

# Army Rapid Innovation Fund Broad Agency Announcement

Announcement No.: W911NF-12-R-0019

Issue Date: 16 July 2012

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## 1.0 General Information

### 1.1 Introduction

This publication constitutes a Broad Agency Announcement as contemplated in Federal Acquisition Regulation (FAR) Part 35.016 and FAR 6.102(d)(2). A formal Request for Proposals (RFP), solicitation or additional information regarding this announcement will not be issued.

The Army will not issue paper copies of this announcement. White papers, technical and cost or price proposals (or any other material) submitted in response to this BAA will not be returned. All proposals will be treated as sensitive competitive information and their contents will be disclosed only for the purposes of evaluation.

### 1.2 Federal Agency Name

Office of the Deputy Assistant of the Army for Research and Technology  
ATTN: SAAL-ZT Room 2E525  
103 Pentagon  
Washington, DC 20310

### 1.3 Research Opportunity Title

Army FY 2012 Rapid Innovation Fund (RIF)

### 1.4 Announcement Type

Initial Broad Agency Announcement

### 1.5 Research Opportunity Number

**W911NF-12-R-0019**

### 1.6 Key Dates

Event	Date	Time
BAA is Released	16 July 2012	
BAA Closes for White Papers	17 Sept 2012	3:00 p.m. ET
Full Proposals Due	30 calendar days after Invitation (NOTE: Please refer to the instructions included with the Invitation.)	

The final due date for white papers to be considered under this BAA is no later than 3:00 p.m. EST on September 17, 2012. It is anticipated that the white paper evaluation process will be completed within 10 weeks. Any offeror whose white paper technology is assessed as “not of particular value” to the Army is ineligible to submit a full proposal under this BAA. The

anticipated due date for full proposals is 30 calendar days after the invitation is issued. It is anticipated that final selections will be made within four weeks after full proposal submission. As soon as the final full proposal evaluation process is completed, organizations selected for funding will be notified via email by the Army organization that is managing the specific proposal.

## **1.7 Research Opportunity Description**

Enacted by Congress in the 2011 National Defense Authorization Act (NDAA) as the Rapid Innovation Program (RIP), the NDAA, Section 4201, Public Law 112-84, and the Consolidated Appropriation Act for FY12 (DIVISION A—DEPARTMENT OF DEFENSE APPROPRIATIONS ACT, 2012, TITLE IV, Research, Development, Test and Evaluation, Defense-Wide) provides DoD with the authority to fund programs that facilitate the rapid insertion of innovative technologies into military systems or programs that meet critical national security needs.

This BAA is primarily for the transition of technologies developed 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).

The goals of the RIF reflect DoD's emphasis on rapid, responsive acquisition and the engagement of small, innovative businesses in solving defense needs. The RIF is seeking projects that address innovative technology that resolve operational challenges or other critical national security needs, and has a demonstration path into a defense acquisition program, including, but not limited to capabilities that:

- Accelerate or enhance a military capability;
- Reduce the development, acquisition, sustainment, or lifecycle costs of defense acquisition programs or fielded systems;
- Reduce technical risk;
- Improve the timeliness and thoroughness of test and evaluation outcomes.

The Army RIF is seeking solutions to Army challenges specified in Section 10 of this BAA. Each white paper MUST address an Army challenge in Section 10 of this BAA, and submitted solutions MUST also involve one or more of the Defense research and development Rapid Innovation Program science and technology thrust areas specified in Section 11 of this BAA.

Technology maturity will be identified to assess technical risks for candidate proposals in direct support of major defense acquisition programs, programs of record, or the next phase of research and development. For purposes of this BAA, the Army seeks a Technology Readiness Level (TRL) of at least 6 for the final product of proposed solution. In circumstances of

exceptional technical merit, proposals with a lower TRL rating will be considered for award, as warranted by the Source Selection Authority.

## **2.0 Eligibility**

### **2.1 Eligible Sources**

Except as specified below, all responsible sources 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 join others in submitting white papers; however, no portion of this announcement will be set aside for HBCU and MI participation. Federally Funded Research & Development Centers (FFRDCs) and National Laboratories are not eligible to receive awards under this BAA. However, FFRDCs and National Laboratories may be subcontractors under an award, so long as such is permitted under their Government sponsoring agreement. Further, Department of Defense and Civilian Laboratories are not eligible to receive awards under this BAA. However, such Laboratories may participate in an award, so long as such participation is authorized by their Laboratory.

### **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.

### **2.3 Export-Controlled Technologies**

Some Army requirements included in Section 10.0 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 §120.15.

## **3.0 Agency Points of Contact**

**3.1** General BUSINESS questions related to this BAA shall be submitted to the email address listed below and must include a subject line of "BUSINESS QUESTION - ARMY RIF BAA" in order to ensure an answer is received. This email address is used ONLY for business questions related to the BAA and white paper submission. There are SEPARATE email addresses included in this BAA for white paper submission and technical questions. Emails asking technical questions, submitting white papers, requesting status of white paper receipt and evaluations and requesting status of full proposal invitations and evaluations will NOT be answered by submission to the address below.

Christopher Justice  
US Army Contracting Command – Aberdeen Proving Ground  
Research Triangle Park Division  
**Email:** [usarmy.rtp.aro.mbx.baa3qa@mail.mil](mailto:usarmy.rtp.aro.mbx.baa3qa@mail.mil)

**3.2** TECHNICAL questions must be addressed to the technical points of contact identified with each requirement in Section 10.0 in order to ensure an answer is received. Technical questions can be discussed with the technical points of contact either telephonically or via email (using the email addresses provided in Section 10.0) —if the question is via email the subject line of the email shall include the “ARMY RIF BAA” and the Army Requirement number. All email correspondence and conversations shall be unclassified.

## **4.0 Award Information**

### **4.1 Funding**

The Government reserves the right to fund all, some, or none of the proposals received under this BAA. The Government provides no funding for direct reimbursement of proposal development costs. Anticipated funds available for all awards under this BAA are \$50 million, contingent on the availability of funds and upon receipt of acceptable proposals. The Government may provide additional funds, but there is no commitment by the Government that the total amount of awards will exceed \$50 million.

In addition, the Government reserves the right to request any additional, necessary documentation once it makes the award instrument determination and to remove offerors from award consideration should the parties fail to reach agreement on award terms, conditions and cost/price within a reasonable time, or the offeror fails to timely provide requested additional information.

### **4.2 Instrument Type**

The type of funding instrument selected by the Government will be either a contract or an other transaction for prototype projects agreement. If a contract is selected as the funding instrument, a firm fixed price contract, or a cost type contract in accordance with FAR Part 16, Contract Types will be used. Other transactional authority will be in accordance with 10 U.S.C 2371 (Section 845), and an other transaction agreement may only be awarded if the use of a standard contract is not feasible or appropriate. Contract type and funding arrangements are at the discretion of the Government.

### **4.3 Award Value**

The cost or price of an individual award will not exceed \$3 million.

### **4.4 Period of Performance**

The period of performance of an individual award shall not exceed 24 months.

## **5.0 White Paper Preparation & Submission Instructions**

### **5.1 White Papers**

White papers MUST address one of the requirements listed in Section 10.0 of this announcement AND one or more of the thrust areas identified in section 11.0 of this announcement. Each white paper MUST focus on ONE requirement per paper, although an offeror may submit multiple white papers under the same requirement and may submit white papers under more than one requirement. In these cases, an offeror must submit each individual white paper separately. Only unclassified white papers will be accepted. If an offeror does not submit a white paper before the specified closing date and time in Section 1.6, the offeror will not be eligible to submit a subsequent proposal. The Government's decision to invite a full proposal will be based upon the evaluation results of the white paper submission. Offerors that do not receive invitations from the Government to submit a proposal are not eligible to submit proposals. There is no limit on the number of white papers an offeror may submit in response to this BAA.

## **5.2 Format of White Papers**

A complete white paper submission will consist of three volumes. The cover sheet is volume one, the white paper is volume two, and the quad chart is volume three.

**5.2.1 Number of Pages:** The white paper is limited to three pages. The white paper cover sheet and quad chart are not included in the page limit. Pages submitted in excess of the white paper page limit will not be read or evaluated.

**5.2.2 Number of Copies & Format:** One electronic copy of the coversheet in Excel Workbook (.xlsx) Format. One electronic copy of the white paper, in Portable Document Format (PDF). One electronic copy of the quad chart in PowerPoint Presentation (.pptx) Format.

**5.2.3 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. Bolding, underlining, and italics may be used to identify topic demarcations or 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.

