

MPG 7120.1

REVISION B

EFFECTIVE DATE: October 3, 2000

EXPIRATION DATE: October 3, 2005

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# **MARSHALL PROCEDURES AND GUIDELINES**

**DA01**

## **PROGRAM/PROJECT PLANNING**

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**DOCUMENT HISTORY LOG**

<b>Status (Baseline/ Revision/ Canceled)</b>	<b>Document Revision</b>	<b>Effective Date</b>	<b>Description</b>
Baseline		5/14/99	Document converted from MSFC-P02.1 to a Directive. Previous history retained in system as part of canceled or superseded ISO Document files.
Revision	A	3/6/00	Revised to include PPMP Team recommendations.
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## PREFACE

### **P.1 PURPOSE**

This procedure defines the Center processes for accepting new work, planning and managing Marshall Space Flight Center (MSFC) programs, projects, and activities, and implements the provisions of NPD 7120.4, NPG 7120.5, and MPD 1280.1, paragraph 7.7.1, "Program/Project and Quality Planning." It shall be used specifically for programs/projects and activities that provide aerospace products and capabilities (PAPAC), i.e., provide space and aeronautics, flight and ground systems, technologies, and operations. It is not required, but may be used, for other projects such as non-flight infrastructure, Construction of Facilities (CoF), Small Business Innovation Research (SBIR), or Research & Analysis (R&A) projects.

It is MSFC policy that:

- a. All proposed new work for MSFC will be accepted or rejected using the process defined in this Directive, except for those new work opportunities listed in section P.2.c. below.
- b. No commitments for new work will be made by any MSFC element unless the work has been approved in accordance with this directive.
- c. All proposed resource requirements for new work will be recorded and maintained by the Lead Organization. Organizations with primary responsibility for the processes listed in P.2.c. below shall ensure that resource information is recorded.

### **P.2 APPLICABILITY**

- a. This Marshall Procedures and Guidelines (MPG) is applicable to all MSFC organizations that manage PAPAC programs, projects, and activities.
- b. This Directive applies to all proposed new work for MSFC. New work is defined as all work not contained in the MSFC baseline operating budget (labor and dollars), whether internally or externally generated. This includes, for example, work resulting from responding to formal Requests for Proposals (RFPs), Announcements of Opportunity (AOs), NASA Research Announcements (NRAs), Cooperative Agreement Notices (CANs), as well as reimbursable work from NASA Headquarters, other NASA Centers, other Government agencies, industry, and academia.
- c. The procedures of this Directive do not apply to the following

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special processes:

- (1) Space Act Agreements which are governed by NPD 1050.1, NPG 1050.1, and MWI 1050.3. (The Technology Transfer Department (TTD) is the MSFC coordination organization for Space Act Agreements.)
- (2) Research and Technology Objectives and Plans (RTOP).
- (3) Center Director's Discretionary Fund (CDDF).
- (4) Code Q Technical Program Plans.

d. This Directive does not apply to MSFC Lead Center responsibilities where the implementation of the work is performed at other NASA Centers.

### **P.3 AUTHORITY**

- a. NPD 7120.4, "Program/Project Management"
- b. NPG 7120.5, "NASA Program and Project Management Processes and Requirements"

### **P.4 APPLICABLE DOCUMENTS**

- a. MPD 1280.1, "Marshall Management Manual"
- b. MPD 1150.1, Charter MC-08, "MSFC Project Management Council"
- c. MWI 7120.1, "Project Quality Plan"
- d. MPG 8040.1, "Configuration Management, MSFC Programs/Projects"
- e. MPG 1410.2, "Marshall Management Directives System"
- f. MWI 8040.4, "Application Guidance for Traceability"
- g. MWI 6410.1, "Packaging, Handling, and Moving Program Critical Hardware"
- h. MPG 1440.2, "MSFC Records Management Program"
- i. MPG 7100.1, "Proposal Development Process"
- j. MPG 7120.3, "Data Management, Programs/Projects"
- k. MWI 1280.2, "MSFC Quality Comment System"

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- l. NPD 7120.4, "Program/Project Management"
- m. NPG 1441.1, "NASA Records Retention Schedules (NRRS)"
- n. NPG 7120.5, "NASA Program and Project Management Processes and Requirements"

**P.5 REFERENCES**

- a. "MSFC CDDF Guidelines and Procedures," June 1996
- b. "MSFC Discretionary Fund Advisory Panel"
- c. NPG 1050.1, "Space Act Agreements"
- d. NPD 1050.1, "Authority to Enter into Space Act Agreements"
- e. MWI 1050.3, "Policy and Authority to Take Actions Related to Reimbursable and Nonreimbursable Space Act Agreements"
- f. MPG 7100.1, "Proposal Development Process"

**P.6 CANCELLATION**

MPG 7120.1A dated March 6, 2000; and MPG 7100.3B dated August 20, 1999

Original Signed by  
Sidney P. Saucier for

A. G. Stephenson  
Director

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## DOCUMENT CONTENT

### 1. DEFINITIONS

1.1 Activity. An effort not specifically designated by a program (e.g., reimbursable agreement or contract) and/or characterized as being small, non-complex, non-critical, and low risk.

1.2 Approving Official. The Approving Official is the person who has been delegated the authority and responsibility for approving various aspects of the activity. The Center Director, working through the MSFC PMC, is the Approving Official for Center activities (usually project level) that meet the resource threshold defined in MSFC Charter MC-08, "MSFC Project Management Council." The Center Director is also the Approving Official for activities governed by MSFC Lead Center Program Management Councils. Threshold limits may be set within the MC-05, "Program Management Council for Microgravity," and MC-09, "Program Management Council for Space Transportation." Directorate Heads or the Program Managers are the Approving Officials within their directorates/programs for activities below those PMC Charter-defined threshold(s). (Directorate Heads and Program Managers are obligated to status all MSFC activities, below the MSFC PMC threshold, periodically to the MSFC PMC).

1.3 Champion. The Champion is the person responsible for the technical content of the proposal and is committed to the concept being proposed. The Champion is responsible for the systems engineering planning necessary for the proposal to demonstrate that the mission objectives can be met within cost and schedule constraints. The Champion is responsible for positioning to win and aligning Independent Research & Development (IR&D) requirements and content (technical and programmatic) to meet the customer needs.

1.4 Configuration Management (CM) Plan. The document that describes the manner in which requirements for configuration management will be implemented for a particular program, project, or activity.

1.5 Data Management (DM) Plan. The document that describes the manner in which requirements for data management will be implemented for a particular program, project, or activity.

1.6 Governing Program Management Council (GPMC). Forum composed of NASA and/or Center Senior Management that assesses program and project planning and implementation, and provides oversight and

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direction as appropriate.

1.7 MSFC Project Management Council (PMC). Forum composed of Center Senior Management that assesses MSFC-managed project planning and implementation, and provides oversight and direction as appropriate. (When MSFC-managed Projects report to another GPMC, they should provide a status to the MSFC PMC prior to reporting to the GPMC.)

1.8 NASA Program Management Council (PMC). The Senior Management group, chaired by the Deputy Administrator, responsible for reviewing, recommending approval of proposed programs, and overseeing their implementation according to Agency commitments, priorities, and policies.

1.9 Non-Quality Sensitive. A term used to identify equipment, hardware, software, or material not directly related to flight systems (e.g., mock-ups, development hardware and software, industrial machinery, laboratory equipment).

1.10 Provide Aerospace Products and Capabilities (PAPAC) Process. The cross-cutting process by which the Agency formulates, approves, implements, and evaluates programs which are established to provide space, ground, and aeronautical systems, technologies, services, and operational capabilities to NASA customers.

1.11 Program. An activity within an Enterprise having defined goals, objectives, requirements, funding, and consisting of one or more projects, reporting to the NASA PMC, unless formally delegated to a GPMC.

1.12 Project. A significant activity designated by a program and characterized as having defined goals, objectives, requirements, life-cycle costs, a beginning, and an end.

1.13 Program Commitment Agreement (PCA). The contract between the Administrator and the cognizant Enterprise Associate Administrator (EAA) for implementation of a program.

1.14 Program Plan. The document that establishes the overall baseline for program implementation as well as the internal and external agreements concluded with the authority of and/or among the Administrator, the EAA, Lead Center Director (LCD), other NASA Center Directors, and the Program Manager.

1.15 Project Plan. The document that establishes the overall baseline for project or activity implementation as well as the internal and external agreements concluded with the authority of

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and/or among the LCD, Program Manager, Project Manager, and other involved NASA Center managers/directors.

1.16 Quality Plan. The document that establishes the specific quality practices, resources, and sequence of activities relevant to a particular product, project, or activity.

1.17 Quality Sensitive. A term used to identify flight hardware, flight software, and flight-associated ground support equipment. This term applies to those deliverable products that are to be assembled into a launch vehicle and associated equipment for testing, handling, launching, and maintaining a vehicle in space. This term also applies to qualification and requalification hardware. Hardware or software that is procured for development activities is non-quality sensitive unless the data resulting from development activities will be used in the "justification for qualification" of flight hardware, software, or flight-associated hardware. Hardware to be used in a hazardous operation might also be designated as quality sensitive by the responsible organization.

1.18 Tailoring. The documentation and approval of the adaptation of the PAPAC process and requirements to specific program or project needs.

## **2. RESPONSIBILITIES**

2.1 Center Director. The Center Director is responsible for:

2.1.1 When MSFC is designated Lead Center:

2.1.1.1 Assisting the EAA in preparing a proposed PCA and supporting the EAA in program formulation;

2.1.1.2 Assigning work to other Centers;

2.1.1.3 Providing overall direction, control, and oversight of program implementation;

2.1.1.4 Appointing the program manager;

2.1.1.5 Establishing and serving as (or designating) chairperson of Lead Center PMC; and

2.1.1.6 Exercising the authority of the MSFC PMC to remain cognizant of and direct (within the authority of the MSFC PMC) MSFC-assigned activities.

2.1.2 When MSFC is not Lead Center, supporting the Lead Center

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Director in program formulation:

2.1.2.1 Concurring with all project manager nominations, prior to their announcement, submitted by the responsible Directorate Head and MSFC program manager;

2.1.2.2 Reviewing and approving MSFC Program and Project plans for programs/projects and activities that exceed the resource thresholds defined in MPD 1150.1, Charter MC-08; and

2.1.2.3 Chairing the MSFC PMC, which reviews MSFC programs/projects and activities, as assigned, to ensure they continue to meet technical and programmatic commitments and to assess program/project changes that violate the original approval criteria.

