

Program Announcement

for the

Department of Defense

Defense Health Program

Defense Medical Research and Development Program

Congressionally Directed Medical Research Programs

Joint Program Committee-1/

Medical Simulation and Information Sciences Research Program

**Joint En Route Care Training System of Systems Initiative:
Hand-Offs, Patient Transfers, and Systems Interoperability**

Funding Opportunity Number: W81XWH-15-DMRDP-JPC1-JRoute

Catalog of Federal Domestic Assistance Number: 12.420

SUBMISSION AND REVIEW DATES AND TIMES

- **Pre-Application Deadline:** 5:00 p.m. Eastern time (ET), April 28, 2015
- **Invitation to Submit an Application:** June 15, 2015
- **Application Submission Deadline:** 11:59 p.m. ET, August 5, 2015
- **End of Application Verification Period:** 5:00 p.m. ET, August 10, 2015
- **Peer Review:** October 2015
- **Programmatic Review:** December 2015

The CDMRP eReceipt System has been replaced with the electronic Biomedical Research Application Portal (eBRAP). Principal Investigators and organizational representatives should register in eBRAP as soon as possible. All pre-applications must be submitted through eBRAP. In addition, applications submitted through Grants.gov will now be available for viewing, modification, and verification in eBRAP prior to the end of the application verification period.

This Program Announcement/Funding Opportunity is one of two documents with instructions to prepare and submit an application for this funding opportunity. The second document, the General Application Instructions, is available for downloading from Grants.gov.

TABLE OF CONTENTS

I. Funding Opportunity Description.....	3
A. Program Description	3
B. Award Information.....	6
C. Eligibility Information	10
D. Funding	11
II. Submission Information	12
A. Where to Obtain the Grants.gov Application Package	13
B. Pre-Application Submission and Content Form	13
C. Application Submission Content and Forms	18
D. Applicant Verification of Grants.gov Submission in eBRAP	24
E. Submission Dates and Times	24
F. Other Submission Requirements.....	24
III. Application Review Information	25
A. Application Review and Selection Process.....	25
B. Application Review Process	25
C. Recipient Qualification	27
D. Application Review Dates	28
E. Notification of Application Review Results	28
IV. Administrative Actions.....	28
A. Rejection	28
B. Modification.....	28
C. Withdrawal.....	28
D. Withhold	29
V. Award Administration Information.....	29
A. Award Notice	29
B. Administrative Requirements	29
C. National Policy Requirements	30
D. Reporting.....	30
E. Award Transfers.....	30
VI. Agency Contacts.....	31
A. CDMRP Help Desk.....	31
B. Grants.gov Contact Center.....	31
VII. JPC-1/MSIS Programmatic Review Panel	32
VIII. Application Submission Checklist	33

I. FUNDING OPPORTUNITY DESCRIPTION

BEFORE APPLYING, PLEASE NOTE: THIS PROGRAM ANNOUNCEMENT/FUNDING OPPORTUNITY IS INTENDED FOR EXTRAMURAL INVESTIGATORS ONLY.

A separate announcement for intramural investigators is available at [https://cdmrp.org/Program Announcements and Forms/](https://cdmrp.org/Program%20Announcements%20and%20Forms/).

- An ***extramural investigator*** is defined as all those not included in the definition of intramural investigators below.
- An ***intramural investigator*** is defined as a Department of Defense (DoD) military or civilian employee working within a DoD laboratory, DoD military treatment facility, or working in a DoD activity embedded within a civilian medical center. Intramural investigators are directed to apply through eReceipt ([https://cdmrp.org/Program Announcements and Forms/](https://cdmrp.org/Program%20Announcements%20and%20Forms/)).
- Submissions from intramural investigators to this Program Announcement/Funding Opportunity will be rejected. ***It is permissible, however, for an intramural investigator to be named as a collaborator in an application submitted by an extramural investigator.*** For more information, refer to the General Application Instructions, Section II.C.5., Research & Related Budget.

A. Program Description

Applications to the Fiscal Year 2015 (FY15) Joint Program Committee 1 (JPC-1) Medical Simulation and Information Sciences (MSIS) Joint En Route Care Training System of Systems (JRoute) Initiative are being solicited for the Defense Health Agency, Research, Development, and Acquisition (DHA RDA) Directorate, by the U.S. Army Medical Research Acquisition Activity (USAMRAA). As directed by the Office of the Assistant Secretary of Defense for Health Affairs (OASD[HA]), the DHA RDA Directorate manages and executes the Defense Health Program (DHP) Research, Development, Test, and Evaluation (RDT&E) appropriation. The JPC-1/MSIS operates in partnership with the DoD Congressionally Directed Medical Research Programs (CDMRP). CDMRP is the execution management agent for this announcement and will provide management support for subsequent awards.

The JPC-1/MSIS was established in FY10 to provide programmatic funding recommendations for OASD(HA) medical research dollars related to medical training and education efforts to advance the development and integration of simulation-based training systems. The JPC-1 Medical Modeling, Simulation, and Training Working Group provided the strategy for which this announcement's topic area was conceived.

The mission of the JPC-1/MSIS is to explore the implications of models and technology for medical education and for the provision, management, and support of health services in the military. The JPC-1/MSIS plans, coordinates, and oversees a responsive world-class, tri-service science and technology program focused on two areas of research. One area is focused on improving military medical training through medical modeling, simulation, educational gaming, assessment systems, and objective training metrics. The second area is focused on improving the use and sharing of health-related data for better strategic planning, process development, and software applications.

Per guidance from Interim DoD Instruction 5000.02, “Operation of the Defense Acquisition System,” dated January 7, 2015, the outcomes of the research will be used to support the solution assessments/material considerations for materiel development of a Joint En Route Care Training System of Systems (<http://www.acq.osd.mil/fo/docs/500002p.pdf>). The government plans to use research outcomes in assessing critical technology elements and technology maturity, system integration risk, future manufacturing feasibility, and, where necessary, technology maturation and demonstration needs.

The JPC-1/MSIS Combat Casualty Training Initiative (CCTI): Joint En Route Care Training System of Systems Initiative

The JPC-1/MSIS CCTI focuses on multiple issues including, but not limited to, advancing the entire continuum of care for combat casualty training through research and development. CCTI research involves, but is not limited to, gap analysis for technology based approaches; validation of training metrics and outcomes; and development of next-generation tools and systems to appropriately and continuously provide a high state of readiness for military healthcare providers. CCTI also investigates simulated “tissue” behaviors and characteristics to better represent virtual models and material properties related to simulation training systems. The effort includes research to integrate best practices into trauma training to improve warfighter performance under stress as would be experienced in-theatre. It also includes team (i.e., collective) training. Goals include, but are not limited to:

- Improve critical lifesaving skills training and confidence of assessment
- Emphasize approaches toward “anytime readiness” in a near-future era of reduced deployment of Military Operational Tempo (OPTEMPO)
- Build psychological resilience into pre-deployment training
- Research on improving training for more effective and efficient military medical teams

The military, like many other medical extramural institutions and organizations, has a continuum of care for patients all the way from point of injury to definitive medical care facilities. Each role of medical care (Roles 1 through 4) offers unique conditions for which the patient and healthcare provider must navigate. For more information about the four roles of medical care, reference Roles of Medical Care (United States) at <http://www.cs.amedd.army.mil/borden/FileDownloadpublic.aspx?docid=1a73495d-1176-4638-9011-9e7f3c6017d8>.

En Route Care is a vast entity, spanning over the entire continuum of care. The System consists of, but is not limited to, evacuation planning, combat casualty care course (C4), logistics, communication, en route care, patient evacuation control (PEC), and more. Future patient movement needs include robust standardized, interoperable en route care and continuous real-time shared patient clinical status and tracking system. It also needs to train and educate skills and tasks (not including professional medical education) for medical and non-medical individuals, teams, aircrews, and units, required for effective patient evacuation and transport.

