Dan Moses
Science Mission Directorate
Heliophysics Division
Program Scientist
Explorers Program Director

12 February 2020

NASA SCIENCE

AN INTEGRATED PROGRAM

Joint Agency Satellite Division

Planetary Science

Astrophysics

Earth Science

Heliophysics

Science by the NUMBERS

RESEARCH

~10,000 U.S. Scientists Funded
~3,000 Competitively Selected Awards
~$600M Awarded Annually

TECHNOLOGY DEVELOPMENT

~$500M Invested Annually

SMALLSATS/ CUBESATS

22 Science Missions
14 Technology Demos

EARTH-BASED INVESTIGATIONS

20 Airborne Missions
8 Global Networks

SOUNDING ROCKETS

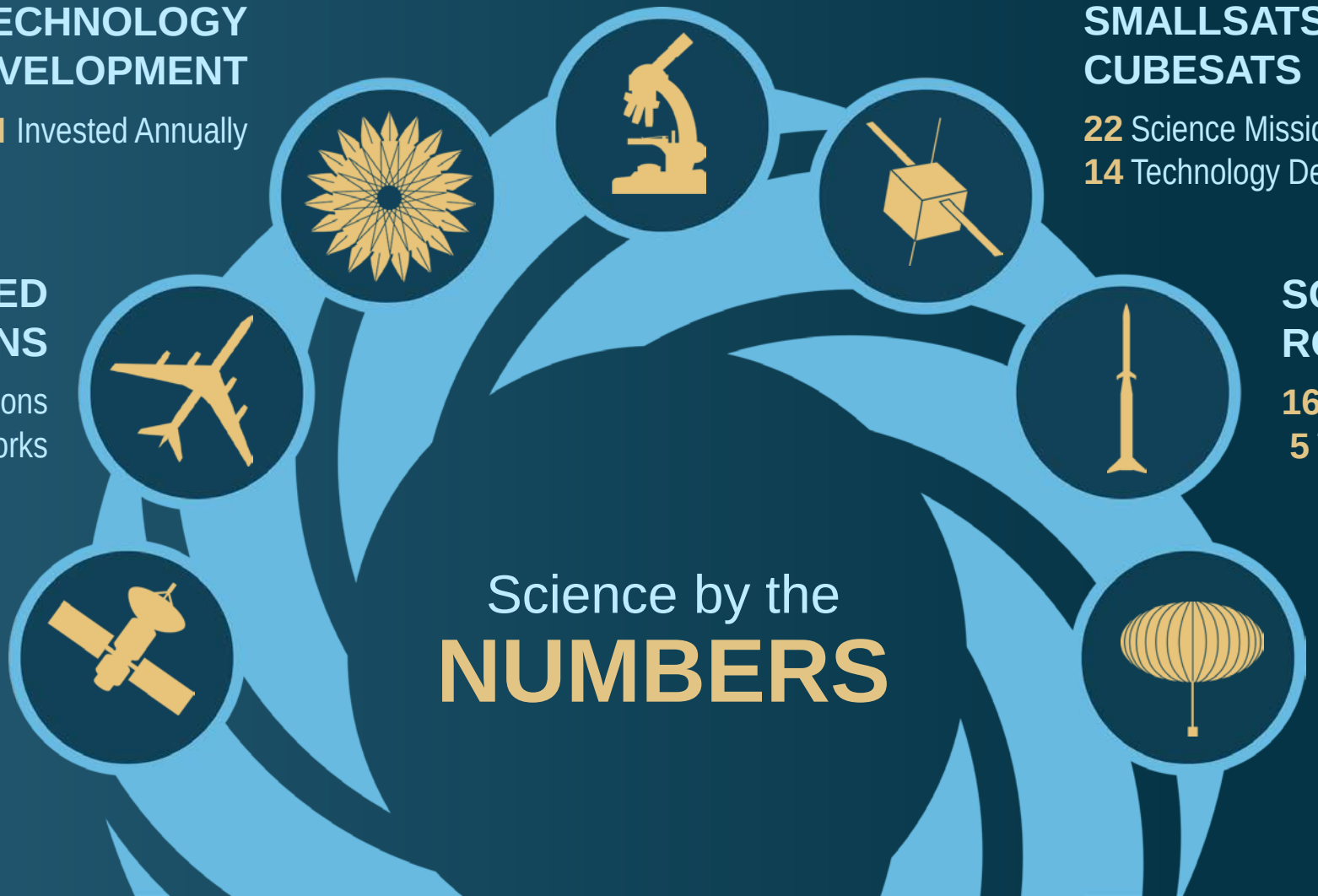
16 Science Missions
5 Tech/Student Missions