2.2 Program Manager. The Program Manager is responsible for:

2.2.1 When MSFC is designated Lead Center:

2.2.1.1 Assisting the EAA and the Center Director in preparing a proposed PCA and supporting the EAA during NASA PMC presentations;

2.2.1.2 Preparing proposed program planning;

2.2.1.3 Obtaining EAA and Center Director approval of the Program Plan;

2.2.1.4 In conjunction with the responsible Directorate Head, preparing a prioritized list of project manager nominees for MSFC-assigned projects and submitting the list to the Center Director for concurrence;

2.2.2 Initiating the resource planning process and defining Center resource requirements;

2.2.3 In conjunction with CM and DM personnel, defining program CM and DM requirements;

2.2.4 Approving Program, CM, and DM Plans;

2.2.5 Reviewing and approving plans for program-designated projects;

2.2.6 Preparing for and supporting periodic GPMC and external reviews;

2.2.7 Ensuring program planning is revised as necessary to

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reflect the results of periodic program, GPMC, and external reviews and program/project changes (budget, schedule, requirements, etc.);

2.2.8 Obtaining concurrence with Program Plan from the Safety & Mission Assurance (S&MA) Office, Procurement Office, Systems Management Office (SMO), and other affected MSFC Center Director direct reports;

2.2.9 Presenting program content (and subsequent changes that violate approval criteria) to the MSFC PMC;

2.2.10 Implementing and managing the program in accordance with approved planning;

2.2.11 Maintaining contact with customers in order to understand their objectives, plans, and requirements and to ensure satisfaction with products and services;

2.2.12 Entering customer comments (complaints, observations, compliments) regarding delivered products and/or services into the MSFC Quality Comment System per MWI 1280.2;

2.2.13 For multi-project programs, ensuring top-level program requirements are converted into controlled, implementable project requirements packages;

2.2.14 For single-project programs, ensuring top-level program requirements are decomposed into implementable requirements;

2.2.15 For single-project programs, performing tasks and assuming responsibilities of the Project Manager;

2.2.16 Baselineing and maintaining configuration control of requirements and finalizing program agreements;

2.2.17 Ensuring design and development activities are conducted per program planning; and

2.2.18 Delivering products and services that are compliant with program technical, cost, schedule, and quality requirements.

2.3 Project Manager. The Project Manager is responsible for:

2.3.1 When projects or activities meet prescribed thresholds, presenting proposed project content and approach (defined in the Project Plan, CM, DM, and Quality Plans) to the MSFC PMC for review and endorsement to proceed to implementation;

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2.3.2 Initiating resource planning process and defining Center resource requirements;

2.3.3 When MSFC is not Lead Center, presenting project content (and changes that violate GPMC approval criteria) to the GPMC;

2.3.4 In conjunction with CM and DM personnel, defining the project CM and DM requirements;

2.3.5 In conjunction with the QAR, defining the project quality requirements;

2.3.6 Approving the Project, Quality, CM, and DM Plans;

2.3.7 Preparing for and supporting GPMC and external reviews;

2.3.8 Ensuring project planning is revised as necessary to reflect the results of periodic project, GPMC, and external reviews and project changes;

2.3.9 Obtaining concurrence with Project Plan from the S&MA Office, Procurement Office, SMO, and other affected MSFC Center Director direct reports;

2.3.10 Obtaining Program Manager and Center Director approval of the Project Plan;

2.3.11 Implementing and managing the project in accordance with the approved PCA, program, and project planning;

2.3.12 Maintaining contact with customers in order to understand their objectives, plans, and requirements and to ensure customer satisfaction with products and services;

2.3.13 Entering customer comments (complaints, observations, compliments) regarding delivered products and/or services into the MSFC Quality Comment System per MWI 1280.2;

2.3.14 Ensuring top-level requirements received from program formulation are decomposed into implementable project requirements;

2.3.15 Baselining and maintaining configuration control of requirements and finalizing agreements;

2.3.16 Ensuring design and development activities are conducted per project planning; and

2.3.17 Delivering products and services that are compliant with

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technical, cost, schedule, and quality requirements.

2.4 CM Personnel. CM personnel are responsible for:

2.4.1 Assisting program and project managers in the definition of configuration management requirements;

2.4.2 Defining the implementation of those requirements in a CM Plan; and

2.4.3 Updating the CM Plan as necessary to reflect the results of periodic program or project reviews, changes that violate the original approval criteria, or to meet customer requirements.

2.5 DM Personnel. DM personnel are responsible for:

2.5.1 Assisting program and project managers in the definition of data management requirements;

2.5.2 Defining the implementation of those requirements in a DM Plan; and

2.5.3 Updating the DM Plan as necessary to reflect the results of periodic program or project reviews, changes that violate the original approval criteria, or to meet customer requirements.

2.6 Quality Assurance Representative (QAR). The QAR is responsible for:

2.6.1 Assisting the Project Manager in the definition of quality requirements;

2.6.2 Defining the implementation of those requirements in a Quality Plan; and

2.6.3 Updating the Quality Plan as necessary to reflect the results of periodic project reviews, changes that violate the original approval criteria, or to meet customer requirements.

2.7 Directorate Head. The Director of the Center Directorate responsible for the project or activity is responsible for:

2.7.1 When MSFC is Lead Center, in conjunction with the Program Manager, preparing a prioritized list of project manager nominees for MSFC-assigned projects and submitting the list to the Center Director for concurrence; and

2.7.2 In conjunction with the responsible Program Manager, approving Project Plans for those projects not meeting resource

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thresholds defined in MPD 1150.1, Charter MC-08.

2.8 Review Team Chairperson. The Review Team Chairperson is responsible for briefing review findings (Program/Project Evaluation Subprocess) and/or recommendations to the GPMC. The MSFC PMC should be briefed prior to going before the GPMC.

### **3. PROCEDURE**

All MSFC PAPAC programs, projects, and activities will be accepted, planned, and managed in accordance with NPG 7120.5 and this procedure, and will be reviewed by the MSFC PMC (or Program Manager and responsible Directorate Head if below defined resource thresholds). The criteria by which programs, projects, or activities are reviewed is defined in MPD 1150.1, Charter MC-08, "MSFC Project Management Council," MC-05, "Program Management Council for Microgravity," and MC-09, "Program Management Council for Space Transportation." Planning and execution of all MSFC PAPAC programs, projects, and activities will conform to the Marshall Management System (MMS) requirements.

As programs, projects, and activities are implemented, they will be impacted by external forces (budget modifications, schedule and/or requirements changes) and internal situations (technical challenges, new requirements). Accordingly, it will be necessary to revisit the formulation subprocess to ensure program/project/activity planning is consistent with schedule commitments and resource availability. PCAs, Program/Project Plans, and other planning shall be modified, as appropriate, reviewed by the GPMC, and signed by the Approving Official (Approval Subprocess).

When MSFC is assigned Lead Center responsibility, the planning process begins early in the program formulation phase with the generation of the PCA, as defined in step 3.6. When MSFC is not the Lead Center or working an activity not designated by a program, planning begins later in the formulation phase with the appointment of project managers for MSFC-assigned projects or activities, as defined in step 3.32 below.

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### Program Formulation Subprocess

<u>Actionee</u>	<u>Action</u>
Directorate Head	<p>3.1a <i>Identify Champion</i> - New work opportunities that fit within the Directorate roles and missions are identified via regular customer visits, web searches, associations, etc. New work opportunities may arise from NRAs, AOs, and other customer solicitations or be directed via other NASA avenues. The Directorate wishing to pursue the new work will assign a Champion to lead the effort during the early formulation phase. The Champion will coordinate with all other involved organizations, including SMO and TTD. TTD will assist in identifying the proper type of external agreement.</p>
Directorate Head	<p>3.1b <i>Identify Lead</i> - The Lead Directorate generally is the organization with the greatest level of involvement in the new work opportunity. The Lead Directorate assigned to explore the opportunity will assign a Lead to coordinate the effort during the early formulation phase. The Lead will coordinate with all other involved organizations, including SMO and TTD. TTD will assist in identifying the proper type of external agreement.</p>
Champion or Directorate Lead	<p>3.2 The Champion (for non-directed activities) gathers and presents appropriate financial, technical, and programmatic data to assist the Approving Official in making a decision on whether to initiate the formulation process.</p> <p>For "Directed Work," the Lead will gather and present appropriate financial, technical, and programmatic data to assist the Approving Official in making decisions on how best to conduct the activity.</p>
Approving Official (MSFC PMC)	<p>3.3 Based on the material presented, the Approving Official will recommend Formulation Authority to Proceed (ATP),</p>

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Chairperson, MSFC Lead Center PMC Chairperson, Directorate Head, or Program Manager)		disapproval of the activity (for non-directed activities), or Formulation ATP and/or restructuring (for directed work).
		Note: For proposal development activities below the MSFC PMC threshold, all disapproval decisions will be submitted to the MSFC PMC for review and possible redirection.
Champion	3.4	New work meeting the MSFC PMC threshold and requiring proposal development are required to follow MPG 7100.1. For proposal development activities below that threshold, the MPG 7100.1 process should be considered but is not mandatory.  Selected "Winning Proposals" will enter back into the process at step 3.5 and continue into further formulation activities.
Center Director	3.5	The Center Director will appoint/name a Program Manager. The Directorate Head will support the Center Director by providing a list of potential candidates along with their recommendation(s).
Center Director & Program Manager	3.6	In conjunction with the responsible EAA, prepare a proposed PCA in accordance with NPD 7120.4 and NPG 7120.5. Requirements for PCA content are found in NPG 7120.5, Appendix E. Program formulation requirements are found in NPG 7120.5, sections 2.1.1, "Program Planning," through 2.1.7, "Capture Process Knowledge." Management systems requirements are found in NPG 7120.5 sections 4.1, "Resources Management," through 4.6, "Program/Project Management Development." Tailoring of the PAPAC process, commensurate with the size, complexity, criticality, and risk of the program, will be documented in the PCA and presented to the NASA PMC.
Program Manager	3.7	In parallel with step 3.6, initiate the resource planning process and define Center resource requirements.