**5.2.4 Headers:** The offeror's name, and Army requirement number (as specified in Section 10.0 of this BAA) shall be in the header of each page. The header may be included in the one-inch margins.

**5.2.5 Virus Check:** Perform a virus check before uploading the white paper. If a virus is detected, it may cause rejection of the file.

**5.2.6 Security:** Do not lock or encrypt any files uploaded as part of your white paper submission.

## **5.3 Content of White Papers**

### 5.3.1 Volume One – Cover Sheet

The cover sheet must be prepared using the government provided template in Excel Workbook (.xlsx) Format (Army RIF BAA Volume1 Template.xlsx). The template is located on the website where this BAA is posted. Offerors shall provide the following information on the cover sheet:

- Organization Information: Name, Mailing Address, Technical POC, Phone Number, E-mail address, and CAGE code
- Business POC, Phone Number, and E-mail Address
- Requirement Number and Title as specified in Section 10.0 of this BAA.  
NOTE: Failure to specify a requirement may result in the white paper not being considered.
- Defense research and development Rapid Innovation Program science and technology thrust area(s) involved in this submission as specified in Section 11.0 of this BAA.
- Duration of Effort
- Estimated Cost of Effort
- Recommended Funding Instrument: (select one)
  - Contract
  - Other Transaction
- Self Certification of Applicant: (select one)
  - Small business
  - Large business
  - Academic institution
  - Other
- Does the proposed approach derive from, extend, or logically conclude efforts from prior DoD-funded SBIR or STTR projects? (select Yes/No)
  - If yes, identify the SBIR/STTR topic number and resulting contract number: \_\_\_\_\_
- Was DoD-reimbursed IR&D technology a foundation for the proposed approach? (select Yes/No)
- Are you proposing to use foreign participants for work under the proposed effort? (select Yes/No)
- Identify the estimated percentage of effort to be performed by the offeror and percentage of work by other team members (e.g. subcontractor/consultant):
  - Offeror: \_\_\_\_\_%
  - Team members: \_\_\_\_\_%
- Has this approach been proposed to or funded by the DoD or another Federal Agency (including previous RIF BAAs) (select Yes/No)
  - If yes, identify the agency, solicitation, and contract/grant number

### 5.3.2 Volume Two – White Paper (3-page PDF file)

The white paper shall be emailed as a PDF attachment. The decision by the Army to request a proposal will be based upon the white paper submission. Ensure your white paper adequately describes the proposed approach and resulting contributions. The white paper 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 the technology meets and solves one of the requirements specified in Section 10.0 of this BAA.
- How and to what degree the technical approach is relevant to an Army acquisition programs including how the approach enhances the military capability; accelerates the development of military capability; reduces the development costs; and/or reduces the sustainment costs of fielding systems.
- How the approach involves one or more of the Defense research and development Rapid Innovation Program science and technology thrust areas specified in Section 11.0 of this BAA.
- The current Technology Readiness Level (TRL) of the technology and/or product and how will it transition to military systems or programs.

**(2) Technical Approach:** Describe how the proposed technical approach is innovative, feasible, achievable, and 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 and 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.

**(3) Schedule:** Describe how the proposed schedule is achievable for the proposed technical approach. Transition to military systems or programs is expected within 24 months of award. Discuss:

- Major activities/milestones.
- Deliverables.
- Metrics/measures of success.
- Potential risks and risk mitigation plans.

**(4) Costs:** Describe the estimated costs for the proposed technical approach.

### **5.3.3 Volume Three – Quad Chart (1-page PowerPoint Presentation (.pptx) Format)**

The Quad Chart sheet must be prepared using the government provided template in PowerPoint Presentation (.pptx) Format (Army RIF BAA Volume 3 Template.pptx.) The template is located on the website where this BAA is posted. The unclassified

Quad Chart shall be e-mailed as a PowerPoint Presentation (.pptx) Format attachment. The Quad Chart should include the following information:

- **Heading (Arial 24pt Bold)**
  - Title of Project
  - Company
  - Requirement #
- **Upper Left Quadrant:**
  - Picture or graphic illustrating proposed technology development
- **Lower Left Quadrant (Arial 12pt Normal):**
  - Project objectives and scope
  - Key deliverables
  - Key participants
- **Upper Right Quadrant (Arial 12pt Normal):**
  - Technology description
    - Brief description
    - Technology readiness level; current and anticipated
  - The “So What”
    - Challenge Area addressed
    - Specific outcomes
    - Where it will be used
- **Lower Right Quadrant: (Arial 12pt Normal):**
  - Estimated costs
  - Major activities/milestones
  - Deliverables, metrics/measures of success
  - Potential risks

<b>Heading: Title, Organization, Requirement Number</b>	
<b>Upper Left Quadrant:</b> Picture or graphic illustrating proposed technology development.	<b>Upper Right Quadrant:</b> How the technology contributes and addresses the requirement, the technical maturity (current level and anticipated level at project completion), how the technology will transition to existing military systems or programs.
<b>Lower Left Quadrant:</b> Project objectives and scope, key personnel, facilities/equipment, related to prior or current work.	<b>Lower Right Quadrant:</b> Estimated costs, major activities/milestones, deliverables, metrics/measures of success, potential risks.

#### 5.4 Submission of White Papers

White papers shall be emailed to <mailto:usarmy.pentagon.hqda-asa-alt.mbx.army-industry@mail.mil> and must include a subject line of “WHITE PAPER – ARMY RIF BAA” in order for the white paper to be properly received. White papers sent by any other means (e.g.

submitted to other email addresses, hand-carried, postal service mail, commercial carrier or fax) will not be considered.

## **5.5 Notification of White Paper Receipt**

Offerors will receive an email confirmation that their white paper has been received.

## **5.6 Submission of Late Proposals (Applicable to White Papers and Proposals)**

Offerors are responsible for submitting electronic white papers and proposals so as to be received at the Government site indicated in this BAA (or in the Invitation to submit a proposal) no later than the date and time specified in the Section 1.6. When sending electronic files, the offeror shall account for potential delays in file transfer from the originator's computer server to the Government website/computer server. 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.

An Offeror should receive confirmation of delivery at the Government site, not just successful relay from the Offeror's system. Acceptable evidence to establish the time of receipt at the Government site includes documentary and electronic evidence of receipt maintained by the Government site. All submissions shall be emailed before the cut off time/date in order to be considered – No exceptions.

If an emergency or unanticipated event interrupts normal Government processes so that white papers and/or proposals cannot be received at the site designated for receipt 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 processes resume.

Offerors agree to hold the terms of their white paper valid for 150 calendar days from the date of submission.

## **6.0 Proposal Preparation & Submission Instructions**

### **6.1 Proposals**

The Invitation Letter to submit a proposal will be sent by the Army Contracting Office that will be handling any subsequent contract award, which is NOT the business office that issued this BAA. Offerors that receive a request to submit proposals shall provide sufficient information to persuade the Government the proposed project represents an innovative approach to accelerating the transition of defense-related technologies. The following is an illustrative outline for proposal format and content. However, the instructions in the Invitation Letter may deviate from the proposal format and content described below. Offerors should follow the instructions provided in the Invitation Letter. Only unclassified proposals will be accepted.

## 6.2 Format of Proposals

**6.2.1 Number of Pages:** The technical proposal is limited to 25 pages. Pages submitted in excess of the page limit will not be read or evaluated. The cover sheet, cost/price proposal, and Performance Work Statement (PWS) are not included in the technical proposal page limit. The cost or price proposal does not have a page limit. There shall be no cost/price information in the technical proposal and no technical information in the cost/price proposal. Pages submitted in excess of the technical proposal and/or PWS page limit will not be read or evaluated.

**6.2.2 Number of Copies & Format:** One electronic copy of the technical proposal, in Portable Document Format (PDF). The cost or price proposal and PWS shall also be uploaded in PDF format.

**6.2.3 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. Bolding, underlining, and italics may be used to identify topic demarcations or 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.

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

**6.2.5 Virus Check:** Perform a virus check before uploading any files to as part of your proposal package. If a virus is detected, it may cause rejection of the file.

**6.2.6 Security:** Do not lock or encrypt any files uploaded as part of your proposal submission package.

## 6.3 Content of Proposals

A complete proposal submission will consist of four volumes. The cover sheet is volume one, the technical proposal is volume two, the cost/price proposal is volume three, and the PWS is volume four.

### 6.3.1 Volume One – Cover Sheet

### 6.3.2 Volume Two – Technical Proposal (25-page PDF file upload)

The technical proposal shall be prepared as a PDF attachment. The technical proposal shall include the following sections in the order given below:

**(1) Contribution to the Requirement:** Provide a project overview and description of benefits, as described below:

**1.1 Project Overview:** A brief statement describing the specific technology and/or product being proposed and how the technology and/or product will work.

