

**The Washington Headquarters Services,
Acquisition Directorate
on behalf of the Department of Defense releases the**

**FY 2015 Rapid Innovation Fund
Broad Agency Announcement
Announcement Number: HQ0034-15-BAA-RIF-0001
*Issue Date: April 15, 2015***

IMPORTANT

THIS IS A TWO-STEP SOLICITATION PROCESS:

- **STEP 1 – SUBMISSION OF WHITE PAPERS**
- **STEP 2 – SUBMISSION OF FULL PROPOSALS (BY INVITATION ONLY)**

White Paper Submission: DoD begins accepting White Papers ***May 01, 2015.***

Deadline for Receipt: White Papers must be **completely** submitted by 3:00 p.m.
EDT June 15, 2015.

Classified White Papers are not accepted under the DoD RIF Program.

Please read the entire solicitation carefully prior to a response.

Help Desk: If you have questions about the Defense Department's RIF Program,
please submit to questions@dodrif.com.

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Department of Defense Rapid Innovation Fund

EXECUTIVE SUMMARY

The goal of the Rapid Innovation Fund is to transition innovative technologies that resolve operational challenges or save costs into acquisition programs. The DoD seeks mature prototypes for final development, testing, evaluation, and integration. Those selected for award may receive up to \$3 million in Rapid Innovation Funding and will have up to two years to perform the work. There is a source selection preference for technologies from small businesses. There are two phases in the source selection process: White Paper submission and full proposal submission. Full proposal submissions are by invitation only. DoD funds available for award are approximately \$225 million.

1.0 General Information

1.1 Introduction

This Broad Agency Announcement (BAA) with procurement instrument identification number HQ0034-15-BAA-RIF-0001 constitutes the solicitation of offers for research and development for the Rapid Innovation Fund. The Rapid Innovation Program was enacted by Congress in section 1073 of the fiscal year (FY) 2011 National Defense Authorization Act to facilitate rapid insertion of innovative technologies into military systems or programs that meet critical national security needs.

The goals of the RIF Program reflect DoD's emphasis on rapid, responsive acquisition and the engagement of small, innovative businesses in solving defense needs. The BAA is for the validation and transition of innovative technologies developed predominantly by small businesses, including those resulting from the Small Business Innovation Research (SBIR) program and DoD reimbursed Independent Research and Development (IR&D). IR&D does not include R&D performed under a grant or contract from the Government. IR&D is defined in Federal Acquisition Regulation (FAR) 31.205-18(a). Offers submitted in response to this BAA should resolve operational challenges or other critical national security needs as characterized by the Department of Defense Components' requirements. The DoD components participating in the RIF Broad Agency Announcement (BAA) include the Military Services, e.g. Department of Army, Department of the Navy (DoN), Department of the Air Force, and Defense Agencies, including: Chief Information Officer / Defense Information Systems Agency (CIO/DISA); Combating Terrorism Technical Support Office (CTTSO); Defense Intelligence Agency (DIA); Defense Logistics Agency (DLA); Defense Threat Reduction Agency (DTRA); Joint Science and Technology Office for Chemical and Biological Defense (CBD); Missile Defense Agency (MDA); National Reconnaissance Office (NRO); North American Aerospace Defense Command / United States Northern Command (NORAD / USNORTHCOM); Office of the Deputy Assistant Secretary of Defense for Emerging Capabilities and Prototyping (EC&P); Office of the Deputy Assistant Secretary of Defense for Manufacturing & Industrial Base Policy (M&IBP);

United States Pacific Command (USPACOM); United States Southern Command (USSOUTHCOM); and the United States Special Operations Command (USSOCOM). These organizations are herein referred to as the DoD Components.

1.2 Soliciting Agency

On behalf of the Office of the Secretary of Defense, the soliciting contracting office is: Washington Headquarters Services (WHS) Acquisition Directorate (AD), 1155 Defense Pentagon, Washington, DC 20301-1155

Contracting Officer WHS-AD: Jim Colachis, Email: james.l.colachis.civ@mail.mil

Contract Specialist WHS-AD: Khalil Mack, Email: khalil.r.mack.civ@mail.mil

1.3 Key Dates

Event	Date	Time
BAA is released on Federal Business Opportunities (FEDBIZOPPS)	April 15, 2015	N/A
Websites Open for White Paper Submission	May 01, 2015	N/A
BAA Closes for White Paper submissions	June 15, 2015	3:00 p.m. EDT

2.0 Eligible Sources

2.1 Industry and Academia

All responsible firms and academic institutions capable of satisfying the Government's needs may submit a White Paper under this BAA. Historically Black Colleges and Universities (HBCUs) and Minority Institutions (MIs) are encouraged to submit White Papers and/or participate in teaming arrangements in submitting White Papers; however, no portion of this announcement will be set aside for HBCU and MI participation.

2.2 Foreign Participants

Foreign participants and/or individuals may participate to the extent that such participants comply with any necessary Non-Disclosure Agreements, Security Regulations, and any other applicable statutes. Some requirements may cover export-controlled technologies. Research in these areas is limited to "U.S. persons" as defined in the International Traffic in Arms Regulations (ITAR), 22 CFR §1201.1.

2.3 Federally Funded Research & Development Centers (FFRDCs)

Federally Funded Research & Development Centers (FFRDCs), including Department of Energy National Laboratories, are not eligible to receive awards under this BAA. However, participation in teaming arrangements with other eligible participants is allowed to the extent that such an arrangement is permitted under the sponsoring agreement between the Government and the FFRDC.

2.4 Department of Defense Laboratories

Department of Defense laboratories are not eligible to receive awards under this BAA and should not submit White Papers in response to this BAA. As with FFRDCs, these organizations may participate in teaming arrangements with eligible sources from academia and industry that are submitting offers in response to this BAA.

2.5 University Affiliated Research Centers (UARC)s

University Affiliated Research Centers are eligible to submit proposals under this BAA unless precluded from doing so by their Department of Defense UARC contracts.

2.6 Teaming

Teams are also encouraged and may submit proposals in any and all areas. However, offerors must be willing to cooperate and exchange software, data and other information in an integrated program with other contractors.

3.0 North American Industry Classification System (NAICS) Code

The NAICS codes for this announcement are 541712: Research and Development in the Physical, Engineering, and Life Sciences (except Biotechnology), and 541711: Research and Development in Biotechnology. A small business under these NAICS codes is defined by a size standard of 500 employees.

4.0 System for Award Management (SAM)

All offerors submitting proposals must have an active registration in SAM at <https://www.sam.gov/portal/public/SAM/> prior to the BAA close date. Failure to indicate whether your entity is a small business for the NAICS codes listed in Section 3.0 in www.SAM.gov prior to the BAA close date may result in your offer not being considered.

5.0 Award Instrument Types

The type of contract selected by the Government will be either a firm fixed price contract, or a cost reimbursement type contract, in accordance with FAR Part 16, Contract Types.

If exceptional circumstances exist, a Cooperative Agreement or Other Transaction may be considered. If a cooperative agreement is selected, the award will be in accordance with DoD Regulation 3210.6-R, Department of Defense Grant and Agreement Regulations. Other Transaction authority will be in accordance with 10 U.S.C 2371. Awards may be made consistent with 10 U.S.C. 2358, 10 U.S.C. 2361, and 10 U.S.C. 2374(a). Contract type and funding arrangements are at the discretion of the Government.

6.0 Communications with Offerors

6.1 Solicitation Amendments

Amendments or links to amendments will be posted to FEDBIZOPPS <https://www.fbo.gov>. Although other web pages may repost these amendments, offerors are advised that the FEDBIZOPPS web page is the only official record.

6.1 General RIF Inquiries

Offerors may submit formal written general questions to questions@dodrif.com, Subject: FY2015 RIF General Question (not addressing a requirement). The questioner and respondent shall remain anonymous. All relevant and/or BAA clarification question(s) will be posted as an amendment to this solicitation on FEDBIZOPPS not later than June 1, 2015. Offerors are advised to monitor FEDBIZOPPS during the solicitation period for amendments to the solicitation.

6.2 DoD Component Inquiries

Non-technical questions pertaining to a particular DoD Component should be submitted in accordance with the instructions given in the Component's Annex in Section 13.0 of this solicitation.

Offerors may also submit technical questions via email, Subject: FY2015 RIF Question for *[DoD Component / Requirement #]* directly to the Technical Point of Contact (TPOC) for the DoD Component identified in the Component's Annex in Section 13.0 of this solicitation. Technical questions may be submitted from April 15 through June 1, 2015. During this period, offerors have an opportunity to ask ***technical questions*** only about specific requirements. Questions should be limited to specific information related to improving the understanding of a particular requirement. **Offerors may not ask for advice or guidance on solution approach and may not submit any material to the technical POC.**

6.3 Notifications

White Papers

All offerors submitting a White Paper in response to this BAA will receive an email

message. The e-mail will either inform the offeror that its White Paper was selected for invitation to submit a Full Proposal or its White Paper was not selected for an invitation.

Full Proposals

Offerors invited to submit Full Proposals will receive an email or other written notification from the DoD Component cognizant Contracting Officer providing instructions for the submission of a full proposal. Similarly, offerors that submit a full proposal will receive an email or other written notification if their proposal has been selected for award.

Note: Notification of White Paper and proposal selection is not an authorization to begin work.

6.4 Debriefings

White Paper evaluation will not entitle the offeror to a debrief as no award can result from a White Paper. However, for Full Proposals, the Component Contracting Officer shall follow the procedures in FAR 35.008 (d).

7.0 Program Funding

Those selected for award may receive up to \$3M in RIF Program funding. White Papers or Full Proposals submitted for greater than \$3M may be eliminated from further consideration. Awards for greater than \$3M require OSD AT&L waiver and congressional notification.

\$225M was appropriated to OSD in FY15 and will be allocated to fund requirements of Defense Components, as follows:

- For support of Army, DoN and Air Force RIF project requirements: \$50M each or \$150M total.
- For Defense Agencies RIF project requirements: \$50M.
- The remaining \$25M will support defense-wide technology area priorities.
- This funding is an estimate only and not a contractual obligation, as all funding is subject to change.

8.0 Period of Performance

The performance period shall not exceed 24 months from date of contract award.

9.0 Two-Step Solicitation Process

9.1 General Information

No paper copies of this solicitation will be issued. The government reserves the right to fund all, some or none of the proposals in response to this announcement and to create and maintain a reserve list of proposals for potential funding, in the event that sufficient funding becomes available. No funding will be provided to offerors for reimbursement of costs incurred to respond to this solicitation. White Papers, technical and cost or price proposals (or any other material) submitted in response to this BAA will not be returned. All submissions will be treated as sensitive competitive information and their contents will be disclosed only for the purposes of evaluation.

9.2 E-mail Addresses

Offerors must be aware that it is their responsibility to ensure: (1) correct e-mail addresses are provided at the time of submission, (2) e-mail notifications reach the intended recipient(s), and (3) the e-mail is not blocked by the use of 'spam blocker' software or other means that the recipient's Internet Service Provider may have implemented as a means to block the receipt of certain e-mail messages.

9.3 Reserved

9.4 Electronic Submissions

For each DoD RIF website, offerors must register to submit White Papers. White Papers are to be submitted electronically to the following respective DoD RIF websites:

- RIF Main Page (contains below links) - <http://www.dodrif.com/>
- Army - <http://www.dodrif.com/user/login>
- DoN - <https://www.navysbirprogram.com/NavyRIF/>
- Air Force - <http://www.AFRapidInnovationFund.com/>
- Office of the Secretary of Defense (OSD) Defense Agencies - <http://www.dodrif.com/user/login>

White Papers provided by any other means (e.g. hand-carried, postal service mail, commercial carrier, fax or e-mail) will not be considered.

White Papers will be considered **“works in progress”** until the offeror submits electronically all three sections in accordance with section 9.5. The respective DoD RIF submission website will provide offerors a printable confirmation of successful White Paper submission upon completion. **White Papers remaining in the system after the due date that have not been finalized will not be evaluated.**

9.5 Step 1: Submission of White Papers

White Papers shall address one of the requirements listed in Section 13.0 of this announcement. Only UNCLASSIFIED White Papers will be accepted. White Papers should focus on one requirement per paper. There is no limit on the number of White Papers an offeror may submit in response to this BAA.

White Papers must be received through the appropriate DoD RIF submission website NLT 3:00 p.m. EDT, June 15, 2015. It will not be possible to submit White Papers after the due date/time. All White Paper submissions must comply with the submission guidelines/templates provided on the respective websites. Failure to comply may result in the rejection of the White Paper during the review. Offerors are responsible for accessing the appropriate DoD RIF submission website and for submitting electronic White Papers to the website specified in Section 9.4. When sending electronic files, the offeror shall account for potential delays in file transfer from the originator's computer server to the DoD RIF submission website. Offerors are encouraged to submit their responses early to avoid potential file transfer delays due to high demand or problems encountered in the course of the submission.

Acceptable evidence to establish the time of receipt includes electronic evidence of receipt. Offerors should print and maintain for their records the electronic date/time stamped receipt appearing on the final screen following each submission. All submissions shall be fully uploaded and submitted before the due date and time in order to be considered submitted timely. **There will be no exceptions.**

Any modification or revision to the White Paper received at the respective DoD RIF submission website after the exact time specified for receipt of offers is "late" and will not be considered.

If an emergency or unanticipated event interrupts normal Government operation of the websites such that White Papers cannot be received by the date and time specified, then the date and time specified for receipt will be deemed to be extended to the same time of day specified in the BAA on the first work day on which normal Government operation of the website resumes.

White Papers may be withdrawn by written notice to the contracting officer any time before notification in accordance with Section 6.3. Withdrawals are effective upon receipt of notice by the Contracting Officer.

9.5.1 White Paper Structure

A complete White Paper will consist of three sections: Section One, the Cover Sheet, Section Two, the Technical Description (to include cost), and Section Three, the Quad Chart.

Number of Pages: The White Paper submission is limited to four pages, which includes Sections Two and Three as below. Section One does not count towards the page count. Pages submitted in excess of the stated limits will not be read or evaluated.

Section One – Cover Sheet (Online Form)

The Cover Sheet is prepared on a DoD RIF submission website. The Cover Sheet must be prepared before Sections Two and Three can be submitted. Offerors that intend to submit multiple White Papers must prepare a separate cover sheet for each White Paper. Upon completion of the Cover Sheet, the offeror will be instructed to submit the Technical Description and Quad Chart. Offerors are responsible for ensuring that all sections have been submitted and accepted by the website. Detailed submission instructions are available on each Component’s website. Cover Sheet data elements required vary by Component.

Section Two – Technical Description (TD)

The TD shall be prepared outside of the respective DoD RIF submission website and then uploaded to the submission site as a PDF attachment. Ensure your TD adequately describes the proposed approach and resulting contributions. The TD shall include the following sections in the order given below, as applicable:

1. **Contribution to the Requirement:** Provide a high-level project overview describing how (3-5 sentence description) this contribution addresses one or more of the goals listed below:
 - **Enhanced Military or DoD System Capability** – Describe how your proposed project significantly increases or improves the military capabilities in relationship to requirements identified in Section 13 and/or acquisition program needs.
 - **Accelerated Military or DoD System Development Capability** – Describe how your proposed project accelerates the development and ability to deploy military or system capabilities required for use by the Department of the Defense.
 - **Reduces Costs** – Describe how your proposed project reduces the development, acquisition, sustainment, demilitarization, or total ownership costs of the identified fielded system or acquisition program.
 - **Reduce Technical Risks** – Describe how your proposed approach can reduce the probability of program failure.

- **Improve the timeliness and thoroughness of test and evaluation outcomes** – Describe how your innovative technology contributes to improving testing timelines/results.
2. **Technical Approach:** Describe how the proposed technical approach is innovative, feasible, achievable, complete, and supported by a technical team that has the expertise and experience to accomplish the proposed tasks, including:
- Project objectives and scope.
 - Overview of tasks and methods planned to achieve each objective.
 - The final product to be delivered.
 - Key Personnel (including subcontractors and consultants).
 - Facilities/Equipment necessary to carry out the proposed effort.
 - Related Prior or Current Work, including SBIR/STTR contracts and IR&D projects.
 - The current Technology Readiness Level (TRL) of the technology and/or product and how it will transition to a defense system or military program. DoD seeks a Technology Readiness Level (TRL) goal of 5 - 6 for entry and goal of 7 - 9 for exit (for descriptions of TRL, see www.acq.osd.mil/chieftechologist/publications/docs/TRA2011.pdf.) In circumstances of exceptional technical merit, proposals with a lower TRL rating will be considered for award, as warranted by the Source Selection Authority.
 - Potential and strategy for transition of deliverables to a Government acquisition program, including any restrictions on Government use, release, or disclosure of technical data or computer software presenting transition difficulty and/or increased risk/cost to the Government.
3. **Schedule:** Provide a proposed project schedule and describe how the proposed schedule is achievable for the proposed technical approach. Technologies should transition to a military system or defense program within 24 months of contract award. Discuss and/or use a Gantt Chart or similar master planning tool to describe:
- Major activities/milestones to include transition and/or deployment events
 - Deliverables
 - Metrics/measures of success
 - Potential risks and risk mitigation plans
4. **Costs:** Name and describe the estimated costs for the proposed technical approach, including:
- The methods (e.g., expert judgment, analogous estimating, parametric estimating) used to ensure that the proposed costs are realistic for the technical approach proposed

- Additional funds, if any, expected to complete the project including the timing, source, amount, and planned use of the funds. Describe funding dependencies, if any or known, such as a firm commitment from a government organization, and/or Internal Research and Development, which may be critical to the completion of a task.

Text & Font Format: Text shall be at least single-spaced, on 8½ x 11 inch paper, with a minimum of one-inch margin all around. Pages shall be numbered consecutively. Font size shall be of minimum 10-point font and preferably Times New Roman. Bolding, underlining, and italics may be used to identify points of emphasis. Graphic presentations, including tables, while not subject to the same font size and spacing requirements, shall have spacing and text that is easily readable.

Headers: The offeror's name and applicable requirement number shall be in the header of each page. The header may be included in the one-inch margins.

Section Three – Quad Chart

The unclassified Quad Chart shall be prepared outside of the respective DoD RIF submission website in Landscape orientation and then uploaded to the submission site as an editable PowerPoint attachment. A Quad Chart template can be found at the Federal Business Opportunity website, FY2015 DoD Rapid Innovation Fund (RIF) Broad Agency Announcement, on the right hand side column, titled "Appendix 1 - Quad Chart Format". The Quad Chart should be formatted as stated and include the following information:

- **Heading** (Arial 24pt Bold)
 - Title of Project
 - Company
 - Requirement number (#)
- **Upper Left Quadrant:**
 - Picture or graphic illustrating proposed technology development
- **Lower Left Quadrant** (Arial 12pt Normal):
 - Project objectives and scope
 - Key personnel, facilities/equipment
 - Related prior or current work
- **Upper Right Quadrant** (Arial 12pt Normal):
 - How the technology contributes and addresses the requirement
 - How the technology will transition to existing military systems or programs
 - Technical Readiness Level (current level and anticipated level at project completion)

- **Lower Right Quadrant:** (Arial 12pt Normal):
 - Estimated costs
 - Major activities/milestones to include transition and/or deployment events
 - Deliverables, metrics/measures of success
 - Potential risks

The Government's decision to invite an offeror to submit a Full Proposal will be based upon the evaluation results of the White Paper submission. If an offeror does not submit a White Paper by the specified due date and time, it is not eligible to participate in Step 2 of the solicitation process.

Virus Check: Perform a virus check before uploading the White Paper. If a virus is detected, it may cause rejection of the file.

Security: Do not lock or encrypt any files uploaded as part of your White Paper submission.

9.6 Step 2: Submission of Full Proposals

Full Proposals are by invitation only. The Government will extend invitations for submission of Full Proposals for those White Paper submissions that merit further consideration. Full Proposals shall expand on the White Paper submission providing sufficient detail that represents an innovative approach to accelerating the transition of defense-related technologies. Invitations for Full Proposals will be sent from respective DoD Component Contracting Officers to offerors. The anticipated due date and time for Full Proposals will be included in the proposal invitation.

Offerors are advised only properly warranted Government Contracting Officers are legally authorized to contractually bind or otherwise commit the Government. The Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination. Offerors may be removed from award consideration should the parties fail to reach agreement on award terms, conditions and cost/price within a reasonable time, or if the offeror fails to timely provide requested additional information.

9.6.1 Format of Full Proposals

Specific DoD Component information for Full Proposal preparation instructions will be provided with the invitation for Full Proposals. Do not lock or encrypt any files submitted as part of the proposal submission. Perform a virus check before uploading any files to the submission websites. If a virus is detected, it may cause rejection of the file. Proposal prices and terms and conditions shall remain valid for 180 days from the submission date of the Full Proposal.

10.0 White Paper and Full Proposal Evaluations

The evaluation process will be conducted using technical subject matter expert reviews as described in FAR 6.102(d)(2) and 35.016. Each White Paper will be evaluated based on the merit and relevance of the specific White Paper as it relates to the evaluation factors stated herein rather than against other White Papers for requirements in the same general area. Each Full Proposal will be evaluated based on the merit, relevance and cost of the specific proposal as it relates to the evaluation factors stated herein rather than against other proposals for requirements in the same general area.

10.1 Adjectival Ratings

During the evaluation of White Papers and Full Proposals, the following adjectival ratings will be used for each of the non-price factors. White Papers will receive a “Go” or “No Go” determination as to whether it will receive further consideration. If during any evaluation a factor is deemed “Marginal” or “Unacceptable” that evaluation will automatically receive a “No Go” determination and will not receive further consideration.

- **Outstanding (O)** – The White Paper/Full Proposal meets requirements and indicates an exceptional approach and understanding of the requirements. Strengths far outweigh any weaknesses. The risk of unsuccessful performance is very low.
- **Good (G)** – The White Paper/Full Proposal meets requirements and indicates a thorough approach and understanding of the requirements. Strengths outweigh any weaknesses. The risk of unsuccessful performance is low.
- **Acceptable (A)** – The White Paper/Full Proposal meets requirements and indicates an adequate approach and understanding of the requirements. Strengths and weaknesses are offsetting or will have little or no impact on contract performance. The risk of unsuccessful performance is no worse than moderate.
- **Marginal (M)** – The White Paper/Full Proposal does not clearly meet requirements and has not demonstrated an adequate approach and understanding of the requirements. One or more weaknesses are not offset by strengths. The risk of unsuccessful performance is high.
- **Unacceptable (U)** – The White Paper/Full Proposal does not meet requirements and contains one or more deficiencies. The proposal is not awardable.

10.2 Evaluation Factors

White Papers and Full proposals will be evaluated using adjectival ratings applied to each of the non-price factors:

- **Factor #1 – Contribution to the Requirement:** The degree to which the technical approach is relevant to the proposed requirement.
- **Factor #2 – Technical Approach/Qualifications:** The degree to which the technical approach is innovative, feasible, achievable, complete and supported by a technical team that has the expertise and experience to accomplish the proposed tasks. This includes an evaluation of the probability for transition of this effort into an acquisition program, a military system, or other military capability.
- **Factor #3 – Schedule:** The degree to which the proposed schedule is achievable within 24 months from award.
- **Factor #4 – Cost:** Whether the proposed cost or price is realistic for the proposed technical approach and does not exceed \$3 million.

During evaluations, Factors #1 and #2 are equally important; Factors #3 and #4 are equally important. When considered together Factors #1 and #2 are significantly more important than Factors #3 and #4.

11.0 Award Information

11.1 Commitment to Small Business

It is the policy of the Department of Defense to provide maximum opportunity to small businesses, including small businesses in all socioeconomic categories to participate in DOD acquisitions. DoD is strongly committed to providing prime and subcontracting opportunities for small businesses, including small businesses in all socioeconomic categories, and, Historically Black Colleges and Universities, and Minority Institutions to support the RIF program.

Selection preference shall be given to small business offers addressing the above evaluation factors. Awards to other than small business offerors are allowed but **ONLY** after the approval authority determines the offer is superior to an offer received from a small business.

All offerors submitting Full Proposals shall demonstrate how it intends to provide meaningful small business participation opportunities to support its proposed project (see Section 11.5). If a small business (prime) proposer is teaming with an other than small business on the project, the small business must perform at least 51 percent of the cost of the work.

11.2 Basis of Award

The Government intends to make multiple awards resulting from this announcement and reserves the right to select for award any, all, part, or none of the proposals received. The awards will be made based on the best proposals that are determined to be most

beneficial to the Government with appropriate consideration given to the evaluation factors, order of importance, and selection preferences. Awards will be made to the offerors whose offer is determined to provide the “best value” to the Government based on the factors/preferences, this may not necessarily be the proposal offering the lowest cost/price or receiving the highest evaluated rating.

11.3 Negotiation and Discussions

If necessary, each Component will determine if negotiations or discussions are required.

11.4 DCAA-Approved Accounting System

Offerors selected for a cost-type award must have a Defense Contract Audit Agency (DCAA)-approved accounting system. Guidance is available at <http://www.dcaa.mil>. Offerors are encouraged to obtain DCAA accounting system approval prior to the award timeframe. Lack of a DCAA approved accounting system will delay and possibly prevent a cost-type or any other award. Questions may be addressed to the Component Point of Contact listed in Section 13.0. While a DCAA audit is pending, a Component Contracting Officers may make a determination that the offeror’s accounting system is acceptable in accordance with FAR 242.7502 and the clause at FAR [252.242-7006](#), Accounting System Administration.

11.5 Subcontracting Plans

For offers proposed in excess of \$650,000 by other than small businesses, the offeror is required to submit a Subcontracting Plan in accordance with FAR 52.219-9. As such, subcontracting plans will be reviewed (and negotiated as necessary) to ensure subcontracting plans are compliant with FAR Subpart 19.7.

12.0 Other Information

The cost of preparing submissions in response to this solicitation is not considered an allowable direct charge to any resulting or any other contract. However, it may be an allowable expense to a normal Bid and Proposal indirect cost as specified in FAR 31.205-18.

12.1 Provisions and Clauses

This BAA lists some provisions and clauses that may be required to be incorporated in resulting contracts. Similar provisions may be included in the terms and conditions of resulting Cooperative Agreements and Other Transactions. Component Contracting Officers are required to insert applicable provisions and clauses in their invitations for Full Proposals.

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at <http://farsite.hill.af.mil>

52.204-10 – Reporting Executive Compensation and First-Tier Subcontract Awards (Jul 2013)

52.215-22 – Limitations on Pass-Through Charges—Identification of Subcontract Effort (Oct 2009)

52.215-23 – Limitations on Pass-Through Charges (Oct 2009)(ALT I)

52.219-28 - Post-Award Small Business Program Rerepresentation (Apr 2012)

52.222-54 – Employment Eligibility Verification (Aug 2013) (This clause will not be include in Cooperative Agreements or Other Transactions)

252.211-7003 – Item Identification and Valuation (Aug 2008)

252.227-7013 – Rights in Technical Data--Noncommercial (FEB 2014)

252.227-7014 – Rights in Noncommercial Computer Software and Noncommercial Computer Software Documentation (FEB 2014)

252.227-7015 – Technical Data—Commercial Items (FEB 2014)

252.227-7017 – Identification and Assertion of Use, Release, or Disclosure Restrictions (JAN 2011)

252.227-7037 – Validation of Restrictive Markings on Technical Data (JUN 2013)

252.232-7003 – Electronic Submission of Payment Requests and Receiving Reports. (JUNE 2012)

252.235-7004 – Protection of Human Subjects (JUL 2009)

235-7002 – Animal Welfare (DEC 2014)

12.2 BAA-100 Organizational Conflicts of Interest (OCI)

Purpose

The primary purpose of this provision is to aid in ensuring that: the Contractor's objectivity and judgment are not biased because of its present, or currently planned interests (financial, contractual, organizational, or otherwise) which relate to work under a contract; the Contractor does not obtain an unfair competitive advantage by virtue of its access to non-public Government information regarding the Government's program plans and actual or anticipated resources; and the Contractor does not obtain any unfair competitive advantage by virtue of its access to proprietary information belonging to others.

