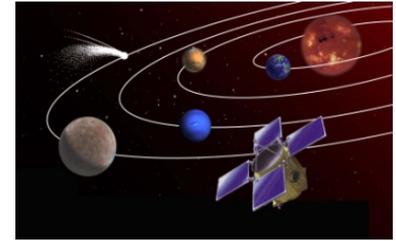


# Overview of the 2014 Discovery AO

Michael H. New, Ph.D.  
Lead Discovery Program Scientist



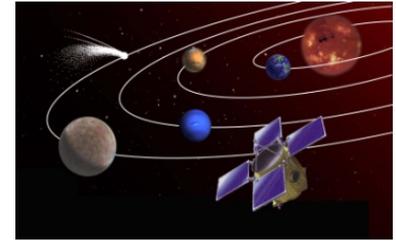
# Basic Facts



- ◆ Based on “Standard AO”
- ◆ No MoOs solicited
- ◆ AO Cost Cap = \$450M (FY15)
- ◆ 9 month Phase A, \$3.0M (RY)
  - Clock starts from expected award of Phase A contracts
- ◆ Launch Readiness Date NLT  
31 December 2021



# Potential Targets



- ◆ Any solid body in the Solar System except the Sun and the Earth
  - Missions to Mars or its satellites are allowed
  - Studies like Genesis of the solar wind as a window on the composition of the early Solar System are still allowed.
  - Identification and characterization of extra-solar planets are *not* allowed.
- ◆ All investigations must address Planetary Science Division strategic goals as enumerated in the current *Science Plan*



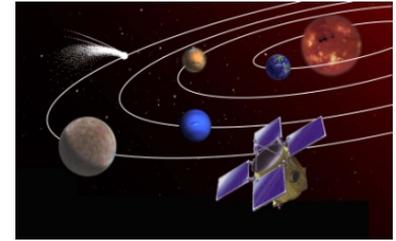
# Response to Draft AO



- ◆ Received ~145 comments on the Draft
- ◆ Largest number were on requirement for missions to carry the Deep-Space Optical Communications (DSOC) package.
  - Requirement dropped from Final AO.
- ◆ Second most popular topic was the requirement to evaluate use of the AMMOS.
  - That requirement was modified (slightly) in the Final AO.



# Results of Comments



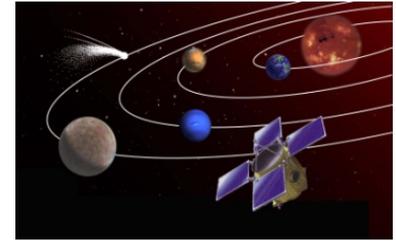
<b>Changes in AO only</b>	<b>43</b>
<b>Added to Q&amp;A only</b>	<b>66</b>
<b>Changed AO &amp; added to Q&amp;A</b>	<b>24</b>
<b>Neither changes in AO nor added to Q&amp;A</b>	<b>2*</b>
<b>Unaddressed</b>	<b>10†</b>
<b>TOTAL</b>	<b>145</b>

\* Comments asked for (1) documents mentioned in Tech Workshop presentations be posted in Program Library and that was done; and (2) additional information on DSOC to be posted and that was done.

† All will be dispositioned in the coming weeks.



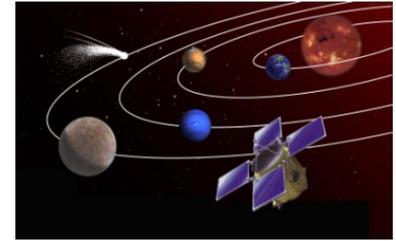
# Changes from 2010 AO



- ◆ Several items have been excluded from the AO Cost Cap
- ◆ New constraint on foreign-contributed instruments
- ◆ New requirement for parametric cost model inputs and outputs.
- ◆ New requirement for Microsoft Project™ formatted schedule.
- ◆ New technologies available, and some older ones not available.
- ◆ New launch-vehicle cost structure.
- ◆ AMMOS information
- ◆ Engineering Science Investigation
- ◆ Technology Demonstration Opportunities
- ◆ Education and Communications Planning



