



Planetary Science Division Research & Analysis Program Restructuring Virtual Townhall

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12:00 Noon – 4:00 PM (EST)
December 3, 2013

<https://connect.arc.nasa.gov/randa>

Restructured Program Elements

RESTRUCTURED PROGRAM ELEMENTS

Reorganization at a glance

- Core programs have wide scopes and address division science goals
- Strategic programs are more narrow in scope and address certain strategic needs
- Focused programs are narrow in scope and limited in time. They may be called for only one year or several, but not indefinitely.

Core Research	Strategic	Focused
Emerging Worlds	PDART (data archiving, tools)	ETIPS (emerging topics)
Solar System Workings	PSTAR (analogs)	LDAP (lunar data analysis)
Habitable Worlds	Exoplanets (joint with Astro)	CDAP
Exobiology	PMDAP	
Solar System Observations (NEOO & PAST)	LARS	
Core Technology	MDAP	
MatISSE	Planetary Protection	
PICASSO	NAI	
	SSERVI	

New program

New program but not called in ROSES2014

Unchanged

Instrument Development Programs have already been consolidated

Astrobiology Inst Development
(ASTID)

Mars Instrument Development Prog
(MIDP)

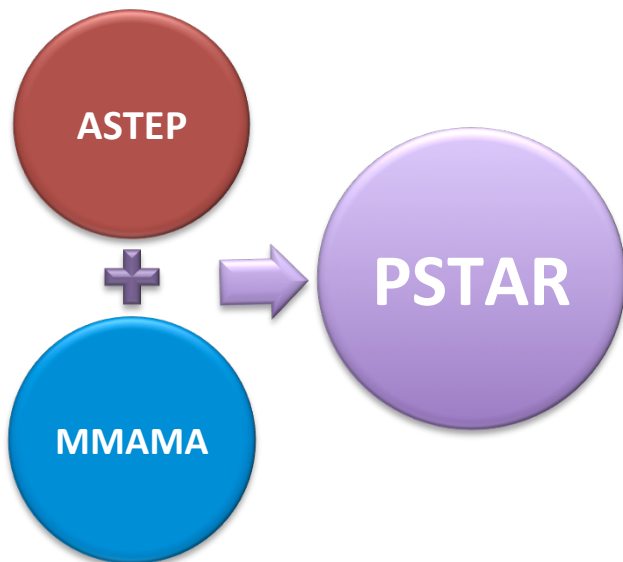
Planetary Instrument Def & Dev
(PIDDP)

Planetary Instrument
Concepts for the
Advancement of Solar
System Observations
(PICASSO)

Maturation of
Instruments for Solar
System Exploration
(MatISSE)

PSTAR: Planetary Science and Technology from Analogue Research

The PSTAR program element addresses the need for integrated interdisciplinary field experiments as an integral part of preparation for planned human and robotic missions. Furthermore, the program solicits proposals for investigations focused on exploring the Earth's extreme environments in order to develop a sound technical and scientific basis to conduct astrobiological research on other solar system bodies. The focus of this program element will be on providing high-fidelity scientific investigations, scientific input, and science operations constraints in the context of planetary field campaigns. Funding provided in this program element is intended to enable researchers to conduct scientific investigations and integrate their instruments, projects, and/or protocols into field activities designed to help NASA plan for future exploration.



The PSTAR solicitation will be a consolidation of the two calls: Astrobiology Science and Technology for Exploring Planets (ASTEP) and Moon Mars Analogue and Mission Activities (MMAMA). The program will maintain the scope of each call, but reduce overlap between the two programs.

Data Analysis Programs

PMDAP, MDAP, and CDAP will continue to focus on data analysis from specific missions. A new Lunar DAP will be called in order to take advantage of the wealth of information from new and ongoing Lunar missions. Data analysis from other missions is still encouraged and can be submitted to the appropriate core program.

Recognizing that data access is important for the community, proposals addressing data archiving, restoration and tools will be considered separately under a new strategic program, PDART.

