



# Project Management Competency Model

We deliver world-class learning and development opportunities, and identify, maintain, and advance critical knowledge that empowers NASA to attain successful outcomes across missions and projects.



## Overview

Through its world-class training curriculum, knowledge-sharing initiatives, development resources, and strategic communications, the Academy of Program/Project & Engineering Leadership (APPEL) Knowledge Services helps ensure NASA's technical workforce has the skills and knowledge needed to advance mission success.

Competencies are the foundation of training and developing project and program managers. NASA APPEL Knowledge Services developed the Project Management Competency Model to support the professional development of NASA's technical workforce. The model outlines distinct competency areas for project managers, as well as shared competencies that encompass both project management and systems engineering. There are 17 separate project management competencies which are categorized into 3 overall areas. The 14 shared competencies, common to both project management and systems engineers, are categorized into 5 general areas. Regular reviews and assessments of the competencies help NASA to determine where skill gaps exist and need to be addressed.





## Competency Model Categories

### **PM 1.0 Program/Project Coordination and Leadership**

- PM 1.1 Stakeholder Management
- PM 1.2 Risk Management
- PM 1.3 Budget and Resource Management
- PM 1.4 Contract Management
- PM 1.5 Systems Engineering (SE Competencies)

### **PM 2.0 Program/Project Formulation**

- PM 2.1 Project Proposal
- PM 2.2 Requirements Development and Management
- PM 2.3 Project Planning
- PM 2.4 Cost Estimating
- PM 2.5 Technology and Engineering Development
- PM 2.6 Acquisition Management
- PM 2.7 Project Lifecycle

### **PM 3.0 Program/Project Implementation**

- PM 3.1 Tracking/Trending of Performance
- PM 3.2 Project Control
- PM 3.3 Earned Value Management
- PM 3.4 Project Review and Evaluation
- PM 3.5 Decommissioning/Disposal and Archival of Data



## Project Management Competency Model

### PM 1.0 – PROGRAM / PROJECT COORDINATION AND LEADERSHIP

<b>Definition</b>	Managing the daily operations and activities of any project to help ensure the project runs smoothly, workflow is streamlined, and working efficiently towards project goals through influencing, inspiring, and motivating individuals and teams; creating conditions for individuals and teams to be effective; and recognizing and rewarding individual and team achievements.
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### PM 1.1 – Stakeholder Management

<b>Definition</b>	Identifying, soliciting, and executing planning interrelationships with those individuals and organizations who are actively involved in the project, exert influence over the project and its results, or whose interests may be positively or negatively affected as a result of project execution or project completion.
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<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>• Participates as a project team member to gain an overall understanding of the stakeholder management process and to gain initial experience in the competency.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams in the execution of the stakeholder management process.</li><li>• Provides guidance and expertise to team members, assisting in resolving issues.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams at the project level in the execution of the stakeholder management process.</li><li>• Provides guidance and expertise at the project level, resolving project issues.</li></ul>	<ul style="list-style-type: none"><li>• Leads overall effort, reviews, and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>		<ul style="list-style-type: none"> <li>• Perform stakeholder management planning and communications (e.g., outreach, status reports, and requirements management).</li> <li>• Contribute to agreements between the project and its stakeholders (i.e., deliverables both to and from).</li> </ul>	<ul style="list-style-type: none"> <li>• Effectively communicate and reach agreements with stakeholders.</li> <li>• Engage in external advocacy for an initiative and outreach and education of stakeholders.</li> <li>• Direct and/or author project stakeholder management planning and communications.</li> </ul>	<ul style="list-style-type: none"> <li>• Direct and implement external advocacy for an initiative as well as outreach and education of stakeholders.</li> <li>• Direct and/or author program stakeholder management.</li> <li>• Arrange and approve agreements between the program and its stakeholders (i.e., deliverables both to and from).</li> </ul>
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>• Clear communications</li> <li>• Leadership</li> <li>• Win-win negotiations</li> <li>• Working in teams</li> </ul>			
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>• Project mission, goals, and objectives</li> <li>• Political, economic, and other factors that influence project goals</li> <li>• NASA's organizational structure</li> <li>• Structure of the key external stakeholder organizations</li> </ul>			



## PM 1.2 – Risk Management

<b>Definition</b>	Identifying and analyzing risks and their impact; developing and implementing strategies for risk mitigation; tracking risks and implementing continuous risk management plans. Applying and having knowledge of risk management principles in relation to the Risk-Informed Decision Making (RIDM) and Continuous Risk Management (CRM) processes consistent with programs/projects for the selection of program/project alternatives and for identifying, analyzing, planning, tracking, controlling, communicating and documenting individual, aggregate risks to meet program/project objectives within stated risk tolerance levels. Also involves communicating risk information to all project/program levels and all stakeholders.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>• Participates as a project team member to gain an overall understanding of the risk management process and to gain initial experience in the competency.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams in the execution of the risk-management process.</li><li>• Provides guidance and expertise to team members, assisting in resolving issues.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams at the project level in the execution of the risk-management process.</li><li>• Provides guidance and expertise at the project level, resolving project issues.</li><li>• Participates in risk-management planning and control with respect to technical, cost, and schedule performance.</li><li>• Manages the development of and approves the project risk-management plan.</li></ul>	<ul style="list-style-type: none"><li>• Leads overall effort, reviews, and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>			<ul style="list-style-type: none"> <li>• Implements a continuous risk-management plan that supports informed, timely, and effective decisions to control and mitigate risk throughout the project life cycle.</li> <li>• Leads a risk-management process that includes conducting IBRs when EVM is required and utilizes risk analysis to support decision-making.</li> <li>• Leads a risk-analysis meeting, in which a collection of risks is evaluated for impact, probability, and timeframe.</li> </ul>	
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>• Team Practitioners should be able to describe, identify, or define:</li> <li>• Utilization of risk analysis to support decision-making.</li> </ul>	<ul style="list-style-type: none"> <li>• Team Leads should be able to:</li> <li>• Develop and implement strategies to mitigate or eliminate risk.</li> </ul>	<ul style="list-style-type: none"> <li>• Project Managers should be able to:</li> <li>• Classify/categorize issues into risk areas for applying mitigation strategies collectively.</li> </ul>	<ul style="list-style-type: none"> <li>• Program Managers should be able to:</li> <li>• Approve the risk-management plan for a program.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>• The fundamental concept of continuous risk management (CRM).</li> <li>• The NASA process of CRM.</li> <li>• The connection between identified risk-mitigation strategies and the project's plan, schedule, and Estimate at Completion (EAC).</li> <li>• The risk-management process.</li> <li>• The integrated baseline review (IBR) role in the risk-management process when EVM is required for projects/contracts.</li> <li>• Techniques to assess, mitigate, and balance risks.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluate risk-management products and understand their implications to the system of interest.</li> <li>• Use techniques to assess, mitigate, and balance risks.</li> <li>• Create and implement a risk-management/-mitigation plan for a subsystem, which involves using failure modes and effects analysis, fault tree analysis, probabilistic risk assessment, or other suitable risk analysis techniques as appropriate.</li> <li>• Participate in a risk management process that includes IBRs when EVM is required and use risk analysis to support decision-making and to avoid working on risk issues in isolation.</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritize issues to identify the risks most important to the project.</li> <li>• Evaluate and anticipate difficult-to-detect technical, schedule, cost, and programmatic risks.</li> <li>• Monitor and adjust plans to overcome these risks.</li> </ul>	<ul style="list-style-type: none"> <li>• Implement continuous risk management in a program and its projects to reduce risk.</li> <li>• Lead development and execution of CRM planning.</li> <li>• Direct project risk management and control with respect to technical, cost, and schedule performance, including the conduct of IBRs on in-house projects when EVM is required.</li> <li>• Direct a risk-management process and utilize risk analysis to support decision-making.</li> <li>• Monitor the risk-management processes and be able to make adjustments and improvements to ensure effectiveness.</li> </ul>





Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>Project management tools and their capabilities with respect to risk management.</li> <li>Risks of a project subsystem or element as well as risk-management planning and control with respect to technical cost.</li> <li>Obvious or easy-to-detect technical, schedule, cost, and programmatic risks</li> </ul>	<ul style="list-style-type: none"> <li>Access the entire project team, stakeholders, and outside resources as necessary in anticipating and responding to a risk issue.</li> <li>Manage and communicate risk data to all potential stakeholders via an integrated system (e.g., the integrated risk management application, or IRMA).</li> </ul>		
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>Technical writing</li> <li>Leadership</li> <li>Strategic thinking</li> <li>Win-win negotiations</li> <li>Working in teams</li> </ul>			
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>Project mission, goals, and objectives</li> <li>Project architectures and concepts</li> <li>Stakeholder expectations</li> <li>Political, economic, and other factors that influence project goals</li> </ul>			



### PM 1.3 – Budget and Resource Management

<b>Definition</b>	Executing NASA and Center budgeting processes for annual (PPBE) and life cycle budget projections ensuring consistency between resource availability and project resource needs to include equipment, funding, civil servant FTEs, contractor WYEs, procurement, and facilities. Includes advocacy; budget and operating plan development and management; and allocation of financial, facility, and other resources.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>• Participates as a project team member to gain an overall understanding of the budget and resource management activities and to gain initial experience in the competency.</li><li>• Allocates, tracks, and manages funding and other capital resources within a project.</li><li>• Performs cost estimating of technical work products.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams in the execution of the budget and resource management activities. Provides guidance and expertise to team members, assisting in resolving issues.</li><li>• Allocates, tracks, and manages funding and other capital resources within a project element.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams at the project level in execution of the budget and resource management activities. Provides guidance and expertise at the project level, resolving project issues.</li><li>• Project Managers apply the processes of allocating, tracking, and managing funding and other capital resources within a project including the capacity.</li></ul>	<ul style="list-style-type: none"><li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level internal, external, and international contacts.</li><li>• Allocates and tracks funding and other capital resources within a project.</li><li>• Describes, identifies, or defines processes and techniques for working with stakeholders to effectively deal with a dynamic budget environment.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>• Contributes to developing products required for the PPBE processes, including timely and accurate full-cost budget information (such as labor, procurement, and travel estimates) to project managers when requested and recording of project budget activities in NASA's accounting and financial systems.</li><li>• Uses the WBS as a tool for tracking actual versus estimated costs, using this information to revise cost models appropriately.</li></ul>			<ul style="list-style-type: none"><li>• Makes tradeoffs between multiple and competing needs and issues, both internal and external.</li><li>• Coordinates budgets and contracts with line organizations and/or contractors.</li><li>• Applies NASA's budgeting process and accounting and financial management techniques.</li><li>• Leads the development and iteration of the PPBE.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"> <li>Processes for estimating the cost of technical work products.</li> <li>General principles of full cost and EVM and their application in the project environment.</li> <li>Significant resource needs and issues for the system of interest.</li> <li>General principles of cost as a risk factor.</li> </ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"> <li>Review and approve cost estimates for subsystem elements.</li> <li>Successfully advocate for the resources needed to accomplish subsystem work scope.</li> <li>Evaluate resource management products and understand their implications for the system of interest.</li> <li>Prepare a project plan that projects the cost required to proceed according to the project management plan.</li> <li>Make tradeoffs between multiple and competing needs and issues, both internal and external.</li> <li>Negotiate budgets and contracts with line organizations or contractors.</li> </ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"> <li>Apply NASA's budgeting process and accounting and financial management techniques and systems to project activities.</li> <li>Lead budget development and iteration with the PPBE for a subsystem, small project, or equivalent entity.</li> <li>Evaluate the effectiveness of others in performing cost estimating and full cost accounting.</li> <li>Use data and information from full cost accounting systems and EVM systems when applicable to make decisions regarding resource allocations.</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>Ensure the accuracy of budget activities in NASA's accounting, financial, and EVM systems.</li> <li>Use data and information from full cost accounting systems to make resource allocations throughout the program/project.</li> <li>Successfully advocate to NASA headquarters (HQ) and field center management for resources.</li> <li>Contribute timely and accurate data to HQ and field center management during the PPBE cycle.</li> </ul>





Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>		<ul style="list-style-type: none"><li>• Understand the process and administer contracts.</li></ul>	<ul style="list-style-type: none"><li>• Approve the annual comprehensive Estimate at Completion (EAC) on projects/contracts with EVM in support of the PPBE process.</li><li>• Successfully advocate for the resources needed to accomplish the project work scope.</li><li>• Contribute timely and accurate data and analysis to program and field center managers per the PPBE cycle.</li><li>• Manage budgets and contracts with line organizations or contractors.</li></ul>	



<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>• Clear communications</li> <li>• Leadership</li> <li>• Strategic thinking</li> <li>• Win-win negotiations</li> <li>• Working in teams</li> </ul>
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>• Project mission, goals, and objectives</li> <li>• Project architectures and concepts</li> <li>• Stakeholder expectations</li> <li>• Political, economic, and other factors that influence project goals</li> </ul>

## PM 1.4 – Contract Management

<b>Definition</b>	<p>Performing acquisition management and monitoring contractor activities to ensure hardware/software components are delivered on time at projected costs and meet all contract and performance requirements. Also involves performing variance reporting, change control functions, evaluation of contractor performance, control of contract changes, and determination and approval of contract award fees throughout the design.</p>			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"> <li>• Participates as a project team member to gain an overall understanding of the contract management process and to gain</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams in the execution of the contract management process. Provides guidance and expertise to team members, assisting in resolving issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams at the project level in the execution of the contract management process.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads overall effort, review and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>	initial experience in the competency.	<ul style="list-style-type: none"><li>• Applies the wide array of contract management activities.</li></ul>	<ul style="list-style-type: none"><li>• Provides guidance and expertise at the project level, resolving project issues.</li></ul>	<ul style="list-style-type: none"><li>• Must be knowledgeable about the wide array of contract management activities, including EVM if applicable, and how to optimally select appropriate contract types to enable the development and delivery of project products.</li></ul>
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"><li>• The penetration/insight required for contractor activities.</li></ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"><li>• Support development of penetration/insight processes required for contractor activities based upon risk assessment.</li><li>• Manage contract change control, contract performance, variance reporting, and contract award recommendations.</li></ul>	<ul style="list-style-type: none"><li>• Project Managers should be able to: Perform project contract management, including change control, monitoring of contract performance, variance reporting, EVM system/data surveillance when EVM is required, and contract award recommendation.</li></ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"><li>• Develop the penetration/insight processes required for contractor activities based upon risk assessment.</li><li>• Chair contract change control boards for projects.</li><li>• Manage contract performance evaluation and award recommendations.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>The importance of contract surveillance and the different methods that can be employed and must demonstrate implementation of contract surveillance activities, such as attending progress reviews, reviewing submittals, and performing EVM system/data surveillance when EVM is required.</li> <li>Configuration or change control process as well as contract performance including EVM if applicable, variance reporting, and contract award recommendation.</li> </ul>	<ul style="list-style-type: none"> <li>Participate in negotiation of change orders and contract close out.</li> <li>Collaborate with project management and procurement personnel on contract management planning.</li> <li>Perform contract surveillance activities, including knowledge of contractor and their EVM system</li> <li>Monitor contractor work products.</li> <li>Evaluate and make recommendations to project management on contract change orders.</li> </ul>	<ul style="list-style-type: none"> <li>Collaborate with procurement personnel on acquisition strategies and contract management planning.</li> <li>Successfully negotiate contracts.</li> <li>Manage contract surveillance activities.</li> <li>Evaluate contractor progress and approve contract changes.</li> </ul>	<ul style="list-style-type: none"> <li>Direct and approve the program and project-level acquisition strategies.</li> <li>Oversee contract management of large contracts.</li> </ul>





