POLARIS:

Helping Managers Get Answers Fast!

Patricia Corcoran, Jeffery Webster

NASA Project Management Challenge 2007

Moody Gardens Hotel & Convention Center

Galveston, Texas

February 6-7, 2007 (Rev 1: 7/02/07)

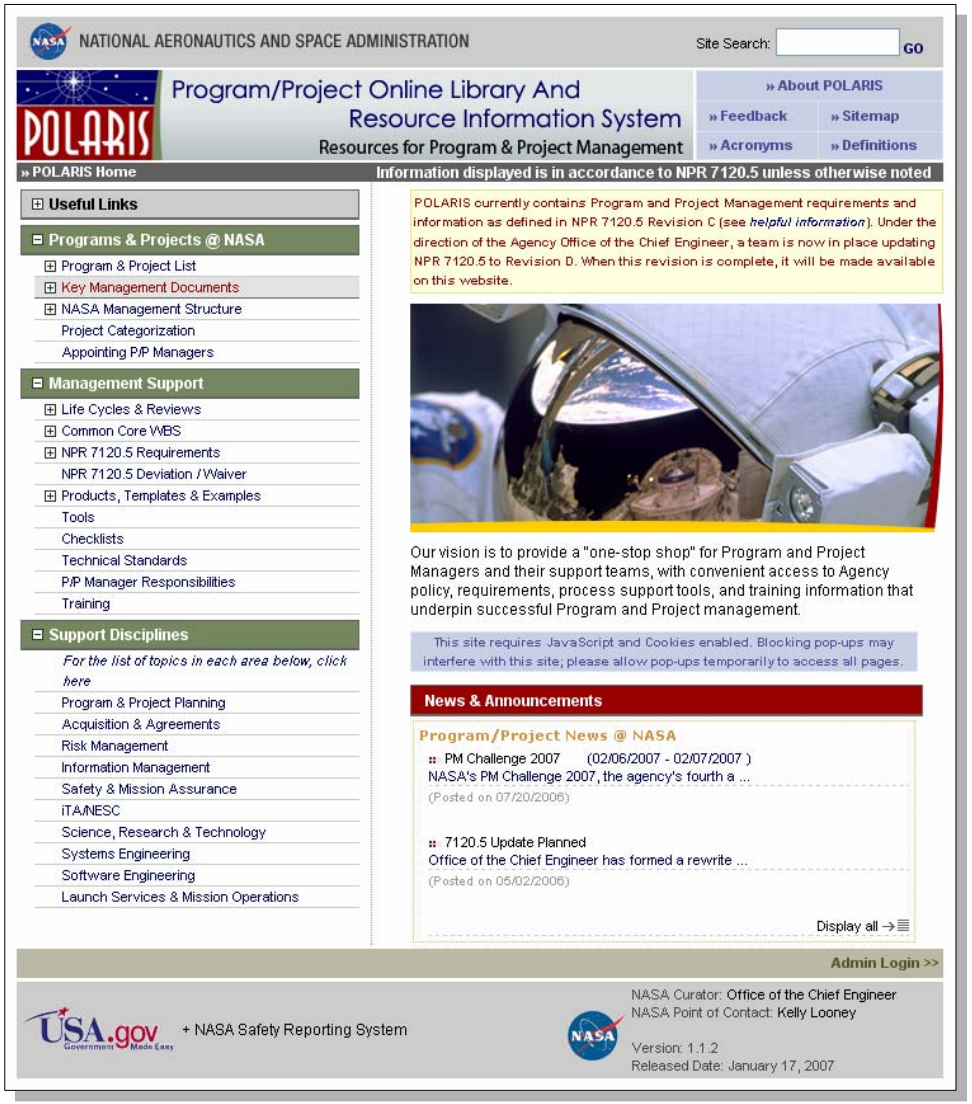
Jet Propulsion Laboratory, California Institute of Technology

Background

- NASA Office of the Chief Engineer (OCE) vision: *"achieve Project Management Excellence"*
  - OCE mission: *"provide policy direction, oversight, and assessment for the NASA program management communities"*
- OCE tasked late in 2004 to improve several areas, including Agency investment management and support
  - Create revision to NASA Program and Project Management Processes and Requirements (NPR 7120.5)
  - Develop a web-based tool (POLARIS) to support the PM community in implementing the revised policy

Overview

- **NASA-wide, web-based system, providing access to information related to Program and Project Management** primarily in NPR 7120.5
  - **Supports NASA's Four Product Lines**:
    - Basic and Applied Research
    - Technology Development
    - Flight Systems and Ground Support
    - Institutional Infrastructure
- **NASA Sponsor: Office of the Chief Engineer (OCE)**
- **MSFC Project Manager**
    - Develop system requirements, including content
    - Conduct operational test and verification
    - MSFC NASA Data Center to host & maintain the final operational system
- **JPL Task to Develop POLARIS**
    - Based on JPL's Project Support Website
    - Phased delivery: Prototype, followed by several builds
    - Formed Project late 2004; began 2005



What will this website do for users?

Provide a one-stop shop for access to….

- A searchable, sortable database of all requirements for all product lines
  in NPR 7120.5
- Project life cycle diagrams with reviews
- Project review definitions with products review information from NPR 7123.1, NASA Systems Engineering Processes and Requirements
- Templates and examples of products
- Project standard WBSs with dictionaries, and requirements for implementation and approval
- Information from NASA's Metadata Manager (MdM): Attributes of Missions, Themes, Programs & Projects
- NPR7120.5 waiver form and instructions

