

Independent Study on the Human  
Exploration of Space  
by the National Academies

“The Generational”

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# Overview

- Authorization Act
- Study group and discussions to date
- Early draft objectives of study
- Framing questions
- Value analysis framework (traceability)
- Questions for discussion

# Authorization Act of 2010

“The establishment of and commitment to human exploration goals is essential for providing the necessary long term focus and programmatic consistency and robustness of the United States civilian space program.”

“The long term goal of the human space flight and exploration efforts of NASA shall be to expand permanent human presence beyond low-Earth orbit and to do so, where practical, in a manner involving international partners.”

“It is critical to identify an appropriate combination of NASA and related United States Government programs, while providing a framework that allows partnering, leveraging and stimulation of the existing and emerging commercial and international efforts in both near Earth space and the regions beyond.”

## 204:INDEPENDENT STUDY ON HUMAN EXPLORATION OF SPACE

(a) IN GENERAL.—In fiscal year 2012 the Administrator shall contract with the National Academies for a review of the goals, core capabilities, and direction of human space flight, using the goals set forth in the National Aeronautics and Space Act of 1958, the National Aeronautics and Space Administration Authorization Act of 2005, and the National Aeronautics and Space Administration Authorization Act of 2008, the goals set forth in this Act, and goals set forth in any existing statement of space policy issued by the President.

(b) ELEMENTS.—The review shall include—

- (1) a broad spectrum of participation with representatives of a range of disciplines, backgrounds, and generations, including civil, commercial, international, scientific, and national security interests;
- (2) input from NASA's international partner discussions and NASA's Human Exploration Framework Team;
- (3) an examination of the relationship of national goals to foundational capabilities, robotic activities, technologies, and missions authorized by this Act;
- (4) a review and prioritization of scientific, engineering, economic, and social science questions to be addressed by human space exploration to improve the overall human condition; and
- (5) findings and recommendations for fiscal years 2014 through 2023.

# Work to Date on Study

- Study starts in FY12
- Working group formed to make “a plan for the plan”
- Discussions to date with:
  - Senate authorization staff
  - House authorization staff
  - OSTP
  - OMB
  - NASA (A suite, SOMD, ESMD, OCT, Safety)
  - 11 meetings with about 21 individuals
- Seek input from ASEB, SSB and others in the room today

