

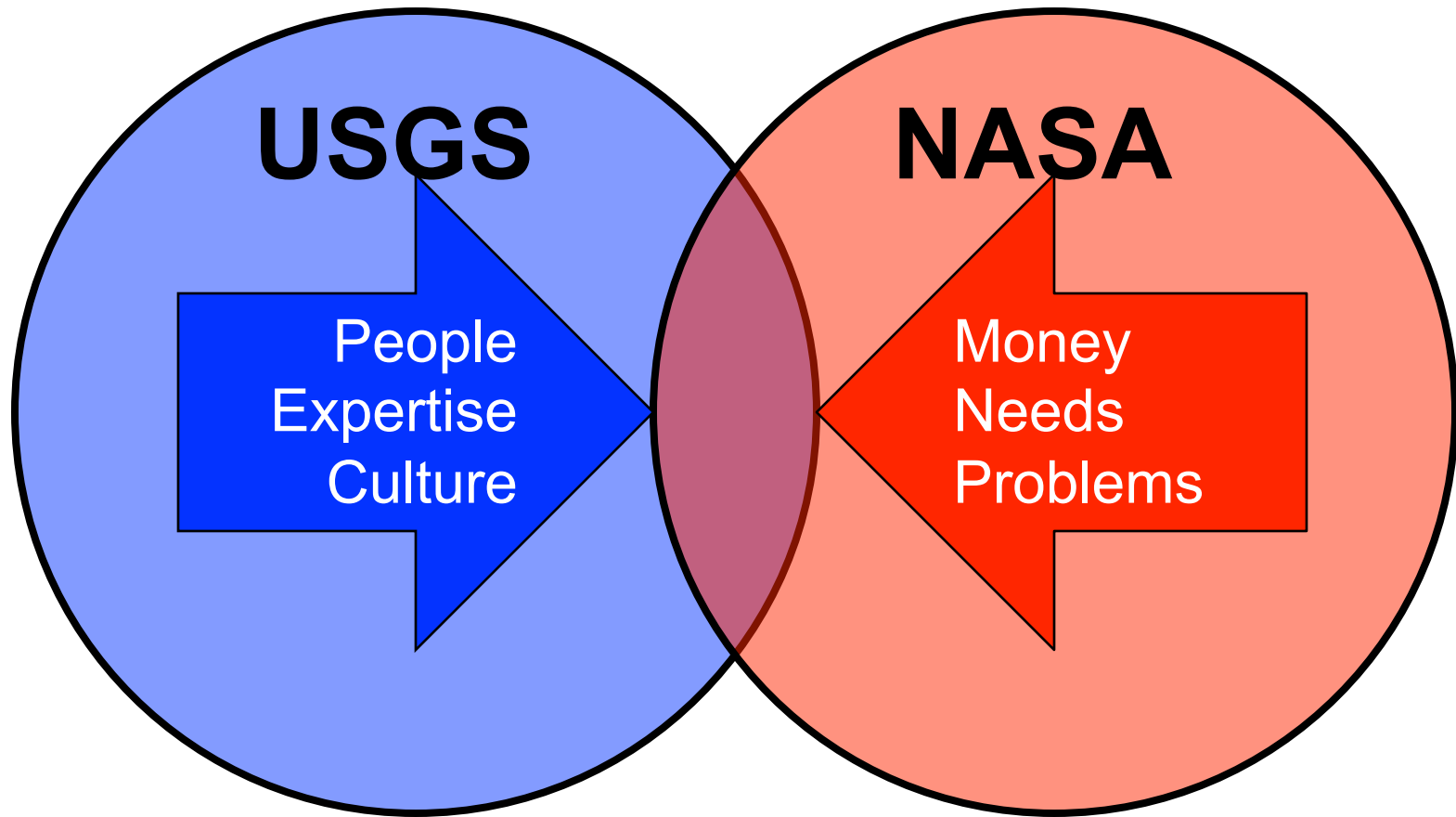


The Relationship Between the PGG Cartography Program and the PDS: Synergy without Overlap

