

1. **Research Title:** Layered Sensor Resource Management

2. **Individual Sponsor:** *List the AFRL research topic sponsor's contact information:*

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3. **Academic Area/Field and Education Level:** Electrical Engineering, Computer Science, and Operations Research / Sensor Resource Management and Tracking (MS or Ph.D. level)

4. **Objectives:** To develop techniques for the real-time tasking of diverse and distributed sensor resources in a layered sensing environment. The techniques will optimize the collection of threat data in a multi-target environment to meet competing requirements for accurate tracking and target identification of asymmetric threats.

5. **Description:** Recent publications illustrate the Air Force's desire to exploit the benefits of a layered (altitude) sensing environment. In such an environment, data from different sensors, of different modalities, at different altitudes of the same scene are fused to gain a better understanding of the operational environment. There exists a rich literature for sensor resource management (SRM) for individual sensors with multi-modality capability and for small web of sensors (such as a swarm of UAVs). However, the proposed body of work will develop innovative algorithms that push the state of the art in SRM in the new persistent surveillance environment which includes a large web of sensors of different modalities, operating at different altitudes, persistently surveilling the same area. This research area is multi-disciplinary in nature (optimization, tracking, ad-hoc networking, etc.) and lends itself nicely to collaboration among the academic DAGSI researchers, government, and industry.

6. **Research Classification/Restrictions:** None- Public

7. **Eligible Research Institutions:**

Universities (DAGSI)

AFIT