**1.2 Benefits:** Describe how and to what degree the technical approach is relevant to a requirement identified in this announcement, including how the approach:

- Enhances the military capability, or
- Accelerates the development of military capability, or
- Reduces the development costs, or
- Reduces the sustainment costs of fielding systems.

**1.3 Transition Strategy:** Describe how the technology and/or product will transition to the Services, including insertion events into military systems or programs. Describe evidence to support stated TRL.

**(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.

**2.1 Objectives and Scope:** Describe the specific objectives of what the project will achieve and any logical boundaries.

**2.2 Work Plan:** Provide an explicit, detailed description of tasks to be completed and deliverables.

**2.3 Key Personnel:** Describe the qualifications of the team and identify key personnel who will be involved in the effort including information directly related to education and experience. Identify any foreign citizens you expect to be involved as a direct employee, subcontractor, or consultant. Key personnel resumes shall be provided in an attachment to the proposal and will not count toward the page limitations.

**2.4 Facilities/Equipment:** Describe available instrumentation and physical facilities necessary to carry out the proposed effort.

**2.5 Related Work:** Describe significant activities and/or previous work directly related to the proposed effort, including SBIR/STTR contracts and IR&D projects.

**(3) Schedule:** Describe how the proposed schedule is achievable for the proposed technical approach. Transition to military systems or programs is expected within 24 months of award.

**3.1 Milestones & Deliverables:** Show major activities/milestones and deliverables anticipated by date, including research and development, testing, integration, transition, and/or acquisition elements, as applicable.

**3.2 Metrics/Measures of Success:** Discuss what measurement criteria will be established to measure progress against stated objectives.

**3.3 Risks:** Describe anticipated risks and risk mitigation plans.

### **6.3.3 Volume Three – Cost or Price Proposal (PDF file)**

The cost or price proposal shall be prepared as a PDF attachment. The cost/price proposal shall include a detailed breakdown of all costs by category. If a proposal is selected for award, the offeror shall be prepared to submit any further documentation to its Army Contracting Officer to substantiate costs. For more information about cost proposals and accounting standards, see the DCAA publication called “Information for Contractors” available at [www.dcaa.mil](http://www.dcaa.mil). The following cost areas shall be included, if applicable:

- (1) **Direct Labor:** Individual labor category or person, with associated labor hours and unburdened direct labor rates.
- (2) **Indirect Costs:** Fringe Benefits, Overhead, G&A, etc.
- (3) **Travel:** Destination, number of trips, number of days per trip, departure and arrival destinations, number of people, etc.
- (4) **Subcontractor and Consultants:** All subcontractor costs and consultant costs must be detailed at the same level as prime contractor costs in regards to labor, travel, equipment, etc. Provide detailed substantiation of subcontractor costs in your cost proposal. Provide consultant agreement or other document that verifies the proposed daily/hourly rate.
- (5) **Other Direct Costs (ODCs):** ODCs shall be itemized with costs or estimated costs.

### **6.3.4 Volume Four – Performance Work Statement**

A PWS clearly detailing the scope and objectives of the effort; tasks to be completed; the technical approach; and deliverables. It is anticipated that the proposed PWS will be incorporated as an attachment to the resultant award instrument. To this end, such proposals must include a PWS without any proprietary restrictions, which can be included in the award instrument.

## **6.4 Submission of Proposals**

Offerors that receive an invitation to submit a proposal shall email their proposal to the address included in the invitation. The cover sheet, technical proposal, cost or price proposal, and PWS shall be submitted electronically via e-mail. Proposals sent by any other means (e.g. hand-carried, postal service mail, commercial carrier, or fax ) will not be considered.

Offerors are responsible for ensuring compliant and final submission of their proposals. Any additional submission instructions will be provided in the invitation requesting the proposal.

## **6.5 Notification of Proposal Receipt**

Offerors will receive email confirmation that their proposal has been received.

## **6.6 Validity of Proposals**

The offeror agrees to hold prices, terms and conditions of their offer firm for 120 calendar days from the date of submission.

## **6.7 Marking of Proposals for Classified/Proprietary Information**

Proposals submitted in response to this BAA are to be unclassified. The proposal submissions will be protected from unauthorized disclosure during the evaluation process in accordance with FAR 15.207(b), applicable law, and DoD regulations. Offerors are to appropriately mark each page of their submission that contains proprietary information. The proposal shall include a Performance Work Statement, which contains only unclassified information and does not include any proprietary restrictions.

## **7.0 Evaluation Information**

The evaluation process will be conducted using a technical subject matter expert review 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 RIF program rather than against other white papers for requirements in the same general area. Each proposal will be evaluated based on the merit, relevance and cost of the specific proposal as it relates to the RIF program rather than against other proposals for requirements in the same general area. All documents necessary for the review and evaluation of white paper and proposal submissions shall be provided as described in this BAA.

## **7.1 White Paper Evaluations**

### **7.1.1 Evaluation Criteria**

White papers will be evaluated using four criteria. The non-price criteria will be evaluated using the following adjectival ratings: Outstanding (O), Good (G), Acceptable (A), Marginal (M), or Unacceptable (U). White papers that are deemed “Unacceptable” in either Factor #1 or Factor # 2 will not be considered for further review.

- **Factor #1 – Contribution to the Requirement**

The degree to which the technical approach is relevant to an Army requirement as listed in Section 10.0. Additionally, the degree the technical approach is relevant to one or more of the Defense research and development Rapid Innovation Program science and

technology thrust areas identified in Section 11.0. The degree the technical approach is relevant to an Army acquisition program or programs including how the approach enhances the military capability; accelerates the development of military capability; reduces the development costs; and/or reduces the sustainment costs of fielding systems.

- **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. The probability for transition of this effort into an acquisition program.

- **Factor #3 – Schedule**

The degree to which the proposed schedule is achievable within 24 months from award.

- **Factor #4 – Cost**

The degree to which the proposed cost or price is realistic for the proposed technical approach and does not exceed \$3 Million.

### **7.1.2 Order of Importance**

Factor #1 and Factor #2 are equally important. Factor #3 and Factor #4 are equally important. Factors #1 and #2 are significantly more important than Factors #3 and #4. The government is more concerned with obtaining superior technical capabilities than with making awards at a lower cost to the government.

## **7.2 Proposal Evaluations**

### **7.2.1 Evaluation Criteria**

Proposals will be evaluated using four criteria. The non-price criteria will be evaluated using the following adjectival ratings: Outstanding (O), Good (G), Acceptable (A), Marginal (M), or Unacceptable (U). Proposals that are deemed “Unacceptable” in either Factor #1 or Factor # 2 will not be considered for further review.

- **Factor #1 – Contribution to the Requirement**

The degree to which the technical approach is relevant to the Army requirements listed in Section 10.0. Additionally, the degree the technical approach is relevant to one or more of the Defense research and development Rapid Innovation Program science and technology thrust areas identified in Section 11.0. The degree the technical approach is relevant to an Army acquisition programs including how the approach enhances the military capability; accelerates the development of military capability; reduces the development costs; and/or reduces the sustainment costs of fielding systems.

- **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. The probability for transition of this effort into an acquisition program.

- **Factor #3 – Schedule**

The degree to which the proposed schedule is achievable within 24 months from award.

- **Factor #4 – Cost**

Cost realism including the Project's cost effectiveness and ability to complete the total project for not more than \$3 million.

### 7.2.2 Order of Importance

Factor #1 and Factor #2 are equally important. Factor #3 and Factor #4 are equally important. Factors #1 and #2 are significantly more important than Factors #3 and #4. The government is more concerned with obtaining superior technical capabilities than with making awards at a lower cost to the government.

## 7.3 Descriptions of Adjectival Ratings

The following adjectival ratings will be used for non-price factors during the evaluation of proposals.

- **Outstanding (O)** – The proposal meets requirements specified in Section 10.0 of this BAA, (and uses one or more technology thrust areas specified in Section 11.0 of this BAA) and indicates an exceptional approach and understanding of the requirements. Strengths far outweigh any weaknesses. Risk of unsuccessful performance is very low.
- **Good (G)** – The proposal meets requirements specified in Section 10.0 of this BAA, (and uses one or more technology thrust areas specified in Section 11.0 of this BAA) and indicates a thorough approach and understanding of the requirements. Proposal contains strengths which outweigh any weaknesses. Risk of unsuccessful performance is low.
- **Acceptable (A)** – The proposal meets requirements specified in Section 10.0 of this BAA, (and uses one or more technology thrust areas specified in Section 11.0 of this BAA) 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. Risk of unsuccessful performance is no worse than moderate.
- **Marginal (M)** – The proposal does not clearly meet requirements specified in Section 10.0 of this BAA, (and uses one or more technology thrust areas specified in Section 11.0 of this BAA) and has not demonstrated an adequate approach and understanding of the requirements. The proposal has one or more weaknesses which are not offset by strengths. Risk of unsuccessful performance is high.

