3.0 NASA Program/Project Life Cycle

One of the fundamental concepts used within NASA for the management of major systems is the program/project life cycle, which consists of a categorization of everything that should be done to accomplish a program or project into distinct phases, separated by Key Decision Points (KDPs). KDPs are the events at which the decision authority determines the readiness of a program/project to progress to the next phase of the life cycle (or to the next KDP). Phase boundaries are defined so that they provide more or less natural points for Go or No-Go decisions. Decisions to proceed may be qualified by liens that must be removed within an agreed to time period. A program or project that fails to pass a KDP may be allowed to "go back to the drawing board" to try again later—or it may be terminated.

All systems start with the recognition of a need or the discovery of an opportunity and proceed through various stages of development to a final disposition. While the most dramatic impacts of the analysis and optimization activities associated with systems engineering are obtained in the early stages, decisions that affect millions of dollars of value or cost continue to be amenable to the systems approach even as the end of the system lifetime approaches.

Decomposing the program/project life cycle into phases organizes the entire process into more manageable pieces. The program/project life cycle should provide managers with incremental visibility into the progress being made at points in time that fit with the management and budgetary environments.

NPR 7120.5, NASA Space Flight Program and Project Management Requirements defines the major NASA life-cycle phases as Formulation and Implementation. For Flight Systems and Ground Support (FS&GS) projects, the NASA life-cycle phases of Formulation and Implementation divide into the following seven incremental pieces. The phases of the project life cycle are:

- Pre-Phase A: Concept Studies (i.e., identify feasible alternatives)
- Phase A: Concept and Technology Development (i.e., define the project and identify and initiate necessary technology)
- Phase B: Preliminary Design and Technology Completion (i.e., establish a preliminary design and develop necessary technology)
- Phase C: Final Design and Fabrication (i.e., complete the system design and build/code the components)
- Phase D: System Assembly, Integration and Test, Launch (i.e., integrate components, and verify the system, prepare for operations, and launch)
- Phase E: Operations and Sustainment (i.e., operate and maintain the system)
- Phase F: Closeout (i.e., disposal of systems and analysis of data)

Figure 3.0-1 (NASA program life cycle) and Figure 3.0-2 (NASA project life cycle) identify the KDPs and reviews that characterize the phases. Sections 3.1 and 3.2 contain narrative descriptions of the purposes, major activities, products, and KDPs of the NASA program life-cycle phases. Sections 3.3 to 3.9 contain narrative descriptions of the purposes, major activities, products, and KDPs of the NASA project life-cycle phases. Section 3.10 describes the NASA budget cycle within which program/project managers and systems engineers must operate.

3.1 Program Formulation

The program Formulation phase establishes a cost-effective program that is demonstrably capable of meeting Agency and mission directorate goals and objectives. The program Formulation Authorization Document (FAD) authorizes a Program Manager (PM) to initiate the planning of a new program and to perform the analyses required to formulate a sound program plan. Major reviews leading to approval at KDP I are the P/SRR, P/SDR, PAR, and governing Program Management Council (PMC) review. (See full list of reviews in the program and project life cycle figures on the next page.) A summary of the required gate products for the pro-

