Update on the state of GEO hosted payloads

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May 1, 2018
Why does hosting matter to the GEO-CAPE community?

1. TEMPO

And also, MAIA (LEO) and GEO-CARB (GEO).

And also, EVI-5.

And also, NASA’s approach to future missions.
Quick Status of NASA commercially hosted payloads

- **TEMPO**: host solicitation release May 2018 with host selection by February 2019.

- **MAIA**: host solicitation release May 2018 with host selection by January, 2019.

- **GEO-CARB**: Study contract with host; targeting actual hosting contract near CDR (mid 2019).

- **GOLD**: Launched on January 25, 2018; Science operations start ~ mid-October, 2018.

- **Atomic Clock**: integrated on a Surrey satellite; launch on the Falcon Heavy, June 2018.
**NASA: hosted payload innovator**

<table>
<thead>
<tr>
<th>Host contract held by:</th>
<th>TEMPO</th>
<th>MAIA</th>
<th>GEO CARB</th>
<th>GOLD</th>
<th>Atomic Clock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orbit</td>
<td>GEO</td>
<td>LEO</td>
<td>GEO</td>
<td>GEO</td>
<td>LEO</td>
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<tr>
<td>Payload Sponsor</td>
<td>Earth</td>
<td>Earth</td>
<td>Earth</td>
<td>Heliophysics</td>
<td>Space Tech</td>
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<tr>
<td>Project stage at host acquisition</td>
<td>U.S. Air Force (HoPS)</td>
<td>Program office (ESSP)</td>
<td>PI</td>
<td>PI</td>
<td>Program office (STP)</td>
</tr>
<tr>
<td>Current state of host acquisition</td>
<td>Waiting for project milestone</td>
<td>Waiting for project milestone</td>
<td>Study contract</td>
<td>On orbit (launched 1/25/2018)</td>
<td>Integrated for launch; launch planned for June 2018</td>
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GAO Study: Hosted Satellite Payloads (102187)

- US Government Accountability Office (GAO) has been conducting an analysis of hosted payload use by DoD.
  - Discussions with NASA about NASA's experience with commercial hosting.
  - GAO report likely to be released FY18.

- Draft findings largely in line with GEO-CAPE experience:
  - Benefits of increased affordability, increased resilience from disaggregation, continuous technology upgrades and industrial base stability
  - Concerns for DOD's ability to mitigate logistical challenges (matching payloads with hosts), maintain payload control and security, and accurately estimate the benefits of using a hosted payload approach.

- Draft Appendix includes this statement:
  “NASA officials said that for these missions, hosting the payload on a commercial satellite allowed them to meet their objectives for science at a better cost than if they had provided the satellites themselves.”
NASA’s approach to future missions

Types of Missions Solicited Under EVC

- ESAS envisioned EVC to be similar to the EVM strand, including full mission implementation costs whether for instruments, spacecraft, and launch vehicles OR hosted payloads with hosting services included.

- While the ESAS references EVM, ESD will exercise flexibility to implement any of the following arrangements for EVC:
  - Full mission implementation – like CYGNSS
  - PI arranged instrument hosting – like GeoCarb
  - NASA provided hosting for a MOO – like TEMPO or MAIA

- ESD may solicit ALL of these implementations in a single AO, as follows:
  - $xxxx M for full mission or PI arranged hosting
  - $xxxx M-$xxxx M for MOO; with $xxxx M-$xxxx M for accommodations
Thank you.
How we got here


• 2013 Changed National Space Transportation Policy
  “United States Government payloads shall be launched on vehicles manufactured in the United States unless an exemption is coordinated by the Assistant to the President and National Security Advisor and the Assistant to the President for Science and Technology and Director of the Office of Science and Technology Policy through an interagency process...such an exemption is not required for United States Government use of foreign launch vehicles to support:
  
  Hosted payload arrangements on spacecraft not owned by the United States Government.”

• 2010 Changed National Space Policy of the United States
  “Departments and agencies shall:
  
  Work jointly to acquire space launch services and hosted payload arrangements that are reliable, responsive to United States Government needs, and cost-effective.”

• 2006 Air Quality Remote Sensing From Space Meeting prepared first Decadal Survey input.
  (doi: 10.1029/2006EO330005)

• 1997 Jack Fishman's "GEOstationary TROpospheric Pollution SATellite" selected for Step 2
  (doi: 10.1117/12.298116 ); team discusses hosting at LM Satellite User’s Conference.