- **Unacceptable (U)** – The proposal does not meet requirements specified in Section 10.0 and/or does not use at least one technology thrust area specified in Section 11.0 of this BAA and contains one or more significant weaknesses. Proposal is unawardable.

#### **7.4 Selection Preferences**

In addition to the evaluation criteria, source selection authorities will use the following selection preferences:

- Can be transitioned directly to operational use or into a defense acquisition program within 12 months of project completion.

Selection preference shall be given first to small business proposals then to other than small businesses that address above preferences.

#### **7.5 Selection**

The Government intends to make awards resulting from this announcement. 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.

#### **7.6 Negotiation**

The Government intends to award without discussions, however, reserves the right to conduct discussions if necessary. The Army Contracting Officer making the award will make the determination if discussions will be conducted.

### **8.0 Award Administration Information**

#### **8.1 Information on White Paper & Proposal Status**

Evaluation of white papers and proposals will be expedited as specified in Section 1.6 of this BAA. Offerors that submitted white papers that are not selected for proposal submission will be notified of that decision after all white papers have been reviewed. The Army anticipates that the white paper review process will be complete 10 weeks after the BAA closes. Offerors invited to submit a proposal will be notified if their proposal has been selected for award or not selected for award by the contracting organization that requests the proposal. It is anticipated that notifications for award/non-award will be provided within 10 weeks of requests for proposal. However, Army Contracting Officers may contact any and all qualified offerors at any time. Notification of white paper and proposal selection is not an authorization to begin work.

#### **8.2 Debriefs**

Debriefings will not be provided.

### **8.3 Email Addresses**

Offerors must be aware that it is their responsibility to ensure: (1) correct email addresses are provided at the time of submission, (2) email notifications reach the intended recipient(s), and (3) the email 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.

### **8.4 North American Industry Classification System (NAICS) Code**

The NAICS codes for this announcement are 541712 and 541711. A small business under these NAICS codes is defined by a size standard of 500 employees.

### **8.5 Central Contractor Registration (CCR)**

All offerors submitting proposals must be registered in the CCR at <http://www.ccr.gov>.

### **8.6 Online Representations and Certifications Application (OCRA)**

In accordance with FAR 4.1201, offerors must complete electronic annual representation and certifications at <http://orca.bpn.gov>.

### **8.7 Excluded Parties List System (EPLS)**

DoD uses EPLS to exclude recipients ineligible to receive Federal awards. EPLS can be accessed online at <https://www.epls.gov/>.

## **9.0 Other Information**

Upon award of a funding instrument, the offeror will be required to make certain legal commitments through acceptance of a contract or other transaction. Below please find some of the terms and conditions that may be included in the resulting funding instrument. However, this is not a complete list of terms and conditions to be included in the funding instrument.

### **9.1 Organizational Conflicts of Interest (OCI)**

**9.1.1 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.

**9.1.2 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.

9.1.2.1 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.

9.1.2.2 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.

9.1.2.3 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.

9.1.2.4 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.

9.1.2.5 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.

9.1.2.6. 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.

## **9.2 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](http://www.pmddtc.state.gov/regulations_laws/itar.html).

## **9.3 Wide Area Work Flow (WAWF)**

Unless using another approved electronic invoicing system, performers will be required to submit invoices for payment directly via the Internet/WAWF at <http://wawf.eb.mil>. Registration to WAWF will be required prior to any award under this BAA.

## **9.4 Employment Eligibility Verification**

Recipients of FAR-based procurement contracts must enroll as Federal Contractors in E-verify and use E-Verify to verify employment eligibility of all employees assigned to the award. All resultant contracts from this announcement will include FAR 52.222-54, "Employment Eligibility Verification."

## **9.5 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. (NOTE: Please keep in mind that all white papers and proposals must be unclassified.)

## **9.6 Use of Animals and Human Subjects in Research**

All research, development, testing, experimentation, education or training involving the use of animals shall comply with the applicable federal and agency rules on animal acquisition, transport, care, handling, and use. For submissions containing animal use, proposals shall briefly describe plans for their Institutional Animal Care and Use Committee (IACUC) review and approval. All Recipients must receive their IACUC's approval as well as secondary or headquarters-level approval by a DoD veterinarian who is trained or experienced in laboratory animal medicine and science. No animal research may be conducted using DoD funding until all the appropriate DoD office(s) grant approval.

All research involving human subjects, to include use of human biological specimens and human data, shall comply with the applicable federal and state laws and agency policy/guidelines for human subject protection. Institutions to be awarded funding for research involving human subjects must provide documentation of a current Federal Assurance of Compliance with Federal regulations for human subject protection, for example a Department of Health and Human Services, Office for Human Research Protections Federalwide Assurance <http://www.hhs.gov/ohrp>. Additional Federal Assurance documentation may also be requested by the awarding DoD Component. All institutions engaged in human subject research, to include subcontractors, must also have a valid Assurance.

In addition, personnel involved in human subjects research must provide documentation of completing appropriate training for the protection of human subjects. Institutions proposing to conduct human subject research that meets one of the exemption criteria in 32 CFR 219.101 are not required to have a Federal Assurance of Compliance. If selected, institutions must also provide documentation of Institutional Review Board (IRB) approval or a determination from an appropriate official in the institution that the work meets one of the exemption criteria with 32 CFR 219. As part of the IRB review process, evidence of appropriate training for all investigators shall accompany the protocol. The protocol, separate from the proposal, must include a detailed description of the research plan, study population, risks and benefits of study participation, recruitment and consent process, data collection and data analysis. No funding can be used towards human subjects research until all approvals are granted.

## **9.7 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).

## **9.8 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/>.

## **9.9 Executive Compensation and First-Tier Subcontract Reporting**

Section 2(d) of the Federal Funding Accountability and Transparency Act of 2006 (Pub. L. No. 109-282), as amended by section 6202 of the Government Funding Transparency Act of 2008 (Pub. L. 110-252), requires the Contractor to report information on subcontract awards. The law requires all reported information be made public, therefore, the Contractor is responsible for notifying its subcontractors that the required information will be made public.

Unless otherwise directed by the Contracting Officer, by the end of the month following the month of award of a first-tier subcontract with a value of \$25,000 or more, (and any modifications to these subcontracts that change previously reported data), the Contractor shall report the following information at <http://www.fsr.gov> for each first-tier subcontract:

- (a) Unique identifier (DUNS Number) for the subcontractor receiving the award and for the subcontractor's parent company, if the subcontractor has one.
- (b) Name of the subcontractor.
- (c) Amount of the subcontract award.
- (d) Date of the subcontract award.
- (e) A description of the products or services (including construction) being provided under the subcontract, including the overall purpose and expected outcomes or results of the subcontract.
- (f) Subcontract number (the subcontract number assigned by the Contractor).
- (g) Subcontractor's physical address including street address, city, state, and country. Also, include the nine-digit zip code and congressional district.
- (h) Subcontractor's primary performance location including street address, city, state, and country. Also, include the nine-digit zip code and congressional district.
- (i) The prime contract number, and order number if applicable.
- (j) Awarding agency name and code.
- (k) Funding agency name and code.
- (l) Government contracting office code.
- (m) Treasury account symbol (TAS) as reported in FPDS.
- (n) The applicable NAICS code.

By the end of the month following the month of a contract award, and annually thereafter, the Contractor shall report the names and total compensation of each of the five most highly compensated executives for the Contractor's preceding completed fiscal year at <http://www.ccr.gov>, if –

- (a) In the Contractor's preceding fiscal year, the Contractor received –
  - (i) 80 percent or more of its annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and
  - (ii) \$25,000,000 or more in annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and

(b) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>).

Unless otherwise directed by the Contracting Officer, by the end of the month following the month of a first-tier subcontract with a value of \$25,000 or more, and annually thereafter, the Contractor shall report the names and total compensation of each of the five most highly compensated executives for each first-tier subcontractor for the subcontractor's preceding completed fiscal year at <http://www.fsrc.gov>, if –

(a) In the subcontractor's preceding fiscal year, the subcontractor received –

- (i) 80 percent or more of its annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and
- (ii) \$25,000,000 or more in annual gross revenues from Federal contracts (and subcontracts), loans, grants (and subgrants) and cooperative agreements; and

(b) The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>).