SPACECRAFT

98 Missions
82 Spacecraft

BALLOONS

10 Science Missions
4 Technology/Student



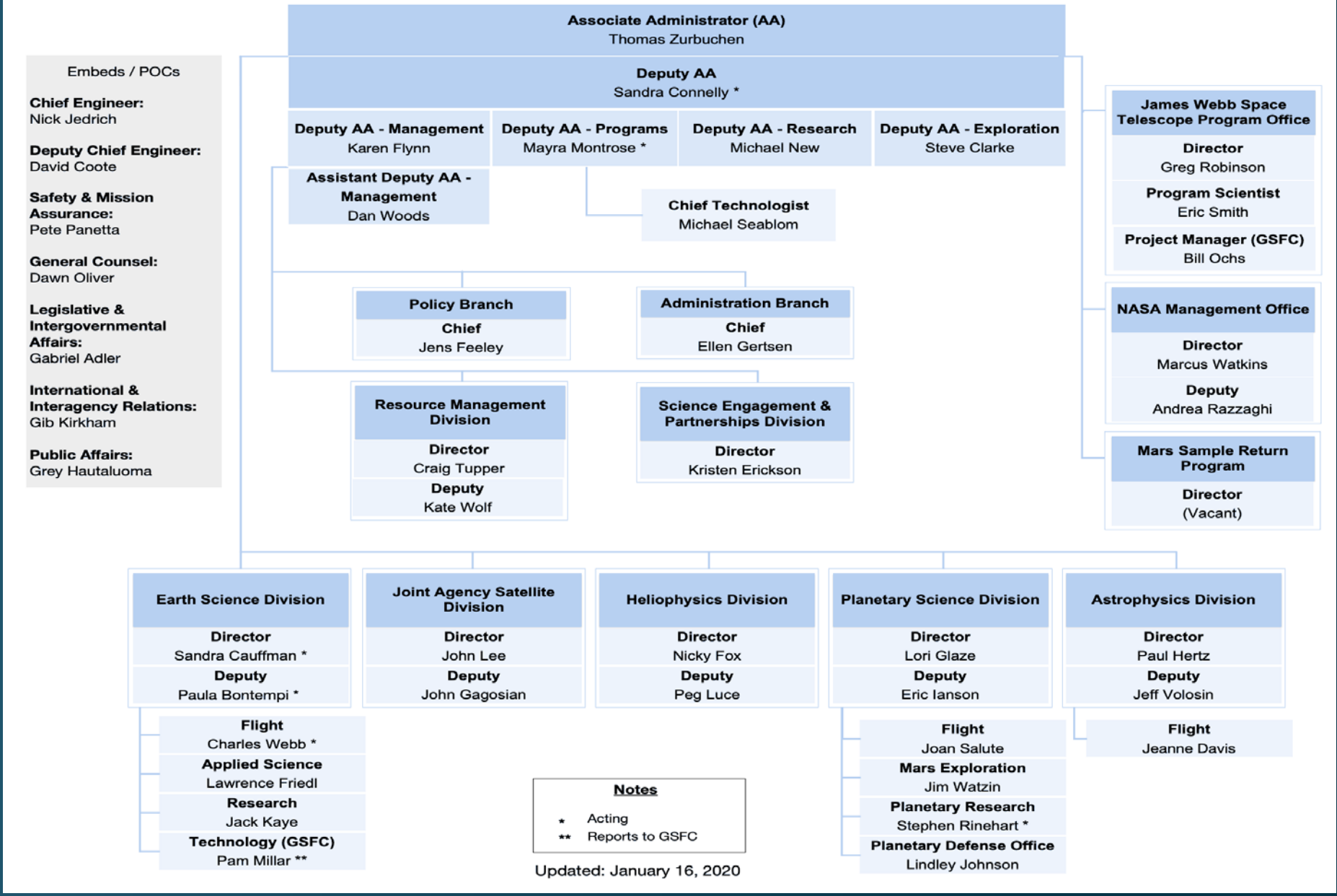
Overview

- NASA's science missions are prioritized for NASA development either through
  - The National Academy of Sciences decadal surveys or
  - The evaluation and selection of competitively peer reviewed proposals.
- Small missions tend to be in the latter category.
- NASA issues regular solicitations for small, PI-led mission proposals, and NASA's announcements of opportunity are open to all categories of proposers.

