



ADVANCED NAVAL NETWORK SOLUTIONS

The Networks and Communications Systems Branch of the Naval Research Laboratory (NRL) is seeking White Papers for innovative research and development in information technology; specifically, relatively mature technology (TRL 6 and higher) for Naval Network and Communications Solutions. Current areas of research focus include:

- (1) Software Reprogrammable Payload (SRP) Waveforms. Implementation of complex waveforms (such as TTNT, HNW, and unmanned platform Control Station Algorithms) hosted on CPCI cards, as part of a systems level, heterogeneous networking capability. Ensure linkage to ONR funded Enabling Capabilities (EC's) in Advanced Tactical Data Links (ATDLES) and SATCOM mitigation. Solutions may be IP or non-IP based.
- (2) Advanced Tactical Edge Solutions. Demonstrate candidate technologies for next generation Tactical Communications Links, integrated, systems level solutions to Ad-Hoc Naval Tactical Edge Mobile Area Networks and candidate protocol stacks/application layer toolkits, with connectivity of up to 30 nodes, including air, ground and sea platforms.
- (3) Spectrum Diversity. Identify integrated, wireless, heterogeneous solutions for network connectivity between afloat and airborne platforms (e.g., ships, aircraft, and UAV's), to include Line of Sight (LOS) solutions. Also, identify and implement advanced waveforms to maximize bandwidth at various ranges to achieve the best signal surpluses, and include in possible solutions improved antennae, maximized efficiency of legacy communications links, UAV communications relays, and wireless connectivity for tactical users. Optical as well as RF solutions at a variety of frequency bands are encouraged.
- (4) SATCOM Mitigation. Integrate technological solutions for overcoming the loss or over-subscription of SATCOM connectivity between (a) deployed

units in an Expeditionary or Carrier Strike groups (ESG or CSG; respectively), and (b) connectivity reachback ashore from deployed ESG/CSG in any given geographic area of responsibility. Solutions must be exportable, scalable, and relevant in any geographic maritime environment in which an ESG or CSG might operate, and must include compatible, tactical edge connectivity and services. Particular interest exists in solutions that can be hosted on small- to medium-UAVs, and in other airborne relays.

- (5) PODs. Integrate candidate radio payloads (e.g., Sea Lancet, SRP, etc) into small airborne PODs, using currently available airframe modifications and POR technology, for both unmanned and manned platforms, conforming to NAVAIR standards and size, weight and power (SWAP) requirements. Include receivers, antennae, and payload.

Address White Papers to 5520baa@nrl.navy.mil. Allow one month before requesting confirmation of receipt of White Paper, if confirmation is desired. Substantive contact should not take place prior to evaluation of a White Paper by NRL. If necessary, NRL will initiate substantive contact.