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- Program Manager 3.8 Prepare proposed Program planning in accordance with the proposed PCA, NPD 7120.4, and NPG 7120.5. Requirements for Program Plan content are found in NPG 7120.5, Appendix E. Program formulation requirements are found in NPG 7120.5, sections 2.1.1, "Program Planning," through 2.1.7, "Capture Process Knowledge." Management systems requirements are found in NPG 7120.5 sections 4.1, "Resources Management," through 4.6, "Program/Project Management Development." Tailoring of the PAPAC process, commensurate with the size, complexity, criticality, and risk of the program, will be documented in the Program Plan and presented to the NASA PMC. Any deviations to the MMS will be processed in accordance with MPG 1410.2, documented in the Program Plan, and presented to the MSFC PMC.
- CM Personnel, DM Personnel, & Program Manager 3.9 In parallel with step 3.8, prepare proposed CM and DM Plan in accordance with the proposed PCA, the proposed Program Plan, MPG 8040.1, and MPG 7120.3. For smaller programs, or where it otherwise makes sense, the CM and DM Plans may be written as a part of the Program Plan.
- Program Manager 3.10 Prepare for and support required GPMC and external reviews per 3.54, "Program/Project Evaluation Subprocess." (When "MSFC" issues exist, the Program Manager will provide a status to the Center Director prior to going before the GPMC. The Center Director may wish to call an MSFC PMC meeting to further discuss the issues.)
- Program Manager 3.11 Update Program planning, as required, to reflect results of GPMC reviews, external reviews, external forces (changes in budget, schedule or requirements, etc.) and internal situations (technical challenges, new requirements, etc.).
- Program Manager 3.12 Obtain concurrence with Program Plan from the S&MA Office, Procurement Office, SMO, and other affected MSFC Center Director direct reports.

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### **Program Approval Subprocess**

- |   |      |   |
|---|------|---|
| Program Manager & Review Team Chairperson | 3.13 | Present program content and applicable review (Program Evaluation Subprocess) findings to MSFC PMC.   |
| MSFC PMC                                  | 3.14 | Review and accept/reject program proposal for use of Center resources. Review program formulation products and review results, and provide recommendation to NASA PMC on readiness of program to proceed to implementation phase.<br><br>If resource proposal is rejected or program deemed not ready to proceed, return to Program Formulation Subprocess. |
| Center Director & Program Manager         | 3.15 | Support the responsible EAA in presentation of the proposed PCA and Program Plan to the NASA PMC for review and endorsement to proceed from the program formulation phase into implementation.<br><br>If program is deemed not ready to proceed, return to Program Formulation Subprocess.  |
| Center Director & Program Manager         | 3.16 | After approval of the PCA by the a&b Administrator and EAA and in conjunction with the responsible EAA, approve the Program Plan.   |

### **Program Implementation Subprocess**

- |                 |      |   |
|-----------------|------|---|
| Center Director | 3.17 | Establish and serve as (or designate) chairperson of Lead Center PMC.   |
| Program Manager | 3.18 | Implement and manage the program in accordance with the approved PCA and program planning. Program implementation requirements are found in NPG 7120.5, sections 2.3.1, "Program Control," through 2.3.6, "Capture Process Knowledge." Management systems requirements are found in NPG 7120.5 sections 4.1, "Resources Management," through 4.6, "Program/Project Management Development." |

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- Program Manager 3.19 Maintain contact with program customers in order to understand their objectives, plans, and requirements, and ensure customer satisfaction with products and services. Customer comments (complaints, observations, compliments) regarding delivered products and/or services are to be entered into the MSFC Quality Comment System per MWI 1280.2.
- Program Manager 3.20 Finalize program resource planning consistent with MSFC PMC direction.
- Program Manager 3.21 Prepare for and support required GPMC and external reviews per 3.54, "Program/Project Evaluation Subprocess." (When "MSFC" issues exist, the Program Manager will provide a status to the Center Director prior to going before the GPMC. The Center Director may wish to call an MSFC PMC meeting to further discuss the issues.)
- Program Manager 3.22 Update Program planning, as required, to reflect results of GPMC reviews, external reviews, external forces (changes in budget, schedule or requirements, etc.) and internal situations (technical challenges, new requirements, etc.). If such changes violate the original NASA PMC approval criteria, return to step 3.11 (Formulation Subprocess) for program reformulation and reevaluation for rebaseline or termination.
- Program Manager 3.23 If the program is NOT a multi-project program, proceed to step 3.24. Otherwise, ensure top-level program requirements are converted into controlled implementable project requirements packages then proceed to 3.32, "Project Formulation Subprocess."
- Program Manager 3.24 Ensure top-level requirements received from program formulation subprocess are decomposed into implementable requirements.
- Program Manager 3.25 Baseline and maintain configuration control of requirements and finalize agreements, including memorandums of understanding, and cooperative agreements.

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- Program Manager 3.26 Ensure design and development activities are conducted per program planning.
- Program Manager 3.27 Deliver products and/or services compliant with program technical, cost, schedule, and quality requirements.

### Project Formulation Subprocess

- Directorate Head 3.28 a *Identify Champion* - New work opportunities that fit within the Directorate roles and missions are identified via regular customer visits, web searches, associations, etc. New work opportunities may arise from NRAs, AOs, and other customer solicitations or be directed via other NASA avenues. The Directorate wishing to pursue the new work will assign a Champion to lead the effort during the early formulation phase. The Champion will coordinate with all other involved organizations, including SMO and TTD. TTD will assist in identifying the proper type of external agreement.
- 3.28 b *Identify Lead* - The Lead Directorate generally is the organization with the greatest level of involvement in the new work opportunity. The Lead Directorate assigned to explore the opportunity will assign a Lead to coordinate the effort during the early formulation phase. The Lead will coordinate with all other involved organizations, including SMO and TTD. TTD will assist in identifying the proper type of external agreement
- Champion or Directorate Lead 3.29 The Champion (for non-directed activities) gathers and presents appropriate financial, technical, and programmatic data to assist the Approving Official in making a decision on whether to initiate the formulation Process.

For "Directed Work", the Lead will gather and present appropriate financial, technical, and programmatic data to assist the Approving Official in making decisions on how best to conduct the activity.

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- Approving Official (MSFC PMC Chairperson, Directorate Head, or Program Manager)      3.30      Based on the material presented, the Approving Official will recommend Formulation ATP or disapproval of the activity (for non-directed activities) or Formulation ATP and/or restructuring (for directed work).
- Note: For proposal development activities below the MSFC PMC threshold, all Disapproval decisions will be submitted to the MSFC PMC for review and possible redirection.
- Champion      3.31      New work meeting the MSFC PMC threshold and requiring Proposal Development are required to follow MPG 7100.1. For Proposal Development activities below that threshold, the MPG 7100.1 should be considered but is not mandatory.
- Awarded "Winning Proposals" will enter back into the process at step 3.32 and continue into further formulation activities
- Center Director      3.32      Appoint project managers for MSFC-assigned projects and/or activities. (A prioritized list of nominees will be prepared by the MSFC Program Manager and responsible Directorate Head and submitted to the Center Director for concurrence.)
- Project Manager      3.33      Initiate the resource planning process and define resource requirements.
- Project Manager      3.34      Prepare proposed project planning in accordance with the signed PCA, the approved Program Plan, NPD 7120.4, and NPG 7120.5, as applicable. Requirements for Project Plan content are found in NPG 7120.5, Appendix E. Additionally, the Project Plan will define the following:
- How project records are identified, controlled (custodian and repository/location) and dispositioned during and at the end of the project or activity;

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- Inspection requirements for quality sensitive and non-quality sensitive hardware;
- Hardware that is program critical (as defined in MWI 6410.1), if any; and
- Part and material traceability and serialization requirements, using MWI 8040.4 as guidance.

Project formulation requirements are found in NPG 7120.5, sections 3.1.1, "Project Planning," through 3.1.7, "Capture Process Knowledge." Management systems requirements are found in NPG 7120.5 sections 4.1, "Resources Management," through 4.6, "Program/Project Management Development." Tailoring of the PAPAC process, commensurate with the size, complexity, criticality, and risk of the project, will be documented in the Project Plan and presented to the GPMC. Any deviations to the MMS will be processed in accordance with MPG 1410.2, documented in the Project Plan, and presented to the MSFC PMC.

QAR &  
Project  
Manager

3.35 In parallel with 3.34, prepare proposed Quality Plan in accordance with project/activity requirements, the proposed Project Plan, and MWI 7120.1. For smaller projects and activities, or where it otherwise makes sense, the Quality Plan may be written as a part of the Project Plan. Consideration shall be given to the following activities when preparing the Quality Plan:

- Identification and acquisition of controls, processes, equipment, fixtures, resources, and skills necessary to achieve the required quality of product;
- Ensuring the compatibility of the design, the production process,

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installation, servicing, inspection, test procedures, and the applicable documentation;

- Necessary updates of quality control, inspection, and testing techniques, including the development of new instrumentation;
- Timely identification of any measurement requirement involving capability that exceeds the known state of the art so that the needed capability can be developed or acquired;
- Identification of suitable product verification at appropriate stages of development; and
- Definition of standards of acceptability, such as pass/fail criteria, code compliance, tolerances, specifications, and measurement uncertainties in appropriate work-authorizing documents.

CM Personnel, DM Personnel, & Project Manager      3.36      In parallel with steps 3.34 and 3.35, prepare proposed CM and DM Plan in accordance with project/activity requirements, the proposed Project Plan, MPG 8040.1, and MPG 7120.3. For smaller projects and activities, or where it otherwise makes sense, the CM and DM Plans may be written as a part of the Project Plan.

Project Manager      3.37      Prepare for and support required GPMC and external reviews per 3.54, "Program/Project Evaluation Subprocess." (When the GPMC is not the MSFC PMC, the Project Manager will provide a status to the Center Director prior to going before the GPMC. The Center Director may wish to call an MSFC PMC meeting to further discuss any issues.)

Project Manager      3.38      Update project planning, as required, to reflect results of GPMC, external reviews, external forces (changes in budget,

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schedule or requirements, etc.), and internal situations (technical challenges, new requirements, etc.). The Project Plan will be submitted to the Program Manager for review and initial concurrence. The Program Manager will verify that the Project Plan meets program requirements and policies.

Project Manager 3.39 Obtain concurrence with Project Plan from the S&MA Office, Procurement Office, SMO, and other affected MSFC Center Director direct reports.

**Project Approval Subprocess**

Project Manager & Review Team Chairperson 3.40 If the project or activity meets the resource thresholds defined in MPD 1150.1, Charter MC-08, present proposed Project content and approach (defined in the Project Plan, Quality Plan, CM Plan, DM Plan), applicable review (Program/Project Evaluation Subprocess) findings, and tailoring decisions to the MSFC PMC. Those projects not meeting the threshold will be presented to the Program Manager and responsible Directorate Head.