# Draft: Overarching Goals for the Study

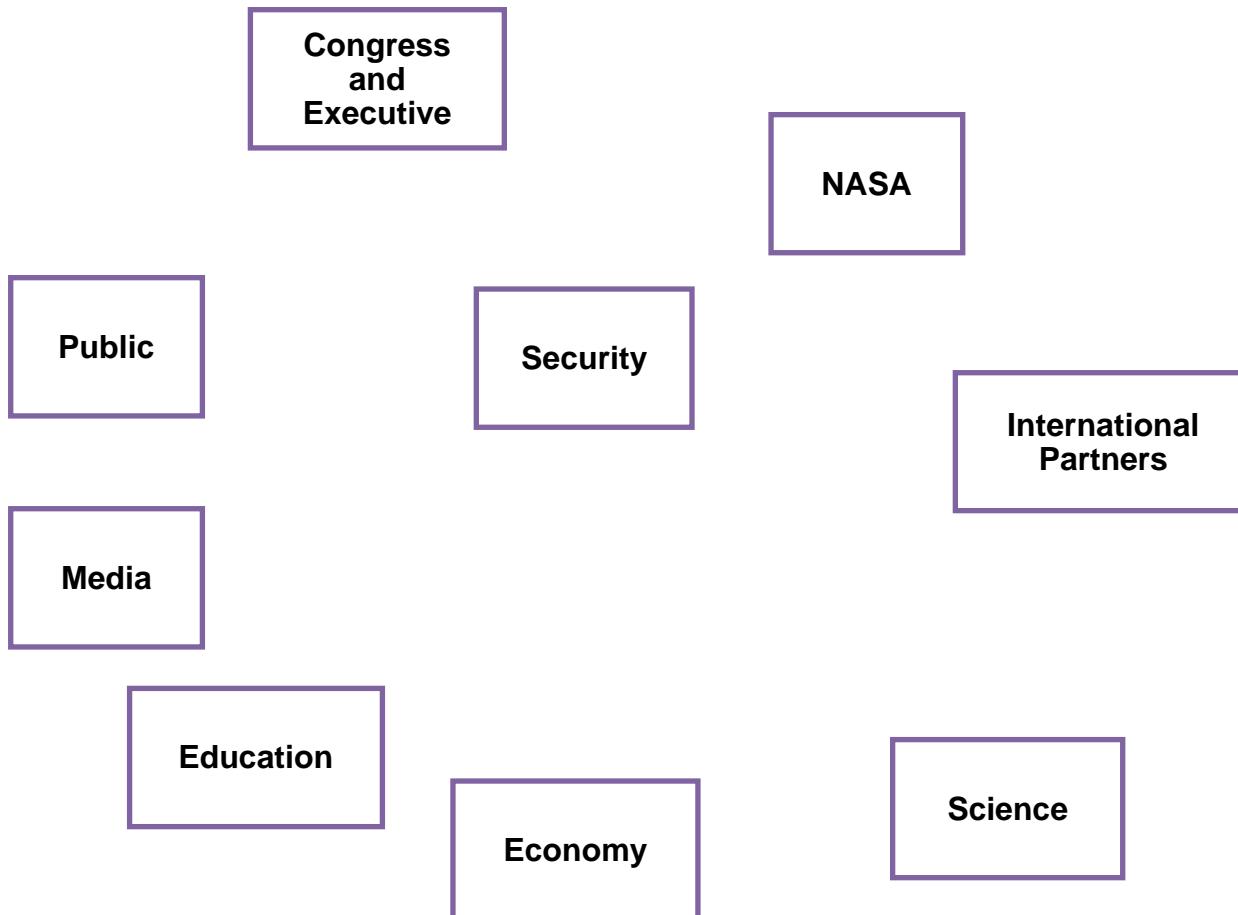
- To create a strategy that “makes sense” for a sustainable human spaceflight program beyond low earth orbit, that will return the greatest benefit to the Nation and its people,
- By anchoring future planning with a comprehensive and cohesive roadmap for an affordable and technically viable program of acceptable risk to humans, with broad buy-in from domestic and international partners and key stakeholders,
- Using a study of the National Academies, in concert with the inputs from the public, key stakeholders, international partners and NASA.

# Framing Questions

- Who are the stakeholders of the human exploration of space?
- What value do they receive from human exploration?
- How could they receive more value? Or better understand the value they receive?

