Defense Space Modernization Roadmap

Leveraging Industry, Commercial, Government, and International

Lindsay Millard, PhD
Principal Director, Space
Office of the Under Secretary of Defense for Research and Engineering

Diversify, Develop, & Demonstrate to

Deter, Deescalate, & Dominate

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Technology from the Earth to the Moon and Beyond

- Autonomous navigation, autonomous systems capable of operating and taking advantage of multi-body environments.
- Commoditized busses with high power generation, energy storage, power management and adaptable payloads.
- Hardening and Resiliency to space weather with high background radiation.
- Standards developed and used by international partners.
- Intelligent, low swap, Local and wide volume search, detection, tracking, ID, and state prediction.
- Facilities that can simulate space, digital engineering, and support rapid assessments.

Cis-lunar regime and operations to drive technology improvements that flow to all orbital regimes.

Launch capabilities and opportunities enabling joint operations and reconstitution.

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Roadmap Process

Accelerate existing investments, push technologies to the warfighter, and expand opportunities for deterrence, de-escalation, and dominance
**Space Domain Awareness:** The capability to monitor, track and characterize an expansive, crowded, and dynamic environment. This includes both long-range wide volume situation awareness and short-time scale local tracking and prediction.

**Investments**

<table>
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<tr>
<th>Technology Pushes</th>
<th>Local and Wide Volume Sensors</th>
<th>On-Board processing</th>
<th>Sustained High Power</th>
<th>Exotic Orbits</th>
<th>PNT</th>
<th>Comms</th>
<th>AI/ML algorithms for object, ID, control, and sensor processing</th>
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<tbody>
<tr>
<td>NEAR</td>
<td>Affordable &amp; manufacturable large format arrays and apertures</td>
<td>Rad hard processors*</td>
<td>Advanced solar and nuclear*</td>
<td>Modeling and facilities for simulations</td>
<td>Alt Ranging</td>
<td>Efficient radiators, apertures, and transceivers</td>
<td>Increase maturity of SDA algorithms*</td>
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<td></td>
<td>Increase maturity of spectrum and waveform agility</td>
<td>COTS based processors</td>
<td>Energy Storage</td>
<td>ESPA class to large satellites</td>
<td>Quantum accelerometers, gyros, sensors*</td>
<td>Fine Pointing</td>
<td>Search, detection and tracking</td>
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<td>MID</td>
<td>Fine grained target acquisition</td>
<td>Secure cloud processing*</td>
<td>Thermal management</td>
<td>Autonomous orbit maneuvering</td>
<td>On orbit predictions</td>
<td>Data backhaul</td>
<td>ID and Event predictions</td>
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<tr>
<td>FAR</td>
<td>Intelligent Sensors</td>
<td>Diversified tip &amp; cue*</td>
<td>Power Management</td>
<td>Autonomous guidance and navigation</td>
<td>Autonomous orbit predictions</td>
<td>Increase maturity of spectrum and waveform agility</td>
<td>Sensor fusion</td>
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