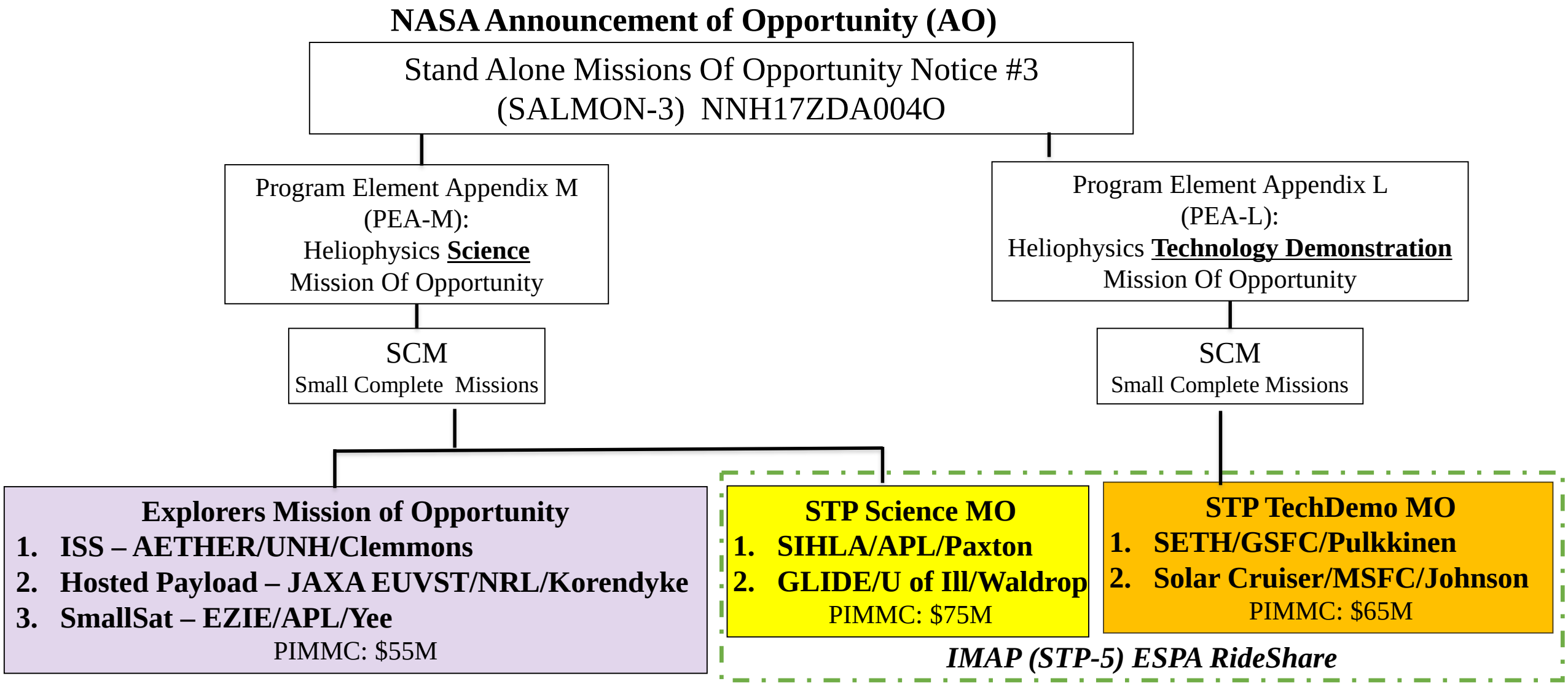
SMD Principles

- Substantial progress on NRC decadal surveys in all four science areas is the measure of success
- Investment choices are based on scientific merit via peer review and open competition
- Active participation by the research community beyond NASA is critical to success
- Effective international and interagency partnerships leverage NASA resources and extend the reach of our science results
- A balanced portfolio of space missions and mission-enabling programs sustains progress toward NASA's science goals
- The NASA mandate includes broad public communication
- Accountability, transparent processes, accessible results, and capture of lessons learned are essential features of this Federal science enterprise

