements gathering, planning, expediting, and closing collaborative jobs and projects. Collaborations also may use titles, terms, and roles that differ from internal PPPL documents so care must be taken to correctly assign roles, work, and approvals. In most cases the MOU should usually be in progress and well developed before requirement documents per this procedure are written.

Requirements change control provides an opportunity to review and approve changes and to review associated cost and schedule changes driven by requirements. This procedure also establishes Change Control for formally approved GRDs, SRDs, and SDDs. Based on a graded approach, Change Control can include lab and DOE aspects and approvals or can be simple revisions and requirement document approvals when necessary.

Definitions:**GRD - General Requirements Document**

Technical expectations that define project goals and objectives. The physics requirements to perform a range of experiments and the overarching engineering design criteria. The GRD is the fundamental building block in determining a project's technical feasibility and scope, cost, schedule, and resource needs. Any relevant physics or engineering constraints, goals, or performance criteria should be included in a GRD. See Table I for applicability.

SRD - Systems Requirements Document

Engineering requirements that must be met for the system to function in accordance with the GRD. An SRD would typically specify any constraints, limits, system performance criteria, operations expectations, user interfaces, systems interfaces, and other services required for the system to function. See Table I for applicability.

SDD - Systems Design Description

Describes a design for a system in sufficient but not rigorous detail so a qualified individual with appropriate technical background could understand the system form, fit, and function as it has been proposed in the Design Verification process. See Table I for applicability.

CA – Collaborations Agreement

A Task Agreement, Memorandum of Understanding, GRD, SRD, contract, Statement of Work, or any other means agreed upon by PPPL and the collaborator or partner that documents the requirements and indicates approvals. Usually defines major stakeholders, roles, requirements, and deliverables. May define cost and schedule range or limitations.

COG - Cognizant Individual

The individual assigned the scope of work, the job costs, and the schedule to execute the activity. Responsible for performing the work.

RLM – The Responsible Line Manager

Responsible for oversight of the work. Assigns the work to the COG and monitors progress per ENG procedures, sound Project Management principles, and ISM. The performing RLM can be different from the funding RLM.

Requirement

A Physics, Engineering, Environment, Safety, Health, or other project management metric that by definition must be met to satisfy the goals and objectives of the project.

Requirements Change Control

A revision of the above documents and associated project documents where a change requires similar approval as originally for inclusion in the scope of a project and includes review, acceptance, and approval of any cost and schedule changes pertaining thereto.

Note: For capital projects, project change control will be defined per DOE 413.3B, the Project Management System Description (PMSD), and the project specific Project Execution Plan. Nevertheless, the expectation of this procedure that a similar level of review and approval for a change as occurred originally will be maintained.

Procedure

This procedure provides a simple process for determining the requirements documents that apply to a given job or project. This procedure may be a stand alone process or part of a larger construct per the PMSD for capital projects. This procedure allows for the discretion of the RLM or Department Head to determine appropriate documents and change control.

COG	1. Evaluates the scope of work and prepares a Work Planning form per ENG-032.
	2. Selects appropriate requirement document deliverables on the WP (GRD/SRD/SDD/CA) and per Table I.
	3. Evaluates the requirements and prepares appropriate requirements documentation. This step requires the utmost care to establish the integrity and accuracy of the direction of the project. If necessary, the COG will update the WP accordingly if new requirements emerge.
RLM	4. Reviews requirements documents, selects an appropriate slate of reviewers based on scope and stakeholders for the job, and selects the method and means for feedback exchange.
Reviewers	5. Provide feedback on requirements.
COG/RLM	6. Select approvals based on WP category (Capital, Major, Serious, Standard). A document requires at least the same level of approval as a WP per ENG-032 and should include appropriate stakeholder approvals.
Approvers	7. Approve requirements documents.
COG	8. As requirements change, revises requirements documentation and repeats the review and approval process.

Table I

Table I refers to capital projects per DOE Order 413.3, and smaller projects deemed Major, Serious, and Standard projects per ENG-032. The following table requires Department Head or RLM discretion.

	Capital Projects (per DOE 413.3)	Major	Serious	Standard
GRD	Required	Required	Recommended per RLM discretion	Optional per RLM discretion
SRD	Required, unless repetitive work	Required, unless repetitive work	Recommended per RLM discretion or update to existing SRD	Optional per RLM discretion
SDD	Recommended, unless repetitive work per Dept. Hd. discretion	Recommended per Dept. Hd. discretion	Recommended per RLM discretion	Revision of any existing SDDs recommended
Collaborations Agreement	Required (A GRD or other CA is acceptable if signed by all partners)	Required (A GRD or other CA is acceptable if signed by all partners)	Recommended per Dept. Hd. discretion	Recommended per RLM discretion

TRAINING

Head, Project Management Office

1. Ensures the appropriate training methods and means (below) are provided and obtains concurrence of the Management System Owner and the Management Process Owner.

A. Target Audience: COGs and RLMs

Instructor: Head, Project Management Office

Training Method:

- Read only initial - once only
- Email distribution only for major changes – as needed
- Online COG/RLM updates – annual

B. Target Audience: Supervisors

- Best Practices sends out notice of new/changed Procedures to all Supervisors.