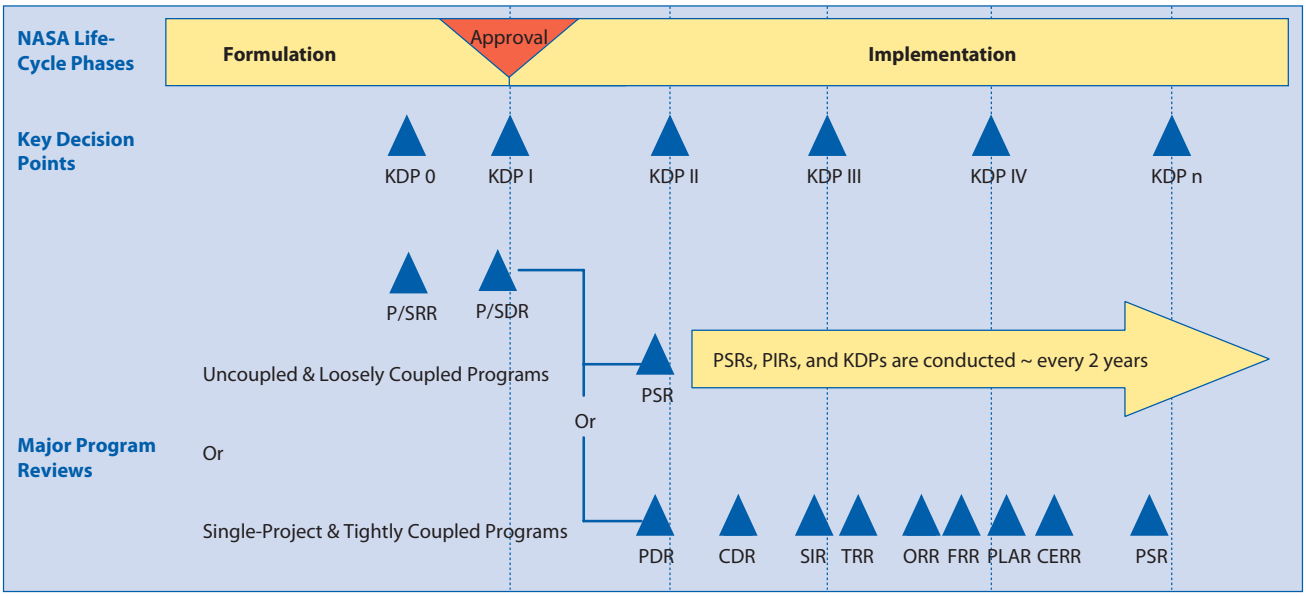

Figure 3.0-1 NASA program life cycle

CDR	Critical Design Review
CERR	Critical Events Readiness Review
DR	Decommissioning Review
FRR	Flight Readiness Review
KDP	Key Decision Point
MCR	Mission Concept Review
MDR	Mission Definition Review
ORR	Operational Readiness Review
PDR	Preliminary Design Review
PFAR	Post-Flight Assessment Review
PIR	Program Implementation Review
PLAR	Post-Launch Assessment Review
PRR	Production Readiness Review
P/SDR	Program/System Definition Review
P/SRR	Program/System Requirements Review
PSR	Program Status Review
SAR	System Acceptance Review
SDR	System Definition Review
SIR	System Integration Review
SRR	System Requirements Review
TRR	Test Readiness Review