Scope

The restrictions described herein shall apply to performance or participation by the Contractor and any of its affiliates or their successors in interest (hereinafter collectively referred to as "Contractor") in the activities covered by this clause as prime contractor, subcontractor, co-sponsor, joint venture, consultant, or in any similar capacity. The term "proprietary information" for the purposes of this clause is any information considered to be so valuable by its owner that it is held in secret by them and their licensees.

Information furnished voluntarily by the owner without limitations on its use, or which is available without restrictions from other sources, is not considered proprietary.

Access To and Use of Government Information: If the Contractor, in the performance of this contract, obtains access to information such as plans, policies, reports, studies, financial plans, or data which has not been released or otherwise made available to the public, the Contractor agrees that without prior written approval of the Contracting Officer, it shall not: (a) use such information for any private purpose unless the information has been lawfully released or otherwise made available to the public, (b) compete for work based on such information after the completion of this contract, (c) submit an unsolicited proposal to the Government which is based on such information after such information is released, or (d) release such information unless such information has previously been lawfully released or otherwise made available to the public by the Government.

Access To and Protection of Propriety Information: The Contractor agrees that, to the extent it receives or is given access to proprietary data, trade secrets, or other confidential or privileged technical, business, or financial information (hereinafter referred to as "proprietary data") under this contract, it shall treat such information in accordance with any restrictions imposed on such information. The Contractor further agrees to enter into a written agreement for the protection of the proprietary data of others and to exercise diligent effort to protect such proprietary data from unauthorized use or disclosure. In addition, the Contractor shall obtain from each employee who has access to proprietary data under this contract, a written agreement which shall in substance provide that such employee shall not, during his/her employment by the Contractor or thereafter, disclose

to others or use for their benefit, proprietary data received in connection with the work under this contract. The Contractor will educate its employees regarding the philosophy of Part 9.505-4 of the Federal Acquisition Regulation so that they will not use or disclose proprietary information or data generated or acquired in the performance of this contract except as provided herein.

Subcontracts: The Contractor shall include this or substantially the same clause, including this paragraph, in consulting agreements and subcontracts of all tiers. The terms “Contract”, “Contractor”, and “Contracting Officer”, will be appropriately modified to preserve the Government’s rights.

Disclosures: If the Contractor discovers an organizational conflict of interest or potential conflict of interest after award, a prompt and full disclosure shall be made in writing to the Contracting Officer. This disclosure shall be made on the OCI Analysis/ Disclosure Form provided as an Attachment to this contract, and shall include a description of the action the Contractor has taken or proposes to take in order to avoid or mitigate such conflicts.

Remedies and Waiver: For breach of any of the above restrictions or for non-disclosure or misrepresentation of any relevant facts required to be disclosed concerning this contract, the Government may terminate this contract for default, disqualify the Contractor for subsequent related contractual efforts, and pursue such other remedies as may be permitted by law or the contract. If, however, in compliance with this clause, the Contractor discovers and promptly reports an organizational conflict of interest (or the potential thereof) subsequent to contract award, the Contracting Officer may terminate this contract for the convenience of the Government if such termination is deemed to be in the best interest of the Government.

Modifications: Prior to contract modification, when the Scope of Work is changed to add new work or the period of performance is significantly increased, the Contracting Officer may require the Contractor to submit either an organizational conflict of interest disclosure or an update of the previously submitted disclosure or representation.

12.3 BAA-200 Export Control

The International Traffic in Arms Regulations (ITAR), 22 CFR Parts 120 through 130, and the Export Administration Regulations (EAR), 15 CFR Parts 730 through 799, will apply to all projects with military or dual-use applications that develop beyond fundamental research, which is basic and applied research ordinarily published and shared broadly within the scientific community. More information is available at http://www.pmddtc.state.gov/regulations_laws/itar.html.

12.4 Publication Approval

Government review and approval will be required prior to any dissemination or

publication, except within and between the Contractor and any subcontractors, of classified and non-fundamental information developed under this contract or contained in the reports to be furnished pursuant to a contract.

12.5 Essentially Equivalent Work

While it is permissible, to submit proposals containing a significant amount of essentially equivalent work for consideration under numerous federal program announcements, it is unlawful to enter into awards requiring essentially equivalent effort. If there is any question concerning this, it must be disclosed to the soliciting agency or agencies before award.

Essentially equivalent work is defined as (1) substantially the same research is proposed for funding in more than one contract proposal or grant application submitted to the same Federal agency; (2) substantially the same research is submitted to two or more different Federal agencies for review and funding consideration; or (3) a specific research objective and the research design for accomplishing an objective are the same or closely related in two or more proposals or awards, regardless of the funding source.

12.6 Security Classification

In order to facilitate intra-program collaboration and technology transfer, the Government will attempt to enable technology developers to work at the unclassified level to the maximum extent possible. If access to classified material will be required at any point during performance, the offeror must clearly identify such need to the contracting office extending the invitation for full proposal.

12.7 Recombinant DNA

All research involving recombinant DNA must include documentation of compliance with Department of Human and Health Services (DHHS) recombinant DNA regulations, and shall comply with the applicable federal and state law, regulation and any additional agency guidance. Research must be approved by an Institutional Biosafety Committee (IBC).

12.8 Department of Defense High Performance Computing Program

The DoD High Performance Computing Program (HPCMP) furnishes the DoD S&T and DT&E communities with use-access to very powerful high performance computing systems. Awardees may be eligible to use HPCMP assets in support of their funded activities if Program Office approval is obtained and if security/screening requirements are favorably completed. Additional information and an application may be found at <http://www.hpcmo.hpc.mil/>.

12.9 Limitations on Other Transactions

Offerors are advised that an Other Transaction (OT) for Prototype Agreement (P.L. Law 103-160 § 845) may only be awarded if there is:

- At least one nontraditional defense contractor participating to a significant extent in the prototype project, or
- No nontraditional defense contractor is participating to a significant extent in the prototype project, but at least one of the following circumstances exists:
 - At least one third of the total cost of the prototype project is to be paid out of funds provided by the parties to the transaction other than the federal government. The cost share should generally consist of labor, materials, equipment, and facilities costs (including allocable indirect costs).
 - Exceptional circumstances justify the use of a transaction that provides for innovative business arrangements or structures that would not be feasible or appropriate under a procurement contract.
- Although use of one of these options is required to use an Other Transaction for Prototype agreement as the procurement vehicle, no single option is encouraged or desired over the others.

For purposes of determining whether or not a participant may be classified as a nontraditional defense contractor and whether or not such participation is determined to be participating to a significant extent in the prototype project, the following definitions are applicable:

“Nontraditional defense contractor” means a business unit that has not, for a period of at least one year prior to the date of the OT agreement, entered into or performed on:

- any contract that is subject to full coverage under the cost accounting standards prescribed pursuant to section 26 of the Office of Federal Procurement Policy Act (41 U.S.C. 422) and the regulations implementing such section; or
- any other contract in excess of \$500,000 to carry out prototype projects or to perform applied research or advanced development projects for a Federal agency that is subject to the Federal Acquisition Regulation.

“Participating to a significant extent in the prototype project” means that the nontraditional defense contractor is supplying a new key technology or product, is accomplishing a significant amount of the effort wherein the role played is more than a nominal or token role in the research effort, or in some other way plays a significant part in causing a material reduction in the cost or schedule of the effort or an increase in performance of the prototype in question.

Offerors are cautioned that if they are classified as a traditional defense contractor, and propose the use of an OT, the Government will require submittal of both a cost proposal under the guidelines of the FAR/DFARS, and a cost proposal under the proposed OT, so that an evaluation may be made with respect to the cost tradeoffs applicable under both situations. The Government reserves the right to negotiate either a FAR based procurement contract, or Other Transaction as it deems is warranted under the circumstances.

12.10 Technical and Administrative Support by Non-Government Personnel

The DoD may use non-government personnel (e.g. contractor support personnel) in the review and administration of offers submitted in response to this BAA. Support contractor employees may have access to offers including information that may be considered proprietary. All contractor support personnel having access to any proprietary data are required to execute nondisclosure agreements certifying that they will not disclose any information pertaining to this solicitation including any offers, the identity of any offerors, or any other information relative to this BAA. The contracts for provision of support personnel contain Organizational Conflict of Interest clauses and include contractual requirements for non-disclosure of proprietary contractor information.

12.11 Foreign Participants

Means any person who is NOT:

- a citizen or national of the United States; or
- a lawful permanent resident; or
- a protected individual as defined by 8 U.S.C. § 1324b(a)(3).

"Lawful permanent resident" is a person having the status of having been lawfully accorded the privilege of residing permanently in the United States as an immigrant in accordance with the immigration laws and such status not having changed.

"Protected individual" is an alien who is lawfully admitted for permanent residence, is granted the status of an alien lawfully admitted for temporary residence under 8 U.S.C. § 1160(a) or 8 U.S.C. § 1255a(a)(1), is admitted as a refugee under 8 U.S.C. § 1157, or is granted asylum under Section 8 U.S.C. § 1158; but does not include (i) an alien who fails to apply for naturalization within six months of the date the alien first becomes eligible (by virtue of period of lawful permanent residence) to apply for naturalization or, if later, within six months after November 6, 1986, and (ii) an alien who has applied on a timely basis, but has not been naturalized as a citizen within 2 years after the date of the application, unless the alien can establish that the alien is actively pursuing naturalization, except that time consumed in the Service's processing the application shall not be counted toward the 2-year period.

13.0 COMPONENT INSTRUCTIONS AND REQUIREMENTS

13.1 Introduction

Each White Paper must support one of the specific DoD Component requirements, more fully described in the each Component's Annex, as follows:

- **Department of the Army Annex: See Section 13.2**
- **Department of the Navy Annex: See Section 13.3**
- **Department of the Air Force Annex: See Section 13.4**
- **Office of the Secretary of Defense / Defense Agencies Annex: See Section 13.5**

13.2 Department of the Army Annex

Points of Contact:

Questions of a technical nature for specific Army topics should be addressed to the Technical Point of Contact listed after each requirement number in this Annex. Questions of a general nature should be addressed to Rob Saunders, 703-617-0279, robert.m.saunders14.civ@mail.mil. Please include the term “U.S. Army RIF technical question” in the subject line.

Specific Instructions:

The invitation for Full Proposal letter will be sent by the Army Contracting Office that will be handling any subsequent contract award, which is NOT the contracting office that issued this BAA. Offerors should follow the instructions provided in the invitation letter.

Army Requirements:

Requirement #: PEOAMMO1

Title: Compact Artillery Power System (Army)

Military System or Acquisition Customer: PEO Ammunition, PM Towed Artillery Systems

Description: US Army has an interest in a compact man-portable power system for howitzer digital fire control systems that is lighter weight and operates with less noise than that of traditional motor-generator sets. The duration soldiers can operate digitally without external power is currently limited by the energy capacity of onboard electro-chemical batteries. This new power supply should provide MIL-STD-1275 28V DC power with a typical draw between 200-300 watts, plus be able to recharge on-board power storage systems, so as to extend the duration soldiers can operate digitally.

Technical POC: David Kratzer, 973-724-7080, david.g.kratzer.civ@mail.mil

Requirement #: PEOC3T01

Title: Context Aware Applications for Dynamic Network Connectivity

Military System or Acquisition Customer: PEO C3T

Description: The basic capability of interest will be bandwidth-aware applications that will enable applications to use available network metrics to improve information flow to and from the warfighter based on bandwidth availability across the Army enterprise. Longer-term, a more generic context aware capability that enable presenting information and services and automating execution of services in support of the warfighter’s mission would be the end-goal. The real challenge for context aware functionality will be the creation of machine based tagging of information with minimal human interaction beyond some nominal training phase. At the objective state of this capability one could envision a capability that was able to use basic context information from a user’s workflow to find relevant information to support that workflow and then instead of attempting to pre-label information to include text, imagery and video, this function would dynamically negotiate between the workflow application and the context information warehouse the context

required to support that user to include the ability to negotiate, infer and discover new context concepts.

Technical POC: Ray McGowan, 443-395-6725, Raymond.c.mcgowan.civ@mail.mil

Requirement #: PEOC3T02

Title: Semantic Services and Application Integration for Dynamic Network Connectivity

Military System or Acquisition Customer: PEO C3T

Description: This project will focus on integrating the capabilities developed for semantic policy, event and discover services along with the context-aware applications that use the context metadata that these services provide to create the baseline capability to enable Dynamic Network Connectivity. It should be clear that the interaction between these services and their ability to share a common ontology at some level of specificity will be critical to the success of this capability. For example, the discovery service will clearly need to work with the policy and potentially other services to define what actions can be taken when a new member joins a node on the tactical edge and the new warfighter will have context-aware applications that will be able to discover particular data repositories that will allow it to not only select the right data sources to inform its SA in the new area, but ideally, do this in a way that would support commander's intent and creating a shared situational awareness among the newly formed team. However, the initial goal will be to ensure that information can be shared by ensuring that bandwidth constraints across the tactical network are dynamically managed to get warfighters the information they need given knowledge of the potential pathways available for information transport through the tactical network. One of the critical components of this approach will be to develop a strategy for ontology creation, domain mediation for ontologies and learning mechanisms to expand and maintain an ontology to ensure as new concepts appear in the warfighter's domain the various services that will comprise this infrastructure can use these new concepts to alter policies, event types and discovery concepts to meet the dynamically evolving mission space of the warfighter.

Technical POC: Ray McGowan, 443-395-6725, Raymond.c.mcgowan.civ@mail.mil

Requirement #: PEOC3T03

Title: Low Cost Position Location Information Beacon

Military System or Acquisition Customer: PEO C3T

Description: Each beacon must be lightweight and wearable so as not to constrict the movements of an extremely active person. A single small device (system not larger than 15in³), wearable on a person's upper body (shoulders, upper back) is preferred, but a disturbed form factor would be considered, such as the antenna mounted on the shoulder but heavier items secured at the waist. The beacon should require little or no user interaction to initiate the device once it is properly configured and delivered to the end-user. The beacon must function in a wide range of terrain. Operational environments would include flat plains or mountain regions, deserts or dense jungles and forest as well as highly developed urban centers. The beacon may leverage multiple wireless networks such as commercial cellular when available, commercial and/or military satellites when available, or other novel communication mechanisms (e.g., long range RFID). Also the device should leverage existing federal infrastructure wherever possible. If a deployed collection point is required,

devices must be capable of operational distances to exceed 70km. The unit cost of each beacon should be less than \$100.

Technical POC: Ray McGowan, 443-395-6725, Raymond.c.mcgowan.civ@mail.mil

Requirement #: PEOIEWS01

Title: Real-time, Low SWAP Image Processing and Exploitation

Military System or Acquisition Customer: PEO IEW&S, PdM EO/IR Payloads

Description: Provide a compact, ruggedized, lightweight, self-contained processing unit capable of performing real-time image processing and exploitation on visible and infrared full motion imagery collected from various airborne payloads. Processing and exploitation shall include automated target detection, moving target indication, target tracking, and ortho-rectification. The unit shall be qualified to MIL-STD-810 for application in airborne environments. The unit inputs and outputs shall conform to Motion Imagery Standards Board (MISB) standards to ensure a platform/payload agnostic solution. Target location and track information shall be embedded into video metadata that is compatible with US Army Distributed Common Ground Station (DCGS-A).

Technical POC: Mr. Adam Terio, 703-704-1835, adam.a.terio.civ@mail.mil

Requirement #: PEOIEWS02

Title: Collaboration between Multiple ISR payloads (Army)

Military System or Acquisition Customer: PEO IEW&S/PM SAI

Description: Currently, there is little or inefficient collaboration between multiple Intelligence, Surveillance, and Reconnaissance (ISR) payloads that are integrated on a single ISR Aerial Vehicle/System. Overall Intelligence can be greatly enhanced if better collaboration exists between these sensors. Technologies that will improve and automate collaboration/fusion between multiple ISR payloads on a single aerial vehicle are required in order to improve the overall operational effectiveness of multi-INT platforms to provide time-critical intelligence to the warfighter in tactical operations.

Technical POC: Stephen Antunes, 443-861-1382, Stephen.r.antunes.civ@mail.mil

Requirement #: PEOIEWS03

Title: Foliage Penetrating SAR/GMTI Exploitation Tools

Military System or Acquisition Customer: PEO IEW&S/PM SAI

Description: Seeking technologies, algorithms, and tools that will reduce the overall workload of the imagery analysts with the exploitation of low frequency, Foliage Penetrating SAR and GMTI sensors. With coarser resolutions, lower location accuracies, and high clutter environments, FOPEN sensors are difficult to exploit intelligence. Tools that can aid analysts in detection, tracking, classification, discrimination, and characterization of targets in FOPEN SAR and GMTI sensors will provide greater utility.

Technical POC: Jon Corriveau, 443-861-1411, jonathan.p.corriveau.civ@mail.mil

Requirement #: PEOIEWS04

Title: Collection of Next Generation Signals of Interest (Army)

Military System or Acquisition Customer: PEOs/PMs for SIGINT Systems, PM EW

Description: Tactical SIGINT collection assets require future capabilities against a growing list of emerging threat signals. The ability to augment signal of interest coverage

beyond current receiver implementations is critical to ongoing mission success. There is a specific class of LPI signals that is increasing in the level of threat presented. A technical implementation alternative is needed to provide coverage for these additional signals of interest to support Processing, Exploitation and Dissemination (PED) at the tactical level.

Technical POC: Larry Bacon, 443-395-4827, laurence.w.bacon.civ@mail.mil

Requirement #: PEOIEWS05

Title: Airborne EW (Army)

Military System or Acquisition Customer: PEO IEWS, PM EW, PM MFEW

Description: The Army has future requirements for Airborne EW to include integrated ES and EA across a variety of platforms at the tactical level. The Army also has legacy and existing PoRs that are currently conducting Airborne ASE, ES, and SIGINT missions. Technologies and solutions are sought that can leverage existing Army Airborne PoRs for accomplishing the functionalities of: RF Detect, ID, Locate, Attack, and Disseminate. The leveraging or modification of existing Army Airborne PoR technologies (I.E., HW, SW, architectures) is desired to achieve efficiencies across separate programs via: HW/SW reuse, reduced duplication, and increased commonality where possible. The purpose of this effort is to reduce risk, increase potential performance, and lower total ownership costs associated with the MFEW PoR. The end product should be a prototype suitable for flight demonstration that integrates with or leverages other Army PoR designs.

Technical POC: Steve Abbott, 443-395-4856, steve.abbott@us.army.mil

Requirement #: PEOIEWS06

Title: Tactical EW - SIGINT Inter-vehicle Communications (Army)

Military System or Acquisition Customer: PEOs/PMs for SIGINT Systems, PM Prophet, PM CREW

Description: There is a growing need to connect and quickly leverage the capabilities of different sensor platforms, including dismounted systems. The ability to use information gathered by one sensor to alert, in real-time, another sensor platform with complementary capabilities will enhance the Intel process. This “tipping and cueing” process of using information from one vehicle’s capability set to another is an enabler of accelerating and advancing the impact of sensor platforms. An implementation is needed to provide tactical EW - SIGINT inter-vehicle communications of data and low latency voice to support the “tipping and cueing” process. Additionally, the establishment of the communications link is foundational for setting up a mesh network that will enable integrated multi-platform, Electronic Attack, Direction Finding (DF), and Command and Control (C2).

Technical POC: John Masco, 443-395-4738, john.d.masco.civ@mail.mil

Requirement #: PEOIEWS07

Title: Nadir looking Synthetic Aperture Radar for Foliage Penetration

Military System or Acquisition Customer: PEO IEW&S/PM SAI

Description: Current Foliage Penetration SAR Radars are limited in resolution due to UHF RF frequencies. Higher frequency SAR systems, such as those in Ku and Ka band, can provide very high resolution imagery, making target identification easier on analysts. Technologies and solutions that can demonstrate a nadir looking SAR in a foliated

environment are sought. In some areas with foliage, there may be an opportunity for radars to detect targets under concealment with a very steep depression angle.

Technical POC: Jon Corriveau, 443-861-1411, jonathan.p.corriveau.civ@mail.mil

Requirement #: PEOIEWS08

Title: Ultra Wideband Spectrum Sensing and Monitoring System (Army)

Military System or Acquisition Customer: PEO IEW&S/PM EW

Description: The increasingly congested and contested electromagnetic environment requires innovative techniques to sense, display, and understand the spectrum in near real time. The ability to collect ultra wideband data, analyze, integrate, share, and distribute at the tactical level is paramount for freedom of maneuver during Electromagnetic Spectrum Operations. Spatial-Spectral holography enables spectrum monitoring capabilities including Signals Analysis, Signal processing, and generic detect, ID, and locate capabilities. A hybrid approach between RF and optical signal processing can be utilized to provide ultrawideband capabilities. The ability to share and distribute these results at the tactical level will yield unparalleled situational awareness for Spectrum Managers, as well as Tactical SIGINT operators.

Technical POC: Rob Blanton, 410-306-2859, Robert.e.blanton4.ctr@mail.mil

Requirement #: PEOSOLD01

Title: "Advanced Technologies for Lighter Weight, Better Performing, and Multifunctional Soldier Clothing & Protective Equipment"

Military System or Acquisition Customer: PEO Soldier, PM Soldier Protection and Individual Equipment

Description: US Army has a need for advanced material, processing, and integration technology for lighter weight and improved performance Soldier equipment. Novel fiber based, film, or other advanced materials with improved tenacity, durability and ballistic performance are desired for application in hard armor, soft armor, and helmets.

Technology is needed for improved hard armor inserts such as ultra-hard ceramics, advanced alternative materials, or novel integration methods. Advanced manufacturing methods are needed for hard armor and combat helmets to improve ballistic performance and reduce weight. High performance energy absorbing materials are needed for blunt impact protection for head, extremities, etc. Advanced transparent materials with ultrafast transitioning are needed to improve ballistic eyewear.

Advanced multifunctional materials are needed that provide improved protection from various threats and environments. Improved thermally protective materials are desired with improved durability, strength, and moisture vapor transport at reduced weights. Alternative spacial vector protection technologies are needed with increased deterrence, functional time, and low toxicity. Improved Soldier camouflage (patterns, colors, and textures) and alternative concealment technologies are needed. Advanced and innovative ways to improve weight distribution of load carriage equipment are needed. Technologies and processes which combine multiple capabilities are desired.

Technical POC: Suzanne Horner; 703-806-5181; suzanne.e.horner.civ@mail.mil

Requirement #: PEOSOLD02

Title: Integrated, Full Solution Day Optic Sighting System
Military System or Acquisition Customer: PEO Soldier, PM Soldier Weapons
Description: Demonstrate a fully integrated, full solution day optic sighting system that will increase P(h) as a function of range and reduce engagement time to enhance the performance of 7.62mm, and caliber .50 shoulder fired rifle systems out to 2000m. Desirable features: 4X-25X Magnification; LRF <3m Ranging Accuracy; Inclinator; Atmospheric Sensors; Ballistic Computer; Real Time Ballistic Solution; Standard Batteries (Army Inventory); High Brightness Display;
Technical POC: Robert Galeazzi; 973-724-6656; robert.j.galeazzi.civ@mail.mil

Requirement #: PEOSOLD03

Title: Digitally Fused Night Vision Device

Military System or Acquisition Customer: PEO Soldier, PM Soldier Sensors and Lasers

Description: Device to combine near infrared (NIR) and long wave infrared (LWIR) into a single head mounted or helmet mounted device with a field of view that is compatible with weapon sights.

Technical POC: Wayde Thomka; (703) 704-1346; wayde.w.thomka.civ@mail.mil

Requirement #: PEOSTRI01

Title: Enhanced Moving Human Target

Military System or Acquisition Customer: PEO STRI

Description: The US Army has an interest in Technologies / Products / Logistics that allow for an autonomous trackless moving human-type target capability for live fire training that can traverse over unimproved terrain, replicate threats and reactive behaviors, link to synthetic training environments, and detect hit and near miss engagements to enhance training realism and improve Soldier readiness and resiliency.

Technical POC: James Todd, 407.384.3905, james.a.todd28.civ@mail.mil

Requirement #: PEOSTRI02

Title: Medical Simulation Training Architecture

Military System or Acquisition Customer: PEO STRI

Description: The US Army has an interest in Technologies / Products / Logistics that support the development of a holistic medical simulation training architecture to support live training domain integrated solutions. The architecture should leverage the Simulation Open Framework Architecture (SOFA) utilized for medical simulations. The architecture is intended for the research and product development community to help develop newer algorithms and models, but can also be used as an efficient prototyping/development tool.

Technical POC: James Todd, 407.384.3905, james.a.todd28.civ@mail.mil

Requirement #: PEOAVN01

Title: UAS Navigation in Navigation Warfare Environments

Military System or Acquisition Customer: PEO Aviation

Description: The Unmanned Aircraft Systems Project Management Office (PM UAS) seeks innovative, modular, and open solutions to improve navigation performance of UAS in Navigation Warfare (NAVWAR) environments where traditional commercial and military GPS signals are degraded by simple and complex radio frequency interference sources. Technology solutions may include but are not limited to Controlled Radiation

Pattern Antennas (CRPA), nulling and digital beamforming control electronics, coupled inertial navigation units, and precision navigation systems augmented by other than GPS signals and data. Various classes of aircraft in PM UAS (Groups 1 to 4) seek components with minimal size, weight, and power (SWAP) and aerodynamic drag appropriate to their respective classes. Proposed solutions should significantly improve signal to noise performance and offer economical retrofit to existing airframes and with existing mission computers. The candidate technologies should be technologically mature and the proposal should provide scope to rapidly integrate and demonstrate through flight or in hardware in the loop simulation on the existing platform in a representative threat environment during the 2015 RIF execution timeframe.

Technical POC: David Cosby, 256-313-6465, david.s.cosby.civ@mail.mil

Requirement #: PEOAVN02

Title: Remaining Useful Life Predictions for Structural and Dynamic Components

Military System or Acquisition Customer: PEO Aviation

Description: Develop and demonstrate a high fidelity analytical capability for the prediction of fatigue life of critical dynamic and static components on rotary-wing aircraft. This required analytical prediction capability will enable the USG to better understand the impacts that certain operations and maneuvers have on component lives and enable the extension of their operational lives to enhance readiness and reduce operational and sustainment costs. The analytical approach may also use existing aircraft sensors and data to support component remaining useful life. Current component life and part tracking should not be assumed thus the solution shall stand alone to predict remaining useful life of the installed component. This analytical capability will enhance and promote safety through the prediction and assessment of the fatigue lives of critical components while allowing the USG to extend or modify the component time-on-vehicle lives, subject to the operational usage spectrum. The analytical tool shall also be utilized to support the component design process for high demand and/or expensive components through the tailoring of the components for fatigue life optimization based on specific applications and known vehicle usage spectrum. The fatigue prediction analysis shall also be used as a virtual testing tool to help avoid test and qualification costs through the reduction in the amount of required physical testing.