Current DAP structure

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graph TD; A[Current DAP structure] --> B[Existing DAPs will remain largely the same:]; A --> C[Planetary Data Archiving, Restoration, and Tools (PDART)]; B --> B1[Planetary Mission Data Analysis Program]; B --> B2[Mars Data Analysis]; B --> B3[Cassini Data Analysis]; B --> B4[Laboratory Analysis of Returned Samples]; B --> B5[A new DAP will be added:]; B5 --> B5a[Lunar Data Analysis]; C --> C1[Archiving and restoration of data]; C --> C2[Higher Level Data Products (e.g. non USGS Maps)]; C --> C3[Reference Databases (e.g. Spectral libraries)]; C --> C4[Digitization of non-digitized data]; C --> C5[Tools];
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Existing DAPs will remain largely the same:

- Planetary Mission Data Analysis Program
- Mars Data Analysis
- Cassini Data Analysis
- Laboratory Analysis of Returned Samples

A new DAP will be added:

- Lunar Data Analysis

Planetary Data Archiving, Restoration, and Tools (PDART)

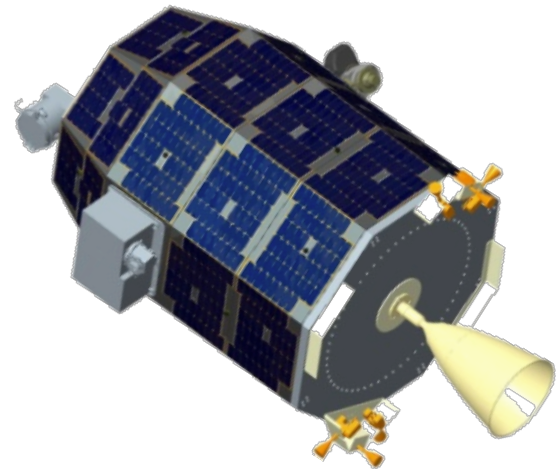
- Archiving and restoration of data
- Higher Level Data Products (e.g. non USGS Maps)
- Reference Databases (e.g. Spectral libraries)
- Digitization of non-digitized data
- Tools

Lunar Data Analysis Program

In order to take full advantage of the wealth of lunar data from recent and ongoing missions, we will stand up a new DAP. This is not a permanent program; it will be restructured or retired according to PSD needs.

Data analysis from the following missions will be sought for this program:

- LRO
- GRAIL
- LADEE
- ARTEMIS
- LCROSS
- Chandrayaan-1/M³
- Data analysis from missions by other space agencies may be considered as well (Kaguya, Selene, Chang'e, etc.)



Exoplanets

Cross-division program between Planetary Science and Astrophysics

The Exoplanets program element solicits basic research proposals to conduct scientific investigations related to the research and analysis of extra-solar planets (exoplanets). Its broad objectives include the determination of compositions, dynamics, energetics, chemical behaviors of extrasolar planets, and the detection and characterization of other planetary systems. This program element is shared with the Astrophysics Division, which takes responsibility for proposals involving the detection of extra-solar planets.

Topics covered by this program element include, but are not limited to:

- Investigations to detect exoplanets (Astrophysics)
- Characterization of exoplanets to:
 - Aid in detection of new exoplanets (Astrophysics) and/or
 - Explain observations of exoplanets and/or
 - Understand the chemical and physical processes occurring on exoplanets and/or
 - Improve understanding to the origins of exoplanetary systems

Proposals pertaining to the conditions for habitability of exoplanets are solicited in the Habitable Worlds call.

Emerging Topics In Planetary Science (ETIPS)

- We anticipate this call will evolve and change annually and allow us to move swiftly to capitalize on new opportunities (e.g. Comet ISON, Chelyabinsk) or place strategic emphasis on important emerging topics.
- This will not be called in ROSES14

The new core research programs

Guiding Principles for PSD Science Strategy

The questions below are the foundation for the PSD research and mission strategy. These questions have been our guiding principles for over two decades and have been affirmed in numerous NRC reports and NASA Science Plans. Our progress towards answering these questions are evaluated by the PSS and reported annually to Congress.

- 1. How did the Sun's family of planets, satellites, and minor bodies form and evolve?**
- 2. How do the chemical and physical processes active in our solar system operate, interact and evolve?**
- 3. What are the characteristics of the solar system that lead to habitable environments?**
- 4. How did life originate and evolve here on Earth and can that guide our search for life elsewhere?**
- 5. What are characteristics of planetary objects and environments that pose threats to, or offer potential resources for, humans as we expand our presence into the solar system?**

Budgets of new core programs

- We have not yet set FY14 or FY15 funding levels of the new program elements.
- Budgets for outlying years are embargoed (we still are not even sure how much we will receive in FY14 due to sequestration, so it is premature to assess the outlook for FY15).
- Current funding for each of the five questions is not equally distributed.
- It is not anticipated that funding for the new core programs will be equally distributed.