…….and much more

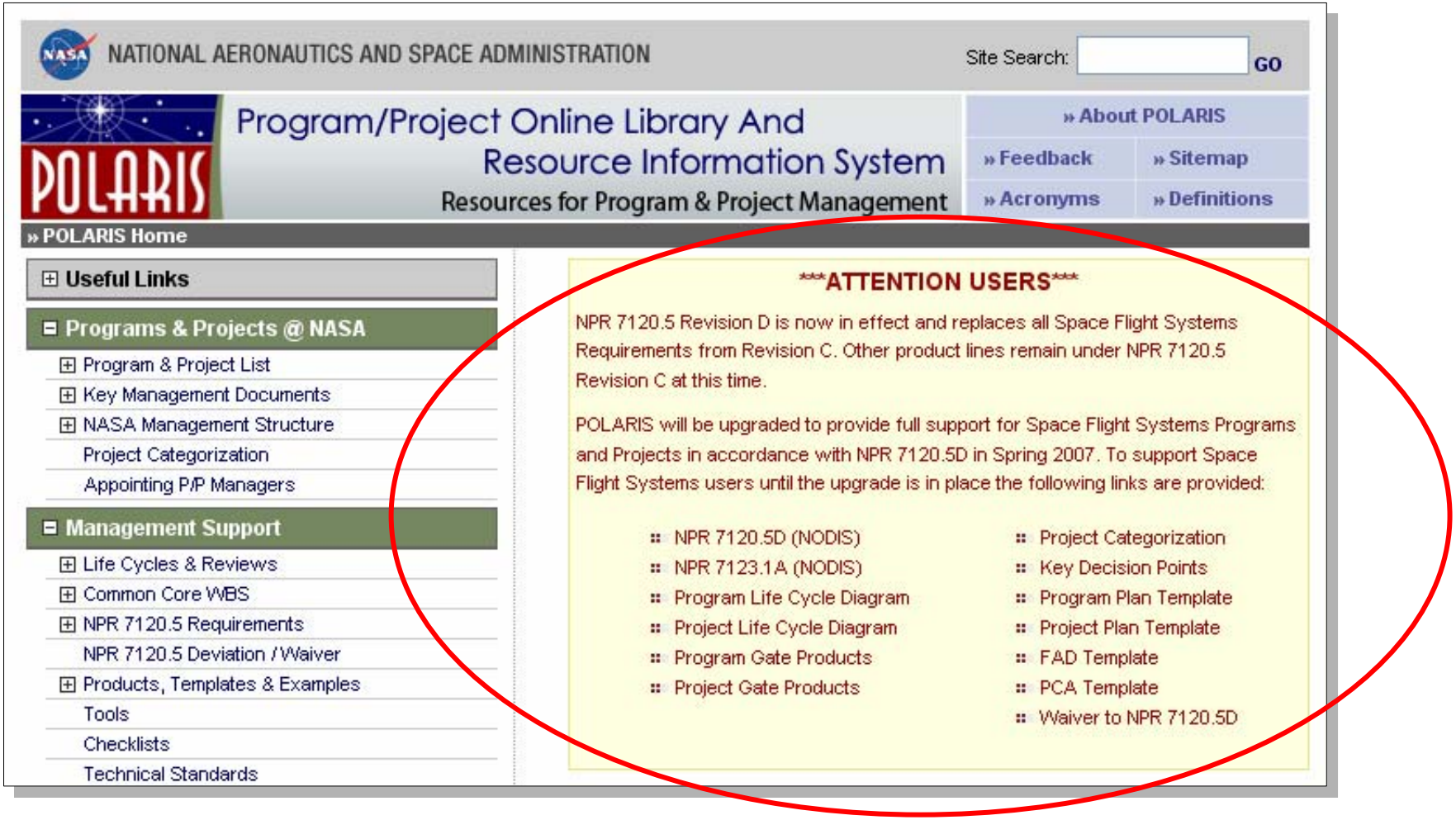
POLARIS Build Descriptions

- Prototype Build: May 2005 (**Basic look & feel for 'go ahead')**

- Build 1.0**: 'LIVE at NDC'** June 15, 2006 **(7120.5C & static MdM data)**
  - **Build 1.1**: **September 27, 2006** (Weekly updates of MdM data)
  - **Build 1.1.1**: **October 20, 2006** (MdM attribute changes)
  - **Build 1.2: ~2 weeks after 7120.5D is approved**
    - Revise POLARIS Home Page to announce issuance of NPR 7120.5D and provide links to specific sections of the document –see next slide
- Build 2.0
  - **Build 2.1**: NPR 7120.5D & review information from NPR 7123.1. (Note: 7120.5C is still valid for the other product lines.) **Operational date June 2007**

- Build 3.0: **TBD for other NASA product lines currently under revision**

Build 1.3


NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Site Search:
GO
POLARIS
Program/Project Online Library And Resource Information System
Resources for Program & Project Management
» About POLARIS
» Feedback
» Sitemap
» Acronyms
» Definitions
» POLARIS Home
Useful Links
Programs & Projects @ NASA
Program & Project List
Key Management Documents
NASA Management Structure
Project Categorization
Appointing P/P Managers
Management Support
Life Cycles & Reviews
Common Core WBS
NPR 7120.5 Requirements
NPR 7120.5 Deviation / Waiver
Products, Templates & Examples
Tools
Checklists
Technical Standards
ATTENTION USERS
NPR 7120.5 Revision D is now in effect and replaces all Space Flight Systems Requirements from Revision C. Other product lines remain under NPR 7120.5 Revision C at this time.
POLARIS will be upgraded to provide full support for Space Flight Systems Programs and Projects in accordance with NPR 7120.5D in Spring 2007. To support Space Flight Systems users until the upgrade is in place the following links are provided:
NPR 7120.5D (NODIS)
NPR 7123.1A (NODIS)
Program Life Cycle Diagram
Project Life Cycle Diagram
Program Gate Products
Project Gate Products
Project Categorization
Key Decision Points
Program Plan Template
Project Plan Template
FAD Template
PCA Template
Waiver to NPR 7120.5D

Build 2.0.0

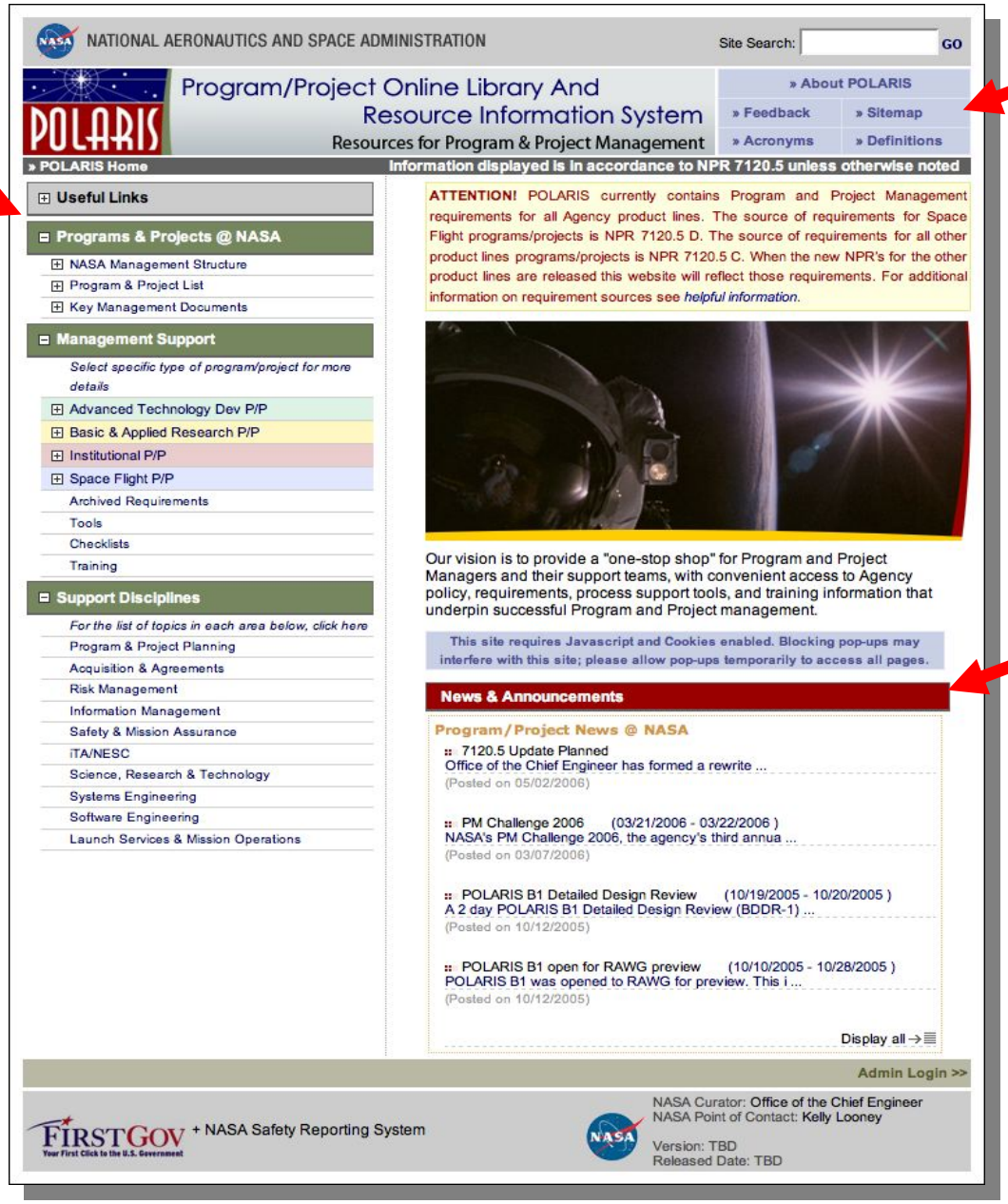
- Modifications for 7120.5D and 7123.1A (Note: 7120.5C for other product lines)
  - Links to the NODIS Documents
  - Program & Project Life Cycle Diagrams
  - Life Cycle Review Descriptions, and Entrance & Success Criteria (7123.1A)
  - Program & Project Gate Products
  - 7120.5D Requirements (shalls) in a keyword searchable database
  - 7120.5C Requirements (shalls) for BAR, ATD, and Institutional programs and projects in a searchable database (Requirements for Flight/ground Support Projects removed)
  - Project Categorization
  - Key Decision Points & Decision Authority
  - Technical Authority
  - Center Implementation Plans
  - Templates for: Program Plan, Project Plan, FAD, PCA, etc
  - Waiver Form for NPR 7120.5D Requirements

Build 2.0.0 Front Page

Main Navigation Menu, consistent throughout the system

Available on each page

News listing, updated regularly



Meta Data Manager (MdM) & POLARIS Program/Project List

POLARIS
PROJECT ONLINE LIBRARY AND RESOURCE INFORMATION SYSTEM

NASA

- Programs & Projects @ NASA
  - Program & Project List
    - TABLE FORMAT
    - Tree Format
    - Program/Project Search
  - Key Management Documents
  - NASA Management Structure
  - Project Categorization
  - Appointing P/P Managers
- Management Support
- Support Disciplines