MSFC PMC, Directorate Head, or Program Manager 3.41 Review and accept/reject project proposal for use of Center resources. Review project formulation products and provide recommendation to proceed from the project formulation phase into implementation to GPMC. If MSFC is Lead Center, provide recommendation on project readiness to proceed to implementation to Approving Official and proceed to step 3.43. Otherwise, provide recommendation to GPMC.

Project Manager & Review Team Chairperson 3.42 If MSFC is NOT Lead Center, present proposed Project content and approach (defined in the Project Plan, Quality Plan, CM Plan, DM Plan), applicable review (Program/Project Evaluation Subprocess) findings, and tailoring decisions to the GPMC.

Center Director, 3.43 After approval by the Approving Official, approve Project Plan. (Projects and

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Program Manager, & Project Manager activities not directly affiliated with a program do not require Program Manager approval. Project Plans for projects and activities not meeting the resource thresholds defined in MPD 1150.1, Charter MC-08, will be approved by the responsible Directorate Head in lieu of the Center Director.)

Project Manager 3.44 Approve Project, Quality, CM, and DM Plans.

### Project Implementation Subprocess

Project Manager 3.45 Implement and manage the project in accordance with the approved PCA, program, and project planning. Project implementation requirements are found in NPG 7120.5, sections 3.3.1, "Project Control," through 3.3.6, "Capture Process Knowledge." Management systems requirements are found in NPG 7120.5 sections 4.1, "Resources Management," through 4.6, "Program/Project Management Development."

Project Manager 3.46 Maintain contact with project customers in order to understand their objectives, plans and requirement, and to ensure customer satisfaction with products and services. Customer comments (complaints, observations, compliments) regarding delivered products and/or services are to be entered into the MSFC Quality Comment System per MWI 1280.2.

Project Manager 3.47 Finalize project resource planning consistent with MSFC PMC direction.

Project Manager 3.48 Prepare for and support required GPMC and external reviews per 3.54, "Program/Project Evaluation Subprocess."

Project Manager 3.49 Update project planning, as required, to reflect results of GPMC, external reviews, external forces (changes in budget, schedule or requirements, etc.), and internal situations (technical challenges,

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new requirements, etc.). If such changes violate the original GPMC approval criteria, return to step 3.30 (Formulation Subprocess) for project reformulation and reevaluation for rebaseline or termination.

Project Manager            3.50    Ensure top-level requirements received from program formulation subprocess are decomposed into implementable requirements.

Project Manager            3.51    Baseline and maintain configuration control of requirements and finalize agreements including memorandums of understanding and cooperative agreements.

Project Manager            3.52    Ensure design and development activities are conducted per project planning.

Project Manager            3.53    Deliver products and/or services compliant with project technical, cost, schedule, and quality requirements.

**3.54    Program/Project Evaluation Subprocess**

This subprocess is initiated when a review or assessment identified in the approved PCA and/or Program/Project Plan is due or an external review is requested by the GPMC or external customers.

If MSFC is Lead Center and the program/project is in formulation, the following reviews are applicable:

- Periodic Review
- Independent Assessment (IA)
- Non-Advocate Review (NAR)
- Special Review

If MSFC is Lead Center and the program/project is in implementation, the following reviews are applicable:

- Periodic Review
- Independent Annual Review (IAR)
- Termination Review
- Special Review

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If MSFC is not Lead Center, the following reviews are applicable:

- External Review Status
- Periodic Review
- Special Review

Process flowcharts for the above reviews are located in Appendix A.

#### **4. RECORDS**

PCAs, Program Plans, Project Plans, CM Plans, DM Plans, Quality Plans, PMC Minutes, and other program/project formulation and planning documentation shall be maintained on file by the responsible manager or their designee in accordance with MPG 1440.2 for the duration of the program/project. After that time, these formulation/planning records will be dispositioned in accordance with NPG 1441.1, Schedule 7.

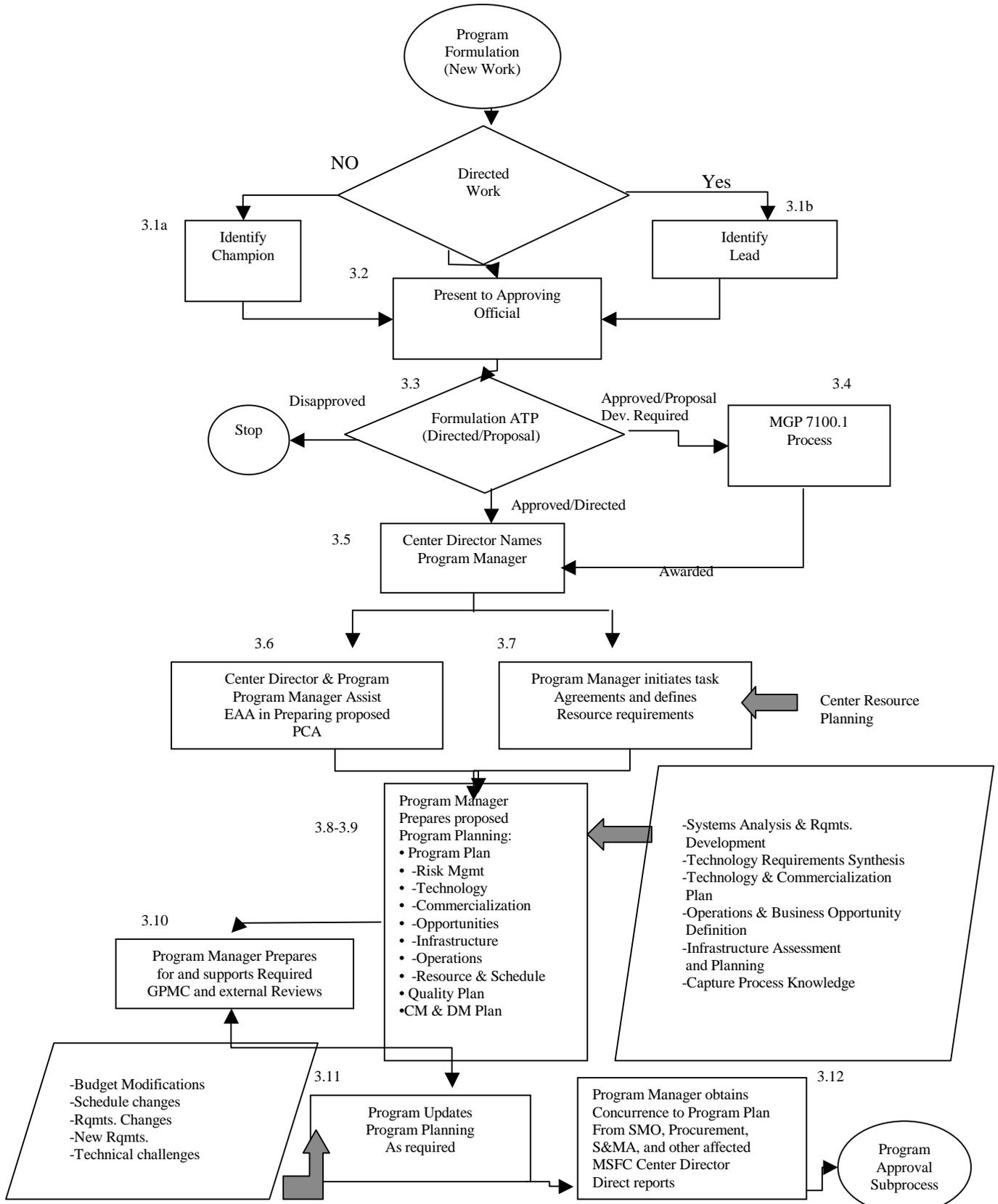
Program/project records related to program/project implementation, i.e., design, development, testing, inspection, acceptance, etc., shall be maintained on file by the responsible Program/Project Manager or their designee in accordance with MPG 1440.2 for the duration of the program/project. After that time, these implementation records will be dispositioned in accordance with NPG 1441.1, Schedule 8.

#### **5. FLOW DIAGRAM**

See following pages.

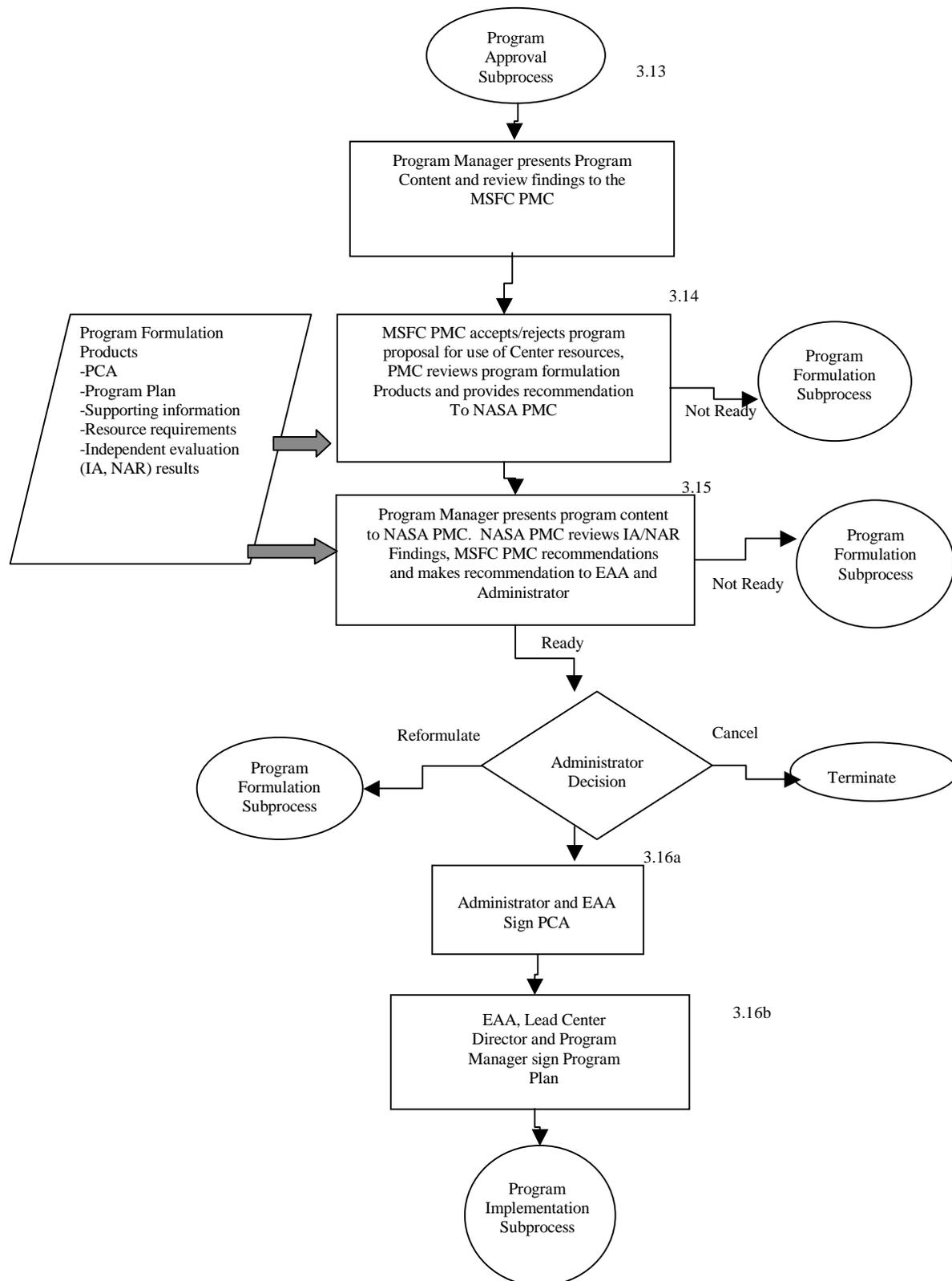
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Program Formulation Sub-Process