New Core Research Programs

The five new core research programs are aligned with PSD's guiding principles.

How did the Sun's family of planets, satellites, and minor bodies form and evolve?



Emerging Worlds

How do the chemical and physical processes active in our solar system operate, interact and evolve?



Solar System Workings

What are the characteristics of the solar system that lead to habitable environments?



Habitable Worlds

How did life originate and evolve here on Earth and can that guide our search for life elsewhere?



Exobiology

What are characteristics of planetary objects and environments that pose threats to, or offer potential resources for, humans as we expand our presence into the solar system?



**Solar System Observations
(NEOO & PAST)**

Emerging Worlds

Solar systems origins and formation

Research in the area of Emerging Worlds aims to understand the formation and early evolution of the Solar System, as well as planetary systems in general. The central goal of the program element is to understand how the Sun's family of planets, satellites, and minor bodies (including small bodies and rings) form and evolve. NASA is particularly interested in proposals for research projects that closely support its mission for exploring the Solar System, contribute to the development of future missions, or involve major interdisciplinary efforts to solve key questions. A wide range of investigations will be covered, including theoretical studies, analytical and numerical modeling, sample-based studies of extraterrestrial materials, laboratory studies, data synthesis, and observational studies of objects outside of our solar system relevant to the formation of planetary systems.

Topics covered by this program element include, but are not limited to:

- Protoplanetary disks
- Formation of planets and planetary systems
- Dynamics of early planets and planetary systems
- Primitive Solar System materials
- Presolar grains
- Early processes on small bodies
- Global-scale differentiation of planetary bodies following formation
- Formation and delivery of volatiles, organic compounds, and other materials to planetary bodies

Solar System Workings

Physical and chemical processes and the major characteristics of the planetary bodies

*The Solar System Workings program element supports research into atmospheric, climatological, dynamical, geologic, geophysical, and geochemical processes occurring on planetary bodies, satellites, and other minor bodies (including rings) in the Solar System. This call seeks to address the physical and chemical processes that affect the surfaces, interiors, atmospheres, exospheres, and magnetospheres of planetary bodies. A wide range of investigations will be covered, including theoretical studies, analytical and numerical modeling, sample-based studies of extraterrestrial materials, laboratory studies, and data synthesis relevant to the physical and chemical processes affecting planetary systems. **Work related to the formation and early evolution of the Solar System will be included in Emerging Worlds, and work investigating the physical and chemical processes to understand habitability will fall under the Habitable Worlds call.***

The scope of this program element covers, but is not limited to, the physical and chemical processes occurring on planetary bodies, satellites, and minor bodies. Topics include:

- Surfaces
- Interiors
- Atmospheres
- Rings
- Magnetospheres and Exospheres

Habitable Worlds

Characteristics and distribution of habitable environments
in the Solar System and beyond

Research supported in Habitable Worlds seeks to use knowledge of the history of the Earth and the life upon it to determine the processes which create and maintain habitable environments, search for ancient and contemporary habitable environments, and explore the possibility of extant life beyond the Earth.

Target bodies for this program element include, but are not limited to:

- Mars
- Icy Worlds
- Exoplanets

Exobiology

How did life originate and evolve on Earth?

The goal of research in Exobiology is to understand the origin, evolution, and distribution of life on Earth. Research is centered on the origin and early evolution of life on the Earth and the potential of life to adapt to different terrestrial environments. This research is conducted in the context of NASA's ongoing exploration of our stellar neighborhood and the identification of biosignatures for in situ and remote sensing applications.

Topics covered by this program element include, but are not limited to:

- Prebiotic evolution
- Early evolution of life and the biosphere
- Adaptations for life in extreme environments
- Evolution of advanced life (Eukaryotes and multi-cellularity)
- Causes and biological responses to mass extinctions

Solar System Observations

NEOO & Planetary Astronomy

NEOO supports NASA's commitment to discover and inventory potentially hazardous near Earth objects with sizes down to ~100 meters and to characterize that population through determination of their orbital elements. This program element will also consider proposals that characterize a representative sample of these objects by measuring their sizes, shapes, and compositions.