Any future Joint En Route Care Training System will need to address skills and tasks for medical and non-medical individuals, teams, aircrews, and units, required for effective patient evacuation and transport. This future System will need to provide en route patient care training and

certification capability that sites such as the Critical Care Air Transport Team (C-CAT¹) already provide for initial and advanced training. This future System will need to provide certification and recertification training and testing capability for enlisted and officers that certain military facilities already provide. Any future Joint En Route Care Training System will need to support Service-specific training such as for en route care, team and crew tasks, in-flight aeromedical team communication, etc., as examples.

One of the ultimate eventual goals is to enable the DoD to develop a Joint En Route Continuum of Care Training System of Systems that can be widely disseminated across all of the Services, with consideration of compatibility and integration with DoD computer network systems and interoperability with existing components. Moreover, the resulting system of systems would be capable of providing both individualized and team-oriented training on the entire continuum of care incorporating multiple scenarios, which would include patient hand-offs and transfers.

As with other medical extramural institutions and organizations, patient hand-offs and patient transfers remain an area where medical errors, communication issues, and adverse events occur. For the purpose of this announcement, the term “hand-off” will be used and defined as, *“the transfer of information (along with authority and responsibility) from one person to another during transitions in care across the continuum.”*² Hand-offs includes opportunities to ask questions and clarify and confirm information relevant to the care and treatment of one or more patients. For the purposes of this announcement, the term “patient transfer” will be used and defined as, *“to convey the responsibility for the care of a patient from one entity to another,”* with emphasis on the actual physical transfer and care of the patient. Over the years, tools such as checklists, mnemonics, and alternate mobile communication platforms have been used and implemented to address patient hand-offs and patient transfers. Some items appear to have limitations while other potential solutions have not been completely studied in order to understand the full effectiveness of integration and the impact they have, or do not have, before, during, or after patient hand-offs and transfers.³

According to a recent article, “an estimated 80 percent of serious medical errors involve miscommunication between caregivers during the transfer of patients.”⁴ There are numerous reasons why medical errors might occur during en route care due to the urgency that the healthcare providers often face during en route care, including failure to think through all of the assessments and interventions that have been or should be provided; failure to document all relevant patient information (such as allergies, medications, weight, etc.) on forms, documents, or other modes of transcription; overestimation by experts on what novices need to know; and inadequately labeled medical equipment and items. Any of these errors may lead to adverse events such as delayed care, medication errors, wrong-site surgery, and death of the patient.

¹ <http://www.ccatt.info/>

² Department of Defense Patient Safety Program and Agency for Healthcare Research and Quality. 2006. TeamSTEPPS: Team Strategies and Tools to Enhance Performance and Patient Safety: Pocket Guide (AHRQ Pub. No. 06-0020-2). Rockville, Maryland. <http://www.ahrq.gov/professionals/education/curriculum-tools/teamstepps/instructor/essentials/pocketguide.pdf>

³ Starmer AJ, et al. 2014. Changes in medical errors after implementation of a handoff program. N Engl J Med 371(19):1803-1812 (<http://www.ncbi.nlm.nih.gov/pubmed/25372088>).

⁴ Better Communication Can Reduce Injuries During Patient Hand-Offs. 2014. Claims Journal <http://www.claimsjournal.com/news/national/2014/11/06/257347.htm>.

Healthcare providers in the military have additional hand-off challenges that can hamper their decision-making processes for administering the best possible care to their patients, such as provision of care under fire, assessment and treatment in austere environments, national and regional customs and language barriers (verbal and non-verbal communications), and equipment differences between the respective Services. Moreover, military healthcare providers often give en route care to patients with multi-trauma injuries and may handle several waves of multi-casualty hand-offs and patient transfers occurring simultaneously with minimal turnaround time.

B. Award Information

The FY15 JPC-1/MSIS JRoute Initiative aims to support research toward the analysis of alternatives for materiel development of a Joint En Route Care Training System of Systems. The JRoute Initiative seeks to support research projects that will develop plans, designs, frameworks, or architecture that ultimately contribute toward the development of a Continuum of Care Joint En Route Care training System of Systems that allows for training across the expanded continuum and that emphasizes training and educating the healthcare provider (both the individual and the team) on how to more effectively manage patient hand-offs and transfers and improve patient outcomes. It is anticipated that such a Joint En Route Care training system will benefit both the Military and public at large by reducing medical errors and adverse events before, during, and after hand-offs and patient transfer, leading to the overall improvement of patient safety and healthcare outcomes. It is also anticipated that future technologies will be better integrated into a more fully comprehensive, interoperable System of Systems Continuum of Care Joint En Route Care trainer.

Applications should provide a solid research-based design, plan, and/or framework that can support future development of a Joint En Route Care Training System of Systems. The design, plan, or framework is encouraged to incorporate open-source architecture, if and where possible. While the proposed plans/designs may include proprietary tools, appropriate justification for incorporating proprietary tools must be included. Proposed intellectual property components should be clearly and legibly marked in the application.

The proposed plan, design, framework, or architecture should also address potential future public uses. Dissemination and propagation of a future En Route Care Training System with public benefits is encouraged.

1. The FY15 JPC-1/MSIS CCTI JRoute Initiative seeks to support research projects addressing all of the following research areas of interest (listed in no particular order):

- References, sources, and/or pilot information that would support a proposed set of definitions and nomenclatures that could be used to structure a potential joint en route care training system. As applicable to the proposed work, applications should include the following information (not all-inclusive):
 - Potential methods for acquisition of skills as well as sustainment of skills already obtained for those who are at different medical levels/experience and who are at different locations within a comprehensive continuum of care system where multiple hand-offs and patient transfers occur;

- Information on evidence-based, well documented, and/or well adopted en route care language including patient hand-off and patient transfer definitions, nomenclature, and structures;
- Well-documented and/or well adopted medical simulation, training, and education definitions, nomenclature, and terminology;
- Summary of strengths, weaknesses, and current gaps in training methodologies applied toward en route care including patient hand-off and patient transfer programs/courses as identified in the literature and/or identified by the Principal Investigator's (PI) organization/institution.
- Designs, plans, frameworks, or architecture that could support a comprehensive Joint En Route Care Training Systems of Systems program where multiple patient hand-offs and patient transfers occur. As applicable to the proposed research, applications should include the following (not all-inclusive):
 - Potential simulation training tools, methodologies to achieve learning objectives, and methodologies on how to recommend evaluation criteria and metrics that at minimum address transitions between Role 1, Role 2, and Role 3 care⁵;
 - Methods for assessing several aspects of the training, such as the learner's goals and objectives, cognitive skills, psychomotor skills, learning outcomes, and evaluator training, should be considered. Information and/or methodologies on how the PI proposes to derive a theoretical design blueprint that could be used to support the analysis of alternatives for knowledge and materiel development of a Joint En Route Care Training System of Systems;
 - An example of an outlined scenario that could standardize hand-offs and patient transfers across the continuum of care (for example, between Role 1 & Role 2, or Role 2 & Role 3) with the capability to integrate variance related to different medical evacuation platforms, different environmental conditions, different types of trauma, different types of equipment, etc. that might be considered;
 - Potential evaluation criteria or metrics that could be used as the training benchmark to detect, either directly or indirectly, medical errors that could occur before, during, and/or after patient hand-offs and patient transfers.
- A System of Systems designs, plans, frameworks, or architecture that could be converted later, as an interoperable approach, to a continuum of care simulation training system. The designs, plans, frameworks, or architecture should include how the components would be incorporated and how components could communicate within a System of Systems as well as work in standalone training scenarios. As applicable to the proposed research, applications should include the following (not all-inclusive):

⁵ Roles of Medical Care (United States).

<http://www.cs.amedd.army.mil/borden/FileDownloadpublic.aspx?docid=1a73495d-1176-4638-9011-9e7f3c6017d8>.

- Discussion of the components within a System of Systems, such as power, communications, software, firmware, and hardware to name a few;
- Discussion of interoperability and applications of an open source/open architecture vs. proprietary components;
- Discussion of components that could be modular in nature and operate independently of the System in addition to being a component that could be connected, be integrated, and communicate within a System of Systems.
- Additional ideas, concepts, and/or approaches on how to expand the breadth and depth for a future Joint En Route Care Training program that includes hand-offs and patient transfers should be proposed. Take into consideration potential future skills that could be included under a Joint En Route Care Training System (evacuation planning, combat casualty care course [C4], logistics, communication, en route care, PEC, and more). Future patient movement needs include robust standardized, interoperable en route care and continuous real-time shared patient clinical status and tracking system. The proposed design, plan, framework, or architecture should include an overarching concept of a proposed Joint En Route Care Training System that all Services could use, either alone or with other Services.