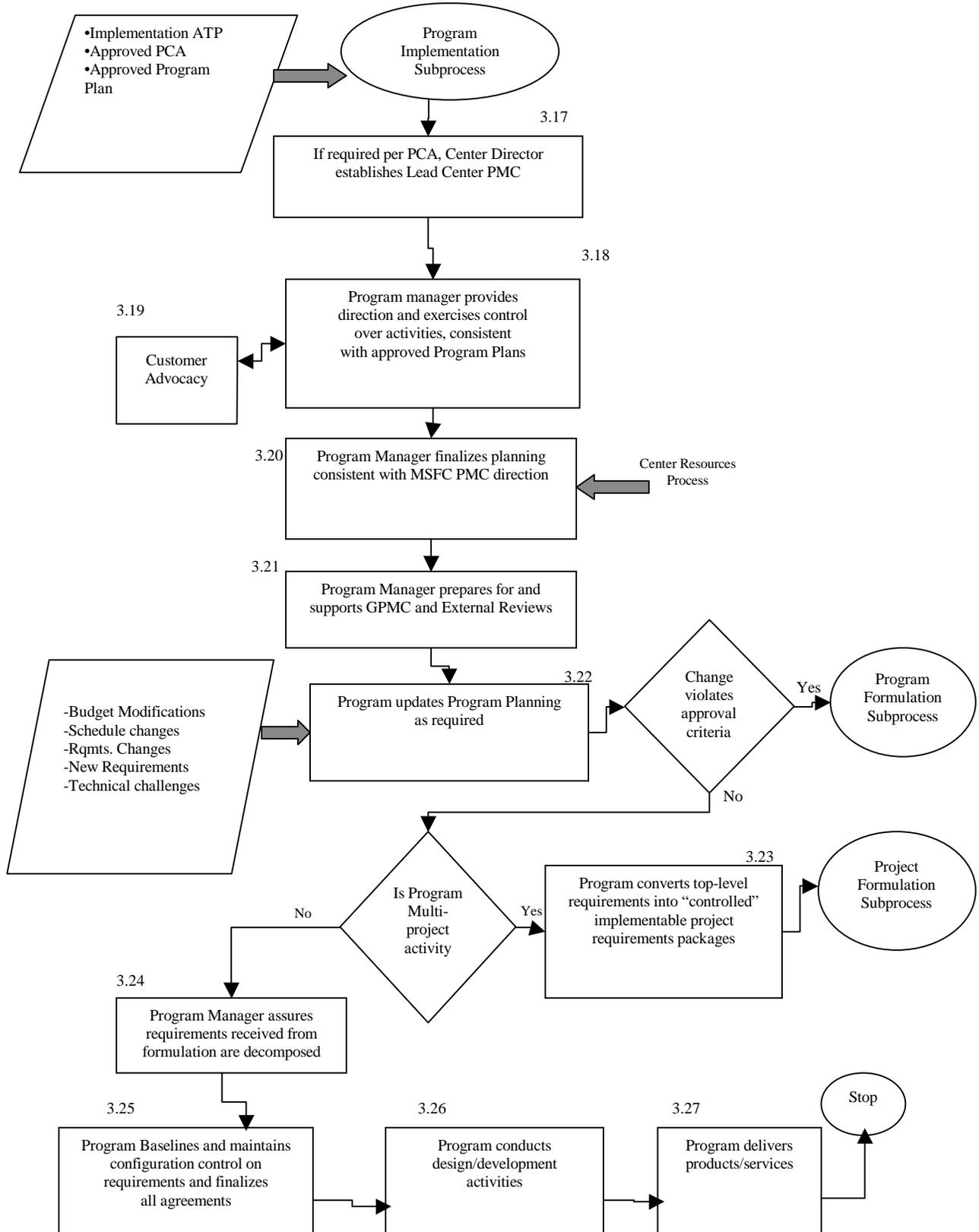


CHECK THE MASTER LIST at <http://starbase.msfc.nasa.gov/directives/directives.htm>  
 VERIFY THAT THIS IS THE CORRECT VERSION BEFORE USE