<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>• Clear communications</li> <li>• Ethics</li> <li>• Leadership</li> <li>• Strategic thinking</li> <li>• Win-win negotiations</li> <li>• Working in teams</li> </ul>
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>• Project mission, goals, and objectives</li> <li>• Project architectures and concepts</li> <li>• Stakeholder expectations</li> <li>• NASA FAR regulations for contracts</li> <li>• Political, economic, and other factors that influence project goals</li> </ul>

### PM 1.5 – Systems Engineering (see SE Competencies)

<b>Definition</b>	Generating a specific product through buying, making, or reusing to satisfy the design requirements. This includes preparing the implementation strategy; building or coding the product; reviewing vendor technical information; inspecting delivered, built, or reused products; and preparing product support documentation for integration. (See Systems Engineering Competency Model for specific competencies.)			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	See System Engineering Competencies			
<b>Proficiency Illustrations</b>	See System Engineering Competencies			
<b>Underlying Skills</b>	See System Engineering Competencies			



<b>Fundamental Knowledge of</b>	See System Engineering Competencies
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## PM 2.0 – PROGRAM/PROJECT FORMULATION

<b>Definition</b>	The identification of how the program or project supports the Agency’s strategic needs, goals, and objectives; the assessment of feasibility, technology, and concepts; risk assessment, team building, development of operations concepts, and acquisition strategies; establishment of high-level requirements and success criteria; the preparation of plans, budgets, and schedules essential to the success of a program or project; and the establishment of control systems to ensure performance to those plans and alignment with current Agency strategies.
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### PM 2.1 – Project Proposal

<b>Definition</b>	Conceptualizing, analyzing, and defining program/project plans and requirements and using technical expertise to write, manage, and submit winning proposals. Also involves developing functional, physical, and operational architectures, including life-cycle costing.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"> <li>Participates as a project team member to gain an overall understanding of the project proposal process and to gain initial experience in the competency.</li> </ul>	<ul style="list-style-type: none"> <li>Leads teams in the execution of project proposal activities.</li> <li>Provides guidance and expertise to team members, assisting in resolving issues.</li> </ul>	<ul style="list-style-type: none"> <li>Leads teams at the project level in the execution of the project proposal activities.</li> <li>Provides guidance and expertise at the project level, resolving project issues.</li> </ul>	<ul style="list-style-type: none"> <li>Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>Team Practitioners should be able to describe, identify, or define:</li> <li>How NASA projects are proposed, approved, and funded.</li> <li>The basic elements of a successful project proposal.</li> <li>How a current project's proposal meets the needs of a NASA Strategic Plan element and the Center Implementation Plan.</li> <li>The support activities involving multiple organizations outside the center.</li> <li>How to develop a network of external contacts.</li> </ul>	<ul style="list-style-type: none"> <li>Team Leads should be able to:</li> <li>Develop functional, physical, and operational architectures (including life cycle costing).</li> <li>Develop, cost, and trade concepts, along with their technology plans.</li> <li>Pursue activities involving multiple organizations outside the center to expand their network of external contacts, including industry partnering activities, and NASA infrastructure utilization.</li> <li>Know the steps of the center's bid and proposal process.</li> <li>Contribute to, or lead, management of the proposal writing and/or submission process.</li> </ul>	<p>Project Managers should be able to demonstrate:</p> <ul style="list-style-type: none"> <li>Expertise in writing, managing, and submitting winning proposals</li> <li>The capacity to develop functional, physical, and operational architectures (including life cycle costing).</li> <li>Proficiency in developing, trading, and selecting concepts, along with their technology plans.</li> <li>The effective use of bid and proposal support resources to lead the development of complete bid and proposal packages..</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>Review and approve bid and proposal packages. Direct the development of functional, physical, and operational architectures (including life cycle costing), and trading concepts along with their technology plans.</li> <li>Identify industry partnering opportunities and NASA infrastructure utilization.</li> <li>Partner in the development of appropriate domestic and international partnerships.</li> </ul>



<b>Underlying Skills</b>	<ul style="list-style-type: none"><li>• Clear communications</li><li>• Win-win negotiations</li><li>• Developing and maintaining relationships</li><li>• Leadership</li><li>• Technical writing</li></ul>
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"><li>• How NASA projects are proposed, approved, and funded</li><li>• The steps of the center's bid and proposal process</li><li>• Organizational structure and capabilities within NASA</li><li>• Organizational structure external to NASA, including industry partnering activities</li><li>• Political environment</li><li>• How to develop a network of external contacts</li></ul>





## PM 2.2 – Requirements Development and Management

<b>Definition</b>	Developing project requirements using defined systems engineering tools and processes, such as functional analysis, decomposition, allocation, mission, and system trades, assessment, and validation of assumptions, peer reviews, and risk balancing; identifying key and driving requirements; finalizing project requirements into the baseline; and managing project requirements so that changes are minimal and scope is maintained within an acceptable schedule, cost, and technological and risk boundaries; defining, developing, verifying, reviewing and managing changes to program/project requirements.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>• Participates as a project team member to gain an overall understanding of the requirements development and management process and to gain initial experience in the competency.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams in the execution of the requirements development and management processes.</li><li>• Provides guidance and expertise to team members, assisting in resolving issues.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams at the project level in the execution of the requirements development and management process. Provides guidance and expertise at the project level, resolving project issues.</li><li>• Obtain and evaluate customer functional and performance project requirements and obtain stakeholder acceptance.</li><li>• Define, develop, verify, review, and maintain specifications.</li></ul>	<ul style="list-style-type: none"><li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level internal, external, and international contacts.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"> <li>• The process involved in defining requirements.</li> <li>• Concepts, project plans, and associated items, including the need for customer involvement to understand their objectives, plans, and requirements.</li> <li>• The process of decomposing customer requirements into project requirements that are clear, feasible, and verifiable.</li> <li>• Requirements baselining, traceability, change processing, and allocation.</li> </ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"> <li>• Participate in defining requirements, concepts, project plans (baselining, traceability, change process, allocation), and associated</li> <li>• Participate in requirements change control for the subsystem and balance requirements changes with subsystem cost and schedule.</li> <li>• Select and/or tailor appropriate requirements, development, and management processes according to project type.</li> <li>• Define, verify, review, and maintain requirements and specifications through functional analysis, technology feasibility, availability, readiness, and decomposition from top-level goals.</li> </ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Select and/or tailor appropriate requirements, development, and management processes according to project type.</li> <li>• Effectively manage others in requirements development tasks, such as functional analysis, analysis of technology feasibility, availability, readiness, and decomposition.</li> <li>• Select and tailor appropriate processes according to project type and approve project requirements and changes.</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Oversee programmatic requirements for obtaining and evaluating customer functional and performance requirements and their management.</li> <li>• Manage the processes for defining, developing, verifying, reviewing, and managing changes to program.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>		<ul style="list-style-type: none"> <li>Demonstrate expertise in tracing an assigned system/subsystem product to a specific requirement in the project specification</li> </ul>		<ul style="list-style-type: none"> <li>Manage development and iteration of requirements concepts; project plans; the planning, programming, and budgeting execution (PPBE) cycle; and associated items for stakeholder acceptance, including analyzing and challenging impacts, capturing relevant standards and criteria, and ensuring that each requirement is verifiable.</li> <li>Direct the requirements baselining process, traceability, change process, and allocation, and approve program requirements and changes.</li> </ul>
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>Clear communications</li> <li>Technical writing</li> <li>Use of selected requirements capturing and tracking tool</li> <li>Working in teams</li> </ul>			



