NASA
Launch Services Program

SMEX AO Pre-Proposal Conference
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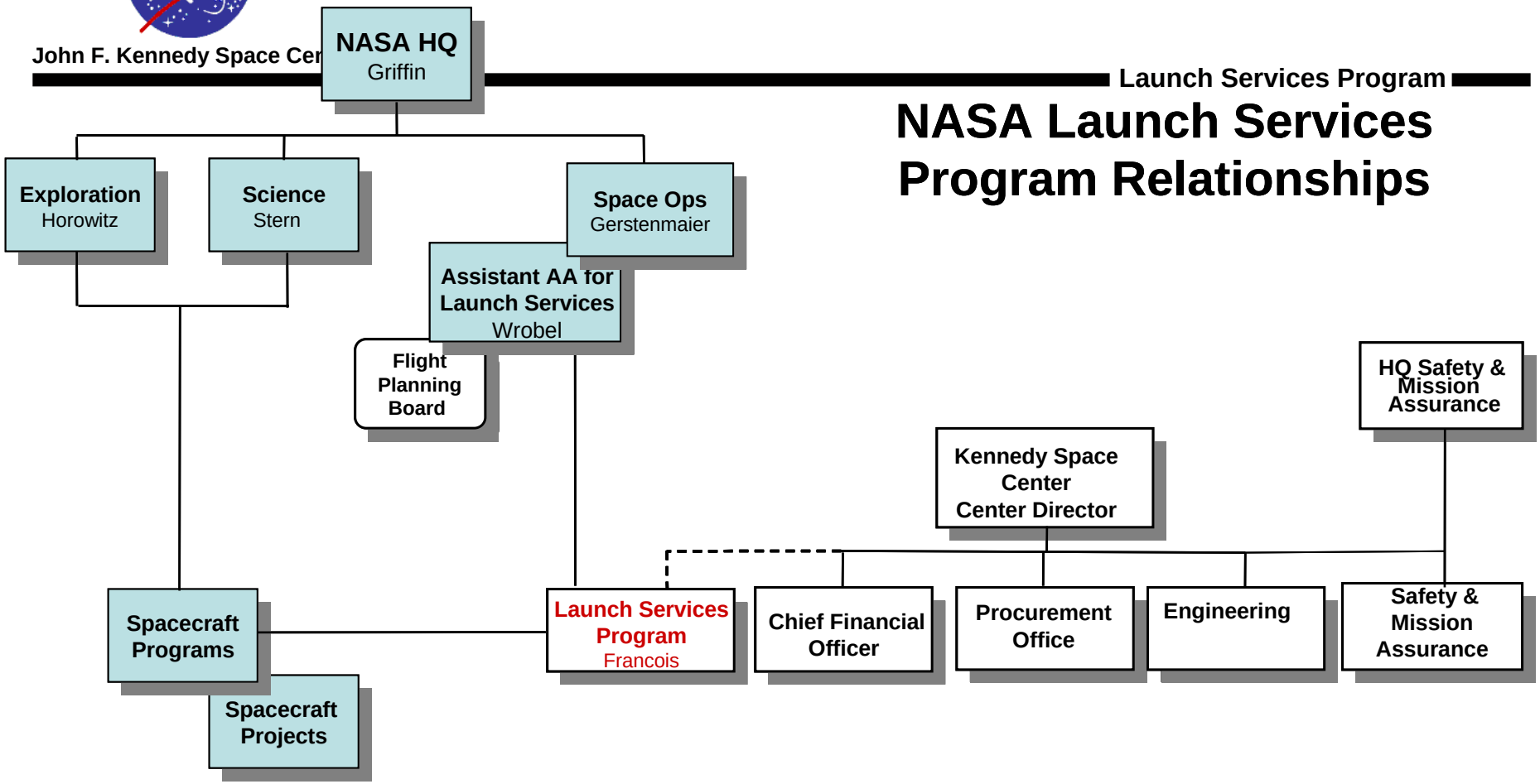
NASA Launch Services Program Relationships