Program Approval Sub-Process

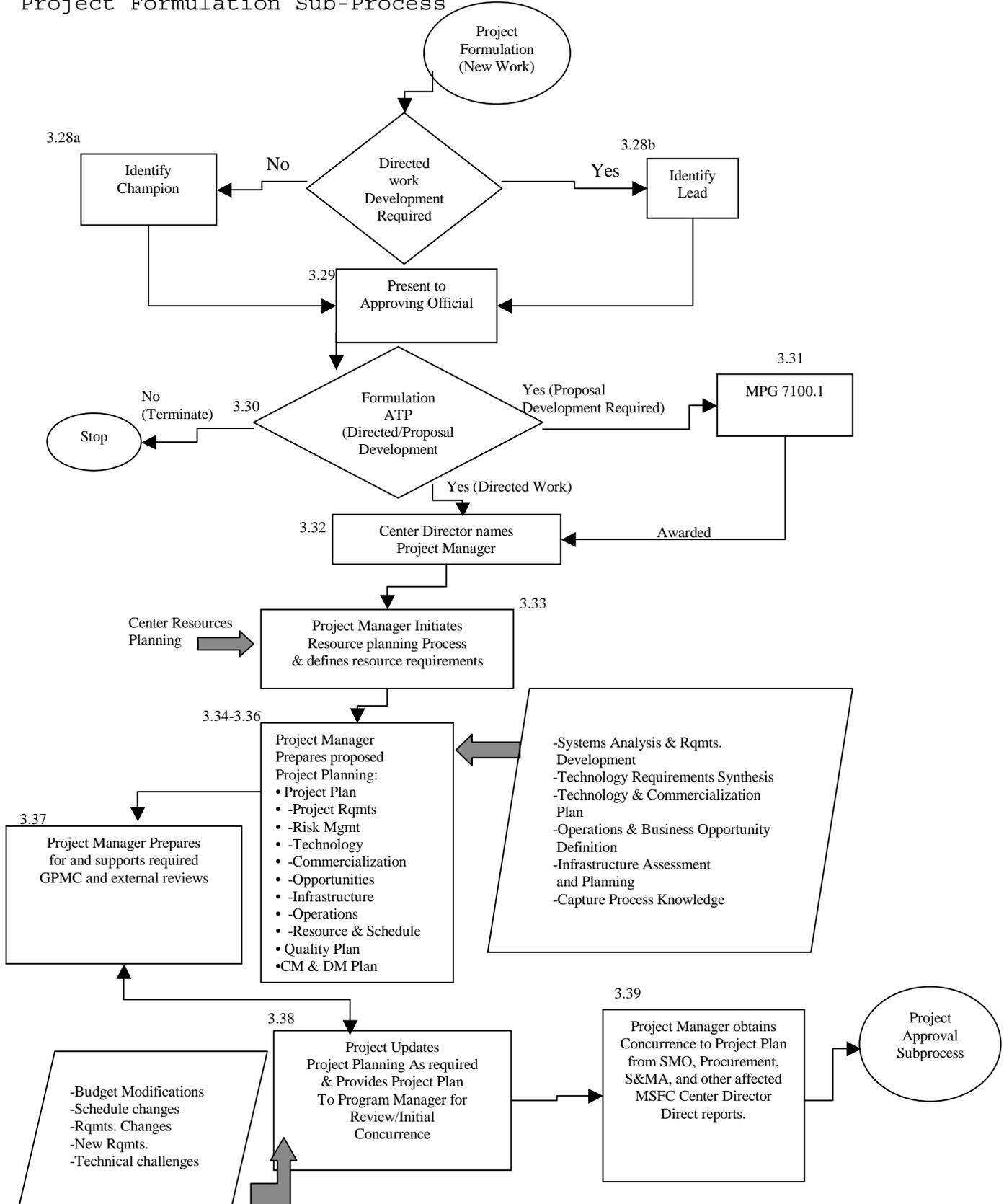


**Program Implementation Sub-Process**



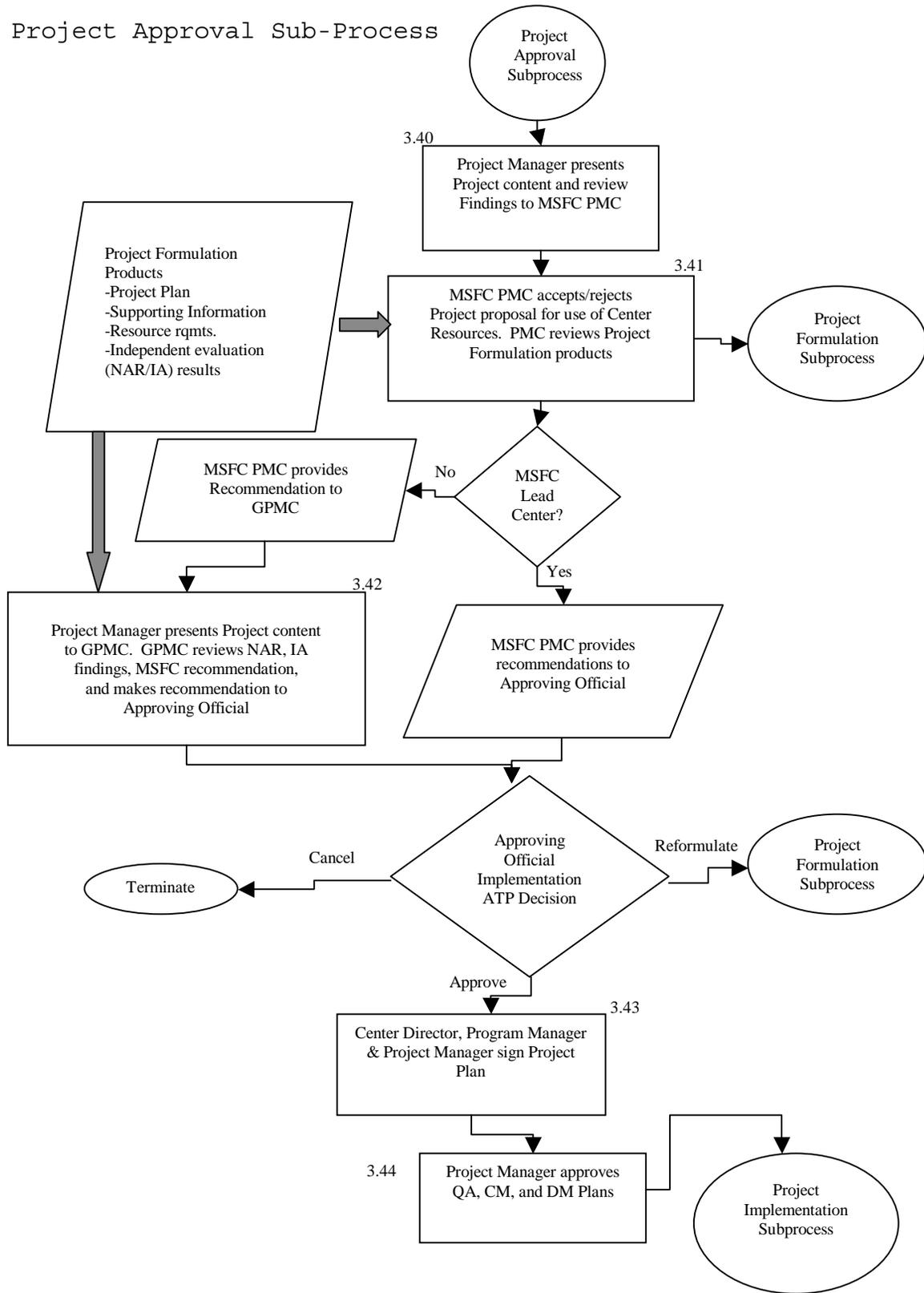
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Project Formulation Sub-Process



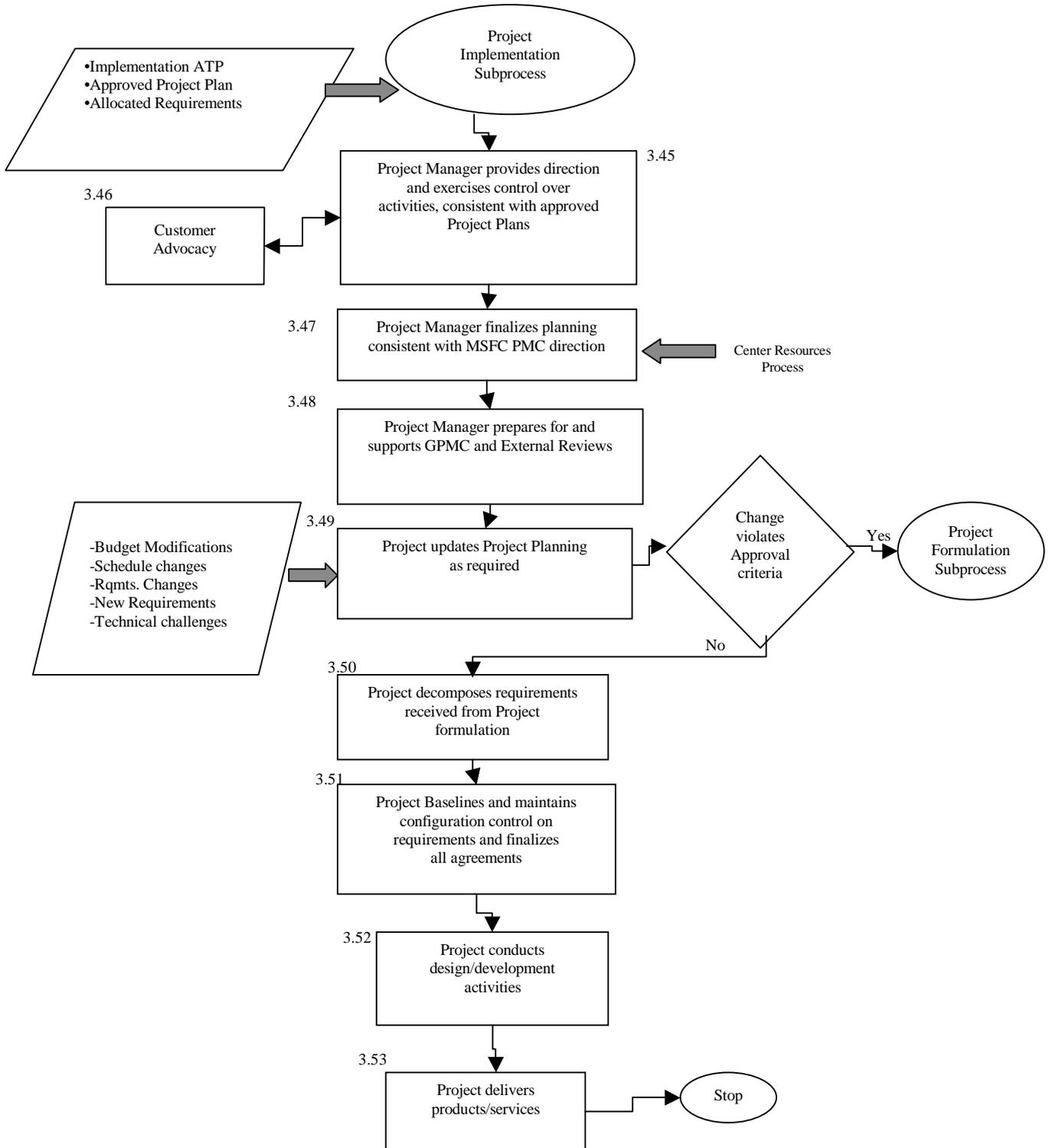
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 VERIFY THAT THIS IS THE CORRECT VERSION BEFORE USE

**Project Approval Sub-Process**

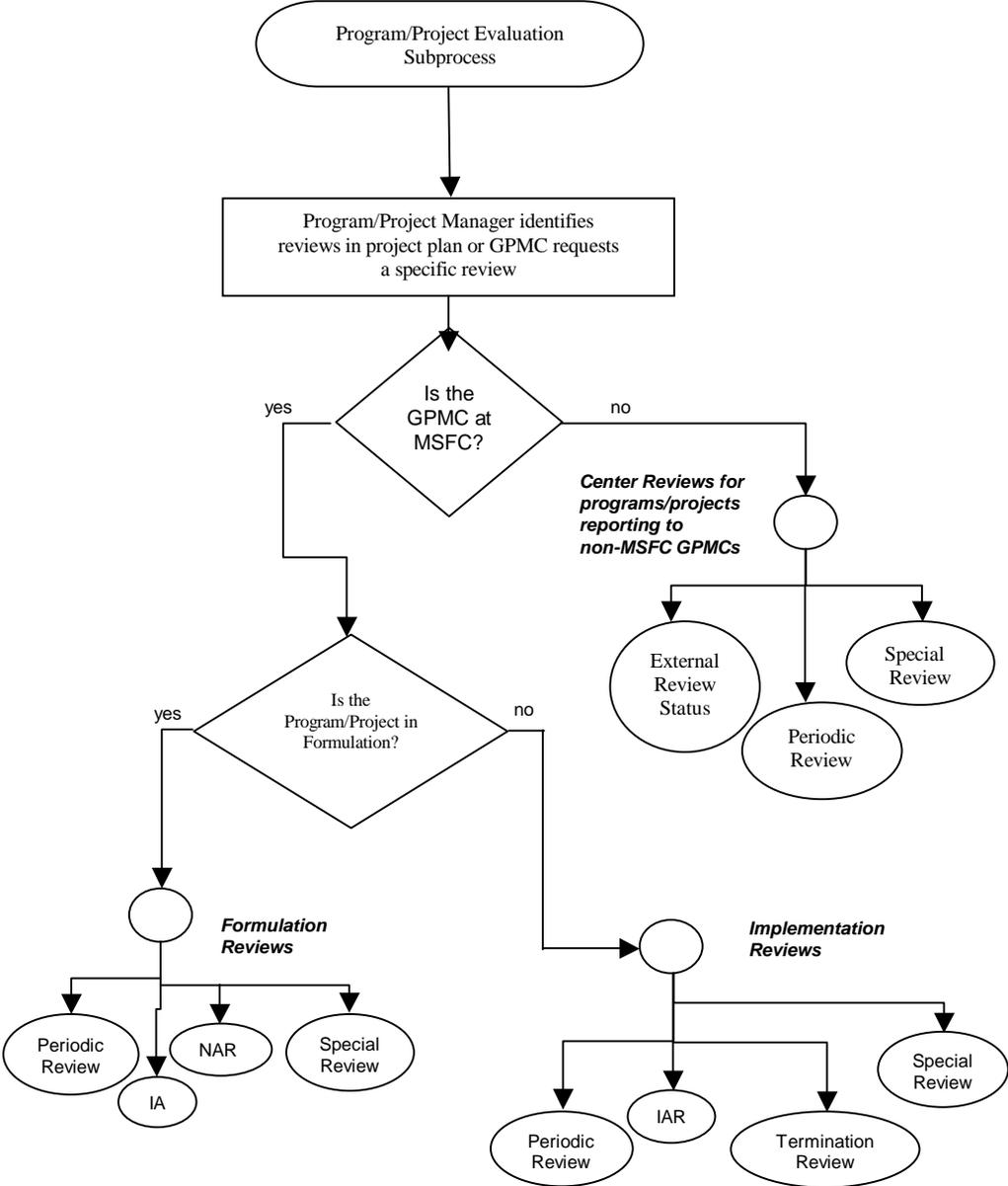


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### Project Implementation Sub-Process