Planetary Astronomy supports both ground-based astronomical observations and suborbital investigations of our Solar System involving sounding rockets and balloons. Proposals are solicited for observations over the entire range of wavelengths from the ultraviolet to radio that contribute to the understanding of the Solar System.

Topics covered by this program element include, but are not limited to:

- NEO observations
- Ground-based observations
- Suborbital observations

These programs will continue (1/2)

- Planetary Major Equipment (PME) requests will be allowed in all of the new core research programs.
- If you would like to submit a stand-alone PME request based on a funded proposal from a program which no longer exists, please consult the discipline scientist of the former program to help you navigate where to submit the PME.
- If you have a step-1 Early Career Fellowship (ECF) award from a program which no longer exists and you would like to submit a step-2 proposal, please consult your discipline scientist from the former program to help you navigate where to submit the proposal.
- There are no anticipated changes to the Planetary Science Division's portion of the call or review process for NASA Earth and Space Science Fellowships (NESSF) this year.
- The topical workshops, symposia, and conferences program (TWSC) will continue.

These programs will continue (2/2)

- Antarctic Search for Meteorites (ANSMET)
- Planetary Data System (PDS)
- Astromaterials curation

Mission Science Support Activities (1/2)

- In the past, certain programs carried a disproportionate burden of fixed costs for support activities and facilities (e.g. PGG, PAST).
- Starting in FY15, all Mission Science Support activities will be consolidated and separated within the R&A portfolio from the competed research program elements.
- They will continue to be managed by appropriate discipline scientists.

Mission Science Support Activities (2/2)

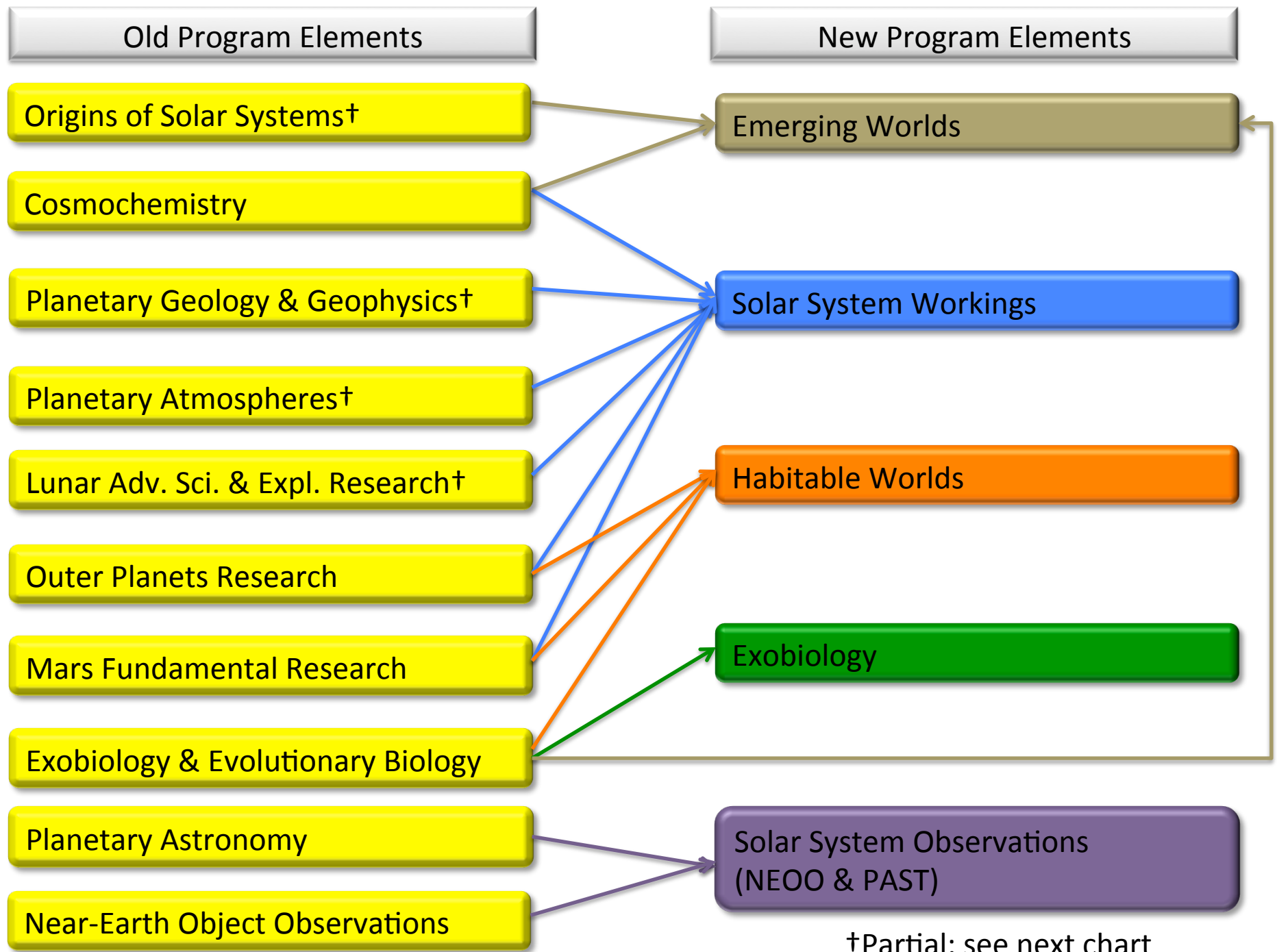
The following is a list of current Mission Science Support activities:

- Infrared Telescope Facility
- Lunar and Planetary Institute (LPI)
- Mars Climate Modeling Center
- NASA Advanced Supercomputing
- National Astronomy & Ionosphere Center/ Arecibo
- Planetary Radar System
- Planetary Aeolian Laboratory
- Planetary Cartography (USGS, Flagstaff)
- Reflectance Experiment Laboratory
- Regional Planetary Image Facility
- Venus Chamber (GSFC)
- Vertical Gun Range (AVGR, Ames)

Where Do Old Program Elements
Go in the New Structure?

The next two charts show “wiring diagram” views of how the old program elements map to the new ones...

- We assessed the 2011 ROSES proposal submissions (all submissions, not just awarded proposals). Every proposal mapped to a new program element.
- We also looked at the FY2013 portfolio (funded awards). Every funded award mapped to a new program element.



Old Program Elements

New Program Elements

Lunar Adv. Science & Expl. Research

A small component of all DAPS

Planetary Geology & Geophysics

Moon, Mars Analog Mission Activities

Astrobio Sci & Tech for Exploring Planets

Origins of Solar Systems

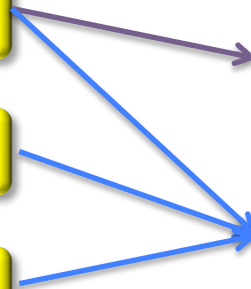
Planetary Atmospheres

Lunar Data Analysis Program

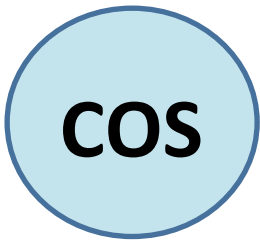
Planetary Data Archiving, Restoration, and Tools (PDART)

Planetary Science & Technology from Analog Research (PSTAR)

Exoplanets



The next four charts show the mappings in a more graphical way.



