**NASA NPD 8600.1**

**Policy Effective Date:**

**Directive Expiration Date:**

**Subject: Capability Portfolio Management**

**Responsible Office: Office of Strategic Infrastructure**

1. **POLICY**
2. NASA policy is to strategically manage capability portfolios across Mission Directorates and Centers in an integrated manner and within established budgets to meet current and future requirements and strategic needs, achieve needed capacity, increase overall Agency efficiency and effectiveness, eliminate unintentional redundancy, leverage external capabilities when in the best interests of the Agency, and comply with regulatory and statutory requirements.
3. NASA policy is to apply Capability Portfolio Management (CPM) procedural requirements to capability portfolios of strategic importance to the Agency.
4. NASA policy is to define a governance and management structure for each capability portfolio.
5. NASA policy is to obtain approval from the Capability Portfolio (CP) manager before acquiring through acquisitions, procurements, partnerships, and agreements (e.g., through program and project execution) products and services external to the capability portfolio that are similar to those available from the capability portfolio.
6. NASA policy is to obtain approval from the CP manager before improving or enhancing the capability portfolio through investments, acquisitions, procurements, partnerships, agreements, and personnel actions that could affect the portfolio capability.
7. NASA policy is to include the concurrence or non-concurrence of the CP manager in all decision packages provided to executive leadership that could impact the capability portfolio. This may include recommendations for new assets that fit within the scope of the capability portfolio, investments, divestments, facility demolition, and repurposing of assets that are included in a decisional review.

**2. APPLICABILITY**

1. This NPD is applicable to NASA Headquarters and NASA Centers including Component Facilities and Technical and Service Support Centers. This language applies to the Jet Propulsion Laboratory, a Federally Funded Research and Development Center, other contractors, recipients of grants, cooperative agreements, or other agreements only to the extent specified or referenced in the applicable contracts, grants, or agreements.
2. This NPD is applicable to capability portfolios approved by the Mission Support Council (MSC) Chair. The current list of capability portfolios is maintained by the Office of Strategic Infrastructure (OSI) Assistant Administrator.
3. This NPD is applicable to investments, acquisitions, procurements, partnerships, and agreements having requirements that utilize or develop capabilities that are similar to those existing within a capability portfolio.
4. In this NPD, all mandatory actions (i.e., requirements) are denoted by statements containing the term "shall." The terms "may" or "can" denote discretionary privilege or permission, "should" denotes a good practice and is recommended, but not required, "will" denotes expected outcome, and "are” or “is" denote descriptive material.

**3. AUTHORITY**

National Aeronautics and Space Act, as amended, 51 U.S.C. § 20113(a).

**4. APPLICABLE DOCUMENTS AND FORMS**

1. NPD 1000.0, NASA Governance and Strategic Management Handbook.
2. NPD 1000.3, The NASA Organization.
3. NPD 1001.0, NASA Strategic Plan