Technical POC: Casey Carter, 256-955-0796, casey.j.carter12.ctr@mail.mil

Requirement #: PEOAVN03

Title: Increasing Benefits of Rotary Wing Sensor Data by Conducting On-Board Complex Event Processing and Data Fusion

Military System or Acquisition Customer: PEO Aviation

Description: Much focus has been given to post-processing and warehousing of the Army's Condition Based Maintenance lifecycle data. This "big-data" allows for fleet-wide analysis once new metrics, algorithms, and processes are developed. However, advanced on-aircraft processing and data architecture technologies to support high output and multiple sensor inputs prior to data downloading can provide in-flight or immediate post-landing maintenance actions to expedite aircraft readiness. Topic is to provide for on-board processing, data fusion/correlation, compression and data storage solutions for sensors that can generate tremendous volumes of data. Innovative on-board applications that will

reduce the time and manpower associated with the analysis of large data, leading to actionable maintenance is required. Demonstration of a seamless interface to ground based maintenance software and applications is desired.

Technical POC: Casey Carter, 256-955-0796, casey.j.carter12.ctr@mail.mil

Requirement #: PEOAVN04

Title: Advanced Ballistic Protection System (BPS)

Military System or Acquisition Customer: PEO Aviation

Description: The Cargo Helicopter Project Office (PO) is interested in innovative technologies to provide increased protection against small arms fire, to include armor piercing (AP) rounds. The technologies should be lightweight, effective over a wide range of impact angles, and be able to fit within the constraints of the existing Cargo On-Off Loading System (COOLS) under-floor Ballistic Protection System (BPS). Proposed systems should be optimized to provide the best performing solution at the lightest weight possible. Testing of the BPS will be required to substantiate the performance to determine if the BPS meets the Army's requirements.

Technical POC: Bill Mueller, 256-876-8507, william.j.mueller22.civ@mail.mil

Requirement #: RDECOM01

Title: Metal Aircraft Component Surface Repair

Military System or Acquisition Program Customer: PEO Aviation, PM UH-60 and PM-AH-64

Description: Demonstrate a material additive repair process/technology that can be applied directly to worn locations to rebuild the surfaces of Aluminum, Magnesium, Steel, and/or Titanium aerospace components to original dimensions and specifications. In addition, apply rigorous test and analysis to evaluate the structural integrity of the repaired component so the material can withstand the operating environment. The goal is to prove a technology that can restore dimensional specifications and significant service life to aircraft components, including a method to confirm adhesion through NDI techniques. Applications range from gearboxes to access panels to substructure components with wear or corrosion issues.

Technical POC: Victor Kenneth Champagne, Leader ARL Center for Cold Spray, US Army Research Laboratory, Email: victor.k.champagne.civ@mail.mil

Requirement #: RDECOM02

Title: Aviation Technologies

Military System or Acquisition Customer: PEO Aviation

Description: Improvements to aviation platforms to overcome the constraints of complex terrain, higher altitudes, extreme temperatures, and extended distances while performing operations throughout the Joint Operational Area. Increase service rate for aviation mission requests, reduced force structure, reduced coverage times, enhance force survivability, expand situational awareness, and reduce fuel consumption and logistics footprint, share common training, education and equipment across the Joint VTOL fleet. Create embedded diagnostics and prognostics technologies for engines and drive train, structures, rotors, and vehicle management systems. Aid the development of an integrated

suite of decision aiding and autonomy technologies manned and unmanned aircraft systems that will increase the combat effectiveness.

Technical POC: Dawn Gratz, 256-842-8769, dawn.m.gratz.civ@mail.mil

Requirement #: RDECOM03

Title: Metal MEMS Spatial Light Modulator Development

Military System or Acquisition Customer: PEO Missiles and Space

Description: The US Army has interest in spatial light modulators (SLMs) that can significantly reduce the size, weight, power, and cost (SWAP-C) of guidance systems and infrared missile seekers by eliminating A/D converters and easing system requirements such as processor power, cables, and electronics. In recent years, modern foundry technology has made possible the development of high performance SLM's. These SLM's are finding their way into many commercial applications such as adaptive optics for telescopes. While the performance of commercially available SLM's is sufficient for some military applications, development of inexpensive, low voltage SLM technology is required to capture its full potential for missile applications.

Technical POC: Dawn Gratz, 256-842-8769, dawn.m.gratz.civ@mail.mil

Requirement #: RDECOM04

Title: Small Arms Weapons Integrated Fire Control (SAWIFC) Technologies for Squad Fire Control

Military System or Acquisition Customer: PEO-Soldier

Description: Submissions are being sought for prototypes of small arms fire control systems that are currently available for evaluation (TRL 5 or greater). Focus is on fire control systems for individual weapons to engage man sized targets at ranges from 0-600 m, with a potential objective of 1,200 m. Size, weight and power (SWaP) should be balanced against the capability provided for an individual soldier. These prototypes should address one or more of these capabilities of interest:

- Reduced target engagement times (examples of technologies: single and multiple target detection and target tracking)
- Reduced aim and delivery error (examples of technologies: stabilized platforms, interactive trigger/fire control for coincident fire, weapon sensors, environmental sensors)
- Tagging and marking of targets
- Identification Friend or Foe (IFF) Primary assessments will be done in daytime with nominal weather conditions, with the desire to have capability at night, with obscurants, etc.

Hardware will be delivered to a Government test site for evaluation against these requirements and stated claims.

Technical POC: Korene Phillips, 973-724-7944, korene.a.phillips.civ@mail.mil

Requirement #: RDECOM05

Title: Tactical Hybrid PAPR/CC SCBA (Army)

Military System or Acquisition Customer: JPEO/JPM for CBRN Defense

Description: CBRN Powered Air Purification Respirators (PAPRs), and Closed Circuit – Self Contained Breathing Apparatus (CC SCBA) systems lack integration, are not tactical,

and do not provide scalable protection in a CBRN environment. Integrated, lightweight PAPR/CC SCBA solutions utilizing novel O₂ storage and CO₂ removal technology are being sought to provide the highest level of respiratory protection in a CBRN environment during extended wear time operational missions. The solution will allow for development of a hybrid PAPR/CC SCBA system providing the ability to rapidly scale protection between PAPR and CC SCBA operational modes while maintaining complete respiratory and percutaneous protection. The system will demonstrate significant weight and volume reduction. The weight goal is to provide a hybrid PAPR/CC SCBA system weight <20 lbs for a 2 hour PAPR/CC SCBA capability and <25 lbs for a 4 hour PAPR/CC SCBA capability. The backpack will be no larger than 16”L x 14”W x 7”D for the 2 hour system and 20”L x 16”W x 7”D for the 4 hour system. The hybrid system will integrate with the FM53 tactical respirator and will not interfere with weapon compatibility. System weights will include the weight of the respirator and face mounted components. The PAPR component will provide airflow and filtration equivalent to the CBRN C420 PAPR system and will utilize a standard military rechargeable battery. The CC SCBA component will allow for electronic monitoring and safety controls and will minimize inhalation temperature to < 95oF and humidity to <50% under all operational conditions. The CC SCBA inspired CO₂ concentration must not exceed 1.5 % and 1.0 % by volume for the 2 and 4 hour system, respectively. System logistics must be minimized and the system will not use ice or require frozen components. The approach will include the development of prototypes and an evaluation of effectiveness through protection factor and operational performance assessments.

Technical POC: Corey Grove, ECBC, (410)-436-6651, corey.m.grove.civ@mail.mil

Requirement #: RDECOM06

Title: Residual Filter Life Indicator (Army)

Military System or Acquisition Customer: TACOM

Description: Current filtration systems that protect fixed and mobile sites degrade over time, some faster than others depending on ambient/battlefield contaminants. Yet there is currently no technology to determine how much protection exists as a function of time in service. As a result, site managers have limited tools for verifying system integrity and planning the cost and man power needed to change out their large filter banks. The objective of this effort is to mature current residual life indicator technologies, such as satellite sampling systems and various spectral/mechanical/electrical devices for immediate deployment to fixed and mobile sites.

Technical POC: Gregory W. Peterson, ECBC, (410)-436-9794, gregory.w.peterson.civ@mail.mil

Requirement #: RDECOM07

Title: Affordable C4ISR Technologies

Military System or Acquisition Program Customer: PEO IEWS, PEO Soldier, PEO C3T, PEO GCS, PEO Ammunition

Description: Cost effective, C4ISR technologies in the areas of focal plane arrays with an emphasis on digital MCT FPA hybridization growth; novel EO/IR sensors and lasers; ruggedized, soldier ready tactical microgrid systems with power distribution units and generators capable of MODBUS and XML communications over TCP/IP; algorithms with

multi-modal biometrics; biometric sensors for nano-UAV; techniques and algorithms for social media intelligence, sensor management, dynamic jamming/friendly communications synchronization and multi-INT big data analytics.

Technical POC: Richard Nabors, CERDEC, richard.a.nabors.civ@mail.mil

Requirement #: RDECOM08

Title: Rapid Rigging/De-Rigging/Soft Landing of Airdrop Platform Loads

Military System or Acquisition Program Customer: PEO Combat Support & Combat Service Support, Product Manager Force Sustainment Systems, Cargo Aerial Delivery – Milestone A for Rapid Rigging and De-rigging Airdrop System projected for FY18

Description: The Advanced Low Velocity Airdrop System (ALVADS) will provide airdropped supplies and equipment in support of Forced Entry (FE) airborne forces. Among the desired ALVADS attributes are the incorporation of new rapid rigging/de-rigging and reduced velocity landing technologies for heavy airdrop platforms to speed the preparation and recovery phases of airborne operations. The Army desires significant time reductions in heavy drop payload rigging, de-rigging after a drop, and a significant reduction (or elimination of) the reliance on energy-dissipating material (honeycomb), while mitigating ground impact force, such that airdrop loads are mission-capable upon arrival on the dropzone. As such, the Army seeks the development and maturation of technologies that either singly or in conjunction with each other are able to provide the capabilities outlined above.

Technical Points of Contact: Walter Krainski, 508-233-4614, walter.j.krainski.civ@mail.mil or Todd Grenga, 508-233-6355, todd.m.grenga2.civ@mail.mil

Requirement #: RDECOM09

Title: Long-range tele-operation of unmanned/optionally-manned ground vehicles

Military System or Acquisition Program Customer: U.S. Army Tank-Automotive Research Development and Engineering Center (TARDEC)

Description: The U.S. Army has an interest in long-distance, trans-continental tele-operation of unmanned/optionally-manned ground vehicles to support expeditionary maneuver.

Technical POC: Greg Hudas, gregory.r.hudas.civ@mail.mil, 586.282.8615

Requirement #: COE01

Title: Advanced Pre-shot Sniper Detection and Surveillance System (Army)

Military System or Acquisition Program Customer: PEO IEW&S

Description: An advanced Pre-shot Sniper Detection and Surveillance System would merge the requirements for pre-shot detection with the need for real-time, optimized geospatial mapping and monitoring. The advanced surveillance system shall provide accurate three-dimensional scene construction for areas of interest at distances of at least 1 km. To accommodate pre-shot requirements, the system shall provide 360 degree surveillance and be capable of detecting the origin of a sniper with a probability of detection greater than or equal to 90%, with a false alarm rate of less than 10%, at distances of at least 500 meters (with target localization error of not greater than +/- 1 degree in elevation and azimuth, and no greater than +/- 10 meters in range). The

integrated system shall further demonstrate the capability for spatially characterizing and discriminating positively identified snipers, while maintaining eye-safety. Such an advanced system would need to prove tactically advantageous through demonstration of obscurant penetration, movement-based change detection, three-dimensional object recognition, and beyond.

Technical POC: Jean Nelson, 703-428-3636, Jean.D.Nelson@usace.army.mil

Requirement #: COE02

Title: Military Engineering Technologies for Entry Operations (Army)

Military System or Acquisition Program Customer: PEO/PMs for Force Projection, JPM Guardian, PEO/PM for Contingency Base Infrastructure, PEO Intelligence Electronic Warfare & Sensors

Description: Develop and demonstrate the ability to rapidly increase throughput and protection levels, while decreasing time and resources to support early entry operations. Technologies and products should help planners identify impacts on operations, locate and establish basing, and providing tools for protecting and projecting forces in austere environments. Force Protection solutions may include passive defense measures, protection from and detection of subterranean threats, methods to assess vulnerability-risk, base layout, and resource allocation prior to and after deployment. Force Projection solutions may include decision support tools for strategic-level remote assessment/planning, operational-level standoff assessments, technologies for remote monitoring of critical infrastructure, or terrain surfacing kits for UAS, landing strips, HLZ and Logistics-over-the-Shore operations.

Technical POC: Pamela Kinnebrew, 601-634-3366,
Pamela.G.Kinnebrew@usace.army.mil

Requirement #: DFSC01

Title: Enhancement or Novel Forensic Analysis Platforms

Military System or Acquisition Program Customer: Defense Forensic Science Center (DFSC)

Description: Produce novel and useful tools, devices, software, or systems that have the potential for forensics application to support criminal justice and expeditionary missions. Examples include improvements to the "front end" of the forensic analysis through the development of nondestructive or minimally destructive methods for evidentiary sample identification and/or collection; development of tools or methods that can separate the various components of a mixture; development of improved tools for examining aged, degraded, or otherwise compromised physical evidence; and development of novel bioinformatics platforms for the interpretation of next-generation sequencing data, including the significance of association. Priority consideration will be given to projects that demonstrate potential for increased quality of result and/or decreased time/cost related to the collection, screening, analysis, or interpretation of sexual assault forensic evidence.

Technical POC: Garold Warner, Senior Analyst, Office of the Chief Scientist, DFSC, Forensic Scientist, 404 469 7200, Garold.C.Warner.ctr@mail.mil

Requirement #: PEOCSCSS01

Title: Add Anti-Lock Braking System (ABS) Capability to the M200A1 Trailer Technical Data Package

Military System or Acquisition Program Customer: M200A1 (Managed by TACOM ILSC, ESA; TARDEC)

Description: The M200A1 Trailer is defined by a Government owned Technical Data Package (TDP). The trailer is heavily used to transport electrical generator sets. Federal Motor Vehicle Safety Standards (FMVSS) now require production trailers to be equipped with ABS Capability however, the M200A1 TDP was created prior to the existence of the FMVSS ABS regulations. A recent contract was awarded to produce additional M200A1 Trailers. ABS Capability was designed, tested and included on the new trailers, however this mandated capability was not captured onto the M200A1 TDP. The updated TDP would be suitable for future trailer procurements and would aid in sustainment activities of the newly fielded M200A1 Trailers with ABS.

Technical POC: John Deja, 586-282-7833, john.l.deja.civ@mail.mil

Requirement #: PEOCSCSS02

Title: Water Quality Monitoring

Military System or Acquisition Program Customer: PEO CS&CSS, PM Force Projection

Description: Technologies such as flow cytometry are now being used by water quality laboratories to measure for viable bacteria. Incorporating the newest technologies in ruggedization and signal processing into the design of this laboratory equipment can enable simplified, real-time, inline pathogen monitoring of product water from military mobile water treatment systems. This water monitoring will verify low pressure water treatment processes to enable the Army to accomplish two operational energy mission objectives: 1) allow easy scale down of water treatment systems for use in expeditionary water supply operations and 2) reduce the fuel required for water treatment of stable, fresh water sources (i.e. allow by-pass of the reverse osmosis treatment). High quality expertise in fluid mechanics, optics, microbiology, chemistry, signal processing and electronics is required for successful completion of this effort.

Technical POC: Lisa Neuendorff.civ@mail.mil, 586-282-4161, lisa.k.neuendorff.civ@mail.mil

Requirement #: PEOCSCSS03

Title: Small-Unit Water Purification

Military System or Acquisition Customer: PEO CS/CSS, PM Force Projection, PdM PAWS

Description: The Army requires a reliable, man-portable water system that can be operated by non-military occupational specialty (MOS) specific personnel that will supply a PLT/CO sized element at a small contingency base (FOB/COP). The Small-Unit Water Purifier (SUWP) shall be a small, lightweight, easy-to-operate, reverse osmosis (RO) based water purification system capable of purifying fresh, brackish and salt water sources to field water quality standards. To reduce risk in the development of a SUWP, developmental efforts are required in the areas of energy recovery and RO membrane technology, including: 1) Energy Recovery: Develop a device to recover the energy contained in the reject water of an RO system with the goal of reducing energy consumption of the SUWP to below 20 watt-

hrs/gallon when operating on seawater; and 2) RO Membranes: Develop new RO membrane and/or a membrane configuration allowing for greater operating flux and recovery in small-scale RO systems.

TARDEC FPT will then fabricate a SUWP demonstrator incorporating the results of the aforementioned studies.

Technical POC: Mark Miller (TARDEC), 805-982-1315, Mark.C.Miller@navy.mil

Requirement #: PEOMS01

Title: Low-Cost Nozzle Components for Tactical Rocket/Missile Propulsion

Military System or Acquisition Customer: PEO Missiles & Space

Description: US Army has an interest in Materials, Processes, and Procedures that will enable cost reduction and improved throughput for tactical rocket nozzle components. Technologies that can offer superior performance at equivalent cost or equivalent performance at lower cost are desired. Solutions should be compatible with tactical propulsion production rates.

Technical POC: J.R. Esslinger, 256-842-1358, John.R.Esslinger.civ@mail.mil

Requirement #: PEOMS02

Title: Alternatives to Solventless Extruded Propellant Grains for Rockets

Military System or Acquisition Customer: PEO Missiles & Space / JAMS / Hydra

Description: US Army has an interest in developing alternate affordable, high throughput minimum smoke propellant grain fabrication processes for guided and unguided rocket systems. Technologies that provide multiple domestic sources are desired (currently have single domestic source for extruded double base). Cost targets are to be equivalent grain cost at rate. Hazards Class 1.3 at the rocket motor level is desired.

Technical POC: J.R. Esslinger, 256-842-1358, John.R.Esslinger.civ@mail.mil

Requirement #: PEOMS03

Title: Common Fuze for Air to Ground Missile Systems

Military System or Acquisition Customer: PEO Missiles & Space / JAMS / JAGM-Hellfire

Description: US Army has an interest in developing warhead fuze solutions that are MIL-STD-1901A compliant and that may be utilized with multiple warheads and rocket motors/propulsion duty cycles. Operational temperature performance between -65 and +160F is desired along with compatibility with the Hellfire family of warheads.

Technical POC: J.R. Esslinger, 256-842-1358, John.R.Esslinger.civ@mail.mil

Requirement #: PEOMS04

Title: Infrared (IR) Sensor for Counterfire Target Acquisition (CTA) Radar

Military System(s) or Acquisition Program Customer(s): PEO Missiles and Space, PD Counter-Rocket Artillery and Mortar, PdM Radars (SFAE-MSL-CRR), AN/TPQ-50 Lightweight Counter-Mortar Radar, AN/TPQ-53 Counterfire Target Acquisition Radar

Description: Develop an infrared sensor for counterfire target acquisition (CTA) radar to improve sense, warn, CTA and situational awareness. Improve overall network probability of weapon location, reaction, coverage, target location error, and/or classification. Reduce or maintain overall network false locations.

Technical POC: Daniel M. Goeggel, 443-861-2679, daniel.m.goeggel.civ@mail.mil

13.3 Department of the Navy (DoN) Annex

Points of Contact:

Business questions on the DoN Annex shall be directed to the Business Point of Contact (POC):

Joseph Cloft

Contracting Officer

Office of Naval Research

ONR Code: BD02

Address: Office of Naval Research, 875 N. Randolph Street, Arlington VA 22203-1995

Email Address: joseph.cloft@navy.mil

Security questions on the DoN Annex shall be submitted to the Security POC:

Diana Pacheco

Industrial Security Specialist

Office of Naval Research

Security Department, Code 43

Address: Office of Naval Research, 875 N. Randolph Street, Arlington VA 22203-1995

Email Address: diana.pacheco@navy.mil

Technical questions on the DoN Annex may be directed to the Technical POC:

Tom Gallagher

DoN Rapid Innovation Fund Program Manager

Office of Naval Research

ONR Code: 03T

Address: Office of Naval Research, 875 N. Randolph Street, Arlington VA 22203-1995

Email Address: Thomas.J.Gallagher@navy.mil

Alternatively, questions of a technical nature on the DoN Annex may be directed to one of the Naval Systems Command (SYSCOM) Points of Contact, as specified below. Questions regarding specific DoN requirements shall be addressed to the Technical POC associated with the requirement.

Naval Facilities Engineering Command (NAVFAC)

Philip Vitale

Deputy Director, Ocean Facilities Program Naval Facilities Engineering Command

Address: 1322 Patterson Avenue SE Suite 1000, Washington, DC 20374

Email Address: philip.vitale@navy.mil

Naval Supply Systems Command (NAVSUP)

Mark Deebel

Program Manager

Address: 5450 Carlisle Pike, Building 309, Mechanicsburg, PA 17055

Email Address: mark.deebel@navy.mil

Marine Corps Systems Command (MCSC)

John Stroud

Deputy Director, MARCORSYSCOM Technology Transition Office, RIF MARCORSYSCOM
Lead

Address: 2200 Lester St., Quantico, VA 22134

Email Address: john.m.stroud@usmc.mil

Naval Sea Systems Command (NAVSEA)

Allen McConnell

NAVSEA Chief Technology Office (05T)

Address: 1333 Isaac Hull Ave. SE, Washington Navy Yard, 20376

Email Address: allen.mcconnell@navy.mil

Naval Air Systems Command (NAVAIR)

Janet McGovern

NAVAIR Rapid Innovation Fund Program Lead

Address: 48150 Shaw Road, Unit 5, Patuxent River, MD 20670-1906

Email Address: NAECTO@navy.mil

Space and Naval Warfare Systems Command (SPAWAR)

Dr. Robert Parker

PEO C4I Technical Director

Address: 4301 Pacific Highway, San Diego, CA 92110

Email Address: robert.parker@navy.mil

Strategic Systems Programs (SSP)

Mark Hrbacek

Future Capabilities Manager (SP2024)

Address: 1250 10th Street SE Suite 3600, Washington Navy Yard, DC 20374-5127

Email Address: Mark.Hrbacek@ssp.navy.mil

Specific Instructions: None

DoN Requirements:

The DoN's mission is to deter aggression and, if deterrence fails, win our Nation's wars. It employs the global reach and persistent presence of forward-stationed and rotational forces to secure the Nation from direct attack, assure Joint operational access and retain global freedom of action¹. The DoN's 2015-2019 budget submission reflects its plans to operate efficiently and effectively, increase its forward presence, and pivot towards the Asia-Pacific region². The Naval SYSCOMs list their requirements for supporting that mission and those plans below.

¹ http://www.navy.mil/cno/cno_sailing_direction_final-lowres.pdf

² http://www.navy.mil/cno/docs/140818_CNO_Navigation_Plan.pdf

All Naval Programs

Requirement #: FY15-DoN-RIF-ANP-01

Title: Reduced Naval Total Ownership Cost (TOC)

Military System or Acquisition Customer: All Naval Programs

Description: The DoN seeks technologies and products to reduce TOC through reductions in procurement and sustainment costs. Technologies are sought that improve reliability and operational readiness; that reduce or mitigate system or component obsolescence; that reduce maintenance, manpower and training costs; or that extend service life. In addition, technologies are required that provide scalable energy solutions for diverse environments and reduce energy consumption through greater efficiency and power management.

Technical POC: Tom Gallagher, 703-696-6815, Thomas.J.Gallagher@navy.mil

NAVAIR

Requirement #: FY15-DoN-RIF-NAVAIR-01

Title: NAVAIR AIR-1.0: EW Range Debrief Capability

Military System or Acquisition Program Customer: PMA-205 Naval Aviation Training Systems Program Office – Pacific Northwest Threat Presentation Capability

Description: The Pacific Northwest Threat Presentation Capability has a requirement to provide debrief capability for airborne electronic attack training missions. To meet this requirement, range emitters record a variety of time, position, and state parameters. However, to provide a meaningful debrief, these data must be combined with aircraft time, position, and state data to yield an integrated picture of what the aircrew was doing in relation to simulated threats at specific times. Traditional range tracking technologies such as range pods are not feasible for providing aircraft data in this context; however, suitable aircraft data may be available from onboard recording devices. A solution is sought to fuse recorded emitter and aircraft data offline and to visualize the result for mission debrief.

Technical POC: LCDR Jeff Grubb, 301-757-8097, jeff.grubb@navy.mil

Requirement #: FY15-DoN-RIF-NAVAIR-02

Title: NAVAIR AIR-1.0: Aircrew Physiologic Status Monitoring

Military System or Acquisition Program Customer: PMA-202 Aircrew Systems Program Office

Description: Aircrew physiologic status monitors are needed to detect, predict, and warn of decreased cognitive function before a physiologic episode occurs. Environmental stressors and physiologic factors impact the cardiovascular and cerebrovascular systems and cause impaired psychomotor function. Tolerance to the stressors varies not only from person to person, but changes for individuals based on health and fitness levels. These episodes have been documented in fixed wing tactical aircraft and highlight the need for a physiologic status monitor that includes: a platform independent person-mounted monitoring / warning system that accounts for individual physiologic tolerance; correlates physiologic decrements to cognitive deficit; provides timely detection and prediction of deficits to present a reliable alert before crisis exists; integrates with existing equipment / clothing. While commercial personal health monitoring systems have been developed for clinical and sports applications,

none are directly applicable to the military aviation environment or have an underlying predictive algorithm that adapts to individual differences and accounts for routine exposures to environmental stresses that result in reduced oxygen supplies to brain tissues.

Technical POC: Dennis Gordge, 301-342-8419, dennis.gordge@navy.mil; Dr. Barry Shender, 301-342-8881, barry.shender@navy.mil

Requirement #: FY15-DoN-RIF-NAVAIR-03

Title: NAVAIR PEO(A): ASW Systems for Naval Aircraft

Military System or Acquisition Program Customer: PMs for Naval Aviation Anti-Submarine Warfare (ASW) Programs

Description: There is a need for technologies to support the entire ASW detect to engage from fixed and rotary wing aircraft. Specifically, in sensor technology, innovative non-acoustic technologies are needed to rapidly and accurately detect submerged targets in various environmental conditions. Algorithm technology is needed for acoustic sensors to support automated cross-field track. Lastly for sensors, software-definable and flexible systems useful across multiple domains (air, surface, subsurface) are sought. In laser systems, there is a need for high duty cycle / high power energy storage systems. For sonobuoys, there is a need for low cost, anti-tamper and encryption technologies for sonobuoys or sonobuoy launchers. Technologies that facilitate reductions in sonobuoy transceiver and antennas' size, weight and power are also sought. Lastly, for sonobuoys, technologies that reduce or eliminate drift due to ocean currents is desired. For ASW tactical decision aids, technologies are sought for integrated moving map displays including underwater bathymetry for ASW environmental situational awareness. For ASW training/post mission analysis, there is a need for technologies for ASW event reconstruction and automated event documentation for post-mission analysis.