Science Mission Directorate Organization

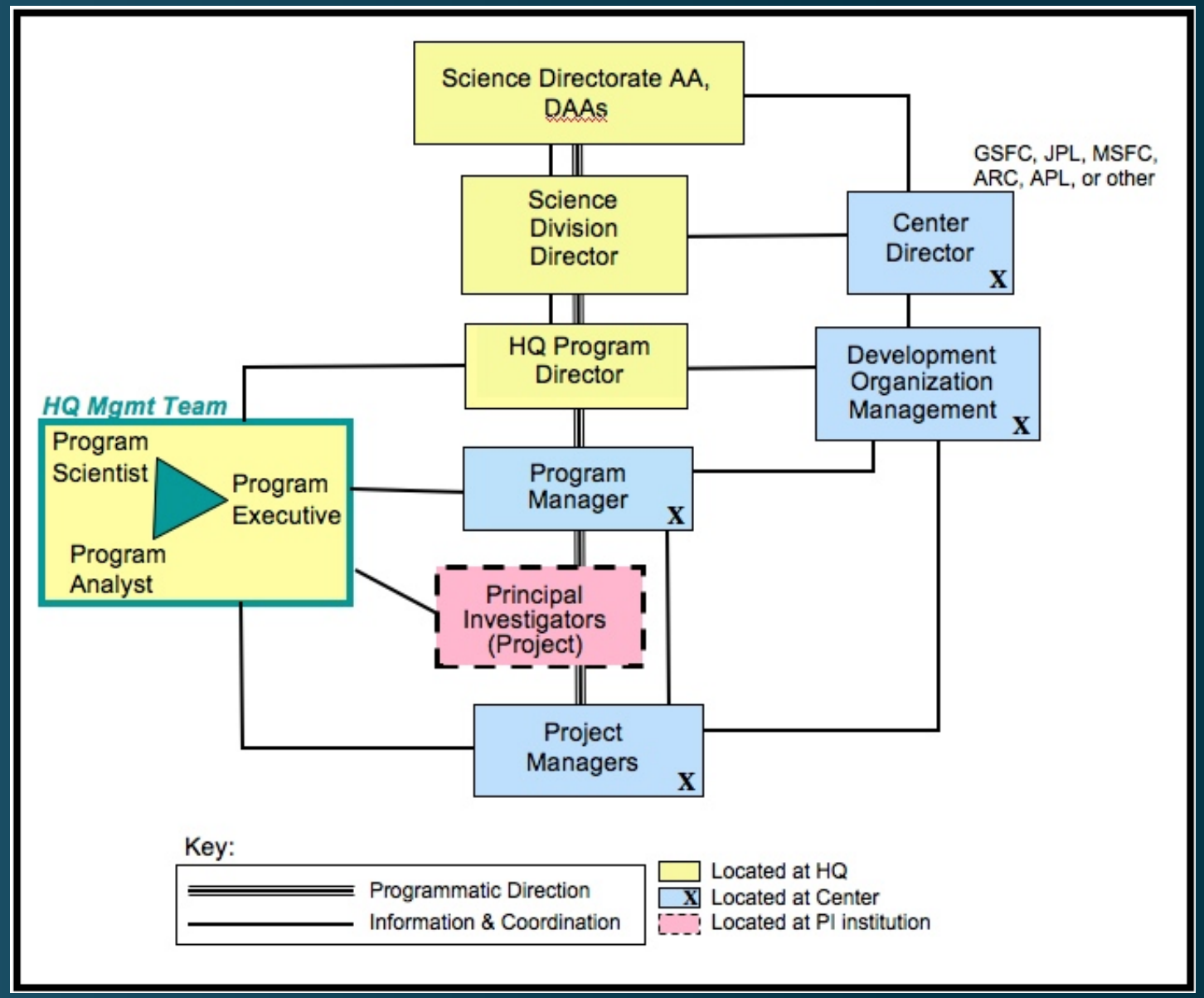


2018 HPD Mission Of Opportunity



PIMMC (PI Managed Mission Cost)