**5. RESPONSIBILITY**

1. The NASA Associate Administrator, Mission Support Council and Mission Support Council Chair, NASA Chief Engineer, NASA Chief Financial Officer, Mission Directorate Associate Administrators, Center Directors, Office of Strategic Infrastructure Assistant Administrator, and CP managers are responsible for promoting policies, procedural requirements, guidance, and best practices in their areas of responsibility under this NPD. They will coordinate efforts to manage capabilities strategically for the benefit of the Agency. The roles and responsibilities of NASA management are defined in NPD 1000.0 and further detailed in NPD 1000.3. The key roles and responsibilities within the context of this NPD are summarized in the following sections.
2. The NASA Associate Administrator shall:
3. Provide Agency-level leadership and commitment for the effective and efficient management of NASA’s capability portfolios.
4. Promote collaboration within the organization (e.g., between Mission Directorates and Centers) when it is needed for successful management of NASA’s capability portfolios.
5. The Mission Support Council Chair shall:
6. Approve or disapprove Strategic Management and Termination of capability portfolios.
7. Ensure that CP managers maintain a cross-Agency perspective and absence of bias in decision making.
8. The Office of Strategic Infrastructure (OSI) Assistant Administrator shall:
9. Ensure that Agency CPM goals, objectives, policies, procedural requirements, guidance, and best practices are established and compatible with established policy that includes NPD 1001.0, NASA Strategic Plan, NPD 1000.3, The NASA Organization, and NPD 1000.0, NASA Governance and Strategic Management Handbook.
10. Maintain the official list of capability portfolios subject to this NPD and related procedural requirements (NPRs) governed by this NPD. This includes a description of the capability.
11. Ensure the integration of the CPM requirements into NASA's business processes.
12. Establish Agency-level boards and teams, as needed, to address Agency-level CPM policies, issues, and strategies.
13. Advise senior officials and the Mission Support Council on matters pertaining to CPM policy.
14. Communicate the importance of effective CPM and conformance with existing management policies, procedural requirements, and guidance documents.
15. Approve or disapprove waivers and deviations to requirements under their authority.
16. The NASA Chief Engineer and MDAAs who have responsibility for technical (discipline, system, service, or research) Capability Leadership Teams (CLTs) shall:
17. Provide periodic analysis and special reporting to the CP manager on technical capabilities in support of the policies in this NPD as well as procedural requirements (NPRs), guidance, and best practices governed by this NPD.
18. Appoint and support requested representatives to boards and teams to address CPM policies, issues, and strategies.
19. The Chief Financial Officer shall:
    1. Support CP managers in establishing Total Cost of Ownership (TCO) for their capability portfolios.
20. Sponsoring Mission Directorate Associate Administrators shall:
21. Appoint a CP manager for each capability portfolio sponsored by the Mission Directorate.
22. Establish one or more funding models, as needed, for each capability portfolio sponsored by the Mission Directorate.
23. Secure resources to strategically manage the capability portfolio and its components and ensure that resources are sized to meet the established goals and objectives.
24. Provide resources for management, operations, maintenance, recapitalization, and overall sustainment of capability portfolios that are being funded by the Mission Directorate.
25. Govern, manage, oversee, and review the operation and sustainment of capability portfolios assigned to the Mission Directorate to ensure these capabilities a) are available to deliver products and services to the Agency in support of programs and projects; b) are consistent with NASA's Strategic Plan; and c) meet established cost constraints.
26. Establish a management and governance structure for capability portfolios assigned to the Mission Directorate.
27. Both sponsoring and participating Mission Directorate Associate Administrators shall:
28. Appoint and support requested representatives to Agency-level boards and teams to address CPM policies, issues, and strategies.
29. Appoint Mission Directorate CP representative(s) as the point(s) of contact for capability portfolio(s).
30. Support and provide information for CP assessments, analyses, plans, and reports. Examples include demand baseline requirements, annual demand forecast analyses, and Capability Portfolio Master Plans.
31. Obtain approval from the CP manager for all investments that could affect a capability portfolio to assure strategic alignment with portfolio and Agency objectives.
32. Center Directors shall:
33. Appoint Center CP representative(s) as the points of contact(s) for capability portfolio(s) that include components at the Center.
34. Appoint and support requested representatives to Agency-level boards and teams to address CPM policies, issues, and strategies.
35. Support and provide information for CP assessments, analyses, plans, and reports.
36. Manage and operate the Center’s CP components.
37. Obtain concurrence from the CP manager prior to execution for all Space Act Agreements, Task Agreements, or other formal agreements that commit CP assets or resources.
38. Obtain approval from the CP manager for all investments that could affect the capability portfolio to assure strategic alignment with portfolio and Agency objectives.
39. Manage and implement repair and investment projects intended to improve the reliability of or add new capability to a capability portfolio.
40. The Assistant Administrator for Procurement shall:
41. Ensure concurrence from the CP manager for acquisitions and procurements that have requirements to utilize capabilities similar to those within the capability portfolio.
42. Ensure approval from the CP manager for acquisitions and procurements that could affect the portfolio capability.
43. The NASA Partnership Office Director and the NASA Office of International and Interagency Relations Associate Administrator shall:
44. Ensure concurrence from the CP manager for partnerships and agreements that have requirements to utilize capabilities similar to those within the capability portfolio.
45. Ensure approval from the CP manager for partnerships and agreements that could affect the portfolio capability.
46. Capability Portfolio (CP) managers shall:
47. Steward the capability portfolio as a strategic Agency resource.
48. Perform integration across Centers that possess capability components. Examples include fostering relationships and information sharing, and developing common Agency architecture, standards, processes, and training.
49. Develop short- and long-range plans for the capability portfolio that are consistent with NASA's Strategic Plan.
50. Identify, select, prioritize, and allocate resources for the capability components and monitor and report the contributions of capability components in a manner consistent with NASA's Strategic Plan.
51. Ensure that all capability components within the portfolio either have mission requirements or have been identified as potentially required for future missions and are being sustained for risk mitigation purposes pending mission requirement maturation.
52. Establish and maintain processes for strategic management of the capability portfolio and its components.
53. Determine the TCO for each capability component in the portfolio.
54. Provide direct support to Agency programs and projects (e.g., determine component(s) within the portfolio that best fit program/project requirements, deconflict utilization of the capability components, and resolve capability gaps for the portfolio based on future program or project requirements).
55. Strategically manage investment, divestment, and the operational readiness of capability components in accordance with the CP strategy.
56. Provide strategic oversight for technical, cost, and schedule performance of repair and investment projects intended to improve reliability or add new capability to the portfolio.
57. Serve as the Agency’s principal advocate and authority for the capability portfolio and its capability components and for similar external capabilities available through other government agencies, commercial vendors, and academia, and evaluate service requests from external entities.
58. Identify collaborative opportunities with other government agencies, commercial vendors, and academia that provide similar capabilities.
59. Serve as the Agency’s principal advocate for the portfolio's capabilities with other agencies, commercial vendors, interagency working groups, and international partners.
60. Serve as the Agency’s implementing authority for accessing CP services for internal and external customers.
61. Concur or non-concur on all Space Act Agreements, Task Agreements, or other binding agreements that utilize CP components.
62. Approve or disapprove all investments for the capability portfolio.
63. Review and approve or disapprove acquisitions, procurements, partnerships, and agreements that have requirements for products and services that are similar to those provided by the capability portfolio or that could affect the capability portfolio.
64. Concur or non-concur on all decision packages provided to executive leadership that could impact the capability portfolio.