Interfaces to other NASA Centers

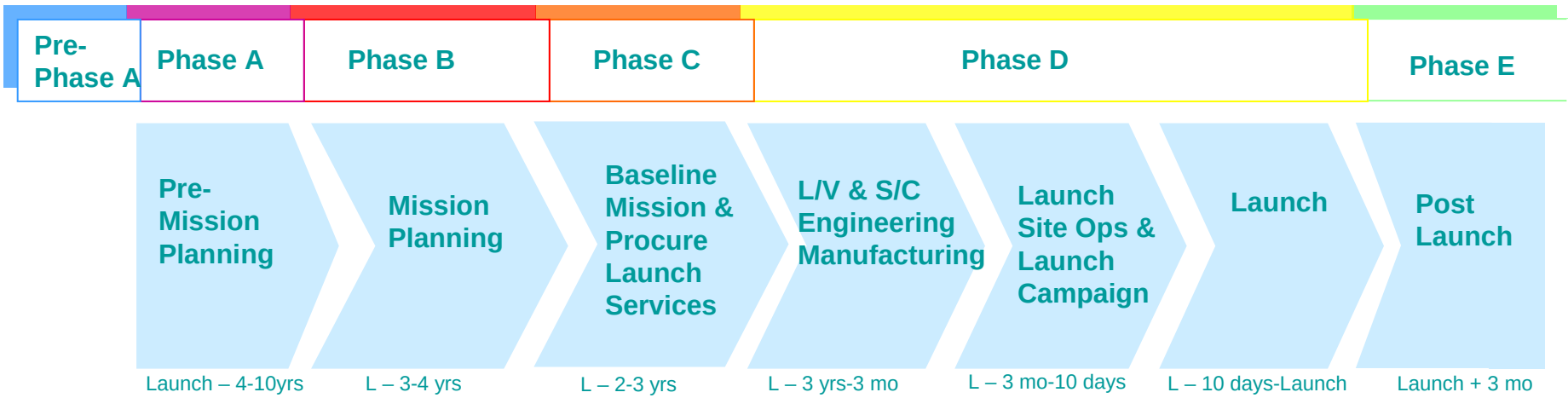
- GRC Technical Support
- SSC Propulsion Support
- GSFC Spacecraft Projects
- MSFC Technical Support
- JPL Spacecraft Projects

Launch Services Program

The Launch Services Program provides technical management of the launch service, technical insight into the launch vehicle production/test, coordinates and approves mission-specific integration activities, provides mission unique launch vehicle hardware/software development, provides payload-processing accommodations, and manages the launch campaign/countdown.

Ground Rules

- Any acquisition of a non-contributed domestic expendable launch vehicle proposed for this AO will be procured and managed by the NASA/Launch Services Program (LSP) via the NASA Launch Services (NLS) contract.
- The LSP will competitively select a launch service provider for these missions based on customer requirements after the mission Confirmation Review and NASA Flight Planning Board (FPB) approval.



Spacecraft reviews shown in red.

Available Vehicles

- Assumption of a specific launch vehicle configuration as part of this AO proposal will not guarantee that the proposed LV configuration will be selected for award of a launch service competitive procurement
  - Firm technical rationale for sole source justification is required in the proposal, and NASA would have to obtain appropriate approvals.
- The Agency policy, NPD 8610.7, “Risk Mitigation Policy for NASA-Owned and/or NASA-Sponsored Payloads/Mission” has been modified so new providers can compete for low risk NASA missions.
  - **Update will be released soon**

Available Vehicles - Continued

- While Pegasus XL is the leading candidate at this time, designation of SMEX as a Class D mission enables new providers to supply launch services:
  - Falcon 1's next mission is early 2008
  - Minotaur 1 has had 6 consecutive successful flights but is not a commercially available launch vehicle
  - ATK's SLV is targeting a demo launch in 2011
  - AirLaunch is in development

Launch Service Budget

- **With the exception of the options noted in the next chart, the launch service costs will be held by the Explorers Program.**
- **The launch service includes:**
  - **The launch vehicle, engineering, analysis, and minimum performance standards and services provided by the contract.**
  - **Launch Site Processing**
  - **Range Support**
  - **Down Range Telemetry support**
  - **Standard Mission Uniques – these are items typically necessary to customize the basic vehicle hardware to meet spacecraft driven requirements. Already budgeted for are items like Pre-ATP studies such coupled loads and/or trajectories analysis, an additional payload fairing door, fuel, an GN2 or pure air purge prior to T-0 and 10,000 Class integration environment.**
  - **Budget does not include launch delays.**

Option Costs

Additional Options	Launch Date	FY10	FY11	FY12	Total ($M)
Kwajalein Launch Site	4/12	**2.4**	**2.2**	**1.2**	**5.8**
Supplemental propulsion	4/12	**1.3**	**1.3**	**1.3**	**3.9**
Additional Options	**Launch Date**	**FY11**	**FY12**	**FY13**	**Total ($M)**
Kwajalein Launch Site	4/13	**2.3**	**2.2**	**1.3**	**5.8**
Supplemental propulsion	4/13	**1.4**	**1.4**	**1.4**	**4.2**
Additional Options	**Launch Date**	**FY12**	**FY13**	**FY14**	**Total ($M)**
Kwajalein Launch Site	4/14	**2.4**	**2.2**	**1.4**	**6.0**
Supplemental propulsion	4/14	**1.4**	**1.5**	**1.5**	**4.4**

Performance by Launch Site

Performance for typical launch sites:

Range	Assumed Inclination	Altitude Range	Performance Range
Eastern	28.5 deg	200 – 1400 km	120 – 450 kg
Western	Sun-synchronous	200 – 1100 km	120 – 325 kg
Wallops	45 deg	200 – 1300 km	130 – 425 kg
Kwajalein (Regan Test Site, RTS)	60 deg	200 – 1300 km	115 – 395 kg

- This performance does not include the effects of orbital debris compliance, which must be evaluated on a mission-specific basis.
- Guidance reserves account for 3-sigma flight performance.
- Performance is for baseline configuration; non-standard, mission-unique hardware will require additional assessment.
- 38-inch (0.96-meter) separation system.
- Mass of entire separation system is book-kept on the launch vehicle side.
- Listed performance is for separated spacecraft mass.