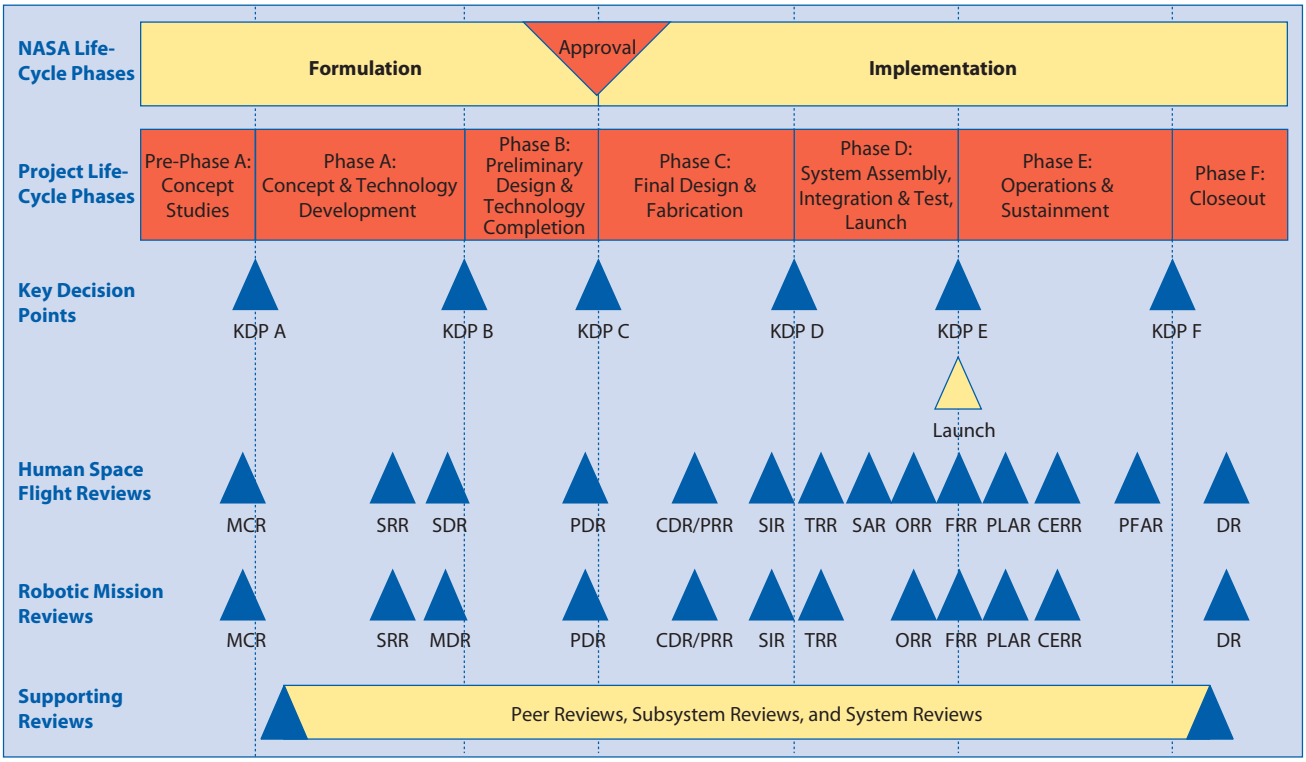

Figure 3.0-2 NASA project life cycle

Program Formulation

Purpose
To establish a cost-effective program that is demonstrably capable of meeting Agency and mission directorate goals and objectives

Typical Activities and Their Products
- Develop program requirements and allocate them to initial projects
- Define and approve program acquisition strategies
- Develop interfaces to other programs
- Start development of technologies that cut across multiple projects within the program
- Derive initial cost estimates and approve a program budget
- Perform required program Formulation technical activities defined in NPR 7120.5
- Satisfy program Formulation reviews' entrance/success criteria detailed in NPR 7123.1

Reviews
- P/SRR
- P/SDR

gram Formulation phase can be found in NPR 7120.5. Formulation for all program types is the same, involving one or more program reviews followed by KDP I where a decision is made approving a program to begin implementation. Typically, there is no incentive to move a program into implementation until its first project is ready for implementation.

3.2 Program Implementation

During the program Implementation phase, the PM works with the Mission Directorate Associate Administrator (MDAA) and the constituent project managers to execute the program plan cost effectively. Program reviews ensure that the program continues to contribute to Agency and mission directorate goals and objectives within funding constraints. A summary of the required gate products for the program Implementation phase can be found in NPR 7120.5. The program life cycle has two different implementation paths, depending on program type. Each implementation path has different types of major reviews. For uncoupled and loosely coupled programs, the Implementation phase only requires PSRs and PIRs to assess the program's performance and make a recommendation on its authorization at KDPs approximately every two years. Single-project and tightly coupled programs are more complex. For single-project programs, the Implementation phase program reviews shown in Figure 3.0-1 are synonymous (not duplicative) with the project reviews in the project life cycle (see Figure 3.0-2) through Phase D. Once in operations, these programs usually have biennial KDPs preceded by attendant PSRs/PIRs. Tightly coupled programs during implementation have program reviews tied to the project reviews to ensure the proper integration of projects into the larger system. Once in operations, tightly coupled programs also have biennial PSRs/PIRs/KDPs to assess the program's performance and authorize its continuation.

Program Implementation

Purpose
To execute the program and constituent projects and ensure the program continues to contribute to Agency goals and objectives within funding constraints

Typical Activities and Their Products
- Initiate projects through direct assignment or competitive process (e.g., Request for Proposal (RFP), Announcement of Opportunity (AO)
- Monitor project's formulation, approval, implementation, integration, operation, and ultimate decommissioning
- Adjust program as resources and requirements change
- Perform required program Implementation technical activities from NPR 7120.5
- Satisfy program Implementation reviews' entrance/success criteria from NPR 7123.1

Reviews
- PSR/PIR (uncoupled and loosely coupled programs only)
- Reviews synonymous (not duplicative) with the project reviews in the project life cycle (see Figure 3.0-2) through Phase D (single-project and tightly coupled programs only)

3.3 Project Pre-Phase A: Concept Studies

The purpose of this phase, which is usually performed more or less continually by concept study groups, is to devise various feasible concepts from which new projects (programs) can be selected. Typically, this activity consists of loosely structured examinations of new ideas, usually without central control and mostly oriented toward small studies. Its major product is a list of suggested projects, based on the identification of needs and the discovery of opportunities that are potentially consistent with NASA's mission, capabilities, priorities, and resources.