If the Contractor in the previous tax year had gross income, from all sources, under \$300,000, the Contractor is exempt from the requirement to report subcontractor awards. Likewise, if a subcontractor in the previous tax year had gross income from all sources under \$300,000, the Contractor does not need to report awards to that subcontractor.

## **9.10 Subcontracting**

For proposed awards to be made as contracts (that exceed \$650,000) to other than small businesses, the offeror is required to submit a Small Business Subcontracting Plan. As such, Subcontracting Plans will be evaluated to ensure that submissions are compliant with FAR Subpart 19.7. Further, Subcontracting Plans are to address the Army subcontracting goals as follows:

- 35% for Small Business,
- 5% for Small Disadvantaged Business
- 5% for Small Women-owned Business
- 3% for Veteran Owned-Business
- 1% for Service-Disabled Veteran-Owned Business
- 5% for HUBzone

For proposed awards made as contracts to small businesses at any value, the offeror shall provide a statement which demonstrates how it intends to provide meaningful subcontracting opportunities to support this policy.

### **9.11 Limitations on Other Transactions**

Offerors are advised that an Other Transaction for Prototype Projects (10 U.S. Code § 2371, Section 845) may only be awarded if the use of a standard contract is not feasible or appropriate. Offerors are advised that an Other Transaction (OT) for Prototype Agreement (P.L. Law 103-160 § 845) may only be awarded if there is:

- a. At least one nontraditional defense contractor participating to a significant extent in the prototype project, or
- b. No nontraditional defense contractor is participating to a significant extent in the prototype project, but at least one of the following circumstances exists:
  - i. 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).
  - ii. 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.
- c. 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:

- i. 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
- ii. 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.

#### **9.12 Technical and Administrative Support by Non-Government Personnel**

The Army may use non-government personnel (e.g. contractor support personnel) in the review and administration of submittals for this BAA. Support contractor employees may have access to proposal information 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 proposal submittals, the identity of any submitters, or any other information relative to this BAA. The contracts for provision of support personnel contain Organizational Conflict of Interest provisions and include contractual requirements for non-disclosure of proprietary contractor information.

#### **9.13 Foreign Participants** (also known as Foreign Persons) means any person who is NOT:

- a. a citizen or national of the United States; or
- b. a lawful permanent resident; or
- c. 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.

### **10.0 Army Requirements**

#### **10.1 Introduction**

The Army requirements for this BAA are contained in paragraph 10.2. These references will be used in conjunction with the priorities process described in paragraph 7.4.

## 10.2 Army Requirements

**Army Challenge #: Challenge Title:** Army Challenge 1b: Force Protection – Soldier and Small Unit

**Problem Statement:** The spectrum of threats encountered by Soldiers in Small Units is varied and complex; current equipment, clothing, and other protective measures do not provide adequate protection without adding significant mobility challenges.

**Challenge:** Increase the level of individual protection for male and female Soldiers at reduced total weight and volume while enabling increased physical and mental agility, particularly over extended periods. The goal is to reduce the number and severity of injuries and casualties (including Traumatic Brain Injury (TBI) and post traumatic stress disorder (PTSD) causes).

**Who:** Individual Soldiers

**What:** Develop technologies to increase protective gear performance while reducing weight and volume – protection from weapon threats, blast, fire, insect-borne diseases, weather conditions including excessive heat/cold, and chemical/biological threats.

**Objectives:** Identify trade space to enable holistic protection design and implementation on the individual Soldier and in Small Unit; optimize level and area of protection against threats while reducing total weight of individual protective gear/equipment by 50% and total volume by 30% from baseline; improve clothing, helmet, Mission Oriented Protective Posture (MOPP) gear, fire retardancy, insect repellent, etc.

**Technical Point of Contact:** Ms. Catherine Hurley, e-mail: Catherine.a.hurley.civ@mail.mil, phone: 703-617-0208.

**Army Challenge #: Challenge Title:** Army Challenge 1c: Force Protection – Occupant Centric Platform

**Problem Statement:** The Army designs vehicles to put Soldiers in rather than designing vehicles around Soldiers. Increasing protection levels of the platforms impacts interior volumes reducing mobility, maneuverability, and freedom of movement for occupants and leads to heavier platforms.

**Challenge:** Improve existing platforms or develop new platforms that provide appropriate increased protection from current and emerging threats and optimal space allocation for Soldiers and their gear, while decreasing platform weight and maintaining or increasing maneuverability during full spectrum operations. Goal is to reduce overall platform weight by 25% and reduce casualties and WIAs by 50% across each mission role with scalable protection levels to defeat a wide range of threats, enhance mobility, and maintain freedom of action during full spectrum operations.

**Who:** Small Unit transport and convoys

**What:** Specify mission, vignettes, scenarios, conditions of the representative baseline

**Objectives:** Establish baselines; develop occupant protective *standards*; mature interior and exterior occupant protection technologies; increase lab testing capability; improve confidence in M&S predictions.

**Technical Point of Contact:** Mr. Matthew Donohue, e-mail: Matthew.c.donohue2.civ@mail.mil, phone: 703-617-0281.

**Army Challenge #: Challenge Title:** Army Challenge 2a: Overburdened – Physical Burden

**Problem Statement:** Soldiers in Small Units (squads/fire teams/crews) are physically overburdened, often carrying up to 130lbs; this degrades performance and may result in immediate, as well as, long term consequences

**Challenge:** Significantly reduce the weight and volume of all items that individual Soldiers in a Small Unit must physically carry to accomplish their missions while maintaining or increasing the ability of the Unit to perform tasks, whether operating as dismounted or in vehicles.

**Who:** Soldiers and Small Units operating in Afghanistan-like environments

**What:** Reduce physical burden within the squad so that no individual Soldier load exceeds 30% of their body weight.

**Objectives:** Reduce physical burden of Soldier and Small Unit so that grenadier, SAW gunner and attached combat medic does not exceed 50% of individual's body weight without a reduction in operational capability.

**Technical Point of Contact:** Ms. Catherine Hurley, e-mail: Catherine.a.hurley.civ@mail.mil, phone: 703-617-0208.

**Army Challenge #: Challenge Title:** Army Challenge 3a: Surprise/Tactical Intelligence – Mission Command

**Problem Statement:** The Small Unit lacks tools and ability to execute mission command on the move (air or ground) to synchronize action, seize the initiative and maintain situational awareness.

**Challenge :** Provide an integrated data structure for intelligence and mission command systems that can feed automated processing and analysis tools to reduce time to decision; provide interactive tools to provide relevant, timely information to support decisions; and reduce the timeline needed to develop, accredit and field intuitive, useful, effective mission command and battlefield awareness software applications.

**Who:** Small Units operating in decentralized locations

**What:** Focus on TOC/COIST capability

**How:** Assess consolidation of Intel and Battle command decision support and analysis tools by 2015 to inform and shape Science and Technology to shorten/improve the decision cycle to figure out HOW to measure success.

**Objectives:** Identify how to reduce development time for BFA software applications to 6 months, for all environments

**Technical Point of Contact:** Mr. Kristopher Gardner, e-mail: kristopher.e.gardner2.civ@mail.mil, phone: 703-617-0284.

**Army Challenge #: Challenge Title:** Army Challenge 7d: Human – Medical Assessment and Treatment

**Problem Statement:** Traumatic brain injury (TBI) continues to be a significant issue due to IEDs and other hazards. The Army medical community is not able to promptly assess, diagnose, treat and rehabilitate Soldiers who have been exposed to ballistic and blast events or other insults.

**Challenge:** Rapidly conduct in-the -field screening, assessment and mitigating treatment to improve short and long term adverse outcomes of mild TBI (mTBI) and TBI.

**Who:** Individual Soldier and combat medic

**What:** Selected Operational Mission Scenarios

**Objectives:** Develop tools that accurately and objectively assess Soldiers with mild to moderate TBI in less than 1 hour following Soldier's return to combat outpost/point of departure (COP/PD) without increasing personnel or administrative burden.

**Technical Point of Contact:** LTC Raymond Vazquez, email: [raymond.vazquez.mil@mail.mil](mailto:raymond.vazquez.mil@mail.mil), phone: 703-617-0257.

**Army Challenge #: Challenge Title:** Army Challenge 1a: Force Protection - Basing

**Problem Statement:** It takes too long and too much manpower to deploy, set up, protect, sustain and relocate Combat Outposts (COPs) and Patrol Bases (PBs).