<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>• Project mission, goals, and objectives</li> <li>• Project architectures and concepts</li> <li>• Stakeholder expectations</li> <li>• Political, economic, and other factors that influence project goals</li> </ul>
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## PM 2.3 – Project Planning

<b>Definition</b>	Developing effective project management plans, including the technical integration of project elements for small, moderate, and complex projects. This includes scope definition, governance structure, WBS, control plans, schedule, and resource estimation and allocation for all project phase activities from concept to launch, operation, tracking, and disposal.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"> <li>• Participates as a project team member to gain an overall understanding of the project planning process and to gain initial experience in the competency.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams in the execution of project planning activities.</li> <li>• Provides guidance and expertise to team members assisting in resolving issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams at the project level in the execution of project planning activities.</li> <li>• Provides guidance and expertise at the project level, resolving project issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li> <li>• </li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>Understands the integration of project elements, design functions, and discipline functions and their associated interactions to balance performance, cost, reliability, operability, and risk, as well as project formulation activities that include planning for EVM in-house implementation when applicable.</li></ul>	<ul style="list-style-type: none"><li>Manages a small project subsystem or equivalent entity during the formulation phase or exhibit other significant involvement in project formulation (with sole authority for project budget, schedule, and scope), and to participate in project/technical integration of project elements, design functions, and discipline functions, and their associated interactions to balance performance, cost, reliability, operability, and risk. Ensure proper scope definition.</li></ul>	<ul style="list-style-type: none"><li>Project managers should be able to lead the planning process for a large project, subsystem, or equivalent entity, including scope definition, integrating activities into a schedule, and resource estimation and allocation, including resources for identified risks and risk mitigations.</li></ul>	<ul style="list-style-type: none"><li>Program Managers are expected to create project and resource plans for complex projects with many interrelated paths, involving multiple organizational units or contractors, and especially challenging deadlines, as well as for projects that are novel, complex, or highly interrelated with other work.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"> <li>• The overall NASA project life cycle, including specific steps in the cycle (e.g., milestone reviews) and project life cycle and gate products.</li> <li>• How to use scheduling and cost-estimating tools to plan the design, development, and testing activities.</li> <li>• How to incorporate risk identification and mitigation planning into the budget, schedule, and staffing.</li> <li>• How to develop a work breakdown structure (WBS) and associated schedule.</li> </ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"> <li>• Integrate activities into a schedule.</li> <li>• Conduct resource estimation and allocation, including resources for identified risks and risk mitigations.</li> <li>• Develop project plans for simple, relatively routine, small- to moderate-sized projects, including EVM when applicable.</li> <li>• Manage the integration of plans, schedules, and cost estimates for a subsystem.</li> <li>• Obtain project approvals through well-established means (e.g., in own work unit).</li> <li>• Assure that resources and schedule are commensurate with the project scope and risk.</li> </ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Implement typical management controls for areas of responsibility.</li> <li>• Perform EVM implementation planning and use when applicable.</li> <li>• Use advanced project planning and tracking tools with extensive EVM capabilities.</li> <li>• Develop a risk-informed life cycle project plan, including WBS, budget, schedule, staffing, and project success criteria.</li> <li>• Oversee project/technical integration of project elements, design functions, and discipline functions, and their associated interactions to balance performance, cost, schedule, reliability, operability, and risk.</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Lead the development and approval of the overall program plan.</li> <li>• Lead a large project, major system, or equivalent entity during the formulation phase, with sole authority for project budget, schedule, and scope.</li> <li>• Direct technical integration of project elements, design functions, and discipline functions and their associated interactions to balance performance, cost, schedule, reliability, and operability.</li> <li>• Direct the development of a life cycle project plan, including WBS, budget, schedule, staffing, EVM if applicable, and project success criteria.</li> </ul>





Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>Project formulation activities and development of a life cycle project plan, including WBS, budget, schedule, staffing, and project success criteria.</li> <li>Development of the project WBS.</li> </ul>		<ul style="list-style-type: none"> <li>Plan for milestone reviews.</li> <li>Be a project advocate.</li> </ul>	<ul style="list-style-type: none"> <li>Lead the process for obtaining approval of especially innovative or complex projects that involve multiple funding sources and work interrelationships with other units.</li> </ul>
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>Clear communications</li> <li>Technical writing</li> <li>Leadership</li> <li>Strategic thinking</li> <li>Win-win negotiations</li> <li>Working in teams</li> </ul>			
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>Project mission, goals, and objectives</li> <li>Project architectures and concepts</li> <li>Stakeholder expectations</li> <li>Political, economic, and other factors that influence project goals</li> </ul>			

**PM 2.4 – Cost Estimating**

<b>Definition</b>	Developing credible cost estimates to support a variety of systems engineering trade studies, affordability analyses, strategic planning, capital investment decision-making, and budget preparation during project planning. This includes engagement and negotiation with line organizations and subcontractors to achieve sound cost and schedule estimates, establishing appropriate UFE/Reserves and Schedule slack to establish a credible estimate, and providing information for independent assessments as required.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>Participates as a project team member to gain an overall understanding of the cost estimating process and to gain initial experience in the competency.</li></ul>	<ul style="list-style-type: none"><li>Leads teams in the execution of the cost-estimating process.</li><li>Provides guidance and expertise to team members, assisting in resolving issues.</li></ul>	<ul style="list-style-type: none"><li>Leads teams at the project level in the execution of the cost-estimating process.</li><li>Provides guidance and expertise at the project level, resolving project issues.</li></ul>	<ul style="list-style-type: none"><li>Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li></ul>
<b>Proficiency Illustrations</b>	Team Practitioners should be able to describe, identify, or define: <ul style="list-style-type: none"><li>Credible cost estimates to support a variety of systems engineering trade studies.</li><li>Perform affordability analyses.</li></ul>	Team Leads should be able to: <ul style="list-style-type: none"><li>Ensure the use of straightforward and well-documented models and techniques for cost estimating during relevant project life cycle phases.</li></ul>	Project Managers should be able to: <ul style="list-style-type: none"><li>Use cost estimates as a planning tool and as an additional input or constraint into the design space for the project.</li></ul>	Program Managers should be able to: <ul style="list-style-type: none"><li>Evaluate and reconcile independent cost estimates with advocacy cost estimates.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>• Execute strategic planning.</li> <li>• Participate in capital investment decision-making.</li> <li>• Prepare budgets during project planning.</li> <li>• Provide information for independent assessments.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that all project needs are adequately covered and properly time-phased in the budget submission for projects of low to medium complexity.</li> <li>• Ensure that cost estimates cover the entire project life cycle.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure the use of advanced models and techniques for cost estimating during relevant project life cycle phases, and assure that a cost analysis data requirement (CADRe) is developed and maintained.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure that all project needs are adequately covered and properly time-phased in the budget submission for large-scale complex projects and/or projects with resource issues.</li> </ul>
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>• Clear communications</li> <li>• Leadership</li> <li>• Win-win negotiations</li> <li>• Working in teams</li> </ul>			
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>• Project mission, goals, and objectives</li> <li>• Project architectures and concepts</li> <li>• Cost estimating tools</li> <li>• Stakeholder expectations</li> <li>• Political, economic, and other factors that influence project goals</li> </ul>			



