



Procedures and Guidelines

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P.1 PURPOSE

The purpose of this document is to establish procedures for the management of technology activities within the Applied Engineering & Technology Directorate (AETD).

P.2 REFERENCES

- a. GPG-1060.2 Management Review and Reporting for Programs and Projects
- b. 710-PG-8730.3.1 NASA Technology Planning and Integration
- c. 700-PG-8730.3.2 Technology Commercialization Process.
- d. 500-PG-1310.1 Customer Agreements
- e. AETD Strategic Technology Plan

P.3 SCOPE

This procedure covers functions that are performed to satisfy technical management responsibilities for AETD (Level 3) technology activities. Agency-wide (Level 2) technology activities that are managed by GSFC and supported by AETD personnel are not covered in this document (See 710-PG-8730.3.1).

P.4 ACRONYMS

- a. ACT – Assistant Chief for Technology
- b. AETD – Applied Engineering & Technology Directorate
- c. CT – Chief Technologist
- d. ESE – Earth Science Enterprise
- e. GSFC – Goddard Space Flight Center
- f. HEDS – Human Exploration & Development of Space
- g. NASA – National Aeronautics & Space Administration
- h. NRA – NASA Research Announcement
- i. SSE – Space Science Enterprise
- j. STAAC – Systems, Technology, and Advanced Concepts Directorate
- k. TFC – Technology Federation Council
- l. TMC – Technology Management Council
- m. TWG – Technology Working Group.

P.5 AUTHORITIES AND RESPONSIBILITIES

5.1 Technology Management Council

GSFC maintains a Technology Management Council (consisting of selected members of the GSFC Management Council) in compliance with GPG 1060.2. The Director of STAAC serves as TMC Chairperson. The TMC has the responsibility to:

- a. Provide foresight of changes in agency goals and policies
- b. Provide direction to changes in Center's role and responsibilities
- c. Provide a clear vision of the Center's technology mission.

The Director of AETD serves on the TMC. The AETD CT reports to the TMC during the Technology Quarterly Status Reviews regarding Level 3 technology activities.

5.2 Technology Federation Council

GSFC maintains a Technology Federation Council (consisting of selected representatives from each Directorate) in compliance with GPG 1060.2. The TFC has the responsibility to:

- a. Coordinate technology development activities across GSFC organizations
- b. Facilitate communication and resolution of technology issues and concerns
- c. Establish and maintain focused technology initiatives aligned with NASA and GSFC goals
- d. Ensure cognizance of technology development funding opportunities
- e. Promote mutually beneficial collaborations with external technology partners
- f. Externally advocate and market GSFC technology development activities.

The AETD CT serves as Chairperson of the TFC and the five AETD ACTs are members of the TFC.

5.3 Technology Program Management

NASA and GSFC program/project offices sponsor funded technology programs and have the responsibility to:

- a. Establish and communicate program technology needs
- b. Solicit information on newest applicable technologies
- c. Communicate status of funding opportunities to technologists
- d. Solicit and select competitive technology proposals
- e. Conduct reviews of funded technology projects
- f. Establish partnerships with programs having common technology needs.

AETD does not have management responsibility for NASA and GSFC funded technology programs unless otherwise delegated to AETD by a program/project office. However, AETD provides personnel to program/project offices to support technology program management activities.

5.4 Technology Line Management

AETD and its five engineering centers are line organizations that develop technologies and have the responsibility to:

- a. Build and maintain competency and capabilities in focused technology areas
- b. Maintain cognizance of solicitations from technology funding sources
- c. Generate and promote peer-reviewed technology proposals
- d. Implement technology development projects in accordance with program plans
- e. Establish partnerships with complementary technology providers.

5.4.1 Technology Working Group

AETD maintains a TWG for the purpose of coordinating the formulation and implementation of all technology activities across the Directorate. The AETD CT serves as Chairperson of the TWG. The five ACTs (one from each AETD center) and a representative from the AETD Business Office are members of the TWG.