**Challenge:** Reduce the percentage of Soldiers needed to set-up a COP/PB and protect against threats (including small arms, indirect fires, air delivered weapons, and CBRNE) in austere, restricted terrains.

**Who:** Focus on Combat Outposts and Patrol Bases in Afghanistan-like conditions

**What:** Representative COP/PBs baseline indicates that it takes 60-90 days using 70% of the manpower assets (i.e., 70% not available for mission tasks)

**How:** Measure impact on Soldier availability and set-up time

**Objectives:** Increase Soldier availability for mission tasks vs. set-up and security tasks to 50% in 30 days with increased force protection; decrease tear-down time to no more than 4 days and increase the percentage of material reusable at next COP within 100 miles.

**Technical Point of Contact:** Dr. Niki Goerger, e-mail: [maria.n.goerger.civ@mail.mil](mailto:maria.n.goerger.civ@mail.mil), phone: 703-617-0158.

**Army Challenge #: Challenge Title:** Army Challenge 7b: Human – Individual Training to Tactical Tasks

**Problem Statement:** The Soldier today has a larger number and more complex weapons, protective systems and communications devices with which to perform more complex missions. The Army needs a highly adaptable, versatile, easy-to-access learner –centric system of training skills and tasks that is tailored to the individual's developmental needs through timing, content, delivery, and duration.

**Challenge:** Develop self-training mechanisms which can supplement or replace trainers to monitor and track Soldier learning needs, assess and diagnose problems, and guide Soldiers through training events, provide effective performance feedback, select appropriate instructional strategies, anticipate and seek out information and learning content tailored to the learner's needs, and provide interventions of other assistance as needed.

**Who:** Selected specific tasks (vehicle driving, maintenance mechanic, weapon operations)

**Objectives:** Develop more effective fieldable simulators and apps-based training modules for key skills and tasks that can be used whenever and wherever Soldiers need to be trained/retrained/certified; develop a mechanism to automatically collect and document proficiency levels that are accessible to leaders.

**Technical Point of Contact:** Dr. James Belanich, e-mail: [james.belanich.civ@mail.mil](mailto:james.belanich.civ@mail.mil) phone: 703-545-2392.

**Army Challenge #: Challenge Title:** Army Challenge 3b: Surprise/Tactical Intelligence – Actionable Intelligence

**Problem Statement:** Small Units do not have capability to send/receive critical tactical intelligence; the tools or training to help them recognize/identify friends or foes, to know

where IEDs are, to see inside buildings and around corners or over hills; or awareness of cultural patterns that might indicate imminent danger.

**Challenge:** Provide Small Units with tools and training to efficiently collect, process, exploit, and disseminate data to support situational awareness and decision making without adding more Soldiers or significantly increasing weight or number of devices.

**Who:** Small Units operating COIN/Stability Operations in Afghanistan-like conditions

**What:** Goal is to provide the ground unit a common operational picture in real time to identify friendly forces in a given AO with 90% accuracy and maintain 90% probability of determining threat interdiction. Objectives : Provide timely accurate/actionable info/intel to obtain in 25% reduction in unanticipated threat encounters at the squad level and increase mission accomplishment (%) measured against loss of life and equipment by 50%

**Technical Point of Contact:** Mr. Kristopher Gardner, e-mail: kristopher.e.gardner2.civ@mail.mil, phone:703-617-0284.

**Army Challenge #: Challenge Title:** Army Challenge 4a: Sustainability/Logistics – Basing

**Problem Statement:** The Army needs improved capability to enable sustainment independence/“self-sufficiency” and to reduce sustainment demands at expeditionary basing levels. It is too costly, too unpredictable, and too labor intensive for a Small Unit to carry all required consumables to last for weeks or months at a COP/PB, storage facilities and systems do not meet needs of these small bases, and resupply efforts are highly unpredictable.

**Challenge:** Increase self-sufficiency, reduce supply demands, and reduce waste at COPs/PBs and improve the ability to sustain the Small Unit for the duration of the mission at lower cost and lower risk to suppliers without adversely impacting primary mission Soldier availability.

**Who:** Small Units in Afghanistan-like environments

**What:** Identify tools, tactics, and techniques to achieve demand reduction.

**Objectives:** Reduce need for fuel resupply by 20%, reduce need for water resupply by 75% and decrease waste while increasing quality of life over COPs/PBs in Afghanistan

**Technical Point of Contact:** Ms. Catherine Hurley, e-mail: Catherine.a.hurley.civ@mail.mil, phone: 703-617-0208.

**Army Challenge #: Challenge Title:** Army Challenge 4b: Sustainability/Logistics – Transport, Distribute & Dispose

**Problem Statement:** The Army needs improved capability to tactically transport and reliably deliver consumables to Forward Operating Bases (FOBs) and smaller satellite bases in remote, dispersed, austere locations with reduced supplier and equipment risk, including improved efficient and safe methods for disposing waste.

**Challenge:** Leverage all available conveyance modes to ensure supply delivery, to increase the reliability and timeliness of supplies delivery, and to be able to predict when and where all classes of supplies will be needed. In addition, the program will devise methods to reduce waste and use it to provide power.

**Who:** For Forward Operating Bases with applications to expeditionary bases (Small Units in COPs and PBs)

**What:** Rapidly deliver significant quantities (volume, weight, etc) of supplies. Air drop and convoy operations - develop ability to conduct rapid movement of emergency, planned, or critical logistics support that enables precise delivery of supplies and repair parts to forward battlefield locations, medical evacuation operations and relief operations

**How:** Representative Afghanistan-like environment baseline

**Objectives:** Develop tools that efficiently manage, track, redirect, account for and distribute supplies to support forced entry, early entry, and non-contiguous operations

In order to be considered, technologies proposed must show a clear transition path into a Army program of record or as a fielded Army prototype system.

**Technical Point of Contact:** Mr. Todd Turner, e-mail: todd.m.turner.civ@mail.mil, phone: 703-617-0283.

**Army Challenge #: Challenge Title:** Army Challenge 1d: Force Protection – On The Move (Ground)

**Problem Statement:** The Army needs an improved capability to move at tactical speeds off and on road unconstrained by explosive hazards (mines and IEDs) to conduct wide area security and combined arms maneuver operations. Route Clearance Patrols and BCT convoys have limited capability to rapidly detect and neutralize explosive hazards at standoff distances. Vehicle convoys and route clearance teams need improved on-board capabilities to detect, neutralize and defeat mines/IEDs.

**Challenge:** Provide affordable technology to rapidly detect, jam, and neutralize explosive hazards at standoff distances. Provide appropriate capabilities to route clearance patrols and convoys.

**Challenge Boundary Conditions:**

**Who:** Engineer Route Clearance Platoons (RCP) and BCT convoys/patrols

**What:** Low false alarm rate detection sensors, networked sensors, airborne sensors, fusion of air and ground sensor data

**How:** Measure mine/IED found and cleared rate, rates of advance for RCPs, and number of friendly vehicle losses due to mine/IED events

**Objectives:** Provide affordable, interoperable sensor suites for mine/IED detection .Develop a next-generation Army networking capability to neutralize IEDs.

**Technical Point of Contact:** Mr. Matthew Donohue, e-mail: Matthew.c.donohue2.civ@mail.mil, phone: 703-617-0281.

**Army Challenge #: Challenge Title:** Army Challenge 2b: Overburdened – Cognitive Burden

**Problem Statement:** We do not understand causes or mitigating factors associated with excessive cognitive load and its impact on Soldier performance.

**Challenge:** Determine what are the most important factors that contribute to excessive cognitive load associated with performing the tasks/functions within the Small Unit against various tactical scenarios; develop standard measures of cognitive load and its impact on performance; and demonstrate the ability to reduce cognitive load and increase performance.

**Challenge Boundary Conditions:**

**Who:** Individuals in squad, platoon and company in counter insurgency (COIN) and Stability Operations

**What:** TBD – specify mission, vignettes, scenarios, conditions of the representative baseline

**How:** Identify Soldier tasks missions; determine the amount of cognitive stress is associated with each, develop tools to measure reduced cognitive load, and find ways to reduce cognitive load and improve performance.

**Objectives:** For the squad leader and company commander validate and apply known behavioral and network (system) measures of cognitive load to reduce the mismatch between

system “x” and the Infantry Squad war fighting capability in tactical scenarios in order to improve mission effectiveness.

**Technical Point of Contact:** Ms. Catherine Hurley, e-mail: [Catherine.a.hurley.civ@mail.mil](mailto:Catherine.a.hurley.civ@mail.mil), phone: 703-617-0208.