SMD Management Accountability

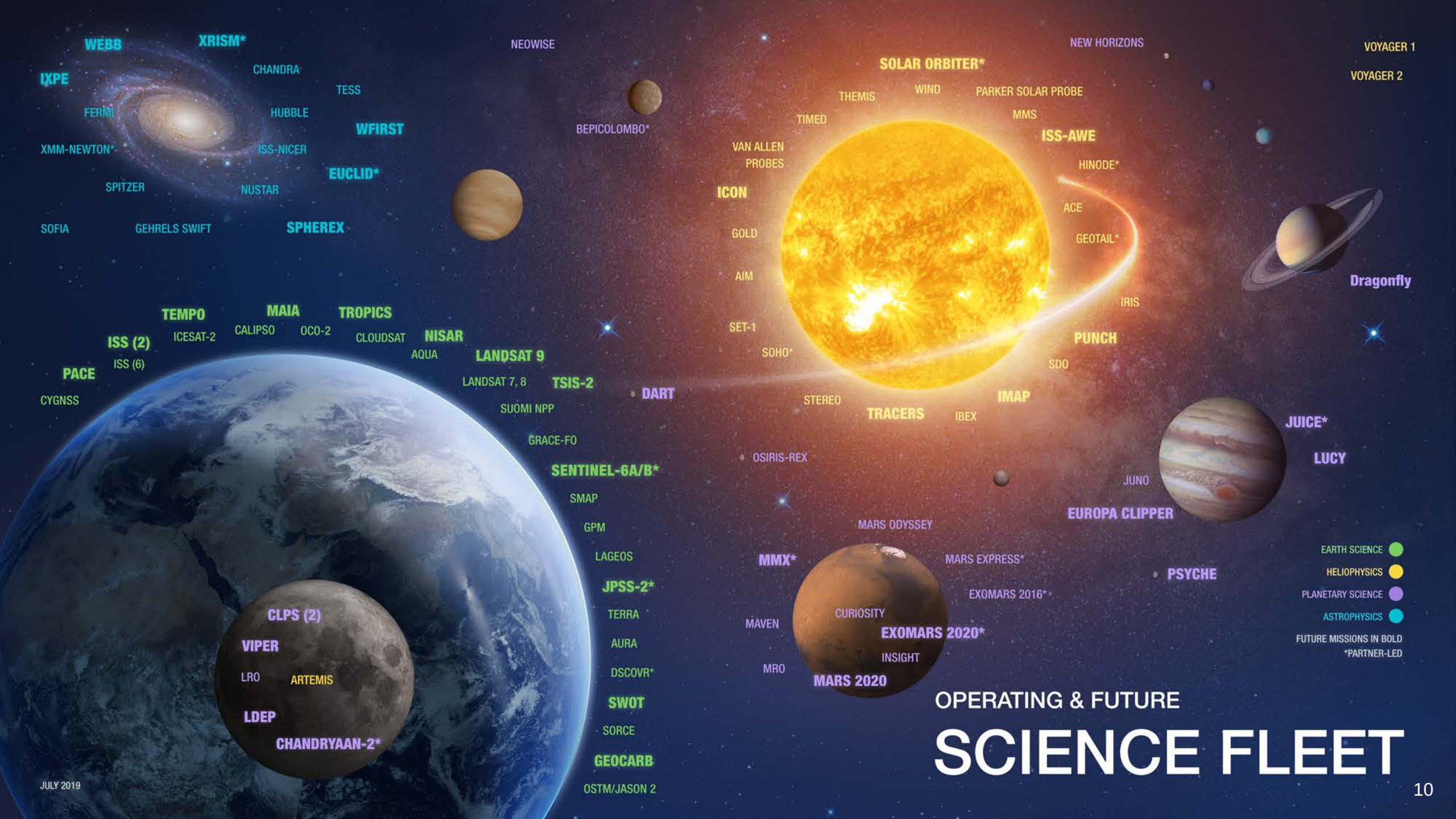


Role of a Program Scientist

The Program Scientist is

- The senior NASA scientist responsible for a flight program or project's science content to carry out an SMD science investigation.
- SMD's interface with the Project Scientist (or the PI for an AO-selected mission).
- The monitor of science management and program execution and ensures the science of the mission remains viable and true to strategic objectives during development of the mission.
- The steward of the Level-1 science requirements.
- A partner with the PE on decisions relevant to mission formulation, design, development, and oversight.

  The PS and PE maintain regular communication. Both participate fully in decisions and meetings relevant to mission planning, including those involving the implementing Centers.


WEBB
XRISM*
IXPE
CHANDRA
TESS
