

Office of Science and Technology Policy and the National Strategy for Planetary Protection

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Office of Science and Technology Policy

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Photo credit: Lloyd Whitman

Outline

- Planetary Protection
- Why the Strategy?
- Objectives of the Planetary Protection Strategy
- Synergy with NASEM CoPP
- Where we should go now ...



Why am I excited about this portfolio?

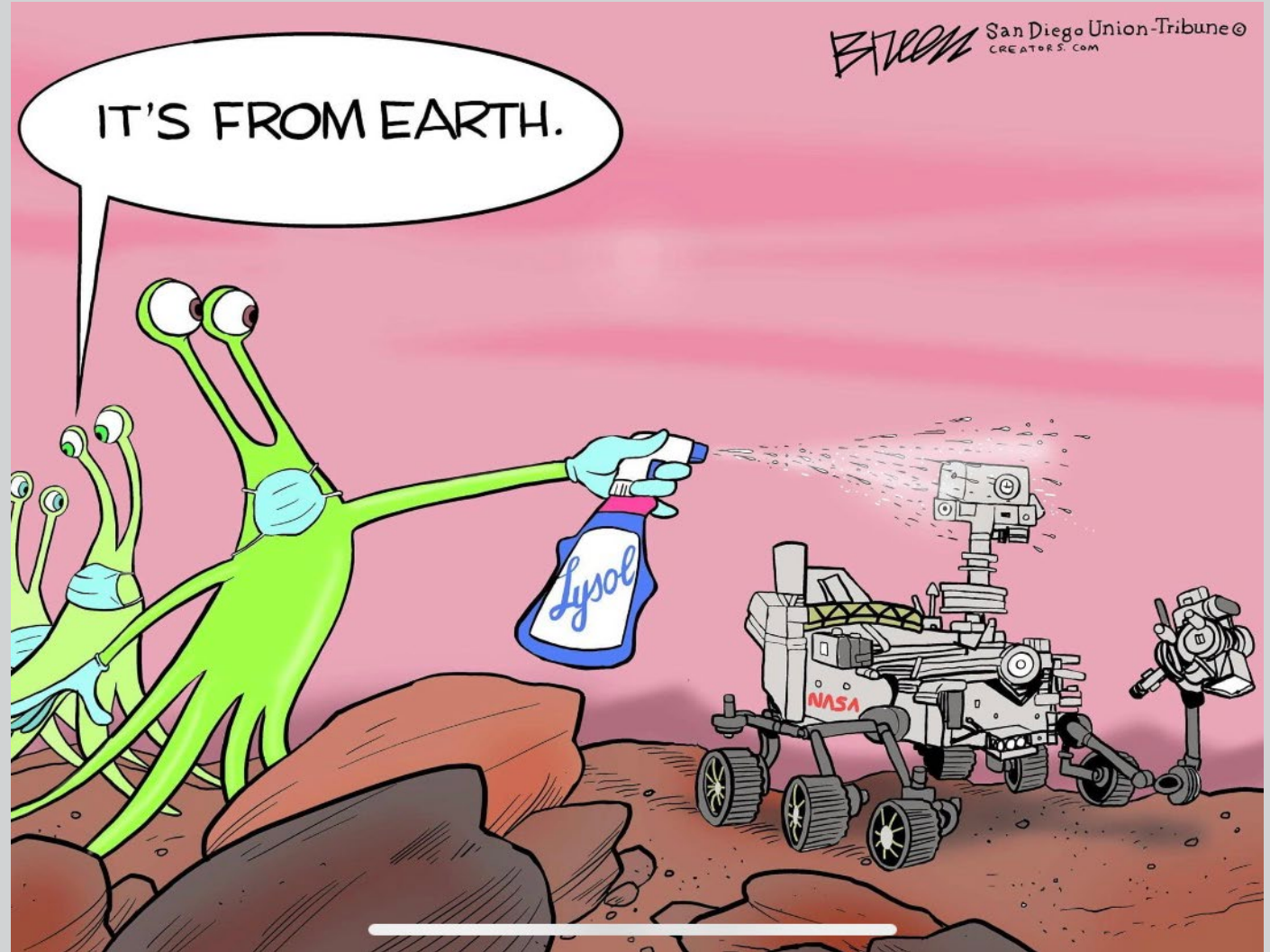
“There are **horrors beyond life's edge** that we do not suspect, and once in a while man's evil prying calls them just within our range.” — H.P. Lovecraft, *The Thing on the Doorstep*