2. *The desired outcomes of research supported by the FY15 JPC-1/MSIS JRoute Initiative should support the future development of a Joint En Route Care Training system of systems, and include the following:*

- A list of contact references and sources for the information that could support solution assessments/material considerations for materiel development of a future Joint En Route Care Training System of Systems;
- A report or document identifying the critical gaps during hand-offs and patient transfers;
- A report, document, and/or list of the terminology and respective definitions used for a continuum of en route care, including patient hand-offs and patient transfers. An analysis of verbal and non-verbal forms of communication and methods to support skills acquisition and sustainment;
- A report, document, and/or list of the medical simulation and training terminology and respective definition of items that could support a Joint En Route Care Training System of Systems,;
- A report or document with an analysis of the literature review on the continuum of en route care, including patient hand-offs/patient transfers. The product should include:
 - Critiques on the methodologies and gaps identified and assessment based upon the findings of what hand-off and patient transfer methods currently exist to reduce common medical errors before, during, and after en route care. In addition, methodologies that might be more favorable to address a future Joint En Route Care training system should be proposed.

- Summarized information and analysis of strengths and weaknesses on training methodologies/techniques applied toward a continuum of en route care, including patient hand-offs and patient transfers.
- A report or document with the information, data, concepts of recommended plans, designs, frameworks, or architecture to potentially support a future Joint En Route Care training system (e.g., evaluation planning, combat casualty care course [C4], logistics, communication, en route care, PEC, based upon the research performed;
- A report, documentation, and/or listing of potential enhancements on the use and user/team functionality of training/simulation equipment interfaces across an en route care continuum;
- A report or document that identifies critical metrics and evaluation criteria that could be used to support a solution assessment/material consideration for knowledge and materiel development of a Joint En Route Care Training System of Systems;
- A report or document that recommends patient transfer and hand-off training courses, tools, and simulation systems that would support a Joint En Route Care training by:
 - Addressing transitions between Role 1, Role 2, and Role 3 as well as from one Service to another;
 - Development of courses, tools, and systems that consider events before, during and after patient transfers and hand-offs. These outcomes should be associated with commercially available or soon-to-be commercially available products;
 - Development of methods for identifying medical errors, clinical outcomes, and other measurable outcomes;
 - Development of tools and systems that have effective and efficient user interfaces that minimize potential healthcare personnel's frustration with the tools and systems;
 - Development of courses, tools, and systems that address both skill acquisition and skill maintenance for those using a Joint En Route Care training system;
 - Addressing multi-trauma, multi-casualty, and other scenarios that Joint Military forces most likely would encounter.
- A report, documentation, series of images, and /or design documenting a proposed "blueprint" that could be used to support a solution assessment/material consideration for knowledge and material development of a Joint En Route Care Training System of Systems to include:
 - Information on power, communications, software, firmware, and hardware and also on interoperability, integration, and communication between the recommended parts of the System of Systems;
 - Information on the potential for a modular and flexible component that can function on its own and yet be able to connect, integrate, and communicate within the System of Systems;

- Information on components of the communications, software, firmware, and hardware that are open source/open architecture/open license vs. solutions that may need to be proprietary;
- Information on near-term and long-lead technologies that can perform capabilities (as previously listed), even if those technologies do not yet exist or have not yet been identified.

Research Involving Human Anatomical Substances, Human Subjects, or Human Cadavers: All DoD-funded research involving new and ongoing research with human anatomical substances, human subjects, or human cadavers must be reviewed and approved by the U.S. Army Medical Research and Materiel Command (USAMRMC) Office of Research Protections (ORP), Human Research Protection Office (HRPO), in addition to the local Institutional Review Board (IRB) of record. Local IRB approval at the time of submission is *not* required. The HRPO is mandated to comply with specific laws and requirements governing all research involving human anatomical substances, human subjects, or human cadavers that is supported by the DoD. These laws and requirements will necessitate information in addition to that supplied to the IRB. *Allow a minimum of 2 to 3 months for HRPO regulatory review and approval processes.* Refer to the General Application Instructions, Appendix 5, and the Human Subject Resource Document available on the eBRAP “Funding Opportunities & Forms” web page (<https://ebrap.org/eBRAP/public/Program.htm>) for additional information.

Research Involving Animals: All DoD-funded research involving new and ongoing research with animals must be reviewed and approved by the U.S. Army Medical Research and Materiel Command (USAMRMC) Office of Research Protections (ORP) Animal Care and Use Review Office (ACURO), in addition to the local Institutional Animal Care and Use Committee (IACUC) of record. IACUC approval at the time of submission is not required. Specific documents relating to the use of animals in the proposed research will be requested if the application is selected for funding. The ACURO must review and approve all animal use prior to the start of working with animals. PIs must submit the institutional animal use protocol, IACUC approval of that protocol, and a version of the animal use appendix titled “Research Involving Animals.” *Allow at least 2 to 3 months for regulatory review and approval processes for animal studies.* Refer to General Application Instructions, Appendix 5, for additional information.

The CDMRP and JPC-1/MSIS intend that information, data, and research resources generated under awards funded by this Program Announcement/Funding Opportunity be made available to the research community (which includes both scientific and consumer advocacy communities) and to the public at large. For additional guidance, refer to the General Application Instructions, Appendix 3, Section L.

C. Eligibility Information

- Independent extramural investigators at all academic levels (or equivalent) are eligible to submit applications
- Cost sharing/matching is not an eligibility requirement.
- Eligible extramural investigators must apply through an organization. Organizations

eligible to apply include national, international, for-profit, non-profit, public, and private organizations.

- Intramural investigators are directed to apply through CDMRP eReceipt at https://cdmrp.org/Program_Announcements_and_Forms/.
- Refer to the General Application Instructions, Appendix 1, for general eligibility information.

D. Funding

- The maximum period of performance is **1** year.
- The anticipated total costs budgeted for the entire period of performance will not exceed **\$1 million (M)**. Associated indirect costs can be budgeted in accordance with the organization's negotiated rate. No budget will be approved by the Government exceeding **\$1M** total costs or using an indirect rate exceeding the organization's negotiated rate.
- The applicant may request the entire maximum funding amount for a project that may have a period of performance less than the maximum **1** year.
- Refer to the General Application Instructions, Section II.C.5., for budget regulations and instructions for the Research & Related Budget. ***For all Federal agencies or organizations collaborating with Federal agencies, budget restrictions apply as are noted in Section II.C.5. of the General Application Instructions.***

For this award mechanism, direct costs:

Must be requested for:

- Travel costs for the PI(s) to an In-Progress Review (IPR) anticipated to be held near end of the period of performance at a government location (to be determined). For planning purposes, it should be assumed that the meeting will be held in the National Capital Area/Maryland/Northern Virginia. These travel costs are in addition to those allowed for annual scientific/technical meetings.

May be requested for (not all-inclusive):

- Salary
- Research-related subject costs
- Support for multidisciplinary collaborations
- Equipment
- Research supplies
- Travel between collaborating institutions, including travel to military/government facilities
- Travel costs to attend scientific/technical meetings in addition to the required IPR meeting described above

This Program Announcement/Funding Opportunity is intended for extramural investigators only. Intramural investigators are directed to apply through CDMRP eReceipt at [https://cdmrp.org/Program Announcements and Forms/](https://cdmrp.org/Program%20Announcements%20and%20Forms/).

An intramural investigator is defined as a DoD military or civilian employee working within a DoD laboratory or medical treatment facility, or working in a DoD activity embedded within a civilian medical center.