Advanced studies may extend for several years and may be a sequence of papers that are only loosely connected. These studies typically focus on establishing mission goals and formulating top-level system requirements and ConOps. Conceptual designs are often offered to demonstrate feasibility and support programmatic estimates. The emphasis is on establishing feasibility and desirability rather than optimality. Analyses and designs are accordingly limited in both depth and number of options.

Pre-Phase A: Concept Studies

Purpose

To produce a broad spectrum of ideas and alternatives for missions from which new programs/projects can be selected

Typical Activities and Products

(Note: AO projects will have defined the deliverable products.)

- Identify missions and architecture consistent with charter
- Identify and involve users and other stakeholders
- Identify and perform tradeoffs and analyses
- Identify requirements, which include:
  - Mission,
  - Science, and
  - Top-level system.
- Define measures of effectiveness and measures of performance
- Identify top-level technical performance measures
- Perform preliminary evaluations of possible missions
- Prepare program/project proposals, which may include:
  - Mission justification and objectives;
  - Possible ConOps;
  - High-level WBSs;
  - Cost, schedule, and risk estimates; and
  - Technology assessment and maturation strategies.
- Prepare preliminary mission concept report
- Perform required Pre-Phase A technical activities from NPR 7120.5
- Satisfy MCR entrance/success criteria from NPR 7123.1

Reviews

- MCR
- Informal proposal review

3.4 Project Phase A: Concept and Technology Development

During Phase A, activities are performed to fully develop a baseline mission concept and begin or assume responsibility for the development of needed technologies. This work, along with interactions with stakeholders, helps establish a mission concept and the program requirements on the project.

In Phase A, a team—often associated with a program or informal project office—readdresses the mission concept to ensure that the project justification and practicality are sufficient to warrant a place in NASA's budget. The team's effort focuses on analyzing mission requirements and establishing a mission architecture. Activities become formal, and the emphasis shifts toward establishing optimality rather than feasibility. The effort addresses more depth and considers many alternatives. Goals and objectives are solidified, and the project develops more definition in the system requirements, top-level system architecture, and ConOps. Conceptual designs are developed and exhibit more engineering detail than in advanced studies. Technical risks are identified in more detail, and technology development needs become focused.

In Phase A, the effort focuses on allocating functions to particular items of hardware, software, personnel, etc. System functional and performance requirements, along with architectures and designs, become firm as system tradeoffs and subsystem tradeoffs iterate back and forth

Phase A: Concept and Technology Development

Purpose

To determine the feasibility and desirability of a suggested new major system and establish an initial baseline compatibility with NASA's strategic plans

Typical Activities and Their Products

- Prepare and initiate a project plan
- Develop top-level requirements and constraints
- Define and document system requirements (hardware and software)
- Allocate preliminary system requirements to next lower level
- Define system software functionality description and requirements
- Define and document internal and external interface requirements
- Identify integrated logistics support requirements
- Develop corresponding evaluation criteria and metrics
- Document the ConOps
- Baseline the mission concept report
- Demonstrate that credible, feasible design(s) exist
- Perform and archive trade studies
- Develop mission architecture
- Initiate environmental evaluation/National Environmental Policy Act process
- Develop initial orbital debris assessment (NASA Safety Standard 1740.14)
- Establish technical resource estimates
- Define life-cycle cost estimates and develop system-level cost-effectiveness model
- Define the WBS
- Develop SOWs
- Acquire systems engineering tools and models
- Baseline the SEMP
- Develop system risk analyses
- Prepare and initiate a risk management plan
- Prepare and Initiate a configuration management plan
- Prepare and initiate a data management plan
- Prepare engineering specialty plans (e.g., contamination control plan, electromagnetic interference/electromagnetic compatibility control plan, reliability plan, quality control plan, parts management plan)
- Prepare a safety and mission assurance plan
- Prepare a software development or management plan (see NPR 7150.2)
- Prepare a technology development plan and initiate advanced technology development
- Establish human rating plan
- Define verification and validation approach and document it in verification and validation plans
- Perform required Phase A technical activities from NPR 7120.5
- Satisfy Phase A reviews' entrance/success criteria from NPR 7123.1

Reviews

- SRR
- MDR (robotic mission only)
- SDR (human space flight only)

in the effort to seek out more cost-effective designs. (Trade studies should precede—rather than follow—system design decisions.) Major products to this point include an accepted functional baseline for the system and its major end items. The effort also produces various engineering and management plans to prepare for managing the project's downstream processes, such as verification and operations, and for implementing engineering specialty programs.