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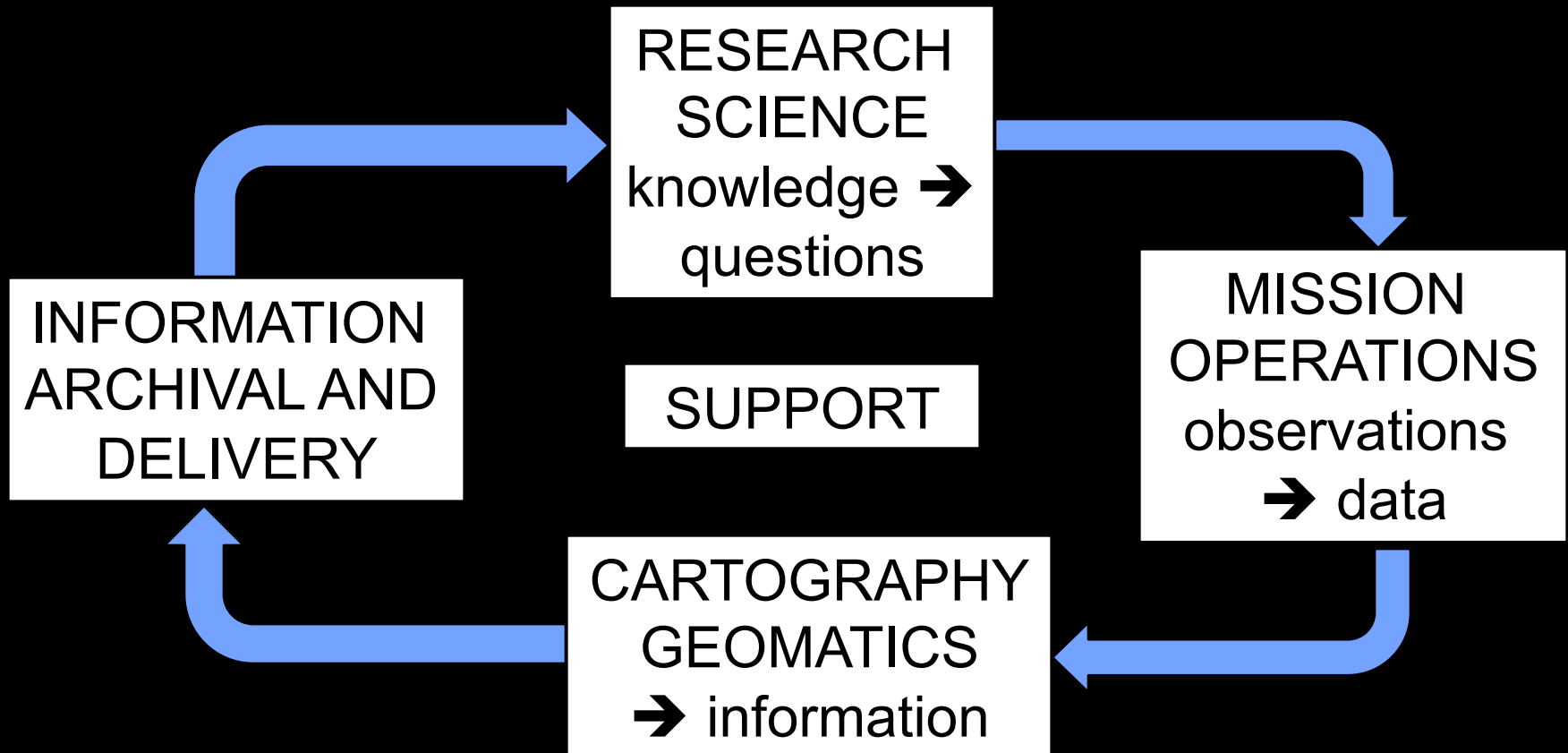
USGS Astrogeology Science Center

Astrogeology: USGS or NASA?



Astrogeology's Core Capabilities

Our core mission can be summarized as supporting planetary missions from “conception to beyond the grave”



“Astro Business Model”

- **98% funding from NASA as grants**
 - Top 5 projects total about \$4.5M/year
 - Modal project is about \$100K/year
- **Leverage unique mix of science and technical capabilities and >50-year history**
 - Funding roughly 1/3 each of “cartography”, “science” and “missions”
 - Staff roughly 1/3 each of “research,” “developmental,” and “support”

History of Carto Program

- Grew out of the cartography support for Apollo (1961-1974) and Viking (1978-2009)
- Came under the umbrella of the Planetary Geology and Geophysics Program very early (1980s)
- Oversight provided by PCWG/PCGMWG
- Funding has been ~level, rising slightly in real-year \$ but not keeping up with rising costs. Currently at ~\$3 M/yr

Major Components

- A. Digital Planetary Databases**
- B. Photogrammetry and Geodesy**
- C. Geologic Mapping Support**
- D. Software Systems Development**
- E. Program Support**

Section A

A-1: Planetary Nomenclature (IAU)

**A-2: Cartographic Web Services
(Astropedia)**

A-3: THEMIS Controlled Mosaics

A-4: LRO Maps of the Moon

A-5: Kaguya TC Mosaics

A-6: Map-a-Planet 2

*A-7: Controlled Mini-RF Mosaics of the Lunar
Poles*

Section B

B-1: Photogrammetry Support and R&D
(SOCET-SET/GXP Topomapping)