It is permissible for an intramural investigator to be named as a collaborator in an application submitted by an extramural investigator under this Program Announcement/Funding Opportunity. ***In such cases, the extramural investigator must include a letter from the intramural collaborator's Commander or Commanding Officer that authorizes the involvement of the intramural collaborator.***

Awards to extramural organizations will consist solely of assistance agreements (Cooperative Agreements and Grants). Sub-awards to intramural agencies and other Federal agencies may be executed through a direct fund transfer (e.g., the Military Interdepartmental Purchase Request [MIPR] or Funding Authorization Document [FAD] process). Direct transfer of funds from the recipient to a Federal agency is not allowed except under very limited circumstances. Refer to the General Application Instructions, Section II.C.5. Research & Related Budget, for additional information on budget considerations for applications involving Federal agencies.

The JPC-1/MSIS expects to allot approximately \$3M of the FY15 DMRDP appropriation to fund approximately 3 JRoute Initiative applications, depending on the quality and number of applications received via both the extramural and intramural Program Announcements/Funding Opportunities. Funding of applications received in response to this Program Announcement/Funding Opportunity is contingent upon the availability of Federal funds for this program.

II. SUBMISSION INFORMATION

Submission is a two-step process requiring both (1) pre-application submission through the electronic Biomedical Research Application Portal (eBRAP) (<https://eBRAP.org/>) and (2) application submission through Grants.gov (<http://www.grants.gov/>). Refer to the General Application Instructions, Section II.A. for registration and submission requirements for eBRAP and Grants.gov.

eBRAP is a multifunctional web-based system that allows PIs to submit their pre-applications electronically through a secure connection, to view and edit the content of their pre-applications and full applications, to receive communications from the CDMRP, and to submit documentation during award negotiations and period of performance. A key feature of eBRAP is the ability of an organization's representatives and PIs to view and modify the Grants.gov application submissions associated with them. eBRAP will validate Grants.gov application files against the specific Program Announcement/Funding Opportunity requirements and discrepancies will be noted in an email to the PI and in the Full Application Files tab in eBRAP. It is the applicant's responsibility to review all application components for accuracy as well as ensure proper ordering as specified in this Program Announcement/Funding Opportunity.

PIs should ensure that their name and email address are the same as the name and email address that will be provided on the SF-424 Form of the Grants.gov application package submitted to Grants.gov. The organization, Business Officials, PI(s), and eBRAP log number named in the full application submitted to Grants.gov must match those named in the pre-application in eBRAP.

Application viewing, modification, and verification in eBRAP is strongly recommended, but not required. The Project Narrative and Budget cannot be changed after the application submission deadline. Any other application component cannot be changed after the end of the application verification period.

A. Where to Obtain the Grants.gov Application Package

To obtain the Grants.gov application package, including all required forms, perform a basic search using the Funding Opportunity Number W81XWH-15-DMRDP-JPC1-JRoute in Grants.gov (<http://www.grants.gov/>).

B. Pre-Application Submission and Content Form

All pre-application components must be submitted by the PI through eBRAP (<https://eBRAP.org/>). Because the invitation to submit an application is based on the contents of the pre-application, investigators should not change the title or research objectives after the pre-application is submitted.

PIs and organizations identified in the pre-application should be the same as those intended for the subsequent application submission. If any changes are necessary after submission of the pre-application, the PI must contact the CDMRP Help Desk at help@eBRAP.org or 301-682-5507.

A change in PI or organization after submission of the pre-application may be allowed after review of a submitted written appeal (contact the CDMRP Help Desk at help@eBRAP.org or 301-682-5507) and at the discretion of the USAMRAA Grants Officer.

The pre-application consists of the following components, which are organized in eBRAP by separate tabs (refer to the General Application Instructions, Section II.B., for additional information on pre-application submission):

- **Application Information – Tab 1**
- **Application Contacts – Tab 2**
 - Enter contact information for the PI. Enter the organization’s Business Official responsible for sponsored program administration (the “person to be contacted on matters involving this application” in Block 5 of the Grants.gov SF-424 form). The Business Official must either be selected from the eBRAP list or invited in order for the pre-application to be submitted.
 - It is recommended that PIs identify an Alternate Submitter in the event that assistance with pre-application submission is needed.

- **Collaborators and Key Personnel – Tab 3**

- Enter the name, organization, and role of all key personnel (including co-investigators, mentors, collaborators, consultants, and subrecipients/subawardees) associated with the application.
- Federal agency personnel involved in the review process and/or with making funding recommendations are prohibited from being involved in the research proposed or assisting in any pre-application, including, but not limited to, concept design, application development, budget preparation, and the development of any supporting documentation.
- JPC-1 Medical Modeling, Simulation, and Training Working Group members and advisors (listed in [Section VII](#), below) should not be involved in any pre-application or application. For questions related to the JPC-1 Medical Modeling, Simulation, and Training Working Group members and advisors and pre-applications or applications, refer to [Section IV.C., Withdrawal](#), or contact the CDMRP Help Desk at help@eBRAP.org or 301-682-5507.

- **Conflicts of Interest (COIs) – Tab 4**

- List all individuals other than collaborators and key personnel who may have a COI in the review of the application (including those with whom the PI has a personal or professional relationship).

- **Pre-Application Files – Tab 5**

Note: Upload document(s) as individual PDF files unless otherwise noted. eBRAP will not allow a file to be uploaded if the number of pages exceeds the limit specified below.

Preproposal Narrative (10-page limit): The Preproposal Narrative page limit applies to text and non-text elements (e.g., figures, tables, graphs, photographs, diagrams, chemical structures, drawings, etc.) used to describe the project. Inclusion of URLs that provide additional information to expand the Preproposal Narrative and could confer an unfair competitive advantage is prohibited and may result in administrative withdrawal of the pre-application.

The Preproposal Narrative should include the following:

- **Problem to Be Studied:** Describe the perceived issue(s) and the problems to be studied. This section should serve as an abstract of the proposed work.
- **Research Areas of Interest:** Describe how the proposed research addresses the Research Areas of Interest outlined in [Section I.B.1](#).
 - **References Sources, and/or Pilot Information:** Describe the proposed set of definitions and nomenclatures that could be used to structure a potential Joint En Route Care Training system.

- **Proposed Design, Plan, Framework, or Architecture**
 - Describe the proposed design, plan, framework, or architecture that could support a comprehensive Joint En Route Care Training system of systems program where multiple patient hand-offs and patient transfers occur.
 - Describe the interoperability (software, firmware, and hardware) of the proposed design, plan, framework, and/or architecture, including how the components would be incorporated and communicate within a System of Systems as well as work in standalone training scenarios.
- **Additional Ideas, Concepts, and/or Approaches:** Describe additional ideas, concepts, and/or approaches on how to expand the breadth and depth for a future Joint En Route Care Training program that includes hand-offs and patient transfers.
- **Theoretical Rationale, Scientific Methods, and Research**
 - **Background/Rationale:** Clearly present the ideas and reasoning behind the proposed research. Include relevant literature citations, preliminary and/or pilot data, and/or other evidence that led to the development of the proposed research. Any preliminary data should be from the laboratory of the PI or member(s) of the collaborating team.
 - **Hypothesis/Objective and Specific Aims:** State the proposed project’s hypothesis and/or objectives and the specific aims/tasks of the proposed research.
 - **Approach/Methodology:** Describe the research approach. Include research design, methods, and analysis/evaluation strategies as well as materials anticipated to be used during the research. If applicable, include a description of animal and/or human use in the proposed project. For studies involving animals and/or human subjects, include a description of the size, characteristics, and partnering organizations of the subject population that will be employed.
- **Significance, Relevance, and Innovation of the Proposed Effort**
 - **Significance and Relevance:** Clearly articulate how the proposed research is relevant to the goal of enhancing En Route Care in delivery of healthcare with the overall goal of improving patient safety and healthcare outcomes in the military health system.
 - **Innovation:** Explain how the proposed project is innovative and not an incremental advancement of previous work.
- **Military Impact:** Describe the anticipated short- and/or long-term outcomes of the proposed project and their potential impact on improving Joint En Route Care training in healthcare delivery and patient safety in the military health system. Refer to [Section I.B.2.](#), for additional information on the anticipated outcomes sought by this Program Announcement/Funding Opportunity.
- **Personnel and Facilities:** Describe the role for the PI, co-PIs (if applicable), key personnel, sub-awards (if applicable), and consultants (if applicable) in the research

team, including the expertise each brings to the proposed project. Explain how the team's expertise is appropriate and complementary for achieving the research goals. Also, briefly provide information on the primary facility where the research is expected to be performed.