Mission Directorate/Support	Relevant Theme	Program	Project or Activity
Education	Education Theme	Minority University Research and Education Program (MUREP)	Minority University Research and Education Corporate Support
Education	Education Theme	Minority University Research and Education Program (MUREP)	Minority University Research and Education Congressional Earmarks
Exploration Systems	Constellation Systems	Robotic Lunar Exploration	Lunar Reconnisiance Orbiter
Exploration Systems	Constellation Systems	Robotic Lunar Exploration	Lunar Robotics Lander
Exploration Systems	Constellation Systems	Robotic Lunar Exploration	Future Missions
Exploration Systems	Constellation Systems	Robotic Lunar Exploration	Robotic Lunar Exploration Program Support
Exploration Systems	Constellation Systems	[illegible]	[illegible]
Exploration Systems	Constellation Systems	[illegible]	[illegible]
Exploration Systems	Constellation Systems	[illegible]	[illegible]
Exploration Systems	Constellation Systems	[illegible]	[illegible]
Exploration Systems	Constellation Systems	[illegible]	[illegible]

Search Form for Agency Program & Project List By Mission Directorate/Support

Mission Directorate:	
Theme:	
Program:	
Project:	
Product Line:	
Program Manager:	
Project Manager:	
Management Group:	
Governing PMC:	
Project Current Phase:	
Project Category:	

Project/Activity Detail

Project or Activity	Lunar Reconnisiance Orbiter
Project Manager	
Project or Activity Management Group	
Project Governing PMC Name	
Project/Activity Management Group Name	
Independent Review Organization Name	
Project Category	
Product Line	
Project Life Cycle Phase	
Project Life Cycle Phase Transition Date	
Risk Classification for Payloads	
Project/Activity	
Leading Center (Project Management Center)	
Last Updated Date	
Program	Robotic Lunar Exploration
Theme	Constellation Systems
Mission Directorate	Exploration Systems

Build 3.0.0Adds NASA Product Lines

POLARIS is structured to be Product Line Centric

Program Life Cycle Chart

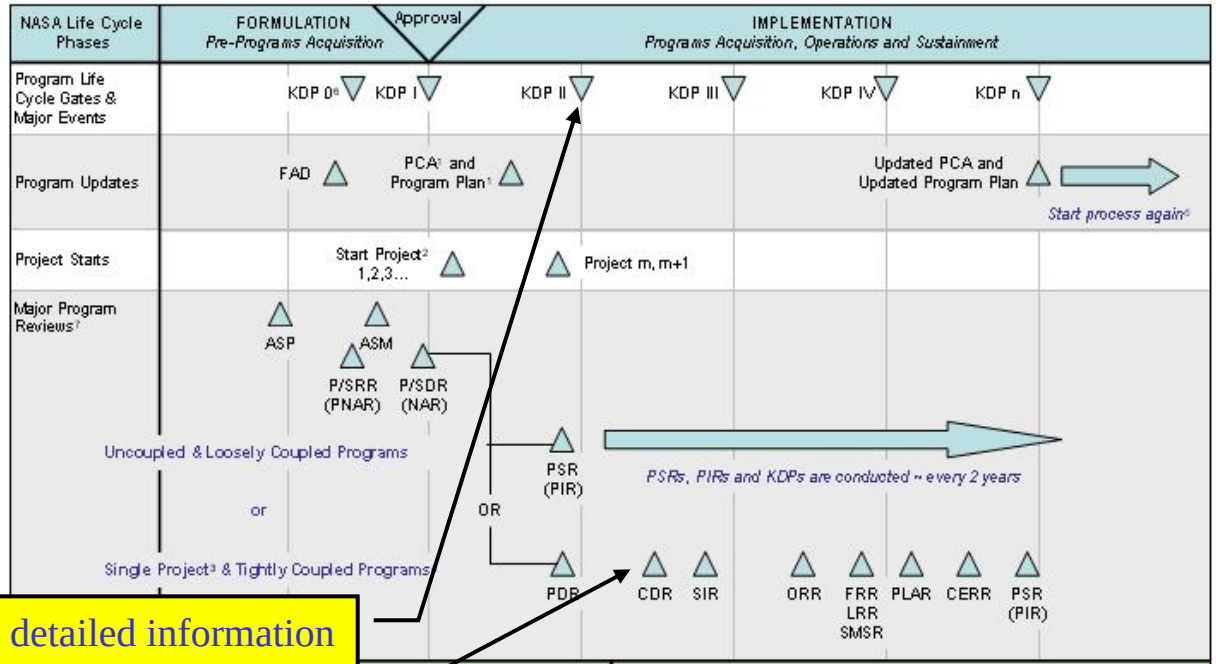
POLARIS
PROJECT ONLINE LIBRARY AND RESOURCE INFORMATION SYSTEM

- Useful Links
- Programs & Projects @ NASA
- Management Support
  - *Select specific type of program/project for more details*
  - Advanced Technology Dev P/P
  - Basic & Applied Research P/P
  - Institutional P/P
  - Space Flight P/P
    - Life Cycles & KDPs/Reviews
      - Program
        - LIFE CYCLE CHART
        - Phase Definitions
        - KDPs
        - Reviews
      - Project
      - Complete KDP/Review List
    - Work Breakdown Structure (WBS)
    - Requirements
    - Products, Templates & Examples
    - Management Process
  - Archived Requirements
  - Tools
  - Checklists
  - Training
- Support Disciplines

Space Flight Programs & Projects

NPR 7120.5D Life Cycle Chart

Program Life Cycle and Reviews



More detailed information is provided by clicking on each KDP and Review

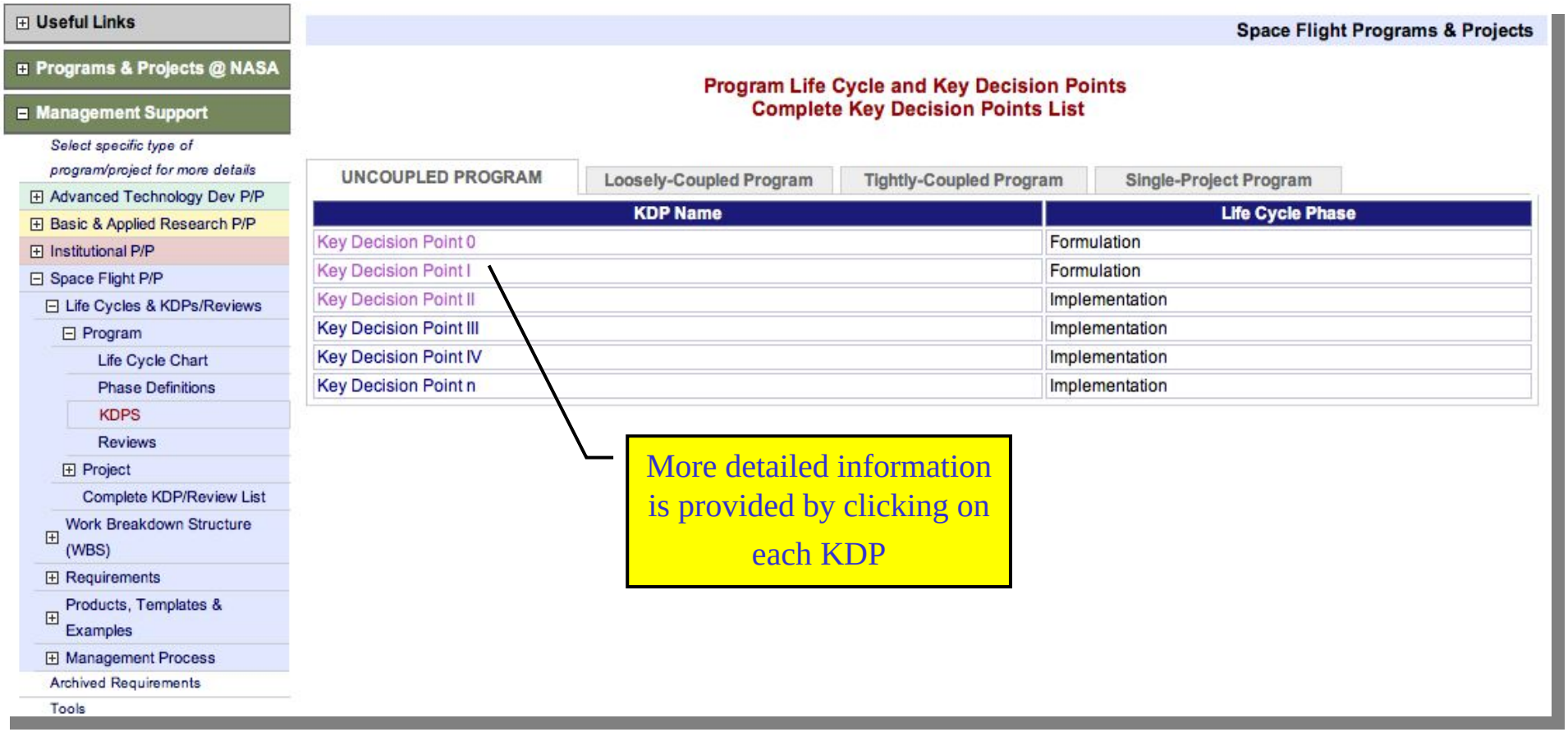
KDP I and reviewed and updated, nd budget remain consistent. owed for formulation prior to KDP occurs during program formulation.