Management System Owner or Designee

2. Notifies the Human Resources Training Office of the training so that they will be aware of the training requirements and be able to provide assistance and guidance in the course development, implementation, tracking, and maintenance if needed.

Records Requirements specific to this procedure

Records Custodians must assure records are maintained as follows:

Record Title	Record Custodian	Location	Retention Time
Work Planning Form	Operations Center or Project Manager	Project File	See record Schedule for specific Project Type <i>Reference Admin 17, Cartographic, Aerial Photography, Architectural & Engineering Records (30.c)</i>
Requirements Documentation	Operations Center or Project Manager	Project File	See record Schedule for specific Project Type <i>Reference Admin 17, Cartographic, Aerial Photography, Architectural & Engineering Records (30.c)</i>

Attachment

1. Additional Guidance for Collaborations

Additional Guidance for Collaborations:

Per ENG-032, collaborations jobs shall be performed by a COG and supervised and approved by an RLM using the Work Planning system and shall be performed like in house PPPL jobs. These types of jobs may involve engineering deliverables like design, analysis, fabrication, procurement, assembly, installation, and testing. The jobs flow through the Work Planning procedures and system like in house PPPL jobs but collaborations introduce additional complexity. Communication will be more involved due to additional stakeholders. Therefore additional attention on the part of the COG and RLM for proper and consistent job management may be required.

This attachment provides guidance to be considered by the COG/RLM for collaborations jobs. While all jobs have these types of considerations, the complexity of a particular collaboration may require additional emphasis.

This guidance can also be used to outline and construct collaborations agreements. CAs may take the form of a collaborations agreement, memorandum of understanding, task agreement, requirements document, specification, or other instrument.

1. Job Initiation

- a. Goals/Charter – Because the job will involve two or more institutions, clear goals are necessary to adequately frame and assess the job and expectations. A Collaborations Agreement may be necessary to formally capture these criteria.
- b. Scope definition – The technical, cost, and schedule parameters by which the job will be judged need to be scoped or a plan to develop them jointly should be made. A formal requirements document may be necessary to define the job and provide a means for change control.
- c. Limitations – If particular hard and fast limitations apply then these limitations should be made clear so that either party can assess the likelihood of success and evaluate continued participation.
- d. Stakeholders – While most collaborations will be handled by an existing PPPL department for the collaboration, additional external relationships must be considered, built, and maintained throughout the life of the job especially for direct technical contact for interfaces and deliverables.
- e. Funding – Funding sources, levels, expectations, and limits may pose special challenges for collaborations. Additional input from senior management may be required prior to committing to a job or committing to changes.
- f. Staffing – Experience with collaborations or a particular institution should be considered when staffing a collaborations job. Also, sufficient commitment for engineering, drafting, shop time, and other lab resources must be made with priority.
- g. Roles and Responsibilities – staff may be assigned project or job specific roles and take responsibilities for portions of the work or for communications.

4. Execution

- a. Work Breakdown – A division of duties between collaboration institutions and PPPL may be required. Tasks should be delineated in advance prior to starting the job.
- b. Plan Implementation – Once the Work Plan has been approved by the COG and RLM and the appropriate departments, the work should follow this plan. If the job requires changes, these should be approved to at least the same level of authority as with the original plans.
- c. Evaluate Scope, Cost, Schedule – The COG owns the progress of the job and provides a first point of contact to identify any scope creep, cost growth, delays, or other derailing anomalies to the job. The COG must execute the job with strong involvement and raise flags if problems arise or persist.
- d. Collaboration Communication - The COG, RLM, and managing departments need to define points of contact, insure regularly scheduled discussions, foster site visits when needed, and develop partnerships to ensure quality paths of communications.
- e. Feedback on Expectations – Status, progress, and change needs to be communicated up and down the line so that expectations are clear and managed.
- f. Manage Information - The flow of information and its context is critical to managing expectations. Email chains, web sites, team meetings, video conferencing, and model and drawing access provide opportunities to transfer and manage the flow of information during the course of the job.

5. Monitor & Control

- a. Verify Scope, Cost, and Schedule – The COG, RLM, and P&CO should aggressively maintain tight control over technical, cost, and schedule parameters and use change control to allow for job growth.
- b. Provide EVMS planned value, earned value, and actual costs –The COG provides cost estimates, job status, and reviews job cost reports to provide EVMS data.
- c. Evaluate EVMS criteria and performance – Collaborations will require review by departments or the Project Status Review Board for job performance.
- d. Feedback to Stakeholders – EVMS and job performance can be provided to all stakeholders
- e. Administer Change Control and Corrective Actions – Job growth requires formalized change control for additions. Corrective actions may include variance analysis.

6. Closeout

- a. Closeout reviews – Job completion may require a review to discuss completion. When work is complete the Work Plan should be closed by the COG and RLM.
- b. Closeout procurements – Contractual agreements and deliverables may need additional effort to close the job.
- c. Closeout control accounts – When charges against a control account are complete, the control account should be closed.
- d. Lessons Learned – Successful and not so successful jobs can provide means for continuous improvement for future work.