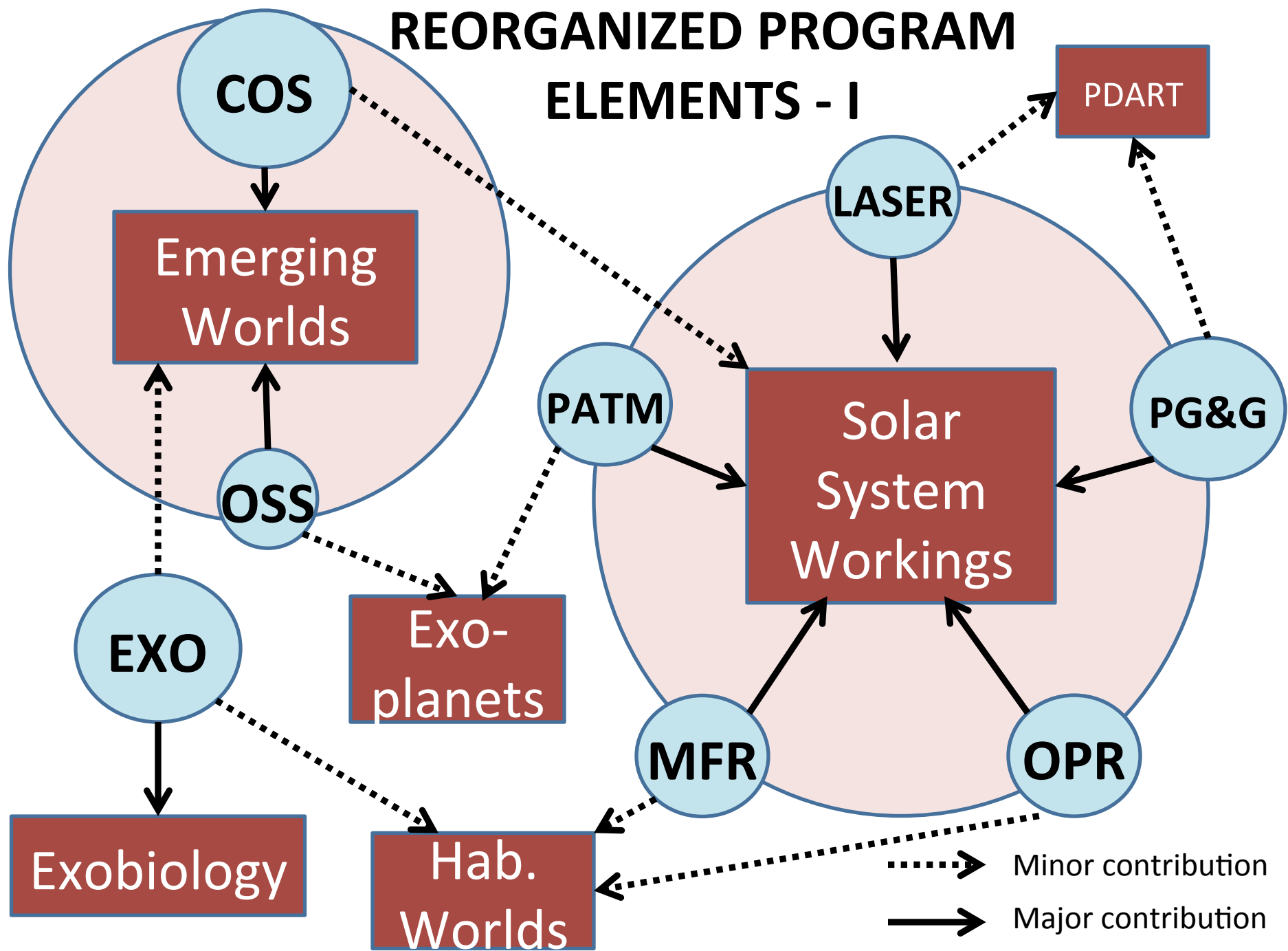
Old program elements are shown as blue circles. This one is Cosmochemistry.

A dark red rectangle with a dark blue outline. Inside the rectangle, the words "Emerging" and "Worlds" are written in a white, sans-serif font, stacked vertically.