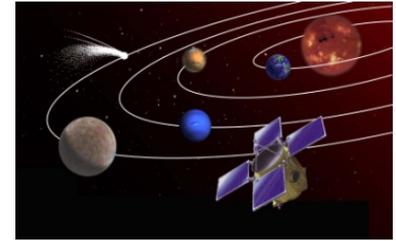
# AO Cost Cap Exclusions



- ◆ Costs associated with Phases E & F are *not* under the AO Cost Cap.
  - Intended to level playing field between missions with different length cruises.
  - Secondary goal is to allow for a more accurate assessment of costs once a mission/spacecraft design are set (Confirmation).
  - Development of FSW or GSW or the fabrication or refurbishment of test beds after launch will be considered Phase D work deferred until Phase E and *will* fall under the AO Cost Cap.
- ◆ DSN “aperture fees” must be computed and reported but are not part of the mission’s budget.
  - Easiest way to assess the DSN usage is “reasonable” according to SCan.
- ◆ As before, standard launch services are not included in PIMMC.



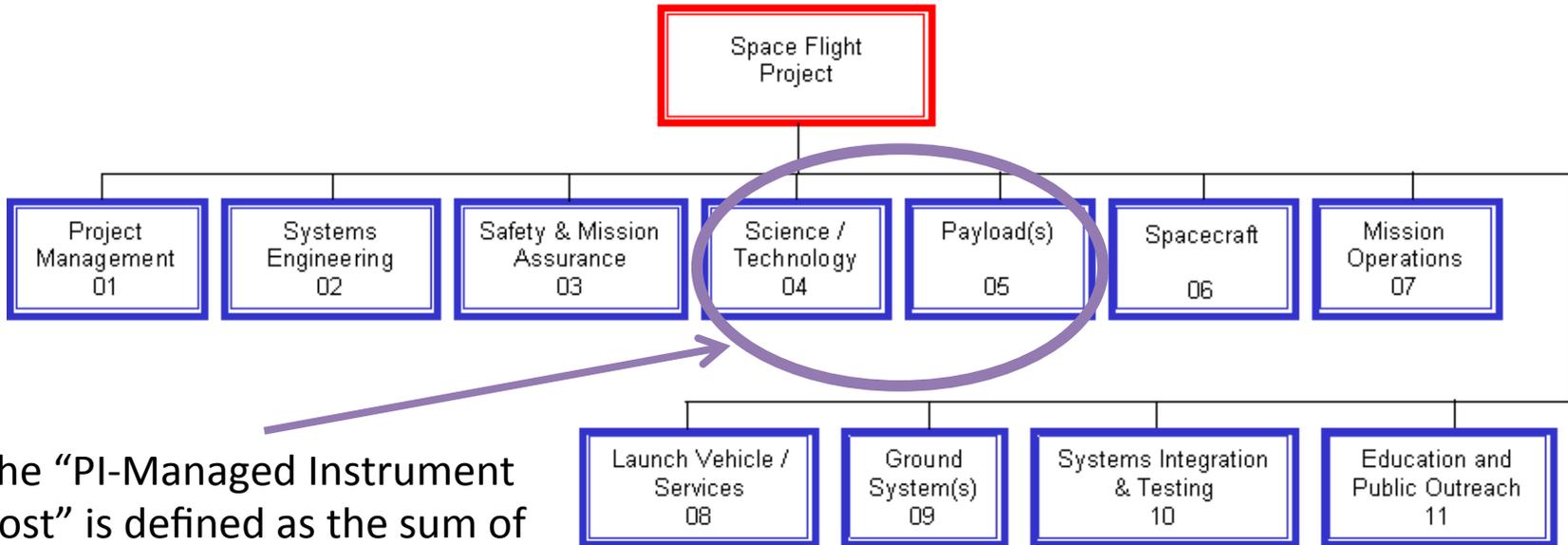
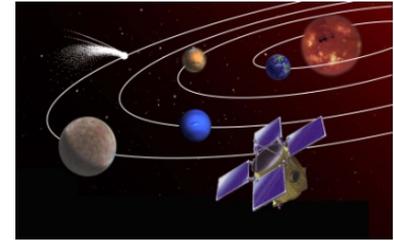
# International Collaborations



- ◆ NASA still welcomes international participation however:
  - By *statute*, NASA cannot enter into bilateral collaborations with the People's Republic of China.
  - By *policy*, NASA funds cannot be used to support research at non-US institutions,
  - Foreign contributions cannot exceed 1/3 of the PIMMC,
  - nor can foreign contributions to instruments exceed 1/3 of the **PI-Managed Instrument Cost**.
- ◆ More information at 1:30 PM.