Versus

“We are at a point in history where a proper attention to space, and especially near space, may be absolutely crucial in bringing the world together.” - Margaret Mead



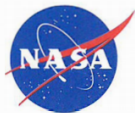
Lifted from Lisa Pratt's (NASA)
presentation!



National Aeronautics and Space Administration

Headquarters

Washington, DC 20546-0001



OCT 17 2019

Reply to Attn of:

Science Mission Directorate

NASA Response to Planetary Protection Independent Review Board Recommendations

I want to thank Chair Alan Stern and the knowledgeable and hardworking board he pulled together for their quick and comprehensive work to produce this report of the Planetary Protection Independent Review Board (PPIRB).

This report represents an important step forward in a very complex area. It helps inform how we at NASA modernize our approach to the wide range of issues and work with the commercial and international partners who will be involved with us in planetary exploration throughout the solar system in the coming years. The report reaffirms the direction of NASA's thinking and changing practice in this area. We appreciate the PPIRB's assessment that recent changes in the Planetary Protection Office (PPO) and its relocation to the Office of Safety and Mission Assurance (OSMA) have improved communication, clarity, and responsiveness to community needs and concerns.

This is a first step, and there is much important work left to do. Our intent is always to

OPP Perspective on Mars Bioburden Metrics, 24 March 2021
CoPP Martian Locations Potentially Suitable for Less Restrictive Bioburden



**Office of Planetary
Protection's
Perspective on
Bioburden Metrics for
Landed Mars
Spacecraft**

Lisa M. Pratt
Planetary Protection Officer, NASA
Office of Safety and Mission
Assurance



Artist concept of return orbiter capturing the OS

<https://mars.nasa.gov/resources/3533/rendezvous-in-martian-orbit/>

The National Academies of
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CONSENSUS STUDY REPORT

Review and Assessment of
PLANETARY PROTECTION POLICY
Development Processes



SCIENCE & TECHNOLOGY POLICY INSTITUTE

**An International Perspective on
Planetary Protection Policies
(Presentation)**

Cara P. Cavanaugh
Jeffrey Trauberman
Rachel Lindbergh
Lincoln M. Butcher
Jericho Locke
Bhavya Lal

October 2020

Approved for public release;
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WORKSHOP

