SMC/XR Development Planning

7 Procurement Wings that acquire space systems for AF space missions
- MILSATCOM
- GPS
- Space Superiority
- Launch and Range Systems
- Space-Based Infrared Systems
- Defense Meteorological Systems
- Satellite Control and Network

SMC/XR Development Planning Directorate builds plans and conducts demonstrations for the future of mission areas
Space Environmental NanoSat Experiment (SENSE)

• Two 3U CubeSats
  – AF Operated
  – Data analysis similar to AF operations

• Assess military utility of CubeSats
  – Should the AF use them for operations?
  – Not a “pure” technology demonstration

• Focusing on Space Environmental Monitoring
  – Electron Density Profile
  – Ionospheric Scintillation
Reference orbit
- 600 km
- 45 deg Inclination
- 2-4+ downlinks/day with single terminal Site
NB: Final orbit dependent on launch host

Sensor Measurements
- Line of sight TEC, e^2, e drift, E-field
- Supportive of NPOESS KPPs and DMSG Interests
- Technically Feasible
- Compatible with Ionospheric Models
- Flexible in terms of altitude and inclination

Demo Timeline

<table>
<thead>
<tr>
<th></th>
<th>1 Month</th>
<th>10 Months</th>
<th>1 Month</th>
<th>Extension Option</th>
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</thead>
<tbody>
<tr>
<td>On-Orbit Check out</td>
<td>S-Band, multiple ground terminal sites</td>
<td>S-band, limited ground terminal</td>
<td>S-Band, multiple ground terminal sites</td>
<td>Option for 1 additional year</td>
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</tbody>
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SENSE Space Segment

- Two 3U CubeSats
- AES 256 bit encryption for uplink and downlink
- 3-axis stabilization
- GPS Position, Navigation and Timing
- Unified S-band for up and down links
- 1-year mission life minimum
What Comes Next

• Focusing on:
  • Communication Missions
  • Intelligence, Surveillance, Reconnaissance Missions
  • Space Weather Missions

• We are always accepting CubeSat concept ideas that have military utility

• We are interested in working together on technology development
Questions