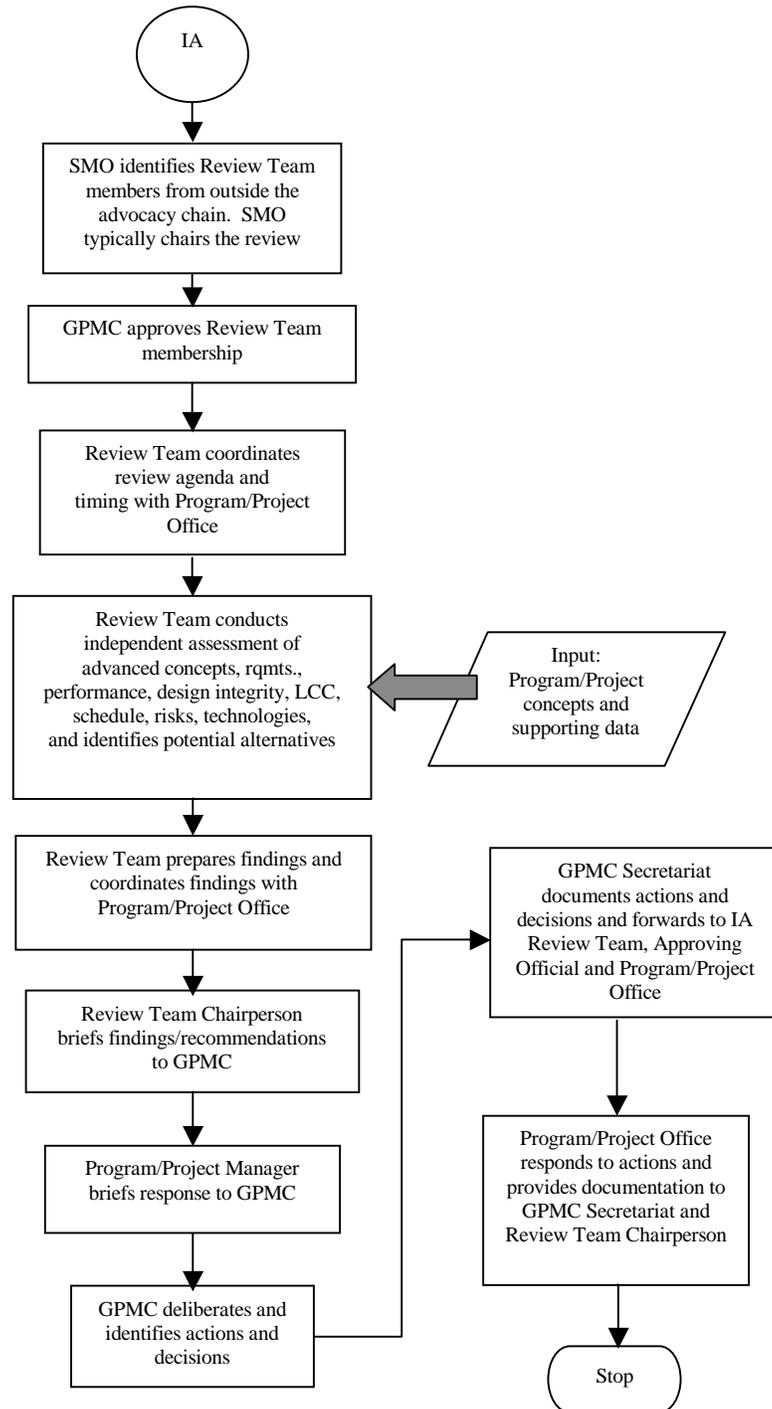
Program/Project Evaluation Subprocess Flow



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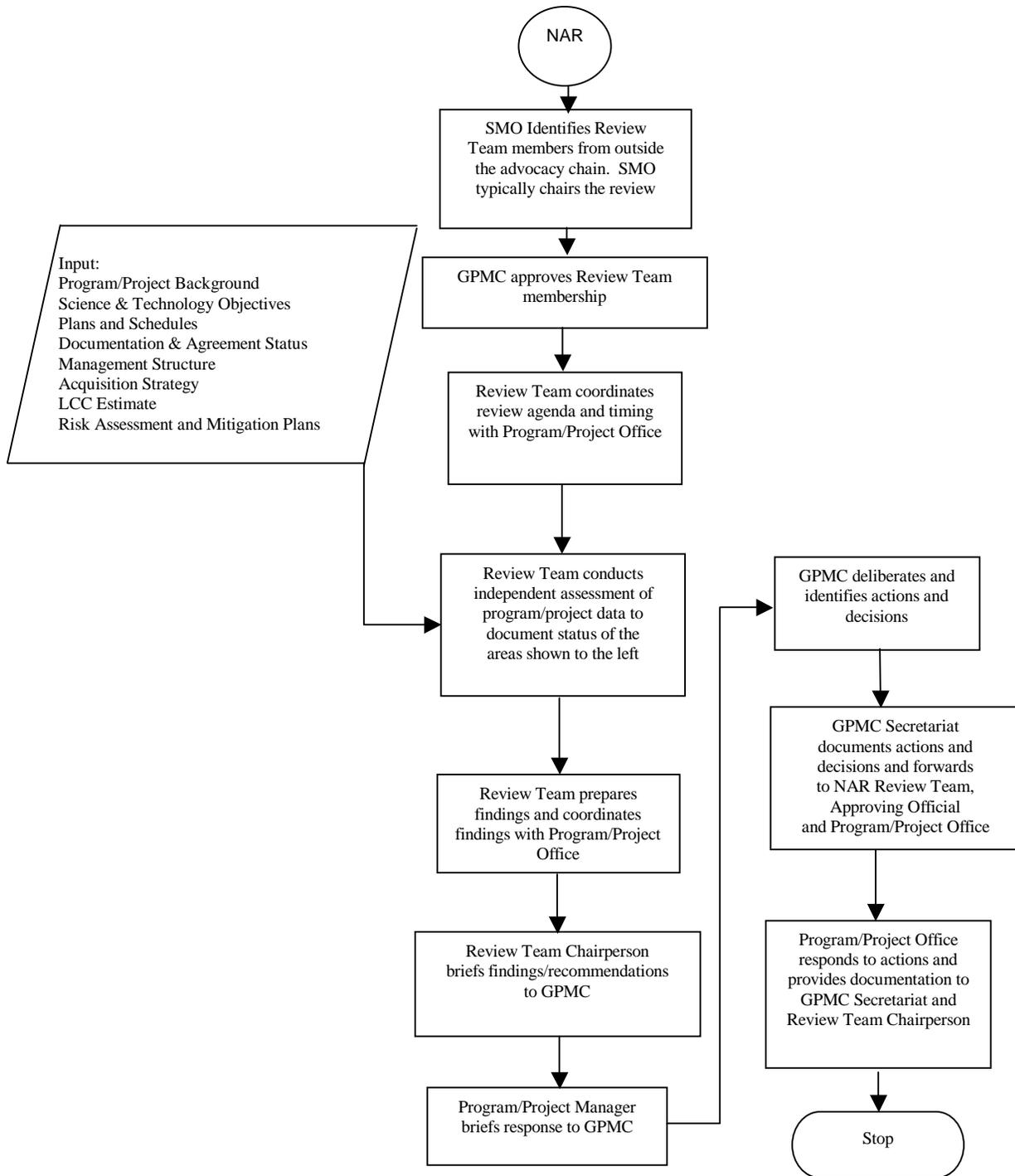
APPENDIX A – PROGRAM/PROJECT REVIEW/ASSESSMENT FLOWS

Independent Assessment (IA)



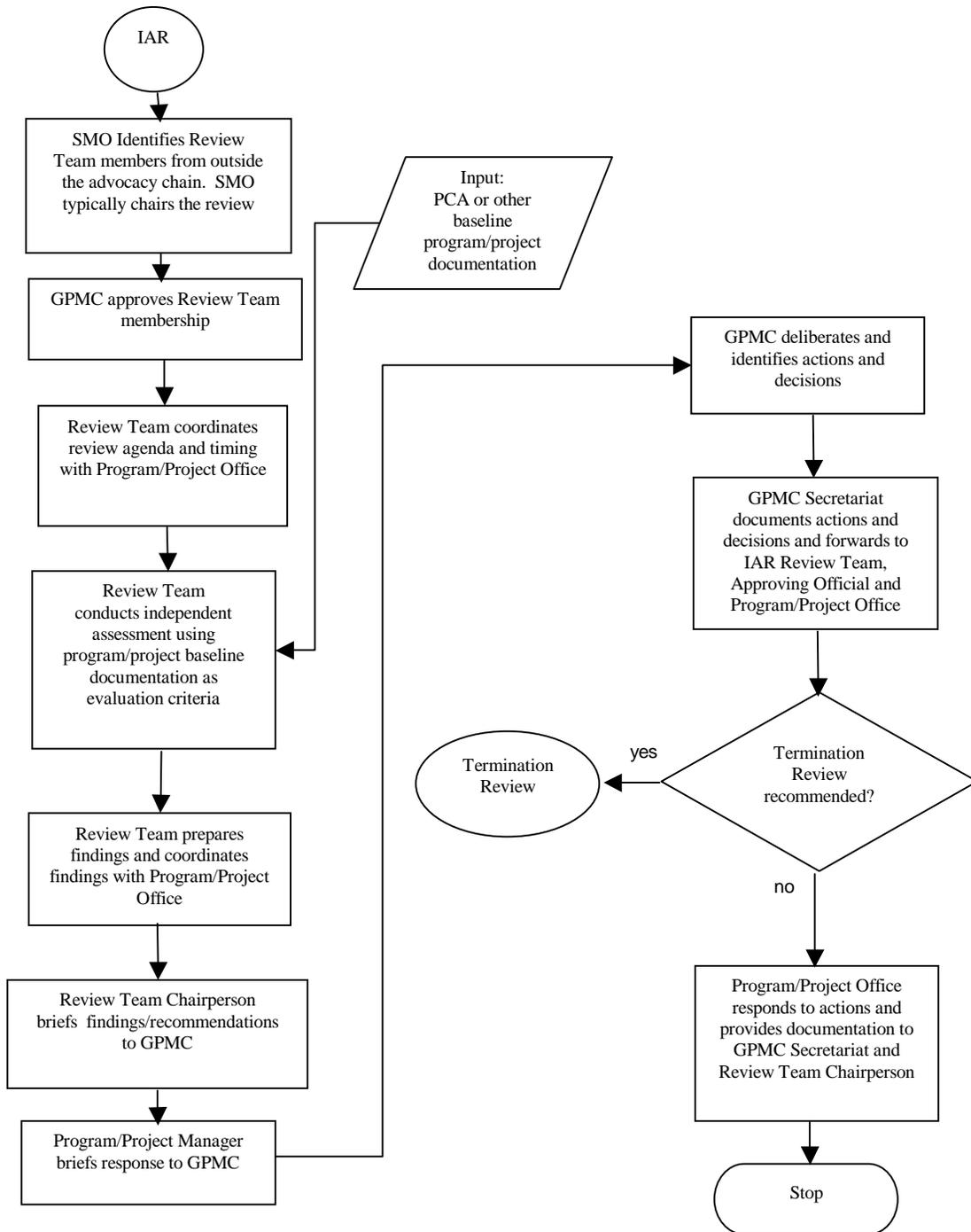
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### Non-Advocate Review (NAR)