Technical POC: Mr. Shawn Slade, 301-342-0432, shawn.slade@navy.mil

Requirement #: FY15-DoN-RIF-NAVAIR-04

Title: NAVAIR PEO(A): Vertical Lift Platform Enablers

Military System or Acquisition Program Customer: PMs for Naval Aviation rotary winged aircraft

Description: Technologies are needed to improve: lift and rotor performance; aeromechanical stability; handling qualities/flight control management systems; engine and drive train performance; increase speed, range and payload capability; improve material development and structural protection; and improve durability; decrease aircraft empty weight. Technologies are required to increase tactical effectiveness and survivability in all weather. Technologies are needed that mitigate the negative effects of the dynamic interface between aircraft, aircraft carriers and air-capable ships; automate and increase efficiencies in launch, recovery and deck operations; and improve structural materials and coatings to withstand high loadings, corrosion, and high temperatures. Technologies are needed to increase performance of aircraft launch and recovery equipment to meet higher energy requirements of future aircraft. Technologies that enhance aircraft design and maintainability for shipboard space constraints and improve flying qualities and performance while conducting sea-based operations. Technologies are needed to enhance aircraft carrier, air-capable ship and aircraft design to improve human-machine interface; improve shipboard sustainment support infrastructure; reduce, simplify and improve robustness of maintenance

actions and procedures; reduce hazardous materials without compromising structural protection performance; and enable interoperability with legacy and future logistic systems.
Technical POC: Mr. Mike Fallon, 301-342-7890, michael.fallon@navy.mil

Requirement #: FY15-DoN-RIF-NAVAIR-05

Title: NAVAIR PEO(U&W): Portable Computer Aided Augmented Reality Virtualization Tools to Assist Aircraft Maintainers to Perform Maintenance, Alignment, and Installation Tasks with Emphasis on Blind Spaces or Hard to Access Areas

Military System or Acquisition Program Customer: PMA-266 Naval Multi-Mission Tactical Unmanned Aerial Systems (UAS)

Description: Technologies are needed to deliver the capability to reduce aircraft maintenance time and number of technicians performing challenging tasks, such as alignment of aircraft components (e.g. drive shaft, flight control actuator, pin alignment), as well as wear detection, secondary observation, part orientation, etc. in blind or hard to access areas. The approach should be capable of presenting unique and clear visualization cues (with feedback) in a graphical display of information that can be projected on aircraft panels (or aircraft structure) inside the aircraft. It is envisioned that common tasks could be programmed for many types of aircraft and unique platform-specific maintenance functions could be added if the user should desire.

Technical POC: Greg Makrakis, 301-757-1116, greg.makrakis@navy.mil

Requirement #: FY15-DoN-RIF-NAVAIR-06

Title: NAVAIR PEO(U&W): Manned and Unmanned Multi-Vehicle/Weapon Moving Target Engagement

Military System or Acquisition Program Customer: PMA-281 Strike Planning and Execution Systems Program Office

Description: The capability to target time critical and time sensitive moving military and ever more used civilian vehicles in a multi-vehicle, multi-weapon engagement scenario is needed. This will include the ability to differentiate between different types of vehicles, real-time dynamic planning and re-planning, optimizing use of selected resources and weapons to minimize kill chain timelines, enhancing targeting accuracy, and the optimizing use of types of weapons based on capability, target and situation to minimize or more so eliminate collateral damage.

Technical POC: Bryan Ramsay, 301-757-6179, bryan.ramsay@navy.mil

Requirement #: FY15-DoN-RIF-NAVAIR-07

Title: NAVAIR PEO(JSF): F-35 Improved Life Cycle Affordability

Military System or Acquisition Program Customer: F-35 Joint Strike Fighter Program Office

Description: F-35 desires maturation and transition of improvements that drive down life cycle cost. The first aspect of life cycle cost is production affordability. Therefore, improvements that drive down Unit Recurring Flyaway (URF) cost, production span time, or improve production quality for F-35 production are desired.

The second aspect of life cycle cost is sustainment. Improvements are desired that reduce sustainment cost by improving reliability or availability of components, reducing cost of spares, improving maintenance man hour requirements, reducing logistics footprint,

avoidance of diminishing manufacturing sources, and other methods of life cycle cost reduction.

Technical POC: Amanda Gentry, 937-387-8898, amanda.gentry@jsf.mil

Requirement #: FY15-DoN-RIF-NAVAIR-08

Title: NAVAIR PEO(JSF): F-35 Follow on Development Maturation and Acceleration

Military System or Acquisition Program Customer: F-35 Joint Strike Fighter Program Office

Description: The first increment of F-35 follow on development includes major systems hardware and software upgrades as well as weapons modification. Desired projects are those which show clear technical risk reduction supporting already approved F-35 upgrade candidates, or reduce the cost/time/complexity of testing new software, hardware, or weapons release, leading to accelerated enhanced capability to the warfighter.

Technical POC: Amanda Gentry, 937-387-8898, amanda.gentry@jsf.mil

MCSC

Requirement #: FY15-DoN-RIF-MCSC-01

Title: MARCOR: MV-22 Internally Transportable GMLRS

Military System or Acquisition Program Customer: Marine Corps Systems Command, PM Armor and Fire Support Systems, HIMARS.

Description: Develop and demonstrate a Guided Multiple Launch Rocket System (GMLRS) launcher system that is C-130 internally transportable and ideally MV-22 internally transportable. System must be able to travel across unimproved terrain at 10MPH, with a desire for it to be capable of keeping up with the road speed of an Medium Tactical Vehicle Replacement (MTVR) which is 55MPH on 2% grade highway. If the system is unable to keep up with MTVR, it must be capable of driving itself up onto an MTVR equipped with ramps. The system shall be capable of orienting the GMLRS launcher in azimuth and elevation and firing the missiles. The system is not required to transport crew. Splitting the system across one or more MV-22's to achieve internal transportability is acceptable but not desired. Reassembly, if required, must be achievable quickly and suitable for foot-mobile or ITV equipped Marines or Special Operations Forces.

Technical POC: Bryan Freeman, 703-432-4259, bryan.freeman@usmc.mil

Requirement #: FY15-DoN-RIF-MCSC-02

Title: MARCOR: Advanced Expeditionary Communications

Military System or Acquisition Program Customer: Marine Corps Systems Command, PM Marine Air-Ground Task Force (MAGTF) Command, Control and Communications (MC3)

Description: The Expeditionary Force 21 Capstone Concept envisions ship to shore standoff distances in excess of 100 Nautical Miles with a focus on distributed Company and below operations. The Marine Corps needs advanced communications technologies that include, but are not limited to: Improved Over the Horizon Ship to shore data communications in a satellite communications/Global Positioning System (SATCOM/GPS) denied environment; small, portable expeditionary communications system providing flexibility to operate in multiple frequency bands above IEEE C-Band (greater than 8GHz); methods to retrofit

existing equipment that protect Marines from electrocution should an antenna contact overhead power lines; multi-band SATCOM on the move antenna for Ka/X or Ka/Ku/X bands; man-portable broadband satellite antenna system weighing less than 15 pounds; man-portable HF beam steering broadband antennas, such as micro-strip technologies, with threshold frequency range of 30-88 Mhz and objective frequency range of 2-100 Mhz; a management system with Authority To Operate that enables loading of new software, patches, and other changes to USMC web services hosted on a commercial Cloud Service Infrastructure.

Technical POC: Mr. Christopher Zaffram, 703-432-8729, Christopher.zaffram@usmc.mil

Requirement #: FY15-DoN-RIF-MCSC-03

Title: MARCOR: Composite Rigid-Wall EMI Shelter

Military System or Acquisition Program Customer: Marine Corps Systems Command, PM Combat Support Systems, Combat Support Equipment

Description: Electro-Magnetic Interference Rigid-Wall Shelters (EMI-RWS) can fulfill a multitude of missions across the range of military operations. In tactical situations, missions can include (but are not limited to): EMI-RWS for maintenance, Tactical Operations Centers (TOCs), various Hospital activities to include operating rooms, and x-ray machines. The use of lightweight composite materials, carbon conduction paths, corrosion resistant coatings, energy efficient lighting and insulations can provide a more energy efficient capability to the Marine Corps, supporting the goals of our expeditionary operations. Shelters' housing mission essential electronic systems must be able to survive electromagnetic events. The EMI-RWS can provide collective protection for the system components inside the shelter, eliminating the need to harden the individual components, which increases component weight. The EMI attenuation provided by the EMI-RWS will allow system developers to control the EMI susceptibility and emissions of the enclosed electronic systems.

Technical POC: David Keeler, 703-432-3238, david.keeler@usmc.mil

Requirement #: FY15-DoN-RIF-MCSC-04

Title: MARCOR: Energy Collaborative Planning Tool and Data Collection Capability

Military System or Acquisition Program Customer: Marine Corps Systems Command, PM Combat Support Systems, Expeditionary Power Systems

Description: Effective utilization of energy resources requires a collaborative Marine Air-Ground Task Force (MAGTF) planning tool that provides an energy "Common Operational Picture." This capability must be functional at the tactical edge, include the ability to collect both logistics and operational data and be interoperable with the USMC Tactical Service Oriented Architecture (TSOA). A handheld device is needed to collect fuel sensor data for further transfer to a server environment where it will be fused with operations data. The handheld device requires an application to permit viewing fuel C2 data in a simplified format with and without connectivity to the server environment. The handheld device must be functional in a tactical environment and utilize multifactor user authentication. Widgets available through TSOA need to be developed to provide for a more robust energy and fuel picture. These widgets may be utilized on a C2 platform possibly as a part of a dashboard or layered over a map service.

Technical POC: Steve Barton, 703-432-5704, steven.a.barton@usmc.mil

Requirement #: FY15-DoN-RIF-MCSC-05

Title: MARCOR: Advanced Battery Technologies for Weapons Systems

Military System or Acquisition Program Customer: Marine Corps Systems Command, PM Infantry Weapons Systems

Description: Rechargeable battery technologies for Saber weapons system that improve safety and reduce logistics burden over existing Lithium Battery Box technologies. Batteries should be modular and allow for performance growth and reduced propagation of cell failures. Provide an improved battery system as a replacement for the current Diver Propulsion Device (DPD) cobalt lithium ion battery. Battery must increase range and speed while decreasing safety hazards and life cycle maintenance costs.

Technical POC: John O'Donnell, 301-908-1194, john.h.odonnell@usmc.mil

Requirement #: FY15-DoN-RIF-MCSC-06

Title: MARCOR: Unattended Ground Sensors for Atmospheric Sensing

Military System or Acquisition Program Customer: Marine Corps Systems Command, PM Marine Intelligence, Tactical Remote Sensor System (TRSS)

Description: Development of a compact, man-portable and/or air- droppable Unattended Ground Sensor (UGS) capable of collecting meteorological data from remote locations and transmitting that information to C2 servers via an Iridium or commercial SATCOM gateway. At a minimum, environmental sensing parameters should include: Temperature, Dew Point, Relative Humidity, Wind Speed and direction (to include gust), barometric pressure, precipitation type and amount, lightning distance and frequency, cloud height (ceilometer) and visibility. Additional parameters to be considered are: Wind Chill, Heat Index, Altimeter Setting, Pressure Altitude, Density Altitude and GPS. Power requirements can include solar and/or rechargeable batteries. Ad hoc networking of the emplaced sensors via a Common Sensor Radio in order to form a broad atmospheric picture and allow data to be delivered in an RF constrained environment. Sensor will utilize the Operational Standards for Unattended Sensors (OSUS) UGS standards to allow for integration into existing sensor programs of record.

Technical POC: Martin Jackson, 703-432-4129, martin.jackson@usmc.mil

Requirement #: FY15-DoN-RIF-MCSC-07

Title: MARCOR: Ground-Based Multi-Function Advance Data Link (MADL) Receiver and Processor

Military System or Acquisition Program Customer: Program Executive Officer Land Systems Marine Corps, PM Air Command & Control and Sensor Netting (AC2SN), Common Aviation Command and Control System (CAC2S)

Description: The arrival of the F-35 Joint Strike Fighter (JSF) marks the Marine Corps' entry into 5th Generation fighter technology. Along with a slew of new technologies that characterize a 5th Generation platform, JSF deploys a state of the art sensor suite that significantly increases the aircrews' awareness, reaction time, and lethality. Currently, the Multi-function Advance Data Link, or MADL, is the JSF's fighter-to-fighter data link that allows the sharing of this media-rich information between aircrews. MADL information presents a revolution to ground forces as well providing a new level of battlefield awareness and understanding. MADL information enhances and enables emerging Integrated Fire Control (IFC) concepts that more closely integrate sea-land-air forces in the detection,

identification, and engagement of hostile aircraft and missiles. This effort seeks to develop a ground-based receiver that will receive, process, and distribute MADL data to ground forces thus extending the benefits of JSF across the MAGTF. The project will integrate the receiver with CAC2S to realize the full warfighting benefit of the enhanced capability.

Technical POC: Col R.Q. Masinsin, 703-432-3093, rey.masinsin@usmc.mil

Requirement #: FY15-DoN-RIF-MCSC-08

Title: MARCOR: Digital Human Body Model for Injury Assessment in Kinetic Events

Military System or Acquisition Program Customer: PEO LS vehicle program teams.

Description: To compliment recent advancements in modeling of vehicles subjected to Improvised Explosive Device (IED) events, the USMC envisions a human body computational model to assess injury risk to Marines riding in attacked vehicles. Current state of the art in injury prediction using Anthropomorphic Test Dummies (ATDs) is extremely limited in its ability to predict the wide range of injuries seen in a cross-section of the warfighter population in IED events. Incorporating a human body model into the blast models assessing vehicle performance would allow for definition of injury risks to both male and female occupants of various sizes to include injuries beyond the currently assessed fractures.

Technical POC: Anne Purtell, 571-285-6474, anne.purtell1@usmc.mil

SPAWAR

Requirement #: FY15-DoN-RIF-SPAWAR-01

Title: SPAWAR: UHF SATCOM End-to-End Capabilities

Military System or Acquisition Customer: PEO Space Systems

Description: Provide technologies that extend Joint Information Environment (JIE) capabilities to deployed UHF SATCOM users. Technologies that enable integration of C4ISR and weapon systems are preferred.

Technical POC: Austin Mroczek, PEO SS APEO for S&T, 619-221-7749, austin.mroczek@navy.mil

Requirement #: FY15-DoN-RIF-SPAWAR-02

Title: SPAWAR: Ocean Sensing Payloads for Small/Nano/CubeSats

Description: Provide Naval forces information about the ocean and littoral regions, and any vessels above, on or below the surface. Payloads could include environmental monitoring or Intelligence, Surveillance and Reconnaissance (ISR) sensors. Payloads should be ready to launch for a demonstration mission at the conclusion of the RIF effort.

Technical POC: Austin Mroczek, PEO SS APEO for S&T, 619-221-7749, austin.mroczek@navy.mil

Requirement #: FY15-DoN-RIF-SPAWAR-03

Title: SPAWAR: Information Transport & Infrastructure (ITI)

Military System or Acquisition Customer: ADNS, CANES, NMT, CDLS, AdvHDR, Link 16, TSw, DJC2, C2OIX, NC3, and NAVMACS (PEO C4I); PEO EIS

Description: Develop capabilities to move, manage, and maintain an increasingly large and diverse array of mission-critical data at the rapid pace needed to support effective tactical,

operational, and strategic decision-making at sea and ashore. Technologies of interest include dynamic and agile routing capabilities; enterprise-level grid awareness and management; tactical network control; communications diversity and satellite communications resilience; and application services that support critical C2 infrastructure. Potential topics could be in the areas of assured connectivity and access in all operating environments, persistent network awareness and control, and bandwidth-efficient communication capabilities.

Technical Points of Contact: Robert Parker, Ph.D., PEO C4I APEO for S&T, 619-524-7599, robert.parker@navy.mil; Dan DelGrosso, PEO EIS TD, 703-604-4480, dan.delgrosso@navy.mil

Requirement #: FY15-DoN-RIF-SPAWAR-04

Title: SPAWAR: Information Security and Information Assurance (ISA)

Military System or Acquisition Customer: CANES, CND, Crypto Modernization (PEO C4I); PEO EIS

Description: Develop capabilities and techniques to reduce vulnerability of operational networks and Information Technologies (IT), including risks due to the proliferation of dual-use, commercial solutions and supply chains. Technologies of interest include finding innovative and cost-effective ways to mitigate those vulnerabilities through such measures as Identity and Access Management (IDAM); Attribute-Based Access Controls (ABAC); Trusted Data Format (TDF) tagging; the use of real-time, automated information guards to manage the provision of access to tagged data across multiple security domains; and the employment of modernized cryptographic devices and algorithms to encrypt data at rest and data in motion. Potential topics could be in the areas of assured access and transparent identification and authentication across the network; nimble and proactive network defense posture against advanced persistent threats; detection, prevention and reporting of data exfiltration to counter the insider threat; resiliency under cyber-attack; improved information audit and forensics; and cloud computing security and assurance.

Technical Points of Contact: Robert Parker, Ph.D., PEO C4I APEO for S&T, 619-524-7599, robert.parker@navy.mil; Dan DelGrosso, PEO EIS TD, 703-604-4480, dan.delgrosso@navy.mil

Requirement #: FY15-DoN-RIF-SPAWAR-05

Title: SPAWAR: Data Integration and Decision Support (DDS)

Military System or Acquisition Customer: NTCSS, MTC2, DCGS-N, NITES Next, Maritime Operations Center (MOC) (PEO C4I); PEO EIS

Description: Develop technologies to support effective decision-making and the ability to rapidly and confidently move from data to options to informed decisions. Develop improved capabilities to collect data from multiple sources, fuse it, and make it available to all relevant users in the right form, to enable better and faster decisions in any environment including in the presence of Anti-Access/Area Denial (A2AD) threats. Technologies of interest include universal data discovery and access, automated data fusion and integration, improved display and visualization, advanced analytics, user-centric designs, trend analysis, prediction tools, and targeting tools. Potential topics could be in the areas of enhanced data discovery and access, advanced analytics and tools, advanced data display and visualization, mission and operations architecture for improved decisions, and management of sensor overload.

Technical Points of Contact: Robert Parker, Ph.D., PEO C4I APEO for S&T, 619-524-7599, robert.parker@navy.mil; Dan DelGrosso, PEO EIS TD, 703-604-4480, dan.delgrosso@navy.mil

Requirement #: FY15-DoN-RIF-SPAWAR-06

Title: SPAWAR: Electromagnetic Spectrum Operations (ESO)

Military System or Acquisition Customer: CCOP, SSEE Inc. F, NITES Next, MTC2 (PEO C4I)

Description: Develop an exceptional awareness of the Electromagnetic Spectrum (EMS) to enable the means to aggressively maneuver through, visualize, protect and control the spectrum at any time or place. Technologies of interest include pervasive sensing, measuring, mapping, predictive modeling and visualization, and overall spectrum agility. Potential topics could be in the areas of acute spectrum sensing and awareness, increased survivability and maneuverability, and EMS synchronization.

Technical Points of Contact: Robert Parker, Ph.D., PEO C4I APEO for S&T, 619-524-7599, robert.parker@navy.mil

Requirement #: FY15-DoN-RIF-SPAWAR-07

Title: SPAWAR: Non-Kinetic Fires (NKF)

Military System or Acquisition Customer: CCOP, SSEE Inc. F (PEO C4I)

Description: Develop offensive measures that leverage the Electromagnetic Spectrum (EMS) and the “wired” network to deliver weapons, either in information content or sheer energy. Develop both covert and destructive weapons for offensive cyberspace operations (OCO) and jamming. Technologies of interest include electronic attack, RF-enabled cyber incursion, and the characterization of the military effects of each. Potential topics could be in the areas of non-kinetic targeting and engagement, NKF operational aids/modeling/planning, non-kinetic counter C4ISR, and non-kinetic electronic attack.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, 619-524-7599, robert.parker@navy.mil

Requirement #: FY15-DoN-RIF-SPAWAR-08

Title: SPAWAR: Positioning, Navigation and Timing (PNT)

Military System or Acquisition Customer: GPNTS (PEO C4I)

Description: Develop Positioning, Navigation and Timing (PNT) capabilities to provide common and precise position and time references to surface, sub-surface, air and space-borne assets, enabling safety of navigation, communications, command and control, combat and weapon systems. Technologies of interest include hardening and modernizing existing GPS-dependent PNT capabilities, development of GPS-independent PNT solutions; and miniaturized and scalable PNT solutions. Potential topics could be in the areas of protected GPS-dependent PNT capabilities, GPS-independent PNT solutions, miniaturized and scalable PNT solutions, diverse sensor applications, and navigation decision aids.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, 619-524-7599, robert.parker@navy.mil

Requirement #: FY15-DoN-RIF-SPAWAR-09

Title: SPAWAR: Environmental Battlespace Awareness (EBA)

Military System or Acquisition Customer: NITES Next, MTC2, DCGS-N (PEO C4I)

Description: Develop Environmental Battlespace Awareness (EBA) capabilities to provide knowledge of the current and predictive physical environment and its impact on naval operations from the bottom of the oceans to space. Technologies of interest include efficient and effective collection of environmental data, improved numerical weather and ocean modeling, new and improved tactical decision aides that describe environmental impacts, and decision management tools that fuse operational information, intelligence and system performance information in a predicted environment to support optimal decision-making for asset allocation, weapons and sensor performance, route selection, and execution timelines to maximize warfighter advantage. Potential topics could be in the areas of in-situ environmental sensing capabilities, advanced numerical environmental prediction capabilities, sensor performance prediction capabilities, and decision management capabilities.

Technical POC: Robert Parker, Ph.D., PEO C4I APEO for S&T, 619-524-7599, robert.parker@navy.mil

NAVSUP

Requirement #: FY15-DoN-RIF-NAVSUP-01

Title: NAVSUP: Mobile Logistics Data Access & Decision Support

Military System or Acquisition Customer: Navy Supply Systems, FACTS & the Warfighter

Description: Numerous electronic information technology (IT) systems exist in the US Navy that contain logistics data and information. Very often that data/information can be difficult to: 1) access by individual users, and 2) share between other IT systems. The lack of access and sharing results in inefficient processes and manual work-arounds, which impede performance, can lead to manual entry errors and increase overall cost. The capability to improve access to logistics data through use of mobile devices to access information and status is desired. Capability includes mobile technologies that can enable broader exposure and sharing of logistics data based on customer requirements for data access, presentation, and delivery.

Technical POC: Mark Deebel, 717-605-7039, mark.deebel@navy.mil

Requirement #: FY15-DoN-RIF-NAVSUP-02

Title: NAVSUP: Leverage Technology to Improved “Last Tactical Mile Delivery”

Military System or Acquisition Customer: Navy Supply System PMs and the Warfighter.

Description: There is a need within the DoN for innovative solutions for efficient and effective unmanned delivery of parts within the vicinity of the deployed fleet customer, thereby enhancing operational fleet readiness, reducing energy consumption, and reducing total ownership costs. Identify opportunities for expedited order fulfillment strategies making use of emerging technologies that support expedited delivery of parts within overseas and CONUS fleet and Navy concentration areas supporting enhanced naval performance.

Technical POC: Mark Deebel, 717-605-7039, mark.deebel@navy.mil

NAVSEA

Requirement #: FY15-DoN-RIF-NAVSEA-01

Title: NAVSEA: Improving Warfighting Affordability, Capability, and Commonality

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, and Special Warfare.

Description: Improving operational capability and effectiveness in a constrained budget and in the face of evolving threats environment require solutions to be affordable, adaptable to evolving realities (currently Pivot to the Asia-Pacific), and applicable across multiple platforms and systems where possible (through the use of open architectures, modularity and/or commonality). Proposals should focus on advancing, improving, and enhancing:

- (1) Ship Self-Defense / Force Protection;
- (2) Modernization / enhancement of combat systems and associated elements;
- (3) Human systems integration with and across operational systems to improve decision making and reduce sailor / operator workload;
- (4) System and/or platform interoperability;
- (5) Systems automated test and analysis capabilities;
- (6) Equipment and tools to improve arctic and littoral operational capabilities;
- (7) Material and/or personnel transfer at sea technologies;
- (8) Modernization / enhancement of command, control, communications, computers, combat systems, intelligence, surveillance, and reconnaissance (C5ISR) elements and systems;
- (9) Advanced and / or low cost optical, night vision, and infrared signatures technology; and/or,
- (10) Combat systems resiliency in Anti-Access/Area Denial (A2/AD) environments.

Technical POC: Timothy Barnard, (202) 781-4902, timothy.barnard@navy.mil, or Douglas Marker, (540) 653-3117, douglas.marker@navy.mil, or Allen McConnell, (202) 781-0631, allen.mcconnell@navy.mil

Requirement #: FY15-DoN-RIF-NAVSEA-02

Title: NAVSEA: Reducing Production, Operation, Maintenance and Disposal Costs

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, Special Warfare, and Naval (Public) Shipyards.

Description: In an era when the expected service life of U.S. Navy ships is 30 – 50 years and beyond, NAVSEA needs creative and innovative approaches to reduce Total Ownership Costs. Shipboard Preventive Maintenance is critical to ensure ships remain operational to and beyond their expected service life, but represents a large portion of the Total Ownership Cost. (Past NAVSEA projects have included corrosion control, monitoring and mitigating material degradation, paperwork reduction, trend analysis.) Also, at the end of service life, disposal and recycling must be efficient and low-cost. Improved Shipboard Preventive Maintenance processes and workflows would provide reduced costs and predictable execution of maintenance availabilities. Additionally, NAVSEA needs to provide capability and capacity flexibility for production, operation, maintenance, disposal, and repairs at any time. Proposals should focus on enhancements and innovations that:

- (1) improve and streamline process and record keeping compliance;
- (2) improve techniques, methods, and tools to stabilize planned maintenance and modernization schedule performance;
- (3) improve workflow;
- (4) insert new technologies, equipment and tools into ship maintenance to improve effectiveness, and reduce energy consumption and cost;
- (5) improve methods and tools that develop, optimize and refine Class Maintenance and Modernization Plans for all ships and submarines;
- (6) improve techniques, methods, and tools to collect and analyze productivity results in order to optimize warfighting capability, fleet operational availability, and expected service life of Navy ships and submarines; and/or
- (7) improve techniques, tools, and methods for workforce training to ensure trade and technical excellence.

Technical POC: Timothy Barnard, (202) 781-4902, timothy.barnard@navy.mil, or Douglas Marker, (540) 653-3117, douglas.marker@navy.mil, or Allen McConnell, (202) 781-0631, allen.mcconnell@navy.mil

Requirement #: FY15-DoN-RIF-NAVSEA-03

Title: NAVSEA: Improving Information Management to Maximize Warfighter Effectiveness

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, and Special Warfare.

Description: Optimize sailor maintenance work time and efficiency, minimize administrative tasks, and improve sailor technical expertise. Proposals should focus on enhanced and innovative:

- (1) tools to analyze and optimize Maintenance and Material Management process requirements;
- (2) techniques, methods, and tools to improve and optimize Maintenance Requirement Cards (MRC);
- (3) Planned Maintenance System tools and training to improve sailor effectiveness;
- (4) methods and tools to measure, collect and analyze performance, progress and results;
- (5) training methods to improve information collection, handling and management; and/or
- (6) tools to improve shipboard administration and business systems.

Technical POC: Timothy Barnard, (202) 781-4902, timothy.barnard@navy.mil, or Douglas Marker, (540) 653-3117, douglas.marker@navy.mil, or Allen McConnell, (202) 781-0631, allen.mcconnell@navy.mil

Requirement #: FY15-DoN-RIF-NAVSEA-04

Title: NAVSEA: Improving Design Tools and Systems for Performance, Capability, and Commonality

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, Special Warfare, and Naval (Public) Shipyards.

Description: NAVSEA needs to maintain an overarching perspective of system performance and total ownership cost while understanding the potential tradeoffs during development. At the same time, it is important to consider risk in terms of consequence, severity and probability in the analysis. This will assure NAVSEA continues to design, build, deliver, and maintain operationally relevant ships and systems within resource constraints. Proposals should focus on enhanced and innovative tools to assist stakeholders in shaping future ship and system characteristics to reduce cost while meeting operational needs. This would include:

- (1) tools to challenge technical requirements, quantify costs and identify margins above operational needs, specifically during formulation of a program of record;
- (2) methods, tools, and systems to understand and optimize in-service maintenance requirements, modernization planning and overall business practices early in the platform life cycle; and/or,
- (3) tools and systems to achieve cost efficient commonality across Navy platforms and systems.

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Requirement #: FY15-DoN-RIF-NAVSEA-05

Title: NAVSEA: Improving Cybersecurity Products and Processes

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, Special Warfare, and Naval (Public) Shipyards.