m. The Mission Support Council serves as the governing council for capability portfolios, initiates efforts to establish capability portfolios, and assigns capability portfolios to sponsoring Mission Directorates.

**6. DELEGATION OF AUTHORITY**

None.

**7. MEASUREMENT/VERIFICATION**

a. Compliance with this NPD is verified through oversight by the Mission Support Council (MSC).

**8. CANCELLATION**

None.

Robert Lightfoot,

NASA Acting Administrator

**ATTACHMENT A: DEFINITIONS**

**Acquisition.** The process for obtaining the systems, research, construction, and supplies that NASA needs to fulfill its missions. Acquisition, which may include procurement (contracting for products and services), begins with an idea or proposal that aligns with the NASA Strategic Plan and fulfills an identified need and ends with the completion of the program or project or the final disposition of the product or service.

**Approval.** Authorization by a required management officialto proceed with a proposed course of action. (When multiple approvals are required, all must be obtained in order to proceed.) Approvals are documented in retrievable capability portfolio records.

**Asset** – Any item of economic value owned by NASA. This includes facilities and equipment. This does not include personnel.

**Capability** – The ability of a system comprised of a combination of workforce (Full Time Equivalent (FTE)/Work Year Equivalent (WYE)), competencies, assets, equipment, processes, and technologies to provide products and services to achieve objectives and/or meet requirements. See also “Technical Capability.”

**Capability Component** – An individual capability within a larger capability portfolio. A system comprised of people (FTE/WYE), equipment, facilities, processes, resources, competencies, and technologies. For example, a wind tunnel and the personnel that manage, operate, and maintain it.

**Capability Leadership Model** – A model designed to advance NASA’s technical capabilities to meet long-term missions, optimize deployment of capabilities across its major facilities, and transition capabilities that are no longer needed by institutionalizing capability management into the Agency’s annual planning and budgeting processes.

**Capability Leadership Team** – A group that assists a (technical) capability leader and is composed of a representative from each Center that conducts work in the technical capability area. See also “Technical Capability Leader.”