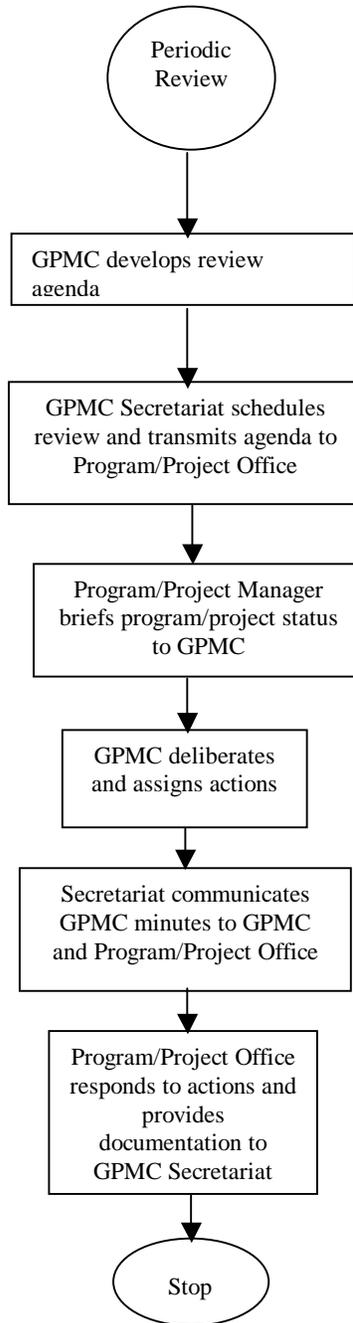
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### Independent Annual Review (IAR)

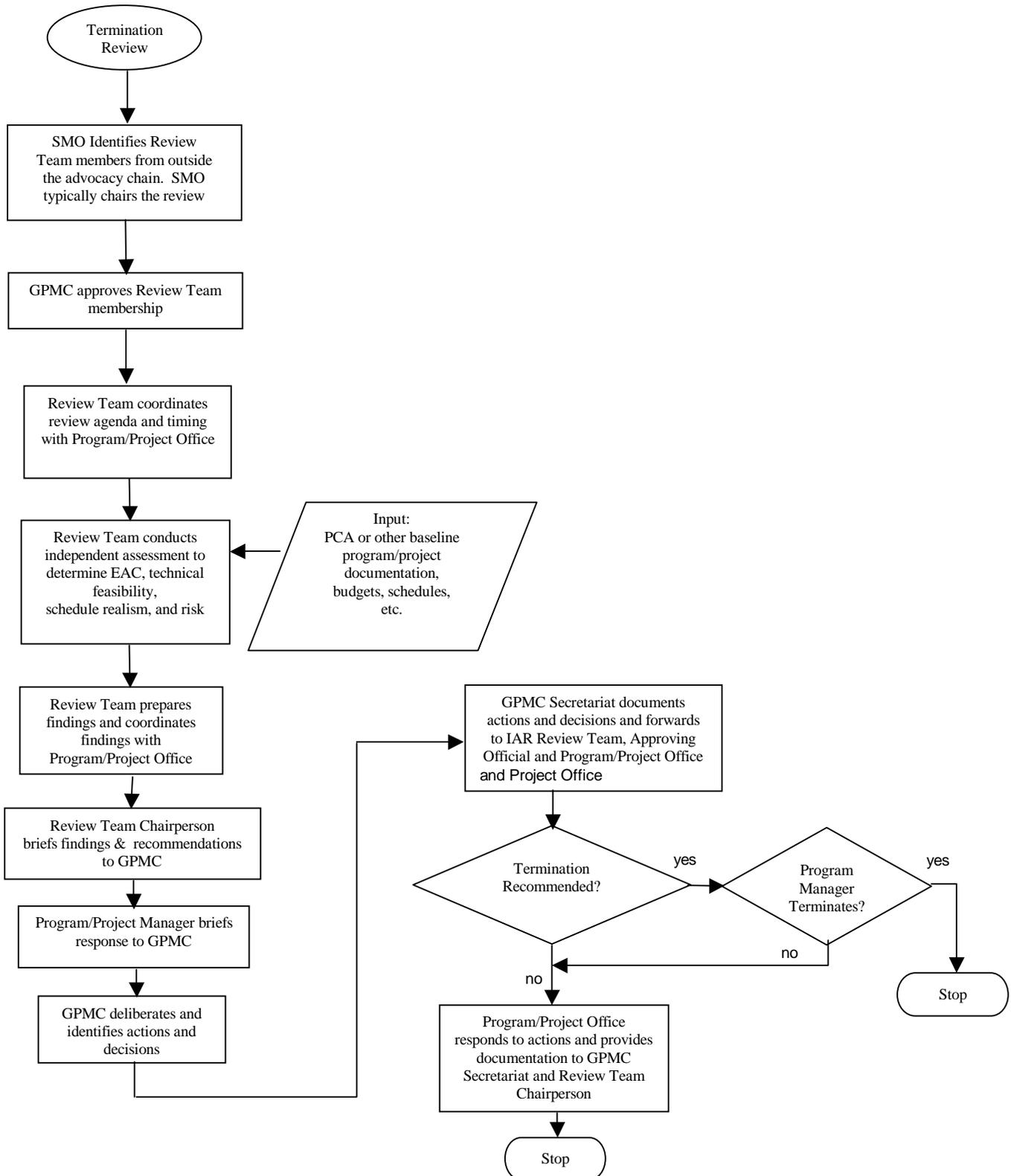


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Periodic Review

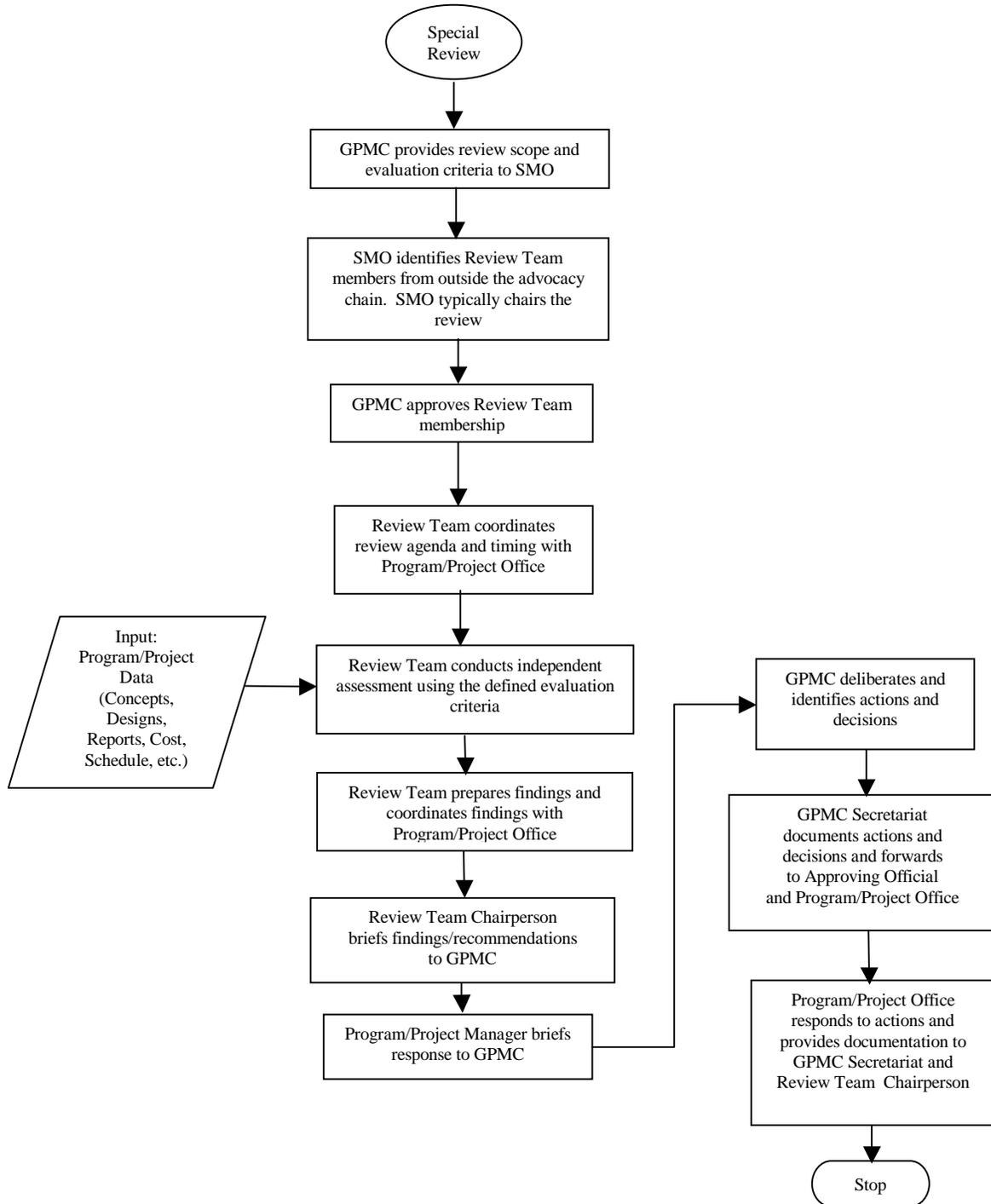


### Termination Review



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## Special Review



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### External Review Status