## PM 2.5 – Technology and Engineering Development

<b>Definition</b>	Evaluating the feasibility, development, progression, readiness, cost, risk, and benefits of integrating new technology and engineering with project plans and schedules. This includes preparing backup plans and schedules for situations when technologies or engineering do not mature at the required rate. This evaluation will allow technology and engineering to be developed and transferred efficiently and effectively to project stakeholders or for possible commercialization.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>• Participates as a project team member to gain an overall understanding of technology and engineering development activities and to gain initial experience in the competency.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams in the execution of technology and engineering development activities.</li><li>• Provides guidance and expertise to team members, assisting in resolving issues.</li><li>• Applies processes for leading and reporting results of technology assessment activities.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams at the project level in the execution of technology and engineering development activities.</li><li>• Provides guidance and expertise at the project level, resolving project issues.</li><li>• Manages the processes for assessing and developing project technologies.</li><li>• Manages the processes of technology transfer and commercialization and the role of other field center organizations in those processes (such as legal and commercial).</li></ul>	<ul style="list-style-type: none"><li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li><li>• Motivates the implementation of NASA's technology transfer and commercialization policies.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>			<ul style="list-style-type: none"> <li>• Directs and/or authors technology assessment, development, and transfer project plans.</li> <li>• Evaluates and approves technology maturation progress and assignment of TRL values.</li> <li>• Arranges and directs technology transfer and/or commercialization activities.</li> </ul>	
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"> <li>• Technology readiness levels and how they relate to the system of interest.</li> <li>• NASA's technology transfer and commercialization policies and applications.</li> </ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"> <li>• Apply processes of technology development and maturation related to technology readiness level (TRL).</li> <li>• Apply NASA's technology transfer and commercialization policies and applications.</li> </ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Lead teams at the project level in the execution of the technology and engineering development activities. Provide guidance and expertise at the project level, resolving project issues.</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Assess, develop, and transfer technology.</li> <li>• Direct and/or author technology assessment, development, and transfer program plans.</li> <li>• Participate as necessary in technology transfer and commercialization activities.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"><li>• Processes for technology assessment.</li><li>• Technology transfer and commercialization processes.</li><li>• Project technology assessments, technology transfer, and commercialization activities.</li><li>• The risk management process.</li></ul>	<ul style="list-style-type: none"><li>• Perform the application of risk management to new technology development.</li><li>• Track and report costs relative to the planned technology development goals.</li><li>• Prepare backup plans for situations when technologies or engineering do not mature at the required rate.</li></ul>	<ul style="list-style-type: none"><li>• Manage the processes for assessing and developing project technologies.</li><li>• Manage the processes of technology transfer and commercialization and the role of other field center organizations in those processes (such as legal and commercial).</li><li>• Direct and/or author technology assessment, development, and transfer project plans.</li><li>• Evaluate and approve technology maturation progress and assignment of TRL values.</li><li>• Arrange and direct technology transfer and/or commercialization activities.</li></ul>	<ul style="list-style-type: none"><li>• Direct risk management and control with respect to new technology development.</li><li>• Evaluate the impact of costs relative to planned technology development goals.</li><li>• Develop overall project/program strategies for backup plans when technologies or engineering do not mature at the required rate.</li></ul>



<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>• Clear communications</li> <li>• Leadership</li> <li>• Strategic thinking</li> <li>• Win-win negotiations</li> <li>• Working in teams</li> </ul>
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>• Project mission, goals, and objectives</li> <li>• Project architectures and concepts</li> <li>• Stakeholder expectations</li> <li>• Political, economic, and other factors that influence project goals</li> </ul>

## PM 2.6 – Acquisition Management

<b>Definition</b>	Developing, implementing, and monitoring the acquisition strategies, procurement processes, contract activities, and approval requirements to support flight hardware/software, service/support, or other project requirements.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"> <li>• Participates as a project team member to gain an overall understanding of the acquisition management process and to gain</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams in the execution of the acquisition management process.</li> <li>• Provides guidance and expertise to team members, assisting in resolving issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams at the project level in the execution of the acquisition management process.</li> <li>• Provides guidance and expertise at the project level, resolving project issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level internal, external, and international contacts.</li> </ul>





Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>	<p>initial experience in the competency.</p> <ul style="list-style-type: none"><li>• Understands and fully complies with federal requirements for contracting via both full and open competition and “other than full and open competition.”</li><li>• Understands the requirements for statements of work (SOW), data requirement descriptions (DRDs), verification plans, technical metrics, acceptance and approval requirements, and the attainment process.</li></ul>			



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>	<ul style="list-style-type: none"> <li>Understands available acquisition instruments and their uses, such as contracts, grants, and cooperative agreements, and the appropriate use of each instrument.</li> </ul>			
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"> <li>The purpose and key elements of an acquisition strategy.</li> <li>Requirements for acquisitions involving well-known, commonly available products, materials, and services.</li> <li>The general acquisition strategy outline of the current project(s).</li> </ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"> <li>Contribute to the development, implementation, and monitoring of acquisition strategies, contract SOWs, DRDs, verification plans, and approval requirements to support flight hardware/software or other project requirements.</li> </ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"> <li>Identify the strengths, weaknesses, opportunities, and risks associated with various acquisition strategies.</li> <li>Apply agency and center acquisition procedures and processes.</li> <li>Determine EVM applicability and implementation requirements.</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>Approve and oversee a program's acquisition strategy.</li> <li>Lead activities associated with development and implementation of contracts and procurement of major hardware/software when serving on a SEB or as a COR.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>• The NASA procurement process of obtaining products and services from outside of NASA</li> <li>• How to prepare an accurate purchase order for products or services from outside of NASA.</li> <li>• The applicability determination of EVM for NASA programs/projects and contracts and associated requirements.</li> <li>• How to write clear SOWs, requirements, and specifications that accurately describe the services and products contractors are obligated to provide.</li> </ul>	<ul style="list-style-type: none"> <li>• Establish effective partnerships with acquisition/contract, EVM, and resources management personnel.</li> <li>• Initiate and track procurement processes for needed services and/or products.</li> <li>• Formulate and execute acquisitions consistent with attainment strategies for projects with low to moderate complexity.</li> <li>• Perform acquisitions for projects with relatively straightforward and stable funding situations.</li> <li>• Monitor and evaluate the performance of acquisitions with low to moderate complexity.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify requirements for acquisitions involving advanced, newly developed, and innovative products, materials, and services.</li> <li>• Establish effective partnerships with acquisition/contract, EVM, and resources management personnel.</li> <li>• Demonstrate capability in development, implementation, and monitoring acquisition strategies, contract SOW, DRDs, verification plans, and approval requirements to support flight hardware/software.</li> <li>• Apply and use NASA's procurement process and contract relationships.</li> </ul>	<ul style="list-style-type: none"> <li>• Direct development, implementation, and monitoring of acquisition strategies, contract SOW, DRDs, verification plans, and approval requirements to support flight hardware/software.</li> <li>• Perform project acquisitions involving multiple contracts, grants, cooperative agreements, and other complex funding mechanisms.</li> <li>• Monitor and evaluate the performance of acquisitions on large-scale, complex projects using EVM if applicable.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>			<ul style="list-style-type: none"> <li>• Demonstrate capability in formulating and executing acquisitions consistent with attainment strategies for large-scale, complex projects, and managing the development of contract SOW requirements, contractor DRDs, and data types (data approval requirements).</li> <li>• Manage the development and approval of a project's acquisition strategy.</li> <li>• Establish and manage successful win-win vendor/contractor relationships.</li> </ul>	
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>• Clear communications</li> <li>• Technical writing</li> <li>• Leadership</li> <li>• Win-win negotiations</li> <li>• Working in teams</li> </ul>			



<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>• Project mission, goals, and objectives</li> <li>• NASA FAR regulations for contracts and acquisitions</li> <li>• Project architectures and concepts</li> <li>• Stakeholder expectations</li> <li>• Political, economic, and other factors that influence project goals</li> </ul>
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## PM 2.7 – Project Lifecycle