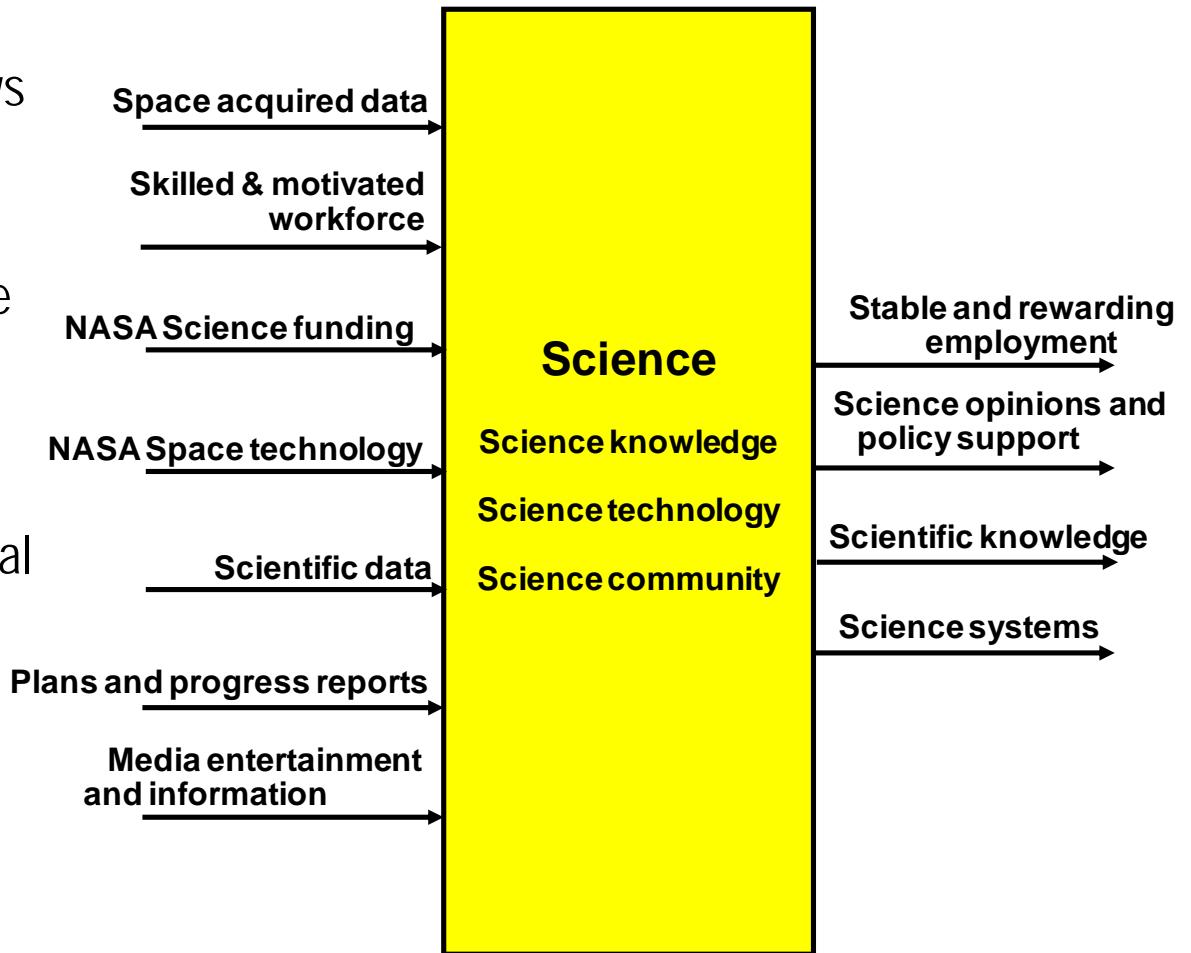
# Exploration Beneficiaries

- Begin by identifying relevant (abstracted) stakeholders

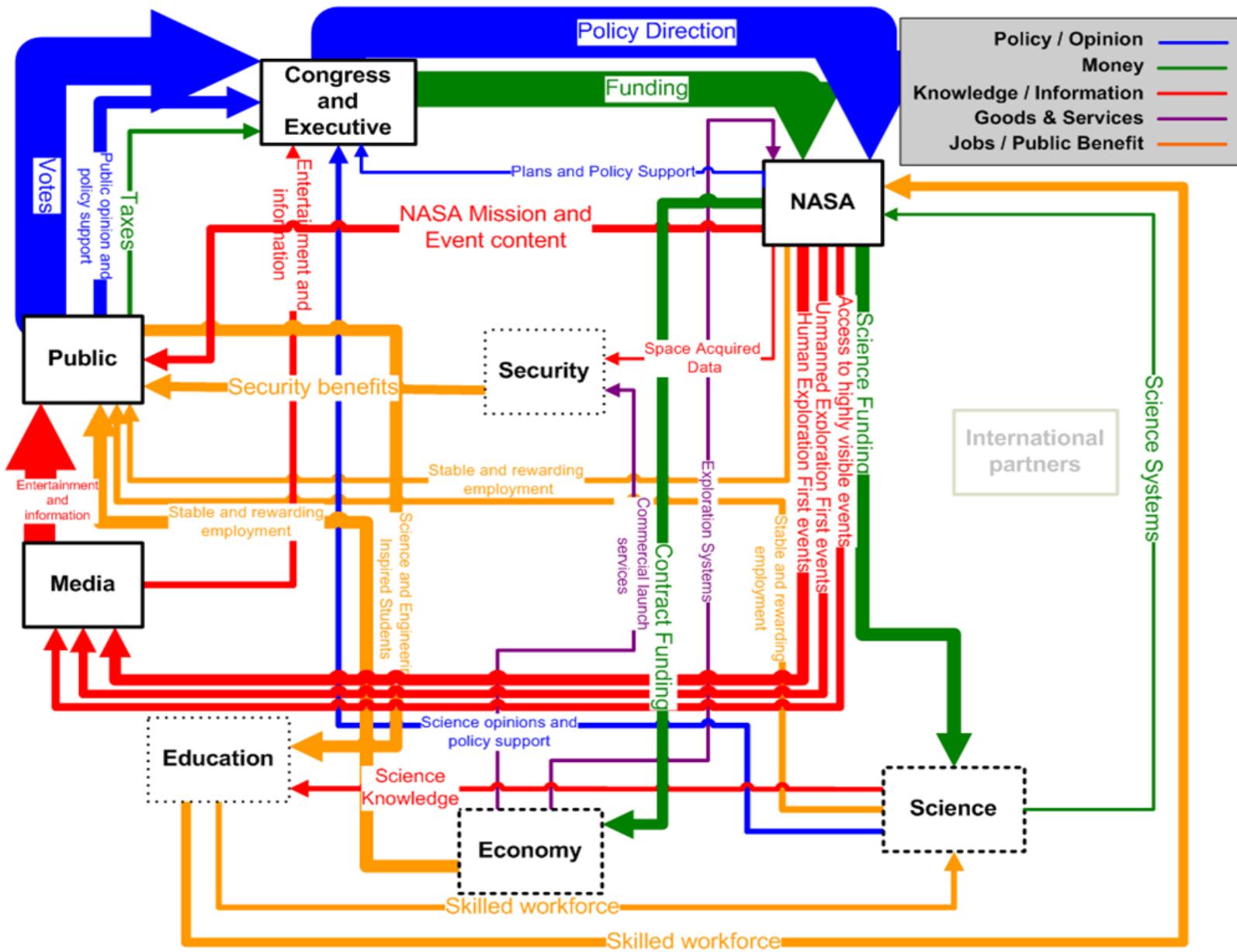


# Value Generation: Modeling Stakeholder Needs

- Identify the needs of stakeholders, and what flows to them to satisfy that need
- Assess the relative importance of the flow to the stakeholder
- Create a network model of the stakeholder community with the project as the central node
- Analyze to gain insight into the delivery of value in the network