3. Single project program reviews from PDR until operations are the same reviews as the project reviews (not duplicates).
4. Tightly coupled program reviews generally differ from other program types because they are conducted to ensure the overall integration of all program elements (i.e., projects). Once in operations, PIRs are conducted ~ every 2 years.
5. KDP 0 and the PPAR may be required by the Decision Authority to ensure major issues are understood and resolved prior to formal program approval at KDP I.
6. When programs require updates (e.g., new program capabilities), the life cycle process will be restarted when directed by the AA, i.e., the program's updated will go through the same formulation and implementation steps as originally done.
7. These reviews are conducted by the program for the independent SRB

ACRONYMS

ASP – Acquisition Strategy Planning Meeting
ASM – Acquisition Strategy Meeting
CDR – Critical Design Review
CERR – Critical Events Readiness Review
FAD – Formulation Authorization Doc
MCR – Mission Concept Review
FRR – Flight Readiness Review
KDP – Key Decision Point
LRR – Launch Readiness Review
ORR – Operational Readiness Review
PPAR – Preliminary Program Approval Review
PAR – Program Approval Review
PCA – Program Commitment Agreement
PDR – Preliminary Design Review
PIR – Program Implementation Review
PLAR – Post Launch Assessment Review
P/SDR – Program/System Acceptance Review
P/SRR – Program/System Requirements Review
PSR – Program Status Review
SIR – System Integration Review
SRB – Standing Review Board
SMSR – Safety and Mission Success Review

Program Key Decision Points (KDPs)



More detailed information is provided by clicking on each KDP

Program Reviews

- Useful Links
- Programs & Projects @ NASA
- Management Support
  - *Select specific type of program/project for more details*
  - Advanced Technology Dev P/P
  - Basic & Applied Research P/P
  - Institutional P/P
  - Space Flight P/P
    - Life Cycles & KDPs/Reviews
      - Program
        - Life Cycle Chart
        - Phase Definitions
        - KDPs
        - REVIEWS
      - Project
      - Complete KDP/Review List
    - Work Breakdown Structure (WBS)
    - Requirements
    - Products, Templates & Examples
    - Management Process
  - Archived Requirements
  - Tools

Space Flight Programs & Projects

Program Life Cycle and Reviews
Complete Reviews List

UNCOUPLED PROGRAM | Loosely-Coupled Program | Tightly-Coupled Program | Single-Project Program

Review Name	Life Cycle Phase
Acquisition Strategy Meeting	Formulation
Acquisition Strategy Planning Meeting	Formulation
Program/System Definition Review	Formulation
Program/System Requirements Review	Formulation
Program Approval Review	Formulation
Preliminary Program Approval Review	Formulation
Program Implementation Review	Implementation
Program Status Review	Implementation

More detailed information is provided by clicking on each Review.
All technical reviews will be directly linked to NPR 7123.1 for entrance and success criteria

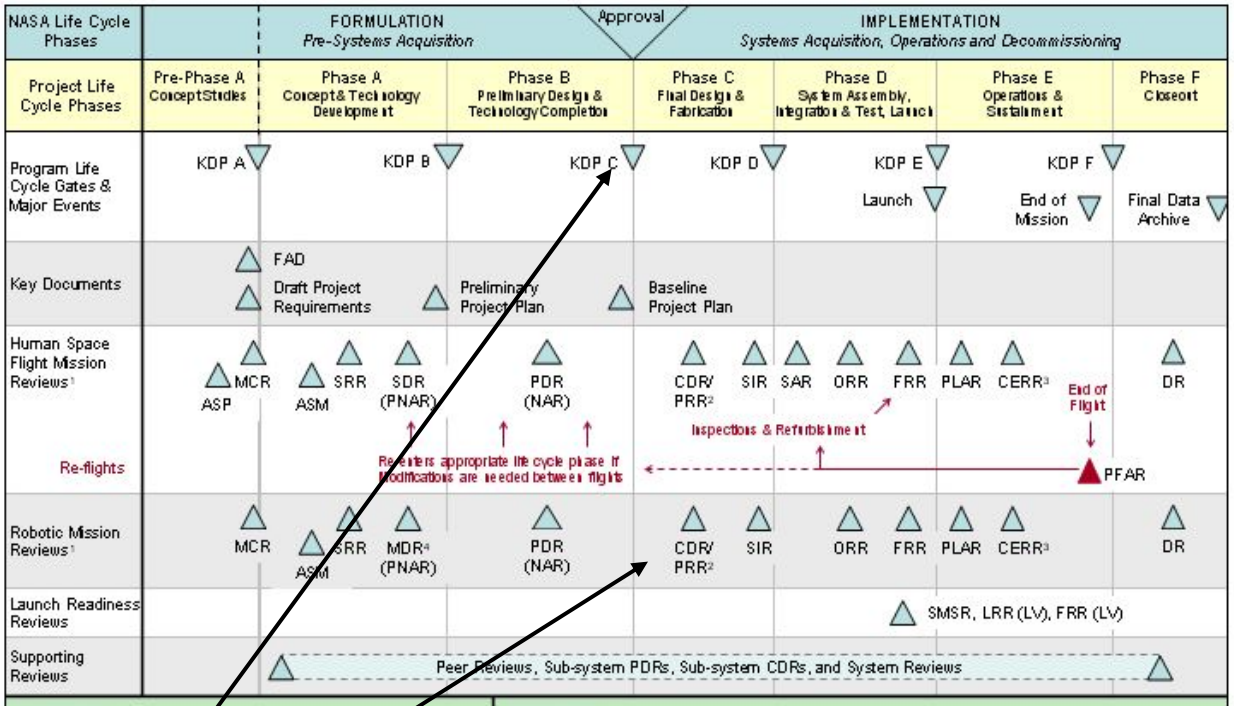
Space Flight Project Life Cycle Chart

POLARIS
PROJECT ONLINE LIBRARY AND RESOURCE INFORMATION SYSTEM

- ⊞ Useful Links
- ⊞ Programs & Projects @ NASA
- ⊟ Management Support
  - *Select specific type of program/project for more details*
  - ⊞ Advanced Technology Dev P/P
  - ⊞ Basic & Applied Research P/P
  - ⊞ Institutional P/P
  - ⊟ Space Flight P/P
    - ⊟ Life Cycles & KDPs/Reviews
      - ⊞ Program
      - ⊟ Project
        - LIFE CYCLE CHART
        - Phase Definitions
        - KDPs
        - Reviews
    - ⊞ Work Breakdown Structure (WBS)
    - ⊞ Requirements
    - ⊞ Products, Templates & Examples
    - ⊞ Management Process
  - Archived Requirements
  - Tools
  - Checklists
  - Training
- ⊞ Support Disciplines

Space Flight Programs & Projects

Project Life Cycle and Reviews



More detailed information is provided by clicking on each KDP and Review

Project KDPs

- Useful Links
- Programs & Projects @ NASA
- Management Support

Select specific type of program/project for more details

- Advanced Technology Dev P/P
- Basic & Applied Research P/P
- Institutional P/P
- Space Flight P/P
  - Life Cycles & KDPs/Reviews
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    - Project
      - Life Cycle Chart
      - Phase Definitions
      - KDPS
      - Reviews
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  - Products, Templates & Examples
  - Management Process
  - Archived Requirements