<b>Definition</b>	Developing and executing plans to implement and manage the project life-cycle phases, gates, and major events, including Key Decision Points (KDPs), Life-Cycle Reviews (LCRs), and principal documents that govern the conduct of each phase, including project closeout, and decommissioning/disposal.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"> <li>• Participates as a project team member to gain an overall understanding of the project life cycle activities and to gain initial experience in the competency.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams in the execution of the project life cycle activities.</li> <li>• Provides guidance and expertise to team members, assisting in resolving issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams at the project level in the execution of the project life cycle activities.</li> <li>• Provides guidance and expertise at the project level, resolving project issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"> <li>The project governance and communication plan describing the governance organization and process used to focus internal and external stakeholder resources, human, budgetary, regulatory, and physical aspects of project life cycle management.</li> <li>How NASA projects review, approve and maintain the project life cycle governance and execution plans.</li> </ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"> <li>Support the implementation and effective use of project management methodology throughout the project life cycle.</li> <li>Plan for issues concerning physical construction, operating systems, hardware, programming, safety, and security.</li> <li>Implement system life cycle functions, and features, and facilitate structured engineering methods.</li> <li>Monitor operations and maintenance standards.</li> </ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"> <li>Plan, design, develop, test, implement, and maintain system development life cycle phases.</li> <li>Provide technical consultation and support on project management and systems engineering.</li> <li>Review project materials and deliverables for adherence to cost, schedule, technical performance, and risk.</li> <li>Identify and analyze project requirements, especially key/driving mission, science, and/or system requirements.</li> <li>Define project scope, product deliverables, and de-scope options.</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>Develop project requirements in accordance with programmatic guidance for obtaining and evaluating customer functional and performance requirements and their management.</li> <li>Develop processes for defining, developing, verifying, reviewing, and managing changes to program requirements.</li> <li>Provide technical management and implementation experience/oversight to direct the completion of difficult technical tasks, especially multi-faceted, cross-cutting tasks.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"><li>• The communication of roles and responsibilities of project team members throughout the project life cycle.</li></ul>		<ul style="list-style-type: none"><li>• Plan and coordinate project activities such as scheduling, budgeting, and administrative tasks, and ensure that all project phases are documented appropriately.</li><li>• Plan and coordinate the development, maintenance, and publication of project plans.</li></ul>	<ul style="list-style-type: none"><li>• Manage development and iteration of requirements concepts, program plans, PPBE cycle, and associated items for projects or large sub-systems including stakeholder acceptance. This includes analyzing and challenging impacts, capturing relevant acceptance standards and criteria, and ensuring that requirements are verifiable.</li><li>• Direct requirements base-lining process, traceability, change control process, and allocation of functional responsibility.</li><li>• Approve program/project requirements and changes.</li></ul>





<b>Underlying Skills</b>	<ul style="list-style-type: none"><li>• <b>Clear communications</b></li><li>• <b>Leadership</b></li><li>• <b>Strategic thinking</b></li><li>• <b>Win-win negotiations</b></li><li>• <b>Working in teams</b></li></ul>
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"><li>• Project mission, goals, and objectives</li><li>• Project architectures and concepts</li><li>• Stakeholder expectations</li><li>• Political, economic, and other factors that influence project goals</li></ul>

### **PM 3.0 – PROGRAM/PROJECT IMPLEMENTATION**

<b>Definition</b>	The execution of approved plans for the development and operation of a program or project and the use of control systems to ensure performance to approved plans and continued alignment with the agency's needs, goals, and objectives.
<b>PM 3.1 – Tracking/Trending of Performance</b>	
<b>Definition</b>	Monitoring and evaluating cost, schedule and technical performance metrics, project risks, and earned value data to analyze, assess and report program/project status and technical and programmatic performance of all activities. Establishing and monitoring leading indicators throughout the project life cycle.



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>	<ul style="list-style-type: none"> <li>Participates as a project team member to gain an overall understanding of the tracking/trending process and to gain initial experience in the competency.</li> </ul>	<ul style="list-style-type: none"> <li>Leads teams in the execution of the tracking/trending process.</li> <li>Provides guidance and expertise to team members, assisting in resolving issues.</li> </ul>	<ul style="list-style-type: none"> <li>Leads teams at the project level in the execution of the tracking/trending process.</li> <li>Provides guidance and expertise at the project level, resolving project issues.</li> </ul>	<ul style="list-style-type: none"> <li>Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li> <li>Understands and effectively utilizes EVM for program/project performance management.</li> </ul>
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"> <li>EVM metrics for the project and contract performance management.</li> <li>Maintenance/monitoring of performance metrics, project risk, and earned value data to determine project health status.</li> </ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"> <li>Ensure effective utilization of EVM methods for project and contract performance management.</li> <li>Maintain/monitor performance metrics, project risk, and earned value data to determine project health status.</li> </ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"> <li>Apply EVM methods to project and contract management.</li> <li>Conduct continual project monitoring and formal reviews.</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>Ensure continual project monitoring and lead periodic formal reviews.</li> <li>Effectively assess technical performance in relation to project risks, schedule demands, and resource utilization to determine project health status.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>• Project reporting and evaluation of technical performance metrics, earned value, and risk management analysis.</li> <li>• Collaborative work commitments and strategic planning agreements.</li> <li>• The decision log containing the rationale for major decisions made during the project life cycle.</li> </ul>	<ul style="list-style-type: none"> <li>• Oversee project reporting and evaluation of technical performance metrics, earned value, and risk management analysis.</li> <li>• Participate in the development of element-level collaborative work commitments and strategic planning agreements.</li> <li>• Participate in continuous project monitoring and periodic formal reviews.</li> <li>• Maintain a decision log at the element level, containing the rationale for major decisions made during the project life cycle.</li> </ul>	<ul style="list-style-type: none"> <li>• Oversee project reporting efforts and the evaluation of technical performance metrics, earned value, and risk management analysis.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop strategies for collaborative work commitments and strategic planning agreements.</li> <li>• Ensure the maintenance of an accurate decision log containing rationale for major decisions made during the project life cycle.</li> </ul>
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>• Clear communications</li> <li>• Leadership</li> <li>• Strategic thinking</li> <li>• Win-win negotiations</li> <li>• Working in teams</li> </ul>			



<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>• Project mission, goals, and objectives</li> <li>• Project architectures and concepts</li> <li>• Stakeholder Expectations</li> </ul>
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## PM 3.2 – Project Control