Description: To safeguard the information and tools used to design, procure, operate, and maintain Navy ships, defenses to protect, detect, characterize, counter, and mitigate unauthorized activity and vulnerabilities need to be incorporated in all systems and platforms. Processes for implementing cybersecurity need to create consistency and to allow for rapid changes and adaptations as new threats and methods are identified. Applicable DoD and DoN requirements and instructions will form the foundation of the controls. The resultant system will continually check, assess, probe, and adapt to threats. Proposals should focus on enhanced and innovative:

- (1) techniques, tools, and systems to identify and detect internal and external threats such as social engineering and phishing;
- (2) techniques, tools and systems to counter identified threats for both ashore and afloat environments to prevent, anticipate, or mitigate potential damage and information leaks;
- (3) cybersecurity techniques, tools, and systems (hardware and software solutions) to set boundaries, detect intrusions, and prevent unauthorized system access at key points in systems; and/or
- (4) techniques, tools, and systems to inject cybersecurity into software and hardware development, configuration, and specifications for both ship systems and critical shore systems to counter cyber threats.

Technical POC: Timothy Barnard, (202) 781-4902, timothy.barnard@navy.mil, or Douglas Marker, (540) 653-3117, douglas.marker@navy.mil, or Allen McConnell, (202) 781-0631, allen.mcconnell@navy.mil

Requirement #: FY15-DoN-RIF-NAVSEA-06

Title: NAVSEA: Power and Energy Systems

Military System or Acquisition Program Customer: NAVSEA PEOs/PMs for Ships, Submarines, Aircraft Carriers, Littoral Combat Ships, Integrated Warfare Systems, Expeditionary Forces, and Special Warfare.

Description: New designs of naval platforms, payloads, support systems, and unmanned vehicles and systems have increased capabilities and automation, but as a result have increased power needs. In other words, ships and off-board vehicles include a diverse set of high energy systems. Areas of interest include:

- (1) increased efficiency, power density, and component and system integration on platforms, including pulsed power architectures;
- (2) efficient power conversion, switching, distribution, conditioning, and control;
- (3) efficient power generation equipment including engines, generators, motors, and actuators;
- (4) improvement to thermal management of both power producers and users;
- (5) energy storage technologies including electrochemical, thermal, dielectric, and kinetic energy storage for ships and, when applied in unmanned vehicles, that have sufficient energy and power density to support extended (e.g., 30 days on station) operations with substantially improved safety characteristics as compared to current solutions;
- (6) opportunistic energy harvesting;
- (7) power for distributed sensors;
- (8) alternative and renewable energy sources for naval operations including addressing logistics and compatibility with legacy equipment; and/or,
- (9) resilient power networks and systems for platforms.

Reduction of our expeditionary energy footprint and personal power demands are also critical needs including reduced weight for personal power through advanced materials, devices, and architectures.

Technical POC: Timothy Barnard, (202) 781-4902, timothy.barnard@navy.mil, or Douglas Marker, (540) 653-3117, douglas.marker@navy.mil, or Allen McConnell, (202) 781-0631, allen.mcconnell@navy.mil

SSP

Requirement #: FY15-DoN-RIF-SSP-01

Title: STRATEGIC SYSTEMS PROGRAMS: Automatic Small Boat Gate for Waterfront Restricted Areas

Military System or Acquisition Program Customer: Strategic Systems Programs, Nuclear Weapons Surety Division

Description: The current small boat gates (SBGs) at Waterfront Restricted Areas (WRAs) are opened and closed approximately 15 times per day. Manually opening and closing a SBG requires up to three small tugboats depending on sea state. There is a need for a low-cost, reliable automatic SBG technology that operates in all sea state and wind conditions. The goals include reducing the operational and personnel costs associated with manually operating the SBGs, and improving strategic system readiness.

Technical POC: Matt Smucker, 202-433-7806, Matthew.Smucker@ssp.navy.mil

NAVFAC

Requirement #: FY15-DoN-RIF-NAVFAC-01

Title: NAVFAC: Improved Expeditionary Warfighter Self Sufficiency

Military System or Acquisition Program Customer: NAVFAC

Description: Joint and coalition expeditionary forces are dependent on water and energy. There is a need for advanced technologies to allow individual, squad and platoon-sized units to efficiently scavenge water (fresh, brackish, salt) and energy from resources in the expeditionary environment. Topics of interest include disinfection, filtration, desalination, maintenance reduction, waste-to-energy conversion, and reduced weight and cube.

Technical POC: Philip Vitale, 202-433-5178, philip.vitale@navy.mil

Requirement #: FY15-DoN-RIF-NAVFAC-02

Title: NAVFAC: Lighterage Data Recorder and Wave Measurement Systems

Military System or Acquisition Program Customer: NAVFAC

Description: (1) A system integral to existing lighterage support craft that can derive and report wave conditions (wave height, period, and direction) from craft motions is sought. The ideal system would be further capable of projecting near-shore wave data into surf zone conditions, given near shore bathymetry. (2) A system capable of monitoring, recording and displaying critical lighterage operating parameters and connector loads is sought to provide both real-time and historical data to operators and system support personnel. Required data include but are not limited to vessel location, speed, heading, platform motions in six degrees of freedom, and connector loads. The ideal system would incorporate data from the wave measurement system located on the lighter support craft.

Technical POC: Philip Vitale, 202-433-5178, philip.vitale@navy.mil

13.4 Department of the Air Force Annex

Points of Contact:

Technical questions on the Air Force Annex should be addressed to: *Mr. Leonard Walton, AFLCMC/XZI, Air Force RIF Program Manager, [937-904-6974](tel:937-904-6974), leonard.walton@us.af.mil.*

Contracting questions pertaining to the Air Force Annex should be addressed to: *Mr. Matthew Adams, AFLCMC/PZIT, Air Force RIF Contracting Specialist, 937-656-7426, Matthew.Adams@us.af.mil*

Questions regarding specific Air Force topic areas should be addressed to the technical POC listed under each topic.

Specific Instructions:

The following additional provisions or clauses are applicable for Air Force.

Ombudsman

AFFARS clause 5352.201-9101, Ombudsman (Aug 2005), will be contained in any contracts or agreements resulting from this BAA. The AFLCMC Ombudsman is Ms. Jill Willingham, Chief, Program Management Division, AFLCMC/AQP, (937) 255-5472, jill.willingham@wpafb.af.mil.

Updates of Publicly Available Information Regarding Responsibility Matters

Any contract or assistance award exceeding \$500,000.00 for which an offeror checked “has” in paragraph (b) of the provision 52.209-7 shall contain the clause/article, “Updates of Publicly Available Information Regarding Responsibility Matters (Jan 2011)”.

Nuclear Weapons Related Material (NWRM)

Proposed efforts may require management, delivery, or use of Nuclear Weapons Related Material (NWRM). Therefore, AFFARS clause 5352.223-9003, Enhanced Security of Products, is hereby incorporated by reference. If the effort proposed requires NWRM, the offeror will include the appropriate security information as provided by the vendor(s).

FY15 Air Force RIF Requirements:

Requirement #: 1) AIR FORCE TEST CENTER

AEDC

1.a. **Missile Warning System (MWS) Towed Optical Plume Simulator (TOPS)**

Development and Operational testing of missile warning systems on USAF and other Service aircraft requires a variety of techniques, including airborne signature simulators. To support testing requirements for F-35 and Next-Generation aircraft, innovative solutions are sought to supply a subsonic airborne towed pod that contains an ultraviolet (solar blind) emitter and two Mid-wave infrared (MWIR) emitters. Suitable emitters must be non-combustion-based and may include lasers, light-

emitting diodes (LEDs), and lamps. The photons from the emitters must be directed to a gimbaled mount that includes a pointing/tracking system so that the photons can be directed at a target aircraft. The emitters must have sufficient optical power (up to 10,000 w/sr) to supply missile-representative irradiance at the receiving optics of the missile warning system on the aircraft under test.

Technical POC: Mr. Taylor Swanson, 931-454-4240 taylor.swanson.1@us.af.mil

1.b. Hostile Fire Indication (HFI) Remote Optical-Sensing of Missile Attitude (ROMA)

A non-contact system to determine missile pitch, roll, and yaw for hostile fire surface-to-air missiles is required. ROMA will provide data to validate the modeling and simulation capabilities which generate missile signature models used for the developmental and operational testing of missile warning systems on USAF and other Service aircraft. Requirements include: resolving pitch and yaw to 1-deg (0.5-deg goal), and absolute roll angle to 5-deg (1-deg goal). Trajectory data update rate: 50 Hz (100 Hz goal). Measurements are required over the complete missile trajectory (2 km max altitude, 10 km downrange, 500 meters crossrange), possibly requiring multiple emplacements. Innovative solutions are sought to minimize costs by maximizing the coverage of a single emplacement.

Technical POC: Mr. Taylor Swanson, 931-454-4240, taylor.swanson.1@us.af.mil

1.c. Facility Scheduling Software for Automated Hypersonic, Supersonic and Transonic Ground Testing

Develop automated, optimized test scheduling capability to decrease weapon system development cycle time and costs, increase test facility capacity and increase fast response to new warfighter needs. Automated scheduling is a necessity for technical expertise retention as well as a means for capacity and cost improvements.

Technical POC: Mr. Michael Barlow, 931-454-7628
michael.barlow.1.ctr@us.af.mil

412 TW

1.d. Ground-Based Sense-and-Avoid Radar for Remotely Piloted Aircraft

Develop and implement ground-based sense-and-avoid radar systems for remotely piloted aircraft (RPA) to detect non-cooperative traffic, enabling RPA to avoid this traffic. Currently, the Federal Aviation Administration (FAA) requires RPA flying outside of exclusive-use airspace to have a chase aircraft to meet FAA “see-and-avoid” criteria for other aircraft. This chase requirement adds to the overall cost of RPA programs and could be eliminated or reduced with a technological solution providing RPA pilots with awareness of airborne traffic. At AF Plant 42, the Northrop Grumman Corporation spends an average of \$468,000 per year on airborne chase aircraft that escort RPA from Plant 42 to R-2508. Eliminating the chase cost creates the potential for realizing \$2.3M over five years.

Technical POC: Lt Col Matthew Domsalla, 661-275-9704,
matthew.domsalla@us.af.mil

1.e. Sense-and-Avoid Technology for Remotely Piloted Aircraft

Develop sense-and-avoid technology for remotely piloted aircraft (RPA) to enable RPA pilots to detect other airborne traffic at an equivalent capability as that of manned aircraft. This capability would enable further integration of manned and remotely piloted aircraft operations in the same airspace. **Technical POC:** Lt Col Matthew Domsalla, 661-275-9704, matthew.domsalla@us.af.mil

1.f. Energy-Efficient On-Site Waste Remediation

The Air Force is interested in technologies to process solid waste in a more economical and sustainable manner. In the past the enormous amount of solid waste generated by deployed forces was disposed of by burning in open burn pits or burn boxes. This practice exposes troops to potentially harmful particulate matter and air toxics. Novel methods of waste disposal are needed to process waste on-site. Further, this process needs to be self-sustaining from an energy standpoint where the energy needed to operate the system is extracted from the waste material. This solicitation calls for solutions to dispose of waste efficiently, most preferably with the simultaneous conversion of the waste to useful fuels or chemicals. The scalability and robustness of proposed systems are important considerations whether at forward area bases or at stateside military bases the main point is the adequate on-site processing of the waste.

Technical POC: Mr. James Zott, 402-232-3032, james.zott.1@us.af.mil

1.g. Stand-off Chemical and Explosives Threat Agile Sensor

Asymmetrical threats represent a continuous threat, with a likely threat concerning hazardous materials and chemicals that are relatively easy to obtain, conceal and deploy. With current technology, the security requirements against vehicle-borne and person-borne threats could create large productivity losses by slowing personnel and daily deliveries entry on bases. A new technique is required that is not thwarted or confused by the presence of interferents, clutter, backgrounds or spoofing. The method should occur at the same time during entry control point access, in less than one second from scan to notification, allowing for inspecting the area of probable threat sources, with an immediate system reset to not impede flow of vehicles or personnel. The system should allow for the real-time detection of various materials and chemicals of interest, such as homemade explosives (HMEs), improvised chemical weapons (ICWs), toxic industrial chemicals (TICs), toxic industrial materials (TIMs), nano-materials, traditional chemical warfare agents (CW) and non-traditional agents (NTAs), and their precursors; allow for constant 24/7 monitoring in all types of weather and environmental conditions, capability in a non-contact, unobtrusive or covert manner; occur automatically with no extensive personnel training costs; globally deployable, including austere locations without needing specialized consumables, specialized handling, or a long logistic trail to support it; provide needed detection agility; be adaptable to new evolving threats as they materialize. The technology needs the ability to perform such analysis at a stand-off distance (approximately 5+ meters) with high specificity allowing for initiation of a real-time defensive posture, minimize personnel exposure, and provide an opportunity for safe segregation of targets and items or change in routes.

Technical POC: Mr. James Zott, 402-232-3032, james.zott.1@us.af.mil

96 TW

1.h. Improved RCS Measurement Capability

Seeking innovative technologies and techniques to improve the RCS measurement system's performance to include, but not limited to: Increase radar sensitivity and dynamic range, reduction of background clutter, increasing signal to noise ratios, and/or developing electronic combat analysis methods to improve RCS measurements in support of the Long Range Strike - Bomber and Next Generation Air Dominance programs.

Technical POC: Capt Spencer Sellers, 575-572-0797, spencer.sellers@us.af.mil

1.i. Remote JTAC Targeting Capability

The 96TW can extend the effect range of Net-Enabled Weapons (JSOW-C1, SDB II) to improve precision targeting in GPS-contested environment. This can be accomplished by expanding the scope of existing Net-Enabled Weapon test tools which will increase test capability as well. Specifically, the Net-Enabled Weapon Real-Time Targeting Tool will integrate Full Motion Video (FMV) with metadata as an input source to the existing tool. The tool can already generate NEW target updates via Link 16 J11.1 message. With this new FMV capability, test operations are improved by identifying target update errors in near-real-time prior to weapon launch.

Technical POC: Mr. Jason Lucas, 850-882-8028, jason.lucas@us.af.mil

1.j. Enhanced Inertial Navigation Test and Evaluation

Reverse Velocity Test Vehicle Capability. Develop and characterize a dynamic testbed that can operate on the Holloman High Speed Test Track to enable the evaluation of strategic-grade inertial components and systems. The testbed provides controlled forward and reverse movements to determine inertial accuracy and errors.

Technical POC: Dr. Jim Brewer, 575-349-1538, james.brewer.1@us.af.mil

1.k. Test Tool for Avionics and Weapons System Integration and Maintenance

System wide instrumentation for aircraft maintenance that monitors multiple heterogeneous data streams (MIL-STD-1553, Ethernet, IEEE-1394) and includes network cable problem diagnosis capability. The expansion of its capability to multiple bus interface test capability with stimulation. This system will streamline maintenance by providing a single sustainable test fixture to address rapid fault isolation with Time Domain Reflectometer (TDR) and dynamic system operational assessment and prognostic tools. A prototype of the system is available, however the Air Force is interested in upgrading the software/hardware to accommodate USAF aircrafts and future smart weapons monitoring and maintenance. A model of this system is highly desirable to install onboard aircrafts for continuous monitoring and fault isolation.

Technical POC: Mr. Ramsey Sallman, 850-883-0537, ramsey.sallman@us.af.mil

Requirement #: 2) AIR FORCE LIFE CYCLE MANAGEMENT CENTER

2.a. Optimized Fleet Management via Condition Based Maintenance Plus (CBM+)

Support optimization management practices across the AF enterprise to promote a condition-based maintenance culture in accordance with a long-term vision. Support the transformational efforts through the re-application of existing data elements and processes in collaboration with commercial-off-the-shelf (COTS) and other best practices to convert fleet data into decision-making information. The goal is to enhance the use and application of existing data elements currently collected by the AF, purposely integrate additional data elements from other existing and planned systems (those that will be coming online in the near future), and continuously assess emerging technology associated with next generation fleet operations (i.e., sensors). The intention is to collect, transmit, store, and analyze data in a holistic manner per tail number to allow condition-based decisions to be made in regard to maintenance, repair and overhaul operations. This overall methodology is known as CBM+. The primary expected outcome of an operations environment that has adopted CBM+ is increased availability and decreased costs. The focus will be to develop a campaign strategy for implementation, a data strategy that addresses all requirements needed to implement CBM+, analysis and determine analytic tools and processes, and begin a pilot program within the AF.

Technical POCs: Col Rich Aldridge, 334-324-5216, richard.aldridge.1@us.af.mil and Ms. Milissa Pavlik, 724-689-8871, milissa.pavlik.ctr@us.af.mil

2.b. Corrosion Monitoring Systems to Reduce Corrosion Maintenance Costs

New and legacy U.S. Air Force platforms require enhanced condition awareness to promote Condition Based Maintenance (CBM+). For the last few years, there is an increasing trend for implementation of CBM+, when areas/components of the aircraft that require attention are inspected and repaired/replaced only when they actually require attention. The latest sensor technology for aerospace needs has focused on low mass, operating conditions, sensitivity and materials. Seeking for low cost, low mass, with high sensitivity and reliability corrosion monitoring systems with a potential to remotely monitor the onset of corrosion and its severity in inaccessible areas, what would provide significant impact in reducing the cost of corrosion and improving readiness.

Technical POC: Ms. Debora Naguy, 937-255-7705, Debora.Naguy@us.af.mil

2.c. Additive Manufacturing

Additive manufacturing (AM) is an emerging technology area that shows great potential application for AF operations to reduce costs, improve readiness, and reduce environmental burden. Seeking AM technology with capability to manufacture on-demand a metal part for AF needs, that would increase warfighter capability by reducing total ownership costs, reduction of parts cost and downtime. The goal is to demonstrate controlled process with a sufficient reproducibility as well as build-up performance of manufactured part with complex geometry. Assess capability of traditional and emerging non-destructive inspection (NDI) methods for detecting various flaw types in manufactured part to ensure reliable quality assurance of AM

components. Demonstrate application of non-destructive inspection (NDI) to verify integrity of resulting product.

Technical POC: Ms. Debora Naguy, 937-255-7705, Debora.Naguy@us.af.mil

2.d. Robotic Nondestructive Inspection

Seeking technologies to automate non-destructive inspection (NDI) capability for the rapid and accurate inspection of aircraft structure during depot maintenance. Robotic NDI requirement should integrate into the Condition Based Maintenance (CBM+) initiative within the AF. Current NDI procedures and equipment are designed to inspect small areas for defects which can result in excessive times to inspect large areas. The proposed technologies should be mature, modular and capable of being rapidly interchanged on robotic systems to reduce inspection times on large metallic and/or composite surfaces and substructures. Technologies should be environmentally friendly and cost effective. Inspection results should be electronically generated for use in condition-based maintenance activities. In addition, the effort will include integrating existing technology to capture and track NDI data across a fleet and to be able to perform fleet wide trending to support CBM+.

Technical POC: Randy Straw, 937-255-7730, randall.straw.ctr@us.af.mil

Requirement #: 3) AIR FORCE PROPULSION DIRECTORATE

3.a. Aircraft Engine Sustainment Technologies

Advanced technologies and applications are sought which will reduce the cost and time associated with Air Force aircraft turbine engine sustainment. Technologies are sought in the following areas: non-destructive inspection, additive repair, component usage extension, airfoil sustainment, improved plating or thermal spray processes, high temperature special technology coating sustainment, augmentor design methodology, integrally bladed disk sustainment, engine health management, and fuel burn reduction.

Technical POC: John Horst, 937-255-7988, DSN 785-7988, john.horst.1@us.af.mil

Requirement #: 4) AIR FORCE SUSTAINMENT CENTER

4.a. Process Control Tools

Achieve both cognizance and control of the technical processes that are planned, conducted, and executed throughout the depots. Inclusive technologies are: Utilizing on-demand technical information and process metrics via advanced Business Process Management (BPM) tools in a lean/six sigma environment; and analysis and statistical process control (SPC) of backshop processes, e.g. plating, NDI, and machining operations.

Technical POC: Tracy Mullen, 801-775-5323, tracy.mullen@us.af.mil

4.b. Increased Parts Availability & Tracking

Delivery of the correct parts to depot level maintenance, where needed, on time, delivered at a "fair" cost, regardless of source (procurement, repair, local manufacture, reclamation, surplus sources, commercial suppliers, etc.) Automate the creation of a digital thread for individual parts with digitalization of inspection results, repair history, usage, maintenance records, etc. Visibility of all inventories

and agility in the rapid certification of sources/local manufacture, and maintain quality and parts integrity/configuration management. Inclusive technologies are fraudulent/counterfeit electronic parts detection; and additive manufacturing technologies for tooling/fixtures and plastics applications.

Technical POC: Tracy Mullen, 801-775-5323, tracy.mullen@us.af.mil

4.c. Safe, Green Workplace

Eliminate unsafe working conditions and costs resulting from continued use of hazardous materials during depot maintenance operations, and reduce the amount and cost of process energy consumed during the continued use of energy-intensive equipment during depot maintenance operations. This includes cost-efficient coating/plating application and removal technologies that are environmentally friendly; portable containment technologies to abate noise and mitigate hazardous materials exposure during on-aircraft maintenance; technologies to improve energy efficiency, enhance energy resiliency, and reduce dependence on fossil fuels; commercial electrical grids and traditional compressed air and steam systems through alternative energy storage; power systems; renewable energy production and more energy efficient equipment use; and energy loss monitoring and management system.

Technical POC: Tracy Mullen, 801-775-5323, tracy.mullen@us.af.mil

4.d. Efficient Depot

Improve the operations within the MRO environment to safely return a consistently high quality asset (weapon system, engine, and commodity) to the war-fighter at the best possible time and cost. Enhance depot manufacturing and/or repair productivity through reduced machine and/or process downtime. Key aspects of the efficient depot include 1) factory/depot Command, Control & Communications (C3) - ability to report, view and control all factory operations and resources across Air Logistics Complexes (ALCs), 2) flexible, reconfigurable, and responsive depot infrastructure and support equipment, 3) comprehensive one-pass on-condition assessment of the weapon system, 4) operations precisely tailored to the on-condition maintenance requirement and scripted to optimize the repair and return to the customer, 5) instantaneous real-time collaboration with Subject Matter Expert (SME) community, 6) advanced automation - flexible and reconfigurable automation systems working in close proximity with, and augmenting the human workforce, 7) effective exploitation of emerging processes - rapid adoption, certification, and transition of game changing processes, and 8) enhanced on-time delivery.

Technical POC: Tracy Mullen, 801-775-5323, tracy.mullen@us.af.mil

4.e. Coating Removal

Develop aircraft coating removal process that does not expose the workforce or the environment to harmful waste streams. Any new process, such as laser de-painting, should also reduce the amount of depot maintenance time to improve aircraft availability.

Technical POC: Tracy Mullen, 801-775-5323, tracy.mullen@us.af.mil

4.f. Reduced Cadmium & Chromium Use During Depot Overhaul of Engines & Aircraft

Occupational Safety and Health Administration (OSHA) abatement costs at the AF overhaul depots currently exceed \$70M/year. Substitute materials and processes are sought to minimize the use of Cd and Cr and associated exposure to health hazards. Substitute materials would be equal or better in terms of corrosion resistance and wear properties.

Technical POC: Tracy Mullen, 801-775-5323, tracy.mullen@us.af.mil

4.g. Ergonomic Assist, Automation, and Robotics Implementation

Develop ergonomic assist technologies focused on reduction in labor hours, reduction in workforce injuries, and/or reduction in hazardous/unsafe working conditions. Develop robotic paint capabilities in the commodity repair and aircraft paint arenas. Also inclusive are: Maskless/reduced-masking process improvements such as aerodynamic sealing of aircraft outer mold lines, or other processes that rely upon masking for proper process quality; outer mold line aircraft robotic NDI inspection capability utilizing sensor fusion technology capable of detailed crack detection and corrosion damage measurement; and paint quality evaluation.

Technical POC: Tracy Mullen, 801-775-5323, tracy.mullen@us.af.mil

4.h. Non Destructive Inspection Data Collection and Storage

Seeking the development of active Non Destructive Inspection recording of a broad array of inspection techniques and to automate the collection, transmittal, digital storage and data management of the inspection results to the cognizant engineering authority at the commodity serial number and aircraft tail number level..

Technical POC: Tracy Mullen, 801-775-5323, tracy.mullen@us.af.mil

4.i. Industrial Manufacturing & Repair, Supply Chain, and Sustainment Engineering Digital Thread

Seeking the demonstration of a scalable digital thread architecture to enable efficient access to all forms of enterprise data in support of Industrial Manufacturing & Repair, Supply Chain, and Sustainment Engineering activities. Capability should assist in ushering in the digital thread domain at the commodity serial number and aircraft tail number level.

Technical POC: Tracy Mullen, 801-775-5323, tracy.mullen@us.af.mil

Requirement #: 5) PEO AGILE COMBAT SUPPORT

5.a. Field Intravenous Reconstitution

Seeking innovative technologies that have been developed and tested to produce sterile water for injection and fill Intravenous (IV) bags in deployed locations. The technology must be either FDA-cleared and ready for Air Force Operational Test and Evaluation or in the final stages of development with functional prototype(s). Ideal candidates will have the capability to produce sterile water and fill IV bags with Normal Saline (NS), Half Normal Saline (HNS), Lactated Ringers (LR), and Dextrose 5% Normal Saline (D5NS). This technology when fielded will reduce the

logistical footprint and provide for just in time manufacturing of life saving fluids for the warfighter. Supports

Technical POC: Mr. Tom Solomon, 937-938-3824, thomas.solomon.ctr@us.af.mil

5.b. Aircrew Laser Eye Protection Block 3

The requirement for Block 3 is to increase current Aircrew Laser Eye Protection (ALEP) capability by updating protection levels to mitigate the current threat, improving visual performance, adding visor and ballistic options, and ensuring compatibility with chemical warfare masks and helmet mounted devices. ALEP provides aircrew members with enhanced protection against hazard and threat laser devices in combat and training situations while minimizing visual acuity degradation and fully compatible with current aircrew flight equipment. The ALEP system also provides sufficient protection to prevent permanent eye damage and temporary effects (glare, flash blindness, etc.) from laser weapons/devices. The Block 3 system will be fully compatible with current aircrew flight equipment, cockpit/cabin displays, exterior aircraft lights, airfield lights, night vision devices, helmet mounted displays, and exterior scenery.

Technical POC: Mr. Pete Gamboa, 937-938-3679, peter.gamboa.1@us.af.mil or Lt Emily Ricketts, 937-904-3672, emily.ricketts@us.af.mil

5.c. Quick-Don Anti-Exposure Suit

Seeking innovative technologies that have been developed and tested to provide anti-exposure protection for aircrew members. The candidate suit shall not inhibit normal operations or safe egress from the aircraft by fit issues or by restricting the member's range of motion. The Quick-Don Anti Exposure suits are for emergency use only, to be donned as an A/C is going down, and will not be worn as a garment. The suits must also fit large aircrew members up to six feet ten inches tall.

Technical POC: Lt. Andrew Beard, 937-938-3668, andrew.beard.3@us.af.mil or Lt Col Scott Bergren, 937-938-4072, scott.bergren@us.af.mil

5.d. Nuclear Flash Goggles

The requirement for Nuclear Flash Goggles is to increase a currently obsolete capability for protecting aircrew members from an extremely intense thermal flash that can easily result in temporary flash blindness or retinal burn, either of which can lead to incapacitation of the aircrew and loss of aircraft. These effects could be minimized by the development and procurement of a more technologically sophisticated and reliable system. Life cycle costs could potentially be lower with a more reliable, advanced system as a replacement to the current goggles that addresses the capability gaps.