**Army Challenge #: Challenge Title:** 3c: Surprise/Tactical Intelligence – Cultural/Linguistic  
**Problem Statement:** Poor understanding of the culture and/or language can increase risk, lead to misunderstandings, and result in inability to execute mission. It takes too many linguists, translators and cultural advisors in Small Units.

**Challenge:** Provide Small Units tools and training to efficiently collect, process, exploit, and disseminate intelligence and situational awareness and make informed decisions without adding linguists/translators or significant weight or number of devices.

**Challenge Boundary Conditions:**

**Who:** Small Units is counter insurgency (COIN)/Stability Operations

**What:** Provide affordable real-time translations and understanding of behaviors of people in other countries

**How:** Assess key cultural, psychological, and social info; political, military, economic, social, infrastructure info; physical environment and time variables that are critical in operational environment. Determine how these factors can be used during screening operations and improve ability to determine deception during interrogation under field conditions in real time and how source credibility can be assessed or determined.

**Objectives:** Develop socio-cultural information framework and standards and develop the capability to train cross-cultural competence and language.

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**Army Challenge #: Challenge Title:** 3d: Surprise/Tactical Intelligence – Organic Combat ID

**Problem Statement:** Small Dismounted Units lack organic assets/tools/methods to distinguish enemy combatants from civilians day and night and avoid fratricide in asymmetric warfare environments.

**Challenge:** Enable improved anti-fratricide and Combatant/Non-Combatant ID capabilities. Program shall not add overall weight or logistics burden to the squad; use existing load bearing and tactical equipment without wires between the weapon and the Soldier borne radio; function for the full duration described in the squad operational model summary/mission profile without additional power and be available 100% of the time; not materially increase the timelines for weapon engagement; be affordable within Soldier system constraints. Soldier-to-Soldier anti-fratricide Combat ID system must be interoperable with air/ground platform Combat ID systems and feed the Common Operating Picture.

**Challenge Boundary Conditions:**

**Who:** Squad-level Soldiers

**What:** Provide improved anti-fratricide Combat ID capabilities and increased Combatant/Non-combatant ID ranges

**How:** Measure impact on Combat ID performance; measure increased range performance for Combatant/Non-Combatant ID; track system affordability metrics

**Objectives:** Provide Soldier borne sensors and weapon sights that can provide Combatant/Non-Combatant ID at increased ranges

**Technical Point of Contact:** Mr. Kristopher Gardner, e-mail: [Kristopher.e.gardner2.civ@mail.mil](mailto:Kristopher.e.gardner2.civ@mail.mil), phone: 703-617-0284.

**Army Challenge #: Challenge Title:** 3e: Surprise/Tactical Intelligence – Overwatch Persistent Surveillance

**Problem Statement:** Small Units require improved ability to rapidly transform data from non-organic overhead assets to Soldiers on the ground where and when needed to avoid surprise and to enable situation development and improve planning and mission execution and enable persistent assessment.

**Challenge:** Demonstrate wide area airborne Persistent Imaging (PI) systems capable of tracking both vehicles and dismounted personnel with real time product generation/ dissemination.

**Challenge Boundary Conditions:**

**Who:** Individual Soldiers and small units, especially when operating in urban environments.

**What:** Systems capable of servicing multiple concurrent users with timely information products.

**How:** Success will be measured by quantifying the accuracy of the information products, the dissemination latency and number of concurrent users supported

**Objectives:** Provide day/night, wide area coverage with automated onboard product generation and delivery to the Warfighter. Demonstrate day/night, wide area coverage capable of tracking vehicles in urban environments and personnel in open terrain.

**Technical Point of Contact:** Mr. Kristopher Gardner, e-mail: [Kristopher.e.gardner2.civ@mail.mil](mailto:Kristopher.e.gardner2.civ@mail.mil), phone: 703-617-0284.

**Army Challenge #: Challenge Title:** 3f: Surprise/Tactical Intelligence – Mission, Enemy, Terrain and weather, Troops and support available, Time available, Civil considerations (METT-TC) Data/Information/Knowledge

**Problem Statement:** Small Units lack capability of rapidly shaping the operational environment before engagements.

**Challenge:** Enable the Small Unit to obtain, manage and understand geo-spatial, geo-environmental, geo-cultural, and geo-temporal data.

**Challenge Boundary Conditions:**

**Who:** Soldiers in counterinsurgency (COIN) or Stability Operations

**What:** Increase effectiveness, avoid surprise through knowledge of environment

**How:** Measure types and fidelity of information needed to improve mission planning and operational success, net-centric data policy standards of accessibility, assured Quality of Service and cross-domain understanding, agility of decisions and performance, and sufficiency of retrieved data/information/knowledge by method of access (general, indexed search, smart push, smart pull.)

**Objectives:**

Demonstrate geo-knowledge management (KM) tools that provide platoon/squad knowledge so that a Squad can understand terrain, weather and key indicators about the populace and more rapidly achieve tactical objectives.

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**Army Challenge #: Challenge Title:** 3g: Surprise/Tactical Intelligence – Network

**Problem Statement:** Small dismounted units need sight/beyond line of sight robust network to facilitate command and ensure user access anytime/ anywhere.

**Challenge:** Provide secure, rugged networking (voice and data) capability within SWAP-C constraints for the dismounted squad, moving and at base stations, to provide timely, relevant, accurate information needed to execute their missions more effectively and efficiently.

**Challenge Boundary Conditions:**

**Who:** Small Units (dismounted and mounted)

**What:** Full network capability at SWAP-C no greater than baseline to enable enhanced tactical intelligence data intra-squad and squad-to-squad, as well as inter-echelon connectivity, to enable units to communicate effectively and integrate maneuver & fires in all environments. Many applications will leverage this capability

**How:** Measure optimal dispersal and number of stations needed on asymmetric battlefield.

**Objectives:** Improve spectrum efficiency, network throughput users per channel and enable communications through blue & red jamming to provide an integrated, protected and end-to-end, and secure robust networked communications to facilitate echelon appropriate Soldier access to networked services and information.

**Technical Point of Contact:** Mr. Kristopher Gardner, e-mail: [Kristopher.e.gardner2.civ@mail.mil](mailto:Kristopher.e.gardner2.civ@mail.mil), phone: 703-617-0284.

**Army Challenge #: Challenge Title:** 5a: Tactical Overmatch – Deliver Decisive Effects

**Problem Statement:** At both fixed and mobile sites, Small Units need improved capabilities to detect threats and respond rapidly with precision fires to deliver decisive effects

**Challenge:** Develop system of systems including organic sensors and shooters that will enable the Army to increase the hemispherical protection for Soldiers against dismounted threats and incoming munitions. Program should address capabilities for static and mobile operations

**Challenge Boundary Conditions:**

**Who:** Soldiers at fixed and mobile sites in current and future hostile environments

**What:** Provide an organic capability for hemispherical protection from dismounted threats and incoming fire.

**How:** Comparing current and future threat detection and targeting capabilities; measure time required to reach operational readiness and required manpower during setup

**Objectives:** For fixed sites, provide sense/warn and respond capability that automatically provides precise target locations to allow suppression of dismounted threats with precision . Provide the capability to detect and respond to indirect fire weapons.

**Technical Point of Contact:** Mr. Matthew Donohue, e-mail: [Matthew.c.donohue2.civ@mail.mil](mailto:Matthew.c.donohue2.civ@mail.mil), phone: 703-617-0281.

**Army Challenge #: Challenge Title:** 5b: Tactical Overmatch – Targeting/Hand-off

**Problem Statement:** Small Units require improved lightweight, day/night target acquisition capability to facilitate precision fires, intra-squad fires, call for fires, hand-off of targets to other assets and ability to conduct battle damage assessments.

**Challenge:** Provide small dismounted units with the tools and training they need to detect, identify, and precisely locate targets without significant Size, Weight, Power or Cost (SWaP/Cost), number of devices, or the need for additional operators.

**Challenge Boundary Conditions:**

**Who:** Small Unit in irregular or conventional warfare,

**What:** Accurate, low SWaP/Cost targeting and hand-off capability

**How:** Measure impact on collateral damage, target location accuracy, unit lethality, speed/accuracy, and probability of first shot hit target handoff measured against non-organic fires success for irregular warfare operations.

**Objectives:** Provide faster, more reliable/accurate target handoff between mounted and dismounted and intra-squad elements day and night. Provide significant increase in first hit probability at extended range.