3.5 Project Phase B: Preliminary Design and Technology Completion

During Phase B, activities are performed to establish an initial project baseline, which (according to NPR 7120.5 and NPR 7123.1) includes "a formal flow down of the project-level performance requirements to a complete set of system and subsystem design specifications for both flight and ground elements" and "corresponding preliminary designs." The technical requirements should be sufficiently detailed to establish firm schedule and cost estimates for the project. It also should be noted, especially for AO-driven projects, that Phase B is where the top-level requirements and the requirements flowed down to the next level are finalized and placed under configuration control. While the requirements should be baselined in Phase A, there are just enough changes resulting from the trade studies and analyses in late Phase A and early Phase B that changes are inevitable. However, by mid-Phase B, the top-level requirements should be finalized.

Actually, the Phase B baseline consists of a collection of evolving baselines covering technical and business aspects of the project: system (and subsystem) requirements and specifications, designs, verification and operations plans, and so on in the technical portion of the baseline, and schedules, cost projections, and management plans in the business portion. Establishment of baselines implies the implementation of configuration management procedures. (See Section 6.5.)

In Phase B, the effort shifts to establishing a functionally complete preliminary design solution (i.e., a functional baseline) that meets mission goals and objectives. Trade studies continue. Interfaces among the

Phase B: Preliminary Design and Technology Completion

Purpose

To define the project in enough detail to establish an initial baseline capable of meeting mission needs

Typical Activities and Their Products

- Baseline the project plan
- Review and update documents developed and baselined in Phase A
- Develop science/exploration operations plan based on matured ConOps
- Update engineering specialty plans (e.g., contamination control plan, electromagnetic interference/electromagnetic compatibility control plan, reliability plan, quality control plan, parts management plan)
- Update technology maturation planning
- Report technology development results
- Update risk management plan
- Update cost and schedule data
- Finalize and approve top-level requirements and flowdown to the next level of requirements
- Establish and baseline design-to specifications (hardware and software) and drawings, verification and validation plans, and interface documents at lower levels
- Perform and archive trade studies' results
- Perform design analyses and report results
- Conduct engineering development tests and report results
- Select a baseline design solution
- Baseline a preliminary design report
- Define internal and external interface design solutions (e.g., interface control documents)
- Define system operations as well as PI/contract proposal management, review, and access and contingency planning
- Develop appropriate level safety data package
- Develop preliminary orbital debris assessment
- Perform required Phase B technical activities from NPR 7120.5
- Satisfy Phase B reviews' entrance/success criteria from NPR 7123.1

Reviews

- PDR
- Safety review

major end items are defined. Engineering test items may be developed and used to derive data for further design work, and project risks are reduced by successful technology developments and demonstrations. Phase B culminates in a series of PDRs, containing the system-level PDR and PDRs for lower level end items as appropriate. The PDRs reflect the successive refinement of requirements into designs. (See the doctrine of successive refinement in Subsection 4.4.1.2 and Figure 4.4-2.) Design issues uncovered in the PDRs should be resolved so that final design can begin with unambiguous design-to specifications. From this point on, almost all changes to the baseline are expected to represent successive refinements, not fundamental changes. Prior to baselining, the system architecture, preliminary design, and ConOps must have been validated by enough technical analysis and design work to establish a credible, feasible design in greater detail than was sufficient for Phase A.

3.6 Project Phase C: Final Design and Fabrication

During Phase C, activities are performed to establish a complete design (allocated baseline), fabricate or produce hardware, and code software in preparation for integration. Trade studies continue. Engineering test units more closely resembling actual hardware are built and tested to establish confidence that the design will function in the expected environments. Engineering specialty analysis results are integrated into the design, and the manufacturing process and controls are defined and validated. All the planning initiated back in Phase A for the testing and operational equipment, processes and analysis, integration of the engineering specialty analysis, and manufacturing processes and controls is implemented. Configuration management continues to track and control design changes as detailed interfaces are defined. At each step in the successive refinement of the final design, corresponding integration and verification activities are planned in greater detail. During this phase, technical parameters, schedules, and budgets are closely tracked to ensure that undesirable trends (such as an unexpected growth in spacecraft mass or increase in its cost) are recognized early enough to take corrective action. These activities focus on preparing for the CDR, PRR (if required), and the SIR.