Technical POC: Mr. Pete Gamboa, 937-938-3679, peter.gamboa.1@us.af.mil or Mr. Eric Biddings, 937-904-3896, eric.biddings.ctr@us.af.mil

5.e. Aircrew Anti-Exposure Suit (Rotary)

Seeking innovative technologies that have been developed and tested to provide anti-exposure protection for aircrew members of rotary aircraft. The candidate suit shall not inhibit normal operations or safe egress from the aircraft by fit issues or by

restricting the member's range of motion. The Anti-Exposure suits should be rugged enough to withstand normal flight environments as they will be donned before the start of flights and worn for their durations.

Technical POC: Lt. Andrew Beard, 937-938-3668, andrew.beard.3@us.af.mil or Lt Col Scott Bergren, 937-938-4072, scott.bergren@us.af.mil

Requirement #: 6) PEO BATTLE MANAGEMENT

6.a. Innovative Computational Technologies for AF Weather Operations

Seeking emerging computing technologies, ranging from low-maintenance simple computer “appliances” to high-performance elastic cloud computing clusters, to improve both the affordability and availability of Air Force Weather operations. The Air Force Weather Enterprise is a system of systems with many layers of weather data collection, processing and weather product production, conducted on a multitude of various computer systems. Utilizing emerging computer technologies to simplify and optimize computational assets will reduce the maintenance and life-cycle costs required to conduct the AF weather mission, while achieving equivalent or enhanced operational performance. The Air Force Weather Enterprise is a system of systems with many layers of weather data collection, processing and weather product production, conducted on a multitude of various computer systems. For example, system maintenance overhead can be significantly reduced by modifying the footprint of fielded components at Air Force Weather Flights. Several weather subsystems are fielded on oversized, over-powered server-based hardware and software, which require server-level systems administration at Weather Flights. These locations rarely have qualified system administration personnel onsite and must coordinate with non-local administrators, resulting in extended downtimes and adverse operational impact. Many of these weather components were designed to run on much smaller systems and prototype demonstrations indicate that emerging technologies, such as inexpensive, small foot-print, dedicated hardware appliances, can achieve similar capability, with less space, power and administration requirements. In other cases, entire computational components (servers or laptops) can be eliminated, with their functionality absorbed into other systems. Advances in the high performance virtual machine instances (VMIs) offered by commercial cloud computing vendors offer new opportunities for meeting surge weather product generation, such as for live, virtual or constructive exercise support, modeling and simulation, or continuity of operations (COOP). While these mission areas typically have required dedicated high powered computational assets, the irregular “surge” nature of these weather operations suggests that significant cost savings could be realized with “pay only as needed” cloud computing resources, now that high powered virtual computing devices are available, if sufficient security and availability can be achieved. Innovative computing technologies such as these, or other emerging computational technologies applicable for simplifying or optimizing AF weather computational resources, are sought under this topic.

Technical POC: Ms Teresa H. O'Donnell, 781-225-3481, teresa.odonnell.3@us.af.mil

The following PEO Battle Management topic descriptions are For Official Use Only (FOUO). These restricted descriptions will only be provided to interested U.S. Contractors pending submission and approval of a certified DD Form 2345 MILITARILY CRITICAL TECHNICAL DATA AGREEMENT:

- 6.b. Increased Positional Accuracy / Altitude Reporting of Non-Cooperative Aircraft**
- 6.c. Dynamic Asset Status Reporting For Near-Real-Time Planning and Execution**
- 6.d. ISR Automated Capabilities**
- 6.e. Combined Long Range Munition Planning System**
- 6.f. Secure Internet Protocol Router Network (SIPRNET) Integration in CRC**
- 6.g. New VINSON ANDVT Crypto Mod (VACM) End Crypto Unit (ECU) in CRC**
- 6.h. Deployable Cross Doman Solution (CDS)**
- 6.i. Open Architecture Application**
- 6.j. Improved Data Processing**
- 6.k. Physical Security Intrusion Detection Systems**
- 6.l. Integrated Multi-mode Intelligence, Surveillance and Reconnaissance (ISR) Sensor Payload for Detection of IEDs**
- 6.m. Detection of Vehicle-Borne Improvised Explosive Device (VBIED)**
- 6.n. Threat detection sensors for small UAV**

If you would like to access the restricted FOUO topic descriptions, you must have a certified/approved DD Form 2345 and submit a formal request to the Air Force:

- i) Go to Air Force Rapid Innovation Fund Submission Website:
<https://www.AFRapidInnovationFund.com>
- ii) Create an account in the system
- iii) Use the request tool in the “View Solicitation and Related Documents” section to submit the request
- iv) Upload a pdf copy of your certified/approved DD Form 2345
- v) Verification of the certified/approved DD Form 2345 will take place (within three business days)
- vi) Upon verification of the certified/approved DD Form 2345, you will receive an email notification and can log back into the Air Force Rapid Innovation Fund Submission Website to view the restricted FOUO topic descriptions

Please note: All restricted FOUO topic description requests must be made using the Air Force Rapid Innovation Fund Submission Website by 5:00pm ET on 8 June 2015.

If you have any problems accessing the Air Force Rapid Innovation Fund Submission Website, please contact our system administrators at AFRIF@brtrc.com. If you have any questions regarding the topic request process, please contact Leonard Walton, AFLCMC/XZ, AF RIF PM, at leonard.walton@us.af.mil.

For information on the DD Form 2345 certification process, please contact the Defense Logistics Services Center at 74 Washington Avenue N., Battle Creek, Michigan 40917-3084 (1-800-352-3572) or reference <http://www.dlis.dla.mil/JCP/#>. Please allow up to 3 weeks for the certification processing time.

Requirement #: 7) PEO C3I & NETWORK

7.a. Deployable JALN IP-Enabled “4G HOT SPOT”

Develop an affordable, small-scale, deployable “4G HOTSPOT” networking system that directly supports an effective/efficient wideband IP-enabled aerial/ground network. Long-range persistent (dwell) airborne C4ISR assets could provide timely C4ISR data elements to combat transport aircraft (CH-46, CH-53, C-22, C-130 and/or C-17), followed by subsequent transmittal to the embarked warfighters’ IP-enabled tablets via a “4G HOT SPOT” wireless connectivity utilizing CHAT, imagery, “John Madden” telestration and SA, thereby achieving range extension. Concurrently, transition from aircraft insertion to ground deployment should be able to seamlessly and rapidly transition the airborne network extension to the ground for tactical employment. The development of a baselined, affordable airborne target payload “4G HOTSPOT” network system requires extensibility for insertion into three different ruggedized deployment configurations to support an effective/efficient wideband IP-enabled aerial and ground network. The three variants include a lightweight, secure, rapidly deployable (1) aerial variant, (2) ground variant, and (3) unmanned deployable ground variant.

Technical POC: Lt Col Guy Spencer, 781-225-6780, guy.spencer.1@us.af.mil

7.b. Laser for Airborne Communications (LAC)

Seeking near-term development, demonstration, and delivery of breakthrough very-high throughput free-space optical (FSO) technology for aerial layer network communications among multiple mobile and fixed air and surface-node subscribers or gateways. Requires lab, field, and multiple-aircraft flight demonstration and qualification testing; provide 1-10+ Gbs throughput of bi-directional Internet Protocol (IP) network-capable traffic (e.g., VoIP, FMV, streaming content, large imagery/other-type file transfers, web services, text chat) among multiple air and surface (fixed and mobile) nodes. Provide means for effective point-to-point and point-to-multipoint connectivity with rapid/instantaneous acquisition, maintenance, and re-capture. Demonstration altitudes for air-to-air: threshold goal of 12,500 feet Mean Sea Level (MSL) and above, with ranges 25-110 nautical miles (nm); and objective goal for operations at 25,000 feet MSL and above, with ranges of 200-250 nm or greater. Demonstration ranges for air-to-surface: 25-35 nm or greater; and objective goal for operations at 40-70 nm.

Technical POC: Lt Col Guy Spencer, 781-225-6780, guy.spencer.1@us.af.mil

7.c. IT Operations Analytics

Provide an analytics-based solution to help shorten the duration of IT outages and potentially prevent them by giving application and network operators earlier warnings of problems brewing beneath the surface. The solution should be able to rapidly ingest and analyze log files and metric information for faster problem identification, isolation and repair. The solution should also include predictive analytics to enable early detection and outage avoidance and help identify IT and network performance issues. It should automatically learn how IT and Network infrastructure is related

from a holistic viewpoint and identify problems before you know to look for them, catching them the first time they happen.

Technical POC: Mr Louis Santana, 781-225-2698, louis.santana.3@us.af.mil

7.d. IT Operations Situational Awareness

Provide an enterprise manager of manager capability (eMoM) that provides real-time IT operations compute, network, application, storage, and data situational awareness, integrating disparate IT management data, delivering aligned service value to mission stakeholders, and tracking infrastructure organization and allocation dynamically. The solution should include a web-based user interface providing integrated fault, application, network and business service views; common reporting incorporating fault, network, application, and service data; task-based work flows that represent common tasks network and system operators perform daily to troubleshoot service, application, and network problems; and ad-hoc diagnostic tools to help identify and manage networks. The solution should provide real-time, intelligent decision support to reduce operator data overload and focus operators on only important situations by reducing/eliminating low level, unnecessary, irrelevant, and duplicative event alerts.

Technical POC: Mr Louis Santana, 781-225-2698, louis.santana.3@us.af.mil

7.e. Range Extension of Commercial Wireless Communication Protocols / Technologies

Seeking innovations to extend commercial wireless communication protocols (including 2G+, 3G, 4G, LTE, 802.11 and 802.16) to support long stand-off ranges found in a military environment. These protocols are designed to limit communication link distances for compliance with commercial standards, limiting utility of commercial networks/products in wartime.

Technical POC: Ms. Annette Benging, 210-925-1080, Annette.bening@us.af.mil

7.f. Operate the AF Network

The Air Force is seeking to ensure the domain is available and secure for Air Force core missions. The Air Force seeks support in migrating to cloud based services[AFINC], cyber situational awareness, intrusion detection/prevention and Big Data (sensors, transfer, application, visualization, storage), and other cyber functions which support the operation of the Air Force portion of the Global Information Grid.

Technical POC: Ms. Annette Benging, 210-925-1080, Annette.bening@us.af.mil

7.g. Celestial Object Sighting System (COSS) Image Processing

Seeking improvements in celestial navigation technologies to provide near-Global Positioning System (GPS) navigation accuracy when combined with off-the-shelf Inertial Navigation Systems (INS). These enhancements include, but are not limited to, improved star-to-centroid image processing for the COSS pre-prototype instrument being used to develop and validate the COSS performance model. Improved image processing will allow further refinement and validation of the COSS performance model. Today's tactical Warfighters need to operate within GPS-contested and GPS-denied areas while maintaining near-GPS location and timing

accuracy.

Technical POC: Mr. Larry Bush, 781-225-0888

7.h. LPD/LPI/AJ Airborne Communications

Seeking technologies and solutions for adaptive Low Probability of Detection (LPD)/Low Probability of Intercept (LPI)/Anti-Jam (AJ) waveforms running over a mobile ad-hoc network (MANET). Today's tactical Warfighter needs to operate within contested and denied environments while maintaining reliable air-air and air-ground and, in some cases, stealthy communications with others both within and without the contested or denied area. Technologies and solutions could include waveform Functional Countermeasures (FCMs), network capabilities, and C and S-band RF equipment.

Technical POC: Mr. Larry Bush, 781-225-0888

Requirement #: 8) PEO FIGHTER/BOMBER

8.a. Trusted Avionics Access Points

Design and develop a methodology and tool to verify trustworthiness of critical avionics embedded software and hardware and identify methods to mitigate vulnerabilities to ensure mission success. The proposed framework, methodology, and tool suite should be enhanced to support vulnerability identification and mitigation of both commercial and military applications. Conduct analysis of systems and services to determine the assets with the highest operational impact. The prototype design should be an independent Line Replaceable Unit attached to the 1553 bus to monitor, alert, and/or take an active response to adversarial activity within the aircraft systems. This capability should include an Intrusion Detection System, Intrusion Prevention System, and Communication Control channel through an airborne network or out of band communication.

Technical POC: Lt Jade Clarice, 937-713-7541, Jade.Clarice.1@us.af.mil

8.b. Test and Demonstrate Airborne Internet Network

Seeking test protocol and realistic demonstration of its application using military radios for a surrogate airborne network, with characteristics similar to those contained in "the Air Force Vision For Aerial Layer Networking 2024" (6 Jul 2010). The demonstration shall be in both a permissive environment and a contested environment (e.g., one with occasional spoofing and intermittent jamming).

Technical POC: Mr. Gerard Wohlrab, 315-330-4663, gerard.wohlab@us.af.mil

8.c. Resiliency of Aircraft Avionics and Platform Systems to Cyber Attack

Seeking Software Defined Radio (SDR) systems and equipment that will create a capability able to communicate with aircraft apertures directly, either during flight operations or while aircraft is on the ground. The hardware should be configured by using open sourced programming methods. Testing should produce cyber offensive tactics such as tools and/or methods when performing the vulnerability characterization of avionics systems and effects annotated resulting from aforementioned tools. Mitigation strategies should be documented and incorporated into countermeasure development. The application of this information can be used

offensively or defensively depending purpose, scope, and information available on targeted systems.

Technical POC: Lt Jade Clarice, 937-713-7541, Jade.Clarice.1@us.af.mil

8.d. Integrated Mobile/Portable Computing Device

The United States Air Force Logistics community requires a singular integrated mobile computer that can operate all the programs/applications utilized by the Logistics community. To this end, vendors shall demonstrate a mobile/portable computer that is intrinsically safe, rugged, lightweight, and portable, wireless and or cellular connectivity capable, has a long battery life under operating conditions (8-hours minimum) and the battery is “hot swappable”. The system must be able to allow USAF computer administrators to control updates and set user permissions. The device must be able to authenticate into the AFNET/DODIN. The device must be able to interface with and operate Standard Base Supply System (SBSS), Resources Management Information Systems (REMIS), Integrated Maintenance Data System (IMDS), GO81, Electronic Technical Information (ETIM), Integrated Management Information System (IMIS), Global Combat Support System (GCSS), Enterprise Supply System (ESS), Combat Ammunition System (CAS), and Cargo Movement Operations System (CMOS) programs. Additionally, the device must be able to display and access content in the following formats: JAVA, HTML5, Adobe, Flash player, Windows media and Office Suite. The device must be capable of authenticating into the AFNET/DODIN using a CAC card and user identification and password. The device must be able to interface with hand-held scanners. The device will be equipped with and able to interface with Radio Frequency ID (RFID) technology. The device must operate on 110-240 Volt and withstand extreme hot and cold operating environments.

Technical POC: Todd A. Engelman, 937-713-7360, Todd.Engelman@us.af.mil

8.e. Low Observable, Point Inspection Tools

Novel Radio Frequency (RF) and optical characterization tools for the purpose of improving the accuracy, precision and/or speed of data collections. This includes RF defects measured in the electromagnetic near field, verifying material properties and/or scattering. Existing RF measurement technologies provide useful data but correlation to far field measurements is challenging. Additionally, automation of visual defect identification, quantification and data transfer has the potential to significantly reduce maintenance man hours and improve maintenance management. Utilization of existing hardware and software infrastructures is highly desirable to maintain continuity and reduce cost. NOTE: Security protocols must be followed for Low Observable data collection. Contacting the TPOC is highly encouraged if offerors do not have experience with secure data systems.

Technical POC: Brandon Black, 937-255-5429, Brandon.Black.2@us.af.mil

8.f. Durable Materials for Low Observable Aircraft

Durable material solutions are still needed for composite Low Observable aircraft. The composite structure is frequently damaged by de-paint processes that are done for maintenance and depot operations. Damages may require repair of the composite or

significantly complicate the re-application of paints and coatings. Coatings or materials resistant to sanding, dry media blast such as Wheat Starch (Type V) or Corn Starch/Polymer hybrid (Type VII) are desired.

Technical POC: Brandon Black, 937-255-5429, Brandon.Black.2@us.af.mil

8.g. Automation of Precision Low Observable Maintenance

The maintenance of Low Observable aircraft at the field level is often tedious and extremely time consuming. This is largely due to the precision necessary to restore structural and Low Observable characteristics back to the most advanced aircraft in the USAF fleet. Technologies for the automation of on aircraft operations such as sanding, grinding, welding and machining are desired. Additionally, supporting capabilities such as precision scanning, measuring and inspection systems are of interest. The goal is to utilize digitized data from scanning systems to expedite repairs performed on and off aircraft with higher precision and greater speed to reduce long term sustainment costs. NOTE: Security protocols must be followed for computer systems in secure areas. Contacting the TPOC is highly encouraged if offerors do not have experience with secure data systems.

Technical POC: Brandon Black, 937-255-5429, Brandon.Black.2@us.af.mil

8.h. Seeking Integration of YMCA GPS card to F-15 EGI

Seeking the advancement of aircraft capability through integration of the YMCA (Y-, M-, C/A) Code GPS card into the Honeywell F-15 Embedded GPS INS (EGI).

Technical POC: Patrick Elliott, 937-713-7394, patrick.elliott@us.af.mil

8.i. End to End Validation of M-Code Requirements

Advancement of aircraft capability by developing and testing Universal Armament Interface (UAI) requirements in F-15 Software Integration Lab (SIL) to demonstrate the end-to-end capability for M-code weapons. The results of this investment will yield verification of design elements which support M-code weapons capabilities given any (legacy, Selective Availability Anti Spoofing Module (SAASM, or M-code) aircraft receiver type. In addition, potentially provide a GPS solution to support Automatic Dependent Surveillance – Broadcast (ADS-B) requirements.

Technical POC: Patrick Elliott, 937-713-7394, patrick.elliott@us.af.mil

8.j. Integrated Circuit Die Extraction and Reassembly

Seeking technology to solve microcircuit (integrated circuit/chip - IC) obsolescence problem perpetuating across DOD services where the technology also improves IC reliability (heat rejection/heat tolerance/case strength, etc.) and provides a quick-reaction low-cost IC sourcing method. Such repackaged ICs will be suitable for high stress military applications for multiple uses including in-depot IC provisioning, and replenishment of obsolescent IC stocks that are affecting OEM manufacturing capability. Specifically interested in current or adaptable technology to perform IC die extraction and reassembly. Vendor will conduct full characterization testing of both the precursor and hermetic repackaged parts to demonstrate full MIL-STD-883 compliance with no degradation/drift occurring during the die extraction and repackaging processes. Testing will be over the full military temperature range when

comparing precursor and repackaged part characterization test results, life test results etc. The contractor should describe their processes for finding die, testing for counterfeit/Trojan/used/bad parts, and mitigating cyber threats - malware proof, real time monitoring of hardware, firmware, BIOS, and core OS components. The contractor should also address reliability, schedule, and cost impacts compared to other mitigation strategies (e.g. circuit board redesigns, etc.). If successful this technology will benefit all current and future DOD weapon systems.

Technical POC: Mr. Jeffrey Sillart, 937-713-6765, jeffrey.sillart@us.af.mil

8.k. F-16 Hydrazine Fuel Replacement

Demonstrate/validate nonhazardous propellant to replace highly toxic propellant, hydrazine, currently used for operation of F-16 aircraft Emergency Power Unit (EPU). The U-2 aircraft, as well as NASA managed programs, also use hydrazine for their operations. Unfortunately, this carcinogenic and mutagenic, hazardous material requires special handling, storage, procurement, transportation, and disposal methods, all of which drive high costs for use of the hydrazine. A hydrazine replacement would significantly reduce/eliminate the high costs for protective personal equipment, storage facilities, and training and would also provide for a safe work environment so that worker use of Personal Protective Equipment and associated medical surveillance and Personal Exposure Limit monitoring could be significantly reduced. Also there is a risk that future production of hydrazine may not continue due to increasingly stricter environmental legislation, including European Commission's Registration of Evaluation Authorization and Restriction of Chemicals (REACH) legislation which is expected to restrict or prohibit its use in Europe in the near term; current manufacturers will likely consider terminating production if its use is prohibited, or even restricted, in Europe. A potential drop-in nonhazardous replacement has been successfully tested for various F-16 EPU performance parameters, including power generation. Further ground testing is required, which could lead to operational testing and, eventually, implementation of a nonhazardous, drop-in hydrazine replacement and thus eliminate significant costs associated with use of the highly toxic hydrazine.

Technical POC: Mary Wyderski, 937-713-6599, mary.wyderski@us.af.mil

8.l. Structural Maintenance Data Analytics

Seeking data management technologies to improve data interaction between maintenance communities and program offices. Vendors should propose and develop a digital interface to efficiently collect maintenance data to include inspection results, leveraging current maintenance information systems, and communicate with existing data management systems in program offices. The tool would enable real time availability of maintenance data to increase the efficiency of the maintenance and program office communities.

Technical POC: Mr. Robert Pilarczyk, 801-586-3155, Robert.Pilarczyk@us.af.mil

8.m. Metal Aircraft Component Surface Repair

Demonstrate a material additive repair process/technology that can be applied directly to worn locations to rebuild the surface of Aluminum, Magnesium, Steel, and/or Titanium components to original dimensions and specifications. In addition, apply

rigorous test and analysis to evaluate the adhesion to the component so the material can withstand the dynamic operating environment. (For example, F-16 engine access covers and main landing gear doors experience wear that renders the covers and doors unserviceable.) The goal is to prove a technology that can restore dimensional specifications and significant service life to aircraft components, including a method to confirm adhesion through Non-Developmental Item (NDI) techniques. Applications range from gearboxes to access panels to substructure components with wear or corrosion issues.

Technical POC: Mr. William Raphael, 405-736-3266, william.raaphael@us.af.mil

8.n. Expand the Data Transfer Rates within Legacy Aircraft Without adding Wires

Seeking ways to provide the capability to expand missions by enabling the intercommunications within legacy aircraft to grow to at least 100Mbps without having to add any wires or cables. Current legacy aircraft are limited in the ability to transfer data between positions on the vehicle. Current missions have not caused the internal transfer rates to be exceeded; however, future missions (such as Advanced Tactical Data Links) are highly likely to exceed the transfer rate limits. Flight testing in military aircraft is recommended.

Technical POC: Susan Duening, 937-713-7577, susan.duening@us.af.mil

8.o. Transponder ADS-B Squitter Transmission

Seeking near term cost-saving technology solution for the Federal Aviation Administration (FAA) Mandate that requires all aircraft flying in the National Airspace to have transponder Automatic Dependent Surveillance – Broadcast (ADS-B) squitter transmission capability (31 Dec 2019 deadline). The transmitted data is geo-position, heading, altitude, velocity, etc. (vector data). Just adding an additional GPS transponder box to each aircraft is not affordable. Desire the ability for technology to transition into a multi-platform solution with only one non-recurring engineering effort.

Technical POC: Susan Duening, 937-713-7577, susan.duening@us.af.mil

Requirement #: 9) PEO ISR & SOF

9.a. Airborne Sensor Data Processing

Seeking innovative on-board Data to Decisions (D2) applications that will reduce the time and manpower associated with the analysis of large data and leading to actionable data. Focus is on advanced airborne on-board processing and standard architecture technologies to support high output and multiple sensor processing prior to data downlinking. Areas of interest include on-board processing, data fusion/correlation, compression and data storage solutions for sensors that generate tremendous volumes of data

Technical POC: Mr. Ed Huling, 937-255-4694, edward.huling@us.af.mil

9.b. Secure, Wireless Personal Area Network

Seeking a secure battlefield wireless personal network for battlefield airman applications that minimizes size, power consumption, and detectable electronic signature. Capability must be compatible with existing serial port data rates and

standard commercial wired interfaces. The proposed solution must consider network and information security compliance with Air Force and National Institute of Standards and Technology (NIST) policies for wireless networks (Reference DoDI and NIST security controls)

Technical POC: Mr. Adam Nickell, 937-656-8068, adam.nickell.ctr@us.af.mil

9.c. Personnel Locator Beacon

Seeking an innovative capability to locate, identify and authenticate isolated personnel in harm's way. This operational capability would greatly improve Personnel Rescue forces efforts to quickly locate and extract military personnel. The new capability should emphasize use of low probability of detection/low probability of intercept technology.

Technical POC: Mr. Brett Cole, 937-656-8038, brett.cole.1@us.af.mil

9.d. Anti-Icing for UAS

Seeking retrofittable anti-icing technologies and certification approaches for medium altitude unmanned aircraft systems (UAS). Icing conditions are a consistent danger to our UAS fleet. The Air Force needs a methodology to evaluate candidate technologies which are designed to improve safety of flight in known icing conditions. This will serve as the foundation towards the eventual removal of flight restrictions in icing conditions. Proposals must baseline a capability and include an analysis and testing of other potential anti-icing technologies to verify the proposed solutions. Specifically looking for affordable solutions that offer a baseline MQ-9 capability, in addition to a toolset (computer and scale models, ice shapes, test plan incorporating design of experiments, etc) to facilitate the evaluation of candidate anti-icing methods for moderate icing environments.

Technical POC: 1Lt Michael Kaniut, 937-255-1634, michael.kaniut@us.af.mil

Requirement #: 10) PEO JOINT STRIKE FIGHTER

10.a. F-35 Improved Life Cycle Affordability

F-35 desires maturation and transition of improvements that drive down life cycle cost. The first aspect of life cycle cost is production affordability. Therefore, improvements that drive down Unit Recurring Flyaway (URF) cost, production span time, or improve production quality for F-35 production are desired. The second aspect of life cycle cost is sustainment. Improvements are desired that reduce sustainment cost by improving reliability or availability of components, reducing cost of spares, improving maintenance man hour requirements, reducing logistics footprint, avoidance of diminishing manufacturing sources, and other methods of life cycle cost reduction.

Technical POC: Amanda Gentry, Amanda.gentry@jsf.mil

10.b.F-35 Follow on Development Maturation and Acceleration

The first increment of F-35. Follow on Development includes major systems hardware and software upgrades as well as weapons modification. Desired projects are those which show clear technical risk reduction supporting already approved F-35 upgrade candidates, or reduce the cost/time/complexity of testing new software,

hardware, or weapons release, leading to accelerated enhanced capability to the warfighter.

Technical POC: Amanda Gentry, Amanda.gentry@jsf.mil

Requirement #: 11) PEO MOBILITY

11.a. Aircraft Wind Sensing

Develop and demonstrate a prototype airborne wind profiling system. The system should use actual winds measurements actual wind measurements sensed beneath and in front of the aircraft upon approach to the drop zone to improve forecasts of local winds and produce a more accurate drop zone wind prediction. The intention of the wind prediction is to improve bundle accuracy during single pass airdrop operations. The capability to conduct single pass airdrop operations reduces risk to airlift platforms and crews and increases airdrop mission flexibility. Increased airdrop accuracy reduces risk to ground forces receiving airdropped supplies and bundle loss.

Technical POC: Patrick Shediack, 937-255-1431, Patrick.shediack.1@us.af.mil

Requirement #: 12) PEO SPACE

Sustaining National Security Space Capabilities. Seeking technologies to maintain and enhance the strategic and tactical national security advantages afforded to the U.S. by space; and energize the space industrial base supporting U.S. national security.