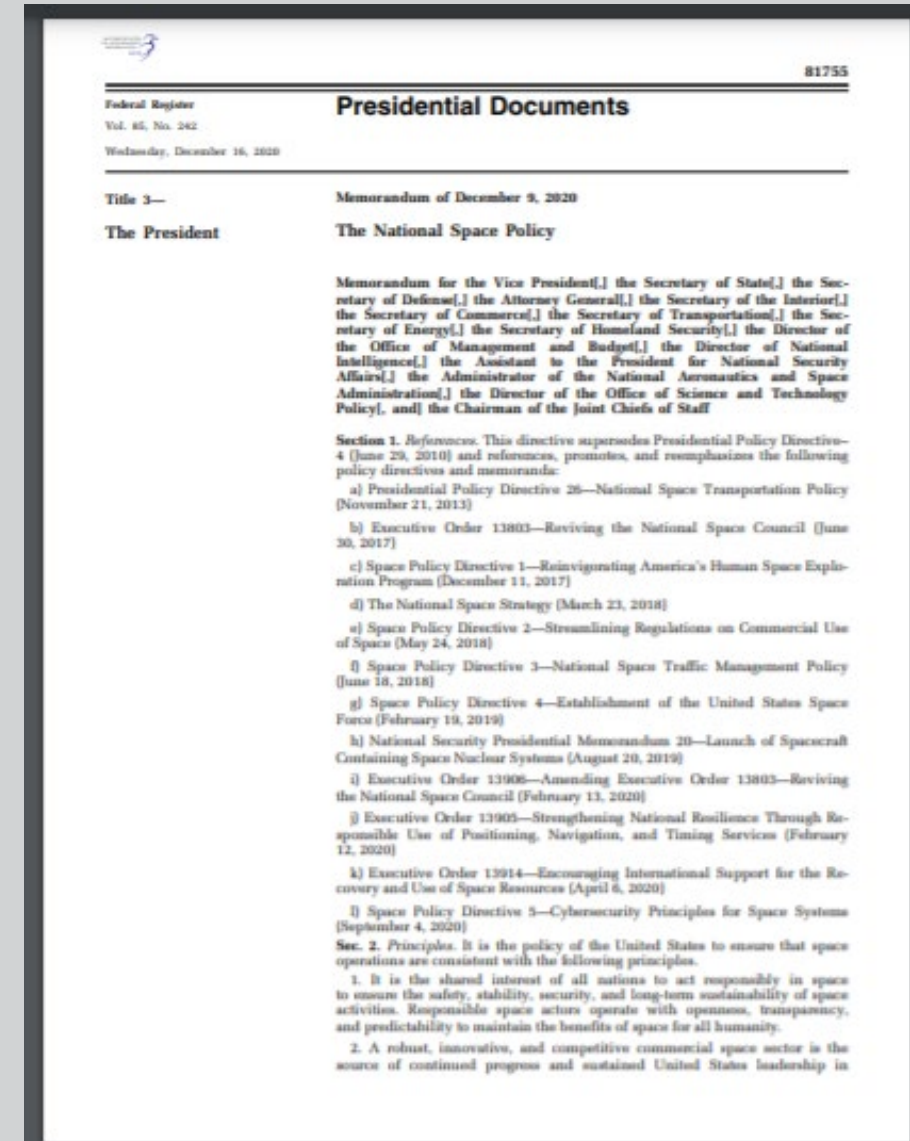
Planetary Protection Knowledge Gaps for
Human Extraterrestrial Missions



MARCH 24-26, 2015
NASA AMES RESEARCH CENTER, CA

National Space Policy

- The National Strategy for Planetary Protection is an important implementation step under the 2020 National Space Policy; specifically, “the development of national and international planetary protection guidelines, working with scientific and commercial partners, for the appropriate protection of planetary bodies and Earth from harmful biological contamination.”
- Continued implementation of this directive will require updating United States department and agency roles and responsibilities, providing authorization and continuing supervision of private space activities, maintaining international leadership, and encouraging the development of innovative technologies and processes that reduce the costs of planetary protection.



Challenges with Planetary Protection

ClearanceJobs / News & Career Advice

https://news.clearancejobs.com/2017/08/20/planetary-protection-officer-mars-parachutist-cool-jobs-na

Alien Hunter, Mars Parachutist and Other Cool NASA Jobs

David Brown / Aug 20, 2017



There is no job at NASA that is *not* cool. (Think about what the janitor at NASA's Jet Propulsion Laboratory sees *every day*. That box in the corner? It's a box of spaceship parts.) A list of "coolest NASA jobs" is practically arbitrary in selection; it's like listing "cutest puppies" or "tastiest ice creams." With that in mind, here are a few actual jobs in America's space program that are probably cooler than yours.

PLANETARY PROTECTION OFFICER

This position recently made the news after its vacancy was announced. If you're in the job market, update your resume and apply for planetary protection officer while you can. NASA has spacecraft across the solar system. Sometimes

https://abc7news.com/science/nasa-will-pay-you-six-figures-to-keep-planets-pure/2267647/

WATCH VIDEOS

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NASA wants to pay you six figures to prevent biological contamination between planets.

It's every astronomer's worst nightmare: a future crewed mission to Mars or even beyond goes terribly awry when astronauts contaminate another planet with destructive microbes from Earth, devastating any hint of life that could be thriving elsewhere in the solar system.

Enter the planetary protection officer (PPO), who is tasked with preventing biological contamination during missions between planets.

NASA is currently [on the hunt for its next PPO](#), who will be paid nearly \$190,000 to maintain federal and international standards governing space exploration.