Phase C contains a series of CDRs containing the system-level CDR and CDRs corresponding to the different levels of the system hierarchy. A CDR for each end item should be held prior to the start of fabrication/production for hardware and prior to the start of coding of deliverable software products. Typically, the sequence of CDRs reflects the integration process that will occur in the next phase—that is, from lower level CDRs to the system-level CDR. Projects, however, should tailor the sequencing of the reviews to meet the needs of the project. If there is a production run of products, a PRR will be performed to ensure the production plans, facilities, and personnel are ready to begin production. Phase C culminates with an SIR. The final product of this phase is a product ready for integration.

3.7 Project Phase D: System Assembly, Integration and Test, Launch

During Phase D, activities are performed to assemble, integrate, test, and launch the system. These activities focus on preparing for the FRR. Activities include assembly, integration, verification, and validation of the system, including testing the flight system to expected environments within margin. Other activities include the initial training of operating personnel and implementation of the logistics and spares planning. For flight projects, the focus of activities then shifts to prelaunch integration and launch. Although all these activities are conducted in this phase of a project, the planning for these activities was initiated in Phase A. The planning for the activities cannot be delayed until Phase D begins because the design of the project is too advanced to incorporate requirements for testing and operations. Phase D concludes with a system that has been shown to be capable of accomplishing the purpose for which it was created.

Phase C: Final Design and Fabrication

Purpose

To complete the detailed design of the system (and its associated subsystems, including its operations systems), fabricate hardware, and code software

Typical Activities and Their Products

- Update documents developed and baselined in Phase B
- Update interface documents
- Update mission operations plan based on matured ConOps
- Update engineering specialty plans (e.g., contamination control plan, electromagnetic interference/electromagnetic compatibility control plan, reliability plan, quality control plan, parts management plan)
- Augment baselined documents to reflect the growing maturity of the system, including the system architecture, WBS, and project plans
- Update and baseline production plans
- Refine integration procedures
- Baseline logistics support plan
- Add remaining lower level design specifications to the system architecture
- Complete manufacturing and assembly plans and procedures
- Establish and baseline build-to specifications (hardware and software) and drawings, verification and validation plans, and interface documents at all levels
- Baseline detailed design report
- Maintain requirements documents
- Maintain verification and validation plans
- Monitor project progress against project plans
- Develop verification and validation procedures
- Develop hardware and software detailed designs
- Develop the system integration plan and the system operation plan
- Develop the end-to-end information system design
- Develop spares planning
- Develop command and telemetry list
- Prepare launch site checkout and operations plans
- Prepare operations and activation plan
- Prepare system decommissioning/disposal plan, including human capital transition, for use in Phase F
- Finalize appropriate level safety data package
- Develop preliminary operations handbook
- Perform and archive trade studies
- Fabricate (or code) the product
- Perform testing at the component or subsystem level
- Identify opportunities for preplanned product improvement
- Baseline orbital debris assessment
- Perform required Phase C technical activities from NPR 7120.5
- Satisfy Phase C reviews' entrance/success criteria from NPR 7123.1

Reviews

- CDR
- PRR
- SIR
- Safety review

Phase D: System Assembly, Integration and Test, Launch

Purpose

To assemble and integrate the products and create the system, meanwhile developing confidence that it will be able to meet the system requirements; conduct launch and prepare for operations

Typical Activities and Their Products

- Integrate and verify items according to the integration and verification plans, yielding verified components and (sub-systems)
- Monitor project progress against project plans
- Refine verification and validation procedures at all levels
- Perform system qualification verifications
- Perform system acceptance verifications and validation(s) (e.g., end-to-end tests encompassing all elements (i.e., space element, ground system, data processing system)
- Perform system environmental testing
- Assess and approve verification and validation results
- Resolve verification and validation discrepancies
- Archive documentation for verifications and validations performed
- Baseline verification and validation report
- Baseline "as-built" hardware and software documentation
- Update logistics support plan
- Document lessons learned
- Prepare and baseline operator's manuals
- Prepare and baseline maintenance manuals
- Approve and baseline operations handbook
- Train initial system operators and maintainers
- Train on contingency planning
- Finalize and implement spares planning
- Confirm telemetry validation and ground data processing
- Confirm system and support elements are ready for flight
- Integrate with launch vehicle(s) and launch, perform orbit insertion, etc., to achieve a deployed system
- Perform initial operational verification(s) and validation(s)
- Perform required Phase D technical activities from NPR 7120.5
- Satisfy Phase D reviews' entrance/success criteria from NPR 7123.1