Technical POC for all PEO Space requirements: Ms. Amanda Cordes, 310-653-9175, Amanda.cordes.1@us.af.mil

12.a. Improved Data Fusion Algorithms for Space-Based Missile Warning, Missile Defense, and Battle Space Awareness

12.b. Improved Automated Analytic Techniques for Characterization and Discrimination for Space-Based Missile Warning, Missile Defense, and Battle Space Awareness

12.c. Increased Persistence of Space-Based Intelligence, Surveillance and Reconnaissance (ISR)

12.d. Enhanced Space Situational Awareness (SSA), including: Data Processing, Cross-Cueing, Debris Detection & Conjunction Prediction

12.e. Technologies to Increase Resiliency of Space Infrastructure

12.f. Technologies to Increase Cross-Domain Capabilities to Enhance Resilience

12.g. Increased Autonomy for Command and Control (C2) Systems to Increase Resiliency and Reduce Manning

12.h. Technologies Enabling Highly Efficient On-Orbit Maneuvers and Longer On-Orbit Life

- 12.i. Enable Multiple Simultaneous Contacts to Reduce Logistics Tail of Satellite and Ground Operations**
- 12.j. Standardized and Miniaturized Components and Interfaces for Satellite Buses and Payloads**
- 12.k. Improved Tools for Design and Testing of Components and Systems**
- 12.l. User-Friendly Interfaces Providing Space Capabilities for Theater Commands**
- 12.m. Technologies to Reduce Costs and Improve Performance of Satellite Buses, Payloads, and Components**
- 12.n. Advanced Photonics, Quantum and Carbon Electronics, and Improved Key Building Blocks for Future Responsive Space Systems**
- 12.o. Space Situational Awareness (SSA) – Detect, Track & Identify**
Developing alternative active and passive sensor technologies to detect and track space objects in a way which significantly lowers cost of operations and sustainment. If, for example, passive technologies could be fielded to deliver the same or better level of detection and track as active sensors, then system maintenance and energy costs (i.e. no emitter) would be reduced. Developing intelligent sensor network technologies for optimizing real-time sensor performance by better utilizing combinations of sensors and data to accomplish what individual sensors cannot. This capability must be rapid (within the space object's risk timeline) and selective (matching sensor capabilities, geography and availability to the mission need).
- 12.p. Space Situational Awareness (SSA) – Characterization**
Developing improved tools and methods for fusing multi-variant intelligence and SSA data to support space object/system characterization. This capability should increase U.S. understanding and confidence-levels associated with the intent of non-cooperative space operators. Develop automated algorithms for recognizing and assessing space object/system characteristics in the context of real-time alerts to U.S. operators if a non-cooperative space asset could threaten U.S. forces, along with an understanding of the relevant facts and Courses of Action which the Joint Space Operations Center (JSpOC) should consider.
- 12.q. Space Situational Awareness (SSA) – Data Integration and Exploitation**
Developing information technology to manage/integrate SSA data/information across classification levels (moving downward low data on higher networks and/or cleansing high data on high networks so it can be synthesized at lower classification levels). Developing planning/direction algorithms to automate and continuously optimize operation of the SSA enterprise, so that the Joint Space Operations Center (JSpOC) has a logical way to adapt to significant changes in the space threat posture.

12.r. Space Situational Awareness (SSA) – Threat Warning and Assessment

Researching autonomous recognition of aberrant data patterns to provide the Joint Space Operations Center (JSpOC) with relevant and timely indications and warnings of hostile or threatening actions by non-cooperative space forces.

12.s. Oxygen Rich Staged Combustion (ORSC) Cycle Liquid Rocket Engines

Seeking technologies to enable the domestic design, development, and production of ORSC propulsion systems. This technology area would include:

- i) Advancements in Oxygen compatible coatings & materials
- ii) Physics-based design tools
- iii) Combustion stability modeling & scalability
- iv) Other related technologies that would reduce technology risk associated with a potential ORSC booster engine development program.
- v) These capabilities would enhance the government's ability to reduce reliance on Russian supplied engines.

12.t. Additive Manufacturing Technology to Take Advantage of Advancements in Manufacturing Capability

Development of additive manufacturing technologies that could significantly reduce the cost of launch systems and low-rate production units.

- Advancements in Selective Laser Manufacturing (SLM)
- Electron Beam Melting (EBM),
- Advanced Process controls
- Updated material property specifications
- Component design updates
- Non-Destructive Evaluation (NDE) techniques for Additive Manufacturing

Requirement #: 13) PEO STRATEGIC SYSTEMS

13.a. Area Intrusion Detection

Intercontinental Ballistic Missile launch facilities have limited intrusion detection and early warning capabilities. Seeking innovative technologies that provide early warning, detect intrusion, and increase situational awareness of personnel monitoring facilities. Any new technologies must not impact the nuclear certification of current systems.

Technical POC: Mr. Clyde Harris, 801-781-8468, clyde.harris.2@us.af.mil

13.b. Survivable Wireless Communications

Seeking technologies for a wireless communications system that is dependable, survivable, jam resistant with low probability of detection, interception, and exploitation. Wireless communication systems have not used because of the sensitivity and criticality of the information being transmitted and susceptibility to countermeasures and exploitation. Novel approaches are being sought for applications where previously, wireless communications would not have been considered.

Technical POC: 2Lt Theodore Lau, 801-586-5761, theodore.lau.1@us.af.mil

13.c. Comprehensive Atmospheric Nuclear Environment (CANE)

Seeking innovative methods to develop established military standard for CANE due to lack of robust SME representation of all AF equity holders. Atrophy of nuclear effects SME coverage noted in the AFNWC CANS III study. Robust SME representation of all AF equity holders to support CANES military standard development is needed. Enterprise wide issue.

Technical POC: Dr. Brett Bedeaux, 505-853-3838, brett.bedeaux@us.af.mil

13.d. Satellite Survivability Nuclear Standard (SSNS)

Seeking innovative methods to develop established military standard for SSNS due to lack of robust SME representation of all AF equity holders. Atrophy of nuclear effects SME coverage noted in the AFNWC CANS III study. Robust SME representation of all AF equity holders to support SSNS military standard development is needed. Enterprise wide issue.

Technical POC: Dr. Brett Bedeaux, 505-853-3838, brett.bedeaux@us.af.mil

13.e. Rad Hard Material Technology Characterization

Seeking ways to increase radiation hardness knowledge for different technologies, to include dose rate, neutron fluence, total ionizing dose, and low-dose-rate sensitivities. Identification of the range of inherent hardness for families of technologies, such as a Hard Technology Chart showing where each technology generally exists in the radiation regimes. Weapon system survivability.

Technical POC: Dr. Brett Bedeaux, 505-853-3838, brett.bedeaux@us.af.mil

13.f. Short Pulse Fast Neutron Environment Simulator

Seeking to coordinate innovative technologies with DTRA effort to develop alternatives for the WSMR Fast-Burst Reactor. USAF and US Navy have requirements for short-pulse fast neutron environments. DTRA and Test Resource Management Center (TRMC) have begun a study to consider alternative technologies. Impact on Current/Future Operation: WSMR Fast-Burst Reactor is the only existing capability; alternate test facility is required due to growing security costs of current facility and lack of backup method/facility. A capability to perform these tests may not be available in the future.

Technical POC: Dr. Brett Bedeaux, 505-853-3838, brett.bedeaux@us.af.mil

13.g. Nuclear Effects Models to Calculate Safe Escape Distances

Seeking standardized set of nuclear effects models to calculate aircraft safe escape distances. Tech orders for operators describing accurate aircraft safe escape distances to ensure aircraft and aircrew survivability after nuclear weapons employment.

Technical POC: Dr. Brett Bedeaux, 505-853-3838, brett.bedeaux@us.af.mil

13.h. ALCM Familiarization App

Seeking innovative technologies for new engineers to be able to access ALCM technical knowledge-base for answers/solutions from one place. Lack of knowledge of the systems among new engineers will show in the quality of product produced.

Technical POC: Abdul Zebri, 405-739-8864, abdelouahed.zebri.3@us.af.mil

13.i. Cold and Warm X-Ray Test Environment

Seeking methods to produce a reflex triode technology, possibly for AFRL's SHIVA-STAR facility, to simulate cold and warm X-ray environments. This is not limited to triode technology, but the goal should be to simulate X-ray environments for effects analyses.

Technical POC: Dr. Brett Bedeaux, 505-853-3838, brett.bedeaux@us.af.mil

13.j. Portable Computer Test Unit (PCTU) Obsolescence

Seeking ways to sustain the current support capability baseline to 2030. PCTU is greater than 15 year old, with no current support. Used for test, troubleshooting, and development work related to ALCM INE (navigation unit). Need to address the lack of capability to troubleshoot/test ALCM INE.

Technical POC: Mr. Trung Pham, 405-739-8862, trung.pham@us.af.mil

Requirement #: 14) PEO WEAPONS

14.a. Denied Area Technologies

Seeking innovative technologies to improve operational system performance in any of the following areas but not limited to: Enhance position, navigation, and timing (PNT) accuracies (high performance Anti-Jam GPS, Non/GPS/alternate navigation approaches such as celestial navigation). Improve precision targeting/delivery, in GPS-contested environments (such as IMU and timing sources). Prevent exploitation of systems lost in denied areas. Extend the effective range of weapons (including propulsion efficiency, aerodynamic improvements, weight reduction, etc...)

Technical POC: Russell T. Klug, 850-883-2137, russell.klug@us.af.mil, Greg Barnette, 850-883-5908, gregory.barnette@us.af.mil, or Mr. Keith Howard 850-883-0571, Franklin.howard.1@us.af.mil

14.b. Improved Target Prosecution Technologies

Seeking technologies in any of the following areas but not limited to: Cockpit selectable weapon characteristics in real time before and positive control after weapon release/employment. Enhance target recognition (sensor sensitivity, sensor fusion, target identification/ATR). Broaden the target set (reduced collateral damage, enhanced lethality, enhanced access and penetration for non-kinetic solutions). Improve fuse capabilities/producibility and cost reduction (survivability, height-of-burst (HOB) performance, fuzing location/target vulnerability detection, universal digital interface). Real-time data link execution and planning, and other associated innovations. Improve weaponeering tools to improve fidelity and or reduce workload. Enable replacement of cluster bombs while maintaining an area attack capability.

Technical POC: Russell T. Klug, 850-883-2137, russell.klug@us.af.mil, Greg Barnette, 850-883-5908, gregory.barnette@us.af.mil, or Mr. Keith Howard 850-883-0571, Franklin.howard.1@us.af.mil

14.c. Improved Weapon Performance and Effectiveness

Seeking technologies in any of the following areas but not limited to: Cockpit selectable weapon characteristics in real time before and positive control after

weapon release/employment. Adjustable warhead effects to optimize lethality and control collateral damage. Enhance energetic/explosives including structural energetic, increase energy density. Enhance weapons effects including increased fragmentation and control, novel payloads/kill mechanisms and penetration improvement technologies. Multiple weapons effects through integration of weapon datalink or net-enabled capability to do coordinated time-of-arrival or in-flight selection of common azimuth/elevation and/or precision fusing selection for multiple weapons delivery.

Technical POC: Russell T. Klug, 850-883-2137, russell.klug@us.af.mil, Greg Barnette, 850-883-5908, gregory.barnette@us.af.mil, or Mr. Keith Howard 850-883-0571, Franklin.howard.1@us.af.mil

14.d.Improved Weapon Affordability/Cost Reduction

Seeking novel technologies and solutions to drive down the cost per unit on legacy weapon modifications and future weapons procurement, throughout the system's lifecycle. Additionally, seeking to employ innovative, low-cost technologies under the Air Force's "Bending The Cost Curve" initiative for future weapons platforms under the Denied Area Technology, Improved Target Prosecution Technology, and Improved Weapon Performance and Effectiveness thrust areas. Areas of interest include but are not limited to: low-cost materials, low-cost navigation and guidance solutions, and addressing universal armament interface (UAI) compliance concerns in early design phase.

Technical POC: Russell T. Klug, 850-883-2137, russell.klug@us.af.mil, Greg Barnette, 850-883-5908, gregory.barnette@us.af.mil, or Mr. Keith Howard 850-883-0571, Franklin.howard.1@us.af.mil

13.5 Office of the Secretary of Defense (OSD) / Defense Agencies Annex

Points of Contact:

General or administrative questions should be addressed to questions@dodrif.com

Questions regarding specific OSD/Defense Agency topic areas should be addressed to the technical point of contact (POC) listed under each of the below requirements or topics.

Specific Instructions: None

OSD / Defense Agency Requirements:

Chief Information Officer / Defense Information Systems Agency (CIO / DISA)

Requirement #: CIO_DISA-15-BAA-RIF-0001

Title: Real-time Data Collection of Current Configurations & Security Posture

Military System or Acquisition Program Customer: DISA Cyber Security Office

Description: Provide an end point solution which facilitates real-time reporting for audit and compliance, reports installed software and version, and detects unknown assets on the network. The technical solution must demonstrate scalability to tens of thousands of total end points within an autonomous system, must coexist with current enterprise software distribution systems such as Microsoft System Center Configuration Manager (SCCM), and installation should be no more complex than a traditional host patch/update for Linux or Windows systems. The solution should have well-defined application programming interfaces (APIs) to enable automated interaction with existing network analysis and big-data analysis tools, and have an intuitive user interface capable of querying all endpoints for information as if the user was on the command line of an endpoint device.

Technical POC: John Mills, 703-695-0906, john.r.mills28.civ@mail.mil, or Eli Konikoff, 301-225-8099, eli.konikoff.civ@mail.mil

Requirement #: CIO_DISA-15-BAA-RIF-0002

Title: Defensive Cyber Maneuver (Software Defined Network)

Military System or Acquisition Program Customer: DISA Cyber Security Office

Description: Provide a solution to identify and implement defensive countermeasures intended to make adversary attempts to operate on DOD networks more expensive, in terms of time, money, or effort. This effort allows for a wide array of both specific and general approaches, including implementation of software defined networks (SDN) or other technologies and approaches. All technology options must be able to be managed at scale, cost-efficient, and effective at addressing a particular adversary reconnaissance method, attack vector, or exploitation technique.

Technical POC: John Mills, 703-695-0906, john.r.mills28.civ@mail.mil, or Eli Konikoff, 301-225-8099, eli.konikoff.civ@mail.mil

Requirement #: CIO_DISA-15-BAA-RIF-0003

Title: Reconstitution and Reimaging of Servers and Endpoints

Military System or Acquisition Program Customer: DISA Cyber Security Office

Description: As the DOD transitions to virtual endpoints, provide a solution for automated reimaging/reconstitution of current physical servers and endpoints to refresh system health, reconstitute compromised machines after attacks, combat persistent threats, and as a tailored response option in anticipation of increased threats or vulnerabilities. The technical solution must demonstrate a reliable, automated, and secure reconstitution mechanism that maintains an acceptable user experience.

Technical POC: John Mills, 703-695-0906, john.r.mills28.civ@mail.mil, or Eli Konikoff, 301-225-8099, eli.konikoff.civ@mail.mil

Combating Terrorism Technical Support Office (CTTSO)

Requirement #: CTTSO-15-BAA-RIF-0001

Title: Non-Radio Frequency Tagging, Tracking and Locating

Military System or Acquisition Program Customer: U.S. Special Operations Command (USSOCOM)

Description: CTTSO Surveillance Collection Operations and Support is interested in innovative Tagging, Tracking, and Locating (TTL) applications utilizing tailorable Photonic Rare-Earth Crystals. This includes the development of covert optical taggants identifiable at distance greater than 3 kilometers (km) that either passively emit a unique Near Infrared-Short Wave Infrared (NIR-SWIR) signature upon exposure to ambient light or are actively excited by currently deployed assets such as laser range finders and night vision goggles and other SWIR sensor systems.

Technical POC: George Papageorge, george.papageorge@cttso.gov

Requirement #: CTTSO-15-BAA-RIF-0002

Title: 21st Century Digital Training for 21st Century Generation

Military System or Acquisition Program Customer: US Naval Academy Science, Technology, Engineering & Math (STEM) Department for Midshipmen, Cadets & other Officer Candidates, multiple intelligence / open-source intelligence agencies, and electronic warfare programs.

Description: There is a need to refine and hone the skills of the younger generation of the military, the majority of which have grown up, plugged into the internet. This generation has the most potential and best intuition and insight on how to influence and control digital operations. CTTSO seeks development of Cyber Operations Discovery Training for Officer Candidates and Junior Enlisted to prepare our future war fighters with sophisticated tradecraft and a disciplined methodology to dominate the digital battle space. The need is for theoretical and hands-on practical cyber support operations training for eligible officer candidates prior to their arrival into their Service communities. Proposals should focus on immediately applicable skills into the areas of Open Source Intelligence (OSI), Operational Security (OPSEC), Identity Management (IDM), Force Protection, Authorities, Regulations and non-kinetic capacity for delivering or securing effects.

Technical POC: Mike Trexler, michael.trexler@cttso.gov, or Dr. Ben Hamilton, benjamin.hamilton@cttso.gov

Requirement #: CTTSO-15-BAA-RIF-0003

Title: Military Mobile Device Cloud

Military System or Acquisition Program Customer: U.S. Army John F. Kennedy Special Warfare Center and School (USAJFKSWCS), War Colleges, and SOCOM

Description: Need is to develop a Cloud Based Military Application Store to host applications, interactive electronic books, documents, and other data. Solution would allow users to synchronize their end user tablets and smartphones with an intuitive user interface, while providing a secure platform that is suitable for “For Official Use Only (FOUO)” material. Government approved applications for numerous communities can be hosted on this Cloud system.

Technical POC: Dr. Ben Hamilton, benjamin.hamilton@cttso.gov

Defense Intelligence Agency (DIA)

Requirement #: DIA-15-BAA-RIF-0001

Title: Cloud Data Query Gateway

Military System or Acquisition Program Customer: DIA Innovation Office

Description: DIA is seeking inexpensive, robust, flexible, scalable framework to enable queries from lower classification networks to higher classification networks with attribute filtered results being presented back to users in lower classification environments. This capability must reduce duplicative systems and data storage across networks, simplify data management, and advance intelligence integration. The capability should support delivery of data to users in intermittent or low bandwidth connectivity environments.

Technical POC: James Harris, 202-231-3040, james.harris3@dodiis.mil

Requirement #: DIA-15-BAA-RIF-0002

Title: Intelligence Operations Convergence - Leveraging the Internet of Things to Connect Tactical User with Strategic Intelligence

Military System or Acquisition Program Customer: DIA Innovation Office

Description: DIA is seeking innovative capabilities to enhance the flow of strategic level intelligence and insight out to the tactical edge and vice versa. Consistent with advances brought on by the Internet of Things, DIA is seeking to fuse data collected by widely distributed and heterogeneous tactical platforms augmented strategic collection platforms, analysis, and insight. Inclusive is a realization that this vision requires integrating innovative technologies to advance security models, infrastructure, data dissemination and storage, large scale heterogeneous data analysis, and information contextualization.

Technical POC: Dan Doney, 202-231-1036, george.doney@dodiis.mil

Requirement #: DIA-15-BAA-RIF-0003

Title: Secure Data Sharing Frameworks for Rapidly Formed Coalitions

Military System or Acquisition Program Customer: DIA Innovation Office

Description: Disaster response and rapidly emerging geopolitical crises have placed heavy demands on DOD information sharing practices. DIA is seeking innovative capabilities to strengthen security posture while sharing data with rapidly formed coalitions. Solutions should support security measures based on centrally controlled attribute and short lived attributes defined by stakeholders as conditions and need to know evolve. Solutions should enable data

forwarding, distribution, synchronization, and assurance in the field in low bandwidth / disconnected tactical settings - prepositioning data according to operating context.

Technical POC: James Harris, 202-231-3040, james.harris3@dodis.mil

Defense Logistics Agency (DLA)

Requirement #: DLA-15-BAA-RIF-0001

Title: Improving Warehouse Performance

Military System or Acquisition Program Customer: Logistics Centers, Depots, and Arsenal

Description: DLA is seeking new, mature technology solutions that dramatically improve cost, time, and efficiency of warehouse distribution systems and inventory management at regional distribution and logistics centers. Current warehouses are set up with stationary shelves and require employees to be mobile and to access stored supplies or inventory manually. DLA is requesting new capabilities to improve efficiencies. For example, in some private sector or commercial companies, fleets of robots bring the shelves to the employees. Similarly, greater computing power on smaller chips means employees could wear augmented reality glasses that can calculate the optimal route through the warehouse or optimal way to pack materiel instead of checking a computer terminal. Preference will be given to selecting mature technology applications already in use in existing defense or private-sector applications.

Technical POC: Robert Cogger, 256-235-48311, robert.cogger@dla.mil

Requirement #: DLA-15-BAA-RIF-0002

Title: Economically Recovering Rare Earth Materials from Magnets

Military System or Acquisition Customer: DLA Strategic Materials

Description: Permanent magnets used in Defense weapons contain rare earth metals. There is very limited domestic production of these rare earth materials and therefore a risk of foreign reliance. Developing an economically viable process for recovering rare earth materials from these magnets, or recycling the magnets themselves, could facilitate the establishment of a viable, competitive domestic supply chain. DLA R&D seeks to prove the viability of a recycling or reclamation process and facilitate commercialization of that process. R&D tasks include identifying sources of scrap and developing process for extracting and re-processing the rare earth metals.

Technical POC: Brian Gabriel, 703-767-0868, brian.gabriel@dla.mil, or Matt Hutchens, 703-767-2502, matt.hutchens@dla.mil

Requirement #: DLA-15-BAA-RIF-0003

Title: Smart Connected Logistics

Military System or Acquisition Customer: Any user of Logistics Data

Description: The Internet of Things (IoT) is often viewed as a network of linked devices. Each device is a smart, connected product characterized by its “awareness” of its state and is able to communicate with other important ‘things’ in its environment. Connectivity amplifies the awareness and enables the device to be connected to many other devices and sources of data. DLA seeks connecting devices and user/systems to the data necessary to provide "cradle to grave" logistical sustainment; for example, the technology to acquire and organize the vast amount of data that will be supplied by these devices. The data must be transformed so it is coherent, relevant, and actionable by humans and Machine-to-Machine or System-to-System

interfaces. To accomplish this, DLA expects a standard or open source protocol solution. The data acquired from IoT devices will be independent from the constraints of the device suppliers or any singular data aggregator.

Technical POC: Tony Monteleone, 804-279-5113, anthony.monteleone@dla.mil

Defense Threat Reduction Agency (DTRA)

Requirement #: DTRA-15-BAA-RIF-0001

Title: Development of a Scalable fidelity Fluid-Dynamic Solver for Airblast and Agent Dispersion in Combating Weapons of Mass Destruction (WMD) Mission Planning Tools

Military System or Acquisition Program Customer: DoD Mission Planners

Description: DoD mission planners need a higher fidelity capability to predict the dispersion and defeat/neutralization of Chemical and Biological (CB) threats and air blast because of the real world threats (high-explosives, improvised explosives devices (IEDs) and CB agents)) by hostile nation-states, terrorist organizations and individual terrorists. Fast running models (FRMs) rely heavily on simplified models, which do not accurately predict agent defeat (AD) scenarios. High fidelity computational fluid dynamic (CFD) codes have the sophistication for AD problems, but are resource intensive (human and computation). Medium fidelity CFD methods are a promising alternative, providing similar physical rigor as high fidelity codes, but with reduced resources. This effort will develop a Windows-based parallelized medium fidelity CFD meshless solver that leverages recent advances in central processing unit (CPU) and graphics processing unit (GPU) technology and newer CFD algorithms. This meshless solver will include at least: (1) first-principles physics-based detonation methodology; (2) dynamic nodal discretization; (3) multi-material interaction; (4) have the ability to model dynamic pressure; turbulent mixing, aerosolization, internal dispersion, and thermal effects; and (5) have linkages to AD neutralization algorithms. This tool must be able to integrate into DTRA's weapons effects decision support tools and be validated against test and high fidelity modeling results.

Technical POC: Greg Doyle, 703-767-6452, greg.doyle@dtra.mil

Requirement #: DTRA-15-BAA-RIF-0002

Title: Nuclear Fallout Debris Analysis in the Field

Military System or Acquisition Program Customer: DTRA Nuclear Forensics Technologies (DTRA J9NTF); USAF Air Force Technical Applications Center (AFTAC)

Description: Develop capabilities to rapidly determine and interpret nuclear or radiochemical composition and quantitative isotopics on post- nuclear detonation debris samples (all forms and phases) within hours after a terrorist nuclear detonation. Analysis can be unattended or attended in the field, with a goal of obtaining medium to high quality answers (identify, quantify, and interpret major and minor elemental and isotopic constituents of radioactive debris) in the shortest time possible.

Technical POC: Lt Col Matthew Zickfoose, 703-767-8622, matthew.zickafoose@dtra.mil

Requirement #: DTRA-15-BAA-RIF-0003

Title: Enhanced Lethality and Versatility for Guided Munitions

Military System or Acquisition Program Customer: DoD Weapon Systems Program Offices

Description: DoD weapons have achieved unprecedented accuracy over the last 30 years, due

to the U.S. lead in guidance, control, and targeting technology. While use of fewer and smaller warheads provides many advantages, there are some disadvantages. Enhancement in total warhead energy available for target damage can be achieved by replacement of inert warhead cases with reactive materials (RM) cases. RM cases provide over 100 percent blast and impulse enhancement, while reactive fragments greatly increase lethality above conventional inert fragments. Retrofitting conventional warhead designs with RM designs would also greatly expand the target sets that can be addressed effectively by these systems. RM technology is currently assessed at a technology readiness level (TRL) of 4. While RM component technologies have each been demonstrated in laboratory environments, only some preliminary research into how best to combine and integrate these technologies has been accomplished. Additional issues of optimization, combination, and integration with existing technologies of the high explosives inert case and inert fragments still need to be addressed so that warheads such as the Hellfire or the Guided Multiple Launch Rocket System (GMLRS) unitary warhead can be upgraded. This proposal will combine and optimize three RM technologies into one formulation for testing in the current Romeo Hellfire and the current unitary blast/frag GMLRS warheads. At the end of this effort, prototype RM Hellfire warheads will be tested in penetration tests to demonstrate equivalent or better penetration, and will be statically tested in instrumented arena tests targets to demonstrate/quantify enhancements in energy and damage delivered.

Technical POC: William Wilson, 703-767-4216, william.wilson@dtra.mil

Joint Science and Technology Office for Chemical and Biological Defense (CBD)

Requirement #: JSTO-CBD-15-BAA-RIF-0001

Title: Wearable Respirator Protection Assessment System (WRPAS)

Military System or Acquisition Program Customer: JPEO CBD / Joint Program Manager (JPM) for Protection

Description: Currently, there are two devices used by the joint services to test chemical-biological protective respirators at the unit level; the Joint Service Mask Leakage Tester (JSMLT) tests mask serviceability, and the M41 Protection Assessment Test System (PATs) determines the Fit Factor (FF) (outside over inside dose) of the mask on the wearer. To reduce the logistical burden, the joint services have identified the need for one system that can efficiently accomplish both objectives. Additionally, FF testing needs to capture more relevant mission-related activities and support testing in the field. A device is needed to conduct both mask serviceability (when attached to an accessory JSMLT-like head-form) and FF testing using only ambient particles as the test challenge. Specific requirements for WRPAS being sought:

- Will be wearable when measuring the FF so the wearer is not constrained by a lengthy sampling line as currently required with the PATs.
- Should not exceed 500 cubic centimeters (cm³) -- smaller and lighter units are preferred.
- Shall have an internal battery for four hours of continuous use
- Will be insensitive to its orientation and the vibration / shock induced by the wearer.
- Will have a built-in display to show the FF after an exercise, and cumulative FF after a series of exercises.
- Will have Wi-Fi or RF communication capability to permit real-time remote transmission and collection of data up to 200 meters, along with on-board memory that records four hours of testing with a built-in USB port for memory interface to a personal computer.

- Must meet existing critical operational performance requirements of the PATS and JSMLT, including environmental storage.
- Required sensitivity will support at least a measureable FF of over 50,000, with preference for 100,000 or more.
- System must show repeatability of performance to within 10 percent of a controlled (refereed) sample.

The technical approach will include development and fabrication of system prototypes and demonstrate efficacy, reliability, and overall durability through operational performance and simulated environmental assessments. The offeror shall deliver four fully functional prototype systems to facilitate government-sponsored independent assessments.