**Capability Portfolio** – A collection of functionally similar capability components and enabling portfolio infrastructure managed together to meet NASA’s strategic needs, goals, and objectives. For example, a ground-based aeronautics testing capability achieved through the use of NASA wind tunnels.

**Capability Portfolio Management** – The centralized management of capability portfolios to achieve NASA strategic goals and objectives.

**Capability Portfolio Manager** – A person assigned to manage a capability portfolio.

**Capability Portfolio Master Plan** -- A document that provides a detailed description of the needed future state for the capability components within a capability portfolio and the processes for delivering products and services. The plan defines the approach for evolving the set of capability components to better support current and future customers and requirements, informs the development and prioritization of change to be implemented, and serves as a guide for assessment of infrastructure improvements and associated investments including modernization, upgrades, and new construction. It also addresses funding sources, the scope of projects that may be needed, and strategic divestments and investments that need to be aligned with Center Master Plans and the Agency Master Plan.

**Capacity** – The available amount of a capability. For example, the available testing hours from a wind tunnel.

**Center Director.** The person responsible for establishing, developing, and maintaining the institutional capabilities (processes and procedures, human capital, facilities, and infrastructure) required for the execution of capability components.

**Demand Baseline –** An aggregated collection of customer requirements for a capability portfolio. The demand baseline is confirmed annually by the customers (Mission Directorates, NASA programs and projects, Centers, and external entities) and updated as needed by the CP manager.

**Governing Council** – The senior management group responsible for providing management oversight of a capability portfolio, its capability components, and related projects. The council has the responsibility of periodically evaluating the cost, schedule, risk, and performance of capability portfolios under its purview. The evaluation focuses on whether the capability portfolio is meeting its commitments to the Agency and is following appropriate management processes.

**Participating Mission Directorate** – A Mission Directorate that has a stakeholder interest in a capability portfolio.

Resource – Budget, workforce, schedule, and other infrastructure elements that support NASA assets and can be used by individuals or organizations to facilitate effective functioning.

**Sponsoring Mission Directorate** – The Mission Directorate assigned by the MSC to provide management and oversight of a capability portfolio.

**Stakeholder –** Any party that has an interest in the outcome or deliverables of a capability portfolio. Stakeholders include customers, beneficiaries, and organizations that will work on or provide support to the capability portfolio.

**Strategic Management** - The process of formulating and implementing strategies to accomplish Agency-level long-term goals and make consequential decisions.

**System –** The combination of elements that function together to produce the capability required to meet a need. The elements include all hardware, software, equipment, facilities, personnel, processes, and procedures needed for this purpose.

**Technical Capability –** NASA defines a technical capability as the equipment, facilities, infrastructure, property, support, and workforce required to accomplish a program or project. As part of its Capability Leadership Model (CLM), NASA has categorized its technical capabilities into four types – discipline, system, research, and service.

**Technical Capability Leader** – A senior technical or subject matter expert in a technical capability area who acts as an advisor and provides senior NASA management with a strategic perspective on the current and future health of the technical capability and its ability to meet long-term mission needs.

**Total Cost of Ownership** – A financial estimate intended to establish the full (direct and indirect) costs of a component capability. The TCO is used to help the CP manager evaluate the value-to-cost ratio of component capabilities. The TCO is determined through processes established by the CP manager to support the need for differentiated understanding of costs in support of decision-making to achieve capability portfolio efficiency and alignment..

**Waiver –** A documented authorization releasing a capability portfolio from meeting a requirement.

**ATTACHMENT B: ACRONYMS**

CLT Capability Leadership Team

CP Capability Portfolio (when used as an adjective)

CPM Capability Portfolio Management

MDAA Mission Directorate Associate Administrator

MSC Mission Support Council

NASA National Aeronautics and Space Administration

NODIS NASA Online Directives Information System

NPD NASA Policy Directive

NPR NASA Procedural Requirements

OSI NASA Office of Strategic Infrastructure

TCO Total Cost of Ownership

U.S.C. United States Code

**ATTACHMENT C: REFERENCES**

C.1 NPD 1000.5, Policy for NASA Acquisition.

**(URL for Graphic)**  
None.

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