FERMI
HUBBLE
WFIRST
XMM-NEWTON*
ISS-NICER
EUCLID*
SPITZER
NUSTAR
SOFIA
GEHRELS SWIFT
SPHEREX
NEOWISE
BEPICOLOMBO*
NEW HORIZONS
VOYAGER 1
VOYAGER 2
SOLAR ORBITER*
THEMIS
WIND
PARKER SOLAR PROBE
TIMED
MMS
ISS-AWE
VAN ALLEN PROBES
HINODE*
ICON
ACE
GOLD
GEOTAIL*
AIM
Dragonfly
IRIS
TEMPO
MAIA
TROPICS
SET-1
PUNCH
ISS (2)
ICESAT-2
CALIPSO
OCO-2
CLOUDSAT
NISAR
SOHO*
AQUA
LANDSAT 9
ISS (6)
SDO
PACE
LANDSAT 7, 8
TSIS-2
DART
IMAP
CYGNSS
STEREO
TRACERS
IBEX
SUOMI NPP
JUICE*
GRACE-FO
OSIRIS-REX
LUCY
SENTINEL-6A/B*
JUNO
SMAP
EUROPA CLIPPER
GPM
MARS ODYSSEY
LAGEOS
MMX*
MARS EXPRESS*
JPSS-2*
PSYCHE
TERRA
EXOMARS 2016*
CLPS (2)
CURIOSITY
AURA
MAVEN
EXOMARS 2020*
VIPER
DSCOVR*
INSIGHT
LRO
ARTEMIS
MRO
SWOT
MARS 2020
LDEP
SORCE
CHANDRYAAN-2*
GEOCARB
OSTM/JASON 2
JULY 2019
EARTH SCIENCE
HELIOPHYSICS
PLANETARY SCIENCE
ASTROPHYSICS
FUTURE MISSIONS IN BOLD
*PARTNER-LED
OPERATING & FUTURE
SCIENCE FLEET