Technical POC: Sal Clementi, 703-767-6970, salvatore.g.clementi.civ@mail.mil, or Salvatore.clementi@dtra.mil

Missile Defense Agency (MDA)

Requirement #: MDA-15-BAA-RIF-0001

Title: Distributed Satellite Network Communications

Military System or Acquisition Customer: Kill Vehicles

Description: Interest is in demonstrating the ability of very small communications payloads to pass data between on-orbit nodes and ground stations with at least three very small satellites at frequencies of S-band or higher. Software defined radios should be used with the ability to change waveforms optimized for space to space and space to ground communications in near real time. For ease of launch, using a Low Earth Orbit launch vehicle with 6 to 18 months on-orbit life expectancy, and to demonstrate miniature electronics in a realistic environment, each of the satellites shall not exceed the 3-unit cube-satellite standard of 10 x 10 x 34 centimeters when folded into launch configuration. The cube-satellites will be three-axis stabilized and have the ability to identify their location through the use of GPS receivers on board. The test program shall consist of passing data space to space and space to ground while measuring performance as a function of distance and antenna orientation.

Technical POC: Rich White, 256-450-2816, richard.white.ctr@mda.mil

Requirement #: MDA-15-BAA-RIF-0002

Title: High Performance, Hardened Optical Coating Technologies

Military System or Acquisition Customer: Kill Vehicles

Description: To enhance system survivability of future missile interceptors, seek improved, hardened technologies. Enhanced optical coatings and mirror technologies support this desire for high performance (high reflectance/low emissivity) survivable technologies. Of interest are: 1) expanding mirror technology development using both coupon level and full-scale test articles, 2) applying manufacturing & producibility methods to facilitate insertion to near term system elements, 3) performing X-ray hardness verification of final candidates, and/or 4) designing and developing full-scale design characterization and hardness verification methods.

Technical POC: Ashley Lindley, 256-450-4368, ashley.lindley@mda.mil

National Reconnaissance Office (NRO)

Requirement #: NRO-15-BAA-RIF-0001

Title: High-strength carbon nanotube based molding compound(s)

Military System or Acquisition Customer: Potentially all Government spacecraft; also all Government composite vehicles (air, land, sea)

Description: Develop a carbon nanotube molding compound to replace chopped carbon fiber-epoxy molding compounds for complex part geometries. Develop methods for dispersing carbon nanotubes in a matrix (e.g. resin, thermoplastic, thermoset, etc.) to provide a uniform fiber reinforced composite part, allowing for proof-loading and significant quality and consistency improvements. Improve finished part consistency and strength over randomly-oriented conventional composite molding compounds. Demonstrate multiple complex finished parts, determine and document design-allowables, and develop commercially-available, high-volume molding compound(s).

Technical POC: Matt Cobert, 703-808-3155, cobertma@nro.mil

Requirement #: NRO-15-BAA-RIF-0002

Title: Carbon Nanotube Composite Rope

Military System or Acquisition Customer: Potentially all Government spacecraft and sea vessels

Description: Develop high strength carbon nanotube-based composite rope that can be mass produced at 1000 kilogram (kgs) per year. Demonstrate improved flexibility, high composited strength at over 1.5 GigaPascals (GPa), and greater environmental stability compared to carbon fiber composites. Establish a catalog product line for use across DOD.

Technical POC: Matt Cobert, 703-808-3155, cobertma@nro.mil

Requirement #: NRO-15-BAA-RIF-0003

Title: Onboard Hyper Spectral Signal Processing and Data Storage

Military System or Acquisition Customer: Potentially all Government spacecraft and sea vessels

Description: Demonstrate and characterize a brass-board processing system using appropriate unclassified data sets with the capability to provide greater than one teraflop (TFLOP) computing processing performance and greater than ten 10 terabytes (Tbyte) of data storage and receiving and storing inputs from multiple high speed sensor feeds. Investigate the implementation of a data fusion capability. Determine the requirements and resources to adopt the processing system for space systems application. Option: Develop and demonstrate a space capable processing system.

Technical POC: Lew Cohn, 703-808-4250, lewis.cohn@nro.mil

North American Aerospace Defense Command / US Northern Command (NORAD / USNORTHCOM)

Requirement #: NORTHCOM-15-BAA-RIF-0001

Title: Mobile Sensor System

Military System or Acquisition Program Customer: Naval Research Laboratory (NRL)

Description: There is a need for low-cost, rapidly-deployable, environmentally friendly, unmanned sensor systems, including deployment and data reach-back from above the Arctic Circle and Caribbean Corridor that can detect, track and identify air targets (less than 6 meters),

surface and subsurface maritime targets (less than 8 meters) at over the horizon distances greater 35 kilometers (km).

Technical POC: Hal Moore, 719-554-3292, harrel.m.moore2.civ@mail.mil

Requirement #: NORTHCOM-15-BAA-RIF-0002

Title: Personally Identifiable Information (PII) Firewall

Military System or Acquisition Program Customer: DISA (Information Volume and Velocity Application)

Description: Joint and coalition forces and other Federal departments situational awareness is enhanced by information gained through open source information such as Twitter, Facebook, Flickr, blogs, etc. This enhanced situational awareness could support numerous planning activities including; deployed tactical environments for force protection, and anticipating interagency needs during a disaster. Operational utility is significantly hampered by the inability to legally and legitimately analyze this information due to the exposure of PII from analytical tools currently available. There is a need (1) for blocking (removal/blocking/masking) direct PII found within streaming or static data sets (text, images, etc.) or metadata of social media without loss of information, and (2) to be monitoring and analytical tool agnostic (the post-processed data should operate in common monitoring and analytical tool sets).

Technical POC: Ed Doray, 719-554-1353, edmund.m.doray.civ@mail.mil

Requirement #: NORTHCOM-15-BAA-RIF-0003

Title: Low Energy Laser Communications

Military System or Acquisition Program Customer: Navy, Space and Naval Warfare Systems Command (SPAWAR)

Description: NORTHCOM seeks a single source free space Ultra Wide Band Laser communications platform that provides an alternative means to traditional air to surface data and voice communications with: (1) data rates exceeding 20 gigabits and (2) can cover distances of over 30 kilometers.

Technical POC: Hal Moore, 719-554-3292, Harrel.m.Moore2.civ@mail.mil

Office of the Deputy Assistant Secretary of Defense for Emerging Capability & Prototyping (Asymmetric Force Application (AFA))

Requirement #: AFA-15-BAA-RIF-0001

Title: Compact Expendable Unmanned Air Vehicle Platforms and Payloads

Military System or Acquisition Customer: Numerous DoD Strike and Intelligence, Surveillance & Reconnaissance (ISR) applications

Description: This effort is to develop and demonstrate innovative platforms and payload technologies with a cost basis that makes them essentially expendable. This may entail simplified designs and manufacturing processes for a flight vehicle or system while providing flexible carry and deployment options. For payloads this may include niche application seekers and sensors for strike and ISR missions. Ideally, baseline designs should include a level of modularity that supports flexible configurations or commercial-off-the-shelf (COTS) applications to meet demands, rather than exquisite designs that attempt to encompass a number of functional requirements at the sacrifice of cost and performance.

Technical POC: Bill Humbert, 703-692-0871, william.r.humbert.civ@mail.mil

**Office of the Deputy Assistant Secretary of Defense for Emerging Capability & Prototyping
(Joint Capability Technology Demonstration (JCTD))**

Requirement #: JCTD-15-BAA-RIF-0001

Title: Joint Chemical Hot Air Decontamination (JCHAD)

Military System or Acquisition Customer:

Description: Develop the capability to safely decontaminate aircraft exposed to chemical warfare agents (CWA). This capability builds upon recent success in using hot/humid air via Bio Thermal Decontamination for neutralizing biological warfare agents (BWA). This capability is being assessed for adaptation within the existing physical infrastructure to effectively support hot/dry air for CWA decontamination. This also leverages existing BWA technology advancements to safely return aircraft to full operational use soon after a CWA exposure.

Technical POC: Larry Magnuson, 618-256-3626, larry.magnuson.1@us.af.mil.

Requirement #: JCTD-15-BAA-RIF-0002

Title: DoD Joint Information Environment (JIE) and Mission Partner Environment (MPE) Microservices Interoperability

Military System or Acquisition Customer: JCTD/Naval Air Warfare Center Weapons Division (NAWCWD) Point Mugu

Description: As the DoD moves forward with establishing the Service Ordinated Architecture JIE within its DoD high security boundary, there is a need to share software applications as suites of independently deployable services, defined as Micro-services, into the all partner MPE for Episodic Mission execution. In support of the Marine Air-Ground Task Force (MAGTF), NAWCWD Pt Mugu is developing the Spectrum Services Framework (SSF) as the data (digital), services and tools construct that allows the MAGTF and mission partners to access, control, and maneuver within the Electro Magnetic Spectrum (EMS). Within the SSF, JCTD office is looking at novel ways to help define, understand, prototype, and demonstrate JIE/MPE interoperable software architecture design patterns where complex applications, as independent processes, communicate with each other using language-agnostic Application Program Interfaces to deliver for a focused small task. Of particular interest within the SSF is enable the Cyber and Electronic Warfare Coordination Cell (CEWCC) to perform its role within the MAGTF.

Technical POC: Elmer Roman, 703-697-4055, elmer.l.roman.civ@mail.mil and Steven Hahn, 703-432-8515, steven.hahn@navy.mil

Requirement #: JCTD-15-BAA-RIF-0003

Title: Reliable Expandable Satellite Testbed (REST)

Military System or Acquisition Customer: Space and Missile Defense Command (SMDC) Technical Center Space and Strategic Systems Directorate (TCS & SSD)

Description: Small satellites present an enormous opportunity for cost savings over the traditional spacecraft design paradigm. Traditionally, in spacecraft design, single, high dollar spacecraft are tested exhaustively to push that failure rate as close to zero (0) as possible, driving up cost. Conversely, if numbers of low cost satellites can be built and tested, then a failure rate can be derived from the population. However, in this relatively new research area of low cost spacecraft, the failure rate has been very high (estimated at about 34 percent biased higher by failures of university cubesats). This is unacceptable for a military system intended to augment

or replace key capability where reliability, mission assurance and dependability are crucial. The ability to launch numbers of satellites in quick reaction and with frequent refresh rate is extremely attractive – provided the satellites perform reliably and consistently. The ability to increase reliability will allow planners to effectively plan and execute missions with flexibility. In order to accomplish this vision, the failure rate must be driven down to more acceptable levels. The failure rate is mostly attributed to lack of systems engineering rigor by non-traditional spacecraft developers and use of Commercial-Off-The-Shelf (COTS) components that have not been sufficiently vetted for military qualification and functional testing. SMDC is looking to develop an expandable HardWare-In-Loop (HWIL) capability that can be utilized during all phases of spacecraft development and mission. This development should include expanded HWIL test capability including event simulation, environmental stimulation, increased modeling fidelity, incremental inclusion of additional flight subsystems, comprehensive test case coverage, aid in accurate diagnostics – all aimed at driving down technical, cost and schedule risks and increasing mission assurance in small satellite programs, while maintaining consistency with the small satellite cost paradigm. The proposed innovation should be generic, tailorable and exportable for standardization and use across multiple satellites.

Technical POC: Mark Ray, 256-701-7381, mark.e.ray@mail.mil

Office of the Deputy Assistant Secretary of Defense for Emerging Capability & Prototyping (Program Integration Office)

Requirement #: PIO-15-BAA-RIF-0001

Title: Fusion of Social Media and Bio-informatics

Military System or Acquisition Customer: EC&P / Program Integration Office (PIO)

Description: The Program Integration Office has a near-term need to develop a novel and efficient analytical method to fuse known trusted sources, public data and social networks with biometric data. The system should be able to perform data analytics that search out qualifying relationships from diverse data sources and then create biometric and behavioral relationships where no apparent relationship previously existed. The system should be able to analyze a variety of data sets across a variety of configurations and operating systems. The system should be able to be expanded to accommodate emerging data sets and throughput. Reports generated by the system should be easy to use, display relevant error rates and/or confidence estimates, and the ability to produce customized reports that fit the specific needs of the various and diverse end users.

Technical POC: Thomas Moore, 703-697-4277, thomas.e.moore13.civ@mail.mil

Requirement #: PIO-15-BAA-RIF-0002

Title: Non-traditional Desulfurization of JP-8 Fuel

Military System or Acquisition Customer: USSOCOM J8/S&T

Description: The Program Integration Office (PIO) is seeking a novel, non-traditional capability to desulfurize JP-8 fuel to less than 0.1 parts per million (ppm) for eventual use in militarily useful fuel cells. Battlefield support requirements define production scalability, airborne and ground transport and Size, Weight and Power (SWaP) requirements. The routine operational temperature and pressure regime of the production unit must be lower than currently available desulfurization methodologies to ensure safety of materiel and personnel. No additional fuels (e.g. hydrogen gas) required by some extraction processes are permitted. Use of non-precious

metals for any catalytic-process sulfur removal methodology is preferred. Substantiating data must be provided to address production scalability issues. All process development must be finalized and well-documented by data prior to development and delivery of a scalable proof-of-principle prototype within 12-15 months. Subsequent verification and validation testing by an independent government operational testing agency will be accomplished at a later date to establish operational suitability and effectiveness.

Technical POC: Thomas Moore, 703-697-4277, thomas.e.moore13.civ@mail.mil

Requirement #: PIO-15-BAA-RIF-0003

Title: Stratospheric Lighter-Than-Air System Demonstrations

Military System or Acquisition Customer: Program Integration Office (PIO)

Description: The Program Integration Office has a near-term need to develop and demonstrate a low cost lighter-than-air (LTA) system with a minimized radar cross-section to carry variety of sensor & communication payloads (over 80 lbs) on long duration (greater than 90 days) stratospheric flights. The system should be able to demonstrate launch operations, controlled maneuvered flight in the stratosphere to designated areas over a global range, and then to return a specified area for recovery operations. During flight operations the system should demonstrate the ability to continuously power a variety of on-board sub-systems including propulsion systems, navigation systems, communication systems and sensor payloads for the duration of the flight. To facilitate a persistent presence over designated areas; control of multiple (two or greater) LTA systems by one control station should be demonstrated. Ideal systems would be able to demonstrate a geostationary capability. Sensors would provide data on atmospheric conditions as well as specified ground objects.

Technical POC: Thomas Moore, 703-697-4277, thomas.e.moore13.civ@mail.mil

Office of the Deputy Assistant Secretary of Defense for Emerging Capability and Prototyping (Rapid Reaction Technology Office (RRTO))

Requirement #: RRTO-15-BAA-RIF-0001

Title: Genomic Sequencing Bioinformatics Platform for Forensic Analysis

Military System or Acquisition Customer: Defense Forensic Science Center (DFSC), Armed Forces DNA Identification Laboratory (AFDIL), and Defense Intelligence Agency (DIA)

Description: DoD requires near-term, novel bioinformatics software to enhance the capabilities for current military operations involving next-generation DNA sequencing (NGS) data for forensic analyses. This software should include algorithm modules for complex DNA mixtures, kinship, biogeographic ancestry and externally visible traits analysis. The system should analyze a variety of forensically-relevant markers including short tandem repeats (STRs) and single nucleotide polymorphisms (SNPs) across a variety of genetic loci (including autosomal and sex-determining chromosomes, and mitochondrial DNA (mtDNA)). The system should be expandable to accommodate emerging genetic loci. STR analysis and reporting must be compliant with DoD STR databases and the national Combined DNA Index System (CODIS). Conventional STR reports should be compliant for upload to the CODIS database. While filtering algorithms for sequence analysis are expected, all sequencing data must be accessible to the end user, including suboptimal sequence reads. The system should operate in a stand-alone capacity on a local server. The system must accept sequencing files from all standard NGS platforms. Reports generated by the system should be easy to use, display relevant error rates

and/or confidence estimates, and the ability to produce customized reports that fit the specific needs of the various and diverse forensic end users.

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Requirement #: RRTO-15-BAA-RIF-0002

Title: Face Capture Technology for Biometric Identification

Military System or Acquisition Customer: DoD Automated Biometric Identification System (ABIS)/Special Operations Command & Defense Intelligence Agency

Description: The DoD is seeking innovative software tools that improve our ability to find and extract facial images from video sequences, and convert them to a probe suitable for comparison to a gallery containing tens of millions of facial images of substandard quality. This software should be capable of locating faces and extracting probe images from low quality video sources with challenging factors such as poor camera resolution typical of commercial closed circuit television cameras and online videos; non-standard facial pose, illumination, and facial expression; partially occluded faces; complex backgrounds; and subjects who are not familiarized and not cooperating. Tools should be capable of sustained ingestion and processing of hundreds of hours of video, with results in a tactical time frame. Tools should not be limited to a small number of high-priority videos, have extended processing time, or require a burdensome candidate review process. Tools should be designed to be capable of operating as a standalone system, or integrated into a comprehensive biometric system. Technical approaches might include compiling multiple off angle images into a single, simulated frontal presentation; use of graphics processing units, cloud, or distributed processing to address the heavy computational workload; or identifying real time changes in facial features or "micro-gestures" to help identify key facial landmarks. Respondents should be prepared to describe their proposed use of existing or improved commercial biometric algorithms; their technical approach to data processing; and how the performer will demonstrate the accuracy of their solutions without the use of actual DOD operational data.

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Requirement #: RRTO-15-BAA-RIF-0003

Title: Robust, Tamper-Resistant, Networked Unattended Sensors

Military System or Acquisition Customer: Army Family of Scatterable Mines (FASCAM) Replacement program; Marine Corps Air Dropped Unattended Ground Sensor program

Description: The DoD seeks novel technologies to prevent jamming, spoofing, tampering with or exploiting RF networked, remotely deployed unattended sensors that can be developed, demonstrated, and delivered in the 2020-2025 timeframe. Jamming and spoofing resistance technologies will improve performance of short range (point-to-point and ad-hoc mesh networks) and long haul (terrestrial or satellite communications) networks in high electromagnetic interference environments; may be implemented on any layer of the Open Systems Interconnection model; and must be applicable to low power RF networks for small, remotely deployed, long endurance, battery powered sensor nodes. Tampering and exploitation prevention technologies may obstruct spoofing, reverse engineering, re-purposing, performance assessment and/or attribution of origin for small, remotely deployed, long endurance, battery powered sensor nodes. Typical nodes will have several sensors (e.g. seismic, acoustic, magnetometer, imager), a low power processor, radio, antenna and battery.

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Office of the Deputy Assistant Secretary of Defense for Manufacturing & Industrial Base Policy (ODASD MIBP)

Requirement #: MIBP-15-BAA-RIF-0001

Title: Low Cost Polishing of Transparent Ceramics with High Radius of Curvatures for Transparent Armor

Military System or Acquisition Customer: US Special Operations Command, Army, Navy and Air Force

Description: Develop and demonstrate robust manufacturing of low cost curved transparent ceramics in sizes needed for transparent armor windows. Polishing curved ceramics is a well know process in the optical field. However transparent armor does not need to be polished to the same finish required for optics. There is a need to economically polish very large transparent ceramics to the transparency necessary for window applications.

Technical POC: Fred Arnold, 312-986-7200, fred.arnold@us.af.mil

Requirement #: MIBP-15-BAA-RIF-0002

Title: Field Programmable Gate Array (FPGA) Design Authentication: Develop Design Verification/ Authentication Technology for Multiple Critical Designs Requirement (All Components) Military Systems

Military System or Acquisition Customer: Numerous Army, Navy and Air Force acquisition programs / systems

Description: Develop and demonstrate an authentication technology that is able to automatically analyze critical FPGA application designs which may be at risk of malicious functionality insertion. The authentication technology should be affordable and effective across multiple FPGA platforms. Establish an automated methodology to extract the functionality of FPGA design bitstreams to netlists. This will greatly reduce the cost and time required to authenticate design functionality and thereby enhance ability to detect malicious functionality insertions.

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U.S. Pacific Command (USPACOM)

Requirement #: PACOM-15-BAA-RIF-0001

Title: Cooperative Unmanned Aerial System (Co-op UAS)

Military System or Acquisition Program Customer: Program Managers (PMs) for Unmanned Aerial Systems

Description: Joint and coalition forces require unmanned aerial vehicles (UAVs) to support military operational capabilities. Individually these systems are capable but cooperatively using multiple UAVs can enhance capability in terms of timeliness, range, effects or more. Goal is to demonstrate and deliver a scalable, cooperative UAS. The system can be demonstrated at an operational test environment using small, low cost, and electronically interlinked UAVs, but must be scalable in terms of algorithms that can address areas of operational capability beyond line-of-site, and at long ranges to support key focus areas such in disparate-data-fused intelligence, surveillance, and reconnaissance (ISR), degraded position, navigation and timing (PNT), communications (dissemination of situation awareness information), and electronic attack.

Technical POC: Lt Col Kenneth Fisher, 808-477-8049, kenneth.fisher1@pacom.mil

Requirement #: PACOM-15-BAA-RIF-0002

Title: Software Defined Radio Aperture (SDRA)

Military System or Acquisition Program Customer: PMs for Software Defined Radio (SDR) applications

Description: Software defined radios are growing in military application and require antenna designs that address an expanding need for high dynamic range Radio Frequency (RF) systems that enable high performance operation in hostile electromagnetic environments while conforming to size weight and power limits of the military system. Military applications are diverse and could include a design for ground-based dismounted soldier such as a lightweight wearable antenna technology that covers the megahertz (MHz) operation band to airborne high-powered applications such as a directional microwave jammer application.

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Requirement #: PACOM-15-BAA-RIF-0003

Title: Tactical Micro-Air Vehicle (MAV) Chemical, Biological, Radiological, Nuclear (CBRN) Surveillance System

Military System or Acquisition Customer: Joint Program Manager for Contamination Avoidance (JPM-CA), SOCOM, 20th Support Command, National Guard Civil Support Teams.

Description: Chemical, Biological, Radiological, Nuclear (CBRN) units and specialty teams have the mission to survey, locate and identify CBRN contamination in support of military operations and civil-military responses to accidents and incidents involving CBRN material. Current available surveillance and detection technologies available to CBRN forces are lacking in remote sensing capability, especially at the tactical or field level. This effort would take advantage of recent advances in micro-air vehicle platforms that can hover and perch over a location while carrying one or more chemical, radiological or biological detection or sampling technologies. Specific chemical and radiological detection and biological sampling technologies exist where in principle such a tactical-level remote sensing capability should be practical. However, there is a technology gap to effectively integrate the sensor packages into the unmanned aerial system and to efficiently and accurately transmit sensor data to a ground control or monitoring station. This tactical CBRN MAV detection system should deliver near-real-time, geo-tagged data on chemical warfare agents, radiological contamination and, if possible, biological threat agent contamination. Biological surveillance may be limited to collection with analysis at the monitoring station. Total system should be man-portable and at least should be transportable in organic platoon level vehicle assets.

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U.S. Southern Command (USSOUTHCOM)

Requirement #: SOUTHCOM-15-BAA-RIF-0001

Title: Managed Access of Mobile Cellular Devices

Military System or Acquisition Customer: Army Communications-Electronics Research, Development & Engineering Center (CERDEC)

Description: To counter the use of mobile cellular technology by Transnational Criminal Organizations, Drug Trafficking Organizations, and Terrorist Organizations, USSOUTHCOM

requires managed access of mobile cellular devices with the capability to create a managed communication umbrella over a specific location/facility or operational area. Managed communication refers to the ability to allow communication/connectivity only to devices that are on an organization/mission approved list. The system should be capable of detecting, locating, and identifying mobile Global System for Mobile communications (GSM) and associated devices. The system should be able to operate unattended, configure itself automatically and deliver data, Short Message Service (SMS) and voice transactions based on predefined keyword parameters, as well as communications within a particular geo-located area delivered through geo-fence implementation. The system should be able to work with advanced security of modern mobile networks, such as 3G, 4G, Long-Term Evolution (LTE), and Universal Mobile Telecommunications System (UMTS) for identification. It should support Military Information Support Operations (MISO) missions by allowing for messaging from Unmanned Air Systems (UAS) or Forward Operating Bases (FOBs), and by enabling free form text messages to be broadcast to mobile devices. With the exception of power requirements, the system should be deployable, portable and self-enclosed.

Technical POC: Rick Arias, 305-437-1894, ricardo.arias.ctr@mail.mil

Requirement #: SOUTHCOM-15-BAA-RIF-0002

Title: Internet Communications at the Tactical Edge

Military System or Acquisition Customer: Army CERDEC Intelligence & Information Warfare Directorate (I2WD)

Description: During operations at the tactical edge (remote and austere environments) U.S. forces lack resilient, cost-effective, seamless Internet connectivity for data-rich, digital communications from remote sites to operations centers, and for coordination and collaboration with non-Department of Defense (DoD) partners and stakeholders: U.S. Interagency, Coalition and Partner Nation forces, Non-Governmental Organizations (NGOs), Academia, and International Organizations. Currently, operations at the tactical edge are hampered by a lack of internet connectivity from remote sites to operations centers and headquarters, and from a lack of connectivity with non-DoD partners and stakeholders. Meeting this requirement would improve interoperability during missions such as Humanitarian Assistance and Disaster Response (HADR), Countering Transnational Criminal Organizations (CTOC), Countering Terrorism (CT), Countering Illicit Trafficking (CIT), Search and Rescue (SAR), and Support to Civil Authorities. Digital communications in today's complex, dynamic mission environment is email, chat, text, and RF capabilities.

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U.S. Special Operations Command (USSOCOM)

Requirement #: SOCOM-15-BAA-RIF-0001

Title: Selectable Effect Munitions

Military System or Acquisition Customer: PEO-Fixed Wing

Description: Provide an enhanced lethality warhead with a selectable effects capability and be compatible with existing common launch tube munitions. Deliver a selectable warhead that ensures the highest number of lethal fragments on targets. Target pattern must be predictable and uniform. Use of high fidelity modeling throughout development is encouraged in to obtain the desired configuration, reduce weight, increase lethal range, and to maximize the value testing

and lethality data. The initiative will conclude with a warhead that has been arena tested and is in a near-final and realistic configuration. The final product must be compatible with Standoff Precision Guided Munitions.

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Requirement #: SOCOM-15-BAA-RIF-0002

Title: Rapid Identification of Materials of Interest for Site Exploitation

Military System or Acquisition Customer: PEO-Strategic Reconnaissance & Science & Technology Directorate

Description: Develop and demonstrate a body-worn, hands-free system to detect, identify and visually locate exposed chemical, biological, radiological or explosive materials during site exploitation operations. The Special Operations Force (SOF) desires a system which allows an operator to assess at a glance the presence of exposed chemical, biological, radiological, precursor or explosive materials within an area of an average sized room.

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Requirement #: SOCOM-15-BAA-RIF-0003

Title: Handheld Low Visibility Media Exploitation (MEDEX) Capability (USSOCOM)

Military System or Acquisition Customer: PEO-Strategic Reconnaissance & Science & Technology Directorate

Description: Special Operations Forces require a light weight, handheld Document and Media Exploitation (DOMEX) exploitation capability to support both overt and clandestine operations. The capability would support mobile, worldwide intelligence collections and multiple mission sets. Capability would be able to operate in a mobile environment, and connect to networks using either native or military communications architectures. Capability can be either a device, or an application for use on existing devices. Spiral 1 develops Cell Phone Exploitation (CELLEX) capability. Spiral 2 is to develop Computer Forensics Triage/Imaging/etc. These capabilities should detect digital signatures or values (key words, hashes, document types, text and number values, and descriptors for file types, etc.), compare digital signatures to onboard digital signatures and values watch-lists, query authoritative databases, and provide user with alert on indicator of the digital signature found. Capability should create user viewable reports on triaged device (alerts and description of what types of digital information are on the device).

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