Space Flight Programs & Projects

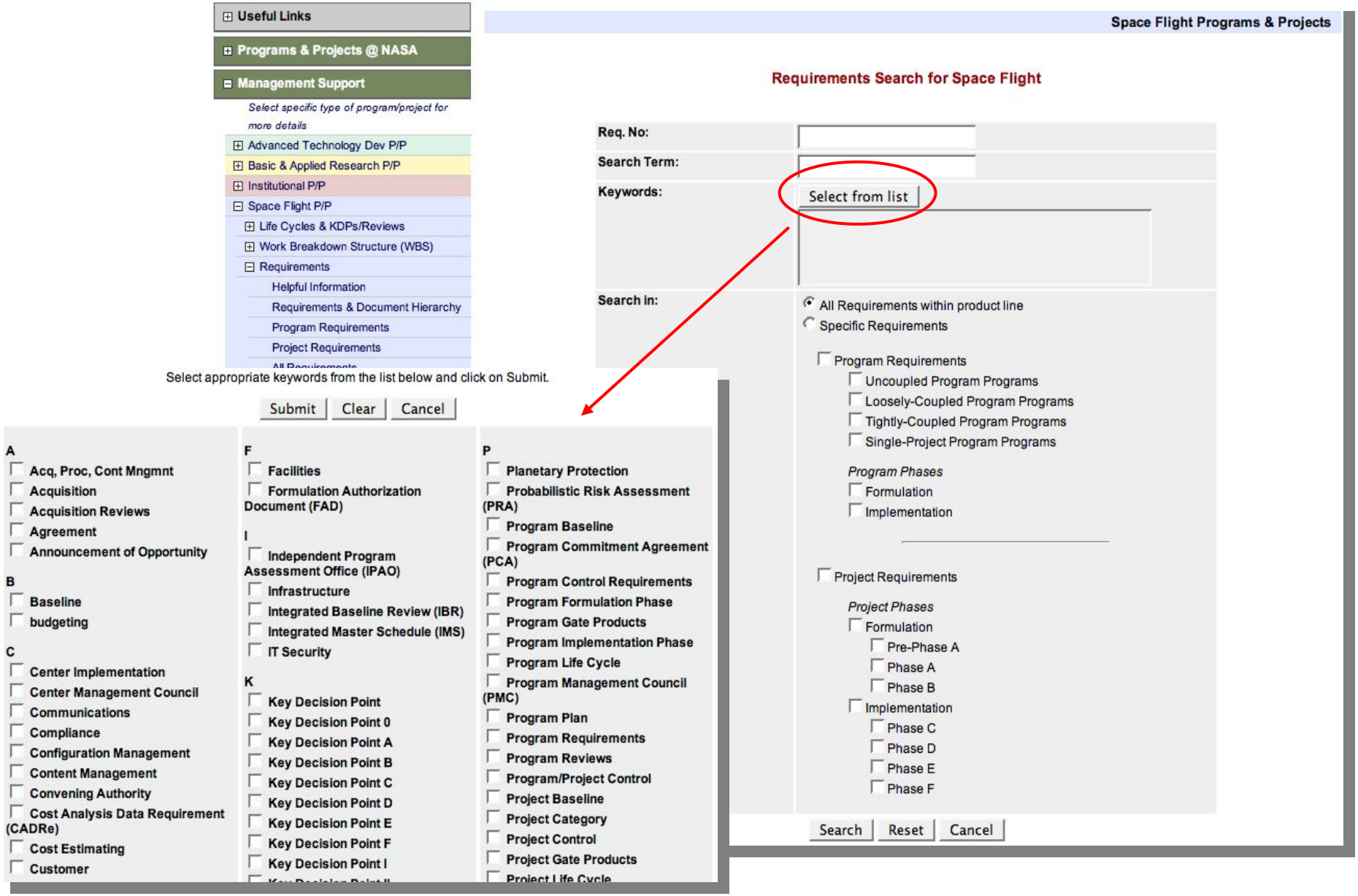
Project Life Cycle and Key Decision Points
Complete Key Decision Points List

HUMAN SPACE FLIGHT PROJECT | Robotics Project

KDP Name	Life Cycle Phase
Key Decision Point A	Pre-Phase A - Concept Studies
Key Decision Point B	Phase A - Concept Development
Key Decision Point C	Phase B - Preliminary Design
Key Decision Point D	Phase C - Final Design
Key Decision Point E	Phase D - Fabrication, Assembly, & Test
Key Decision Point F	Phase E - Operations & Sustainment

More detailed information is provided by clicking on each KDP

Requirements Search



Space Flight Program Requirements

POLARIS
PROJECT ONLINE LIBRARY AND RESOURCE INFORMATION SYSTEM

- Useful Links
- Programs & Projects @ NASA
- Management Support

Select specific type of program/project for more details

- Advanced Technology Dev P/P
- Basic & Applied Research P/P
- Institutional P/P
- Space Flight P/P
  - Life Cycles & KDPs/Reviews
  - Work Breakdown Structure (WBS)
  - Requirements
    - Helpful Information
    - Requirements & Document Hierarchy
    - PROGRAM REQUIREMENTS
    - Project Requirements
    - All Requirements
    - Compliance Matrix (Optional)
    - Requirement Search
    - Waiver
    - NPR 7120.5D (NODIS) (Coming Soon)
  - Products, Templates & Examples
  - Management Process

Space Flight Programs & Projects

Program Requirements for Space Flight

IMPORTANT: Database search results are based solely on the NPR 7120.5 version indicated on the search page. Every attempt to include relevant context with the requirements was made, however the user should research the NPR to gain a full understanding of the requirements. It is a Program and Project manager's responsibility to review and comply with other NPRs and NPDs and with lower level policy and requirements set forth by Mission Directorates, Mission Support Offices and Field Centers.

Program Requirements
- Loosely-Coupled Program requirements
- Single-Project Program requirements
- Tightly-Coupled Program requirements
- Uncoupled Program requirements

Source: NPR 7120.5D

Program Requirements

	Number	Statement	Phase
Loosely-Coupled Program			
1	4.1	Programs -- Formulation Phase	Formulation
2	4.1.1	Purpose: The purpose of program formulation activities is to establish 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 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 Acquisition Strategy Meeting (ASM), the Program/System Requirements Review (P/SRR), the Program/System Definition Review (P/SDR)/ Program Approval Review (PAR), and the governing PMC review. In addition, at the discretion of the DA, a Preliminary Program Approval Review (PPAR) leading up to a KDP 0 may be required to ensure major issues are understood and resolved prior to KDP I. A summary of the required gate products is provided in Table 4-1.	Formulation
3	4.1.2	Requirements: During program formulation, the Program Manager and the program team shall:	Formulation
4	4.1.2.a	For all programs-	Formulation
5	4.1.2.a.1	Plan, prepare for, and support the Acquisition Strategy Meeting (ASM) prior to partnership commitments and obtain	Formulation

Space Flight Project Requirements

POLARIS
PROJECT ONLINE LIBRARY AND RESOURCE INFORMATION SYSTEM

- Useful Links
- Programs & Projects @ NASA
- Management Support

Select specific type of program/project for more details

- Advanced Technology Dev P/P
- Basic & Applied Research P/P
- Institutional P/P
- Space Flight P/P
  - Life Cycles & KDPs/Reviews
  - Work Breakdown Structure (WBS)
  - Requirements
    - Helpful Information
    - Requirements & Document Hierarchy
    - Program Requirements
    - PROJECT REQUIREMENTS
    - All Requirements
    - Compliance Matrix (Optional)
    - Requirement Search
    - Waiver
    - NPR 7120.5D (NODIS) (Coming Soon)
  - Products, Templates & Examples
  - Management Process
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Space Flight Programs & Projects

Project Requirements for Space Flight

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Project Requirements
- Human Space Flight Project requirements

Source: NPR 7120.5D

Project Requirements

	Number	Statement	Phase
Human Space Flight Project			
1	4.3	Projects - Pre-Phase A	Pre-Phase A
2	4.3.1	Purpose: During Pre-Phase A, a pre-project team studies a broad range of mission concepts that contribute to program and Mission Directorate goals and objectives. These advanced studies along with interactions with customers and other potential stakeholders help the team to identify promising mission concept(s) and draft project-level requirements. The team also identifies potential technology needs (based on the best mission concepts) and assesses the gaps between such needs and current and planned technology readiness levels. These activities are focused toward a Mission Concept Review and KDP A. A summary of the required gate products for this phase is provided in Table 4-3.	Pre-Phase A
3	4.3.2	Requirements: During Pre-Phase A, the pre-project manager and team shall:	Pre-Phase A
4	4.3.2.a	Support Headquarters- and program-related activities, in particular:	Pre-Phase A
5	4.3.2.a.1	Obtain an approved project FAD.	Pre-Phase A
6	4.3.2.a.2	Support the Program Manager and the MDAA in the development of the draft program requirements on the project.	Pre-Phase A
7	4.3.2.b	Perform technical activities-	Pre-Phase A
8	4.3.2.b.1	Develop and document preliminary mission concept(s).	Pre-Phase A
		Prior to the project life cycle reviews shown in Figure 2-4 for this phase, conduct internal reviews in accordance with	