Reviews

- TRR (at all levels)
- SAR (human space flight only)
- ORR
- FRR
- System functional and physical configuration audits
- Safety review

3.8 Project Phase E: Operations and Sustainment

During Phase E, activities are performed to conduct the prime mission and meet the initially identified need and maintain support for that need. The products of the phase are the results of the mission. This phase encompasses the evolution of the system only insofar as that evolution does not involve major changes to the system architecture. Changes of that scope constitute new "needs," and the project life cycle starts over. For large flight projects, there may be an extended period of cruise, orbit insertion, on-orbit assembly, and initial shakedown operations. Near the end of the prime mission, the project may apply for a mission extension to continue mission activities or attempt to perform additional mission objectives.

Phase E: Operations and Sustainment

Purpose
To conduct the mission and meet the initially identified need and maintain support for that need

Typical Activities and Their Products
- Conduct launch vehicle performance assessment
- Conduct in-orbit spacecraft checkout
- Commission and activate science instruments
- Conduct the intended prime mission(s)
- Collect engineering and science data
- Train replacement operators and maintainers
- Train the flight team for future mission phases (e.g., planetary landed operations)
- Maintain and approve operations and maintenance logs
- Maintain and upgrade the system
- Address problem/failure reports
- Process and analyze mission data
- Apply for mission extensions, if warranted, and conduct mission activities if awarded
- Prepare for deactivation, disassembly, decommissioning as planned (subject to mission extension)
- Complete post-flight evaluation reports
- Complete final mission report
- Perform required Phase E technical activities from NPR 7120.5
- Satisfy Phase E reviews' entrance/success criteria from NPR 7123.1

Reviews
- PLAR
- CERR
- PFAR (human space flight only)
- System upgrade review
- Safety review

3.9 Project Phase F: Closeout

During Phase F, activities are performed to implement the systems decommissioning disposal planning and analyze any returned data and samples. The products of the phase are the results of the mission.

Phase F deals with the final closeout of the system when it has completed its mission; the time at which this occurs depends on many factors. For a flight system that returns to Earth with a short mission duration, closeout may require little more than deintegration of the hardware and its return to its owner. On flight projects of long duration, closeout may proceed according to established plans or may begin as a result of unplanned events, such as failures. Refer to *NPD 8010.3, Notification of Intent to Decommission or Terminate Operating Space Systems and Terminate Missions* for terminating an operating mission. Alternatively, technological advances may make it uneconomical to continue operating the system either in its current configuration or an improved one.

Phase F: Closeout

Purpose
To implement the systems decommissioning/disposal plan developed in Phase C and analyze any returned data and samples

Typical Activities and Their Products
- Dispose of the system and supporting processes
- Document lessons learned
- Baseline mission final report
- Archive data
- Begin transition of human capital (if applicable)
- Perform required Phase F technical activities from NPR 7120.5
- Satisfy Phase F reviews' entrance/success criteria from NPR 7123.1

Reviews
- DR

To limit space debris, *NPR 8715.6, NASA Procedural Requirements for Limiting Orbital Debris* provides guidelines for removing Earth-orbiting robotic satellites from their operational orbits at the end of their useful life. For Low Earth Orbiting (LEO) missions, the satellite is usually deorbited. For small satellites, this is accomplished by allowing the orbit to slowly decay until the satellite eventually burns up in the Earth's atmosphere. Larger, more massive satellites and observatories must be designed to demise or deorbited in a controlled manner so that they can be safely targeted for impact in a remote area of the ocean. The Geostationary (GEO) satellites at 35,790 km above the Earth cannot be practically deorbited, so they are boosted to a higher orbit well beyond the crowded operational GEO orbit.

In addition to uncertainty as to when this part of the phase begins, the activities associated with safe closeout of a system may be long and complex and may affect the system design. Consequently, different options and strategies should be considered during the project's earlier phases along with the costs and risks associated with the different options.