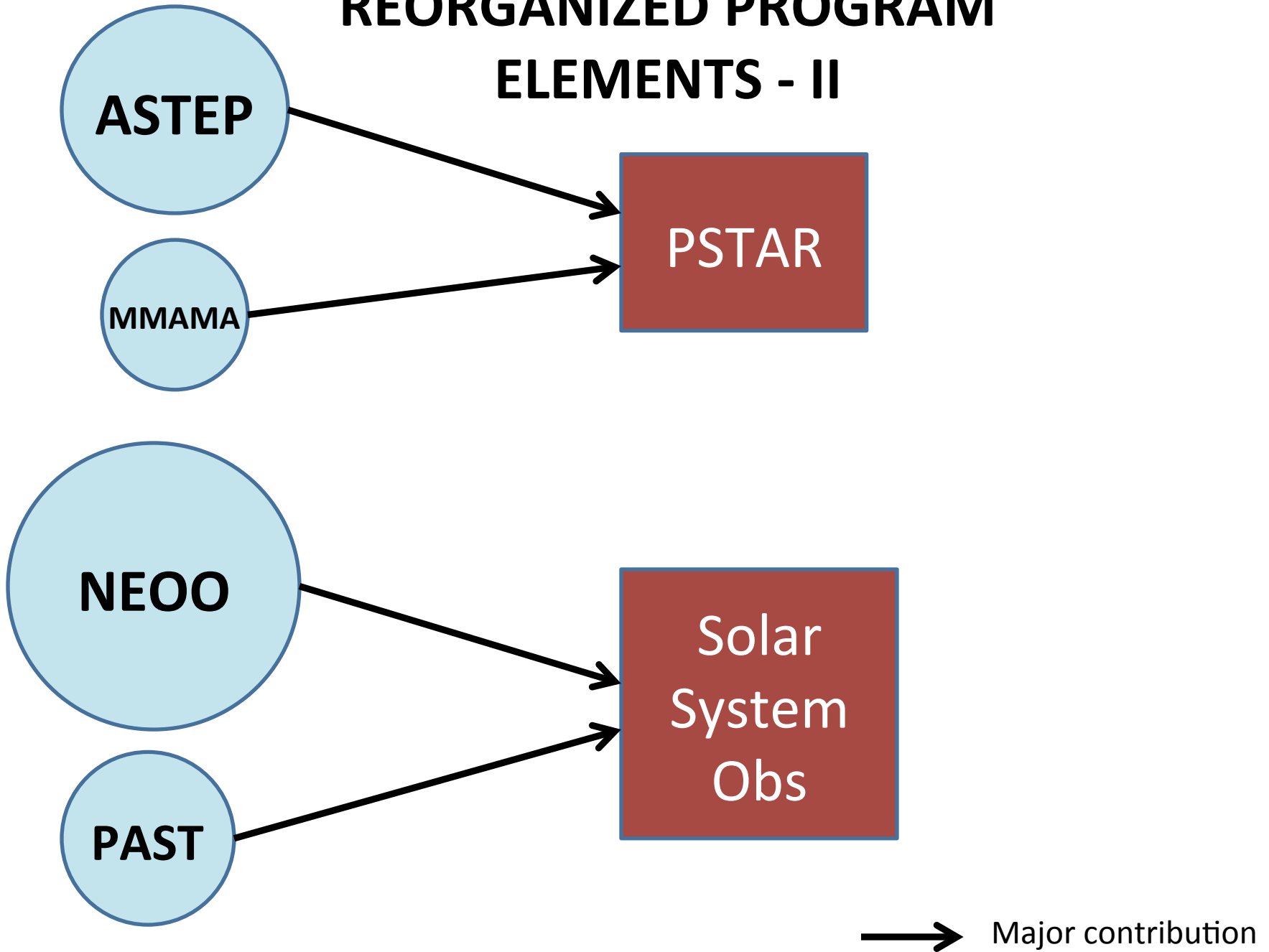
Emerging
Worlds

New program elements are shown as dark red rectangles.

REORGANIZED PROGRAM ELEMENTS - I



REORGANIZED PROGRAM ELEMENTS - II



PROGRAM ELEMENTS THAT DON'T CHANGE

SSERVI

NAI

CDAP

PSPs

PICASSO

LARS

MDAP

GSPs

MatISSE

**Plan.
Prot.**

PMDAP

Tentative Schedule

Program Element	Due Date	Notes
Exoplanets	Late May	Timed to match with Emerging Worlds
Emerging Worlds	Late May	Timed to match with Exoplanets call
LARS	Early July	Kept roughly the same as current
Solar System Observations (NEOO & PAST)	Mid July	Kept roughly the same as current
PSTAR	Late Aug	Funding out in time for field season
CDAP	Mid Sept	Moved to align with PDART
PICASSO/MatISSE	Mid Sept	Kept roughly the same as current
Habitable Worlds	Mid Sept	Timed to match with PPR
LDAP	Mid Sept	Aligned with PDART
PPR	Mid Sept	Timed to match with Habitable Worlds
PDART	Late Sept	Aligned with DAPS
MDAP	Late Sept	Aligned with PDART
PMDAP	Early Oct	Avoids DPS; Aligned with PDART
Exobiology	Late Jan	Avoids AGU
Solar System Workings	Late Feb	Avoids LPSC