Pre-Application Supporting Documentation: The items to be included as supporting documentation for the pre-application *must be uploaded as individual documents* and are limited to:

- References Cited (one-page limit): List the references cited (including URLs if available) in the Preproposal Narrative using a standard reference format that includes the full citation (i.e., author[s], year published, title of reference, source of reference, volume, chapter, page numbers, and publisher, as appropriate).
 - List of Abbreviations, Acronyms, and Symbols: Provide a list of abbreviations, acronyms, and symbols used in the Preproposal Narrative.
 - PI and Key Personnel Biographical Sketches (five-page limit per individual): Upload as "Biosketch_LastName.pdf." Bold or highlight publications relevant to the proposed project.
 - Budget Summary: Upload as "BudgetSummary.pdf." Complete the two-page Pre-Application Budget Summary Form (available for download in eBRAP) as instructed.
 - Quad Chart: Upload as "QuadChart.pdf." Complete the one-page Quad Chart Form (available for download in eBRAP) as instructed.
- **Submit Pre-Application – Tab 6**
 - This tab must be completed for the pre-application to be accepted and processed.

Pre-Application Screening

- **Pre-Application Screening Criteria**

All pre-applications will be screened by the JPC-1 Medical Modeling, Simulation, and Training Working Group members to determine technical merit and relevance to the mission of the DHP, DMRDP, and JPC-1/MSIS. Pre-applications will be screened based on the following criteria, listed in descending order of importance:

- **Theoretical Rationale, Scientific Methods, and Research:** To what degree the research approach for accomplishing the specific aims is feasible, will accomplish the objectives, will provide information on proposed methods and analysis/evaluation strategies, and is based on sound rationale. To what degree the proposed work and research is derived from evidence-based, best-of-class, well-documented, and/or well-adopted designs, plans, frameworks, or architecture.
- **Significance, Relevance, and Innovation:** To what degree the proposed research is relevant to the goal of enhancing Joint En Route Care training in delivery of healthcare, with the overall goal of reducing patient hand-off and patient transfer errors and improving patient safety and healthcare outcomes in the military health

system. To what degree the proposed work is innovative and novel, including whether the proposed research is duplicative of existing research.

- **Research Area of Interest:** How well the proposed research addresses the Research Areas of Interest outlined in [Section I.B.1.](#)
 - References Sources, and/or Pilot Information: Whether the proposed set of definitions and nomenclatures are appropriate for structuring a potential joint en route care training system.
 - Proposed Design, Plan, Framework, or Architecture
 - To what degree the proposed design, plan, framework, or architecture could support the development of a comprehensive Joint En Route Care Training system of systems program where multiple patient hand-offs and patient transfers occur.
 - How well the interoperability (software, firmware, and hardware) of the proposed design, plan, framework, and/or architecture, is described, including how proprietary and open-source components would be incorporated (as applicable) and interoperate within a System of Systems as well as work in standalone training scenarios.
 - Whether the proposed ideas, concepts, and/or approaches on how to expand the breadth and depth for a future Joint En Route Care Training program are appropriate.
- **Military Impact:** To what degree the project’s anticipated short- and/or long-term outcomes will impact the military and a future Joint En Route Care training program in healthcare delivery and patient safety in the military health system in a way that is consistent with the program’s goals.
- **Personnel and Facilities:** To what degree the expertise, experience, and knowledge of the key research personnel, sub-awards (if applicable), and consultants (if applicable) are appropriate and complementary for achieving the research goals. To what degree the prime facility will be able to perform the proposed research.
- **Budget:** Whether the budget is appropriate for the proposed research and within the limits of this Program Announcement/Funding Opportunity.
- **Notification of Pre-Application Screening Results**

Following the pre-application screening, PIs will be notified as to whether or not they are invited to submit applications; however, they will not receive feedback (e.g., a critique of strengths and weaknesses) on their pre-application. The estimated timeframe for notification of invitation to submit an application is indicated on the [title page](#) of this Program Announcement/Funding Opportunity.

C. Application Submission Content and Forms

Applications will not be accepted unless the PI has received notification of invitation.

The CDMRP cannot make allowances/exceptions to its policies for submission problems encountered by the applicant organization using system-to-system interfaces with Grants.gov.

Each application submission must include the completed Grants.gov application package provided in Grants.gov for this Program Announcement/Funding Opportunity. The Grants.gov application package is submitted by the Authorized Organizational Representative through the Grants.gov portal (<http://www.grants.gov/>).

Note: The Project Narrative and Budget Form cannot be changed after the application submission deadline. If either the Project Narrative or the budget fails eBRAP validation or if the Project Narrative or Budget Form needs to be modified, an updated Grants.gov application package must be submitted via Grants.gov as a “Changed/Corrected Application” with the previous Grants.gov Tracking ID *prior to the application submission deadline*.

Grants.gov application package components: For the FY15 JPC-1/MSIS JRoute Initiative, the Grants.gov application package includes the following components (refer to the General Application Instructions, Section II.C., for additional information on application submission):

1. **SF-424 (R&R) Application for Federal Assistance Form:** Refer to the General Application Instructions, Section II.C., for detailed information.
2. **Attachments Form**

Each attachment to the Grants.gov application forms must be uploaded as an individual PDF file in accordance with the formatting guidelines listed in Appendix 2 of the General Application Instructions. For all attachments, ensure that the file names are consistent with the guidance. Grants.gov will reject attachments with file names longer than 50 characters or incorrect file names that contain characters other than the following: A-Z, a-z, 0-9, underscore, hyphen, space, and period. In addition, Grants.gov has file size limits that may apply in some circumstances. Individual attachments may not exceed 20 MB and the file size for the entire Grants.gov application package may not exceed 200 MB.

- **Attachment 1: Project Narrative (20-page limit):** Upload as “ProjectNarrative.pdf.” The page limit of the Project Narrative applies to text and non-text elements (e.g., figures, tables, graphs, photographs, diagrams, chemical structures, drawings, etc.) used to describe the project. Inclusion of URLs that provide additional information to expand the Project Narrative and could confer an unfair competitive advantage is prohibited and may result in administrative withdrawal of the application.

Describe the proposed project in detail using the outline below.

- **Background:** Present the ideas and reasoning behind the proposed research; include relevant literature citations, preliminary data, and/or other evidence that

led to the development of the proposed study. Describe previous experience most pertinent to this project. Any preliminary data should be from the laboratory of the PI or member(s) of the collaborating team.

- Clearly support the choice of study variables and explain the basis for the study questions and/or study hypotheses. Establish the relevance of the study and explain the applicability of the proposed findings.
- **Hypotheses/Objectives:** State the hypotheses/study questions and overall objective(s) to be reached.
- **Specific Aims:** Concisely explain the project’s specific aims. If this application is part of a larger study, present only tasks that this award would fund.
- **Study Design:** Describe the experimental design, methods, and analyses/evaluations in sufficient detail for analysis.
 - Identify and describe the hypothesis to be studied and the projected outcome of the proposed research.
 - Define the study variables and describe how they will be measured. Include a description of appropriate controls and the endpoints to be tested. Describe how data will be collected and analyzed in a manner that is consistent with the study objectives. Describe a plan for data access.
 - For development of devices and technologies, discuss the engineering/technical design to achieve the project goals demonstrating the feasibility of the proposed product development. Discuss the perceived engineering/design strengths and flaws and recommendations for overcoming/preventing them.
 - Address any potential barriers and plans for addressing potential delays. As relevant, describe plans for addressing issues unique to working within the military health system.
 - Document the availability and accessibility of the study materials (including data) needed as applicable.
- **Project Milestones:** Identify timelines for critical events that must be accomplished in order for the project to be successful in terms of cost, schedule, and performance.
- **Additional Information:** If human and/or animal subjects are included in the research, applications may be submitted without human and/or animal use protocols and institutional approvals. However, protocols with required institutional approvals must be submitted no later than 60 days after award to demonstrate continued progress and ensure continuation of payment. The Grants Officer may make exceptions in situations where human and/or animal use is not expected to begin until after the first year of the research project. In such cases, a timeframe for submission of the appropriate protocols and institutional approvals will be established prior to award.