3.10 Funding: The Budget Cycle

NASA operates with annual funding from Congress. This funding results, however, from a continuous rolling process of budget formulation, budget enactment, and finally, budget execution. NASA's *Financial Management Requirements (FMR) Volume 4* provides the concepts, the goals, and an overview of NASA's budget system of resource alignment referred to as Planning, Programming, Budgeting, and Execution (PPBE) and establishes guidance on the programming and budgeting phases of the PPBE process, which are critical to budget formulation for NASA. Volume 4 includes strategic budget planning and resources guidance, program review, budget development, budget presentation, and justification of estimates to the Office of Management and Budget (OMB) and to Congress. It also provides detailed descriptions of the roles and responsibilities for key players in each step of the process. It consolidates current legal, regulatory, and administrative policies and procedures applicable to NASA. A highly simplified representation of the typical NASA budget cycle is shown in Figure 3.10-1.

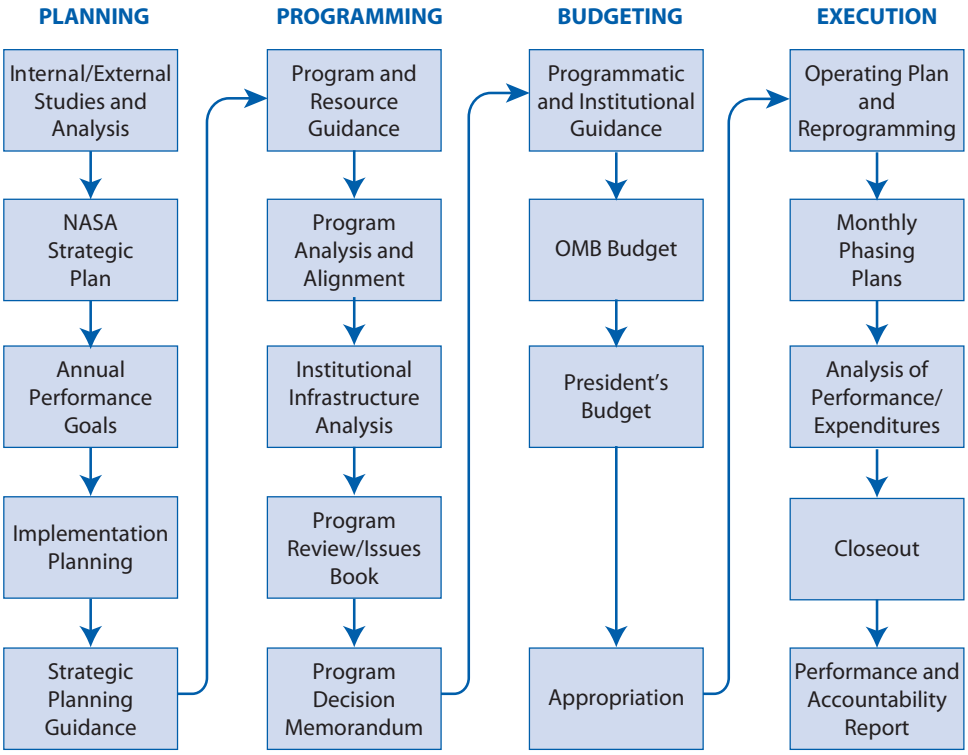

Figure 3.10-1 Typical NASA budget cycle

NASA typically starts developing its budget each February with economic forecasts and general guidelines as identified in the most recent President's budget. By late August, NASA has completed the planning, programming, and budgeting phases of the PPBE process and prepares for submittal of a preliminary NASA budget to the OMB. A final NASA budget is submitted to the OMB in September for incorporation into the President's budget transmittal to Congress, which generally occurs in January. This proposed budget is then subjected to congressional review and approval, culminating in the passage of bills authorizing NASA to obligate funds in accordance with congressional stipulations and appropriating those funds. The congressional process generally lasts through the summer. In recent years, however, final bills have often been delayed past the start of the fiscal year on October 1. In those years, NASA has operated on continuing resolution by Congress.

With annual funding, there is an implicit funding control gate at the beginning of every fiscal year. While these gates place planning requirements on the project and can make significant replanning necessary, they are not part of an orderly systems engineering process. Rather, they constitute one of the sources of uncertainty that affect project risks, and they are essential to consider in project planning.