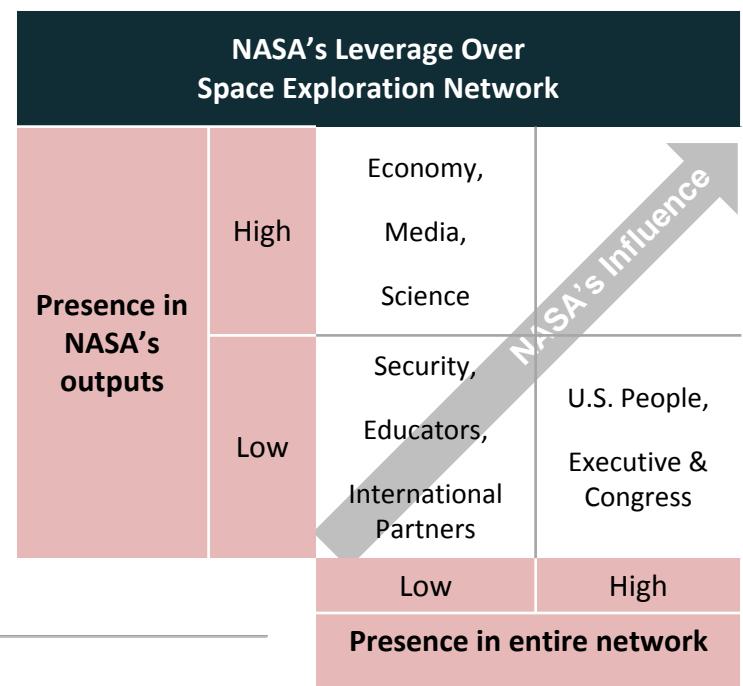
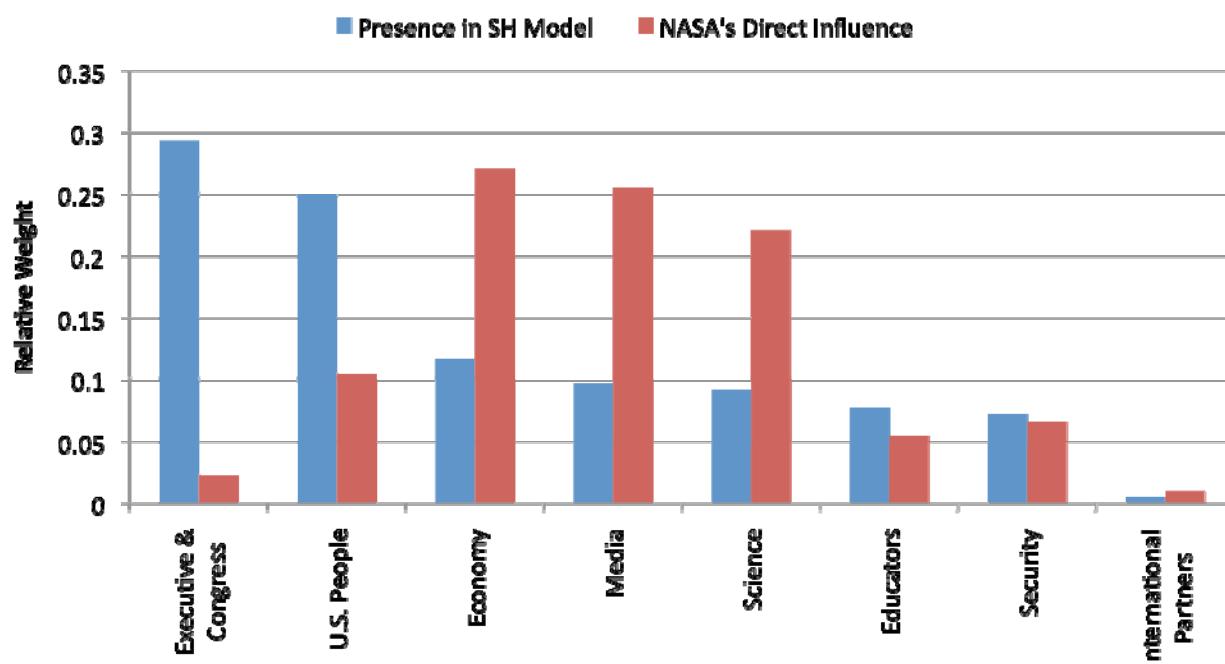