ATD Requirements Search

POLARIS
PROJECT ONLINE LIBRARY AND RESOURCE INFORMATION SYSTEM

- Useful Links
- Programs & Projects @ NASA
- Management Support

Select specific type of program/project for more details

- Advanced Technology Dev P/P
  - Life Cycles & Reviews
  - Work Breakdown Structure (WBS)
  - Requirements
    - Helpful Information
    - Requirements & Document Hierarchy
    - Program Requirements
    - Project Requirements
    - All Requirements
    - Compliance Matrix
    - REQUIREMENT SEARCH
    - Deviation / Waiver
    - NPR 7120.5C (NODIS)
  - Products, Templates & Examples
  - Management Process
- Basic & Applied Research P/P
- Institutional P/P
- Space Flight P/P

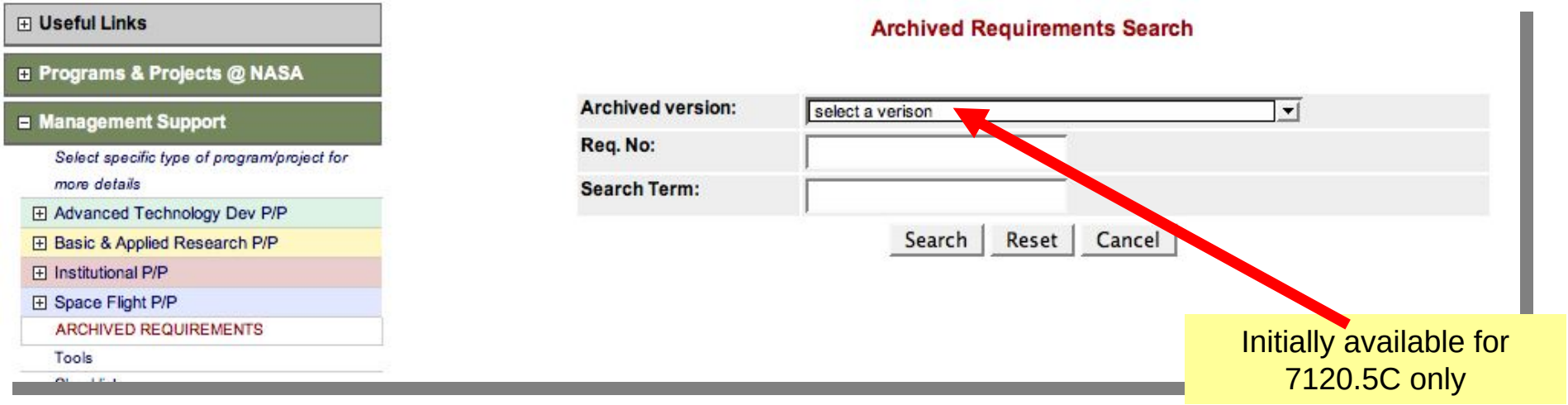
Advanced Technology Development Program & Projects

Requirements Search for Advanced Technology Development

Req. No:	
Search Term:	
Keywords:	Select from list
Search in:	All Requirements within product line Specific Requirements Program Requirements Project Requirements

Search | Reset | Cancel

Archived Requirements Search



Waiver Requests

POLARIS
PROJECT ONLINE LIBRARY AND RESOURCE INFORMATION SYSTEM

- Useful Links
- Programs & Projects @ NASA
- Management Support
  - *Select specific type of program/project for more details*
  - Advanced Technology Dev P/P
  - Basic & Applied Research P/P
  - Institutional P/P
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      - NPR 7120.5D (NODIS) (Coming Soon)
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Space Flight Programs & Projects

NPR 7120.5D Waiver Instructions

- Submittal Instructions
- Approval Authorities
- Waiver Form

Submittal Instructions

Requests for waivers to NPR 7120.5D requirements are documented and submitted for approval using the NPR 7120.5D Waiver Form. Prior to KDP 0 / KPD I for programs, and KDP B and KDP C for projects, these requests may be documented and attached to a single waiver to assure proper routing and control. Waivers impacting Formulation or requiring long lead time may be submitted individually early in Formulation. Following KDP I for programs and KDP C for projects, waivers must be submitted individually to the appropriate authority.

Evaluation and disposition of all other requirements change requests and waivers comply with the following:

- The organizations and the organizational levels that agreed to the establishment of a requirement must agree to the change or waiver of that requirement, unless this has been formally delegated elsewhere.
- The next higher Programmatic Authority and Technical Authority are informed in a timely manner of change requests or waivers that could affect that level.

Approval Authorities

Waivers to NPR 7120.5D requirements may be granted by the officials shown the following table:

Legend	R Recommends	A Approves	I Informed

	Project Manager	Program Manager	Center Director	MDAA	Chief Engineer	NASA AA	Approval Authority for Waivers with Dissent
Programs (except tightly couples programs)		R	A	A	A	I	NASA AA
Programs (tightly coupled programs)		R		A	A	I	NASA AA
Category 1 Projects	R	A	A	A	A	I	NASA AA
Category 2 and 3							

Initiating Programs/Projects

⊞ Useful Links
⊞ Programs & Projects @ NASA
⊟ Management Support
Select specific type of program/project for more details
⊞ Advanced Technology Dev P/P
⊞ Basic & Applied Research P/P
⊞ Institutional P/P
⊟ Space Flight P/P
⊞ Life Cycles & KDPs/Reviews
⊞ Work Breakdown Structure (WBS)
⊞ Requirements
⊞ Products, Templates & Examples
⊟ Management Process
Process Overview
INITIATING PROGRAMS/PROJECTS
Roles & Responsibilities
Categorization & Management Councils
Key Decision Points
Review Process
Technical Authority Process
Strategic Acquisition Process
Dissenting Opinions
Center Implementation Plan
Archived Requirements

Initiating Space Flight Programs/Projects

- Program Initiation
- Project Initiation
- AO-driven Projects
- Assignment of a Project to a Center

Space Flight Program Initiation

To initiate planning for individual programs, a Mission Directorate prepares a program FAD following an ASP meeting (See: Strategic Acquisition Process).

The program FAD authorizes a Program Manager to initiate the planning of a new program, and to perform the analysis of alternatives, required to formulate a sound Program Plan. Because the creation of a new program represents a major commitment of the Agency and may require coordination with OMB and/or the Congress, the FAD requires the approval of the MDAA.

Source: NPR 7120.5 D, 2.2.3.1

Space Flight Project Initiation

To initiate a new project, a Mission Directorate, working through a program office, usually provides a small amount of discretionary resources for concept studies (i.e., Pre-Phase A). These pre-formulation activities involve:

- Design reference mission analysis
- Feasibility studies
- Technology needs analyses
- Analyses of alternatives that should be performed before a specific project concept emerges

These trade studies are not considered part of formal project planning since there is no certainty that a specific project proposal will emerge.

Roles and Responsibilities

- Useful Links
- Programs & Projects @ NASA
- Management Support

Select specific type of program/project for more details

- Advanced Technology Dev P/P
- Basic & Applied Research P/P
- Institutional P/P
- Space Flight P/P
  - Life Cycles & KDPs/Reviews
  - Work Breakdown Structure (WBS)
  - Requirements
  - Products, Templates & Examples
  - Management Process
    - Process Overview
    - Initiating Programs/Projects
    - ROLES & RESPONSIBILITIES
    - Categorization & Management Councils
    - Key Decision Points
    - Review Process
    - Technical Authority Process
    - Strategic Acquisition Process
    - Dissenting Opinions
    - Center Implementation Plan
  - Archived Requirements

Space Flight Programs & Projects

Space Flight Program and Project Management Roles and Responsibilities

The roles and responsibilities of senior management are defined in NPD 1000.0, the NASA Strategic Management and Governance Handbook, and NPD 1000.3, The NASA Organization.