P.6 IMPLEMENTATION

6.1 Determine Customer Needs

Meeting customer needs is the basis for AETD technology activities. The AETD TWG acquires technology requirements from the plans and roadmaps of the following customers:

- a. Earth Science Enterprise
 - Earth Science Technology Office (See 710-PG-8730.3.1)
 - Earth Science Missions
 - GSFC Earth Science Directorate.
- b. Space Science Enterprise
 - Cross-Enterprise Technology Development Program (See 710-PG-8730.3.1)
 - Space Science Themes and missions
 - GSFC Space Science Directorate.
- c. Human Exploration & Development of Space Enterprise
 - Space Operations Management Office.
- d. NASA Office of Chief Technologist.

6.2 Assess Emerging Technologies

The AETD TWG acquires on a regular basis information regarding newly emerging technologies and their potential to enable and enhance future space missions. This is accomplished through:

- a. Discussions with and presentations by GSFC technologists
- b. Technical interchange meetings with technologists from outside organizations
- c. Technical conferences and technology showcases
- d. Recent publications.

6.3 Establish Strategic Technology Product Groups and Products

The AETD TWG establishes and maintains strategic technology product groups and products within technology focus areas. The product groups and products are specified in an AETD Strategic Technology Plan. These technology focus areas for which GSFC will maintain a leadership role include (but may not be limited to):

- a. Large Aperture Systems
- b. Distributed Observatories
- c. Advanced Instruments
- d. Rapid Formulation / Execution Environments
- e. Science Information Systems.

6.4 Align In-house Technology Development with Core Competencies

The AETD TWG recommends certain products from the strategic technology product groups for in-house development to maintain unique capabilities that AETD possesses (or needs to acquire). This is based on core competency assessments for the following five discipline Centers:

- a. Instrument Technology
- b. Mechanical Systems
- c. Electrical Systems
- d. Information Systems
- e. Guidance, Navigation & Control

6.5 Establish External Technology Alliances

For those technologies that are of strategic interest, but not planned for in-house development, the AETD TWG targets external technology providers for potential partnerships. Each partner would work with AETD in the development of a specific product for one of the strategic technology product groups.

6.6 Develop Integrated Technology Roadmaps

The AETD TWG with AETD's technology partners develop and maintain a technology roadmap for each strategic technology product group.

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6.7 Maintain Cognizance of Funding Opportunities

The AETD CT subscribes to announcements of NASA technology solicitations and relevant technology solicitations outside NASA. The AETD CT notifies the AETD ACTs of all relevant announcements. The AETD ACTs notify cognizant technologists within their center of the opportunity to acquire funding for technology products that are on roadmaps for the strategic technology product groups.

6.8 Coordinate Development of Technology Proposals

The AETD ACTs work with cognizant technologists within their center on a continuous basis to initiate the development of technology proposals that are consistent with roadmaps for the strategic technology product groups. Whenever a funding opportunity is identified, the proposals are completed by cognizant AETD technologists to meet requirements of specific technology solicitations. The review and approval of technology proposals are performed in accordance with 500-PG-1310.1 Customer Agreements.

6.9 Monitor Development of Technologies

Upon selection of a technology proposal for funding by a program/project office, the cognizant AETD technologist functionally reports to the technology program/project manager on the implementation of the technology development. The technology manager may be a member of the program/project office, or a member of AETD that is collocated with the program/project office. In either case, the technology manager functionally reports to the program/project office.

AETD line management also monitors the work of cognizant technologists to assure that technology development is implemented in accordance with commitments to the program/project offices. The AETD Branches report to their AETD center. The AETD centers report to the Directorate office, which reports in turn to the GSFC Management Council on all technology development activities. This is accomplished on a bimonthly basis through institutional status reviews.

