University Innovation Summit - Hypersonic Defense

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What is Hypersonic Defense?

Universities can support the hypersonic defense mission by advancing the state of the art.
Detect and Track

- **Purpose:**
  - Provide warning and location of incoming threats

- **What MDA Needs:**
  - Reduce latency
  - Data compression and management
  - Innovative low size, weight, and power sensors
Fire Control

- **Purpose:**
  - Optimize engagement solution

- **What MDA Needs:**
  - Decision algorithms
  - High speed processing
  - War gaming and training
Interceptor Technologies

• Purpose:
  – Interceptors engage incoming threats

• What MDA needs:
  – Seeker technologies
  – Advanced Materials
  – Propulsion/Aero-controls Technologies
  – Communication Technologies
  – Guidance, Navigation, and Control

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Seeker Technologies

• Seeker Purpose:
  - Guides the vehicle to the target

• What MDA needs:
  - Investigate new seeker/window concepts
  - Aero-optical performance models
  - Windows with mechanical, thermal, and optical performance at relevant temperatures
  - Seeker/window mechanical characterization
  - Window frame integration
  - Wind tunnels for evaluation
Advanced Material Technologies

• Purpose:
  - Protects the vehicle against aerodynamic and aerothermal loads

• What MDA needs:
  - Identify new and novel materials for windows, light weight structures, nosetips, leading edges, and acreage Thermal Protection System materials
  - Develop material models
  - Optimize Thermal Protection System and structural materials
  - Understanding ablation, erosion, outgassing, moisture/humidity effects, etc.
  - Characterize thermal and mechanical material properties
  - Test materials against relevant environments