**Technical Point of Contact:** Mr. Matthew Donohue, e-mail: Matthew.c.donohue2.civ@mail.mil, phone: 703-617-0281.

**Army Challenge #: Challenge Title:** 6a: Maneuverability – On The Move (Air)

**Problem Statement:** The Army needs improved capability to tactically transport (dismounted vertical maneuver/air assault) Soldiers, vehicles and equipment to austere or unprepared landing zones..

**Challenge:** Provide technical capability for vertical lift aircraft with improved survivability in a low to medium threat environment.

**Challenge Boundary Conditions:**

**Who:** Air assault and aerial resupply squadrons

**What:** Medium class vertical lift aircraft capable of meeting anticipated future requirements for lift, speed, range and operating environment

**How:** Representative baseline of speed, range, and payload parameters.

**Objectives:** Assess trade space between speed, range and payload to identify optimum system attributes. Quantify operational benefits through Warfighter analysis. Demonstrate system capability through flight tests.

**Technical Point of Contact:** Mr. Todd Turner, e-mail: todd.m.turner.civ@mail.mil, phone: 703-617-0283.

**Army Challenge #: Challenge Title:** 6b: Maneuverability – Degraded Visual Environment

**Problem Statement:** Approximately 80% of Army helicopter losses in theater result from a loss of situational awareness in degraded visual environments (DVE). Cargo and Utility Lift aircraft currently have rudimentary night pilotage visual cueing (image intensification (I2) goggles).

**Challenge:** Develop and demonstrate affordable, lightweight DVE pilotage solutions to increase Warfighter safety and survivability. Utilize a handling qualities improvement methodology (ADS-33) to parametrically quantify the contributions of flight control enhancements, various visual systems, and cueing to reduce workload in DVE, thereby,

increasing safety. Leverage existing hardware/ software and programs to assess needs and opportunities for application to the current fleet.

**Challenge Boundary Conditions:**

**Who:** Pilots of Army attack, utility, cargo and scout rotary wing aircraft

**What:** Lightweight, cost effective pilotage system to increase survivability while operating in multiple DVE conditions

**How:** Success will be measured by quantifying the ability to detect obstacles, enable full flight maneuver tasks and maintain situational awareness in DVE

**Objectives:** Provide a technology integrated capability for operations in Degraded Visual Environments.

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**Army Challenge #: Challenge Title:** 7a: Human – Strength-Based Soldier Characteristic Assessments and Readiness

**Problem Statement:** The Army lacks capability to rapidly and accurately identify and measure attributes and talents; document them; and use them to predict potential, success, and performance.

**Challenge:** Identify a valid set of “most promising” attributes, talents and/or potential characteristics; identify assessment tools and techniques which could be used to rapidly predict, measure human status and conduct data/decision analysis which could be communicated to leaders, both at home station and in the field; and demonstrate that these can be used to assist in assignment of tasks..

**Challenge Boundary Conditions:**

**Who:** Army recruits, selected deploying units.

**What:** Enabling leaders to rapidly assess and utilize Soldier and Unit strengths .

**How:** Representative baseline of screening events, methods and methodologies.

**Objectives:** Integrate human characteristic data from multiple sources into tools that are fieldable throughout the Soldier lifecycle of service.

**Technical Point of Contact:** Dr. James Belanich, e-mail: [james.belanich.civ@mail.mil](mailto:james.belanich.civ@mail.mil) phone: 703-545-2392.

**Army Challenge #: Challenge Title:** 7c: Human – Collective Training for Tactical Operations

**Problem Statement:** The significant number of critical skills required by Soldiers, Leaders and Units in complex tactical operations exceeds the Army’s current capability for home-station training and there is no clear set of best-effective training or leadership development methods; fidelity for mission rehearsal is inadequate.

**Challenge:** Provide an immersive, full-spectrum, training experience for Small Units at home station and/or while deployed that approaches the complexity and realism of fixed-site combat training centers but requires a minimum of infrastructure and pre-event preparation.

**Challenge Boundary Conditions:**

**Who:** Small Unit/Squad

**What:** Selected Operational Mission Scenarios against baseline

**How:** Reduction in number of personnel; improved tactical unit operations

**Objectives:** Provide tools, based on learning theories, that enable repeatable and scripted and unscripted training situations; represent both kinetic and non-kinetic effects, as well as social

and culturally realistic, reactive, dynamic situations, with immediate performance analysis and feedback, exercise review, and after-action analysis. Provide a 10:1 reduction in the number of overhead personnel to plan, execute, and evaluate Small Unit training; including: training to provide commanders and units with effective training tools, methods, and socio-cultural competencies that improve unit tactical operations.

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phone: 703-545-2392.

**Army Challenge #: Challenge Title:** 7e: Human – Trauma Management

**Problem Statement:** Dismounted Warfighters have significant, complex injuries due to IEDs and other battlefield events that require advanced trauma management.

**Challenge:** Capture, process and electronically disseminate near-real-time medical information on Soldier injuries, wounds and treatment from point of injury through the continuum of care. Also improve battlefield care to enable better monitoring and management of hemorrhaging.

**Challenge Boundary Conditions:**

**Who:** Individual Soldier and combat medic

**What:** Selected Operational Mission Scenarios

**How:** Measure reduction in deaths due to hemorrhaging against baseline

**Objectives:** Develop and demonstrate a system that can be worn by Soldiers and/or used by Combat Medics to capture, process and disseminate information on casualties in a field operation; decrease pre-surgical, preventable hemorrhage death on the battlefield by 5%.

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phone: 703-617-0257.

## 11.0 Defense research and development RIF science and technology thrust areas

- **Enhancing Energy Security and Independence.** For technologies that will improve energy efficiency, enhance energy security, and reduce the Department's dependence on fossil fuels through advances in traditional and alternative energy storage, power systems, renewable energy production and more energy efficient ground, air, and naval systems. Examples of capabilities include: sensors, communications and software needed to collect energy consumption information at point of use across the deployed force (e.g., fuel consumption measurement systems for vehicles), platforms, and various devices in contingency bases; technologies that reduce the size and weight of thermal management systems on-board vehicles and platforms; modeling and simulation technologies that examine the effect of energy demand and improvements on operations and integrate power and thermal systems on-board vehicles and platforms; hybrid energy storage, with high energy and power density power systems for autonomous air, ground, and undersea systems; and energy capture and conversion technologies for low power sensors, electronics, micro-autonomous systems.
- **Developing Advanced Materials.** For investment in a broad range of materials technologies, both organic and inorganic, that can provide enhanced performance in extreme environments; enhanced strength and reduced weight for the spectrum of applications from aerospace to lighter Warfighter

loads; enhanced survivability of ground, air, and naval systems; and tailored physical, optical, and electromagnetic properties for a wide variety of the challenging environments and unique properties demanded of military systems. Such materials could include advanced metals and alloys, advanced composites and hybrid materials, engineered nanomaterials, and alternatives for critical and strategic materials. Investments can address new techniques for manufacturing and processing of materials, including advancements in forming, joining, and shaping. Examples of other capabilities include: methods that enable accelerated discovery, development, performance prediction and certification of materials and systems; development of viable, environmentally benign alternative technologies to extract ore, reduce metal from the ore, or to recover critical elements from scrap and waste; predictive tools for affordable and efficient structural health management and of military assets; materials supporting both structure and propulsion in space access applications; and materials that improve the performance and fuel efficiency of air-breathing engines. Investments can further address materials and processes research directed toward extending the life of components in defense service, in accelerating insertion of novel or newly tailored materials, or in decreasing sustainment costs of defense systems.

- **Improving Manufacturing Technology and the Industrial Base.** For increased investment in advanced and innovative manufacturing technologies across the spectrum of applications to significantly compress design to production time cycles, reduce cost, minimize waste and energy consumption, and improve producibility as well as product quality and reliability. Based on coordination with the Office of the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy, needed manufacturing technology advances include: advanced joining techniques (e.g., composite bonding, friction stir welding, and laser welding) for shipbuilding, aviation and combat vehicle programs; flexible automation and advanced robotics to improve the yield of critical parts; techniques for ballistic survivability that satisfies performance, cost, and weight goals for both Soldier and weapon system armor; additive manufacturing to fabricate parts in a layer-by-layer fashion directly from a digital design; manufacturing for portable power such as fuel cells; and secure network applications that provide for secure protocol transfer, integrated data sharing, and protection of intellectual property.
- **Advancing Microelectronics.** Increased investment in the development of resilient advanced microprocessors, application-specific integrated circuits, field programmable gate arrays, printed circuit boards, photonics devices, and other related electronics components for the next generation of military and intelligence systems.

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