# Value Flows – Current Situation

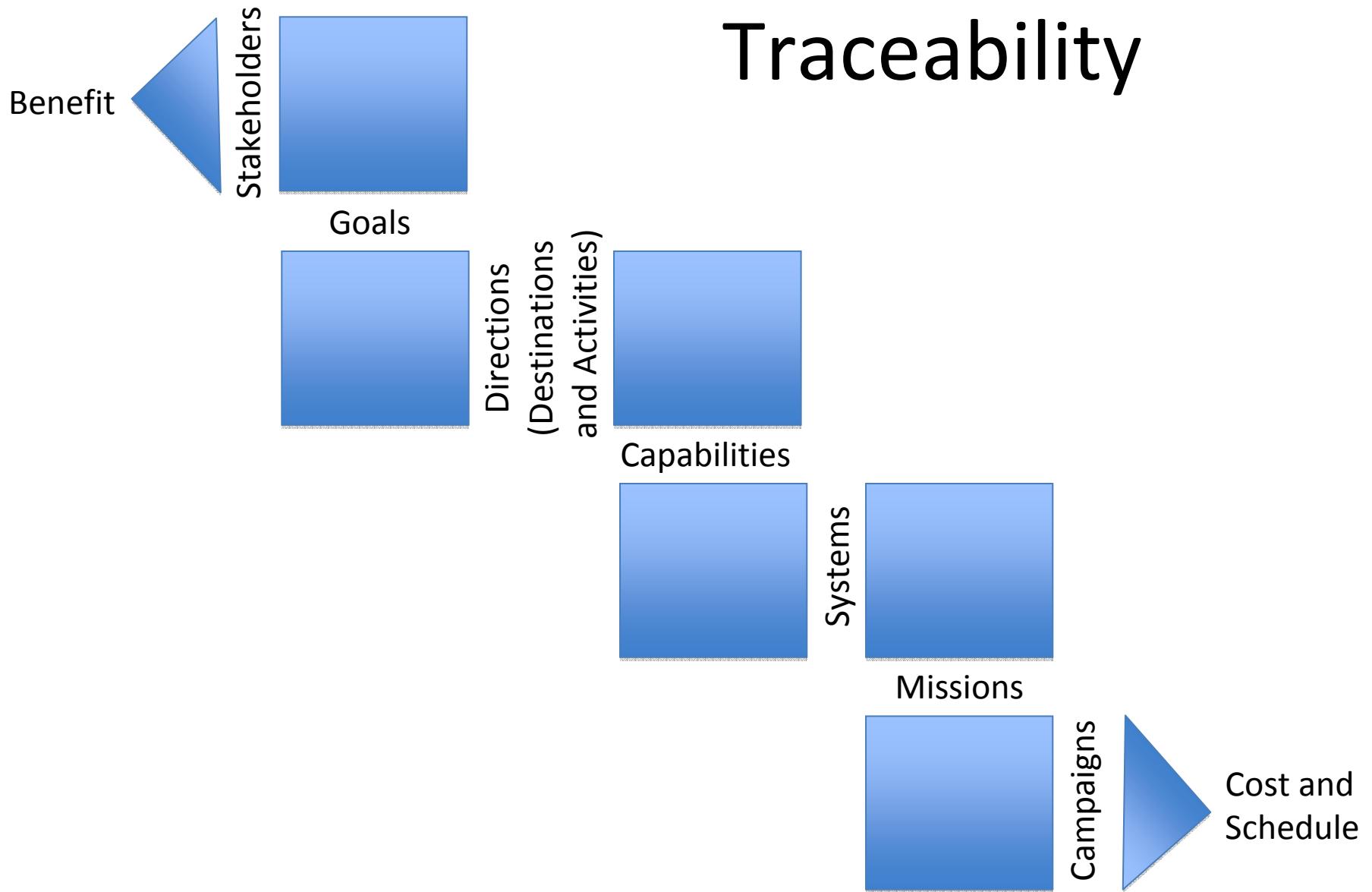


# NASA's Influence on the Space Exploration Stakeholder Network

- There is a discrepancy between SHs that are important to the network, and those that NASA influences directly.
- No SHs that are heavily present in NASA's direct outputs are also heavily present in the network.
- This means NASA can only have large influences through indirect interaction.
  - (e.g. NASA → Media → People → Congress → NASA)



# Traceability



# Questions for Discussion

- How will this study add value over Paine, Aldridge, Lyles, Augustine et al. ?
- What are the key issues in the future of human exploration to which the academy can contribute?
- How will we explain and prioritize
  - Goals
  - Directions (destinations and activities)?
  - Core capabilities?
- How will we engage various stakeholders?
- How will we develop a plan which represents a national consensus?



# Goals from “America’s Future in Space” (Lyles)

- To reestablish leadership for the protection on Earth and its inhabitants through the use of space research and technology
- To sustain US leadership in science by seeking knowledge of the universe and searching for the life beyond Earth
- To expand the frontiers of human activities in space
- To provide technological, economic, and societal benefits that contribute solutions to the nations most pressing problems
- To inspire current and future generations
- To enhance US global strategic leadership through leadership in civil space activities