B-2: Planetary Geodesy (IAU and community
coordinates support)

**B-3 & B-4: Integrated Photogrammetric
Control Environment** (future software)

B-5: Pattern Matching

Section C

C-1: Planetary Geologic Map Coordination

C-2: MRCTR GIS Lab

Section D

D-0: ISIS Project Management

D-1: ISIS Support and Maintenance

~~D-2: Camera Model Development~~

Section E

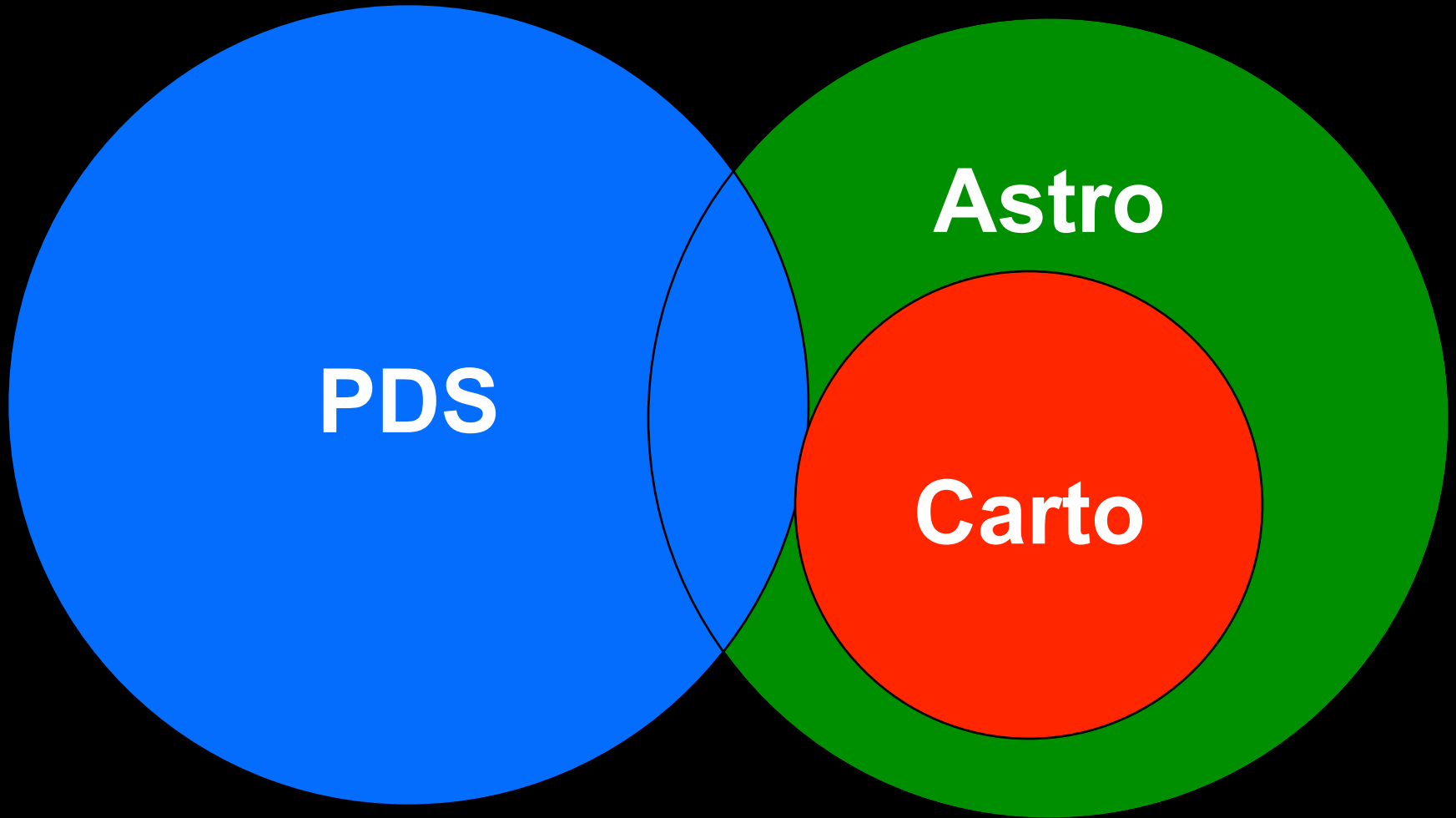
E-1: PG&G Shoemaker Postdoctoral Fellowship

E-2: RPIF (Astro & network management)