<b>Definition</b>	Performing technical and programmatic activities to control cost, schedule, technical content, and configuration to assure the project's performance is within approved baseline and to address performance variances.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"> <li>• Participates as a project team member to gain an overall understanding of the project control activities and to gain initial experience in the competency.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams in the execution of project control activities.</li> <li>• Provides guidance and expertise to team members, assisting in resolving issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams at the project level in the execution of project control activities.</li> <li>• Provides guidance and expertise at the project level, resolving project issues.</li> <li>• Effectively monitors all project activities based on technical requirements, resource limitations, schedule demands, contract scope, and risk assessments.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level of internal, external, and international contacts.</li> <li>• Performs critical project control tasks such as reviewing EVM reports, approving program costs and schedule changes.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>				Directs corrective actions for program areas that deviate from project plans and the application of tracking and trend data to analyze programmatic and technical performance, along with development, evaluation, and implementation of mitigation efforts to address performance variances.
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"> <li>• The purpose of project control.</li> </ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"> <li>• Apply program control techniques, including cost tracking, EVM, and configuration/data management.</li> <li>• Manage contract change control.</li> <li>• Oversee schedule integration of multiple project elements.</li> <li>• Use techniques to assess, mitigate, and balance risks.</li> </ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Manage techniques for controlling cost, schedule, technical content, and configuration and their application throughout the project.</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Tailor reserve and margin policy and manage its application.</li> <li>• Be responsible for PMC reporting when a project plan cannot be met.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>Processes for using tracking and trend data to analyze programmatic and technical performance with associated mitigation efforts to address performance variances.</li> <li>Configuration or change control processes and the responsibilities of configuration control boards.</li> <li>EVM processes that comply with the ANSI/EIA-748 EVMS guidelines.</li> <li>Reserve and margin policies and practices.</li> <li>Scheduling methods such as critical path analysis.</li> </ul>	<ul style="list-style-type: none"> <li>Apply tracking and trend data to analyze programmatic and technical performance, with associated mitigation efforts to address performance variances.</li> <li>Implement corrective actions in areas that deviate from the baseline.</li> <li>Manage reserve and margin assessment activities.</li> <li>Support Configuration Control Board (CCB) activities for design/development changes in subsystem elements.</li> </ul>	<ul style="list-style-type: none"> <li>Conduct critical project control tasks such as reviewing EVM reports, approving cost and schedule changes, leading a CCB, and applying reserve and margin policy.</li> <li>Lead a risk-management process that includes conducting IBRs when EVM is required and utilization of risk analysis to support decision making.</li> <li>Direct project control mechanisms, as well as the corrective actions for areas that deviate from the baseline.</li> <li>Oversee PMC and other reporting when project plans cannot be met.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that adequate controls are implemented, such as program control techniques, including EVM, data management, and configuration management.</li> <li>Chair contract change control board for project.</li> <li>Establish and manage configurations for complex products (e.g., many diverse uses and users, complicated documentation and data control requirements, and complex user training requirements with more sophisticated training tools).</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>The fundamental concept of continuous risk management.</li> </ul>			<ul style="list-style-type: none"> <li>Direct project risk management and control with respect to technical, cost, and schedule performance, including conduct of IBRs on in-house projects when EVM is required.</li> </ul>
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>Clear communications</li> <li>Leadership</li> <li>Strategic thinking</li> <li>Win-win negotiations</li> <li>Working in teams</li> </ul>			
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>Project mission, goals, and objectives</li> <li>Project architectures and concepts</li> <li>Stakeholder expectations</li> <li>Political, economic, and other factors that influence project goals</li> </ul>			





### PM 3.3 – Earned Value Management

<b>Definition</b>	A project management approach for measuring and assessing project performance through the integration of technical scope with schedule and cost objectives during the execution of the project. EVM provides quantification of technical progress with objective performance measurement techniques, enabling management to gain insight into project status and project completion costs and schedules. Two essential characteristics of successful EVM are EVM system data integrity and carefully targeted monthly EVM data analyses (e.g., identification of risky Work Breakdown Structure (WBS) elements).			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>• Participates as a project team member to gain an overall understanding of the EVM process and to gain initial experience in the competency.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams in the execution of the EVM process.</li><li>• Provides guidance and expertise to team members, assisting in resolving issues.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams at the project level in the execution of the EVM process.</li><li>• Provides guidance and expertise at the project level, resolving project issues.</li><li>• Ensures the project EVM system is effectively implemented and maintained and the data from the EVMS is reliable.</li></ul>	<ul style="list-style-type: none"><li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level internal, external, and international contacts.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>			<ul style="list-style-type: none"> <li>• Negotiate with line management for the assignment of Subsystem Lead/Managers.</li> <li>• Support the coordination and conduct of the project IBR by the program manager/customer and lead IBRs as appropriate.</li> <li>• Ensure project schedule margin is reasonable and controlled.</li> </ul>	
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"> <li>• Basic concepts of EVM and EVM terminology.</li> <li>• NASA's policy/procedures for applying EVM to major acquisitions.</li> </ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"> <li>• Ensure that control account planning captures all the authorized scope, schedule, and budget prior to approval by the project manager.</li> <li>• Negotiate with line management for the assignment of P-CAMs and other resources.</li> </ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Approve CPR for submittal to senior management and the sponsor.</li> <li>• Use the EVM data and performance metrics to manage and control cost, schedule, and technical performance.</li> </ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"> <li>• Ensure the application of EVM requirements to projects/contracts.</li> <li>• Approve project plans that include the EVM Implementation Plan.</li> <li>• Monitor project performance using EVM data and analysis.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>NASA EVM capability (i.e., people, processes, tools, training).</li> <li>Processes for implementing EVM on projects/ contracts and establishing and maintaining the PMB</li> <li>IBR processes, including purpose, approach, requirements, and roles and responsibilities.</li> <li>Analysis of EVM data and utilization of the analysis to support decision making and development of estimates of cost and schedule at completion.</li> <li>The means for implementing NASA EVM capability on projects and contracts.</li> </ul>	<ul style="list-style-type: none"> <li>Oversee the initiation and approval of Work Authorization Documents (WADs).</li> <li>Review Change Request Documents and approve those change request documents not requiring project manager approval.</li> <li>Ensure all Variance Analysis Reports (VARs) are complete/accurate and have valid corrective actions.</li> <li>Assist in the development of estimates at completion.</li> <li>Participate in and/or lead IBRs for major acquisitions that require EVM.</li> </ul>	<ul style="list-style-type: none"> <li>Communicate status, impacts, and plans of action to the program manager/sponsor.</li> </ul>	<ul style="list-style-type: none"> <li>Direct and approve changes to the project baseline in a timely manner.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>• Appropriate tailoring of EVM capability, preparing the EVM implementation plan for the project, and accomplishing the planning necessary to establish the PMB.</li> <li>• When assigned as a Project-Control Account Manager (P-CAM), identify and assign appropriate performance measurement techniques to work packages to provide meaningful performance measurement data.</li> <li>• When assigned as a P-CAM, understand the planning and executing of control account(s) within authorized scope, schedule, and budget.</li> </ul>	<ul style="list-style-type: none"> <li>• Manage and communicate project/contract technical, schedule, and cost performance status and provide forecasts to the project manager using EVM data from the internal EVM system.</li> <li>• Review Change EVM system.</li> </ul>		



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>When assigned as a P-CAM, understand negotiation with line management for the assignment of performing resources.</li> </ul>			
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>Clear communications</li> <li>Leadership</li> <li>Strategic thinking</li> <li>Win-win negotiations</li> <li>Working in teams</li> </ul>			
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>Project mission, goals, and objectives</li> <li>Project architectures and concepts</li> <li>Stakeholder expectations</li> <li>Political, economic, and other factors that influence project goals</li> </ul>			