Key Roles and Responsibilities related to Program and Project Management

Official	Key Roles & Responsibilities
NASA Administrator	• Approves assignment of programs and Category 1 Projects to Centers
NASA Associate Administrator	• Responsible for technical and programmatic integration of programs at the Agency level and chairing the Agency PMC • Is the KDP Decision Authority for programs and Category 1 projects • Approves the PCA
Associate Administrator, PA&E	• Responsible for independent assessment of programs and Category 1 projects • Responsible for developing Agency strategic plan, and providing strategic guidance recommendations
Chief Engineer	• Establishes policy, oversight and assessment for the NASA engineering and program/project management capability • Responsible for implementation of Technical Authority • Serves as the principal advisor to the Administrator and other senior officials on matters pertaining to the technical capability and readiness of NASA programs and projects to execute according to plans
Chief Safety and Mission Assurance Officer	• Assures the safety and mission assurance of all NASA activities through the development, implementation, assessment and functional oversight of Agency-wide safety, reliability, maintainability, and quality policies and procedures • Serves as principal advisor to the Administrator on Agency-wide safety, reliability, maintainability, and quality assurance matters

Key Decision Points & Decision Authorities

POLARIS
PROJECT ONLINE LIBRARY AND RESOURCE INFORMATION SYSTEM

NASA

- Useful Links
- Programs & Projects @ NASA
- Management Support
  - *Select specific type of program/project for more details*
  - Advanced Technology Dev P/P
  - Basic & Applied Research P/P
  - Institutional P/P
  - Space Flight P/P
    - Life Cycles & KDPs/Reviews
    - Work Breakdown Structure (WBS)
    - Requirements
    - Products, Templates & Examples
    - Management Process
      - Process Overview
      - Initiating Programs/Projects
      - Roles & Responsibilities
      - Categorization & Management Councils
      - KEY DECISION POINTS
      - Review Process
      - Technical Authority Process
      - Strategic Acquisition Process
      - Dissenting Opinions
      - Center Implementation Plan
  - Archived Requirements
  - Tools
  - Checklists

Key Decision Points (KDPs) and Decision Authority (DA)

- Definition of Terms
- Decision Authority by Category
- Materials submitted to Decision Authority: KDP Readiness Products
- Factors considered by Decision Authority
- KDP Process and Outcomes

Definition of Terms

KDP:	Event or gate where the responsible DA decides on the readiness of a program or project to enter the next phase of its life cycle.
DA:	NASA official authorized to make a decision at a KDP.

Decision Authority by Category

Program/Project	Decision Authority
Programs	NASA AA (1)
Category 1 Projects	NASA AA (1)
Category 2 Projects	MDAA (2)
Category 3 Projects	MDAA (2)

(1) For Category 1 Projects, authority may be delegated to the MDAA (documented in Program Commitment Agreement)
(2) May delegate to a another level (documented in Program Plan?)

Source: NPR 7120.5D, 2.3.5 and Footnote 8

Technical Authority

Useful Links
Programs & Projects @ NASA
Management Support
Select specific type of program/project for more details
Advanced Technology Dev P/P
Basic & Applied Research P/P
Institutional P/P
Space Flight P/P
Life Cycles & KDPs/Reviews
Work Breakdown Structure (WBS)
Requirements
Products, Templates & Examples
Management Process
Process Overview
Initiating Programs/Projects
Roles & Responsibilities
Categorization & Management Councils
Key Decision Points
Review Process
TECHNICAL AUTHORITY PROCESS
Strategic Acquisition Process
Dissenting Opinions
Center Implementation Plan
Archived Requirements
Tools
Checklists
Training

Technical Authority Process

- Overview of Technical Authority Process
- Engineering Technical Authorities
- Safety and Mission Assurance Authorities
- Health and Medical Technical Authorities

Overview of Technical Authority Process

The NASA governance model has two basic authority processes:

- The Programmatic Authority Process
- The Technical Authority Process

The Programmatic Authority Process is described by the roles and responsibilities of the NASA AA, MDAAs and program and project managers. For more information see Program and Project Management Roles and Responsibilities.

The Technical Authority Process provides for the selection of individuals (referred to as a Technical Authority (TA)) at different levels of responsibility, whom provide an independent view of matters within their respective areas of expertise, and are funded independently of the program/project.

Types of Technical Authorities	Technical Authority Responsibilities
Include the following: • Engineering TAs • SMA TAs • Health & Medical TAs	• Approves changes to, and waivers of, all TA-owned requirements • Concurs in the establishment of, changes to, and waivers of, all program/project derived requirements at the level of their technical authority • Serves as members of program/project control boards, change boards, and internal review boards

Source: NPR 7120.5 Rev D, section 3.4.1, 3.4.1.1

Dispute Resolution

Strategic Acquisition

⊞ Useful Links
⊞ Programs & Projects @ NASA
⊟ Management Support
Select specific type of program/project for more details
⊞ Advanced Technology Dev P/P
⊞ Basic & Applied Research P/P
⊞ Institutional P/P
⊟ Space Flight P/P
⊞ Life Cycles & KDPs/Reviews
⊞ Work Breakdown Structure (WBS)
⊞ Requirements
⊞ Products, Templates & Examples
⊟ Management Process
Process Overview
Initiating Programs/Projects
Roles & Responsibilities
Categorization & Management Councils
Key Decision Points
Review Process
Technical Authority Process
STRATEGIC ACQUISITION PROCESS
Dissenting Opinions
Center Implementation Plan
Archived Requirements
Tools
Checklists
Training

NASA's Strategic Acquisition Process

NASA's strategic acquisition planning and authorization is a continuous process requiring the earliest possible informed decisions to ensure programs and projects have the proper budget authorization and Agency commitment. To facilitate this decision process, three discrete acquisition events are required as defined in the table below:

Acquisition Strategy Planning (ASP) meeting*	**Provides the forum for senior Agency management to review major acquisitions before authorizing budget expenditures** • Integral to the annual budget submission process • Structured to allow Agency senior management to review major acquisitions that evolve from requirements introduced to the Agency from external and internal sources • Purpose is to identify and define roles and responsibilities of Mission Directorates, Centers, major partnerships, and associated infrastructure with the focus on maintaining ten healthy Centers • Delineates if an Acquisition Strategy Meeting is required for each acquisition under consideration
Acquisition Strategy Meeting (ASM)*	**Examines the Agency's acquisition approach (e.g., internal make-or-buy, Center assignments, etc.)** • Applies to both programs and projects • Should be convened as early as practicable and prior to partnership commitments • Obtains senior management approval of acquisition strategy • Program ASM may be held in conjunction with the Program SRR, but must be prior to KDP I • Project ASM may be held in conjunction with the Project SRR, but must be prior to KDP B • Supporting materials include appropriate program and project documentation that covers budget, schedule, requirements and risk
Procurement Strategy Meeting* (PSM) *Formerly called the Acquisition Strategy Meeting	**Approves the procurement approach for each procurement**

Tools and Checklists

- Programs & Projects @ NASA
- Management Support
  - Life Cycles & Reviews
  - Common Core WBS
  - NPR 7120 Requirements
  - NPR 7120 Deviation / Waiv
  - Products, Templates & E amples
  - TOOLS
  - Checklists
  - Technical Standards
  - P/P Manager Responsibilities
  - Training
- Support Disciplines

Tools

Name	Description	Source	Comments
Risk Management Tools	A list of risk management tools with links, from the NASA Accademy of Program/Project Leadership Website.	APPEL	
NASA Technical Standards	Provides information on preferred technical standards for NASA programs, provides links to other sources of standards information.	HQ/OCE	
Webtabs	Time and attendance system providing all NASA Civil Servants the ability to accurately record their direct labor hours against the appropriate Program, Project, Service Pool overhead and/or G&A accounts to 7 digit WBS level.	HQ/IEMP	*requires login
SAP	NASA's Core Financial System	HQ/IEMP	*requires login
BW - Core Financial Business Warehouse	Business Intelligence Tool (BI), which provides on-line analytical access to actual	HQ/IEMP	*requires login

Checklists

Name	Description	Source	Comments
Checklist for Assessment of Risk Management	A checklist from NPR 8000.4, Risk Management Procedural Requirements, APPENDIX C. It is intended for the use of the NASA Independent Program Assessment Office (IPAO) or Center Systems Management Offices (SMO), when assessing the RM activities conducted by program/project offices	NPR 8000.4	
Checklist for Project Management and Review Boards	Excerpt of a checklist taken from the Report on Project Management in NASA by the Mars Climate Orbiter Mishap Investigation Board (p. 43-46).	HQ	

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Programs & Projects @ NASA

Management Support

Support Disciplines

For the list of topics in each area below, click here

- Program & Project Planning
- Acquisition & Agreements
- Risk Management
- Information Management
- Safety & Mission Assurance
- iTA/NESC
- Science, Research & Technology
- Systems Engineering
- Software Engineering
- Launch Services & Mission Operations

Support Disciplines - Guide

Program and Project Planning

- Program and Project Management Process
- Program and Project Management Committees
- Cost Estimating
- EVM / Scheduling
- Program / Project Control
- Independent Program Assessment
- WBS / WBS Dictionary
- Facilities

Acquisition and Agreements

- Acquisition, Procurement and Contract Management
- Export Control / Foreign Access Agreements

Management

Risk Policy and Requirements

Cost Estimating

- Requirements from NPR 7120.5
- Cost Estimating Handbook
- NASA Cost Estimating Site
- Cost Analysis Steering Group Members *
- Center Cost Estimating POCs
- Space Launch Operations Cost Estimating Process Definition Handbook (KSC)