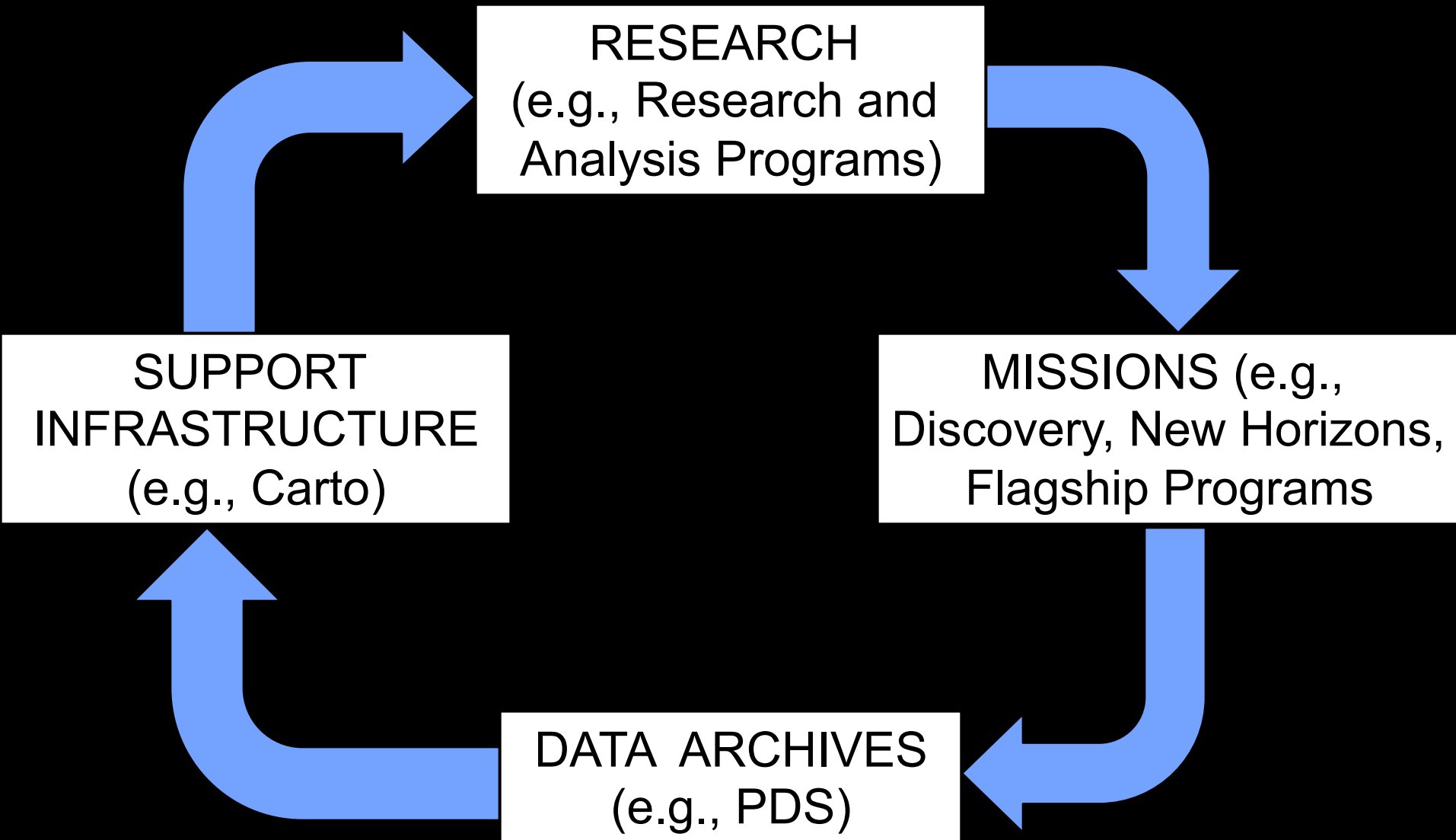
Relationship between Carto and PDS

- **No overlap between Carto and PDS tasks**
 - <1% goes to supporting Astropedia which underpins the PDS “annex”
- **PDS and Carto need each other and the community needs both**
 - Carto produces higher level (cartographic) products (and the tools to create them) from PDS archived data
 - The tools and infrastructure maintained by Carto are used by PDS, instrument teams, missions, and researchers

Relationships in Graphical Form...



...in the Planetary Science Cycle



Examples of the Strength of Synergy

- Missions follow IAU standards, expediting PDS archival
- Missions pay for geometric models to be incorporated into ISIS, allowing cross-instrument and cross-mission data fusion
- Experts produce consistent precision global cartographic products correctly and once
- Results in more and better science, sooner, and at less cost

The Future of Carto?

- **With the end of the PG&G Program, there is no mechanism in place to continue the Carto program beyond FY16**
 - Actively working this with a meeting planned at NASA HQ next month
 - CRAG *may* provide some sort of oversight role
 - There should be lessons from PDS that can be applied to managing the Carto program