The PPO will join NASA's Office of Planetary Protection and work to prevent "biological contamination of explored environments that may obscure our ability to find life elsewhere" protect Earth's biosphere in case life does

its next hire. Applicants should come ready with resumes, qualifications, and experience planning and responding to a job posting.

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Alien attack? NASA to hire planetary protection officer to save Earth!

NASA is looking to hire a planetary protection officer to protect Earth from an alien attack. The US government's official employment site posted the job listing, and it is open for citizens of USA and India to apply in their applications till August 14.

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Principles for the Principals

- Avoiding harmful biological contamination of the Earth and other planetary bodies supports a safe, sustainable, and predictable Earth and space environment for the foreseeable future.
- The United States should continue to lead the development of internationally-accepted guidelines for avoiding harmful biological contamination that properly balances the interests of scientific discovery, human exploration, and commercial activities in space.





THE WHITE HOUSE

National Strategy for Planetary Protection

Product of

THE WHITE HOUSE
NATIONAL SPACE COUNCIL

DECEMBER 2020

NATIONAL STRATEGY FOR PLANETARY PROTECTION

THE INTERAGENCY WORKING GROUP ON PLANETARY PROTECTION

Co-chairs

Chris Beauregard, National Space Council
Michael Schmoyer, PhD, Office of Science and Technology Policy

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Federal Bureau of Investigation
Federal Emergency Management Agency
National Aeronautics and Space Administration



U.S. Interagency Coordination on a National Planetary Protection Strategy

The National Strategy for Planetary Protection (December 2020)

- Objective 1: Avoid harmful forward contamination by developing and implementing risk assessment and science-based guidelines and updating the interagency payload review process.
- Objective 2: Avoid backward contamination by developing a Restricted Return Program to protect against adverse effects on the Earth environment due to the potential return of extraterrestrial life.
- Objective 3: Incorporate the perspective and needs of the private sector by soliciting feedback and developing guidelines regarding private sector activities with potential planetary protection implications.



What is being asked?

Objective 1: Avoid harmful forward contamination by developing and implementing risk assessment and science-based guidelines and updating the interagency payload review process.

- **Objective 1.1: Develop a Forward Contamination Risk Assessment Framework.**

Deliverable: Develop a forward contamination risk assessment framework within one year.

- **Objective 1.2: Develop Flexible Science-based Forward Contamination Guidelines.**

Deliverable: Develop guidelines for forward contamination mitigation within nine months.

Deliverable: Develop risk-informed decision-making implementation strategies for human missions within one year.

- **Objective 1.3: Assess the Interagency Aspects of the U.S. Government Payload Review Process.**

Deliverable: Develop a report reviewing the United States Government payload review process within nine months.



What is being asked?–2

Objective 2: Avoid backward contamination by developing a Restricted Return Program to protect against adverse effects on the Earth environment due to the potential return of extraterrestrial life.

- **Objective 2.1: Develop a Risk Assessment Framework.**

Deliverable: Develop a backward contamination risk assessment framework within nine months.

- **Objective 2.2: Develop an Approval Framework.**

Deliverable: Develop an approval framework within nine months.

- **Objective 2.3: Develop a Return Procedures Framework.**

Deliverable: Develop a return procedures framework within one year.



www.nasa.gov



What is being asked?–3

Objective 3: Incorporate the perspective and needs of the private sector by soliciting feedback and developing guidelines regarding private sector activities with potential planetary protection implications.

- **Objective 3.1: Engage with Industry.**

Deliverable: Develop a report on industry feedback and R&D partnership opportunities within three months.