EVM / Scheduling

- **Policy and Requirements**
  - EVM Requirements from NPR 7120.5
  - Scheduling Requirements from NPR 7120.5
  - EVM Policy & Requirements
- **Helpful Sites / Links**
  - Agency EVM Site
  - EVM Handbook
  - Scheduling Handbook
  - Integrated Baseline Review Handbook
  - Scheduling Resource Website

Export Control / Foreign Access

- **Policy and Requirements**
  - Requirements from NPR 7120.5
  - NPD 2190.1-NASA Export Control Program Policy
  - NPR 2190.1-NASA Export Control Program Procedure
  - NPD 1371.5 - Coordination and Authorization of Access by Foreign Nationals and Foreign Representatives to NASA
  - NPR 1371.2A - Processing Requests for Access to NASA Installations or Facilities by Foreign Nationals or US
  - NPD 2110.1 - Foreign Access to NASA Technology Transfer Materials
  - NPD2200.1 - Management of NASA Scientific and Technical Information (STI)
  - NPR 2200.2 - Requirements for Documentation, Approval and Dissemination of NASA Scientific and Technical Information
  - NPR 2210.1 - External Release of NASA Software
- **Helpful Sites & Links**
  - Overview Briefing on Export Control Regulations
  - NASA Export Control Program
  - NASA Office of External Relations
  - Helpful Government Agencies *

Facilities

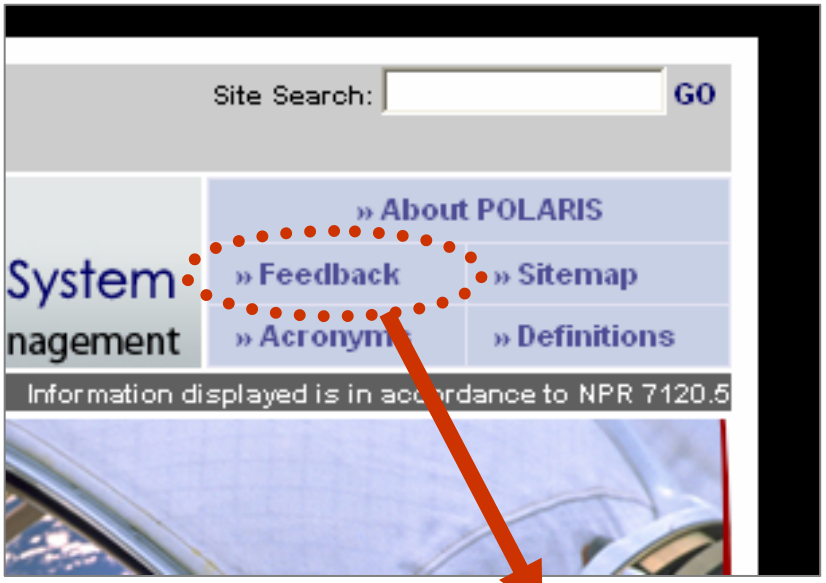
- **Policy and Requirements**
  - Requirements from NPR 7120.5
  - NPD 8820.2 - Design and Construction of Facilities Policy
  - NPR 8820.2 - Facility Project Implementation Guide
  - NPD 8820.3 - Facility Sustainable Design
  - NPD 8831.1 - Maintenance of Institutional and Program Facilities and Related Equipment
  - NPR 8831.2 - Facilities Maintenance Management
- **NASA**
  - Major NASA Facilities Inventory site *
  - Rocket Propulsion Facilities

  * Note: Requires ID and password
- **LRC**
  - LRC Facilities
- **DRFC**
  - DRFC Research facilities
- **GRC**
  - GRC Research Facilities
  - Smaller Test Facilities
- **JSC**
  - JSC Facilities
- **KSC**
  - KSC facilities
- **MSFC**
  - Engineering Facilities
  - Optics Manufacturing Facilities
- **SSC**
  - Propulsion Test Facilities
- **ARC**
  - Microgravity Test Facility
  - Mission Simulation Facility

Topics covered include:

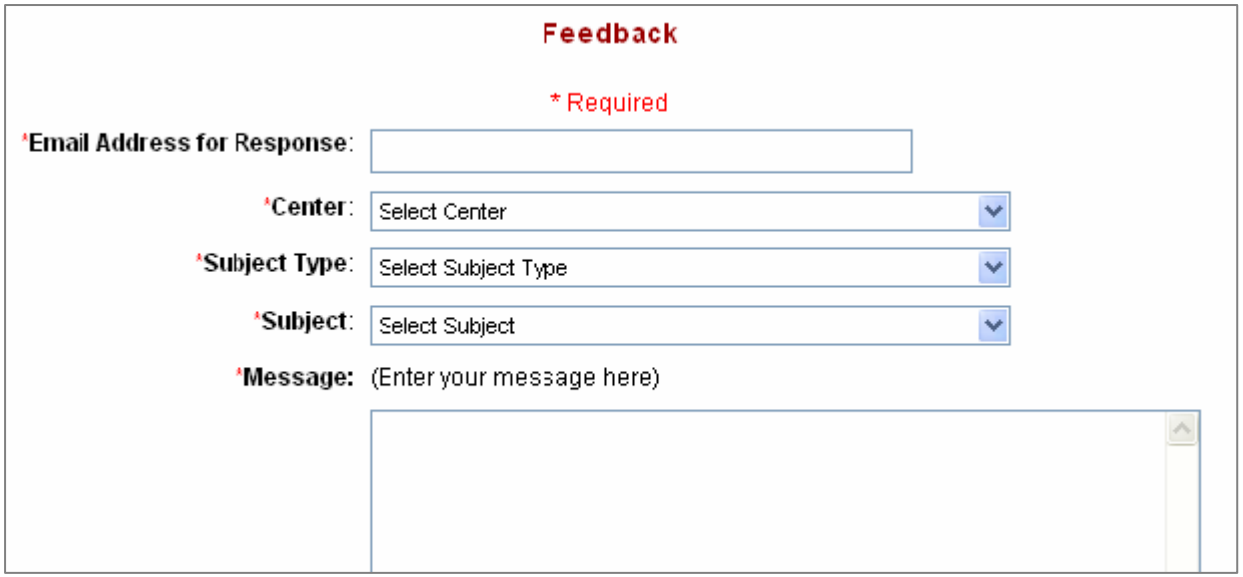
- **Policy & Requirements**
- **Handbooks & Guidance**
- **Helpful sites/links**
- **Training**
- **Tools**
- **Products, Templates, Examples**
- **Points of Contact**

We need your help…..



We want POLARIS to be a living tool, providing improving support to Program and Project Managers as management policy and requirements evolve. We need your good ideas and constructive criticism to make this tool responsive to your needs.

Please take the time to let us know what you think!



Planned Future Enhancements After Build 2

- New NPRs for NASA's other product lines: Advanced Technology and Development (ATD), Basic and Applied Research (BAR), and Institutional/Facilities
- As available from the Agency's MdM database, POLARIS may add more information on Programs and Projects, including product line, category, Governing PMC, manager name, life cycle phase, leading center, etc.
    - Dependent on agency MdM application being fully populated and kept current
- Daily updates of Program & Project data from MdM
- Additional product templates and examples
- Additional review content (example data packages, example agendas, review plans, etc)

Many items dependent on HQ for review and approval of content

Other Possible Applications

Of the website…..

- NPR 7123, Systems Engineering Processes and Requirements
  - Either import remainder of NPR7123.1 into POLARIS (merges Systems Engineering and Project Management into one site)
  - Or, create similar site for Systems Engineering
- Use POLARIS-type site for mission directorates, with content being mission directorate specific
  - Potential for linking (traceablility) of agency requirements
- Use POLARIS type site for Center level application, with content being Center level policy, requirements, guidance and links.
  - Potential for linking (traceability) of agency requirements

Other Possible Applications, cont'd

- Of the requirements database…..(unlimited potential)
  - All Agency requirements (NPRs) databased with keywords and linked to show traceability and dependency. Keywords could allow:
    - Generation of requirements list by role (i.e. all requirements a facilities manager must meet)
    - Generation of comprehensive requirements list on a particular subject (i.e. all EVM requirements)
    - Generation of job descriptions & performance evaluations
  - All Mission Directorate requirements databased with keywords and linked to have traceability to Agency requirements.
  - All Center requirements databased with keywords and linked to have traceability to both Mission Directorate and Agency requirements.

Summary

- POLARIS tool is designed to support Program and Project Management
  - Continuous improvement planned
  - Maintenance planned to remain current
- POLARIS needs your support and input to be successful
  - Make it what *you* need
- POLARIS could be applied to other agency requirements (NPRs) and to Mission Directorates and Field Centers
  - Requires up front investment and on-going maintenance support