6.10 Transfer New Technology Products

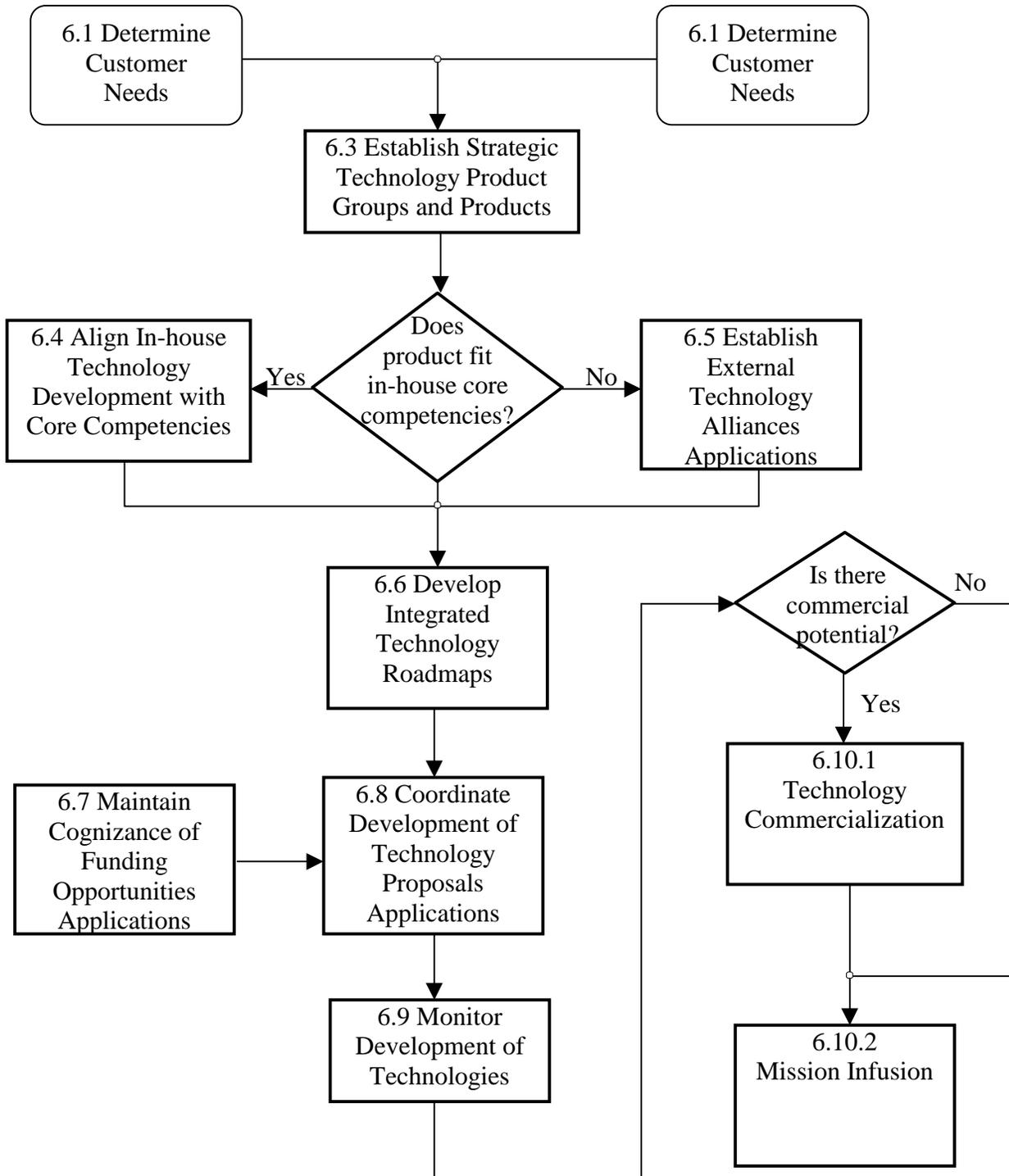
6.10.1 Technology Commercialization

The AETD TWG works with the Technology Commercialization Office to identify technologies that have been developed, validated, and are ready for commercialization. The Technology Commercialization Office provides commercialization specialists to work with cognizant AETD technologists to commercialize the products in accordance with 700-PG-8730.3.2.

6.10.2 Mission Infusion

During transfer of a newly developed technology to a source that intends to produce and provide the product to the user community, the AETD TWG and cognizant AETD technologists identify potential missions that may be enabled or enhanced by the new product. The product provider has a responsibility to market the new product for a first mission opportunity to a broader user community than NASA. The AETD TWG works with project formulation managers for NASA roadmap missions to baseline the new technology products for a first flight opportunity. To ensure that outside PIs (who propose to mission AOs) are aware of new products available for infusion, the AETD TWG and cognizant AETD technologists submit newly developed technologies for inclusion on the NASA Technology Ready List.

Flow Chart for AETD Technology Management Process



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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	06/07/1999	Initial Release