- **Objective 3.2: Develop Guidelines for Private Sector Activities.**

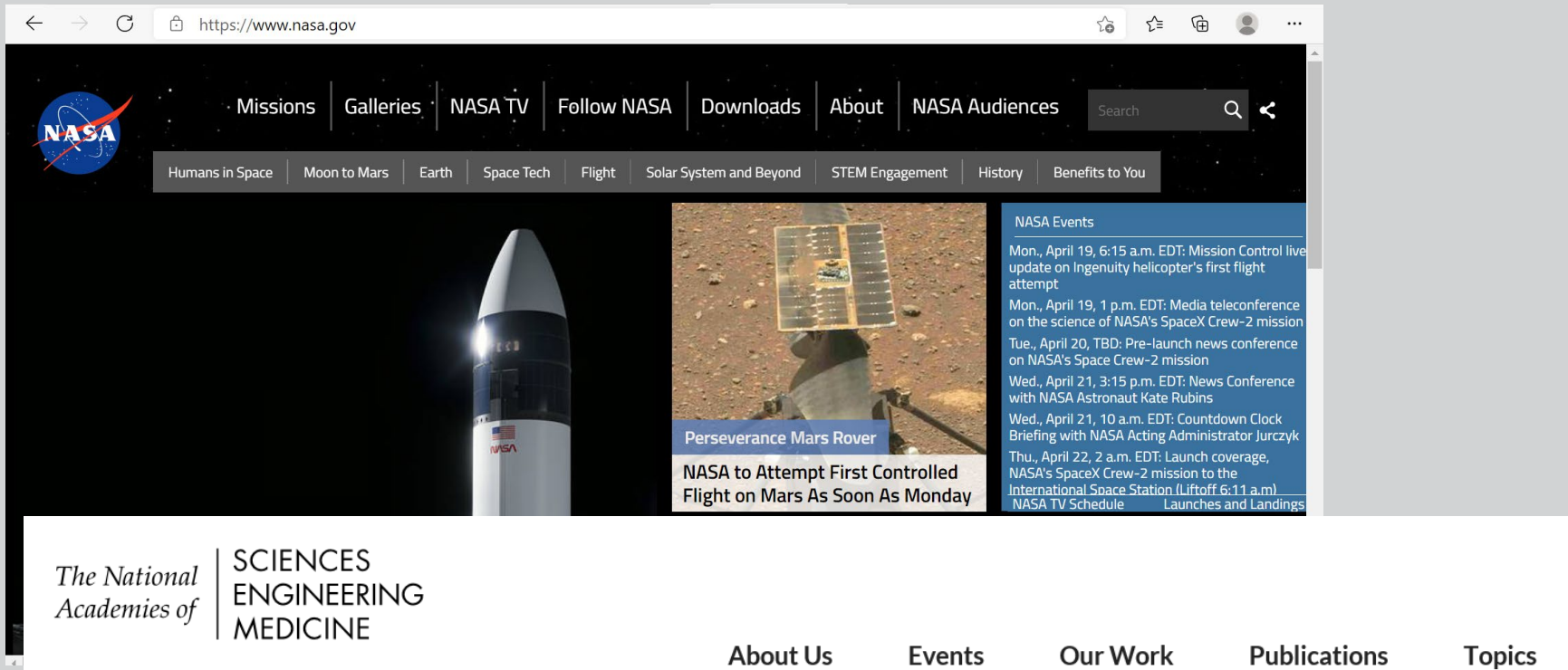
Deliverable: Develop guidelines on authorization and continuing supervision within six months.



<https://www.engadget.com/2017-11-19-nasa-defend-the-earth-against-space-plagues.html>



Timeliness of our Joint Work



Committee on Planetary Protection - Meeting No. 3 on Mars Mission Bioburden Requirements

Compliments on the Complements

The Strategy supports a NASEM/CoPP approach to:

- Identify criteria for determining locations or regions on Mars that are potentially suitable for missions of less restrictive bioburden than the current requirements for Category IV.
- Identify some potentially acceptable locations that meet those criteria and are suitable for reduced bioburden criteria.
- Consider the appropriateness of mission activities that occur beneath the Martian surface in these locations and how deep such mission activities should be allowed.



Remembering the Strategy's Goals

1. Develop supportive processes and sufficiently flexible and cost-effective guidelines for planetary protection, adaptable to future developments in space exploration, such as new destinations, discoveries, technologies, capabilities, and actors.
2. Promote safe return protocols for Restricted Earth Return samples that enable exploration, science, and commercial activity.
3. Update United States Government department and agency roles and responsibilities for preventing harmful forward and backward biological contamination, to resolve overlaps, gaps, and ambiguities.
4. Provide authorization and continuing supervision, in accordance with applicable obligations, of United States private sector in-space activities for the purpose of preventing harmful forward and backward biological contamination.
5. Demonstrate continued international leadership to prevent harmful forward and backward biological contamination, consistent with applicable obligations.
6. Encourage the development of innovative technologies and processes to lower costs and other barriers for preventing forward and backward harmful biological contamination while maintaining data-based standards.