PIs and collaborating organizations may not use, employ, or subcontract for the use of any human participants, including the use of human anatomical substances, human data, and/or human cadavers, or laboratory animals until applicable regulatory documents are approved by the USAMRMC to ensure that DoD regulations have been met.

- For studies with prospective accrual of human subjects, indicate quarterly enrollment targets.
- Identify cell line(s) and commercial or organizational source(s) to be used. If human anatomical substances (including cell lines) will be used, specify whether or not identifiable information is accessible to the research team by any means.
- If applicable, indicate time required for submission and/or approval of documents (e.g., Investigational New Drug and Investigational Device Exemption) to the U.S. Food and Drug Administration or appropriate government agency.
- For studies involving human subjects, allow at least 2 to 3 months for regulatory review and approval by the USAMRMC HRPO; this does not include the additional time required for local IRB review and approval.
- For animal studies, allow at least 2 to 3 months for regulatory review and approval by the USAMRMC Animal Care and Use Review Office (ACURO); this does not include the additional time required for local Institutional Animal Care and Use Committee (IACUC) review and approval.
- Refer to the General Application Instructions, Appendix 5, for additional regulatory information.
- **Attachment 2: Supporting Documentation.** Start each document on a new page. Combine and upload as a single file named “Support.pdf.” If documents are scanned to pdf, the lowest resolution (100 to 150 dpi) should be used. ***There are no page limits for any of these components unless otherwise noted. Include only those components described below; inclusion of items not requested will be removed or may result in administrative withdrawal of the application.***
 - References Cited: List the references cited (including URLs if available) in the Project Narrative using a standard reference format that includes the full citation (i.e., author[s], year published, title of reference, source of reference, volume, chapter, page numbers, and publisher, as appropriate).
 - List of Abbreviations, Acronyms, and Symbols: Provide a list of abbreviations, acronyms, and symbols.
 - Publications and/or Patent Abstracts (five-document limit): Include relevant publication URLs and/or patent abstracts. If publications are not publicly available, then a copy/copies of the published manuscript(s) must be included in Attachment 2. Extra items will not be reviewed.

- Facilities, Existing Equipment, and Other Resources: Describe the facilities and equipment available for performance of the proposed project and any additional facilities or equipment proposed for acquisition at no cost to the award. Indicate whether or not Government-furnished facilities or equipment are proposed for use. If so, reference should be made to the original or present Government award under which the facilities or equipment items are now accountable. There is no form for this information.
- Letters of Organizational Support: Provide a letter (or letters, if applicable), signed by the Department Chair or appropriate organization official, confirming the laboratory space, equipment, and other resources available for the project. Letters of support not requested in the Program Announcement/Funding Opportunity, such as those from members of Congress, do not impact application review or funding decisions.
- Letters of Collaboration (if applicable): Provide a signed letter from each collaborating individual or organization that will demonstrate that the PI has the support or resources necessary for the proposed work. ***If the project involves collaboration with a Military Facility (military health system facility, research laboratory, treatment facility, dental treatment facility, or a DoD activity embedded with a civilian medical center), special requirements apply.*** A DoD researcher must obtain a letter from his/her commanding officer or Military Facility director authorizing his/her participation in the research project. This letter must be included with the application. (Refer to the General Application Instructions, Section II.C.8, for additional information.)
- Intellectual Property
 - Background and Proprietary Information: All software and data first produced under the award are subject to a Federal purpose license in accordance with applicable DoD Grant and Agreement Regulations (DoDGAR) requirements. Provide a list of all background intellectual property to be used in the project or provide a statement that none will be used. If applicable, state and identify the proprietary information that will be provided to the Government and indicate whether the applicant will require a waiver of the Federal purpose license.
 - Intellectual and Material Property Plan (if applicable): Provide a plan for resolving intellectual and material property issues among participating organizations.
 - Commercialization Strategy (if applicable): Describe the commercialization plan. The plan should include intellectual property, market size, financial analysis, strengths and weaknesses, barriers to the market, competitors, and management team. Discuss the significance of this development effort, when it can be anticipated, and the potential commercial use for the technology being developed.
- Data and Research Resources Sharing Plan: Describe how data and resources generated during the performance of the project will be shared with the research

community. Refer to the General Application Instructions, Appendix 3, Section L for more information about the CDMRP expectations for making data and research resources publicly available.

- **Attachment 3: Technical Abstract (one-page limit): Upload as “TechAbs.pdf.”** Use only characters available on a standard QWERTY keyboard. Spell out all Greek letters, other non-English letters, and symbols. Graphics are not allowed.

Abstracts of all funded applications may be publicly posted; *therefore, proprietary information should not be included in the abstract.*

The technical abstract should be clear and concise and, at a minimum, provide the following information:

- **Background:** Provide a brief statement of the ideas and theoretical reasoning behind the proposed work.
 - **Objective/Hypothesis:** State the objective/hypothesis to be tested. Provide evidence or rationale that supports the objective/hypothesis.
 - **Specific Aims:** State concisely the specific aims of the study.
 - **Study Design:** Briefly describe the study design.
 - **Impact:** Provide a brief statement explaining the potential relevance of the proposed work to improving patient safety and healthcare outcomes in the military health system and/or to the general public.
- **Attachment 4: Lay Abstract (one-page limit): Upload as “LayAbs.pdf.”** Use only characters available on a standard QWERTY keyboard. Spell out all Greek letters, other non-English letters, and symbols. Graphics are not allowed.

Not required at this time. Leave Attachment 4 space blank.

- **Attachment 5: Statement of Work (SOW) (two-page limit): Upload as “SOW.pdf.”** The suggested SOW format and examples specific to different types of research projects are available on the eBRAP “Funding Opportunities & Forms” web page (<https://ebrap.org/eBRAP/public/Program.htm>). For the JRoute Initiative, use the SOW format example titled “SOW Generic.” The SOW must be in PDF format prior to attaching. Refer to the General Application Instructions, Section II.C.3., for detailed guidance on creating the SOW.
- **Attachment 6: Outcomes and Impact Statement (one-page limit):** Upload as “Impact.pdf.” Explain in detail why the proposed research project is important, as follows:
 - **Describe the short-term impact:** Describe the anticipated outcome(s)/results(s)/theoretical framework, design, and/or plan that will be directly attributed to the results of the proposed research.
 - **Describe the long-term impact:** Describe the anticipated long-term gains from the proposed research, including the long-term anticipated advantages that the new understanding may ultimately contribute to the goal of reducing medical

errors/adverse events before, during, and/or after patient hand-offs and transfers and to improving patient healthcare outcomes within the military health system. Articulate how the anticipated outcomes will contribute to improving en route medical care.