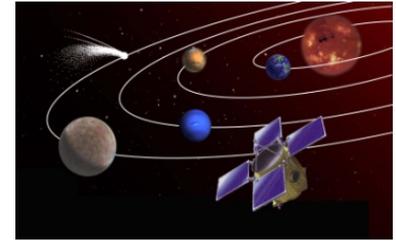
# PI-Managed Instrument Cost?



The “PI-Managed Instrument Cost” is defined as the sum of costs associated with WBS 04 & WBS 05 in the standard WBS



# Requirement for Parametric Cost Model Inputs & Outputs



- ◆ Goal of Rqmt. 71 is to improve transparency in evaluation cost-modeling.
- ◆ Allows proposers to provide their assumptions about complexity, heritage, etc. in a clearly defined format.
  - Also provides a common benchmark
- ◆ Will be used by TMC after independently estimating costs.



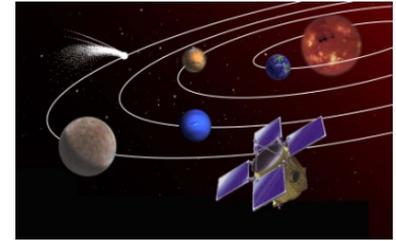
# Requirement for Electronic Version of Schedule



- ◆ Rqmt. B-43 *not* intended to add requirements to the schedule, merely its presentation.
- ◆ Electronic version need not be any more mature than that presented graphically in a fold-out.
- ◆ Goal is to make it easier for evaluators to get the schedule right
  - No more measuring lengths of task lines.
  - No more inferring connections.
- ◆ Evaluators will *not* be performing any analyses not previously performed.
  - No JCLs. No “schedule health checks”.
  - Will check critical path(s), margin, slack, as always.



# NASA-Developed Technologies



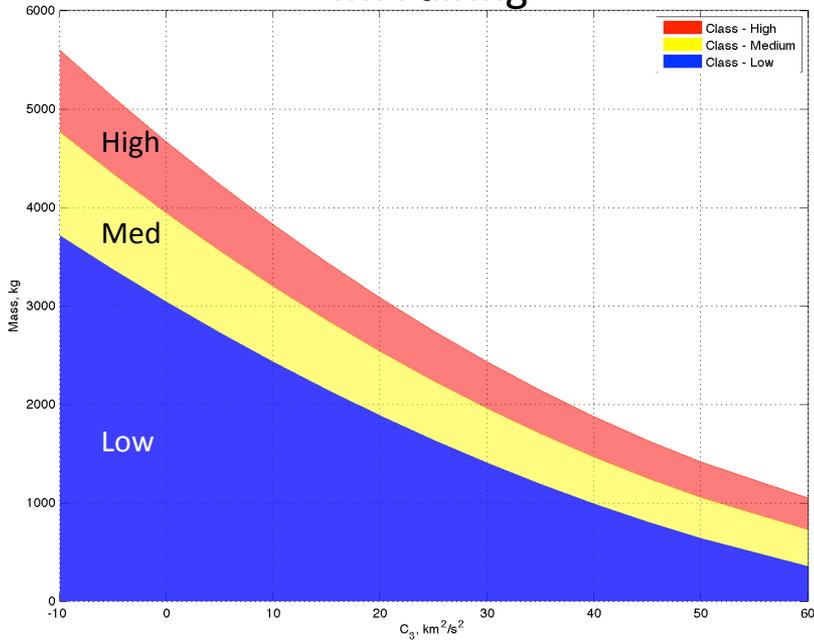
- ◆ For this AO, SMD is partnering with STMD and HEOMD. A number of technologies developed by the three directorates are available for the AO under a variety of infusion schemes.
- ◆ Unfortunately, neither ASRGs nor MMRTGs will be available for this AO.
- ◆ Discussion of these deferred until 2PM.



