

## Attachment 1 – Research Topic Template

1. **Research Title:** Multi-Platform GPS-denied Navigation for Unmanned Aircraft Systems
2. **Individual Sponsor:**

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3. **Academic Area/Field and Education Level:** Electrical Engineering, Computer Engineering, Computer Science, Signal Processing, Wireless Communication (BS, MS or Ph.D. level)
4. **Objectives:** Develop algorithms and software, leveraging appropriate open-source tools, for a distributed network to enable a navigation solution for each vehicle that is more accurate than what it would otherwise be able to estimate on its own.
5. **Description:** Networked systems stand to provide warfighting capabilities that exceed the sum of their parts. Heterogeneous systems distributed across multiple platforms can leverage each other's strengths to accomplish a joint objective. Precision navigation is fundamental to any Air Force mission, but especially for vehicles working in concert with each other. The purpose of this research is to demonstrate navigation solutions for networked platforms that are better than what any one platform could develop on its own. Since this capability is inherent when GPS is available, this research will assume that at least most of the platforms in the network are denied GPS access.
6. **Research Classification/Restrictions:** None at this time.
7. **Eligible Research Institutions:** Indicate to what organizations this topic should be provided.

DAGSI (Wright State University, AFIT, Ohio State University, University of Dayton, Miami University, Ohio University, University of Cincinnati)

AFIT (only)

USAFA (only)

If you are submitting a topic for the USAFA, please indicate if you are also interested in sponsoring a USAF Cadet in summer of 2013 (Avg Cost for USAF Cadet for 33 days was \$5000)

X Yes      No

**Include the appropriate Distribution Statement. All topics must have an approved distribution statement.**