- **Military Relevance:** Clearly articulate how the proposed research is relevant to the goal of enhancing team performance in delivery of en route healthcare with the overall goal of improving patient safety and healthcare outcomes in the military health system. State precisely the estimates as to the immediate and/or long-range usefulness of this study to the Armed Forces, as distinguished from general advancement of knowledge in medicine.
 - **Public Purpose:** Provide a concise, detailed description on how this research project will benefit the general public.
 - **Attachment 7: Innovation Statement (two-page limit):** Upload as “Innovation.pdf.” Describe how the proposed project is innovative. Research deemed innovative may introduce a new paradigm, challenge current paradigms, look at existing problems from new perspectives, or exhibit other creative qualities. Investigating the next logical step or incremental advancement on published data is not considered innovative. This may include a proposed conceptual framework, design, and/or plan of key components and how they integrate/communicate with each other. Identifying which potential components will be open source/open architecture vs. proprietary.
 - **Attachment 8:** Collaborating DoD Military Facility Budget Form(s), if applicable: Upload as “MFBudget.pdf.” If a Military Facility (military health system facility, research laboratory, treatment facility, dental treatment facility, or a DoD activity embedded with a civilian medical center) will be a collaborator in the performance of the project, complete the Collaborating DoD Military Facility Budget Form (available for download on eBRAP at <https://ebrap.org/eBRAP/public/Program.htm>), including a budget justification, for each Military Facility as instructed. Refer to the General Application Instructions, Section II.C.8., for detailed information.
- 3. Research & Related Senior/Key Person Profile (Expanded):** Refer to the General Application Instructions, Section II.C.4., for detailed information. Note: Some of the items in this attachment may be made available for programmatic review.
- **PI Biographical Sketch (five-page limit):** Upload as “Biosketch_LastName.pdf.” The suggested biographical sketch format is available on the “Funding Opportunities & Forms” web page (<https://ebrap.org/eBRAP/public/Program.htm>) in eBRAP. The five-page National Institutes of Health Biographical Sketch may also be used.
 - **PI Previous/Current/Pending Support (no page limit):** Upload as “Support_LastName.pdf.”

- Key Personnel Biographical Sketches (five-page limit each): Upload as “Biosketch_LastName.pdf.”
 - Key Personnel Previous/Current/Pending Support (no page limit): Upload as “Support_LastName.pdf.”
4. **Research & Related Budget:** Refer to the General Application Instructions, Section II.C.5., for detailed information.
 - Budget Justification (no page limit): Upload as “BudgetJustification.pdf.” The budget justification for the entire period of performance must be uploaded to the Research & Related Budget after completion of the budget for Period 1.
 5. **Project/Performance Site Location(s) Form:** Refer to the General Application Instructions, Section II.C.6., for detailed information.
 6. **R & R Subaward Budget Attachment(s) Form (if applicable):** Refer to the General Application Instructions, Section II.C.7., for detailed information.

D. Applicant Verification of Grants.gov Submission in eBRAP

Prior to the end of the application verification period, PIs and organizational representatives can review and modify in eBRAP certain components of an application submitted to Grants.gov. Following retrieval and processing of the Grants.gov application, eBRAP will notify the organizational representatives and PI by email to log into eBRAP to review, modify, and verify the Grants.gov application submission. eBRAP will validate retrieved files against the specific Program Announcement/Funding Opportunity requirements and discrepancies will be noted in both the email and in the Full Application Files tab in eBRAP. eBRAP does not confirm the accuracy of file content. It is the applicant’s responsibility to review all application components and ensure proper ordering as specified in the Program Announcement/Funding Opportunity. *If either the Project Narrative or the budget fails eBRAP validation, an updated Grants.gov application package must be submitted via Grants.gov as a “Changed/Corrected Application” with the previous Grants.gov Tracking ID prior to the application submission deadline.* The Project Narrative and Budget Form cannot be changed after the application submission deadline.

E. Submission Dates and Times

All submission dates and times are indicated on the [title page](#) of this Program Announcement/Funding Opportunity. Pre-application and application submissions are required. Failure to meet either of these deadlines will result in application rejection.

F. Other Submission Requirements

Refer to the General Application Instructions, Appendix 2, for detailed formatting guidelines.

All applications must be submitted through Grants.gov. Applicant organizations and all subrecipient organizations must have a Data Universal Numbering System (DUNS) number to submit applications to Grants.gov. The applicant organization must also be registered in the Entity Management functional area of the System for Award Management (SAM) with an

“Active” status to submit applications through the Grants.gov portal. Refer to the General Application Instructions, Section II.A., for information on Grants.gov registration requirements.

III. APPLICATION REVIEW INFORMATION

A. Application Review and Selection Process

All applicants are evaluated by scientists, clinicians, and consumer advocates using a two-tier review process. The first tier is peer review of applications against established criteria for determining technical merit. The second tier is a programmatic review that makes recommendations for funding to the DHA RDA Directorate and the Office of the Assistant Secretary of Defense for Health Affairs, based on (a) technical merit and (b) the relevance to the mission of the DHP and JPC-1/MSIS, and to the specific intent of the award mechanism. The highest-scoring applications from the first tier of review are not automatically recommended for funding. Additional information about the two-tier process used by the CDMRP can be found at <http://cdmrp.army.mil/about/fundingprocess.shtml>.

All CDMRP review processes are conducted confidentially to maintain the integrity of the merit-based selection process. Panel members sign a nondisclosure statement that application and evaluation information will not be disclosed outside the panel. Violations of confidentiality can result in the dissolving of a panel(s) and other corrective actions. In addition, personnel at the applicant or collaborating organizations are prohibited from contacting persons involved in the review process to gain protected evaluation information or to influence the evaluation process. Violations of these prohibitions will result in the administrative withdrawal of the organization’s application. Violations by panel members or applicants that compromise the confidentiality of the review process may also result in suspension or debarment from Federal awards. Furthermore, the unauthorized disclosure of confidential information of one party to another third party is a crime in accordance with Title 18 United States Code 1905.

B. Application Review Process

1. Peer Review: To determine technical merit, all applications will be evaluated according to the following scored criteria, which are listed in decreasing order of importance:

- **Theoretical Rationale and Scientific Methods**
 - How well the rationale for the proposed study is supported by preliminary data (if provided), critical review and analysis of the literature, and/or other evidence-based information/data that supports the proposed research, methods, and anticipated outcomes.
 - How well the study aims, hypotheses or objectives, experimental design, methods, and analyses are designed to clearly answer the research questions.
 - Whether the proposed research and work provides a listing of evidence-based definitions and nomenclature (verbal and non-verbal) that is or would be

applicable to the development of a Joint En Route Care training system with interest on patient hand-offs and patient transfers.

- To what extent the proposed information and/or methodologies to derive designs, plans, frameworks or architecture could be used to support the analysis of alternatives for knowledge and materiel development of a Joint En Route Care Training System of Systems.
- Whether there is evidence of an adequate contingency plan, such as a risk mitigation plan, to resolve potential delays.
- **Relevance, Innovation, and Impact**
 - How the proposed research is relevant to the goal of enhancing a future Joint En Route Care training system and has the potential to improve patient safety and healthcare outcomes in the military health system by effectively training the healthcare provider/team and reducing medical errors while administering en route care.
 - How the proposed work is innovative and novel, including whether the proposed research is duplicative of existing research.
 - To what degree the proposed evaluation criteria and metrics for individuals and teams have fundamental scientific relevance and potential to directly or indirectly impact the reduction of errors or improve patient safety and healthcare outcomes, particularly as it pertains to patient hand-offs and patient transfers.
 - To what degree the anticipated short- and long-term outcomes resulting from the proposed study will contribute to the goal of improving patient safety and healthcare outcomes within the military health system.
 - To what degree the anticipated outcomes will impact the materiel development and optimization of a Joint En Route Care Training System of Systems.
- **Design, Plan, Framework or Architecture**
 - To what degree the proposed research is based upon evidence-based, best of class, well documented, and/or well adopted designs, plans, frameworks, or architecture that could support a System of Systems.
 - How well the interoperability of the proposed designs, plans, frameworks or architecture is described, including the application of open-source/open-architecture/open-license concepts or solutions (if applicable) in a System of Systems.
 - To what degree the proposed work and research provide information and/or methodologies that could support a potential modular, flexible, robust medical simulation training system as standalone as well as integrated into a System of Systems.

- **Personnel and Facilities**

- How the composition and balance of the research team (including other organization personnel, sub-awards, and consultants, as applicable) are appropriate.
- To what degree the PI's and research team's backgrounds and expertise are appropriate and complementary to accomplishing the proposed work.
- To what degree the levels of effort by the PI and other key personnel are appropriate to ensuring the success of proposed research.
- To what degree the research environment and the accessibility of institutional resources support the proposed study (including collaborative arrangements).
- Whether there is evidence for appropriate institutional commitment.
- If applicable, to what degree the intellectual property plan is appropriate.
- If applicable, to what degree the commercialization plan is appropriate.