Performance by Launch Site - Continued

Performance with supplemental propulsion system:

The primary purpose of a supplemental propulsion system is to achieve smaller injection errors, however this system will generally provide for a performance benefit when considering altitudes above 600 km.

Range	Assumed Inclination	Altitude Range	Performance Range
Eastern	28.5 deg	200 – 1400 km	175 – 360 kg
Western	Sun-synchronous	200 – 1100 km	115 – 250 kg
Wallops	45	500 – 2000 km	160 - 335 kg
Kwajalein (Regan Test Site, RTS)	60 deg	200 – 1300 km	150 – 315 kg

- This performance does not include the effects of orbital debris compliance, which must be evaluated on a mission-specific basis.
- Guidance reserves account for 3-sigma flight performance.
- Performance is for baseline configuration; non-standard, mission-unique hardware will require additional assessment.
- 38-inch (0.96-meter) separation system.
- Mass of entire separation system is book-kept on the launch vehicle side.
- Listed performance is for separated spacecraft mass.

Static and Dynamic Envelopes, (No supplemental propulsion)

Static Payload Envelope

Station		Diameter		Comments
(cm)	(in)	(cm)	(in)	
10.0	3.95	116.2	45.74	Payload Interface Plane for Payload Separation System
50.8	20.00	115.3	45.40	Maximum Nominal Payload Diameter
111.0	43.70	114.1	44.90	Ogive Mate Line
213.9	84.20	70.9	27.90	Diameter at Maximum Payload Length

Dynamic Payload Envelope

Station		Diameter		Comments
(cm)	(in)	(cm)	(in)	
10.0	3.95	117.7	46.34	Payload Interface Plane for Payload Separation System
50.8	20.00	116.8	46.00	Maximum Nominal Payload Diameter
111.0	43.70	115.6	45.50	Ogive Mate Line
213.9	84.20	72.6	28.60	Diameter at Maximum Payload Length

Static and Dynamic Envelopes with supplemental propulsion

Static Payload Envelope

Station		Diameter		Comments
(cm)	(in)	(cm)	(in)	
10.0	3.95	116.2	45.74	Payload Interface Plane for Payload Separation System
50.8	20.00	115.3	45.40	Maximum Nominal Payload Diameter
83.3	32.80	114.6	45.13	Ogive Mate Line
186.2	73.30	72.6	28.60	Diameter at Maximum Payload Length

Dynamic Payload Envelope

Station		Diameter		Comments
(cm)	(in)	(cm)	(in)	
10.0	3.95	117.7	46.34	Payload Interface Plane for Payload Separation System
50.8	20.00	116.8	46.00	Maximum Nominal Payload Diameter
83.3	32.80	116.2	45.73	Ogive Mate Line
186.2	73.30	72.6	28.60	Diameter at Maximum Payload Length

Contributed Domestic or Foreign Launch Vehicles

- The provision of launch services, as a contribution to an Explorer mission by a U.S. or non-U.S. partner, may be proposed only on a no-exchange-of-funds basis (i.e., at no cost to NASA).
- Contributed launch vehicles and launch services may be proposed as long as the value of the contribution is within the cap on contributions (one-half of PI Mission Cost).
- It is the responsibility of the proposer to secure an organization that will provide the launch service contribution if it is desired.
  - The proposer of a mission with a contributed expendable launch service must identify the opportunity and provide evidence in the proposal that the launch service provider agrees to manifest the mission should the proposal be selected and confirmed for flight.

Contributed Domestic or Foreign Launch Vehicles - Continued

- **The demonstrated reliability and the resultant probability of mission success for contributed launch services will be evaluated consistent with National Space Transportation Policy, Public Law, and NASA's Launch Services Risk Mitigation Policy NPD 8610.7.**

- **For any co-operative contributed launch vehicle, the approach for NASA's insight for launch services should be submitted in the proposal. The contributed launch service will be assessed in conjunction with NASA stakeholders as part of the selection process. The NASA Flight Planning Board assuring consistency with Agency risk strategy will approve final mission assignment.**

- **Dual manifested or secondary payloads (applies to SMEX only) will not be considered under the cognizance of this AO.**

Summary

- **It is the Launch Service Program's goal to ensure the highest practicable possibility of launch success while managing the launch service technical capabilities, budget and schedule.**
- **Questions must be officially submitted to SMEXAO@NASA.GOV, however LSP will gladly respond as quickly as possible.**