## PM 3.4 – Project Review and Evaluation

<b>Definition</b>	Planning, preparing, conducting, and managing internal and external project programmatic and technical reviews that include using metrics to monitor and track the status of the project. This includes awareness of review expectations and products, preparation of review plans, including developing entrance/success criteria, evaluating project progress against entrance/success criteria, the gathering, tracking and disposition of discrepancies noted during the review, and communicating the results of the reviews.			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"><li>• Participates as a project team member to gain an overall understanding of the project review and evaluation activities and to gain initial experience in the competency.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams in the execution of project review and evaluation activities.</li><li>• Provides guidance and expertise to team members, assisting in resolving issues.</li></ul>	<ul style="list-style-type: none"><li>• Leads teams at the project level in execution of project review and evaluation activities.</li><li>• Provides guidance and expertise at the project level, resolving project issues.</li><li>• Participates or leads an element of the review and approval process for a technical and programmatic activity, and to manages all facets of preparing and conducting internal and external reviews.</li></ul>	<ul style="list-style-type: none"><li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level internal, external, and international contacts.</li><li>• Manages a project/program through a review and approval process and directs personnel on how to structure and formulate reviews to the major stakeholders at the highest level of agency management, academia, and industry.</li></ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<p>Team Practitioners should be able to describe, identify, or define:</p> <ul style="list-style-type: none"><li>• The purpose and value of internal and external project reviews.</li><li>• The review and approval process of technical and programmatic activity.</li><li>• Tools that objectively measure how much work has been accomplished on a program/ project and that relate resource planning to technical, cost, and schedule requirements.</li><li>• Techniques for presenting technical and programmatic information.</li></ul>	<p>Team Leads should be able to:</p> <ul style="list-style-type: none"><li>• Plan and conduct subsystem portions of both internal and external project reviews.</li><li>• Prepare programmatic and technical subsystem development performance for project management's use in external reviews.</li><li>• Present subsystem development performance at major milestone reviews such as Preliminary Design Review (PDR) and Critical Design Review (CDR).</li><li>• Plan and manage internal peer reviews for subsystems.</li><li>• Manage the process of addressing the findings of review panels/boards.</li></ul>	<p>Project Managers should be able to:</p> <ul style="list-style-type: none"><li>• Approve and manage the continuum of internal and external project reviews.</li><li>• Document and present project progress in terms of risk mitigation, resources, technical, and schedule accomplishments to the program office, PMC, and at reviews such as PDR, CDR, Standing Review Boards (SRB), etc.</li><li>• Recognize the need for and initiate additional reviews (e.g., peer reviews).</li><li>• Review business process reengineering.</li></ul>	<p>Program Managers should be able to:</p> <ul style="list-style-type: none"><li>• Conduct major project reviews for the stakeholders of the governing PMC, SRB, independent assessment, or other high-level review teams, including those from academia and industry.</li></ul>





Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>• The use of EVM and/or other tools to measure, evaluate, and provide input to progress reviews on specific aspects of the project.</li> <li>• The role of participant in internal project peer reviews as both presenter and reviewer.</li> <li>• The role and responsibilities of a convening authority in ensuring that technical reviews occur at the proper project level of maturity.</li> <li>• The risk management process.</li> </ul>			
<b>Underlying Skills</b>	<ul style="list-style-type: none"> <li>• Clear communications</li> <li>• Leadership</li> <li>• Strategic thinking</li> <li>• Win-win negotiations</li> <li>• Working in teams</li> </ul>			



<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"> <li>• Project mission, goals, and objectives</li> <li>• Project architectures and concepts</li> <li>• Stakeholder expectations</li> <li>• Political, economic, and other factors that influence project goals</li> </ul>
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### PM 3.5 – Decommissioning/Disposal and Archival of Data

<b>Definition</b>	<p>The process of ending an operating mission and the attendant project as a result of a planned end of the mission or project termination. Decommissioning includes final delivery of any remaining project deliverables, disposal of the spacecraft and all its various supporting systems, closeout of contracts and financial obligations, and archiving of project or mission operational and scientific data and artifacts.</p> <p>Decommissioning does not mean that scientific data analysis ceases, only that the project will no longer provide the resources for continued research and analysis. The process of eliminating a project's assets, including the spacecraft and ground systems. Disposal includes the reorbiting, deorbiting, and/or passivation of a spacecraft (i.e., the process of removing stored energy from a space structure at the end of the mission that could result in an explosion or deflagration).</p>			
<b>Role</b>	<b>Team Practitioner</b>	<b>Team Lead</b>	<b>Project Manager</b>	<b>Program Manager</b>
<b>Proficiency Level</b>	<ul style="list-style-type: none"> <li>• Participates as a project team member to gain an overall understanding of decommissioning/disposal and data archival activities and to gain initial experience in the competency.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams in the execution of decommissioning/disposal and data archival activities.</li> <li>• Provides guidance and expertise to team members, assisting in resolving issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads teams at the project level in execution of the decommissioning/disposal and archiving of data activities.</li> <li>• Provides guidance and expertise at the project level, resolving project issues.</li> </ul>	<ul style="list-style-type: none"> <li>• Leads overall effort, reviews and approves products, resolves issues, and maintains relationships with the highest level internal, external, and international contacts.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Level</b>			<ul style="list-style-type: none"> <li>• Demonstrates expertise in specific project issues and environmental factors in relation to disposal/decommissioning and data archiving.</li> <li>• Validates and baselines project assets commensurate with internal/external stakeholder activity as defined in project plans.</li> </ul>	
<b>Proficiency Illustrations</b>	Team Practitioners should be able to describe, identify, or define:	Team Leads should be able to: <ul style="list-style-type: none"> <li>• Develop a decommission/disposal plan and a schedule to archive project data.</li> </ul>	Project Managers should be able to: <ul style="list-style-type: none"> <li>• Document and execute project asset identification for disposal/decommissioning and archival data.</li> <li>• Develop BOE/cost estimations of life cycle costs associated with project disposal/decommissioning and archival data.</li> </ul>	Program Managers should be able to: <ul style="list-style-type: none"> <li>• Review and approve disposal/decommission and archival data archival for functional, physical, operational architectures, and technology.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>The project governance and communication plan describing the governance organization and process used to focus internal and external stakeholder resources, human, budgetary, regulatory, and physical aspects of decommissioning/disposal, and data archival and records management.</li> <li>How NASA projects review, approve, and maintain decommissioning/disposal plans and archive data.</li> </ul>	<ul style="list-style-type: none"> <li>Document the processes, responsible parties, contact points, historical documentation, and risks associated with the disposition/decommission and archival data of project assets.</li> <li>Identify procedures to govern and communicate, with specific focus on the formal processes necessary to ensure the final disposition of, decommissioning, or archiving of project assets/data.</li> <li>Review and update disposal/decommissioning and data archival plans according to project life cycle key decision point criteria.</li> </ul>	<ul style="list-style-type: none"> <li>Conduct effective identification of the disposal/decommissioning and data archiving of project assets, resources, and records within the project schedule and the tracking of each milestone until completion.</li> </ul>	<ul style="list-style-type: none"> <li>Direct the development of functional, physical, operational architectures, and technology disposal/decommissioning and archival data plans.</li> <li>Identify an asset manager within the program plan and utilize external partnership opportunities to develop appropriate measures to manage timelines associated with disposal/decommissioning and archiving data throughout the program life cycle.</li> <li>Develop the support and internal/external resource activities involved in implementing and executing program decommissioning/disposal and data archiving.</li> </ul>



Role	Team Practitioner	Team Lead	Project Manager	Program Manager
<b>Proficiency Illustrations</b>	<ul style="list-style-type: none"> <li>• The communication of roles and responsibilities of project team members to decommission/dispose and archive project data.</li> <li>• How a decommissioning/disposal plan incorporates the steps to transfer resources, archive project data, and close out products such as WBS, contracts, agreements, fiscal year obligations, assets (hardware/software, interfaces, technology, mission support, infrastructure), staffing, and IT (e.g., business applications, web).</li> </ul>	<ul style="list-style-type: none"> <li>• Procure, identify, track, and report on the disposition/decommission or archiving of all project assets/data, whether located at the center or other agencies.</li> <li>• Maintain databases of applicable serial numbers, asset tags, locations, and current disposition information relying on existing disposition/decommission.</li> <li>• Maintain records management of project data using existing policies and procedures for archiving.</li> </ul>		<ul style="list-style-type: none"> <li>• Develop the ongoing maintenance and operations of program artifacts, policies, and procedures for disposal/decommissioning and data archiving.</li> </ul>



<b>Underlying Skills</b>	<ul style="list-style-type: none"><li>• Clear communications</li><li>• Leadership</li><li>• Strategic thinking</li><li>• Win-win negotiations</li><li>• Working in teams</li></ul>
<b>Fundamental Knowledge of</b>	<ul style="list-style-type: none"><li>• Project mission, goals, and objectives</li><li>• Project architectures and concepts</li><li>• Environmental regulations</li><li>• Stakeholder expectations</li><li>• Political, economic, and other factors that influence project goals</li></ul>