PROGRAM IMPACT >

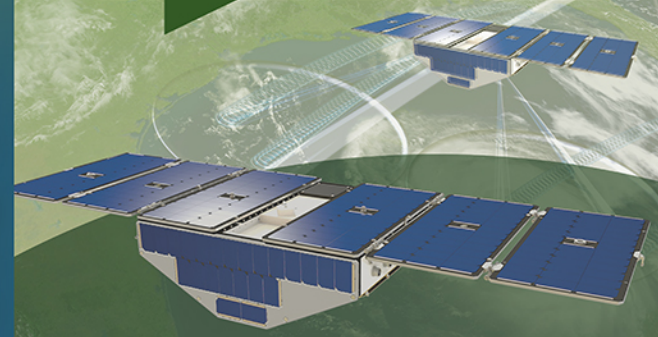
TECHNOLOGY >

SMD

ENABLE INNOVATION

Disruptive Innovation

SmallSat Constellations

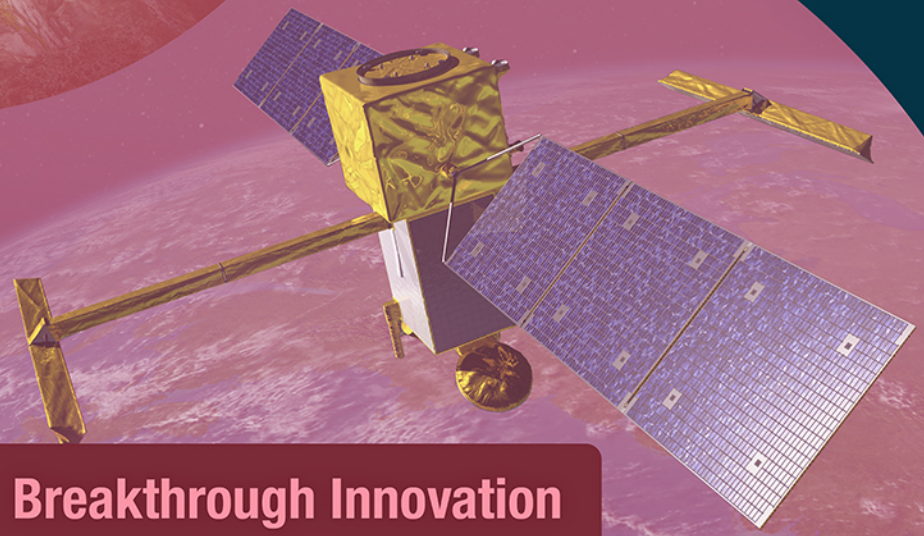


Game Changer

Deep Space Laser Communication

Incremental

Discovering More Exoplanets



Breakthrough Innovation

Unprecedented Ocean Measurements

Mission Principal Investigator Development

- Seek to increase the diversity of mission principal investigators and develop the next generation of mission leaders to ensure that new ideas and mission concepts are brought forward
- Based on feedback from November 2018 workshop, NASA Science
  - Developed a consolidated PI resources webpage at https://science.nasa.gov/researchers/new-pi-resources
  - Introduced a pre-reviews of mission peer review panels to ensure diversity and reduce conflicts of interest
  - Added a code of conduct requirement for SMD-funded conferences to ROSES 2019
  - Restarted proposal writing workshops at major science conferences
  - Included career development positions and associated evaluation criteria as part Discovery and New Frontiers Aos
  - Lessons learned presentation on characteristics and key mistakes associated with proposal success
    - Video: https://www.youtube.com/watch?v=xoLYRjm48-U
- Upcoming activities include:
  - Information sessions at science conferences and stand-alone workshops to support people developing first proposal
  - First workshop will be held October 16-18, 2019 in Tucson, AZ and information on how to register will be forthcoming
  - Sign up to learn more at https://lists.hq.nasa.gov/mailman/listinfo/hq-smdpi-workshop-outreach


EXPLORE
with us