In addition, the following unscored criteria will also contribute to the overall evaluation of the application:

- **Budget**

- Whether the budget is appropriate for the proposed research and within the limitations of this Program Announcement/Funding Opportunity.
- Whether the proposed timeline is appropriate and tasks outlined in the application are logical in their progression.

- **Application Presentation**

- To what extent the writing, clarity, and presentation of the application components influence the review.

2. Programmatic Review: To make funding recommendations and select the application(s) that, individually or collectively, will best achieve the program objectives, the following criteria are used by programmatic reviewers:

a. Ratings and evaluations of the peer reviewers

b. Relevance to the mission of the DHP and JPC-1/MSIS, as evidenced by the following:

- Adherence to the intent of the award mechanism
- Programmatic relevance
- Program portfolio balance
- Relative impact and innovation

C. Recipient Qualification

For general information on required qualifications for award recipients, refer to the General Application Instructions, Appendix 1.

D. Application Review Dates

All application review dates and times are indicated on the [title page](#) of this Program Announcement/Funding Opportunity.

E. Notification of Application Review Results

Each PI and organization will receive email notification of posting of the funding recommendation in eBRAP. Each PI will receive a peer review summary statement on the strengths and weaknesses of the application.

IV. ADMINISTRATIVE ACTIONS

After receipt of pre-applications from eBRAP or applications from Grants.gov, the following administrative actions may occur:

A. Rejection

The following will result in administrative rejection of the pre-application:

- The pre-application is submitted by an intramural organization.
- Preproposal Narrative is missing.

The following will result in administrative rejection of the application:

- Submission of an application for which a letter of invitation was not received.
- Project Narrative exceeds page limit.
- Project Narrative is missing.
- Budget is missing.

B. Modification

- Pages exceeding the specific limits will be removed prior to review for all documents other than the Preproposal Narrative and Project Narrative.
- Documents not requested will be removed.

C. Withdrawal

The following may result in administrative withdrawal of the pre-application or application:

- A JPC-1 Medical Modeling, Simulation, and Training Working Group member or advisor is named as being involved in the research proposed or is found to have assisted in the pre-application or application processes including, but not limited to, concept design, application development, budget preparation, and the development of any supporting documentation. A list of the JPC-1 Medical Modeling, Simulation, and Training Working Group members and advisors can be found in [Section VII](#).

- The application fails to conform to this Program Announcement/Funding Opportunity description to the extent that appropriate review cannot be conducted.
- Inclusion of URLs, with the exception of links in References Cited and Publication and/or Patent Abstract sections.
- Page size is larger than 8.5 inches x 11.0 inches (approximately 21.59 cm x 27.94 cm).
- Inclusion of any employee of CDMRP review contractors in applications for funding without adequate plans to mitigate conflicts of interest. Refer to the General Application Instructions, Section II.B., for detailed information.
- Personnel from applicant or collaborating organizations are found to have contacted persons involved in the review process to gain protected evaluation information or to influence the evaluation process.
- The application budget differs significantly from the budget included in the pre-application.
- The invited application does not propose the same research project described in the pre-application.

D. Withhold

Applications that appear to involve research misconduct will be administratively withheld from further consideration pending institutional investigation. The institution will be required to provide the findings of the investigation to the USAMRAA Grants Officer for a determination of the final disposition of the application.

V. AWARD ADMINISTRATION INFORMATION

A. Award Notice

Awards will be made no later than September 30, 2016. Refer to the General Application Instructions, Appendix 3, for additional award administration information.

Any assistance instrument awarded under this Program Announcement/Funding Opportunity will be governed by the award terms and conditions, which conform to DoD's implementation of the Office of Management and Budget (OMB) circulars applicable to financial assistance. Terms and conditions of new awards made after December 26, 2014 may include revisions to reflect DoD implementation of new OMB guidance in the Code of Federal Regulations, Title 2, Part 200, "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards" (2 CFR part 200).

B. Administrative Requirements

Refer to the General Application Instructions, Appendix 3 for general information regarding administrative requirements.

C. National Policy Requirements

Refer to the General Application Instructions, Appendix 4 for general information regarding national policy requirements.

D. Reporting

Refer to the General Application Instructions, Appendix 3, Section J, for general information on reporting requirements.

Quarterly technical progress reports and quad charts will be required. In addition to written progress reports, in-person presentations may be requested.

E. Award Transfers

Refer to the General Application Instructions, Appendix 3, Section N, for general information on organization or PI changes.

VI. AGENCY CONTACTS

A. CDMRP Help Desk

Questions related to Program Announcement/Funding Opportunity content or submission requirements as well as questions related to the submission of the pre-application through eBRAP should be directed to the CDMRP Help Desk, which is available Monday through Friday from 8:00 a.m. to 5:00 p.m. ET. Response times may vary depending upon the volume of inquiries.

Phone: 301-682-5507

Email: help@eBRAP.org

B. Grants.gov Contact Center

Questions related to application submission through Grants.gov portal should be directed to the Grants.gov Contact Center, which is available 24 hours a day, 7 days a week (closed on U.S. Federal holidays). Note that the CDMRP Help Desk is unable to provide technical assistance with Grants.gov submission.

Phone: 800-518-4726

Email: support@grants.gov

Sign up on Grants.gov for “send me change notification emails” by following the link on the Synopsis page for the Program Announcement/Funding Opportunity or by responding to the prompt provided by Grants.gov when first downloading the Grants.gov application package. If the Grants.gov application package is updated or changed, the original version of the application package may not be accepted by Grants.gov.

VII. JPC-1/MSIS PROGRAMMATIC REVIEW PANEL

Current List of JPC-1 Medical Modeling, Simulation, and Training Working Group Members and Advisors:

Mr. Wilson Ariza	Dr. Kevin Kunkler
SGM F. Young Bowling	Dr. Joseph Lopreiato
Mr. Paul Chatelier	Dr. Haru Okuda
COL Tamara Crawford	Dr. Ray Perez
LTC(P) Shad Deering	Ms. M. Beth Pettitt
LTC Dawn Fitzhugh	LTC Marilyn Rink
Col Meletios Fotinos	CDR Mitchell Seal
Lt Col Jennifer Hatzfeld	LTC(P) Christopher Todd
CDR Typhanie Kinder	LTC Dave Thompson
Ms. Heidi King	Lt Col David Watson

Submissions that include a JPC-1 voting member as an investigator, consultant, collaborator, or in a key personnel role will not be considered.

VIII. APPLICATION SUBMISSION CHECKLIST

Grants.gov Application Components	Upload Order	Action	Completed
SF-424 (R&R) Application for Federal Assistance		Complete form as instructed.	
Attachments Form	1	Project Narrative: Upload as Attachment 1 with file name "ProjectNarrative.pdf."	
	2	Supporting Documentation: Upload as Attachment 2 with file name "Support.pdf."	
	3	Technical Abstract: Upload as Attachment 3 with file name "TechAbs.pdf."	
	4	Lay Abstract: Not required; leave Attachment 4 blank.	
	5	Statement of Work: Upload as Attachment 5 with file name "SOW.pdf."	
	6	Outcomes and Impact Statement: Upload as Attachment 6 with file name "Impact.pdf."	
	7	Innovation Statement: Upload as Attachment 7 with file name "Innovation.pdf."	
	8	Collaborating DoD Military Facility Budget Form(s): If applicable, upload as Attachment 8 with file name "MFBudget.pdf."	
Research & Related Senior/Key Person Profile (Expanded)		Attach PI Biographical Sketch (Biosketch_LastName.pdf) to the appropriate field.	
		Attach PI Previous/Current/Pending Support (Support_LastName.pdf) to the appropriate field.	
		Attach Biographical Sketch (Biosketch_LastName.pdf) for each senior/key person to the appropriate field.	
		Attach Previous/Current/Pending (Support_LastName.pdf) for each senior/key person to the appropriate field.	
Research & Related Budget		Complete as instructed. Attach Budget Justification (BudgetJustification.pdf) to the appropriate field.	
Project/Performance Site Location(s) Form		Complete form as instructed.	
R & R Subaward Budget Attachment(s) Form		Complete form as instructed.	