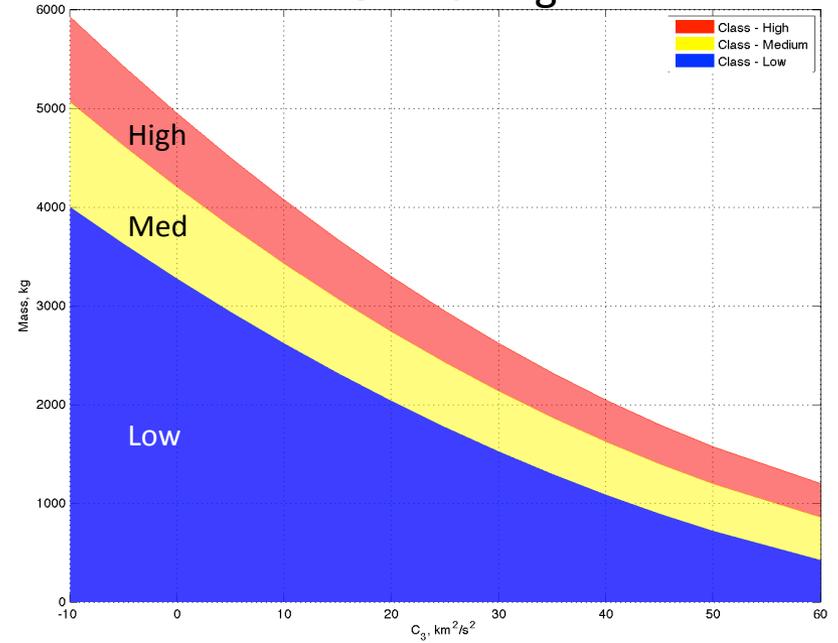
# Launch Services



### 4m Fairing



### 5m Fairing



<i>Charges against Cap</i>	4m Fairing	5m Fairing
Low Performance	-\$16M	\$13M
Medium Performance	0	\$28M
High Performance	\$14M	\$43M



# AMMOS Information



- ◆ Goal of Rqmt. 47 is *not* to mandate use of the Advanced Multi-Mission Operations System (AMMOS).
- ◆ NASA invests heavily in the development and maintenance of the AMMOS and the use of the AMMOS is expected to offer savings to missions since only mission-specific adaptations need to be performed.
- ◆ Investigations which choose to use an operations system other than the AMMOS must provide a justification for this choice.
  - Extensive heritage is a perfectly acceptable justification.



# Engineering Science Investigation



- ◆ Missions involving entry, descent, and landing (EDL) into the atmosphere of a Solar System object (including the Earth) shall include an **Engineering Science Investigation** to obtain diagnostic and technical data about vehicle performance and entry environments.
- ◆ Will be funded outside of the AO cost cap.
- ◆ Goals and objectives outlined in a document in the Program Library.
- ◆ Requirement is to provide a rough estimate of the cost of implementing the ESI in the Step-1 proposal.
  - Requirement is *not* to provide a highly accurate cost estimate at this time.



# Tech Demos



- ◆ The option for proposing a Technology Demonstration Opportunity (TDO) has been restored to the AO
  - Any technology is eligible for this, not just the NASA-developed technologies listed in the AO.
  - Costs are outside of the AO Cost Cap.
  - TDO must be separable from main investigation since it may not be selected even if main investigation is.



# Education & Communications



- ◆ E&C still in flux NASA-wide.
- ◆ E&C plan *not* required in Step 1.
  - If new E&C requirements are levied, funding should come with them.
- ◆ Student Collaborations (SCs) are still optional and encouraged.
  - If proposed, will receive up to 1% of PI-Managed Mission Cost as incentive
    - Incentive won't exceed actual cost of SC.