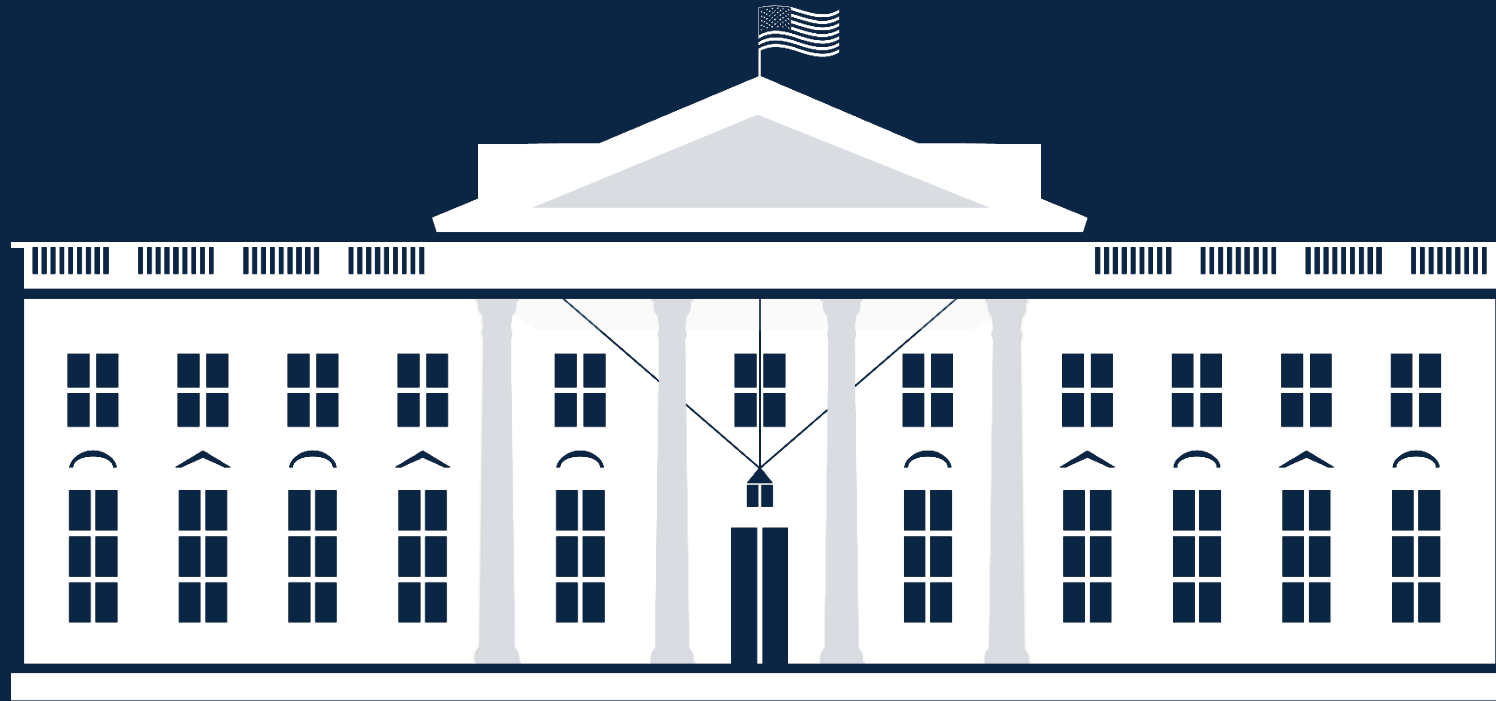


Conclusion

- Thank you to the USG IWG and the sub-IWGs!
- Gratitude to STPI for the technical assistance!!
- Immense appreciation to all PP partners!!!

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