National Aeronautics and Space Administration

NASA Flight Opportunities Program (FOP) Platform Tradeoffs Analysis

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FOP reflects NASA’s shift in policy from a public driven space industry towards an emphasis on public-private partnerships.

Payloads team goal: Responsible for soliciting, selecting and shepherding payloads that require flight testing in order to mature technologies, not only to reduce risk in deep space or manned space missions, but also to develop critical technologies with multiple applications in space.

Several companies provide these flight opportunities and each have unique capabilities to fly payloads in environments that closely imitate the environment of space missions.

PROGRAM INTRODUCTION

- FOP reflects NASA’s shift in policy from a public driven space industry towards an emphasis on public-private partnerships.
- Payloads team goal: Responsible for soliciting, selecting and shepherding payloads that require flight testing in order to mature technologies, not only to reduce risk in deep space or manned space missions, but also to develop critical technologies with multiple applications in space.
- Several companies provide these flight opportunities and each have unique capabilities to fly payloads in environments that closely imitate the environment of space missions.

PROJECT DESCRIPTION

- Researched FOP platform providers in conjunction with payload requirements to develop a tradeoffs analysis matrix, comparing capabilities, across platforms, in a user-friendly manner.
- Employed basic economic principles when creating matrix to clearly identify the tradeoffs across providers with the goal of minimizing barriers to participation for payload providers.
- Furthered mission of FOP to “Fly Early, Fly Often, Fly Safely” by minimizing barriers to participation for payload provider candidates.

QUESTION

How do researchers, interested in testing technologies in space, know which platform(s) best meet the needs of their payload?

FOP Tradeoffs Analysis Matrix

Principle Investigators want...
- Microgravity
- High altitude
- Reduced atmosphere interference
- Vacuum & extreme temps.
- Repeatability

Next Steps...
- How to balance payload design requirements with platform capabilities
- How to apply FOP flight data to demonstrate NASA’s relevance to key stakeholders
- Connect general trends to specific data through an online database further minimizing barriers to entry for FOP candidates

“Pay for your own ride”

Payload Requirements
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- High altitude
- Reduced atmosphere interference
- Vacuum & extreme temps.
- Repeatability

Company Name
- Zero Gravity Corporation
- Near Space Corporation
- Near Space Corporation
- Near Space Corporation
- Stratospheric Balloon Aerospace
- Kistler Aerospace
- Masten Space Systems
- XCOR Aerospace
- Up Aerospace

Payload Requirements
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Image Key:
- Top Left – Up Aerospace (Spaceloft XL)
- Top Right – Masten Space Systems (Xaero)
- Top Center – XCOR Aerospace (Lynx)
- Bottom Right - Up Aerospace (Spaceloft XL)
- Bottom Center Right - XCOR Aerospace (Lynx)
- Bottom Left – Near Space Corporation (Small/Nano Balloon System)